

SAILING DIRECTIONS
FOR THE
SOUTH-EAST COAST OF NOVA SCOTIA
AND
BAY OF FUNDY.

COMPILED FROM VARIOUS ADMIRALTY SURVEYS.

BY

STAFF COMMANDER G. F. McDOUGALL, R.N.

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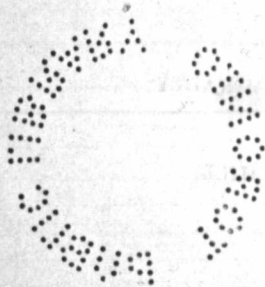
SOUTH-EAST COAST OF NOVA SCOTIA

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This work
of Nova Scoti
Sable Island,
Nova Scotia.

The directio
and Surveys
P. F. Shortlan

Hydrographic

ADVERTISEMENT.

This work contains Sailing Directions for the South-east Coast of Nova Scotia and Bay of Fundy, and includes a description of Sable Island, as well as the out-lying Banks of Newfoundland and Nova Scotia.

The directions have been principally compiled from the remarks and Surveys of Rear Admiral H. W. Bayfield, and Captains P. F. Shortland and J. Orlebar, R. N., between the years 1853-65.

G. H. R.

Hydrographic Office, Admiralty, London,
October 1867.

NEWFOUNDLAND

General Observati
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Nova Scotia Bank
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Sable island; pro
Currents; tides;
Caution -

NOVA SCOTIA :-

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David, Washbal
Dangers on weste
Roaring Bull, K
Andrew passage.
Dover and Snor
Wine, Crane, and
Whitehaven. East
and Outer Gull
Torbay. Shag and
Little harbour. Ne
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Ragged ledge.

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Black rock light
and D'Ore.
Cape Spencer.
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**IN THIS WORK THE BEARINGS ARE ALL MAGNETIC,
EXCEPT WHERE MARKED AS TRUE.**

**THE DISTANCES ARE EXPRESSED IN SEA MILES OF
60 TO A DEGREE OF LATITUDE.**

**A CABLE'S LENGTH IS ASSUMED TO BE EQUAL TO
100 FATHOMS.**

**THE SOUNDINGS ARE REDUCED TO LOW WATER OF ORDINARY
SPRING TIDES.**

**THE ELEVATIONS ARE ABOVE HIGH WATER ORDINARY
SPRING TIDES.**

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The seaboard c
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SAILING DIRECTIONS
FOR THE
SOUTH-EAST COAST OF NOVA SCOTIA
AND
BAY OF FUNDY.

SOUTH-EAST COAST OF NOVA SCOTIA.

CHAPTER I.

NEWFOUNDLAND AND NOVA SCOTIA BANKS :—
CURRENTS, ICE, &c.—SABLE ISLAND.

VARIATION IN 1867.

Virgin rocks - - 30° 45' W. | Sable island - - 22° 20' W.

GENERAL OBSERVATIONS.—Nova Scotia, a province of British North America, is an extensive peninsula varying in breadth from 50 to 100 miles, and connected with the continent by an isthmus only 8 miles in width, having the Bay of Fundy on the one side, and Northumberland strait on the other. It lies between lat. 43° and 46° N., and long. 61° and 67° W.; and is bounded on the north by Northumberland strait which separates it from Prince Edward island; north-east by the Gut of Canso, lying between it and Breton island (now a county of Nova Scotia); south and south-east by the Atlantic ocean; west by the Bay of Fundy, and north-west by New Brunswick.

Nova Scotia was first discovered by John Cabot in 1497, and was colonized by the French in 1598; it was taken by the English in 1627, when a grant was made of it by James I. to Sir W. Alexander. In 1632 the colony was restored to France, but at the peace of Utrecht, in 1714, was again ceded to England. After the peace of Aix-la-Chapelle, in 1748, a settlement of disbanded troops was formed under the auspices of Lord Halifax, from whom the capital city of the province derives its name.

The seaboard of the south-east coast, between Cape Canso to the north-east and Cape Sable to the south-west, is no less than 230 miles in a straight line; the general trend being about E. by N., and W. by S. Throughout the whole extent of this rocky coast are numerous indenta-

tions, varying in size and utility ; from the narrow creek in which boats seek shelter to noble harbours, of which Halifax is at once the largest, most accessible, and safest.

The coast is also fringed by numerous islands and sunken dangers which, by breaking the sea, tend to facilitate the progress and promote the safety of the local coasting trade ; but to ensure its successful prosecution, local knowledge of the coast and its dangers is indispensable ; the more so as the fogs, — of a density seldom experienced elsewhere — are very prevalent during the greater part of the year.

The soils of Nova Scotia are various along the south shore ; the granite forms the basis, extending in many places 20 miles into the interior. This region is the least fertile, and being that which strangers first see is apt to create an unfavourable impression ; but there are elsewhere extensive alluvial tracts, producing the most abundant crops. The forests also abound in good timber ; the ash, beech, birch, maple, oak, pine, and spruce being the most common trees indigenous to the country.

The interior of the peninsula is intersected by numerous rivers, lakes, and streams, which beautify and enrich the country ; it is also agreeably diversified by forest lands and grassy plains. The surface, though undulating, is not mountainous, the highest elevation being a little over 800 feet above the level of the sea. A tract of rugged hilly country, varying in breadth from 20 to 60 miles, with an average height of about 500 feet, ranges along the shores of the Atlantic.

There are several remarkable caverns, and grottoes along the shores of Nova Scotia, one of which at St. Peter point on the Bay of Fundy coast, displays a spacious hall, the roof of which is fretted with stalactites.

The census of the population of Nova Scotia taken in 1861 shows that the province contained 330,857 inhabitants, including 5,927 coloured people. In 1865 the value of exports amounted to 1,766,138*l.* ; and that of imports to 2,876,332*l.*

In the following pages will be found the latest information respecting the approaches to, as well as the appearance of, the south-east coast of Nova Scotia, though it must be borne in mind that peculiar and distinctive features, are not easily recognizable in the usual misty weather from distances which, in consequence of numerous outlying dangers, it would be prudent for a vessel uncertain of her position to be kept from the land.

The numerous lighthouses, however, now erected along the coast afford great assistance to a stranger in ascertaining his position when first making the land. Vessels approaching Sambro island lighthouse in a fog, and firing a gun, will be answered from the island, where a party of artillery and a heavy gun are stationed for the purpose.

CLIMATE.—The city of Halifax, capital of Nova Scotia, occupies a

central position somewhat more climatic fluctuation experienced in the British continent sudden as much as 60° (

The extreme (Fahr.) below zero being about 20° winter seldom continues from Christmas. The cold weather temperate ; the

The comparison attributable in prevents the harbor like those on the

GREAT BAY ocean to any point traverse the Great North and South and West, between the French, rocks, surveyed

The form of the in the parallel of west, and decreasing a depth of 22 fathoms 50° W. the bank the north-west.

The Great bar channel about 20 the north-west defined.

Virgin Rocks, 90 miles from their position on 50° 51' 30" W.

The bank, with

* See Admiralty Halifax, with the out

central position on the Atlantic seaboard of the province, and though somewhat more than 5° south of the southern point of Great Britain, its climatic fluctuations are greater and more severe than anything experienced in the British isles; for like other portions of the North American continent sudden changes of temperature sometimes occur, amounting to as much as 60° (Fahr.) in twenty-four hours.

The extremes of temperature during the year vary from 6° to 8° (Fahr.) below zero, to 80° above it; the average of the coldest month being about 20° ., and that of the hottest about 70° . The severity of winter seldom sets in until the close of December; frost generally continues from Christmas to April, being followed by a spring of short duration. The cold weather is usually dry, and the summer heat regular and temperate; the autumn is however the most enjoyable season.

The comparatively mild climate enjoyed by Nova Scotia seems to be attributable in some degree to the influence of the Gulf stream, which prevents the harbours of the Atlantic from being frozen during the winter like those on the northern shore of the province.

GREAT BANK OF NEWFOUNDLAND.—In crossing the North Atlantic ocean to any port in Nova Scotia or the Bay of Fundy, vessels generally traverse the Great bank of Newfoundland. This bank extends 294 miles North and South, from the parallel of $47^{\circ} 43'$ to 43° N., and 240 miles East and West, between the meridians of 48° and 54° W. It has been surveyed by the French, and the only known danger on this bank are the Virgin rocks, surveyed by Mr. Rose, master, R.N., in the year 1829.*

The form of the bank is irregular, but it reaches its most eastern limit in the parallel of the Virgin rocks. South of this it trends to the south-west, and decreases in depth, so that in the parallel of 44° N. there is only a depth of 22 fathoms, sand. In the parallel of 43° N. and meridian of 50° W. the bank falls into deep water, and its 60-fathom edge trends to the north-west.

The Great bank is separated from Ballard bank near Cape Race by a channel about 20 miles wide, having from 80 to 100 fathoms, mud; but the north-western limit of the Great bank has not yet been correctly defined.

Virgin Rocks, about 4 cables in length and $1\frac{1}{2}$ cables broad, lie S. 51° E., 90 miles from Cape Race, and have on their shoalest part $4\frac{1}{2}$ fathoms; their position on the Great bank being in lat. $46^{\circ} 26' 30''$ N., and long. $50^{\circ} 51' 30''$ W.

The bank, with from 28 to 30 fathoms water, on which the rocks are

* See Admiralty chart, North America, East coast, St. John's, Newfoundland, to Halifax, with the outer banks, No. 2,666.

situated extends $4\frac{1}{2}$ miles in an E. by N. direction, its broadest part being about $2\frac{1}{2}$ miles. Around the $4\frac{1}{2}$ -fathom patch there are from 5 to 6 fathoms water, increasing quickly to 7 and 9 fathoms; but in heavy weather the whole of this rocky ground breaks dangerously. The current generally sets over these rocks about one mile per hour, W.S.W.

In crossing the Great bank it is best to avoid the parallel on which the Virgin rocks are situated, as another shoal with 21 feet water, called Jesse Ryder rock, but not yet examined, has been reported 50 miles East (true) from the Virgin rocks.

GREEN BANK is in reality the western extremity of the Great bank, being only partially separated from it by a gully of deep water, in about long. 54° W., having over 60 fathoms, mud.

The western limit of this bank is in long. 55° W., and its southern margin in lat. $45^{\circ} 10'$ N. In no part is there less water than 34 fathoms, sand; and the peculiarity of its western limit nearly coinciding with the meridian of 55° W. makes it of service in verifying the longitude; for the deep gully between it and St. Pierre bank is 14 miles wide, with from 70 to 90 fathoms, mud.

BANK ST. PIERRE has its eastern limit nearly on the meridian of $55^{\circ} 22'$ W., and attains its southern boundary in lat. 45° N., long. 56° W. The bank then trends about N. by W. $\frac{1}{2}$ W. for 120 miles to its western margin in lat. $46^{\circ} 40'$ N., long. $57^{\circ} 25'$ W.

The soundings on this bank are often under 30 fathoms, the ordinary bottom being sand and broken shells.

NOVA SCOTIA BANKS.—Although our acquaintance with the nature and extent of the principal banks which mark the approaches to Nova Scotia cannot yet be deemed perfect, our knowledge of their limits and depth of water has been greatly increased during late years. Much useful information respecting the outer banks was diffused by the French charts in 1858; the surveys of Le Have and Roseway banks by Captain Shortland, R.N., in 1859 were satisfactory in every respect; and, later still, the off-shore soundings by Captain Orlebar, R.N., in 1864 are valuable additions to our hitherto scanty knowledge of the inequalities of the various banks which lie off the much-exposed and dangerous coast of Nova Scotia. Of these banks the principal in extent and most important in position are the Banquereau and Sable banks, the former being the easternmost of what may be correctly designated the Nova Scotia banks.

BANQUEREAU BANK, with from 15 to 60 fathoms, is an extensive plateau of sand, gravel, and shells, and is distinguished from contiguous banks by numerous flat sea-eggs without prickles which are found on the bottom. It takes its rise about lat. $44\frac{1}{2}^{\circ}$ N., long $57\frac{1}{4}^{\circ}$ W., and from

thence extending of 60° W. This 50 miles wide, but the north-east be across its narrow

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MIDDLE GR of Sable island, 15 fathoms was about 35 miles in 30 fathoms, and narrow gully 3 n within 35 miles c ipally by a sub fathoms.

thence extending in a westerly (true) direction 120 miles to the meridian of 60° W. This bank is separated from Bank St. Pierre by a deep gully 50 miles wide, having from 200 to 300 fathoms, muddy bottom; and from the north-east bar of Sable island by another gully of deep water 12 miles across its narrowest part and 140 fathoms deep.

On referring to the chart it will be seen that its shoalest part, with 15 fathoms, in lat. $44^{\circ} 35'$ N. and long. $57^{\circ} 54'$ W., is the apex of a ridge (having less than 30 fathoms) upwards of 40 miles in length in a N.E. and S.W. direction; and that relatively with the dangers off Sable island it is not only a safe offing for vessels intending to pass to the northward of the last-named danger, but by keeping, if possible, in the same parallel, the long and continuous line of comparatively shoal water, would enable a vessel under ordinary circumstances, to feel her way with some degree of confidence until she has passed to the westward of the meridian of Sable island.

MISAINÉ and CANSO BANKS.—Misaine bank lies to the northward of Banquereau bank, between the latter and Scatari island, and between its north-west edge, with 60 fathoms, and a similar depth on the outer edge of a bank extending from the shores of Cape Breton island, there is a deep gully 20 miles wide, with from 70 to 150 fathoms. The least water yet found on this bank is 36 fathoms, the general depth being more than 40 fathoms, with a bottom of stones and broken shells. The outline of the bank is very irregular; its eastern limit is in lat. $45^{\circ} 25'$ N., long. $58^{\circ} 10'$ W., and its western extremity is connected with Canso bank by the 60-fathom line.

The least water on Canso bank is 33 fathoms, sandy bottom; the bank is separated from the north end of Middle ground by a space of deep water with 112 fathoms, and from the bank extending from Cape Canso by a narrow deep-water channel with 84 fathoms.

ARTIMON BANK, situated at the east end of the deep-water gully separating Misaine bank from Banquereau, is of small extent, the least water being 36 fathoms, over a bottom of stones, with star fish and sea eggs.

MIDDLE GROUND, about 30 miles to the northward of the west end of Sable island, has been reported to have as little as 10 fathoms, although 15 fathoms was the least water obtained on examination. The bank is about 35 miles in length N.W. and S.E., with depths varying from 15 to 30 fathoms, and is separated from the west end of Banquereau bank by a narrow gully 3 miles across, with 83 fathoms. Its inner end extends to within 35 miles of Cape Canso, the distance between being occupied principally by a submarine valley, having in one locality a depth of 122 fathoms.

If in foggy weather, soundings should be struck within the 30-fathom line, they will impart confidence in making the coast of Nova-Scotia, as the middle of the bank is in about the same parallel as the entrance of Halifax harbour.

SAMBRO BANK is about 12 miles in length, within the 60 fathom line, and lies S.S.E. 36 miles from the same depth south of Sambro ledges. This bank is surrounded by deep water, but there are other detached patches of less than 60 fathoms in the neighbourhood whose limits are not yet accurately defined.

LE HAVE BANK.—The north-eastern shoal plateau of this bank with from 45 to 50 fathoms, sand and stones, is 32 miles in length N. by E. $\frac{1}{2}$ E., and S. by W. $\frac{1}{2}$ W., by 15 miles broad; the north end being about E. by S. $\frac{1}{2}$ S., nearly 60 miles from Baccaro point. Another 50-fathom bank exists to the westward (true) of the south end of the above, from which it is only separated by a shallow gully with 53 fathoms.

The 60-fathom boundary of the Le Have bank is well defined all round, and includes within its limits Brown bank, described hereafter.

ROSEWAY BANK.—The shoalest part of this bank with from 31 to 40 fathoms, stones and pebbles, is about 11 miles in length, and its centre is on the same parallel as Cape Sable lighthouse and the north end of Le Have bank. Between the 60-fathom lines of Le Have and Roseway banks there is a deep channel with from 70 to 100 fathoms; whilst inshore, Roseway bank is connected by a narrow neck, with the 60 fathom-line of the bank extending along the coast.

BROWN BANK, within the 50 fathom line, is 55 miles in length, with an average breadth of 15 miles. It lies to the westward of, but contiguous to Le Have bank, and with it forms an almost continuous bank, following the line of coast off Cape Sable at the distance of 50 miles off shore.

Near the western extremity of Brown bank is a sandy rise about 10 miles long north and south (true), with from 24 to 30 fathoms, the centre of which lies about 50 miles S.W. of Cape Sable.

Outside the 50-fathom line of Brown bank there is a deep-water channel 25 miles wide, separating it from the 60-fathom line at the north-eastern extremity of George shoal, off the Massachusetts coast.

Inside Brown bank there is a narrow deep-water channel with above 60 fathoms, dividing it from the same depth on the edge of the shore bank, which follows—about 30 miles off—the line of coast from Cape Sable to as far as Bryer island, abreast of which the deep water approaches within 5 miles of the shore.

There are many inequalities on the main shore bank, off the south-west coast of Nova Scotia which it would be useless to describe in detail in

these directions, chart, by studying not only of the p also of the relati

BIRDS.—The increasing numb gull, heavy of fl become very nu

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these directions, inasmuch as they are clearly delineated on the Admiralty chart, by studying which the navigator will have a comprehensive idea, not only of the positions of, and depths upon the various small patches, but also of the relative positions of the larger banks.

BIRDS.—The approach to the banks is generally evidenced by an increasing number of sea fowl around the vessel. Hagdowns, a species of gull, heavy of flight, are seen all across the Atlantic, but on the banks they become very numerous, as well as divers and other sea fowl.

FISH.—All the banks off Newfoundland and Nova Scotia abound in cod and other fish, and during the summer season a large fleet of fishing vessels are found at anchor upon them. The ordinary track of the mail steamers is left open, but north and south of this unoccupied track numerous American, French, and colonial vessels are employed in the cod fishery, especially on the Great bank of Newfoundland, Bank of St. Pierre, Banquereau and Green banks, and Middle ground.

Although 300 years have passed away since these banks were first frequented by fishermen from the west of England and St. Maloes, and that hundreds of vessels have been annually freighted from their prolific stores, the cod and other fish shew no sensible diminution.

During the last few years the shore supply of fish has been reported to be on the decrease, but on the banks, where about 400 vessels are employed, fish are found in abundance.

CURRENTS.—Of the great currents in this part of the ocean, it is generally admitted that the Gulf stream, after passing along the coast of the United States, is deflected to the eastward between the parallels of 35° and 40° N., and continuing on in about an E.N.E. direction (true) passes south of the tail of the Great bank of Newfoundland during the winter months, but extends over the south end of the bank during the summer season.

From a combination of causes, such as prevailing, or lately prevailing winds, and the preponderance of polar or tropical waters, the Gulf stream has been found to have an oscillatory motion, so that it would be impossible to assign any definite limits to the margins of this great ocean river.

The velocity of the Gulf stream across the south end of the Great Newfoundland bank is very variable, but at times amounts to more than a knot an hour in an E.N.E. direction (true). One result of this influx of warm water into a cold atmosphere is the production of the dense fogs so frequently experienced on the banks, and which materially embarrass and retard navigation.

Although the current between the Grand bank and Newfoundland commonly sets to the W.S.W., sometimes at a rate of nearly one mile per hour, it is not always so; and near the shore, in moderate weather,

it even changes with the wind. At these times during the flood it runs to the S.W., and during the ebb to the N.E., the former being the stronger.

To the westward of Cape Race, it must also be remembered that the current so frequently setting to the N.W. one mile per hour in the offing is not invariable in strength or direction, but is affected greatly by the prevailing wind. It is observed generally to run in upon the eastern side of the great bays indenting the south coast of Newfoundland, and out on their western side. In the offing it is influenced by the winds, and near the shore by the tides, so that during springs the stream of ebb runs weakly to the S.E., and the stream of flood to the N.W., the latter sometimes 2 miles per hour round the headlands.

Captain Cloué, of the French Imperial Navy, during his survey of Banquereau bank, remarks that he observed the currents to be very irregular in strength and direction, for they sometimes change all round the compass in 24 hours, and have been known to set in a contrary direction to the prevailing wind. The ordinary strength of the current is about half a knot; but it occasionally attains a velocity of more than 2 miles an hour. The fact of the transportation of field ice from the north to the latitude of 41° N., indicates the certainty of a current ordinarily setting to the south-west, at the rate of nearly half a mile per hour.

Arctic, or Labrador Current.—In addition to the warm waters of the Gulf stream is the cold ice-bearing current from the Arctic seas, which passes to the southward, along the coast of Labrador, at rates varying from 10 to 36 miles per day.

Abreast of Labrador this cold current appears to extend as far to the eastward as the meridian of 40° W., from thence in its course to the southward it is met by the northern edge of the Gulf stream, the position being nearly always distinguishable by the rips caused by the interlacing of the waters of the two currents.

A branch of the Arctic current flows through the Straits of Belleisle into the Gulf of St. Lawrence, and again enters the Atlantic in a south-easterly direction between Breton island and Newfoundland.

Vessels bound for the Gulf of St. Lawrence, and wishing to make the land of Cape Breton, should, if the weather be foggy, shape a course so as to pass a few miles north of Scatari island, and most frequently after passing the meridian of Flint island the fog will clear. The south-west wind, which is accompanied by a dense fog at Scatari, becomes clear and fine during its passage over the warm land.

When approaching the entrance of the Gulf of St. Lawrence, the current generally sets to the southward, on the Cape Breton side of the strait but on the Newfoundland shore it has frequently been found setting to the northward about one knot per hour.

To the eastward of the same current turns to the west the south-east coast of the American shore character as a current.

Along the Scotian shore generally sets to half a mile an hour by the wind. In the eastward at easterly winds, it is than a knot an vessel's distance.

Between Ram current is governed to the westward.

The formation of Scotia is probably currents; for the of Mexico, and the as well as the easterly north, are alike the two streams.

During the summer of Cape Race, the one mile per hour.

ICE.—One of the exposed in cross form of bergs, released at the bottom by the Labrador route between the In this route ice both months in the of the year north August.

These icebergs extent; they have positions to attain phenomena have overrunning the

To the eastward of Breton island it intermingles with the main branch of the same current, which, after skirting the east coast of Newfoundland, turns to the westward around Cape Race, and from thence passing along the south-east coast of Nova Scotia, continues on to the southward along the American shore to Florida, preserving in a marked degree its distinctive character as a cold current inside the warm waters of the Gulf stream.

Along the South-east coast of Nova Scotia, the off-shore current generally sets to the south-west at an average rate of rather more than half a mile an hour, but both direction and strength are much influenced by the wind. After a continuous westerly blow, the current will run to the eastward about half a knot per hour; and after a prevalence of easterly winds, the usual south-westerly current is accelerated to more than a knot an hour; in either case the set will tend to increase the vessel's distance from the shore.

Between Ram island and Cape Sable, within 8 miles of the shore, the current is governed by the Bay of Fundy tidal stream, the flood setting to the westward and the ebb to the eastward.

The formation of the extensive banks of Newfoundland and Nova Scotia is probably to be attributed to the meeting of the above diverse currents; for the loose delta of the numerous rivers falling into the Gulf of Mexico, and borne along in suspension by the force of the Gulf stream, as well as the earthy matter which icebergs are ever bringing from the north, are alike deposited within the comparatively limited space where the two streams come into collision.

During the survey, in 1829, of the Virgin rocks, about 90 miles S. E. $\frac{1}{2}$ E. of Cape Race, this current was found setting to the W.S.W. at the rate of one mile per hour.

ICE.—One of the most fruitful sources of danger to which vessels are exposed in crossing the Atlantic are the immense masses of ice, in the form of bergs, and extensive fields of solid compact ice which are released at the breaking up of winter in the Arctic regions, and drifted down by the Labrador current across the direct and much frequented route between the principal ports of Western Europe and North America. In this route ice is more likely to be encountered from April to August, both months inclusive, although icebergs have been seen during all seasons of the year north of the parallel of 43° N., but not often so far south after August.

These icebergs are frequently several hundred feet high, and of vast extent; they have occasionally been seen as low as lat. 39° N., and in positions to attain which the Gulf stream must have been crossed. Such phenomena have been attributed to the warm waters of the Gulf stream overrunning the cold Arctic current; whilst the latter, retaining its

progress and direction as a submarine current, transports the deeply-immersed ice islands into and across the Gulf stream.

On this subject an able authority has remarked, "No impulsion but that of a vast current, setting in a south-westerly direction, and passing beneath the Gulf stream, could have carried these immense bodies to their observed positions, on routes which cross the Gulf current, in a region where its average breadth has been found to be about 250 miles."*

It may possibly assist to realise the enormous magnitude of these ice islands by stating that the specific gravity of fresh-water ice, of which bergs are composed, is about seven-eighths that of sea-water; in other words, only one-eighth of the entire mass appears above the water, the remaining seven portions being immersed beneath the surface of the sea.

In the latitude of St. John Newfoundland icebergs have been fallen in with as far east as the meridian of 40° W., being the eastern margin of the cold Arctic current already described. Further south, between the parallels of 40° and 45° N., they have been seen as far east as 39° W.

From lat. $38^{\circ} 40'$ N., and long. $47^{\circ} 30'$ W.—which under ordinary circumstances may be deemed the most southerly position in which to expect icebergs—their probable boundary line to the westward would be in nearly a straight line towards Halifax, to as far as long. 61° W.

Instances of an exceptional nature are on record of icebergs having been seen bordering on the parallel of 40° N., within 60 miles W.N.W. of the island of Corvo; and of another having been passed in lat. $36^{\circ} 10'$ N. and long. $39^{\circ} 0'$ W. Ice fields have been fallen in with in the latitude of Cape Race, on the meridian of 45° W., and also in lat. 42° N. and long. 50° W.

Vessels bound for the Gulf of St. Lawrence or Halifax, either endeavour to make Cape Race by passing north of the Virgin rocks, or in order to avoid the ice, cross the banks on the parallel of 44° N., hauling up on their proper course when past long. 55° W., as heavy ice is seldom seen to the westward of that meridian.

Under ordinary circumstances the ice does not reach so far south as Cape Race before April, so that sailing vessels leaving England in March have often entered the Gulf of St. Lawrence without being impeded by ice. When in the supposed vicinity of ice a good look out is essentially necessary, for even during a fog, or the darkest night, the position of an iceberg may be ascertained by a peculiar whitening of the fog—known as *ice-blink*—which frequently renders them visible at some distance.

Generally on approaching ice there is a marked diminution in the

* Mr. W. C. Redfield.

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temperature of the air and sea, especially of the latter. The indications of the thermometer should therefore never be neglected, though it must not be assumed to be an infallible guide.

Vessels should, if possible, always pass to windward of icebergs, to avoid the loose ice floating to leeward.

No rule, however, can be laid down to ensure safe navigation, as the position of the ice differs so much in different seasons; but much will depend on the vigilance, caution and skill of the navigator when crossing the dangerous ice-bearing portion of the North Atlantic ocean.

SABLE ISLAND is formed of two nearly parallel ridges of sand shaped like a bow, concave to the northward, and meeting in a point at either end. Its whole length, following the curve and including the dry parts of the bars, is 22 miles; or E. $\frac{3}{4}$ S. 20 $\frac{1}{2}$ miles, in a direct line across the curve; its greatest breadth is exactly one mile. In some parts it is wholly or partially covered with grass, in others scooped out by the winds into crater-shaped hollows, or thrown up into sand-hills, not exceeding the height of 75 feet above high water. Between these ridges a long pond, named Salt-water lake, said to be gradually filling with blown sand, but still in some parts 12 feet deep, extends from the west end to the distance of 11 miles; and a low valley continues from it 6 $\frac{1}{2}$ miles more to the north-east end of the island. The entrances to this pond have been for some time closed, the sea flowing in over the low sandy beach on the south side, and at the west end only in high tides and heavy gales.*

When seen from the north, from a distance of 9 or 10 miles, the island presents the appearance of a long range of sand-hills, some of which are very white. From the south, the range of white sand appears more continuous, and very low towards the west end. On a nearer approach many of the sand-hills are seen to have been partly removed by the waves, so as to have formed steep cliffs next the sea. In other parts they are covered by grass, and defended by a broad beach, which however cannot be reached without passing over ridges of sand covered with only a few feet water. These ridges, which are parallel to the shore at distances not exceeding one third of a mile, form heavy breakers, and are dangerous to pass in boats, when there is any sea running.

POSITIONS.—The west flagstaff on Sable island is in lat. 43° 56' 24" N. long. 60° 2' 47" W.; the west extremity of the grassy sand-hills in lat. 43° 56' 44" N., long. 60° 8' 31" W.; and the east extremity of the

* See Plan of Sable island, No. 2,171, scale, $m=0.4$ of an inch.

grassy sand-hills in lat. $43^{\circ} 58' 57''$ N. and long. $59^{\circ} 45' 33''$ W. Such were the positions in 1852, but the island has been wasting away at the west end for many years past, sometimes almost imperceptibly, at other times several miles have been swept away by the winds and waves during a single heavy gale. The east end has changed very little, if at all, during the last 30 or 40 years. The distance of the East and West flagstuffs from the end of the grassy sand-hills have been stated, so that any future change may be readily ascertained. The distance of the island from the lighthouse on White Head island, the nearest part of Nova Scotia, is 85 miles.

PRODUCTIONS. — The amount and variety of vegetation on this gigantic sand bar is extraordinary. Besides two kinds of grass, there are wild peas and other plants, affording subsistence to more than 400 wild horses and innumerable rabbits, as well as to the domestic cattle belonging to the establishment. There are no other animals on the island, excepting rats, which have come on shore from wrecks. There are also four or five kinds of edible berries in great abundance, and many flowers and shrubs, but no trees.

Fresh water is to be had almost everywhere by digging down a few feet into the sand. Seals, and abundance of wild fowl, frequent the island in their seasons.

The fisheries around the island are exceedingly valuable, but the danger of remaining near its formidable bars has hitherto restricted the number of vessels engaged in them to a few schooners.

The ESTABLISHMENT on Sable island for the relief of shipwrecked persons is supported by an annual grant from the legislature of Nova Scotia, to which the Imperial Government adds an equal sum; also by a salvage upon the sale of wrecked vessels and their cargoes, the occasional sale of wild horses, &c. It is situated on the north side of the island between the pond and the sand-hills, and consists of a comfortable house for the superintendent and his family, buildings for the men and the occasional accommodation of shipwrecked persons, for storing provisions and other property saved from wrecks, workshops, stabling, &c.

The superintendent has under him a foreman and nine men, two of whom with their families occupy outposts at the Middle and East flagstuffs. No wrecks can take place on the island at a greater distance than 6 miles from some one of these posts; and in the event of one occurring the outposts report by signal to the superintendent at the principal establishment.

The West Flagstaff, which points out the position of the principal establishment, stands on a sand-hill 40 feet high, and with its crows-

nest, or look-out north side of the west end of the

The East Fla on a sand-hill o date, 2,280 fatho

The Middle water lake, and the buildings at side, distant $3\frac{1}{2}$

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Sable island the north, and careful not to northward, wh over the bars, the bars are e so, having 30 contrary, the difficult to ac

nest, or look-out, 100 feet above the sea, is a conspicuous object on the north side of the island; in 1852 it was distant 4,215 fathoms from the west end of the grassy sand-hills.

The East Flagstaff, 40 feet high, is also a conspicuous object, standing on a sand-hill on the north side of the island, and distant, at the same date, 2,280 fathoms from the north-east end of the grassy sand-hills.

The Middle Flagstaff is farther inland, near the east end of the salt water lake, and $3\frac{3}{4}$ miles to the westward of the East flagstaff. Besides the buildings at these flagstaves, there is a house of refuge on the north side, distant $3\frac{1}{2}$ cables from the west end of the grassy sand-hills.

The WEST BAR dries about three-quarters of a mile from the end of the grassy sand-hills. There are several patches nearly dry about a mile farther out, and then 9 miles of heavy breakers, succeeded in bad weather by 7 miles more, in which the depth increases from 5 to 10 fathoms, and where there is usually a great ripple and a heavy cross sea. The direction of this bar is N.W. $\frac{1}{2}$ N. for the first 12 miles, and then W. by N. for the remaining distance; the whole extent of the bar from the end of the grassy sand-hills to the depth of 10 fathoms being 17 miles, beyond which the water deepens gradually to the westward for many miles.

The EAST BAR during fine weather dries about 4 miles from the end of the grassy sand-hills. At the distance of $1\frac{3}{4}$ miles, a small sand-hill about 10 feet high and with some grass on it, has accumulated around a wreck since 1820. The 4 miles of dry sand are succeeded by 8 or 9 miles of heavy breakers; the whole length of this bar, from the grassy sand-hills to the depth of 10 fathoms, being 14 miles. Its direction is N.E. by E. $\frac{1}{2}$ E. for the first 7 miles, beyond which it curves gradually, till it terminates to E.S.E. The ridge of sand, with a depth of from 10 to 13 fathoms on it, and with often a heavy cross sea, continues for 10 miles farther to the E.S.E., and then ends abruptly; the depth increasing, in a distance of 3 miles farther in the same direction, to 170 fathoms, in the channel between Sable island and Banquereau bank.

Sable island and its submerged bars form a crescent, concave towards the north, and extend over more than 50 miles of sea. Vessels should be careful not to be caught within this crescent in a strong gale from the northward, when the accelerated ebb tide, setting directly towards and over the bars, would render her situation extremely dangerous. Both the bars are extremely steep on the north side, the east bar especially so, having 30 fathoms water close to it. To the southward, on the contrary, the water deepens gradually for many miles, and renders it difficult to account for the great number of shipwrecks on that side

of the island and its bars; unless they are to be attributed to the neglect of the lead.

The average number of ascertained wrecks on the island for some years past has been about two annually, but there is often sad evidence of additional losses on the bars, especially after a long continuance of foggy weather, for pieces of recently wrecked vessels and their cargoes, together with the drowned bodies of their crews, are frequently drifted on shore. Wrecks on the bars are of course far more dangerous to life than those that take place on the island, and it is important in such cases to know on which bar the vessel is, and the consequent direction in which to seek for safety on the island. This information, when the island is hidden by fog or the darkness of night, must be sought by observing the direction of the line of breakers, which on the East bar is between N.E. by E. and East until near its outer extremity, whilst on the West bar it is N.W. $\frac{1}{2}$ N.

ANCHORAGE.—Off the north side of Sable island, excepting near the east end, where the deep water approaches too near the shore, there is good anchorage in from 5 to 10 fathoms, and from one to two miles off shore. The bottom is fine sand, and holds well, but the sea is so heavy, excepting with off-shore winds, that a vessel should weigh immediately on the first indications of a wind from the sea.

DIRECTIONS.—In approaching the anchorage off Sable island from the northward at night or in thick weather, the lead should be kept constantly going; and after passing the Middle ground, distant about 25 miles to the northward of the island, great caution should be used, and the vessel should be certain of her position; for the east end of the island and the East bar are very steep on that side.

Vessels seldom anchor off the south side of the island, because of the prevailing heavy swell from the southward; but they may safely approach by the lead on that side, taking care not to become becalmed in the heavy swell, and in the strong and uncertain tides and currents near the bars.

The landing is in general impracticable on the south side, excepting after a long continuance of northerly winds; and on the north side boats can land only during southerly winds and fine weather; but there are surf boats at the establishment, which can land when ordinary boats would swamp.

CURRENTS.—The irregular currents are said to be one of the principal causes of the frequent wrecks on Sable island. Although our acquaintance with their strength and direction cannot yet be deemed complete, it has been ascertained that a branch of the Labrador current, after passing

along the east westward, proba another branch St. Lawrence th out to the south currents are re direction, by lo known to be to to windward in Gulf stream; an island, were sup when they ran c

TIDES.—It i island at 7h. 30r rise about 4 fee The ebb sets to 1 $\frac{1}{2}$ or 2 knots;

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CAUTION.— indications, for t deep-sea lead,

along the eastern coast of Newfoundland, is frequently deflected to the westward, probably by the Great bank, and that it is often joined by another branch of the same current, which, having entered the Gulf of St. Lawrence through the Strait of Belleisle, is frequently found running out to the southward, between Newfoundland and Breton island. These currents are rendered inconstant and irregular both in strength and direction, by local and distant winds; but the general tendency is well known to be to the westward, for vessels find no difficulty in beating to windward in that direction, anywhere to the northward of the Florida Gulf stream; and hence it is, that many of the vessels wrecked on Sable island, were supposed to have been well to the eastward of its position when they ran on shore.

TIDES.—It is high water, full and change, on the north side of Sable island at 7h. 30m., and on the south side about an hour earlier; springs rise about 4 feet. The tidal streams are much influenced by the wind. The ebb sets to the southward on and over the bars, often at the rate of $1\frac{1}{2}$ or 2 knots; the flood at a much less rate in the contrary direction.

FOGS, WINDS, and BAROMETER.—Fogs are prevalent all the year round, but during the spring and summer months, dense fogs or rain almost always accompany all winds from the sea, from E.N.E., round by south, to W.S.W. In winter the rain is frequently replaced by snow. During the autumnal and winter months winds from between North and West become more frequent, and, being off the land, are always accompanied with clear weather.

Strong gales of wind do not often occur in May, June, or July; but after the middle of August they are often of great strength, and it then becomes essential to attend carefully to the indications of the barometer. Strong winds from East, round by South, to W.S.W., are always accompanied by a falling barometer; when, therefore, these winds begin to abate, and the barometer at the same time ceases to fall, a change of wind, more or less sudden, to the opposite direction may be expected, with a rising barometer and fine weather; if it be winter, the change will probably be accompanied by intense frost, coating the vessel, sails, and rigging with ice.

Again, a high barometer, stationary or beginning to fall, indicates that a S.E. or S.W. wind, with accompanying rain and fog, is not far distant; and if, at the same time, there be a bank of clouds rising above the north-western horizon, the indication is certain.

CAUTION.—It is essential to the safety of vessels to attend to these indications, for to the neglect of such precautions, more especially of the deep-sea lead, no less than to the fogs and irregular currents the frequent

shipwrecks on Sable island and the south-east coast of Nova Scotia are attributable.

All this portion of the sea, from the eastern limit of the Bank of Newfoundland, past Cape Race to Halifax, as well as to Portland, Boston, or other harbours of the coast of the United States, is within soundings, and therefore during foggy weather, or when in doubt respecting the ship's position, frequent soundings are absolutely necessary.

Another important point to which due attention should be paid is, that in coming from the eastward the variation of the compass rapidly decreases, and, if not allowed for, might easily run a vessel into danger.

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CHAPTER II.

NOVA SCOTIA :—SOUTH-EAST COAST.

CAPE CANSO TO HOLLINS BAY.

VARIATION IN 1867.

Cape Canso	-	-	-	23° 25' W.
Whitehaven	-	-	23° 20' W.	Country Harbour - - 22° 25' W.

The COAST.—From Cape Canso to Torbay, a distance of 18 miles, metamorphic gneiss is the prevailing rock. It forms barren hills along the northern shore of Torbay; and Whitehaven, White head, and White point derive their names from its more or less white appearance.

From Torbay to Indian bay, a distance of about 20 miles, the shore is formed of metamorphic rocks, principally clay and micaceous slates, in nearly vertical strata. On these rest the unstratified drift clay and boulders forming the reddish cliffs which appear occasionally, but not extensively, on this part of the coast. The country near the sea has in general a desolate appearance, in some parts thinly wooded with dwarf spruce trees, in others, which are called the barrens, it is quite bare, or only covered with peat and bushes.*

A few miles inland, as may be seen in most of the harbours, the drift hills become covered occasionally with hard wood, birch, beech, and maple, and are more or less susceptible of cultivation. The hills seldom exceed the height of 200 feet above the sea, and near the coast are in general much lower.

The Soundings are deep and irregular everywhere along this part of the coast, and vessels running along it, or approaching it during dark nights or the prevailing fogs, should not go into a less depth than 40 fathoms water.

The Tidal Streams are weak and irregular, but there is generally—though not continuously—a current setting along the coast to the westward, sometimes exceeding the rate of one knot per hour; hence vessels seldom experience any difficulty in beating to the westward.

* See Admiralty Charts: Canso Harbour, No. 2,163, scale, $m = 4$ inches; Green Island to Cape Canso, No. 2,517; and Liscomb Island to Green Island, No. 2,519; scales, $m = 1\frac{1}{4}$ inches.

CRANBERRY ISLAND LIGHT.—Cranberry island, low and rocky, a quarter of a mile in length, and divided into several parts at high water, may in reality be described as the north-eastern extremity of Nova Scotia, with a nearer approach to accuracy than Cape Canso, which is only an insignificant islet a long mile to the south-west.

Near the north end of Cranberry island stands the lighthouse of wood, octagonal in shape, 60 feet high, and painted with red and white horizontal stripes, from which is exhibited two *fixed* white vertical lights 35 feet apart. The upper light, 75 feet above high water, should be seen in clear weather from a distance of 15 miles; the lower, being an inferior light 40 feet high, only from a distance of 9 miles. They bear N.E. $\frac{1}{2}$ N. $1\frac{1}{4}$ miles from Cape Canso; but dangers on either side reduce the breadth of the clear channel to half a mile.

Fog Trumpet.—A Dobell's fog trumpet is established 100 yards south of the lighthouse; each blast will be of *five seconds* duration, with intervals of *twenty* seconds, and in clear weather it should be heard from 6 to 10 miles off.

CAPE CANSO is a low rocky islet 15 feet high, less than a quarter of a mile in extent, and connected at low water with Andrew island, by a sandy neck about one cable in breadth. Detached from the islet at high water, and at the distance of little more than a cable in a S.E. by S. direction, is the Cape rock, 8 feet high.

At $1\frac{1}{4}$ miles to the north-west is Glasgow head, a remarkable red clay cliff 50 feet above the sea; and at an equal distance beyond in the same direction lie the town and harbour of Canso.

From Cape Canso to Guysborough, a distance of 25 miles in a westerly direction, the south coast of Chedabucto bay is composed of primary rocks, partially covered with drift sand, clay, and boulders. This drift occasionally appears in high, red-looking cliffs on the shore, and when cleared of stones it furnishes a tolerably productive soil; but the climate is not favourable to agriculture, and the large fishing population obtain little beyond a few vegetables and food for their cattle.

Drift ice in the month of May, and in June the prevailing easterly winds, bringing fog from a cold sea, check vegetation until past mid-summer, and seldom allow of settled warm weather before July. But fishing, not farming, is here the great business of life, as it has been ever since the first settlement in this country. Codfish, herrings, and mackerel swarm along these shores, and the latter especially are taken in incredible numbers, both in the spring and fall of the year, by the numerous schooners occupied in this important pursuit.

ANDREW ISLAND, about $1\frac{3}{4}$ miles in length and $1\frac{1}{4}$ miles in breadth, is separated from the mainland of the peninsula of Nova Scotia by a deep

narrow channel, the greatest elevation barren, with steep west, the island hereafter describ

Grime and Bass as the Canso led Cranberry island more especially has 12 feet least it is surrounded rocky patch, with From Grime rock distant $2\frac{1}{2}$ miles at Canso, the s Petit-pas, and F

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CAUTION.— from seaward, t numerous detach tance from the la weather, the con

narrow channel about one eighth of a mile broad. The island is low, its greatest elevation, 35 feet, being at the south end; it is also boggy and barren, with stunted spruce over its surface. On all sides, excepting the west, the island is surrounded by a fringe of dangerous shoals, to be hereafter described.

Grime and Bass Rocks are the outermost of the off-lying dangers, known as the Canso ledges, which render the approach to the Ship channel between Cranberry island and Cape Canso extremely dangerous to strangers, and more especially so as the locality is celebrated for fogs. Grime rock, which has 12 feet least water, is only marked by breakers when the sea is heavy; it is surrounded by various patches with from 3 to 5 fathoms, the outermost rocky patch, with $4\frac{1}{2}$ fathoms, being a quarter of a mile to the eastward. From Grime rock the lighthouse on Cranberry island bears W. by S. $\frac{1}{4}$ S., distant $2\frac{1}{2}$ miles; it also lies with the steeple of the Roman Catholic church at Canso, the southern extremity of Grassy island, the northern end of Petit-pas, and Park ledge all in one.

The Bass rock, with only 6 feet water, breaks frequently, and lies S.W. $3\frac{3}{4}$ cables from Grime rock. From it Cranberry island lighthouse bears W. by S., distant $2\frac{1}{4}$ miles; and the steeple of the Roman Catholic church at Canso, and southern extremity of Petit-pas appear in line.

Middle, Inner Bass, and Kelp Rocks lie within the Grime and Bass rocks, to the westward. Of these the Middle rock, with only 4 feet water, as well as the Inner Bass, awash at low water, can almost always be seen; but the Kelp rock, with 12 feet least water, only breaks during a heavy sea.

Middle rock lies W.N.W. one mile from Bass rock, and from it the lighthouse on Cranberry island bears S.W. by W. $\frac{1}{4}$ W., $1\frac{4}{10}$ miles; and the Roman Catholic church at Canso, seen over Petit-pas, is open a little to the southward of Park ledge.

The breakers on this rock, as well as on the Inner Bass, which lies $3\frac{1}{2}$ cables to the N.N.W., often serve as a guide to fishing and coasting vessels, which prefer passing close to these rocks to going outside all the edges; but this should on no account be attempted by large ships or by strangers; for although the passage between the Middle and Bass rocks is a mile wide, the existence of the Sand shoal and White rock, with 5 and 4 fathoms respectively, as well as another nameless patch of the same depth as the latter, render it unsafe in the heavy swell which so frequently prevails.

CAUTION.—It is essentially necessary, when approaching Cape Canso from seaward, that great caution be exercised, in consequence of the numerous detached shoals and rocks which lie at some considerable distance from the land; and that at all times, but more especially during foggy weather, the constant use of the lead should be deemed indispensable.

Should the approach to these dangers be from the northward, it must be borne in mind that the off-lying ledges lie only 4 cables within the edge of the 30-fathom bank; if from the southward and eastward, go into no less than 25 fathoms, until the soundings indicate that the vessel is off the bank to the northward; and, lastly, in clear weather do not haul to the westward into Chedabucto bay until the high land of Black point opens to the northward of Derabie island, bearing W.N.W.

DANGERS of the Entrance of SHIP CHANNEL.—As a detailed account of the various out-lying dangers off Cape Canso, as well as those leading to Canso harbour, will be found in vol. 2 of the St. Lawrence Pilot, it is not deemed necessary to repeat in this work any observations on dangers in this locality, save those affecting the coast navigation from Cranberry island to the southward.

The following description of objects and dangers on either side of the entrance of Ship channel into Canso harbour, in the order in which they would be passed by a vessel running in from sea, will sufficiently explain the Admiralty chart, without which, or the aid of experienced local knowledge, no one should attempt a navigation so hazardous.

EASTERN SIDE, Stanley Shoals.—These dangers consist of four small rocky patches a quarter of a mile apart. The least water, 4 fathoms, is on the northern and western patches, whose positions are sometimes shown by breakers.

The northern patch lies with the northern of the Black rocks on with the north point of Glasgow head, and Crow islet, half its apparent breadth, open east of Cranberry island. From the western patch, the eastern end of Crow islet is just shut in behind the eastern extreme of Cranberry island, and the highest part of Glasgow head, just over the north end of the southern group of Black rocks.

The western extremes of Derabie and Cranberry islands in one, and bearing N. by W. $\frac{1}{2}$ W., lead in between these shoals and the Cape Breaker.

Nickerson and David Rocks.—From the Nickerson rock, which is detached, with 4 fathoms least water, Cranberry island lighthouse bears N.W. $\frac{1}{2}$ W. $1\frac{1}{4}$ miles. This rock is less in the way of navigation than the Stanley shoals, from which it is distant about half a mile in a N.N.E. $\frac{1}{2}$ E. direction. The same remark applies to David rock, with 13 feet water, half a mile nearer to the lighthouse, which bears from it N.W. $\frac{1}{4}$ N. three-quarters of a mile.

Washball Rock, a rocky patch, which dries at low water, lies W.S.W. 2 cables from David rock, and S.S.E. $\frac{3}{4}$ E. 7 cables from the lighthouse; it forms the extremity or toe of a rocky shoal extending from Cranberry island, and occupies a mid-position between the lighthouse, and the Stanley

shoals. As the vessel is in guiding vessels the Cranberry is

Pink Rock, west of Cranberry island extends $1\frac{1}{2}$ cables to the extreme southern N.N.E. half a mile from Fort point in the direction of this danger; it should be kept in view until the bearing

WESTERN SIDE southward, the Cranberry island is Patch rock, which occasionally; it

Within the Point is Boom rock, west of Canso; and E. It obtained a more survey, by the l extreme of Dove leads clear to the

Cape Breaker 4 fathoms water, and Cranberry eastward a cable sea, this rock is not that the Ro and therefore as The Roaring B S.E. $\frac{1}{2}$ S., two-t

Keeper and distant half a the Cape Breaker distant 3 cables open to the north clear to the north

Black Rocks passage into Glasgow masses of trap

shoals. As this danger can almost always be seen, it is of great service in guiding vessels. These two last-named rocks lie so near the edge of the Cranberry island bank, as to leave no safe passage between them.

Pink Rock, with only 4 feet water, lies half a mile to the southward of Cranberry island lighthouse; but from it a shoulder, with 3 fathoms water, extends $1\frac{1}{2}$ cables W. by N. From this rocky shoulder, which forms the extreme southern edge of the Cranberry island bank, the lighthouse bears N.N.E. half a mile. Flag hill, and the south-west extremity of the beach of Fort point in line, bearing N.W. $\frac{1}{4}$ N., lead just clear to the southward of this danger; but as the beach cannot always be made out, Flag hill should be kept about half a point open to the south-west of Fort point, until the bearing of the lighthouse shows that the rock is passed.

WESTERN SIDE.—Patch and Boom Rocks.—Approaching from the southward, the entrance of the Ship channel between Cape Canso and Cranberry island is a mile wide. The outermost danger on this side is Patch rock, with 5 fathoms water, but on which the sea is said to break occasionally; it bears from Cape Canso S.S.E. $\frac{1}{2}$ E., $1\frac{3}{4}$ miles.

Within the Patch—to the westward, nearly three-quarters of a mile—is Boom rock, with 12 feet water, bearing S. $\frac{1}{4}$ E., $1\frac{1}{2}$ miles from Cape Canso; and E.S.E. $1\frac{1}{2}$ miles from the south point of Andrew island. It obtained a melancholy celebrity during the progress of the Admiralty survey, by the loss of a schooner on it with all hands. The south-western extreme of Dover island, open to the southward of White point W. $\frac{1}{3}$ S. leads clear to the southward of both these rocks.

Cape Breaker and Roaring Bull Rock.—The Cape Breaker, with $2\frac{2}{3}$ fathoms water, bears from Cape Canso S.E. by E. one mile distant. Crow and Cranberry islands touching, bearing N. by W., will clear it to the eastward a cable's length. As it can only be seen when there is a heavy sea, this rock is extremely dangerous, and would be still more so were it not that the Roaring Bull, 4 cables to the westward, almost always shows, and therefore assists in indicating the position of its treacherous neighbour. The Roaring Bull has only 2 feet water, and bears from Cape Canso S.E. $\frac{1}{2}$ S., two-thirds of a mile.

Keeper and Kirby Rocks, with 4 and $2\frac{1}{2}$ fathoms water, are distant half a mile and one mile respectively, about N.W. by N. from the Cape Breaker; Kirby rock bears from Cape Canso E.N.E., and is distant 3 cables. The steeple of the Roman Catholic church at Canso, open to the north-east of Glasgow head, bearing N.W. $\frac{1}{2}$ N., leads just clear to the north-east of Cape Breaker, and Keeper and Kirby rocks.

Black Rocks, lie N.N.W. a long half mile from Kirby rock, the passage into Glasgow harbour being between them. They consist of two masses of trap rock about 5 feet high, and can therefore always be seen;

as the shoal water extends from them only a cable's length to the eastward, they are of great service in pointing out the western side of the channel.

Gannet Ledges.—The outermost of these ledges, with only 3 and 4 feet water on them, extend S.E. by E. nearly a mile from Gannet point the south extremity of Andrew island; and foul ground, with 6 and 9, fathoms over it, runs out fully a mile farther to the south-east. The south-west extremity of Dover island kept open to the southward of White point, bearing W. $\frac{1}{3}$ S., leads half a mile to the southward of these ledges, as well as the dangerous Boom rock with 12 feet water, and from which Gannet point bears W.N.W. $1\frac{1}{2}$ miles.

ANDREW PASSAGE, between Andrew island and the mainland, and leading to Glasgow and Canso harbours, is too intricate for a written description to avail. It is frequented occasionally by fishing vessels and small coasters, but even with the aid of a chart, local knowledge is indispensable for the safe guidance of even a small vessel.

DOVER BAY is $2\frac{1}{2}$ miles wide at the entrance, from Dover head eastward to White point, and 4 miles deep to the N.N.W.; but although so extensive, it affords no shelter for ships, being filled towards its head with islets and rocks above and under water, among which only small craft and boats could find their way. Louse harbour, on its western shore, one mile within Dover head, has within it depth and space sufficient for large vessels; but its entrance, to the north of Louse island, with $3\frac{1}{2}$ fathoms water, is only about 30 fathoms wide. Little Dover Run is a very narrow channel between White island—forming the eastern side of the bay—and the mainland; its narrowest part being only about 30 yards wide, with 3 fathoms water. It leads in among the islets at the head of the bay, and is frequented in the season by fishing vessels.*

The dangers at the mouth of Dover bay are, a rock with 3 feet water on it, from which Dover head bears N.N.E. $\frac{1}{2}$ E. a third of a mile; Blackman shoal, with 4 fathoms water, from which Dover head bears N.W. by W. three-quarters of a mile; Bay shoal, with 5 fathoms water, lying nearly half-way between Dover head and White point, and breaking only after heavy gales; Horne shoal, with 3 fathoms water, lying nearly mid-way between Louse head and White island; and Lumsden shoal, with $2\frac{1}{4}$ fathoms water, from which White point bears S.E. by E. distant $6\frac{1}{2}$ cables.

The White point ledges extend $5\frac{1}{2}$ cables to the southward of White point; and White rock, with 5 fathoms water, which breaks after heavy

* See Admiralty Chart, Cape Canso to Dover Head, No. 2,518, scale, $m = 4$ inches.

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gales, lies nearly half a mile farther off, with the point bearing N. by W. distant one mile.

Gannet Shoal, consisting of several detached patches, having on one spot as little as 9 feet water, lies East one mile from White point. There are other rocks to the northward of it off Madeline point, and at the entrance of Little Dover run, for which the Admiralty chart is necessary to ensure the safe guidance of a vessel in such intricate places. The soundings are alike deep and irregular near these dangers, so that the lead will afford little or no warning at night or in thick weather; but in the daytime Cranberry island lighthouse, kept open to the eastward of the trees on Cape Canso, N.E. $\frac{1}{2}$ N., will lead to the eastward of Gannet shoal, the White point ledges, and White rock.

DOVER ISLAND, upwards of a mile in extent east and west, and a long half mile broad at its western end, forms a salient point of the coast between Dover bay and the indentation of Port Howe.

It has an elevation of 95 feet, and is separated from the mainland by a narrow but navigable channel, with 14 feet water, known as Dover passage, which is frequented by fishermen and small coasting vessels; but as in the narrowest part the passage is only 30 fathoms across, it is evidently not adapted for either large vessels or strangers.

PORT HOWE.—The bay known as Port Howe, to the westward of Dover island, is small, and dangerous to approach on account of numerous shoals. The entrance lies between Howe point to the eastward and Black rock, 4 feet high, off Fluid point on the western shore; the distance across being a good third of a mile, but the navigable channel is narrowed by shoal ground to little more than $1\frac{1}{2}$ cables.

Within the entrance the shores are mostly steep-to, and there is sufficient depth of water for the largest ships; but in the parts not exposed to the southerly swell, there is barely room for a vessel to swing at single anchor.

The best anchorage is in the mouth of the western arm, care being taken to avoid a sunken rock with only 8 feet water, lying rather more than a cable S. by E. $\frac{1}{2}$ E. from the point which separates the western and northern arms. There is also secure anchorage within Port island and in the mouth of Dover passage, but in both places it would be necessary to moor. As on some occasions this place might prove useful as a harbour of refuge, it would be advisable for seamen frequenting this coast, to make themselves familiar with the marks for clearing the following dangers:—

Dover Shoals and Snorting Rocks.—The Dover shoals, with 4 fathoms on them, lie on the eastern side of the entrance of the channel, S. $\frac{3}{4}$ E. $5\frac{1}{2}$ cables from Snorting rocks, which never cover. These latter are nearly joined at low water to the south-west extremity of Dover island. Sunken rocks, with various depths on them, extend W. by S. a quarter

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of a mile from Snorting rocks, and together with similar rocks lying 2 cables off Howe point, must be left to the eastward in running in. The entrance between these last-named rocks and Black rock and reef off Fluid point is, as before observed, only about $1\frac{1}{2}$ cables wide.

Avery Shoal, with $3\frac{1}{4}$ fathoms water, lies nearly a mile to the southward of Whale island, and three-quarters of a mile from the south-east extremity of Millstone island—in one with the lighthouse on White Head island—and bearing W. by N. $\frac{1}{2}$ N. Dover head open to the southward of Snorting rocks bearing E.N.E. leads clear to the southward of this shoal, which is in the way of vessels running along the coast; and the same marks lead also to the southward of the Vache and Whale shoals, carrying 10 and 20 feet water, and lying 4 cables and $1\frac{1}{4}$ miles respectively farther inshore to the E.N.E. The Whale rocks—which dry at low water and are farther inshore—and Whale shoal lie on the western side of the channel leading to Port Howe.

DIRECTIONS.—The marks for running into Port Howe are the Black rock, already mentioned, in one with the remarkable Sugar loaf hill, 180 feet high, about a mile inland from the entrance of Kyak brook at the head of the harbour. Being outside the shoals, bring the above marks in one, bearing N. $\frac{3}{4}$ W., and run towards them until the south extremities of Whale and Millstone islands are nearly in one, bearing W.S.W.; then alter course so as to pass a cable's length to the eastward of the Black rock.

If proceeding to the anchorage at the mouth of the western arm, endeavour to preserve a mid-channel course between Port island and the western shore, anchoring in about 8 fathoms, mud, with the west end of Snorting rocks just seen open of the point west of Port island, and borrowing on the southern shore in order to avoid the sunken rock off the point which divides the Arms. If the anchorage within Port island be preferred, pass round the north-west end of the island at the distance of a cable—to avoid the reef off it—and anchor within it, in $4\frac{1}{2}$ fathoms, mud.

WINE, CRANE, and RASPBERRY COVES are small intricate indentations between Port Howe and Whitehaven, abounding in sunken rocks and difficult of access. They are adapted for small craft and boats, but without good local knowledge of the neighbourhood and its numerous dangers, the approaches to these places are perilous in the extreme.

WHITE HEAD ISLAND LIGHT.—White Head island, 6 cables long and 120 feet high, derives its name from the whitish granite rock of which it is composed, and forms a salient feature off the point of land east of Whitehaven, its inner or northern end being about one-third of a mile from the main shore. The interior of the island is wooded with dwarf spruce trees, but the lighthouse on its south-west point stands on the bare rock, and is a square wooden building painted white, from which at an elevation of

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* See Admiral

55 feet above high water, is exhibited a *revolving* white light, which attains its greatest brilliancy every 20 seconds, and in clear weather should be visible from a distance of 11 miles.

WHITEHAVEN is a secure harbour, with sufficient space and depth of water for a fleet of the largest ships; but, like most of the indentations on this coast, the entrances, three in number, are so narrow and indirect, and the sunken rocks so numerous, that no large vessel could safely attempt them at night or in the dense fogs that so frequently prevail.*

The shores of the harbour have a barren and desolate appearance, the woods having been extensively burnt off the granite hills, especially on the eastern side. On the western shore there are hills of the drift boulder clay, affording pasture for the cattle of the fishermen, who reside principally in Doliver and Marshall coves, but whose houses will also be seen at intervals all the way to the head of the North-west arm, distant 7 miles from the entrance of the haven.

East Bull, one of the outer dangers of the eastern entrance to Whitehaven, is a small detached rock, having only 6 feet water, and lies with the lighthouse bearing N.W. distant 6 cables. Half way between it and White Head island, is Sculpin rock, dry at low water; and midway between it and Millstone island, there is a rocky shoal carrying $3\frac{1}{4}$ fathoms water. The entrance to the eastern passage into Whitehaven harbour is between this shoal and Millstone island.

South-west Bull, with 5 feet water, lies with the lighthouse bearing N.E. distant $6\frac{1}{4}$ cables. Rocky ground, with 4 fathoms water, extends from it 4 cables to the N.W. by W., and there are rocky patches with 5 fathoms between it and White Head island.

Dover head open to the southward of Millstone island, bearing E. by N., leads to the southward of both the East and S.W. Bull rocks.

Black Ledge dries at low water. Its western extremity, from which the lighthouse bears E. $\frac{3}{4}$ S. rather more than one mile, is cleared by keeping Doliver and Fisherman islands touching, and bearing N. by E. $\frac{1}{4}$ E., whilst Bald rock and Flying point in one, bearing N.N.W. $\frac{1}{4}$ W., will lead to the south-west of it, and S.W. Bull rock.

Shag and Rocky Ledges are nearer the lighthouse, and never cover; and the Gammon islets, small and of bare granite, will be seen to the northward of them. The southern passage into Whitehaven harbour is to the eastward of all these, including the S.W. Bull, and between them and White Head island.

Inner and Outer Gull Ledges and Bald Rock extend nearly a mile to

* See Admiralty Plan of Whitehaven with views, No. 2,560; scale, $m = 4$ inches.

the southward from Deming island, which, being united to the mainland at low water, forms the western point of entrance to Whitehaven. These ledges and rocks are all above water, but there are reefs between and around them; that most in the way being a rock with 6 feet water on the east end of the shoal tongue extending from Bald rock, and lying S.S.E. $\frac{1}{2}$ E. $1\frac{1}{2}$ cables from the Outer Gull ledge; Net rock (joined by a reef to the south-east extremity of Three-top island) and Spry point in one, bearing N.E. by E. $\frac{3}{4}$ E., leads clear to the south-east of it.

The western passage into Whitehaven harbour between the 6 feet rock and Black ledge is half a mile wide. There is little or no warning by the lead in approaching any of these dangers from seaward, the depth exceeding 20 fathoms a little more than a quarter of a mile from them.

THREE-TOP ISLAND may be easily recognized by the three remarkable hills, 50 or 60 feet high, from which its name is derived. The channels to the north-west of it, on either side of Doliver island, are so narrow and full of rocks, as to be only fit for small craft and boats. The Ship channel to the eastward of it, is 2 cables wide at entrance between Net rock and Turtle reef, which runs out from Spry point. A short distance within the entrance, and nearly abreast the middle of Three-top island, there is a rock with $3\frac{1}{2}$ fathoms water, which reduces the breadth of the channel between it and the island to $1\frac{1}{2}$ cables. The marks that lead to the south-west of this rock are, the ends of Gammon islets and White Head island very slightly overlapping, and bearing S. by E. $\frac{3}{4}$ E.; these marks also clear the shoals farther in off Doliver island and Deming point, on the western side of the harbour.

TIDES.—It is high water, full and change, in Marshall cove, Whitehaven harbour, at 8h. 0m.; springs rise 6 feet, and neaps 4 feet. The rate of the tidal streams in the entrance seldom exceeds half a knot, unless it be the ebb stream when accelerated by heavy rains, or the melting of the snow in spring.

DIRECTIONS.—The Eastern Passage into Whitehaven is rendered so intricate and dangerous by Middle rock, with only 6 feet water, and other shoals, that it should never be attempted in a large ship, unless in case of necessity. Between the Middle rock and Paddy ledge the passage is only half a cable wide. To run in, bring the summit of the northernmost hill on Three-top island in line with Dogfish point, bearing N.W. $\frac{1}{4}$ W., and run towards them, passing a cable's length to the southward of Millstone island. To pass between Middle rock and Paddy ledge, open out the hill a little to the northward of the point, and when abreast the reef off Mink islands steer sufficiently to the northward to clear the sunken rock which lies N. by E. 60 fathoms from the small islet on the opposite side of the channel.

Round Dogfish and Millstone island to the southward. The lighthouse is just abreast and run in N.N.W. Then alter open to the eastward. Doliver island at house open to the on the eastern side.

Having passed fathoms, mud, in on the western side southerly winds. fathoms can be chosen for a large vessel sheltered parts of there is a clear channel.

Kelp Shoal, when passing to the west through the channel are the western bearing S. $\frac{1}{2}$ E. shoal, between island southward of M. namely, the western in one, and bearing

Having passed chosen either in detached danger the Arms, is a N.W. by W. from by the line of S. by W. $\frac{1}{4}$ W.

The Southern run in to the east N.N.E. for the distance not exceeding touching Dogfish pass to the south lighthouse come S.S.E. $\frac{1}{2}$ E., steering

Round Dogfish point to the westward at the distance of a cable, until it and Millstone island are touching S.E. $\frac{3}{4}$ E., and steer N.W. $\frac{3}{4}$ W. passing to the southward of Turtle rock and reef; and when White Head island lighthouse is just open east of Gammon islets, keep these objects astern and run in N.N.W. $\frac{1}{2}$ W. until the north end of Three-top island is nearly abeam. Then alter course to North, taking care to keep White Head island open to the eastward of the Gammon islets, in order to clear the shoals off Doliver island and Deming point on the western shore; and the lighthouse open to the westward of Spry point, to clear Yankee island reef on the eastern shore.

Having passed this reef, the anchorage becomes good, in from 7 to 10 fathoms, mud, immediately within it, and also off the fish stages and houses on the western shore, although some swell comes in with the strong southerly winds. Small vessels anchor in Yankee cove, into which $3\frac{1}{2}$ fathoms can be carried through a very narrow channel. The best passage for a large vessel desirous of proceeding farther in, to the more completely sheltered parts of the harbour, is to the eastward of Fisherman island, where there is a clear channel, one cable wide, and carrying a depth of 8 fathoms.

Kelp Shoal, with only 3 feet water, lies directly in the way of vessels passing to the westward of Fisherman island. The marks for running through the channel (only half a cable wide) between it and the island, are the western extremities of Pilot point and of Yankee islet in line, bearing S. $\frac{1}{2}$ E. There is also a passage to the westward of Kelp shoal, between it and the shoal which extends $1\frac{1}{2}$ cables off shore to the southward of Marshall cove; but the marks for running through it, namely, the western sides of Munroe rock, Three-top island, and Shag ledge in one, and bearing South, might not easily be distinguished by a stranger.

Having passed through either of these channels, anchorage may be chosen either in Marshall cove or farther up the harbour, where the only detached danger in the way, until the vessel arrives at the entrance of the Arms, is a shoal, with $3\frac{1}{4}$ fathoms water, lying a quarter of a mile N.W. by W. from White islands, and which is cleared to the westward by the line of Fisherman island and Pilot point touching, and bearing S. by W. $\frac{1}{4}$ W.

The Southern Passage into Whitehaven is only one cable wide. To run in to the eastward of the S.W. Bull, steer between N. by E. and N.N.E. for the western side of White Head island, which pass at a distance not exceeding one cable; open out Millstone island until it is touching Dogfish point, bearing S.E. $\frac{3}{4}$ E.; keep those marks astern and pass to the southward of Turtle rock and reef off Spry point. When the lighthouse comes just open to the eastward of Gammon islets, bearing S.S.E. $\frac{1}{2}$ E., steer in N.N.W. $\frac{1}{2}$ W. and proceed as before directed.

Western Passage.—To run into Whitehaven harbour in a steamer, or with a fair wind through the western passage and Ship channel, attention must be paid to the marks already given for clearing the rock off the Outer Gull ledge on the one side, and the Bull rocks and Black ledge on the other. It is seldom that the Black ledge or the breakers on it cannot be seen, and it may then be passed at any distance between one and 4 cables; but to run in nearly midway between it and the rock off the Outer Gull ledge, bring Net rock to bear N.E., and steer so as to pass round to the eastward and northward of it at the distance of one cable.

Open the lighthouse a little to the eastward of Gammon islets, bearing S.S.E. $\frac{1}{2}$ E., and steer in N.N.W. $\frac{1}{2}$ W. until the north end of Three-top island is nearly abeam, after which proceed according to previous directions.

TORBAY is of great extent, being nearly 9 miles long and 4 miles deep. At its eastern end a very narrow isthmus, or "haul-over" for boats, separates it from Whitehaven. On its northern shore, Molasses harbour, Cole harbour, and Charlo harbour afford secure anchorage for small vessels in from 2 to 3 fathoms water, but the approach to them all is more or less difficult, and would require the aid of a native pilot.

On the shores of Molasses harbour is a settlement of Acadians, and on an elevation 110 feet above the sea, on the western side of the entrance, stands their chapel, a large wooden building without a steeple. There are settlements also at Cole and Charlo harbours, as well as on the banks of Larry river at the west end of the bay; and there are chapels on the eastern side of the two last-named places, but they are small wooden buildings, undistinguishable from others in the vicinity. At these settlements the drift boulder clay is cultivated sufficiently to afford pasture for cattle; in rear of them the barren granite hills rise to the height of 360 feet above the sea.

The principal entrance into Torbay is between Berry head and the small group of Sugar islands, of clayslate not exceeding 30 feet in height, which stretch across the eastern half of the bay; there is here a clear channel three-quarters of a mile wide, with from 8 to 12 fathoms water. The anchorage within this entrance, off Webber cove, near the western end of the bay, is easy of access and secure, in 6 fathoms, sand and mud; the only danger much in the way being Webber shoal, with 12 feet water, which lies from 3 to 6 cables from the shore, off the north side of the peninsula, of which Berry head is the eastern extremity.

Its northern end is cleared by the southern extremities of Topstone ledge (off the westernmost of the Sugar islands) and Green ledge in one, bearing E.S.E.; small vessels only should attempt to pass to the southward of it. To the northward of Webber shoal the passage is not less than half a mile wide between it and either Charlo shoal or Larry reef, which lie to the N.E. and N.W. of it respectively.

DANGERS

is a low rocky ledge exceeding 80 feet above the beach and ranges a third of a mile well as detached 4 cables to the eastward in running

Shag Rock,

2 $\frac{1}{4}$ miles from Shallow water shore, half a mile

Gull Rock,

danger on the western side a mile from Berry line with New Gull rock.

Torbay Led

more dangerous water, lies with Sugar islands, 1 $\frac{1}{3}$ miles; and East two-third islands, with dangerous safe passage for

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DIRECTION

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DANGERS OF TORBAY.—Berry head, the western point of Torbay, is a low rocky point at the eastern extremity of a peninsula, nowhere exceeding 80 feet in height, and which is united to the mainland by a beach and range of sand hills. Shallow water extends off this peninsula a third of a mile to the southward, and off Berry head there is a reef, as well as detached rocks, with varying depths on them, the outermost lying 4 cables to the eastward of the head; these must all be left to the westward in running into the bay.

Shag Rock, rises 2 feet above ordinary high water, and lies E. by S. $\frac{1}{4}$ S., $2\frac{1}{4}$ miles from Berry head, and half a mile from the nearest shore. Shallow water extends 4 cables S.E. of the rock, and between it and the shore, half a mile distant, there are several rocks which dry at half-tide.

Gull Rock, small and detached, with about 12 feet water, is the greatest danger on the western side of the entrance; it lies S.W. $\frac{3}{4}$ W., nearly one mile from Berry head, and East $1\frac{1}{4}$ miles from Shag rock. The Shag in line with New Harbour head, W. $\frac{3}{4}$ N., leads 2 cables to the southward of Gull rock.

Torbay Ledges, lying on the eastern side of the entrance, are still more dangerous. French rock, the farthest out, with only 10 feet water, lies with Topstone ledge off the western extremity of the Sugar islands, N. by E. $1\frac{1}{2}$ miles; Berry head, N.W. by W. $\frac{1}{2}$ W. $1\frac{1}{3}$ miles; and the Bull rock, with 4 feet water, which usually breaks, East two-thirds of a mile. The other ledges lie between these and the islands, with deep water between them, but so scattered as to leave no safe passage for ships.

Shag rock and New Harbour head in one, bearing W. $\frac{3}{4}$ N., leads 3 cables to the southward of all these ledges.

Hog island touching Leblanc point, bearing N.E. by E., leads to the eastward of the Bull rock; and Cole Harbour head open to the westward of Topstone ledge, N.N.E. $\frac{1}{2}$ E., leads to the westward of French rock and the ledges next to the northward of it, but does not clear Brig rock, the westernmost of the ledges, with 9 feet water, and from which Topstone ledge bears N.E. by N. 3 cables' lengths. The soundings are so irregular around these ledges, and the depth so great (15 fathoms close to them), that the lead scarcely affords any assistance.

DIRECTIONS.—With a fair wind into Torbay, run in with the western extreme of the islet, next east of Topstone ledge, touching Mars head, and bearing N.E. $\frac{1}{2}$ E., or with the eastern point at the entrance of Cole harbour open to the westward of Topstone ledge—the apparent breadth of the latter—N.N.E. $\frac{1}{2}$ E., whichever course the wind may render preferable; and when Berry head and the points to the westward of it come in line, bearing W. $\frac{1}{2}$ S., alter course immediately to N.N.W., and

so continue until the southern extremities of Topstone and Green ledges come in one, bearing E.S.E.; then steer W.N.W., keeping those marks on astern, until Flat point and Berry head are one, bearing South; and then West to the anchorage, in 6 fathoms, mud, off Webber cove, which should bear between S.W. and S.W. by W., and be distant from half to three-quarters of a mile.

LITTLE HARBOUR, a small shallow indentation in the coast next west of Berry head, and N.W. by W. one mile from Shag rock, is only adapted to admit boats at high water. Half a mile from its entrance, in a S.S.E. direction, is Net rock, with about 3 fathoms water, and S.S.W. $2\frac{1}{4}$ miles distant is a patch—with 6 fathoms water—known as Tuffin bank, on which the sea is said to break occasionally after very heavy gales.

NEW HARBOUR COVE, 5 miles to the westward of Berry head, is not a harbour, but merely a shallow bay open to the S.S.E., and affording no safe anchorage to shipping. From Shoal point on its western shore a rocky spit runs out three quarters of a mile to the S.S.E. At the head of the cove is the entrance of St. Catherine river, only one foot deep at low water, and dangerous to boats when there is any sea running. For the first 5 miles the river flows through a narrow inlet, which boats can ascend to its head; the stream then becomes rapid and unnavigable for 4 miles farther, to the large lake from whence it flows.

GREEN, GOOSE, and HARBOUR ISLANDS form a group lying N.W. by N. and S.E. by S., 4 miles in extent. Green island, the smallest and most off-lying, lies W.S.W., nearly 4 miles from New Harbour head. The inner of the three Harbour islands closely approaches the main land, near Isaac harbour, the low-water features being separated by a deep water channel only 2 cables across. These islands are formed of drift boulder clay, resting on highly inclined clayslate rock, and are wooded with small spruce trees. They are low, the highest hill on Goose island, the middle and largest of the three, not exceeding the height of 80 feet above the sea.

The numerous off-lying dangers in this locality forbid the coast being approached, during dark nights or fogs, nearer than the depth of 30 fathoms, and the constant use of the lead should be deemed indispensable, for by it alone can the position of the ship be ascertained.

Brandy Ledge, the easternmost of the dangers off Green island, is a rocky shoal three quarters of a mile in length, parallel to the coast, and one-third of a mile broad. Near the centre of the ledge is a spot which only covers at high water, and from it New Harbour head bears N. by E. $1\frac{3}{4}$ miles, the channel between being clear, with from 7 to 15 fathoms.

Split Rock, small, and awash at low-water springs, lies near the southern

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From the rock, sea, Darby point open to the north bearing N.W. $\frac{1}{2}$ $2\frac{1}{2}$ miles; the pt and the eastern s

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end of a long rocky shoal, which, including two detached patches of $3\frac{1}{4}$ and 5 fathoms water, extends a full mile to the N.N.W. of the rock.

From the rock, which is dangerous at high water and with a smooth sea, Darby point, on the main land near Island harbour, appears just open to the northward of Beach point (the north end of Goose island), bearing N.W. $\frac{1}{2}$ W.; the south extremity of Green island bears W. $\frac{3}{4}$ S. $2\frac{1}{3}$ miles; the part of Brandy ledge that dries E. by S. $\frac{1}{2}$ S. $1\frac{1}{3}$ miles; and the eastern side of New Harbour head, N.E. by E. 2 miles.

White Rock, with 10 feet water, lies East, one mile from Green island; a quarter of a mile further off on the same bearing there is a rock, with $4\frac{2}{3}$ fathoms water. There are other patches nearer the island, the southernmost of which, with about 2 fathoms water, bears from its south extreme E. $\frac{1}{2}$ S. two-thirds of a mile.

Frying-pan, a small shingle reef 4 feet above high water, lies 2 cables off the north end of Green island.

Pan Rock, with only 3 feet water, lies a third of a mile to the westward of the Frying-pan.

Ragged Ledge extends nearly $1\frac{1}{2}$ miles from the east end of Goose island in an E.S.E. direction, and from its outer extremity—which is seldom entirely covered—the whole extent of the reef is partially dry at low tides. There is no passage for ships between this ledge and Green island, or between Goose and Green islands, the whole space being studded with rocky patches with 10, 12, and 18 feet water on them, and which break heavily in bad weather.

Dutch Shoal, with 8 feet water and of small extent, lies within Ragged ledge, and bears from the east end of Goose island E.N.E. nearly one mile. It is separated from the shallow water extending from the shore of that island, by a very narrow channel; and its northern edge is just cleared when Burke and Beach points (on Harbour and Goose islands respectively) are in line, W.N.W., bearing in mind that the point of the northern beach of Harbour island must at the same time be well in sight to the northward of them both.

Burke Shoal, with 8 feet water, lies a quarter of a mile off the north-east point of Harbour island. From this shoal spot the high-water tangent of the northern point of Harbour island is just open of Burke point. The marks for clearing this danger to the northward are Red head (at the entrance of Isaac harbour) and Drum head in line.

CODDLE HARBOUR is situated within the island of the same name, and possesses secure anchorage for small vessels, in from 12 to 14 feet water. The principal entrance is from the eastward, but as the dangers are too numerous for any written directions to avail, the place should on no account be attempted by a stranger.

SEAL COVE, a small indentation west of Coddle island, and immediately opposite Goose island, dries at low water, with the exception of a narrow channel only available for boats.

ISLAND HARBOUR lies between Harbour island and the main shore in a bay between two long shingle points on the north side of Harbour island. Directly abreast, and a third of a mile distant, is Drum head, a small island, close to the main land, and connected with it at low water; and next eastward from it is Darby point, both of which are used as leading marks. In the bay, within the line uniting the shingle points of the island, there is only depth of water sufficient for small vessels, but the anchorage farther out, in 7 fathoms, mud bottom, although open to the E.S.E., is considered safe during the summer months. It is, however, not adapted for vessels larger than a sloop of war, the deep water being confined to a narrow and crooked channel.

Pilots.—During the fishing season several families reside on Harbour island, as well as on the opposite mainland, from whence pilots may be obtained; but they are not much in the habit of conducting vessels drawing more than 10 or 12 feet water.

TIDES.—It is high water, full and change, in Island harbour at 7h. 40m.; springs rise $6\frac{1}{2}$ feet, and neaps $5\frac{1}{2}$ feet. The flood stream comes from the eastward, and its rate is usually less than one knot, but it is much influenced by the winds.

DIRECTIONS:—From the Eastward.—Coasting vessels usually take the inner route, especially late in the autumn, when northerly and N.W. winds prevail, passing between Brandy ledge and New Harbour head, and through the Sound, as the passage between Goose island and the mainland is called. Having passed New Harbour head at the distance of half a mile, steering W.N.W., observe that the marks for clearing the shoals off Coddle harbour, Coddle island, and Seal cove, are Darby point and Drum head in one, bearing W.N.W.; therefore keep Drum head only just open, until abreast Beach point (Goose island); then bring Burke point to bear W. by N., and bearing in mind the mark for clearing Burke shoal, steer so as to pass the point, and anchor in 7 fathoms, mud, just outside the line joining the two shingle points of the harbour. It is best to moor in so narrow a channel with one anchor well into the bay to the southward.

The dangers to the southward of this route will be cleared to the northward by keeping both the shingle points of Harbour island open to the northward of Beach point, bearing W.N.W., until the vessel is as far west as Coddle island; then the course must be more to the northward to clear the shoal off Goose island, which contracts the channel between it and Graham shoal, off Seal cove, to the breadth of 2 cables. The leading

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ISAAC HAR: of the sea north- one (Country ha side of the entra head, a small p shingle beaches,

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These dange western shore, r little harbour, ir fathoms, mud.

marks already given, namely, Drum head just open to the southward of Darby point, until Burke point bears W. by N., will be found the best guide for this narrow part of the channel.

From the Southward, having a southerly or easterly wind, enter the channel between Harbour and Goose islands, steering N.N.E., and bordering on the Goose island side of a mid-channel course, in order to avoid the reef off Saladin point and the Middle Ground. Having passed between the latter and the reef always visible off Goose island, alter course to North, until Red and Drum heads come in one, then to N.W. $\frac{1}{2}$ N., keeping them in one to clear Burke shoal; and when Burke point, which is bold to the northward, bears W. by N., haul to the westward, and having passed the point, anchor as before directed.

In approaching Island harbour from the westward, observe that a ridge of rocky ground, with irregular soundings, extends from Red head, on the eastern side of the entrance to Isaac harbour, to Harbour island, a distance of $1\frac{1}{2}$ miles. To avoid the shallow patches, in 12, 16, and 18 feet water upon this ridge, pass the north-west point of Harbour island at a distance of between 2 or 3 cables, steering N.E. by E. until Drum head and Darby point come in one, bearing E.S.E.; then keep to the eastward, and bring Burke point in one with the remarkable hill on Goose island, bearing S.E. by S.; then run in upon these last-named marks to the anchorage.

From the N.W.—Being off Red head, bring Drum head and Beach point (the north extremity of Goose island) in one, and steer towards them S.E. $\frac{3}{4}$ E., or as may be necessary to keep them in one, until Burke point comes in line with the remarkable hill on Goose island bearing S.E. by S., when steer towards them and anchor as before directed.

ISAAC HARBOUR is the eastern and smaller of two narrow arms of the sea north-west of Harbour island, being separated from the western one (Country harbour) by Ragged point, opposite which, on the eastern side of the entrance, and at the distance of three-quarters of a mile, is Red head, a small peninsula with red clay cliffs, united to the mainland by shingle beaches, enclosing a shallow pond.

Off the next little peninsula to the northward, Webb reef runs out westward across the entrance to the distance of $2\frac{1}{4}$ cables, leaving a passage with 7 fathoms water, but only two cables wide, between it and Ragged rocks, which cover at high water, and run off a cable's length from the shore a quarter of a mile within Ragged point.

These dangers, and some shallow water within the harbour off its western shore, render a pilot necessary to a stranger entering this beautiful little harbour, in which vessels may anchor securely in from $3\frac{1}{2}$ to 4 fathoms, mud.

Webb cove, in which the fishing and coasting vessels usually anchor, in 2 fathoms, mud, is on the eastern side, and just within the entrance. From it the harbour runs in a northerly direction for a distance of 3 miles, nowhere exceeding 4 cables in breadth; at its head is a rapid stream and saw mill. The shores on either side rise gradually to the summits of hills of drift clay and boulders, from 200 to 300 feet high, and are cultivated to some extent by an industrious community, whose principal occupations appear to be coasting and the fisheries.

Supplies.—Fresh provisions in moderate quantity, and water, may be readily obtained in Isaac harbour.

COUNTRY HARBOUR, a long, deep, narrow indentation next west of Isaac harbour, is unequalled by any other on the coast east of Halifax. It may be easily recognized by the three islands, already described, on the eastern side of the channel leading to it and Isaac harbour, as well as by Country Harbour head, a bold and precipitous headland of clayslate in nearly vertical strata, 160 feet high, and which may be considered as the termination of its western shore. Properly speaking, however, the actual entrance is abreast of Harbour point, 3 miles farther to the N.N.W., where the channel is 3 cables wide, with a depth of 11 fathoms.*

From thence the harbour preserving a breadth from a third to half a mile, with a varying depth from 10 to $5\frac{1}{2}$ fathoms, is easily navigable as far as Stewart cove on the eastern shore, off which is an excellent land-locked anchorage, with from $4\frac{1}{2}$ to 7 fathoms, mud, 4 miles from the entrance. Throughout this distance the only danger to be avoided is a rock, with 3 feet water, about half a cable off shore near the southern point of Mount Misery peninsula.

From Stewart cove the channel becomes narrow, but continues navigable for large vessels $2\frac{1}{2}$ miles above it, and for small vessels to the entrance of the river at the head of the harbour, which is distant $7\frac{1}{4}$ miles from its entrance at Harbour point. Boats can ascend the river 2 miles, or to half a mile above the bridge, where the tide ends.

The shores of this harbour are steep to on either side; the summits of the ridges being generally only a short distance from the shore, and increasing in elevation from 200 feet at the entrance to 470 feet near its head. The small population scattered along the shores have hitherto been principally occupied in lumbering and the fisheries; they have consequently made but little progress in agriculture, although the cultivation of the drift clay, with which the clayslate rock is deeply covered, would probably prove remunerative.

On the western shore, at two-thirds of a mile within the entrance, is

* See Admiralty Plan of Country harbour, No. 2,547; scale, $m = 3$ inches.

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Green point, of shingle, enclosing a large pond; and three-quarters of a mile farther in, on the same side, is Mount Misery, a remarkable round peninsulated hill, 140 feet in height, and which forms the principal leading mark for clearing the dangers lying off the entrance to the harbour.

Country Harbour head also forms the north-eastern boundary of Fisherman harbour (to be described hereafter), whose outer extremity, Cape Mocodome, terminates in a low shingle beach, off which, nearly a cable's distance, is Cape rock, 4 feet high.

COUNTRY HARBOUR LEDGES.—Shoal Place, the most off-lying of the easternmost Country Harbour ledges, bears from Green island S. $\frac{1}{4}$ E. $2\frac{1}{8}$ miles. It is small and rocky, with 5 fathoms water, and breaks only when a heavy sea is running.

Tomcod Rock covers at high water, and lies $1\frac{1}{4}$ miles N.W. by N. of Shoal place, and the same distance S.S.W. of Green island. When breaking, as it usually does, this danger serves to warn vessels of their approach to the Tomcod shoals, which are small rocky patches scattered around the rock in various directions, as will be seen on referring to the chart.

Tomcod Shoals.—The northernmost of these patches, the Gull Nest of the fisherman, with $\frac{3}{4}$ fathoms water, bears from Tomcod rock N. by E. $\frac{1}{4}$ E. distant 4 cables, and from Green island S.S.W. $\frac{1}{2}$ W. three-quarters of a mile, with a clear passage between. But the westernmost of these patches, with $2\frac{1}{3}$, $3\frac{1}{3}$, and 4 fathoms water on them, are most in the way of vessels bound to or from Country harbour. The marks that lead close to the westward of them are, Harbour island open to the westward of the low dry reef off Flying point (the south extremity of Goose island) bearing nothing to westward of N. $\frac{1}{2}$ W. ; or the summit of Mount Misery in one with Harbour point, bearing N.N.W. $\frac{1}{4}$ W. (*See View*).

Middle Ledge, or South Easter of the fishermen, (so named in reference to Cape Mocodome, from which it bears S.S.E. $\frac{1}{2}$ E. $3\frac{3}{4}$ miles,) is a rock about a cable in length, which covers at half tide ; it is the apex of a rocky shoal about 4 cables long from N.W. to S.E., around which the soundings are too deep and irregular to afford much warning by the lead. When it breaks, as it always does—excepting when a high tide accompanies an unusually smooth sea—there is no difficulty in passing on either side of the ledge ; the nearest danger to the westward being Taylor shoal, which bears from it W. by N. $\frac{1}{8}$ N. nearly 2 miles, it is only necessary when passing on that side to give the rock or breakers a berth of half a mile.

To the eastward the passage between the Middle ledge and Tomcod shoals is $2\frac{1}{4}$ miles wide, and the marks that clear it on that side, at the distance of 4 cables, are the western points of Goose island, in one bearing N. by E. $\frac{3}{4}$ E. ; and these marks lead also over Jarvis bank, a

fishing ground lying a mile farther out to the S.S.E., and on which the least water found was 14 fathoms. The marks for passing to the southward or outside of the Middle ledge are, the Castor and Pollux in one, bearing N.W. by W., or the Pollux and Hollins head, N.W. $\frac{3}{4}$ W.; these marks also lead close inside or northward of the Taylor shoal.

Pollux Rock, of small extent and 4 feet high, lies S.S.W. $2\frac{1}{4}$ miles from Cape Mocodome, and from it a reef extends 4 cables to the N.N.W. The eastern extremities of Cape Mocodome and Country Harbour head in one lead over the end of this reef; therefore to pass clear to the westward of it, Country Harbour head must not be opened out farther than to be only just seen in one with the bank or cliff off Cape Mocodome, and over the shingle beaches, which form its south-east extremity.

Bingly and Taylor Shoals.—Bingly shoal, with $2\frac{1}{2}$ fathoms water on it, lies East half a mile from Pollux rock. The Taylor shoal has 3 fathoms on it, and lies two-thirds of a mile farther to the southward, bearing S.E. $\frac{1}{4}$ S. nearly one mile from the Pollux; the two points on the eastern side of Goose island, in one bearing N.E. $\frac{3}{4}$ E., lead to the eastward of this shoal, but those points are low, and can seldom be distinguished. These two shoals are all the more dangerous, inasmuch as they break only during a heavy sea.

Rose Shoal, the most formidable of the dangers off Fisherman harbour, is a rocky ledge two-thirds of a mile long, N. $\frac{1}{2}$ W. and S. $\frac{1}{2}$ E., on which the least water is 6 feet; it lies immediately off the pitch of Cape Mocodome, from which its outer or southern extremity bears S.S.E. $\frac{1}{2}$ E., distant $1\frac{1}{2}$ miles, and from Pollux rock N.E. by E. $\frac{1}{2}$ E., nearly 2 miles. The marks for clearing it to the southward are, Fléck point, on the northern side of Hollins bay, just open of Bickerton island, N.W. by W.; and for leading to the northward, Barachois head and Cape rock in one, W.N.W.

The Bull is a small rock, which dries at low water, and bears S.E. $3\frac{1}{2}$ cables from Cape Mocodome, off which there are other rocks with 6 feet water, the outermost bearing E. $\frac{1}{2}$ N. distant half a mile from the cape. These all lie on the rocky shoal, which extends two-thirds of a mile out from the cape, and are exceedingly dangerous at high water and with a smooth sea, when they are not marked by breakers.

Black Ledge, more than a mile in length in a north and south direction, lies directly off the mouth of Fisherman harbour. The central part of it is 2 feet above high water, and in several other parts it dries, or nearly so, at low water. From its southern extremity, which is steep-to with only 2 feet water, Cape Mocodome (in line with Hollins head) bears W. $\frac{1}{2}$ N., and is distant rather more than one mile. The head kept open will lead clear to the southward of it, and the summit of

Mount Misery bearing N. by

TIDES.—It 7h. 40m. $\frac{1}{2}$ spr weak, seldom

DIRECTION Middle ledge, aid of the give just to the east and run in with and the south alter course to with Harbour p named marks channel. And the way, except south-eastern to Stewart, cov mussel beds the eastern shore.

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FISHERMAN between Cape the south-east, is a cove on its which vessels n bottom of mud. 7 fathoms, and mouth of the anchor there du

DIRECTION a fair wind, and clear the rocks of the entrance N. by E. $\frac{1}{2}$ E.; in upon those

Mount Misery (in Country harbour) open of Country Harbour head, bearing N. by W. $\frac{3}{4}$ W. clear its eastern side.

TIDES.—It is high water, full and change, in Country harbour at 7h. 40m. ; springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet. The streams are weak, seldom exceeding half a knot.

DIRECTIONS.—With a fair wind for Country harbour, having passed Middle ledge, either by giving its breakers a sufficient berth, or by the aid of the given leading marks ; open the summit of Mount Misery only just to the eastward of Country Harbour head, bearing N. by W. $\frac{3}{4}$ W. and run in with these marks on, until about midway between Rose shoal and the south point of Goose island, or until the latter is abeam ; then alter course to North, and when the summit of Mount Misery comes in one with Harbour point, steer N.N.W. $\frac{1}{4}$ W. (*see* View), or so as to keep the last-named marks on, until near the mouth of the harbour, which enter in mid-channel. Anchor anywhere within it, as there are no detached dangers in the way, excepting the rock already mentioned, lying half a cable off the south-eastern point of Mount Misery peninsula. If intending to proceed to Stewart cove, keep well over towards the western shore, to avoid the mussel beds that lie off the islet, and the points of small coves on the eastern shore.

With a beating wind, the leading marks which have been given for clearing the dangers on either side of the channel will show when to tack. In the board towards Harbour island stand no nearer than half a mile, to avoid the shoal water off its south-western shore ; and in standing in to the north-west of the island, tack whilst Flying point is well open to the south-west of it, to avoid the shoals between it and Isaac harbour.

FISHERMAN HARBOUR is a bay nearly 2 miles wide at the entrance, between Cape Mocodome and Country Harbour head. It is quite open to the south-east, so that the only part that can properly be called a harbour is a cove on its southern shore, formed by a long beach of shingle, and in which vessels may lie securely in from 10 to 15 feet at low water, over a bottom of mud. Outside the cove the holding ground is good in from 4 to 7 fathoms, and as the sea is in some degree broken by the dangers off the mouth of the bay, large vessels with good ground tackling might safely anchor there during the summer months.

DIRECTIONS.—To enter Fisherman harbour from the southward with a fair wind, and being within Pollux rock, observe that the marks which just clear the rocks off Cape Mocodome are, Holly point (on the western side of the entrance of Isaac harbour) in one with Country Harbour head, bearing N. by E. $\frac{1}{2}$ E. ; therefore, to pass between Bull rock and Rose shoal, run in upon those marks ; keeping Holly point only a degree or two open

until past Rose shoal, when the point may be opened more, in order to give the rocks off the cape a wider berth.

As soon as Dorkin island at the head of the harbour, opens out to the north-eastward of the shingle beach at the cove on the southern shore, bearing N.W. $\frac{1}{2}$ N., the vessel may haul to the westward into the bay, where the only danger is a rocky shoal, extending a quarter of a mile from the high clay cliff, next eastward of the cove just mentioned.

To run for the harbour from the eastward between Rose shoal and Black ledge the marks are, Dorkin island and the shingle beach of the cove (already mentioned) bearing N.W. $\frac{1}{2}$ N. The channel between the shoal and the ledge is two-thirds of a mile wide, so that there would be no difficulty in beating in, with the assistance of the chart, and attending to the leading marks for clearing the opposite points of Black ledge and Rose shoal; but there would be less sea with a westerly wind between the ledge and Country Harbour head, where there is also a clear channel half a mile wide.

Castor Rock, small, of dark slate, and 4 feet above high water, bears from the eastern point of Bickerton island S.S.W. $1\frac{1}{2}$ miles; and the Castor shoals, rocky patches with 3, 4, and $4\frac{1}{2}$ fathoms water on them, lie off it to the eastward, westward, and southward.

Fleck Shoal, the outermost of these patches, with $3\frac{1}{4}$ fathoms, bears from the Castor, S.S.W. $\frac{1}{2}$ W. $1\frac{2}{3}$ miles; and Green island, open to the southward of the Pollux, bearing E. by N., leads clear to the southward of it.

The passage between Pollux rock and the nearest of the Castor shoals is more than a mile wide. Harbour island, touching Cape Mocodome, N.E. $\frac{1}{2}$ E., leads through it; but the north-west extremity of the island cannot always be distinguished from the land behind it.

Nixonmate Shoal.—A reef runs out S.S.W. $\frac{1}{2}$ W., $1\frac{1}{2}$ miles from Hollins head, on which the shoalest patches are, the Nixonmate shoal and Webb rock, distant $1\frac{1}{4}$ miles and 4 cables respectively from the head, and carrying 10 and 6 feet at low water. There are patches of 15 and 20 feet water between them. The Castor rock and Cape Mocodome in one, bearing E. by N. $\frac{1}{2}$ N., lead half a mile to the southward of these dangers; and there is a clear passage, half a mile wide, between them and the Castor shoals.

PORT BICKERTON is a safe and convenient little harbour for small vessels. It has a clear entrance, carrying 6 fathoms water, between Bickerton island and Barachois head, but it is less than 2 cables wide. Barachois head, on the eastern side of the entrance, may be known by its white cliff, from which, as also from the island, a reef extends 2 cables to the south-east.

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DIRECTIONS.—To enter Port Bickerton with a leading wind, being half a mile or more from the entrance, open Round island (small, with red clay banks, and one mile up the harbour,) only so far as to touch the north-east side of Bickerton island, bearing N.W. by N. Run in with these marks on until abreast the south-east point of the island; then having passed in mid-channel through the entrance, avoid the shoal in the middle of the harbour by keeping close along the eastern shore until abreast Round island, where anchor, within the shoal, in 13 or 14 feet water over a bottom of mud.

If preferable, on entering haul to the westward round Bickerton island at a distance of between one and two cables, so as to pass between it and the shoal into the western part of the harbour, where the anchorage, in 12 feet over mud bottom, is sheltered by the reefs, which leave only a shallow boat channel between the island and the mainland to the westward.

HOLLINS BAY, the next inlet to the eastward of Indian bay, is open to the south-east, and affords shelter at its head to boats and small craft. At its entrance, two-thirds across towards Bickerton island, lies Hollins shoal, with only 6 feet water on it.

HOLLINS HEAD, the south-west point of Hollins bay, bearing from the beacon on Wedge island, E. by N. $6\frac{2}{3}$ miles, is a small and remarkable peninsula, united to the main land by a long beach of stones and shingle, having on its eastern side a cliff of reddish clay and boulders 50 feet high. It is fast wasting by the action of the sea.

CHAPTER III.

NOVA SCOTIA :—SOUTH-EAST COAST.

HOLLINS BAY, TO SPRY HARBOUR.

VARIATION IN 1867.

Liscomb Harbour	-	-	22° 15' W.
Nicomtau bay	-	22° 45' W.	Sheet Harbour - 21° 40' W.

PROCEEDING on to the westward, the character of the coast between Hollins bay and Pope harbour remains unchanged. Hills of the drift boulder clay resting on granite and clay-slate, and occasionally presenting red cliffs to the action of the sea, still form the predominating feature. The country becomes less sterile as the distance from the shore increases, and is everywhere more or less wooded, excepting the clearances around the houses.*

INDIAN BAY is bounded on the east by Hollins head, already described, and on the west by Walter island; but it is entirely open to the S.S.E. and only affords some shelter from S.W. winds to fishing craft and small coasters. The head of the bay receives the waters of a large fresh-water lake, from which it is only separated by a narrow beach of sand. The hills forming the shores of the lake and bay afford good soil, and are carefully cultivated by an intelligent population, whose church and school-house mark their care for the religious and moral training of their families.

There are several shoals extending from the headlands forming the east side of this bay, but the most dangerous and extensive is the Nixonmate shoal, described in the last chapter.

WALTER ISLAND, lying one mile to the eastward of Cape St. Mary, is low and wooded, and at low water a beach of sand, and stones nearly unites it to the mainland, near Wine head, a high clay bank on the west side of Indian bay. A reef of rocks extends to the distance of 2 cables from its eastern side, affording some shelter to an insecure anchorage in the cove north of the island, sometimes used by coasters.

* See Admiralty Chart, Nova Scotia; S.E. Coast, Pope Harbour to Liscomb Harbour, No. 2,396; scale, $m = 1\frac{1}{4}$ inches.

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WEDGE ISLE Barachois point, c The islet is marked seen at the distance neighbouring harb being monotonous short distance are

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ST. MARY RI the bay between obstructed by a be a depth of about The outer edge its inner edge bei a mile from the w

For the first ha and dangerous, ru Half a mile with shores of the river is the navigable channel water, runs parallel channel between

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Walter Shoal, with 3 fathoms water, lies South three-quarters of a mile from Walter island. A vessel will pass to the south-east of it by not opening Wedge islet south of Liscomb island.

Rude Shoal is a rocky reef extending half a mile in an easterly direction from Wine head, on the western side of the entrance to Indian bay. To clear it keep Fleming cliff, on the western side of the bay, open of Rude point.

CAPE ST. MARY, 137 feet high, is the headland immediately to the eastward of St. Mary river, and on its eastern side is Wine cove, affording neither shelter nor anchorage.

WEDGE ISLET, about $1\frac{1}{4}$ cables in extent, lies South $1\frac{1}{2}$ miles from Barachois point, on the western side of the entrance to St. Mary's river. The islet is marked by a beacon, 100 feet above high water, which can be seen at the distance of 10 miles, and thus forms a most useful mark for the neighbouring harbours. The beacon is all the more essential, as the coast being monotonous in character and uniformly low, its features from a short distance are not easily distinguishable.

The islet is of clay, and towards the mainland rises abruptly to the height of 50 feet; it is surrounded by rocky ledges, and those on its north and south sides extend out to the distance of nearly half a mile. Between it and the mainland, the passage is obstructed by rocky ledges, but a depth of 20 feet may be carried through, by keeping the north-west extreme of Walter island touching Cape St. Mary, bearing N.E. by $\frac{1}{2}$ E.; but on no account should this channel be attempted by a stranger.

Sand Shoal, with 5 fathoms water on it, lies S. by E. $1\frac{2}{3}$ miles from Wedge islet, and only breaks after heavy gales.

ST. MARY RIVER, one of the largest rivers in Nova Scotia, falls into the bay between Cape St. Mary and Barachois point. The entrance is obstructed by a bar of sand nearly a quarter of a mile broad, over which a depth of about 10 feet may be carried at ordinary low water, springs. The outer edge of the bar lies between Wharf point and Black head; its inner edge being a little below Shag reef, which runs off one-eighth of a mile from the western point of McDiarmid cove.

For the first half mile above the bar the channel of the river is crooked and dangerous, running close to Shag reef and the east bank of the river. Half a mile within the bar, and nearly in a central position between the shores of the river, is Horton islet, between which and the eastern shore is the navigable channel. From the islet a long spit, which dries at low water, runs parallel with the eastern shore towards Shag reef, leaving a channel between $1\frac{1}{4}$ cables across.

Nearly in the centre of the channel, a little below Horton islet, is a

rock with 6 feet water, and within the islet four-fifths of a cable distant is another rock with 8 feet. Above these rocks the channel, about 50 yards wide, and carrying a depth of 15 feet, winds its way between mud flats, and gradually decreases in depth and width, until at the distance of $6\frac{1}{2}$ miles from the bar it divides into two branches, one of which ends in a swamp; but the other, the main river makes an abrupt turn round a steep slate rock at right angles to its course, and is navigable nearly half a mile farther to the northward.

At this point, the head of the navigation, and on the east bank of the river, is situated the village of Sherbrooke, with a population of 300 persons. It has two churches, a school, court-house, and jail: its principal trade is in firewood, deals, and ship-building; and it employs a few schooners in the Labrador fisheries. Below Sherbrooke, on the east bank of the river, there are two other churches, one of which, 75 feet high, forms a prominent object, and can be seen on approaching from the sea.

After a continuance of southerly winds there is much swell in the bay, and the bar of this river is one mass of breakers, making the entrance during any time of tide very dangerous, if not impracticable: but in the summer months, during the prevalence of south-west winds, the water is smooth, the bay being much sheltered by the Wedge islet shoals. The shores of the bay are rocky, and should not be approached nearer than 2 cables' lengths. Black head and Birch point in line, bearing N. by W. $\frac{1}{2}$ W., will lead clear of the shoal off Barachois point.

Pilots.—The services of a pilot can be obtained from McDiarmid cove, on the eastern side of the entrance to St. Mary river, by any vessel carrying the usual pilot signal.

TIDES.—It is high water, full and change, within the bar of St. Mary river at 8h. Om.; ordinary springs rise 6 feet, and neaps $4\frac{1}{2}$ feet.

DIRECTIONS.—In approaching St. Mary river from the eastward the first object generally recognized is the beacon on Wedge islet. With the wind and weather favourable, steer for this beacon on a W.N.W. or N.W. bearing, so as to open out the entrance of the river. To enter the river safely, through the crooked channel, a pilot is requisite; for not only does the bar, but the cross set of the tides upon Shag reef and Bridget shoal, render local knowledge absolutely necessary.

Vessels frequenting this river moor head and stern, or are secured to the wharves, as there is not sufficient width in the channel, with any scope of cable, to swing clear of the mud flats. During the summer months vessels occasionally anchor in 5 fathoms, sand, in the middle of the bay, between Barachois point and Cape St. Mary; but later in the season such anchorage is not recommended.

JEGOGAN HARBOUR.—This deep inlet, next west of St. Mary

river, is not much drawing 12 feet water but the narrow channel, is only half a pilot. Below this the approaches to it are

Tobacco Island, labour. A vessel will extend S. by E. opening Pye point no

Shag Ledge is dis water, which lies E. wooded bluff 100 feet. There are several 2 cables wide near I

DIRECTIONS.—middle passage, bet the north-east side N.W. by N., and Ste Brig point (low an bearing N. by W.; eastward of Shag led

Good holding ground side of the harbour, ever, be borne in mind point; but it will gravel islet, united part of the north-east

LISCOMB ISLAND wooded, and lies E. west, and from its harbours.

Crook Shoals.—Crook shoals extend touching Wine head of the shoals.

Mackerel Shoal, from Cranberry point avoided by keeping just open of the trees

Channel Rock, water on it, and br

river, is not much frequented, and has but few settlers. Vessels drawing 12 feet water may anchor near its head, secure from all winds ; but the narrow channel leading to it, on the north-east side of Rae island, is only half a cable wide, and should not be attempted without a pilot. Below this the anchorage is exposed to the ocean swell, and the approaches to it are much impeded by Shag and Tobacco ledges.

Tobacco Island, low and wooded, lies at the entrance to Jegogan harbour. A vessel will pass to the southward of the Tobacco ledges, extending S. by E. one mile from the south point of this island, by not opening Pye point north of Liscomb island bank, bearing N.W. by W. $\frac{1}{2}$ W.

Shag Ledge is distinguished by a low dark rock, only 5 feet above high water, which lies E.S.E. distant 6 cables from Redman head, a steep wooded bluff 100 feet high, forming the western point of the harbour. There are several dangers off its west side, leaving a channel only 2 cables wide near Redman head.

DIRECTIONS.—A vessel intending to enter Jegogan harbour by the middle passage, between Tobacco island and Shag ledge, should bring the north-east side of Hemloe island to touch Redman head, bearing N.W. by N., and steer in upon this mark until Shag ledge is in line with Brig point (low and wooded, on the west side of Jegogan harbour), bearing N. by W. ; then steer North so as to pass a cable's length to the eastward of Shag ledge, and continue on the same course to the anchorage.

Good holding ground will be found abreast the houses on the west side of the harbour, between Brig point and Coote head. It should, however, be borne in mind that a 13 feet rock lies N.N.E. 4 cables from Brig point ; but it will be cleared by keeping the middle of the small bare gravel islet, united at low water to Tobacco island, on with the wooded part of the north-east side of that island.

LISCOMB ISLAND, upwards of 2 miles long, and 150 feet high, is wooded, and lies between Redman head and Liscomb point to the southwest, and from its position tends to shelter Liscomb and Little Liscomb harbours.

Crook Shoals.—From Crook point, the east extreme of the islands, the Crook shoals extend nearly a mile in a south-east direction. Wedge islet touching Wine head, N.E. $\frac{3}{4}$ E., leads about half a mile to the south-east of the shoals.

Mackerel Shoal, with only 2 feet water, extends West nearly 2 cables from Cranberry point, the west extreme of Liscomb island ; it will be avoided by keeping the English church steeple in Little Liscomb harbour, just open of the trees on Hemloe island, bearing N. by W.

Channel Rock, lying S.E. $2\frac{1}{4}$ miles from Crook point, has 3 fathoms water on it, and breaks when there is much swell. Smoke and Cranberry



points touching N.W. $\frac{1}{4}$ W. leads to the westward; and the southern points of Barren and Goose islands leads to the southward.

LITTLE LISCOMB HARBOUR.—A narrow shallow passage separates Liscomb and Hemloe islands; the small channel between the latter island and the mainland being known as Little Liscomb harbour, the entrance to which lies to the north-east of Liscomb island, and has fair anchorage, but is only adapted for small craft. It may be entered safely by bringing Redman head touching the north-east side of Hemloe island, N.W. by N.

LISCOMB HARBOUR.—The entrance to this excellent and capacious harbour, which is landlocked and tolerably smooth at all times, is between Liscomb island and Liscomb point. At $1\frac{1}{4}$ miles within the entrance, the harbour trends in a W.N.W. direction for 4 miles; but at the distance of 2 miles the channel is considerably narrowed by rocky shoals, which run off from the northern shore, after which it maintains a breadth of one cable up to its head, where it receives the waters of Liscomb river, a rapid shallow stream abounding in trout and salmon. On the north side of the harbour is a large cove, named Spanish Ship bay, but it is too much encumbered with rocks to render a description intelligible.*

Supplies.—Good water can be obtained from a little brook on the south shore of Liscomb harbour, and small supplies of fresh provisions and firewood may be purchased at moderate prices.

A small population is scattered along the shores of Liscomb, Little Liscomb, and Jegogan harbours though numerically small, the people are industrious and intelligent. The church with a steeple lately erected in Liscomb harbour forms a prominent object from the sea, and a useful landmark.

DANGERS of the ENTRANCE.—Although the rocky patches off the entrance of Liscomb harbour, are numerous, the danger from them is considerably diminished by the fact that they all lie nearly in the same direction, viz., South from Liscomb point.

Hawbolt Rock, the most outlying danger, has $4\frac{3}{4}$ fathoms water, and lies South nearly 4 miles from Liscomb point. It seldom breaks, but a vessel will pass to the southward of it, by keeping Gull ledge only touching the south-west side of Tuffin island.

Sand Shoal, composed of rock and sand, with 9 feet water on it, lies South 3 miles from Liscomb point. Gull ledge touching the north side of Little White island,—which has a wooded hummock 50 feet high,—

* See Admiralty Plan of Liscomb and Mary-Joseph harbours, No. 2,769; scale, $m = 3$ inches. Admiralty Charts:—Liscomb Island to Green Island, No. 2,519; scale $m = 1\frac{1}{2}$ inches, and Pope Harbour to Liscomb Harbour, No. 2,396; scale, $m = 1\frac{1}{2}$ inches.

W. $\frac{3}{4}$ N., leads to the Hawbolt rock.

Black Prince Shoal heavily, lies one mile from Liscomb point.

East Breaker and North 9 cables from latter 11 feet water on

Liscomb Shoal extends the least water on it is in this danger.

Leading Marks.—

Smoke and Liscomb all these shoals except opening the steeple all barn on Hawbolt island clear all these shoals to Mary-Joseph harbour

Saddle Rock, on the harbour, with 5 fathoms $2\frac{3}{4}$ miles. Gull ledge leads to the southward west of Cranberry harbour

TIDES.—It is high 8h. Om.; ordinary springs are weak and irregular

DIRECTIONS.—

with a fair wind, bring in upon this mark for the English church alter course to the point and the south the east ends of Lan points in one.

Approaching the rock, bring the church bring the former in. These marks on when alter course, a

With an off-shore immediately the church the Liscomb shoal;

W. $\frac{1}{2}$ N., leads to the southward of this danger, and between it and Hawbolt rock.

Black Prince Shoal, which uncovers at half-tide, and generally breaks heavily, lies one mile within the Sand shoal, and 2 miles South of Liscomb point.

East Breaker and Lump Rock lie respectively N.N.E. $6\frac{1}{2}$ cables and North 9 cables from Black Prince shoal; the former has 4 feet, and the latter 11 feet water on it.

Liscomb Shoal extends S.E. by E. half a mile from Liscomb point, and the least water on it is 16 feet. The church steeple, N. by W., will clear this danger.

Leading Marks.—The church steeple in Liscomb harbour, in line with Smoke and Liscomb points, nearly North, leads to the eastward of all these shoals excepting the N.E. breaker, which may be cleared by opening the steeple about midway between the points of entrance. A high barn on Hawbolt island touching the Thrumcap, W. by N. $\frac{1}{4}$ N., will clear all these shoals on the north, and is a useful mark for vessels bound to Mary-Joseph harbour.

Saddle Rock, on the east side of the channel leading to Liscomb harbour, with 5 fathoms water, bears S. $\frac{1}{2}$ E. from Crook point, distant $2\frac{3}{4}$ miles. Gull ledge touching the north side of Little White island leads to the southward; and the church steeple in Liscomb harbour just west of Cranberry head, will lead to the westward.

TIDES.—It is high water, full and change, in Liscomb harbour at 8h. 0m.; ordinary springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet. The streams are weak and irregular, being much affected by the winds.

DIRECTIONS.—Approaching Liscomb harbour from the eastward with a fair wind, bring Smoke and Pye points in line N.W. by N.; run in upon this mark till abreast Mackarel shoal; then steer N. by W. for the English church, and after passing Smoke point, which is steep-to, alter course to the westward, so as to pass about midway between Pye point and the southern shore: bring to in about $4\frac{1}{2}$ fathoms, mud, with the east ends of Lang and Pye islands in line, and Smoke and Cranberry points in one.

Approaching the harbour from the westward, and being outside Hawbolt rock, bring the church well open of Liscomb point and stand in, so as to bring the former in line with the low trees of Hemloe island, N. by W. These marks on will lead clear of all danger until past Smoke point, when alter course, and anchor as before directed.

With an off-shore wind, in standing to the westward, take care to tack immediately the church steeple appears open of Hemloe island, until within the Liscomb shoal; and in standing to the eastward tack when Cranberry

and Pye points are in line until abreast Cranberry point, when the steeple must be kept in line with the trees on Hemloe island to clear the Mackarel shoal. Within this, both shores may be approached safely to a cable's length, and anchorage obtained as before.

MARY-JOSEPH HARBOUR, secure and well sheltered, has the advantage of entrances east and west; but the channels are narrow, and should not be attempted without a pilot by any vessel drawing more than 9 feet. The inhabitants, scattered along the shores, principally rely on fishing for subsistence; but cultivate the drift hills, and keep cattle. A church stands on high ground in Smith cove, east of the harbour, and may be seen from the sea.

As any attempt to convey an intelligible description of the numerous off-lying dangers would prove useless, the navigator is referred to the Admiralty charts of the harbour and adjacent coasts.

Supplies.—Water may be obtained in Lobster cove in small quantities; and fresh provisions and fuel can be bought at reasonable prices from the inhabitants.

Gull Ledge, lying S.S.W. $1\frac{1}{2}$ miles from the south part of Barren island, is composed of two bare ridges of slate 30 feet high, and separated only by a narrow gully just wide enough to afford shelter to a boat; close to the ledge the water is deep, but West rock, with only 2 feet on it, makes the passage north of the ledge dangerous.

Smith Rock, of small extent, with 12 feet water, lies S.W. 6 cables' lengths from the Gull ledge. West Black ledge on with the south end of Tuffin island, clears this danger on its southern side.

Seal Ledges lie N.E. by E. 2 miles from the Gull ledge, and extend $1\frac{1}{2}$ miles from south-east point of Barren island. Between these ledges and Black Prince shoal is the channel, nearly a mile wide, leading into Mary-Joseph harbour, but which, on account of the dangerous shoals on its eastern side, should not be attempted without a pilot, unless the wind be fair and the weather clear.

The mark for leading to the eastward of the Seal ledges is Gravel point, the north extreme of Liscomb island, open of Liscomb point, bearing N.N.E. $\frac{1}{2}$ E.

THRUMCAP ISLET, not more than 15 feet high, and distinguished by a small clump of trees, lies at the eastern entrance of Mary-Joseph harbour. There are some patches of shoal water to the eastward of the islet, and on its western side is a dry rocky ledge, between which and Smith point is a channel one cable wide, but not much used or generally known.

The more direct channel is south of the Thrumcap, and this is narrowed to one cable, at the distance of half a mile to the eastward of the islet, by a rock with only 10 feet water, on the north end of Pan shoal; to clear

it Turner point on H
W.N.W.

DIRECTIONS for
—Being off Gull ledge
Liscomb island open
to the eastward of
high barn on Hawbold
the church steeple
Hawbold island) touch

By carefully keeping
opens to the south-west
a cable's length from
along the north side
9 feet water, on the ledge
with eelgrass, is clear
point. Good and clear
about halfway between

DIRECTIONS for
to the eastward of
Barren islands then
with sufficient water
difficult to navigate
entering from sea, be
the harbour of Mary-J.

In approaching from
the highest part of
islands, N.E. $\frac{1}{4}$ N.;
Halibut island bears
island is approached,
Halibut islands, W.
these marks on asterisks

Running 3 miles
half tide, and always
White island; then
west point of Goose
to N. by W. $\frac{1}{2}$ W., so
man rock (dry at low
just open east of the

Continue on this
nearly shut in behind
Blackbill point shut
steering about E. by

it Turner point on Hawbolt island should be kept touching Smith point, W.N.W.

DIRECTIONS for Eastern Entrance to MARY-JOSEPH HARBOUR.

—Being off Gull ledge with a leading wind, bring the Gravel point of Liscomb island open of Liscomb point, N.N.E. $\frac{1}{2}$ E., the mark for leading to the eastward of the Seal ledge, and run in on this course until the high barn on Hawbolt island shows north of Barren island; then steer for the church steeple bearing N.W., and immediately Turner point (on Hawbolt island) touches Smith point, alter course to W.N.W.

By carefully keeping the latter marks on, proceed until False passage opens to the south-west; then keep nearly a W. by N. course, so as to pass a cable's length from the Thrumcap and Smith point; and then W.N.W. along the north side of the channel so as to avoid Turner shoal, with 9 feet water, on the left. The Middle ground on the right, a muddy flat with eelgrass, is cleared by keeping the Thrumcap just in sight over Smith point. Good and convenient anchorage can be had in 7 fathoms, mud, about halfway between Lobster and Turner points.

DIRECTIONS for Western Entrance.—Several dry ledges will be seen to the eastward of the White islands, between which and Goose and Barren islands there is a channel sometimes frequented by coasters, with sufficient water in it for vessels of the largest draught; but it is difficult to navigate without local knowledge. There is another channel entering from sea, between Halibut and White islands, and as it leads into the harbour of Mary-Joseph, directions will be given for its navigation.

In approaching from sea with the usual south-westerly wind, bring the highest part of Tuffin island midway between Halibut and Camp islands, N.E. $\frac{1}{4}$ N.; proceed with these marks on until the southern Halibut island bears West, then bear up E.N.E.; and when, as Tuffin island is approached, Brokenback island appears between the two northern Halibut islands, W. by N. $\frac{1}{2}$ N., alter course and steer E. by S. $\frac{1}{2}$ S. with these marks on astern.

Running 3 miles on this course will bring the Hubbub rocks (dry at half tide, and always breaking) in line with east end of the bushes on Little White island; then steer North with these marks astern, until the south-west point of Goose island shuts in Salmoneaux point, when alter course to N. by W. $\frac{1}{2}$ W., so as to pass $1\frac{1}{2}$ cables to the westward of the Frenchman rock (dry at low water), and to clear which see that Harbour rock is just open east of the high grass field on Nicum point, N. $\frac{3}{4}$ W.

Continue on this course until Round island, in Mary-Joseph harbour, is nearly shut in behind Epe point; then steer East upon this mark until Blackbill point shuts in the White islands, when keep in mid-channel, steering about E. by S. to leave Round island a cable's length to the west-



ward. Having cleared this island haul in N. by E., and, rounding Turner point, secure anchorage may be had halfway between Turner and Lobster points in 7 fathoms.

There are other passages leading into this channel, but directions for them would be useless without local knowledge; and therefore only the more direct and least dangerous will be described.

To pass between East and West Black ledges, which are bold-to, and separated by a channel half a mile wide, bring the low and wooded west end of Goose island midway between the two ledges, N. by W. $\frac{1}{2}$ W., and upon that course steer in; when within the ledges steer N.N.W. $\frac{1}{2}$ W., and, passing to the eastward of Hubbub rocks, enter the channel before described.

If wishing to run between the White islands and Little White island, bring the west end of the latter in line with west end of Goose island to clear the shoal off the east end of the White islands, and steer in N. by E. $\frac{1}{2}$ E. until the east end of the White islands bears West; then alter course to N.N.W., and having passed Little White island steer N.N.E., which will lead to the westward of Hubbub rocks, and into the channel before described.

There is another channel between Little White island and West Black ledge, but it is too narrow and intricate to be of service, and will not therefore be described.

BAY of ISLANDS is the name commonly given to the coast between Mary-Joseph and Beaver harbours. The islands off this part of the coast are very numerous, and the channels between them are so narrow, intricate, and beset with rocks that, although there is sufficient depth to admit schooners drawing 12 feet water, they are not easily described, and their safe navigation requires an intimate local knowledge, such as could never be acquired from the best chart. Coasters use them occasionally to avoid the heavy swell in the offing: a few know the channel sufficiently well to run inside the islands, the whole distance between Liscomb and Sheet harbours; whilst others are content to venture within a few of the most off-lying of the numerous islands with which this part of the coast is studded. The Admiralty chart, on which it is believed every rock and shoal is correctly placed, will be useful to coasters, by enabling them, with the assistance of their local knowledge, to find their way with much greater security than heretofore.*

There is a channel passing close on the north side of Beaver, Brother, and Pumpkin islands, which is often used; but to navigate it safely care must be taken, when to the westward of Pumpkin island, to keep Beaver island lighthouse in the hollow between the wooded Brother islands, bearing E. by S. $\frac{3}{4}$ S., so as to clear the Black Peg shoals.

NICUMCIGUM IN harbour, is the abode by net and line fishing farms. A few small anchorage; but the makes it unnecessary leading thereto.

WHITE ISLANDS highly-inclined strata, an elevation of 80 feet eastward of Beaver islands and rocks, lying Nicomtau bay.

Between some of the but they are far too schooners trading or f

Bowen Ledge is a half a mile from the channel $3\frac{1}{2}$ cables wide

Horse Shoe Shoal, $1\frac{1}{3}$ miles from the ce.

Halibut islands kept c

David Shoal, with Horse Shoe shoal.

Lockwood Rock, Tuffin island seen over distant rather more island open east of W ends of Tuffin and W ward.

NICOMTAU BAY, schooners of light dra the westward, the ab farms, and during the islands for the purpos

HALIBUT ISLAND high, lying to the eastern side of a cha

* See Admiralty Chart inches.

NICUMCIGUM INLET, an indentation next west of Mary-Joseph harbour, is the abode of a few families who earn a precarious livelihood by net and line fishing off the White islands, and the cultivation of small farms. A few small schooners frequent this inlet, and find within it snug anchorage; but the proximity of the excellent harbour of Mary-Joseph makes it unnecessary to attempt a description of the crooked channel leading thereto.

WHITE ISLANDS, which derive their name from cliffs of slate of highly-inclined strata, showing white to seaward, are wooded, and attain an elevation of 80 feet at their eastern extreme. They lie 9 miles to the eastward of Beaver island lighthouse, and are the outermost of a group of islands and rocks, lying off the point separating Nicumcigum inlet from Nicomtau bay.

Between some of these islands are channels, and a few snug anchorages; but they are far too intricate to be serviceable to any but the small schooners trading or fishing along these shores.

Bowen Ledge is a bare flat slaty rock only 8 feet high, lying S.S.W. half a mile from the low west point of Camp island; there is a navigable channel $3\frac{1}{2}$ cables wide on its northern side.

Horse Shoe Shoal, with 3 fathoms water on it, lies S.S.W. nearly $1\frac{1}{2}$ miles from the centre of the larger White island. The west end of Halibut islands kept open west of Bowen ledge, leads to the south-west.

David Shoal, with 4 fathoms on it, lies North half a mile from the Horse Shoe shoal.

Lockwood Rock, with 3 fathoms on it, lies with the highest part of Tuffin island seen over the east point of White island, N.W. by N., and is distant rather more than 2 miles from the latter. The whole of Tuffin island open east of White island will lead to the eastward; and the east ends of Tuffin and White islands in line, will clear the rock to the westward.

NICOMTAU BAY, the outlet of Moser river, a small stream admitting schooners of light draught, is, in common with Newtonquoddy, further to the westward, the abode of a few industrious families, who cultivate small farms, and during the summer months frequent the Halibut and White islands for the purpose of fishing.*

HALIBUT ISLANDS, a cluster of islands a mile in extent and 35 feet high, lying to the north-west of the White islands, are situated on the eastern side of a channel of deep water, leading into an indifferent anchor-

* See Admiralty Chart of Nicomtau Bay and parts adjacent, No. 2,673; scale, $m = 3$ inches.

age under the shelter of Brokenback island. They also mark the entrance into Nicomtau bay.

Bassoon Reefs, an extensive cluster of shoals, lying $2\frac{1}{2}$ miles to the south-west of Halibut islands, are composed of large rounded stones, and are partially uncovered at low water. They generally break heavily; but as at high water, springs, with the wind off shore, their position is not easily recognized, it will be well to take care that Pumpkin island does not show open to northward of the Brother islands. This mark will lead half a mile to the southward.

BIRD ISLANDS, low and without trees, lie 2 miles to the North-west of the Bassoon reefs.

NEWTONQUODDY, an inlet to the eastward of Beaver harbour, will admit schooners of small tonnage; but is not much frequented, even by small vessels, on account of the numerous rocky islets and shoals overlying its entrance.

DIRECTIONS.—The anchorages under Brokenback island and in Nicomtau bay are not recommended, but they may prove useful in cases of emergency. Approaching the anchorage under Brokenback island from the eastward or westward, do not pass to the northward of the line between the Bassoon reefs and White islands, until Baptiste island (of red clay banks, 70 feet high, and partly wooded) is seen east of Brokenback. When the highest part of Baptiste island is in line with the east end of Brokenback island, N.W. by N. (which mark leads to the eastward of the Snapper shoal), steer on that line of bearing, and giving Brokenback island a berth of less than a cable's length, anchor in 10 fathoms, sand, with the Bird islands open west of Brokenback island, and the northern Halibut island just open south of Gold island.

To enter Nicomtau bay, steer in with Harbour rock (of slate, 30 feet high, and nearly bare of trees) in line with the high land on the eastern side of Moser river bearing N. $\frac{1}{2}$ E. In passing to the westward of the Halibut islands be careful that the west end of Hartlin island is well open of Goose island, in order to clear the Salamander rock, with only a foot on it at low water. After clearing the Salamander, steer so as to pass a cable's length to the eastward of Harbour rock, and to the westward of the Bull rock, which uncovers at low water; then steer in N.E., and choose a berth in 7 or 8 fathoms, mud, under Hartlin island.

In clear weather Pumpkin island may be seen distinctly from the deck of a vessel when off the White islands; and by keeping it just open north of Beaver island lighthouse, bearing W. by N., it will lead to the southward of all these shoals. If not made out, the White islands should not be approached nearer than 2 miles, a distance that can be easily maintained by occasional cross bearings, or by sextant angles.

BEAVER ISLAND covered with scrubby its north side, in a small cove near the high water by enter island.*

The house, 35 feet painted white, with S.S.W. It stands elevation 70 feet at which attains its g visible in clear weat

BEAVER HARBOUR fringe the coast in t Beaver island ligh entrance channel be eastward of Beaver during heavy S.S.E. an excellent refuge.

The Beaver har N.N.W. one mile f small craft, being p springs, and by a s entrance, within wh

This little harbo of Quoddy hill, 184 one, until the hill of the spit, when s rounding the spit, w

Macleod Cove als bottom, and is enter of Macleod island. after rounding a spi from the island.

Salmon River fal the bridge affords g

Supplies.—There harbour, residing p river. They have t of England, and m:

* See Admiralty Pla

BEAVER ISLAND LIGHT.—Beaver island, 40 feet high, is partially covered with scrubby trees, and its slate cliffs show white to seaward. On its north side, in moderate weather, landing can be safely effected at a small cove near the east end; and in bad weather boats may be saved at high water by entering the gully, which separates the two parts of the island.*

The house, 35 feet high, on the roof of which the lantern is placed, is painted white, with two black balls placed horizontally on the gable facing S.S.W. It stands on the eastern end of Beaver island, and from an elevation 70 feet above high water, is exhibited a *revolving* white light, which attains its greatest brilliancy every *two minutes*, and should be visible in clear weather from a distance of 12 miles.

BEAVER HARBOUR.—Notwithstanding the numerous dangers which fringe the coast in the vicinity of this harbour, it is easy of access after Beaver island lighthouse has been identified, in consequence of the entrance channel being straight and deep, after passing 2 cables to the eastward of Beaver island. The position of this harbour is objectionable during heavy S.S.E. winds, but under all other circumstances it affords an excellent refuge.

The Beaver harbour of the Fishermen is a small cove situated N.N.W. one mile from Beaver point. It affords excellent shelter to small craft, being protected by a reef of stones, partly dry at low water, springs, and by a spit of sand and shingle extending halfway across its entrance, within which small craft may lie secure from all winds.

This little harbour may be entered by rounding the reef on the line of Quoddy hill, 184 feet high, and the south point of Hardwood island in one, until the hill of Beaver point comes in line with the stores at end of the spit, when steer in upon this latter mark, bearing S. $\frac{3}{4}$ E., and rounding the spit, which is bold-to, anchor in 18 feet, over muddy bottom.

Macleod Cove also affords excellent anchorage in 21 feet over a muddy bottom, and is entered by a channel half a cable wide at the west end of Macleod island. The anchorage is on the north side of the island after rounding a spit of sand and mud extending N.N.W. a cable's length from the island.

Salmon River falls into the east division of Beaver harbour, and at the bridge affords good fresh water.

Supplies.—There are about 200 inhabitants along the shores of Beaver harbour, residing principally at the cove on its west side and at Salmon river. They have two day schools, and a resident minister of the Church of England, and make out a comfortable living; some being engaged in

* See Admiralty Plan of Beaver Harbour, with View, No. 2,663; scale. $m = 3$ inches.

the coasting trade, others in fishing and the cultivation of small farms. Firewood and a limited supply of fresh provisions may be generally obtained at moderate prices.

William Shoal, with 3 fathoms water, and only breaking occasionally, is the principal danger to be avoided in approaching Beaver island lighthouse which bears from it N.N.W. distant 2 miles. It will be cleared, when nearing it from the southward, by keeping the conical hill on Sutherland island open east of Beaver island; the lighthouse on Beaver island in one with the hill, would lead directly over the shoalest part.

Marmot Rock, the outermost danger on the east side of the channel leading to Beaver harbour, is only awash at low water, springs, and lies so much within the line of the Beaver islands, that with the prevalent south-west winds it seldom breaks; it will, however, be avoided by not opening Pumpkin island much to the northward of the Brother islands, until Harbour rock comes in line with the west end of Rocky island, bearing N.N.W.

Middle Shoal, on the eastern side of the channel into Beaver harbour, has $2\frac{1}{2}$ fathoms water on it, and with the two neighbouring 4-fathom patches lying to the southward and westward, may be avoided by not opening Harbour rock to the westward of Rocky island.

Sutherland Island, on the west side of the channel into Beaver harbour, is wooded, with cliffs of slate, and has on it a conical-shaped hill 107 feet high, sufficiently remarkable to make a good mark for William shoal.

Harbour Rock, of bare slate, 12 feet high, lies on the eastern side of the channel into Beaver harbour, and has shoal water extending a cable's length to the W.N.W.

Sandy Islet has a red clay bank, 12 feet high, at its south end; between it and Harbour rock the ground is broken and rocky.

Rocky and Hardwood Islands lie on each side of the entrance to the Salmon river anchorage. The former has a rock, with only 5 feet water, lying $1\frac{1}{4}$ cables' lengths from its eastern end; the latter is bold-to, and has red clay banks.

Balcom Shoal, with only 10 feet water, lies in the middle of the passage between Rocky and Hardwood islands, and narrows the available channel into Salmon river anchorage to less than one cable. Harbour rock touching the west end of Sandy islet leads through the western channel, and touching the eastern end of the islet leads through the eastern channel; but to reach this anchorage local knowledge is necessary.

TIDES.—It is high water, full and change, in Beaver harbour, at 7h. 40m.; springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet.

DIRECTIONS.—

by day, when about to bear N.N.W. $\frac{1}{2}$ W east end of Beaver open to the eastward to the eastward of Sutherland house in sight astern line, with the cross Harwood island, fa bottom.

If, however, better the vessel run into latter a depth of 21 in the same depth passages, one north more commonly use the following brief d

In nearing Beaver Salmon river appears Harbour rock comes course with this latter hill appears well open shoals, steer for the Sandy island is shoal

With an offshore binding the east and west end of Rocky of Sutherland island

The intelligent seaman difficulty in working always that the anchor point.

At Night.—The eye at night, in attention to the nearer than half and approaching wooded hill, passing this island steering with that cove, in 7 or 8 fathoms

DIRECTIONS.—In approaching Beaver harbour from the southward by day, when about 5 or 6 miles from Beaver island bring the lighthouse to bear N.N.W. $\frac{1}{2}$ W. and steer in N.N.W., observing that in passing the east end of Beaver and Horse islands, the dark-wooded Beaver point is open to the eastward of Sutherland island. After passing a cable's length to the eastward of Sutherland island and Beaver point, keep the lighthouse in sight astern, open to the eastward of Sutherland island; on this line, with the cross mark of Quoddy hill in line with the south end of Harwood island, fair anchorage can be obtained in 7 fathoms, muddy bottom.

If, however, better shelter be desired, a pilot should be procured, and the vessel run into Salmon river anchorage or Macleod cove. Into the latter a depth of 21 feet may be carried, and a land-locked berth obtained in the same depth over muddy bottom. Into the former there are two passages, one north of Rocky island, narrow, but clear of rocks; the other, more commonly used, between Rocky and Hardwood islands, for which the following brief directions may suffice :—

In nearing Beaver point, when the church steeple on the east side of Salmon river appears open west of Hardwood island, steer for it until Harbour rock comes in one with the west side of Sandy island, when alter course with this latter mark on astern, steering in N. $\frac{1}{2}$ W. till Quoddy hill appears well open north of Hardwood island; then having passed the shoals, steer for the steeple again, and anchor in $4\frac{1}{2}$ fathoms mud, when Sandy island is shut in behind Hardwood island.

With an offshore wind a vessel must tack upon the two leading marks binding the east and west sides of the channel; namely, Harbour rock and west end of Rocky island, and Beaver point open of the east end of Sutherland island.

The intelligent seaman, with the assistance of the chart, will find no difficulty in working into a safe berth in Beaver harbour, remembering always that the anchorage is not good until the vessel is north of Beaver point.

At Night.—The entrance to Beaver harbour may be safely attempted, even at night, in clear moonlight weather, with a fair wind, and careful attention to the bearing of Beaver island light. Having passed not nearer than half a mile to the eastward of the light, steer in N.N.W., and approaching Sutherland island, which will be recognized by its wooded hill, pass about a cable's length to the eastward of it. After passing this island, keep the light just open of the point astern, and steering with that mark on pass Beaver point, and anchor when abreast the cove, in 7 or 8 fathoms, mud.

SHEET HARBOUR, one of the finest on the coast, and situated nearly

midway between Country harbour and Halifax, derives its name from the Sheet rock, a small islet outside the entrance, which presents to seaward a remarkable cliff of clay slate, resembling a suspended sheet. The entrance between Western island and Danberry island is a third of a mile wide, and the anchorage immediately within it on the western side is quite safe, and sufficiently commodious to accommodate a large fleet.*

The harbour is of considerable extent, extending inland $6\frac{1}{2}$ miles, and is navigable for ships nearly to its head, where rapid streams discharge into it the waters of a chain of lakes. There are mills at the head of the North-west and principal Arm, the shores of which are well settled. There is also a scanty population along the North-east Arm and eastern shore of the harbour; but the western shore, from Mitchell point to Mushaboon harbour, is uninhabited. The hills of clay, abounding in boulders, supply the only soil adapted for cultivation. They rest on clay-slate in nearly vertical strata, as is well displayed in the North-east Arm, which in the course of time has been cut by the rapid stream at its head across the rock, in nearly an east and west direction.

Supplies.—Water may be obtained in Sheet harbour, either from Watering cove on the west side, or Smelt brook on the opposite shore. A moderate supply of fresh provisions and abundance of fire-wood may also be procured from the inhabitants, a respectable class of people, who derive a comfortable subsistence from ship-building, coasting, and farming.

DANGERS of the ENTRANCE.—The numerous and formidable dangers off Sheet harbour render the approach to it perilous in the extreme during dark nights, or the prevalent foggy weather, especially for large vessels; but by day, with clear weather, little difficulty will be experienced in a vessel furnished with the Admiralty charts and directions, the leading marks being distinct and good.

PUMPKIN ISLAND is a steep rounded islet 90 feet high, bare of trees, lying W.N.W. $1\frac{3}{4}$ miles from the lighthouse on Beaver island; rocky ledges extend S.S.W. nearly half a mile from its south point.

Eastern Shagroost is a low rocky ledge barely 5 feet above high water, with breaking rocky shoals on its north and west sides, but steep-to on its south-west side, and with deep water between it and Pumpkin island, from which it is distant $1\frac{1}{2}$ miles in a W. by S. $\frac{1}{4}$ S. direction.

Geddes Shoal, with 5 fathoms on it, is the outermost of the off-lying patches on the eastern side of the entrance. From it the eastern

* See Admiralty Chart, Sheet and Mushaboon Harbours, and Spry bay, No. 2,807; scale, $m = 3$ inches.

extremity of the W. bears N.N.E. $\frac{1}{8}$ E., in the entrance of the bearing North, and rocky shoal only after

Logan Rock, with quarters of a mile from is seldom marked by the channel) bears nearly $1\frac{1}{2}$ miles wide

Western Shagroost reef, partially dry, of S.W. $\frac{1}{2}$ W., and the northward of the as the dangerous Bank from the Western point (nearly in line Mink islands) S.W.

Monroe Rock, with Western Shagroost former being distant N.E. by E. $\frac{1}{4}$ E., lead the southward of Geddes

Macdonald Rock bears from Macdonald extensive Macdonald water, bears from the The mark, which just Babin shoals, as well touching the east point

This mark leads to water, and from the of Danberry island, also another rocky W. by N. from Babin nearly a mile. Boats vessels in a heavy sea follow.

Yankee Jack, a Taylor head S.S.E. W. by N. $\frac{3}{4}$ N., the exceedingly dangerous

extremity of the Western Shagroost is in line with Fishery point, and bears N.N.E. $\frac{1}{2}$ E., distant about $2\frac{1}{4}$ miles; and the Sheet rock appears in the entrance of the harbour, between Western and Danberry islands, bearing North, and distant about $4\frac{3}{4}$ miles. The sea breaks over this rocky shoal only after heavy gales.

Logan Rock, with $3\frac{1}{4}$ fathoms water, bears N. by W. $\frac{1}{2}$ W. three-quarters of a mile from Geddes shoal. From this dangerous rock, which is seldom marked by a breaker, Yankee Jack (on the opposite side of the channel) bears W. by N. $\frac{1}{4}$ N., the passage between them being nearly $1\frac{1}{2}$ miles wide.

Western Shagroost, 6 feet above high water, can always be seen. A reef, partially dry, extends two-thirds of a mile from it in the direction of S.W. $\frac{1}{2}$ W., and has only 4 feet on its south-west extremity. To the northward of the rock are several rocky 4-fathom patches, as well as the dangerous Babin shoal, the least water on which, $2\frac{1}{2}$ fathoms, bears from the Western Shagroost N.N.W. $\frac{1}{4}$ W. $1\frac{1}{4}$ miles, and from Fishery point (nearly in line with the southern extremities of Hardwood and Mink islands) S.W. by W. $\frac{3}{4}$ W. $1\frac{1}{2}$ miles.

Monroe Rock, with 12 feet water, lies with the western points of Western Shagroost and Sheet rock in one, bearing N. by W. $\frac{1}{2}$ W.; the former being distant nearly a mile. Pumpkin and Horse islands touching, N.E. by E. $\frac{1}{4}$ E., lead a quarter of a mile south of this rock, and close to the southward of Geddes shoal.

Macdonald Rock and Shoals.—Macdonald rock, dry at low water, bears from Macdonald point S.W. $\frac{1}{2}$ W. half a mile, and lies on the extensive Macdonald shoals, the outermost patch of which, with 12 feet water, bears from the point S.W. by W. $\frac{3}{4}$ W. three-quarters of a mile. The mark, which just clears the western extremities of Macdonald and Babin shoals, as well as the reef off the Western Shagroost, is Sheet rock, touching the east point of Western island, and bearing N. $\frac{1}{2}$ W.

This mark leads between Macdonald shoals and a patch with $4\frac{3}{8}$ fathoms water, and from the latter Sheet rock appears touching the western point of Danberry island, N. by E. $\frac{1}{2}$ E., and is distant nearly a mile. There is also another rocky shoal, with 5 fathoms water, three-quarters of a mile W. by N. from Babin shoal, and which bears from Guilford island S.S.E. $\frac{1}{8}$ E. nearly a mile. Both these shoals, which would be dangerous to large vessels in a heavy sea, will be cleared by attention to the directions which follow.

Yankee Jack, a small rocky shoal with only 3 feet water, bears from Taylor head S.S.E. $\frac{3}{4}$ E. $2\frac{1}{2}$ miles. At the distance of a quarter of a mile, W. by N. $\frac{3}{4}$ N., there is another rock with 12 feet water. These are exceedingly dangerous at high water and in a smooth sea, when they are

not marked by breakers; but Taylor Goose rock which can always be seen, and from which the 12 feet rock bears S.E. $\frac{1}{2}$ S. a third of a mile, serves as a beacon to avoid them. Nothing could be found to the southward of these shoals excepting several patches of 8 fathoms, the outermost of which is on the Pollock ground of the fishermen.

Taylor Goose.—This dangerous rock, awash at high water, bears from Taylor head S.S.E. $\frac{1}{4}$ E. $1\frac{3}{4}$ miles. Vessels may pass to the south-east of it at the distance of a cable, but in the opposite direction the shoal extends a quarter of a mile, and is just cleared to the westward by the east points of Guilford and Western islands in one, N.N.E. $\frac{3}{4}$ E.

Mushaboon Shoal, a small rocky patch with 3 fathoms water, bears from Taylor head S.E. $\frac{1}{2}$ E. $1\frac{1}{2}$ miles. As the position of this rock is seldom shown by a breaker, it is exceedingly dangerous; and would be more so, but that its locality is in some measure pointed out by the Taylor Goose, which can always be seen, and from which Mushaboon bears N.E. $\frac{3}{4}$ N. about three-quarters of a mile.

Pyche Shoals.—The dangers on the western side of the entrance to Sheet harbour are rocky patches of $3\frac{1}{2}$ and 4 fathoms off Taylor head, and also the more dangerous Pyche shoals, which are separated from Pyche island by a narrow channel leading to the entrance of Mushaboon harbour. The least water on these shoals is 17 feet, and their south-east point, distant about a mile from the island, is cleared by the east points of Guilford and Western islands in one, bearing N.N.E. $\frac{3}{4}$ E.

TIDES.—It is high water, full and change, in Watering cove, Sheet harbour, at 8h. 6m.; ordinary springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet; but strong winds cause great irregularities, especially in the rise. The diurnal inequality is most distinctly shown in the low waters, in this and all the harbours that have been surveyed on this coast, including Halifax. The ordinary rate of the tidal streams does not exceed half a knot; but it is said to be stronger after heavy rains or the melting of the winter's snow, or after long continued southerly gales, which have previously forced the water into the harbour. It is high water about a quarter of an hour earlier in the entrance of the harbour, where the rise is about 2 feet less.

DIRECTIONS for Eastern Passage.—There are four passages for ships between the outer dangers off Sheet harbour, either of which may be taken, as the wind or other circumstances may render expedient. To pass to the eastward of Geddes shoal and Logan rock, and between them and the reef off the Western Shagroost, run in with Western island just touching the west end of Sheet rock, bearing N. $\frac{1}{2}$ W.

These marks will also lead close to, but clear of, the Babin and Macdonald shoals, and up to Sheet rock; but as the soundings are more than usually irregular by this route, it will be preferable on ap-

proaching Babin she line of bearing, un rock are in line and passage is clear to th to keep to the eastw and Western islands, a cable's length off tl

In entering betwe berth of not less th half a cable off its northward and westv island, and anchor w off shore.

If a vessel be bou the White rock, wh Danberry island, the S. by W. $\frac{1}{2}$ W., lead therefore be kept of rock; then sheer o of Danberry island N.N.E. $\frac{1}{4}$ E., or so Slab point, on the those marks barely passed, observing tl $1\frac{1}{2}$ cables from Salr

Having passed S Olding point at a off the shingle of W shore in 7 fathoms Arm appearing nea vessel will here be

For the navigati pensable.

HURD COVE.— the entrance, is th entrance of a nar mainland, through low water.

Middle Passag which is the wide point of Danberry point of Guilford

proaching Babin shoal, to haul over towards Guilford island on a N.W. line of bearing, until the west ends of Danberry island and Sheet rock are in line and bearing about N.N.E. $\frac{1}{4}$ E. From this position the passage is clear to the entrance of the harbour; it being only necessary to keep to the eastward of a line joining the eastern points of Guilford and Western islands, and to avoid a rock, which can always be seen, half a cable's length off the west end of Sheet rock.

In entering between Western and Danberry islands, give the former a berth of not less than a cable's length to avoid a rock with 4 feet water, half a cable off its east point, which, having passed, haul in to the northward and westward, until Macdonald point is shut in behind Western island, and anchor within it, in 6 or 7 fathoms, mud, not less than $1\frac{1}{2}$ cables off shore.

If a vessel be bound up Sheet harbour, the first danger to be avoided is the White rock, which dries at low water, and is distant $4\frac{1}{2}$ cables from Danberry island, the west point of which touching Sheet rock, and bearing S. by W. $\frac{1}{2}$ W., leads just clear to the westward of it. Sheet rock should therefore be kept open to the westward of Danberry island until past the rock; then sheer over to the eastward, so as to bring the western points of Danberry island and Sheet rock in one, bearing S.S.W. $\frac{1}{4}$ W., and steer N.N.E. $\frac{1}{4}$ E., or so as to keep those marks on astern, until nearly abreast Slab point, on the western shore, 2 miles within the entrance. Then, as those marks barely clear Slab shoal, steer a little to the eastward until it is passed, observing that the passage between it and the reef, which extends $1\frac{1}{2}$ cables from Salmon island, is only 2 cables wide.

Having passed Slab shoal, keep over towards the western shore, rounding Olding point at a distance not exceeding $1\frac{1}{2}$ cables to avoid the shoal off the shingle of Watt point, and anchor off Watering cove on the western shore in 7 fathoms, mud, with the chapel at the head of the North-west Arm appearing nearly midway between Mitchell and Church points. The vessel will here be landlocked, and secure in all winds.

For the navigation of the Arms the services of a pilot would be indispensable.

HURD COVE.—On the eastern side of Sheet harbour, at $1\frac{1}{4}$ miles within the entrance, is the shingle Gull ledge, off Hurd cove, which last is the entrance of a narrow and intricate passage between Sober island and the mainland, through which a depth of 6 or 7 feet only can be carried at low water.

Middle Passage.—To pass between Yankee Jack and Logan rock, which is the widest passage, run in with Sheet rock touching the western point of Danberry island, and bearing N. by E. $\frac{1}{2}$ E., until the south-west point of Guilford island bears N.W. $\frac{1}{2}$ N., when the southern point of

Salisbury island will have disappeared behind it ; then steer to the northward and westward, until the west ends of Danberry island and Sheet rock are in line, in order to clear the 28 feet shoal which the former marks lead over, and, passing to the westward of the Sheet rock, anchor as before directed.

Passage Eastward of Taylor Goose.—If it be desired to pass to the eastward of the Taylor Goose and Mushaboon shoal, and between them and the Yankee Jack, run in with the eastern points of the Sheet rock and Danberry island exactly in one, bearing N.N.E. $\frac{1}{2}$ E. ; those marks will lead in clear of all danger to Sheet rock, which should be passed on the western side, after which proceed as before directed.

Western Passage.—To run for Sheet harbour by the westernmost passage, to the westward of Taylor Goose and Mushaboon shoal, and between them and the Pyche shoals, proceed as follows :—

Being outside of and to the westward of the Taylor Goose, bring Sheet rock to touch the east point of Danberry island, bearing N.E. $\frac{1}{2}$ N., and run in with these marks on until Bob bluff opens out north of Pyche island, when the Pyche shoals will have been passed, and the vessel may be kept away a little to the eastward, so as to give a wider berth to the reefs off Guilford island, which the above marks only just clear.

MUSHABOON HARBOUR scarcely deserves to be ranked as a harbour, as it is exposed to the full force of S.S.E. winds. It affords indifferent shelter to vessels only on the eastern side near its head, where Gull rock and the shoals which nearly unite it to Malagash island break off the sea.

The Gates.—The dangers off Mushaboon harbour are common to it and to Sheet harbour, with which it communicates by a narrow and intricate passage, called the Gates, between Malagash and Gibbs islands. In the entrance of this passage there is a small islet, and the channel, which is on its northern side, is not more than 40 fathoms wide, and 12 feet or 14 feet is all that can be carried through at low water, and that with difficulty.

DIRECTIONS.—As the harbours immediately adjoining Mushaboon to the east and west are so superior to it, vessels seldom require to enter this exposed anchorage ; but should any wish to do so, the safest course for a stranger to pursue will be to run in upon either of the leading marks for Sheet harbour until Bob bluff, well open north of Pyche island, bears N.W. by N. ; then steering for the bluff on this bearing will lead well to the eastward of the Pyche shoals, and vessels may run up the middle of the bay, steering N.N.W. $\frac{1}{2}$ W. for Yellow rock, the channel between the dangers on either side being half a mile wide.

On nearing Gull and Yellow rocks, she may either pass between them, disregarding the rock between them in 4 fathoms at low water ; or, passing

to the westward of Yellow Botelier island and anchor in 6 fathoms, mud.

SPRY BAY.—Taylor harbour upwards of 3 miles in length ; it is destitute of marks and is indistinguishable afar off. The anchorage of Spry bay, is sufficiently good, in 7 or 8 fathoms.

Tomlees Bay, at the northward, and almost full of mud, afford shelter to fish wharf and store.

Taylor Bay, on the westward, immediately north of the mouth, but affords secure anchorage ; it is inhabited by an industrious population.

Redman Shoal.—The anchorage of Spry harbour are in and out of Redman shoal, from which the vessel may run N.E. $\frac{1}{4}$ E. $1\frac{1}{10}$ miles ; the anchorage is in one, bearing North ; and on the eastern side of Maloney rock, N. by W. on this shoal to be 5 fathoms deep, engaged in the Admiralty charts.

Mad Moll Reef, the point runs out W. by S. nearly straight, with patches of shingle, which are of it two rocky patches of a third of a mile in that direction between it and Neverfail.

Herring and Maloney bays are Herring and Maloney tent, with 12 feet water from Maloney rock, with distance from half to the dry shingle on Mad Moll leads a quarter of a mile just open to the eastward.

Neverfail Shoal, with

to the westward of Yellow rock, may haul over to the eastward towards Botelier island and anchor off it, and to the northward of Gull rock, in 6 fathoms, mud.

SPRY BAY.—Taylor head is the outer extremity of a narrow peninsula, upwards of 3 miles in length, which divides Mushaboon and Spry harbours; it is destitute of trees, but being composed of large white rocks is distinguishable afar off. Spry harbour, situated at the north-west end of Spry bay, is sufficiently commodious to accommodate a large fleet; the anchorage, in 7 or 8 fathoms, mud, being quite secure in all winds.

Tomlees Bay, at the north-east angle of Spry bay, is open to the southward, and almost full of rocks, which, together with the islets off its mouth, afford shelter to fishing schooners near its head, where there is a wharf and store.

Taylor Bay, on the western side of Tomlees head, is a shallow indentation immediately north of Spry harbour; it is not adapted for large ships, but affords secure anchorage for coasting and fishing vessels. Its shores are inhabited by an industrious and respectable population.

Redman Shoal.—The principal dangers to be avoided in approaching Spry harbour are in and off the mouth of Spry bay; the outermost being Redman shoal, from which Taylor head, the eastern point of the bay, bears N.E. $\frac{1}{4}$ E. $1\frac{4}{10}$ miles; the eastern sides of Leslie island and Tomlees head in one, bearing North; and Lawler point (which is an islet at high water) on the eastern side of Gerard island is just open to the eastward of Maloney rock, N. by W. $\frac{1}{2}$ W. The fishermen report the least water on this shoal to be 5 fathoms, nor could any less be found by the officers engaged in the Admiralty survey.

Mad Moll Reef, the principal danger on the eastern side of Spry bay, runs out W. by S. nearly a mile from Taylor head. On it there are two patches of shingle, which are always above water; and to the northward of it two rocky patches nearly dry at low water, the reef extending two-thirds of a mile in that direction, and reducing the breadth of the passage between it and Neverfail shoal to a third of a mile.

Herring and Maloney Shoals.—The dangers on the western side of Spry bay are Herring and Maloney shoals. The latter, of considerable extent, with 12 feet water, is by far the most in the way. Its bearing from Maloney rock, which is always above water, is S. by W. $\frac{1}{2}$ W., and distance from half to two-thirds of a mile. The southern extremity of the dry shingle on Mad Moll reef in one with Taylor head, bearing E. $\frac{3}{4}$ N., leads a quarter of a mile to the southward of these shoals; and Bald rock just open to the eastward of Maloney rock, N. $\frac{2}{3}$ E., leads to the eastward.

Neverfail Shoal, with 17 feet water on it, lies E. $\frac{1}{2}$ S. a quarter of a

mile from Maloney rock ; and from it Tomlees head and Leslie island appear touching, N. $\frac{1}{2}$ E.

Rocky Patches.—There is a rocky patch, with 28 feet water, lying North a third of a mile from Neverfail shoal, and another, with 5 fathoms, a quarter of a mile farther to the E.N.E.; but there is seldom sufficient swell so far in the bay as to render these dangerous.

Ram Rock is the only other danger in the way on the western side of Spry bay. It dries at low water, and lies E. by S. $\frac{1}{4}$ S. about $1\frac{1}{2}$ cables' lengths from Lawler point, with the southern sides of Leslie and Green islands in one, bearing East, and with Bald rock (distant nearly half a mile from the Ram rock) appearing just open to the southward of them. There is a clear passage between Bald and Ram rocks.*

DIRECTIONS for Eastern Channel.—To run into Spry bay by the eastern and preferable channel proceed as follows :—Pass to the westward of Redman shoal and Mad Moll reef, and between the latter and the Neverfail shoal, by keeping the eastern side of Tomlees head only just shut in behind the high bank on the eastern side of Leslie island, bearing North a little easterly. Run in upon these marks until Maloney rock and Pope head come in one, bearing W. by S.; then alter course to N. by W. $\frac{1}{2}$ W., for the western side of Tomlees head, and having passed between Bald and Ram rocks, haul to the westward round the northern end of Gerard island, from which the shallow water does not extend beyond $1\frac{1}{2}$ cables' lengths, and anchor in 7 or 8 fathoms mud, with Taylor head shut in behind the north-east point of Gerard island, bearing S. E., and Dutchtown point S.W., and not nearer than 3 cables; in order to be sufficiently far from a rocky shoal with 3 fathoms water, which is $1\frac{1}{2}$ cables off shore, and bears from the south extremity of that point N.N.E. a quarter of a mile.

This berth is recommended, but there is plenty of available room to the northward and westward; the anchorage being quite secure as long as Mad Moll reef is not opened out to the eastward of Gerard island.

Western Channel.—The western channel into Spry bay lies to the westward of Maloney shoal and Maloney rock, between them and Stoney island, and is only $1\frac{1}{2}$ cables wide. The marks leading through it are Bald rock and the eastern side of Tomlees head touching, N. by E. $\frac{1}{2}$ E.

NOVA SCO'

SPRY HAI

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Pope Harb

Ship Harbour - - 21°

THE distance between island is about 32 miles, much broken by many rocks, and sunken dangers features of the coast are v sula, presenting a cliff of r waves. These peninsulas stones and shingle, and exceed the height of 140 f

POPE HARBOUR has is only secure within Har being little more than a moor. In the bay outside

A reference to the Ad eastern side of the harbour side of Phoenix island is Pope shoals is a third of Also, that some part of t can always be seen, and the dry parts more than a of an Episcopal church, v high,—on the side of a from a distance of many chapel stands low down r

* See Admiralty Chart : N No. 2,439; scale, m = $1\frac{1}{4}$ inch Tangier Harbours, No. 2,855

CHAPTER IV.

NOVA SCOTIA :—SOUTH-EAST COAST.

SPRY HARBOUR, TO SHUT-IN ISLAND.

> VARIATION IN 1867.			
Pope Harbour	-	-	- 21° 5' W.
Ship Harbour	-	-	- 21° 30' W.
		-	Jedore Harbour - 20° 25' W.

THE distance between the western point of Spry bay and Shut-in island is about 32 miles, in a westerly direction, the coast line being much broken by many indentations, and fringed with numerous islets, rocks, and sunken dangers. Between Jedore head and Shut-in island the features of the coast are very remarkable, each headland being a peninsula, presenting a cliff of red clay to the continuous wasting action of the waves. These peninsulas are joined to the main land by beaches of rolled stones and shingle, and are more or less wooded, but none of them exceed the height of 140 feet above the sea.*

POPE HARBOUR has a depth of water sufficient for large ships, but it is only secure within Harbour island, where the space, with deep water, being little more than a cable's length across, it would be necessary to moor. In the bay outside a heavy swell rolls in during southerly gales.

A reference to the Admiralty chart will show that the dangers on the eastern side of the harbour are few, and easily avoided:—that the western side of Phoenix island is quite bold, and the channel between it and the Pope shoals is a third of a mile wide, and has a depth of 12 fathoms in it. Also, that some part of the reef off Gerard head, and of the Barrier reef can always be seen, and that the shallow water does not extend from the dry parts more than a cable's length. Lastly, observe, that the steeple of an Episcopal church, which stands on an elevation upwards of 100 feet high,—on the side of a grassy hill in rear of Bollong point,—can be seen from a distance of many miles out at sea, and that a Roman Catholic chapel stands low down near the water, on the western side of the point.

* See Admiralty Chart : Nova Scotia, S.E. Coast, Shut-in-Island to Pope Harbour, No. 2,439 ; scale, $m = 1\frac{1}{4}$ inches ; and Pope Head so Charles Island, including Pope and Tangier Harbours, No. 2,855 ; scale, $m = 4$ inches.

Supplies.—The shores of Pope and Spry harbours, as well as Taylor bay, are more thickly peopled than usual on this coast; the hills of drift clay and boulders on the main land, and also on the north side of Gerard island, being cultivated to a considerable extent. There are extensive tracts of hardwood land in the vicinity, furnishing timber for shipbuilding, and supplies of fresh provisions and water may be readily obtained.

Horse Rock.—Of the formidable dangers off Pope harbour, the Horse rock, with only 4 feet water, lies the farthest out, and from it Pope rock (in line with the east end of Ironbound island) bears N.N.W. $\frac{3}{4}$ W. $1\frac{1}{2}$ miles.

Pope Rock and Shoals.—The Pope shoals, which are exceedingly dangerous, extend more than half-way out from Pope rock towards the Horse rock, and the soundings are rocky and irregular throughout the remaining distance. Pope rock is above water, and distant three-quarters of a mile from Ironbound island, but the passage between them is rendered impassable to strangers by sunken rocks, including Drunken Dick, Soup rock, &c., and so also is the passage between the island and the main.

Schooner and Black Rocks.—All these dangers must be left to the westward in running in, and so also must Schooner rock, with only 6 feet water, which lies a quarter of a mile out from the islets at the entrance of Shelter cove, in which the fishing schooners lie landlocked in 2 or 3 fathoms at low water. From Black rock, which lies a third of a mile farther in on the same or western side, and is always above water, the shallow water does not extend beyond a cable's length to the eastward, leaving a clear channel between it and the Barrier reef, a quarter of a mile wide.

TIDES.—It is high water in Pope harbour, full and change, at 7h. 40m.; springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet; but strong winds cause great irregularities. The tidal streams are weak and irregular.

DIRECTIONS.—When bound to Pope harbour with a fair wind, refer to the chart and proceed as follows. When not less than $2\frac{1}{2}$ miles from the outer islands, bring the Episcopal church steeple in line with Gerard head, bearing N. by W. $\frac{2}{3}$ W., and these marks will lead in between Phoenix island and the Pope shoals. As soon as Pope and Taylor heads come in one, bearing E. $\frac{1}{2}$ S., alter course to N.W. by N., and it will lead midway between the reef off Gerard head and Schooner rock; and when the two western points of Harbour island come in one, bearing N. by W. $\frac{1}{2}$ W., (when they should also be in line with the Roman Catholic chapel, which is not easily distinguished,) alter course to N.N.W. $\frac{1}{2}$ W., (for the head of the harbour, so as to pass midway between Harbour island and Grum point), until the channel through the harbour and to the northward of Gerard island begins to open.

Then keep away to N.E. by N., or for the church steeple, until the

points of Long island on the bearing E. $\frac{3}{4}$ N., when run between Bollong point and $4\frac{1}{2}$ fathoms, mud. Should anchor outside on the last-bottom, and may either wa

Small craft can pass free channel between Long and landlocked anchorage, but Spry bay, through very narrow shoal between Dutchtown

TANGIER HARBOUR

the latter by a narrow passage in direction; the western side and Tangier islands.

As a harbour it is too small for ships; there are also numerous small vessels near its eastern side, and $2\frac{1}{2}$ miles

Supplies.—Around the eastern side of the main land that set tolerably good pasture for coasting, the inhabitants

DIRECTIONS.—In approaching the harbour be kept well open to the eastward to clear the Pope shoals, which may be hidden behind Sandy island. These marks, which are a stranger, who might safely

In running for the harbour, be kept by bringing Sandy Cove in line with the eastern point of Tangier island at a distance of between it and Drunken

Having passed Sandy Cove, be kept between of between $1\frac{1}{2}$ and $2\frac{1}{2}$ fathoms, Shag ledges (which dry up at low water) the western point of island where the vessel will lie on a bed of stiff mud. There are numerous rocks about this harbour, which should be avoided; therefore, with safety should not

points of Long island on the northern side of the harbour come in one, bearing E. $\frac{3}{4}$ N., when run in with those marks on, and anchor midway between Bollong point and the north-east point of Harbour island, in $4\frac{1}{2}$ fathoms, mud. Should the wind be from the eastward, the vessel may anchor outside on the last-named leading marks, and in $6\frac{3}{4}$ fathoms muddy bottom, and may either wait for a fair wind, or warp into the harbour.

Small craft can pass from this harbour, eastward, through the narrow channel between Long and Gerard islands, into a far more capacious and landlocked anchorage, but which is accessible to large vessels only from Spry bay, through very narrow and intricate channels on either side of a shoal between Dutchtown point and Gerard island.

TANGIER HARBOUR next west of Pope harbour, is separated from the latter by a narrow peninsula about 2 miles long, in a S. by E. $\frac{1}{2}$ E. direction; the western side of the channel is formed by the two Baltee and Tangier islands.

As a harbour it is too open, and deficient in depth of water for large ships; there are also numerous rocks, but it affords a secure anchorage for small vessels near its head, especially in Mason cove, which is on the eastern side, and $2\frac{1}{2}$ miles from the entrance.

Supplies.—Around the head of Tangier harbour, and also on the point of the main land that separates it from Pope harbour, there are tracts of tolerably good pasture land, from which, together with fishing and coasting, the inhabitants derive a comfortable subsistence.

DIRECTIONS.—In approaching Tangier harbour, Porcupine hill should be kept well open to the westward of Ironbound island, N. by W. $\frac{3}{4}$ W., to clear the Pope shoals; and, on the other hand, Porcupine point should be hidden behind Sandy Cove point, to clear the shallow water off Tangier island. These marks, however, might not be easily recognized by a stranger, who might safely do without them by proceeding as follows.

In running for the anchorage, avoid the ledges off Ironbound island, by bringing Sandy Cove point to bear N.N.W., or pass the eastern point of Tangier island at a distance of about 2 cables' lengths; or midway between it and Drunken Dick, which is almost always shown by a breaker.

Having passed Sandy cove and Porcupine points at a distance of between $1\frac{1}{2}$ and $2\frac{1}{2}$ cables, and midway between Whaleback and Shag ledges (which dry at low water) and the eastern shore, haul round the western point of Hog island, and anchor within it in Mason cove, where the vessel will lie landlocked in 15 or 16 feet water, over a bottom of stiff mud. There are rocks, with only 16 or 17 feet water, so scattered about this harbour, that no written directions would enable a stranger to avoid them; therefore, vessels of too great draught to pass over them with safety should not attempt to run in.

SHOAL BAY, the next inlet west of Tangier harbour, is sufficiently wide for large ships to beat in and out of with ease, and possesses a good depth of water, and excellent anchorage. The coasting schooners anchor off Shellnut cove in 3 or $3\frac{1}{2}$ fathoms, mud, with the Mary island in one with Borgle bluff (the north-east extremity of Charles island), bearing S. by E.; but the only secure anchorage for large ships is on the opposite or south-western side, near the head of the bay, where the Middle ground, with only 12 feet water, and which bears N.W. $\frac{2}{3}$ N., $5\frac{1}{2}$ cables from the north point of Charles island, and N.E. by E. $\frac{2}{3}$ E., 3 cables from Moose island, is the only danger much in the way.

There is a narrow and intricate channel of communication between Shoal bay and Tangier harbour, lying between the Inner Baltee island, and the mainland; there is also a passage inside Tangier island, but its dangers render it unavailable, especially for strangers.

Supplies.—The head of Shoal bay is well settled, the hills of red clay affording a productive soil, but the islands are almost everywhere barren. Supplies of fresh provisions, wood, and water may be obtained.

Anchorage.—Vessels should anchor in Shoal bay with Borgle bluff and Outer island touching, bearing S.E. $\frac{1}{2}$ E.; either midway between the Middle ground and the north point of Charles island in $5\frac{1}{2}$ fathoms, sand, when Round islet (in one with Tucker point) should bear S.S.W. $\frac{1}{4}$ W., distant 2 cables' lengths; or else to the north-west of the Middle ground, in $4\frac{1}{2}$ fathoms, mud, with Hardwood island seen through the Tickle, and bearing W.S.W.; the latter berth being the more preferable of the two.

DIRECTIONS.—In running for this anchorage, from the eastward, round Outer island at the distance of half a mile or more, in order to avoid the reefs off it, and pass to the westward of Baltee shoal (on which, however, the least water is 4 fathoms), by bringing Borgle bluff to bear N.W. $\frac{1}{2}$ N. as the vessel runs up the bay.

Leave Net shoal, which has 3 fathoms water on it, to the eastward, by keeping the remarkable and highest red clay cliff (already mentioned) open to the westward of Mary island, bearing N.W. by N. The same marks lead close to the south-west of Eve ledge, the only other danger in the way, which is awash at high water, and therefore always visible.

This ledge is bold on the south-west side, and having passed between it and the north point of Charles island (where the channel is clear, and nearly half a mile wide), the Middle ground will be avoided, in passing between it and Mary island, by not bringing Borgle bluff to the eastward of S.E. by S. until the south sides of Mary and Tuff islands come in one, bearing E. $\frac{1}{4}$ N., or until Hardwood island appears through the Tickle.

From this position keep away to the westward, and anchor on the line of Borgle bluff and Outer island touching, S.E. $\frac{1}{2}$ E., with the whole of

Hardwood island seen in 5 fathoms, over mud, although some swell. The dangers on the point, as well as Borgle bluff, may be avoided by keeping the remainder of the bay open of Borgle bluff.

SHIP HARBOUR

5 miles in length, the width at the narrowest is a mile across. The shores are steep, and lie between the islands, they are amongst the highest, with an elevation of 100 feet.

The space between the islands and the mainland, is almost completely sheltered to Day cove, where supplies may be obtained in less than an hour, although the swell that rolls in at high water is considerable.

The western shore is composed of soft eastern shore as far as the clay, which attain a height of 100 feet in boulders—afford a good pasture for cattle and sheep.

The north-eastern shore being bare, and the islands into the head of the bay, on the western side discharges the water into the bay. The Episcopal church stands on the western side.

Supplies.—Ship families own schools, with lumbering and agriculture, furnish them with place is a rapid Salmon point. Supplies are abundant.

DANGERS ON ENTRANCE

entrance to Ship Harbour a fleet of principal dangers on the coast.

* See Admiralty Pilotage, 17698.

Hardwood island seen through the Tickle, bearing W.S.W., and in $4\frac{1}{2}$ fathoms, over mud, as already pointed out. This anchorage is quite safe, although some swell may roll in during or after heavy south-east gales. The dangers on the western side of the bay, namely, the ledges off Charles point, as well as Borgle shoal, which has 16 feet water, may be avoided by keeping the remarkable and highest red clay cliff, at the head of the bay open of Borgle bluff, bearing N.N.W.

SHIP HARBOUR is an indentation of considerable extent, being nearly 5 miles in length, though the narrows at the entrance are barely a quarter of a mile across. The approaches to the harbour are comparatively bold and steep, and lie between Charles and Nichol islands, of gneiss, and barren; they are amongst the largest on the coast, but in no part do they exceed an elevation of 100 feet above the sea.*

The space between Nichol island on the western side, and the mainland, is almost completely occupied by islands and shoals, which afford shelter to Day cove, where secure anchorage for small vessels may be obtained in less than 4 fathoms, in which position they will be out of the swell that rolls in after heavy southerly gales.

The western shore of Ship harbour is well settled, and so also is the eastern shore as far in as Salmon point; for the hills of drift sand and clay, which attain an elevation of more than 200 feet—though abounding in boulders—afford a sufficiency of hay and vegetables for the support of cattle and sheep.

The north-eastern shore within Newcombe brook is barren, the hills being bare, and the extreme height 240 feet. Little river flows into the head of the harbour at 5 miles from the entrance; and near it, on the western side, a larger and rapid stream, on which there are mills discharges the waters of Ship Harbour lake. A Roman Catholic chapel stands on the western shore at $1\frac{1}{4}$ within the entrance, and an English Episcopal church a mile farther in on the same side.

Supplies.—Ship harbour has been long settled; several of the principal families own schooners employed in the coasting trade, which, together with lumbering and fishing, and the limited produce of their cattle and fields, furnish them with a comfortable subsistence. The best watering place is a rapid brook on the eastern shore, about half a mile within Salmon point. Supplies of fresh provisions may be obtained.

DANGERS on Eastern Side of Entrance.—Although very narrow, the entrance to Ship harbour is not difficult with a fair wind; within the harbour a fleet of the largest ships may be moored in security. The principal dangers on the eastern side of the entrance of Ship harbour, are

* See Admiralty Plan of Ship Harbour, with View, No. 2,624; scale $m = 3$ inches. 17698.



the ledges off Charles island, the outermost being Bull rock with only 4 feet water, and which is often shown by a breaker.

It bears from Charles point (the south extremity of Charles island) S.E. $\frac{1}{2}$ S., 6 cables, and, together with numerous other rocks above and under water, will be cleared to the southward by keeping Long point (the southern extremity of Nichol island) open south of Bear rock, bearing W. $\frac{1}{2}$ N. The mark that leads clear to the westward of these dangers, including the ledges farther in off the Western islands, is Passage island, just hidden behind Wolf point, bearing N.W. $\frac{1}{2}$ W., and Ship rock seen over Bald island, and in one with Tucker point bearing N. by W. $\frac{3}{4}$ W.

Bear Rock, which is small, rises 4 feet above high water, and is quite bold on the eastern side; but a reef, mostly dry at low water, extends from it $1\frac{1}{2}$ cables to the westward. It lies nearly in the middle of the entrance between the islands, with a clear channel on either side, about $4\frac{1}{2}$ cables broad.

DANGERS on Western Side.—In approaching the harbour, the principal dangers lie outside the islands off its entrance. Friar island and Friar ledges lie on the western side, and off them Flat ledge always above water, from which the West Bull rock, with only a fathom water on it, bears W. by S. $\frac{1}{2}$ S., a quarter of a mile, and the East Bull rock, with 4 fathoms on it, East, $1\frac{3}{4}$ cables' lengths. Egg island lighthouse, seen over Bald rock, W. $\frac{1}{2}$ S., leads nearly half a mile to the southward of these dangers.

There is also the Middle ground with 4 fathoms water, bearing from Flat ledge E.N.E. 6 cables, and the more dangerous N.E. shoal, with $2\frac{1}{2}$ fathoms water, bearing from the eastern end of Friar ledge N.E. by E. distant $4\frac{1}{2}$ cables' lengths, and from Bear rock W. by S. three-quarters of a mile. These dangers lie to the southward of Nichol island, and vessels approaching the harbour should pass to the southward and eastward of them all. Farther in, the rocks and shallow water off the eastern side of Nichol island, including Pot rock with 4 fathoms on it, will be avoided, if Wolf point (the high north-eastern extremity of Nichol island) be not brought to bear to the northward of N.N.W.

There are also several outlying dangers, which are equally in the way of vessels running along the coast, or approaching this harbour. These are, Little rock, with 4 fathoms, bearing from Flat ledge S.S.E. about 2 miles; Broad breaker, with 4 fathoms, bearing from Charles point S. by E. easterly $1\frac{1}{2}$ miles; Silver shoal, with 5 fathoms, lies from Charles point S.E. $\frac{3}{4}$ S. $3\frac{3}{4}$ miles, and from the south-east point of Outer island, nearly South $2\frac{3}{4}$ miles. On all the above shoals the sea breaks occasionally after heavy gales.

TIDES.—It is high water, full and change, in Ship harbour at 7h. 54m.;

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ordinary springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet; but winds cause great irregularities both in the times and rise; extraordinary springs rising 7 feet, and neaps only 4 feet.

The ordinary rate of the tidal streams does not exceed half a knot; but after heavy rains or the melting of winter snow, as well as after strong south-easterly gales, that have driven the water into the harbour, the ebbing stream is said to be much stronger.

DIRECTIONS:—From the Eastward.—Approaching Ship harbour from the eastward with a fair wind, Bull rock, and the other ledges off Charles island, will be avoided by keeping Long point open south of Bear rock, W. $\frac{1}{2}$ N., until Passage island disappears behind Wolf point, with the latter bearing N.W.; then steer for Wolf point keeping Passage island shut in until past the Western islands; then, midway between Wolf point and Bald island, and thence for the harbour's mouth.

Having arrived abreast Passage island, haul to the westward towards Day cove, until the house on Eisan point is in one with the north-east point of Caroline island, and seen over the small shingle islet off Salmon point, and nearly touching the clay cliff of the latter, bearing N.N.W. $\frac{1}{3}$ W. Keep these marks exactly on, and they will lead in past Black rock (which lies outside Black point on the eastern side of the entrance), and O'Brien reef, which lies half a mile further in, and also on the eastern side of the narrow channel.

After passing between O'Brien reef and Beach point, of shingle (where the channel, between the 3 fathoms line, is only 70 fathoms wide), haul in more to the westward, and anchor midway between Salmon point and the western shore in 7 fathoms, or anywhere between Salmon point and Whale island in 4, 5, or 6 fathoms; the bottom being of mud and the shelter complete. Caroline island lies over on the western side of the harbour, a mile within Beach point, and may be easily recognized by a round wooded hill, 190 feet high, near its north-east point.

If the wind should be unfavourable for running in, anchor outside in Day cove, either midway between Passage island and Day point in $4\frac{1}{2}$ fathoms, mud; or further in to the westward, in any depth from 4 to $2\frac{1}{2}$ fathoms, according to the size of the vessel. In the first named berth the Western islands are just shut in behind the eastern point of Passage island, bearing S.E. by E., and the vessel will only be exposed to the swell rolling round the latter after a south-easterly gale; further in there is little or no swell.

With a beating wind the passage to the eastward of Bear rock is preferable for a stranger, for the rock is steep to on that side, and the leading marks towards the ledges off Charles island, including the Western islands may be used with confidence.

An inspection of the chart will show that shoals commence immediately within Salmon point on the one side, and Whale island on the other; and that the channel becomes exceedingly intricate after passing Caroline island and the opposite Mussel island, 2 miles within the entrance. If the very narrow channel between Garret ledge and the White rocks were buoyed, 21 feet at low water could be carried through into the clear part of the harbour within Eisan point, where the depth is 9 fathoms with space sufficient for a large fleet to lie in safety.

From the Westward.—In approaching Ship harbour from the westward, Ship rock (which gives its name to the harbour) may be easily recognized, being a remarkable cliff of clay slate, 70 feet high, on one of the islands on the eastern side of the passage, and a mile within Charles island. When seen from a distance at sea the cliff resembles a ship under sail, and, together with the western extremities of Bald island and Tucker point, forms the leading mark for running in on either side of Bear rock.

When running in with the wind from the westward, proceed as follows:—To clear the East and West Bulls, steer to the eastward with Egg Island lighthouse, and Bald rock in line; or pass outside the Flat ledge (which can always be seen) at the distance of a third of a mile or more; and when Ship rock comes in one with the western point of Bald island, N. $\frac{2}{3}$ W., steer in with this mark on, between the N.E. shoal and the reef off Bear rock. Having passed the latter, steer so as to pass midway between Wolf point and Bald island (from either of which the shallow water does not extend beyond 60 fathoms), and thence for the harbour's mouth, as before directed.

OWL HEAD BAY derives its name from Owl head, which has a remarkable round mound and cliff at its extremity, and is the most prominent point on the western shore of the bay, $1\frac{1}{4}$ miles within the entrance. The bay is an indentation next west of Ship harbour, and is much frequented by coasting vessels, as an occasional stopping place, on account of the facility with which they can beat in or out, the channel being comparatively clear, and not less than half a mile wide. They anchor near the head of the bay, and on either side according to the wind; but to be well sheltered, they must lie in less than 3 fathoms at low water.

The greatest danger to be avoided in entering this bay is Owl rock, which lies on the eastern side of the channel, with only 9 feet water, and bears from the south point of Friar island N.W. $\frac{1}{2}$ W. three quarters of a mile. The peninsula of Wisdom point (at the head of the bay) touching Cable point, N.N.W., leads clear to the westward of it, and also of the reef which runs out $3\frac{1}{2}$ cables to the S.W. from Friar island, and which can almost always be seen. On the western side, the only dangers in the way are a rock, with 10 feet water, lying North $1\frac{1}{2}$ cables from Black

ledge, and the reef in the points are dangers. There are

False Passage be of this bay, is only be carried through a

EGG ISLAND LI 40 feet high; it lies western side of the numerous islands off

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Bald Rock, about from Egg island sides, but reefs exist and there is a shoal W. by S. a quarter wide between Bald and the other island it is rendered dang

ledge, and the reef running out $1\frac{3}{4}$ cables from Cuckhold head. Farther in the points are comparatively bold, and the bay free from hidden dangers. There are a few settlers at the head of the bay.

False Passage between Nichol and Cable islands, on the eastern side of this bay, is only fit for boats or small craft, 4 feet being all that can be carried through at low water.

EGG ISLAND LIGHT.—Egg island is of rock, $1\frac{1}{2}$ cables in length, and 40 feet high; it lies $3\frac{3}{4}$ miles to the westward of Black ledge (on the western side of the entrance to Owl Head bay), and is the outermost of the numerous islands off this part of the coast.

The lighthouse, of wood, octagonal in shape, and painted with black and white vertical stripes, stands in the centre of the island, and from an elevation of 85 feet above high water, is exhibited a *revolving* light, attaining its greatest brilliancy every minute, and having alternate *red* and *white* faces; in clear weather the light should be visible from a distance of 14 miles.

Pyche and Grizzle Rocks.—Outside Egg island, at the distance of a quarter of a mile to the southward, are the Transport ledges, always above water, as well as the more dangerous Pyche rock with only 3 fathoms water; it lies with Jedore rock and Egg island in line W. by N. $\frac{3}{4}$ N., and is three quarters of a mile from the latter island. The Grizzle rock, having 4 fathoms on it, lies with the north-east points of Egg and Long islands, in line N.W. $\frac{2}{3}$ N., and is distant from the former island a little more than half a mile.

Flint Ledge, about 10 feet above high water level, lies N. by E. seven-eighths of a mile from Egg island, the channel between being clear, with the exception of Passage rock, which however has $4\frac{3}{4}$ fathoms on it.

Between Flint ledge and the south point of Long island, are the Tomfool shoals, with 3 fathoms water over them; and within these are Stoddart and Goose ledges, lying off the entrances of Clam and Little harbours, which admit only small craft and boats. In order to avoid extending these remarks to an inconvenient length, the seaman is referred to the published chart as the safest guide for these localities, as well as for the dangers in Clamb bay.

Bald Rock, about 8 feet above high water, is of small extent, and bears from Egg island E. $\frac{1}{2}$ S., $2\frac{1}{2}$ miles. It is bold on the north and south sides, but reefs extend from either end of it to the distance of $1\frac{1}{2}$ cables; and there is a sunken rock, with only 6 feet water, bearing from it W. by S. a quarter of a mile. The passage is clear, and a third of a mile wide between Bald rock and the shoal water off Bald island; within which, and the other islands next eastward, there is a passage for small craft, but it is rendered dangerous by sunken rocks.

Barse Rock and Hurley Shoal are small rocky patches with 4 fathoms on them, and deep water all around. They bear from Bald rock, nearly S. by W., $2\frac{1}{2}$ miles, and S. by E., $2\frac{1}{4}$ miles respectively; as they lie directly in the way of vessels running along the coast, they are dangerous to large ships. The sea breaks over them in heavy gales.

JEDORE HEAD.—The low shingle point of this remarkable headland, which attains an elevation of 200 feet, lies W.N.W., 8 miles from Egg island. On the western side of the head are cliffs of red clay 70 feet high, and on its south east side stands Jedore cliff—also of red clay, and forming an excellent landmark—which attains an elevation of 135 feet. Off the pitch of the point, the 5 fathom line extends half a mile to the south-west.

JEDORE HARBOUR:—As the discussion of the numerous dangers known as the Jedore ledges, would be much simplified by describing them in connexion with Jedore harbour, off the entrance of which these dangers are scattered, it has been considered expedient to adopt a plan which is deemed likely to render the subject more intelligible to the navigator.

Jedore Harbour is the first ship harbour to the eastward of Halifax. Its entrance, which is distant $2\frac{1}{4}$ miles E.N.E. from Jedore head, is $4\frac{1}{4}$ cables wide from West head to the opposite shore; but Thorn shoal, with only 9 feet water on it, stretches out from the western shore just outside and across the entrance, so as to be greatly in the way of vessels entering. The channel between this shoal and East head is $3\frac{1}{4}$ cables wide between the 3-fathom lines, and carries a depth of 4 fathoms at low water over what may be termed the bar.

On the eastern side of the harbour and immediately within the entrance is Bar point, composed of shingle and enclosing a pond; and from it Bar shoal, a continuation of the shingle of Bar islet, extends more than half way across to the western shore, diminishing the breadth of the channel to a cable's length, but forming no bar, the depth there being $6\frac{1}{2}$ fathoms. The sandy beach of Marsh point will be seen running out from the western shore at $1\frac{1}{2}$ miles within the entrance. The anchorage is secure within this beach in 7 fathoms, over mud, and in a channel $1\frac{1}{2}$ cables wide; but outside the bottom is of sand, and a considerable swell rolls in with strong winds from the southward; nevertheless, the coasting schooners anchor there in fine summer weather.

The channel, between flats of mud, weeds, and mussel beds, which dry at low water, continues clear and deep enough for the largest ships up to the Bown islands, off English point, which separates the Eastern and Western Arms of the harbour, at the distance of 4 miles from the entrance. Vessels may pass close round to the eastward and northward of these small islands, to the secure anchorage within or to the north-west of

them; but the entrances leave only very narrow than 14 or 15 feet can be

For all within these chart, since no written d are navigable, for any v including Salmon inlet which is 2 miles above t of the inlet $1\frac{1}{2}$ miles up

The coast road, after continued to this bridg entrances of Navy pool some land susceptible of the Western Arm, w is tolerably good and h dividing the Arms. F on the eastern side a appearing.

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DANGERS of the narrow and crooked c Thorn and Bar shoal dangers, and direction seaman to use it as a h

Jedore Rock.—Jed the westernmost of with a rocky ledge ex from Jedore head S. I with the exception of ever, the sea very rare

Arnold Rock, is the which it bears S.S.W. almost always be seen well as Arnold shoal, southward, with 6 fat to the westward of Je

Old Man, Mehann 12 feet high, and lies

them ; but the entrances to the Arms are nearly closed by shoals, which leave only very narrow and intricate channels, through which not more than 14 or 15 feet can be carried at low water.

For all within these Arms we must refer the seaman to the Admiralty chart, since no written description would avail ; only remarking that they are navigable, for any vessel that can enter them, nearly to their heads, including Salmon inlet to the rapids at the entrance of Salmon river, which is 2 miles above the long wooden bridge which crosses the entrance of the inlet $1\frac{1}{2}$ miles up the Eastern Arm.

The coast road, after passing the church at the Western Arm, is continued to this bridge, and from it to other bridges which cross the entrances of Navy pool and Oyster pond, where there is a saw-mill and some land susceptible of cultivation ; but the best farms are at the head of the Western Arm, where the land, although abounding with boulders, is tolerably good and heavily timbered, as is also the case on the point dividing the Arms. Farther out the land is comparatively barren, and on the eastern side almost entirely so, the bare granite everywhere appearing.

Supplies.—The scattered population along the shores of Jedore harbour depend principally upon coasting, fishing, and lumbering for subsistence, and could afford only a very limited supply of fresh provisions to shipping. Water may be obtained from a small stream near Blakely cove, on the western shore, $3\frac{1}{2}$ miles within the entrance.

DANGERS of the ENTRANCE.—To render Jedore harbour, with its narrow and crooked channel, easy of access, buoys would be required on Thorn and Bar shoals ; meanwhile, the following description of the dangers, and directions for their avoidance, will enable the intelligent seaman to use it as a harbour of refuge in case of necessity.

Jedore Rock.—Jedore rock, of clay-slate, and 50 feet in height, is the westernmost of the small islands off the mouth of the harbour, with a rocky ledge extending $1\frac{1}{2}$ cables from its western end. It bears from Jedore head S.E. $\frac{1}{2}$ E. $1\frac{1}{2}$ miles, the passage between being clear, with the exception of some patches of 5 and 6 fathoms, on which, however, the sea very rarely breaks.

Arnold Rock, is the only danger to the westward of Jedore rock, from which it bears S.S.W. half a mile distant ; it dries at low water, and can almost always be seen ; but to ensure passing to the westward of it, as well as Arnold shoal, which lies three quarters of a mile farther to the southward, with 6 fathoms on it, the harbour's mouth must be kept open to the westward of Jedore rock.

Old Man, Mehanny, and Gull Rocks.—The Old Man is a small rock 12 feet high, and lies with the centre of Jedore rock (in line with Jedore

head) N.N.W. $\frac{1}{4}$ W. two thirds of a mile. It is steep-to on the eastern side, but a small sunken rock, with only 4 feet water on it, lies a cable's length from it S.W. by S. Jedore head open to the westward of Jedore rock, leads to the westward of it; the passage is clear between it and Arnold and Jedore rocks. There is also a clear passage between the Old Man and the Mehanny rocks, some of which are dry at low water, and can almost always be seen. They bear from the Old Man N.E. by E. three quarters of a mile; and beyond them in the same direction Gull rock, together with Barren and Roger islands, will be seen; the latter lying half a mile off shore, and three quarters of a mile to the eastward of the harbour's mouth.

Macdonald Rock, with 14 feet water, bears West $1\frac{1}{8}$ miles from the south point of Long island; and from it the East head of Jedore harbour, and west point of Barren island, in line, are seen over the western Spritsail rock, bearing N.W. $\frac{1}{2}$ N.

Hopkin Rock, has 11 feet water, and from it the Old Man, (with the breakers on Arnold rock just open to the southward of it) bears West $1\frac{3}{8}$ miles; Mehanny rocks, W.N.W. one mile; the east end of Spritsail rock, North, one mile. Both these rocks are very small, with deep water all around them, and break only in heavy weather.

JEDORE LEDGES:—South-West Ledges.—Jedore ledges comprise the whole of the scattered off-lying dangers to the southward of Jedore harbour, and in consequence of their distance from the coast, and proximity to deep water, require to be approached with extreme caution.

South-West Ledges, so named in reference to Egg island, are three rocky patches which dry at low water, and cover a space 3 cables long in a S.W. $\frac{1}{2}$ W. direction. From the north-easternmost ledge, the south point of Long island bears N.N.E. $\frac{1}{2}$ E., $1\frac{1}{8}$ miles, and the passage is clear between them. The south-westernmost ledge is covered only during spring tides, and can therefore almost always be seen.

Bull Rock, bearing S.E. $\frac{1}{4}$ S., $6\frac{1}{4}$ cables' lengths from the last-named danger, is one of the most dangerous of the ledges, having only a depth of 5 feet over it at low water; during high tides it is marked by breakers, but only when a heavy sea is running. From it the south end of Long island bears N. by E. $\frac{1}{4}$ E. $1\frac{3}{4}$ miles, and Egg island E.N.E. 2 miles.

Bull Shoal, with 3 fathoms water, bears W. by S. $\frac{1}{2}$ S., half a mile distant from Bull rock, and South, nearly two-thirds of a mile from the south-westernmost of the South-west ledges. From it the Old Man, Jedore rock, and Jedore head are nearly in one, bearing N.W. $\frac{1}{2}$ W. It rarely breaks, and is therefore extremely dangerous.

Brig Rock has only 3 feet at low water, when its position is usually marked by a breaker; during low spring tides and a heavy sea, it

top becomes visible E. by N. $\frac{1}{2}$ N., $3\frac{3}{4}$ mil N.W. by N., about 3 ledges, which always most dangerous in fit by a breaker.

Brig Shoal, with 5 Brig rock; from it B are nearly in line, be very heavy gales, w

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THE POLLOCKS, grounds, on which th less than $5\frac{1}{2}$ fathoms any shoaler ground.

Inner Pollock, the North and South, ha $5\frac{1}{2}$ fathoms, near its with the eastern ext Old Man, in one w miles; and Egg isla

Outer Pollock, h off on the same line bearing E. by N. $\frac{3}{4}$ l

East Pollock is around it, and bears cliff open to the w them all.

TIDES.—At Ar harbour, it is high rise $6\frac{1}{2}$ feet and ne after high and low v entrance of the ha 2 feet less, and the of the flood tide is f the westward of it.

DIRECTIONS.—westward, pass mic rock, steering E.N. steep bank (not th

top becomes visible between the waves. Egg island bears from it E. by N. $\frac{1}{2}$ N., $3\frac{3}{4}$ miles; the Old Man (on with the centre of Jedore cliff) N.W. by N., about 3 miles; and the westernmost of the South-west ledges, which always shows, N.E. by E. $\frac{2}{3}$ E. $1\frac{1}{2}$ miles. This rock is most dangerous in fine weather, and at high water, when it is not shown by a breaker.

Brig Shoal, with 5 fathoms on it, bears S.E. by S. 4 cables from the Brig rock; from it Bull shoal, Bull rock, and the south side of Egg island are nearly in line, bearing E. by N. $\frac{3}{4}$ N. This shoal is dangerous after very heavy gales, when it is said to break at irregular intervals.

The eastern extremity of Jedore cliff in one with the Old Man, bearing about N.N.W. $\frac{1}{4}$ W., leads 4 cables to the westward of Brig rock and shoal, and between them and the East Pollock.

THE POLLOCKS, consisting of three distinct patches, are rocky fishing grounds, on which the sea breaks after heavy gales, but on which nothing less than $5\frac{1}{2}$ fathoms could be found; neither do the fishermen know of any shoaler ground.

Inner Pollock, the largest of the three patches, is half a mile in extent North and South, having 7 fathoms on its south end, and the least water, $5\frac{1}{2}$ fathoms, near its northern extremity; from it Jedore rock, (in one with the eastern extremity of Jedore cliff,) bears N. by W. 3 miles; the Old Man, in one with the West head of Jedore harbour, North, $2\frac{1}{2}$ miles; and Egg island, E. by N. $5\frac{1}{3}$ miles.

Outer Pollock, has 6 fathoms on it, and lies nearly a mile farther off on the same line of bearing from Jedore rock, and with Egg island bearing E. by N. $\frac{3}{4}$ N., $5\frac{1}{2}$ miles.

East Pollock is a small patch of 7 fathoms, with deep water all around it, and bears from the Inner Pollock E. $\frac{1}{4}$ N. half a mile. Jedore cliff open to the westward of Jedore rock, leads to the westward of them all.

TIDES.—At Arnold cove, $2\frac{1}{2}$ miles within the entrance of Jedore harbour, it is high water, full and change at 7h. 45m.; ordinary springs rise $6\frac{1}{2}$ feet and neaps $4\frac{3}{4}$ feet. The streams change almost immediately after high and low water, and do not exceed the rate of 2 knots. In the entrance of the harbour the times will be a few minutes earlier, the rise 2 feet less, and the ordinary rate of the streams one knot. The in-draught of the flood tide is felt several miles off this harbour, and off the inlets to the westward of it.

DIRECTIONS.—To run for the anchorage in Jedore harbour from the westward, pass midway, or nearly so, between Jedore head and Jedore rock, steering E.N.E., so as to keep outside the Thorn shoal, until the steep bank (not the sand beach) of Marsh point touches the shingle

beach of Bar point, bearing N. by E. $\frac{1}{2}$ E. Run in with the above marks on, until Roger island touches East head, bearing S.E. by E.; then steer N. by W. to clear the Bar shoal.

When from one to $1\frac{1}{2}$ cables from the shingle beach on the western shore of the harbour, keep away to the northward and eastward, so as to run along that shore, at any distance between a cable and half a cable's length, until up to the sand beach of Marsh point, which must be rounded to the northward at the same distance, and anchor between it and Pea point on the opposite shore, in about 7 fathoms, over muddy bottom. At or near low water, when a part of the Bar shoal is shown by breakers, and the steep mud flats are visible on either side of the channel, is the most favourable time for entering this harbour.

In approaching the harbour from the southward, the harbour's mouth should be seen between the Old Man and the Jedore rock, or the whole of Jedore cliff should be open to the westward of Jedore rock, to pass to the westward of the Pollocks, on which, however, no less than $5\frac{1}{2}$ fathoms could be found. Leaving Arnold and Jedore rocks to the westward, pass midway between them and the Old Man, taking care to avoid the sunken rock off the latter; or, if preferred, pass to the eastward of the Old Man, which is steep to on that side, and when approaching the harbour's mouth bring the marks on for running in, namely, the steep bank (not the sand beach) of Marsh point and the shingle beach of Bar point touching, and proceed as before directed.

In approaching Jedore harbour from the eastward, coasting vessels pass inshore of Egg island, and between Long island, and the south-west ledges, leaving the outermost ledges to the southward; but this passage should only be attempted by those who are possessed of local knowledge, for Macdonald and Hopkin rocks lie nearly in the way, and are the more dangerous because they seldom break. An additional reason why this inshore passage should be avoided, is the fact, that with southerly or easterly winds, a dense fog frequently sets in very suddenly, and it would be perilous in the extreme for a stranger to be surprised by it among the ledges.

Vessels running along this part of the coast should pass outside all the Jedore ledges, and at night, or during foggy weather, should not approach within the depth of 40 fathoms, for the soundings are deep and very irregular near them all. There are 30 fathoms less than half a mile to the southward of Brig shoal and Outer Pollock.

FISHING GROUNDS.—Of the dangers just described the Hopkin and Macdonald rocks, Tom-fool shoals, Pyche and Grizzle rocks, as well as Bull and Brig shoals near the rocks of the same names, were discovered by parties engaged in the Admiralty Survey, under Captain Bayfield; as

were also the following shoaling of the water, can not otherwise dangerous. island S.S.E. $\frac{3}{4}$ E., $6\frac{3}{4}$ miles least water on them being from which the Duck bank and the John bank, with

CLAM BAY.—Immediately Roger and Barren islands or between in case of ne vessels in fine summer. Outside these islands toward of them Middle rocks, Duck island, with Loaf and Goose island, which affords no safe shipping, the seaman is Long island, three quarters from the East head of J distinguished.

MUSQUIDOBOIT IN west of Jedore head, i beach of shingle), distar ing coast forming a sha by three distinct arms o Musquidoboit inlet, immediately within Je islands, and is navigabl receives the waters of entrance of the princip inlet, and $1\frac{3}{4}$ miles N.N carried at low water; b directly in the way, and

Within the bar there wide, and between fl low water. At about narrow, and only 7 or with the tide to the he

The most favourable water, when the Duke as well as the mud flat

Harbour Islet lie

were also the following rocky fishing grounds, on which the sudden shoaling of the water, causes at times a very heavy sea; but which are not otherwise dangerous. Of these, the Yankee bank bears from Shut-in island S.S.E. $\frac{3}{4}$ E., $6\frac{3}{4}$ miles; and the Darby bank, S.E. $\frac{1}{4}$ S., $6\frac{3}{4}$ miles, the least water on them being 14 fathoms. The other two lie off Egg island, from which the Duck bank, with 7 fathoms, bears S. by W. $\frac{1}{3}$ W., $1\frac{1}{2}$ miles; and the John bank, with 12 fathoms, S. $\frac{1}{2}$ E., $2\frac{1}{2}$ miles.

CLAM BAY.—Immediately to the eastward of Jedore harbour are Roger and Barren islands, already noticed, which vessels may pass within or between in case of necessity, and which may afford shelter to fishing vessels in fine summer weather, but no safe anchorage for ships. Outside these islands are Gull and Mehanny rocks, and to the eastward of them Middle rock, Sprintsail, Sister, North Sister, and Siteman rocks, Duck island, with its ledges, rocks, and shoals; and the Sugar Loaf and Goose island, with its ledges. These all lie across Clam bay, which affords no safe anchorage, and as they are out of the way of shipping, the seaman is referred to the chart for their relative positions. Long island, three quarters of a mile in length, 50 feet high, and bearing from the East head of Jedore harbour S.E. by E. 4 miles, may be easily distinguished.

MUSQUIDOBOIT INLET.—The most salient point of the coast, next west of Jedore head, is Shut-in island (connected with the main by a beach of shingle), distant $10\frac{1}{4}$ miles in a westerly direction; the intervening coast forming a shallow bay, whose shores are irregular and broken by three distinct arms of the sea, having a general northerly trend.

Musquidoboit inlet, the largest and easternmost of the three, lies immediately within Jedore head to the westward; it contains many islands, and is navigable for small craft and boats 7 miles inland, where it receives the waters of the Musquidoboit river. Over the bar, at the entrance of the principal channel,—which is on the eastern side of the inlet, and $1\frac{3}{4}$ miles N.N.W. from Jedore head,—a depth of 10 feet can be carried at low water; but Dunbrock rock, with only 3 feet water on it, lies directly in the way, and renders the entrance both difficult and dangerous.

Within the bar there is a depth of 4 fathoms in a channel $1\frac{1}{4}$ cables wide, and between flats of sand, mud, and weeds, which uncover at low water. At about 4 miles within the bar the channel becomes very narrow, and only 7 or 8 feet deep, but small craft and boats can ascend with the tide to the head of the inlet.

The most favourable time for a stranger to enter this inlet is at low water, when the Duke rocks and Bull reef on either side of the entrance, as well as the mud flats on either side of the channel, become visible.

Harbour Islet lies three quarters of a mile off the entrance of

Musquidoboit inlet, and bears from Jedore head N.W. $\frac{3}{4}$ W. about $1\frac{1}{2}$ miles. It is small and stony, and from it a rocky shoal, on which are the Musquidoboit ledges, extends upwards of a mile to the southward, and to within half a mile of the Musquidoboit shoal. A depth of $2\frac{1}{2}$ fathoms may be carried past Harbour islet on either side, but it is all covered with breakers during a strong southerly wind, and is altogether an exceedingly dangerous place.

Musquidoboit Shoal is of rock, and 6 cables long, from N.E. to S.W. The least water on it, 3 fathoms, is nearly in its centre and bears from Jedore head W. by S., distant 2 miles.

Perpisawick Shoal is a similar patch of rock with $4\frac{3}{4}$ fathoms water on it, bearing E. $\frac{3}{4}$ S. $5\frac{1}{2}$ miles from Shut-in island, and S. $\frac{3}{4}$ W. $2\frac{1}{2}$ miles from Perpisawick head. There are irregular soundings of $6\frac{1}{2}$ and 7 fathoms for a short distance around it; and 16 fathoms outside, or to the southward of it, within the distance of half a mile.

Pat Shoal is a small rocky patch, with only $4\frac{1}{2}$ fathoms water, bearing E. $\frac{3}{4}$ N. nearly three miles from Shut-in island, and S. by W. $1\frac{1}{2}$ miles from Story head. There is a depth of 12 fathoms, at a quarter of a mile to the southward of it.

These shoals—the two former of which lie outside a line drawn from Shut-in island to Jedore head—are exceedingly dangerous to large ships. The Musquidoboit is frequently marked by breakers; the Pat and Perpisawick only occasionally, after heavy gales, when they break at irregular intervals, and become dangerous to small craft and boats.

Codray and Round Shoals lie nearer in-shore, and are, therefore, less in the way of vessels; the least water on them is $4\frac{1}{4}$ fathoms. The former bears from Perpisawick head—the reefs off which extend nearly out to it—S.W. by S. nearly a mile; and the latter from Flying point, on the western side of the entrance of Musquidoboit inlet, S.W. $\frac{1}{2}$ W., about the same distance.

PERPISAWICK INLET, is half a mile wide at the entrance, which is on the west side of Perpisawick head. After crossing the bar of sand, about a mile within the entrance, (on which there are only 6 feet at low water,) there commences a narrow channel, between mud flats uncovered at low water, which is navigable to the head of the inlet, a direct distance of 5 miles, for any vessel that can cross the bar. Within a mile from the head of the inlet the mud flats retire on either side, leaving an open space, in which there are 9 fathoms water. There are reefs off the entrance points of these inlets, and a small rock, with only 6 feet water on it, lying a quarter of a mile off the western side of Perpisawick head. On these the sea breaks heavily, as it does also on the bars, which are very dangerous to boats.

CHISSETCOOK INLET

between Cape Entry and island N.E. by E. $3\frac{3}{4}$ miles

This inlet extends 5 miles of Chissetcook and other islands several islands in it forming shipping, having only 3 feet principal channel, which continues to the head of wind through flats of sand,

The shores of these inlets where the road from Dan and Guysborough.

TIDES.—At the entrance of Musquidoboit inlets it is high water rise $4\frac{1}{2}$ feet, and neaps at the entrances is from 2 winter's snow, have been in the entrance of the Musquidoboit inlets.

SHUT-IN ISLAND, 3

half a mile from Graham shingle. It forms the western harbour.

THREE FATHOMS H.

of Shut-in island, quite open to small vessels which can reach it, the low-water mark passed over.

The entrance to this inlet, water, is half a cable wide, the depth in the channel is 1 distance within, as already useless for shipping, except when a vessel might run. The leading mark for a white house on a hill at

CHISSETCOOK INLET is also half a mile wide at its entrance between Cape Entry and Story head, the latter bearing from Shut-in island N.E. by E. $3\frac{3}{4}$ miles.

This inlet extends 5 miles inland, and receives at its head the waters of Chissetcook and other lakes. Its shores are well settled, and there are several islands in it forming beautiful scenery; but it is useless to shipping, having only 3 feet at low water on the bar of the western and principal channel, which commences half a mile within Cape Entry, and continues to the head of the inlet. Both channels are very narrow, and wind through flats of sand, mud, and weeds, which dry at low water.

The shores of these inlets are well settled, especially near their heads, where the road from Dartmouth passes and continues to Ship harbour and Guysborough.

TIDES.—At the entrance of Chissetcook, Perpisawick, and Musquidoboit inlets it is high water, full and change, at 7h. 30m.; springs rise $4\frac{1}{2}$ feet, and neaps 3 feet. The ordinary rate of tidal streams in the entrances is from 2 to 3 knots; but heavy rains, or the melting of winter's snow, have been known to increase the rate of the ebb stream in the entrance of the Musquidoboit inlet to fully 4 knots.

SHUT-IN ISLAND, 3 cables long and of low clay slate rock, is distant half a mile from Graham head, but united to it by a reef and beach of shingle. It forms the western side of the entrance to Three Fathoms harbour.

THREE FATHOMS HARBOUR.—The entrance is close to the eastward of Shut-in island, quite open to the southward, and affords shelter only to small vessels which can run into the narrow channel east of Ball islet one mile within the entrance. The depth is there 3 fathoms, mud; but to reach it, the low-water depth of 8 feet (with a $4\frac{1}{2}$ feet rise) must be passed over.

The entrance to this harbour, between reefs that partly dry at low water, is half a cable wide between the 3-fathom line on either side, the depth in the channel being $3\frac{1}{2}$ fathoms, but it decreases to 8 feet a short distance within, as already noticed. It is an excellent fishing station, but is useless for shipping, excepting as a harbour of refuge in case of distress, when a vessel might run in until she grounded on the mud within the reefs. The leading mark for running in is, the west side of Ball islet and a white house on a hill at the head of the harbour in one, bearing N. $\frac{1}{4}$ W.

CHAPTER V.

NOVA SCOTIA :—SOUTH-EAST COAST.

SHUT-IN ISLAND, TO MARS HEAD.

VARIATION in 1867.

Halifax

20° W.

SHUT-IN SHOALS extend $1\frac{1}{2}$ miles to the westward, and three-quarters of a mile to the southward, of Shut-in island. They are of rock, with 16 feet least water, and are extremely dangerous. The red cliffs of Seller head open east of the eastern point of entrance of Three Fathoms harbour, bearing N.E. by N., will clear their south-east point; and the lighthouse on Devil island, when in sight, should not be brought further to the westward than W. by N. $\frac{1}{2}$ N. There are soundings of 20 fathoms a long mile from them, and vessels should not approach nearer than that depth at night or in foggy weather.

PORTER LAKE.—The entrance to this lake is on the western side of Graham head, a peninsula with red cliffs 60 feet high. The lake extends 7 miles to the northward, and receives the waters of other lakes still further inland. It has in some parts depths of 4 and 5 fathoms, but only one foot at low water in its narrow entrance.

LAWRENCETON LAKE.—The entrance of this lake—admitting boats only in fine weather—is half a mile to the eastward of Egg islet, and on the west side of Lawrenceton head. This latter is a peninsula composed of drift sand, clay, and boulders,—resting on clay slate, and united to the shore by long beaches of stones or shingle,—and whose red cliffs form the distinguishing feature of this part of the coast. The peninsula is 92 feet high, and the kirk, which stands on its inner slope, is therefore not very conspicuous from the sea.

COLE HARBOUR is situated at the bottom of the first bay eastward of Halifax harbour, formed between Shut-in and Devil islands, which bear E. $\frac{1}{3}$ S. and W. $\frac{1}{3}$ N. from each other, distant 8 miles. The harbour has a dangerous bar of sand, with only 3 feet at low water, which is covered with breakers whenever any sea is running. It is only during fine weather and with a smooth sea that boats can safely cross it to the entrance, which is barely 40 fathoms wide between points of shingle and sand. In this narrow entrance the depth is 5 fathoms, and the rate of the tide-stream from one to 2 knots, but immediately within it the depth diminishes to

4 or 5 feet, and narrow cove inland.

Eastward of this harbour Egg islet, connected with the mainland, water extends off the islet in 5 fathoms, nearly one mile

HALIFAX HARBOUR,

open at all seasons, and its depth is one of the finest and deepest of water sufficient for any dangers off its entrance—especially during the foggy season,—it is easier of ingress to the coast. The entrance is to the north-east, and Chelmsford position between these points is N. by W. $\frac{1}{2}$ W., for a distance of 5 miles.

The city of Halifax is contained in 1861 about 1000 acres of a peninsula on the western side of the entrance. The citadel, in a commanding position between its two points, is 100 feet above the sea at high water mark, easily recognized from the sea.

The harbour opposite the city, but at the Narrows,—abstracts to less than a quarter of a mile, which has an area of ten acres on the eastern side of the Narrows, is the town of Dartmouth, situated continually. Eastern fog is common farther to the southward.

Ever since its settlement and its trade, which is principally with the Indies, and other British ports, is also the chief rendezvous for North American stationers and from England, and advanced its commerce.

* See Admiralty Chart, No. 1000, scale $m = 1\frac{1}{2}$ inches; and Plan of Halifax Harbour.

4 or 5 feet, and narrow channels—between mud flats—extend 2 miles inland.

Eastward of this harbour, and distant 2 miles, is the low and narrow Egg islet, connected with the shore by a reef and shingle beach; shoal water extends off the islet 3 cables to the southward, where it terminates in 5 fathoms, nearly one mile from the main shore.

HALIFAX HARBOUR, possessing an area of about 10 square miles, is open at all seasons, and its navigation is scarcely ever interrupted by ice. It is one of the finest and safest in the world, affording space and depth of water sufficient for any number of the largest ships; and although the dangers off its entrance are such as to render great caution necessary,—especially during the fogs which usually accompany all winds from the sea,—it is easier of ingress and egress than any other large harbour on the coast. The entrance, $5\frac{1}{2}$ miles wide, lies between Devil island, to the north-east, and Chebucto head, to the south-west; and from mid-position between these points the general trend of the harbour is about N. by W. $\frac{1}{2}$ W., for a distance of 15 miles, to the head of Bedford basin.*

The city of Halifax is the capital of the province of Nova Scotia, and contained in 1861 about 25,000 inhabitants; it is built on the declivity of a peninsula on the western side of the harbour, and 8 miles within its entrance. The citadel, immediately in rear of the city, and in a central position between its two extremes, stands on a commanding elevation 227 feet above the sea at high water, and with its flagstaff forms a leading mark, easily recognized from a vessel off the entrance of the harbour.

The harbour opposite the town is about three-fourths of a mile broad, but at the Narrows,—about a mile above the upper end of the city,—it contracts to less than a quarter of a mile, and then expands into Bedford basin, which has an area of ten square miles, and is completely landlocked. On the eastern side of the harbour, and immediately opposite the Naval yard, is the town of Dartmouth; between it and the city steamers ply continually. Eastern fort, with its tower, stands close to the shore 2 miles farther to the southward, on the same side of the harbour.

Ever since its settlement Halifax has been the seat of a profitable fishery, and its trade, which is principally with England, the United States, the West Indies, and other British colonies, is in a very flourishing condition. It is also the chief rendezvous for the ships of the Royal Navy, in the North American station, and its selection as a port of call for the mail steamers to and from England, has increased its importance as a maritime city and advanced its commercial prosperity.

* See Admiralty Chart, Nova Scotia, Mars Head to Shut-in island, No. 2,410; scale, $m = 1\frac{1}{4}$ inches; and Plan of Halifax Harbour, with view, No. 2,320; scale, $m = .3$ inches.

Halifax harbour has the advantage of never being closed by ice; for, although in very severe winters, when the low temperature has been accompanied by a continuance of calm weather, the inner part of the harbour has been frozen over, yet this has occurred only at intervals of many years; and even then, as the ice never extends beyond George island, there is always a sufficient space of open water, between it and Macnab island, in which vessels may anchor in safety. Even when the ice forms opposite the city, it never remains long, for it is broken up by the first southerly wind of sufficient strength to send a swell into the harbour.

The smaller and landlocked harbours of this coast are in general all frozen over during the two or three coldest winter months; and so also are the larger harbours, excepting for short distances within their entrances, which are kept open by the swell from the southward. The coasting vessels are usually laid up in consequence, from about the middle of December to near the end of March.

LIGHTS.—Two lighthouses stand on the eastern side of Halifax harbour; one on the south-west point of Devil island, forming the eastern point of the entrance,—and the other, named Sherbrook tower, on the west extremity of Maugher beach, (Macnab island)— $4\frac{1}{2}$ miles within the entrance.

Devil island, composed of clay slate, is 15 feet high, one-third of a mile in length, and lies the same distance from Hartland point, the eastern point of the mainland at the entrance of the harbour. A reef connects it with the shore, and shallow water extends from it one-third of a mile to seaward.

The lighthouse, octagonal in form, built of wood, and painted brown with a white belt, stands on the southern extremity of Devil island, and exhibits at an elevation of 45 feet above high water a *fixed red* light, which should be visible in clear weather from a distance of about 8 miles. Pilots are stationed on Devil island, and several families reside there.

The lighthouse on the west end of Maugher beach, is 48 feet high, circular, and painted white with red roof. It exhibits at an elevation of 58 feet above high water a *fixed* white light, visible in clear weather from a distance of 12 miles. It bears from the Thrumcap buoy N. by W. $2\frac{1}{2}$ miles.

EASTERN SHORE of the HARBOUR is less rocky and barren than the western, being formed of ridges of drift sand, clay, and boulders, resting on clay slate; it is inhabited all the way to Dartmouth.

Referring to the Admiralty plan of this harbour for a full and accurate topographical description, including churches, wharves, dock-yard, forts, &c., it will only be necessary to notice those objects which may be useful for the guidance of seamen on entering or leaving the harbour.

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At three-quarters of a mile to the northward of Devil island—already described—is Barrie beach (of shingle), inclosing a shallow pond, which affords shelter to boats.

Eastern Passage.—The entrances to the eastern passage lie on either side of Lawler island; that to the eastward, between the island and the main, being the deepest, and having 10 feet over its bar at low water. Only 5 feet at that time of tide can be carried through between Lawler and Macnab islands; there are rocks in the entrance, and off the south end of Lawler island, as will be seen in the chart.

This passage being very narrow, and only adapted for small vessels, it will merely be necessary to direct attention to the 6 feet shoal, lying $1\frac{1}{2}$ cables distant from a brook on the eastern shore of the mainland, and half a mile within Lawler island, as well as to the rock lying 60 fathoms off the north-east point of Macnab island; these being the only detached dangers in the passage after passing the bar.

MACNAB ISLAND, on the eastern side of the ship channel into Halifax harbour, is 3 miles long, including its shingle beaches. The distance between the western shore of the island, and that of the mainland, is about three-fourths of a mile, but the actual channel is narrowed abreast its north-west point to half a mile, by an extensive shoal off Pleasant point.

On Maugher beach, at the western extremity of the island, the lighthouse—known as Sherbrook tower—shows out as a very conspicuous object from the entrance of the harbour. The island is well cultivated, and has hills of sand, clay, and boulders of various elevations, the maximum height being 152 feet above the sea.

Ives point, the north-west extremity of Macnab island, is a steep clay bank, with a shingle beach curving out from it to the north-east.

Thrumcap Islet is connected with the south-west extremity of Macnab island by long shingle beaches, inclosing a shallow pond. It is at present 33 feet high, and $1\frac{1}{2}$ cables long, but its cliff of red sand and clay is fast wasting by the action of the sea.

Thrumcap Shoal extends one mile to the southward from the islet, and forms one of the principal dangers at the entrance of the harbour. Its south-west extremity is marked by a red buoy, with small staff and vane, lying in 8 fathoms water, with George island just open to the westward of Ives point; Graham head (10 miles to the eastward) well open to the southward of Devil island; and the lighthouse on the latter island bearing E. $\frac{1}{2}$ N. 2 miles.

Lighthouse Bank extends three-quarters of a mile to the southward from Maugher beach. Devil island lighthouse open south of Macnab island, seen over the shingle beaches, and bearing S.E. by E. $\frac{1}{2}$ E., clears

its south point in 5 fathoms. From the least water, 3 fathoms, the lighthouse on Maugher beach, distant half a mile, is in one with Ives point.

Shallow water also extends to the westward and northward from Maugher beach to the distance of 2 cables. In the latter direction the rocky ground known as the Horse Shoe dries at low water, and great caution is necessary not to borrow too close on this danger when entering or leaving Macnab cove, where the anchorage is good in 7 or 8 fathoms, mud; the best berth being with Sandwich point seen over the Horse Shoe, and the western sides of George island and Ives point in one.

Ives Knoll, awash at low spring tides, rises from the rocky bank which runs out 4 cables from the beach to the northward of Ives point, or towards George island. A red buoy is moored in 8 fathoms near the western side of this bank, and distant one cable west from the knoll.

WESTERN SHORE of the HARBOUR.—Chebucto head, the southern extreme of the western shore of Halifax harbour, bears N.E. $4\frac{1}{4}$ miles from Sambro island lighthouse. It is 106 feet high, and consists of a whitish granite, of which, together with clay slate, the steep and barren western shore of the harbour is composed. At the distance of $1\frac{1}{4}$ miles from Chebucto head in a northerly direction is Portuguese cove, inhabited by fishermen; and on a hill one-third of a mile in rear of the cove, stands Camperdown flagstaff, 168 feet above the sea.

Herring Cove, distinguished by the steeple of a chapel and the houses of the fishermen on its rocky shores, is 3 miles to the northward of Portuguese cove, and $1\frac{1}{4}$ miles S.W. from Sandwich point. It is a secure harbour for small craft and boats, having 6 feet at low water in its narrow entrance, and 8 feet, over soft mud, within. At its head a brook discharges the waters of a chain of small lakes.

York Redoubt forms a conspicuous object on the western shore, and may be easily recognized by its flagstaff and position; it stands 177 feet above the sea, within a cable's length of the shore, three-quarters of a mile to the northward of Sandwich point, and nearly abreast the lighthouse on Maugher beach.

Pleasant Point, at the entrance of the North-west Arm, is $1\frac{1}{2}$ miles farther in, and will be recognized by its batteries and by the tower on its summit, 114 feet above the sea. George island, also, which lies off the southern end of the city, will be readily known by its redoubt and tower.

DANGERS:—**Rock Head Shoal**, the outer and most dangerous shoal off the entrance of Halifax harbour, is about 3 cables in length, and its shoalest part, with $3\frac{1}{4}$ fathoms water, lies with the tower of George island in line with Ives point, bearing N. by W.; Sambro island on with White head, bearing S.W. $\frac{1}{4}$ W., the lighthouse on the island being open; and Devil island lighthouse N.E. $2\frac{1}{4}$ miles.

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A black and white beacon buoy, carrying a bell, is moored near the south-west end of this shoal in $6\frac{3}{4}$ fathoms water, rocky bottom; with the eastern end of George island in line with Ives point, and Sambro lighthouse island open of White head, S.W. $\frac{1}{2}$ W.

Portuguese Shoal, a small rocky patch with 5 fathoms water, lies W.S.W. half a mile from Rock head shoal, and from it the east point of George island is just touching the west side of the lighthouse on Maugher beach; Sambro island is concealed behind Chebucto head; and Camperdown flagstaff bears W. by S. A black buoy is moored on its western side in 6 fathoms, with George island just open to the westward of the lighthouse on Maugher beach, bearing N. $\frac{1}{2}$ W.; Camperdown flagstaff W. $\frac{3}{4}$ S.; and Devil island lighthouse N.E. $\frac{2}{3}$ E.

Leading Marks.—Sambro island kept well open S.E. of White head, bearing S.W. $\frac{1}{2}$ W., will lead clear to the southward of the Rock head and Portuguese shoals. The tower on George island touching the east side of the lighthouse on Maugher beach, N. $\frac{3}{4}$ W., will lead through between them; and George island well open to the west of the lighthouse on Maugher beach, bearing N. $\frac{1}{4}$ W., will lead clear to the westward of them, and also nearly midway between the Neverfail and Thrumcap shoals.

Neverfail Shoal, upwards of a cable in length, has on its shoalest part $4\frac{1}{2}$ fathoms, and from it the eastern side of George island appears in line with the steeple of a Roman Catholic chapel at Dartmouth; the tower on Pleasant point over the point at York Redoubt; the south-east end of Lawler island over the south-east extremity of the shingle beach southward of the Thrumcap; and Hartland point over the northern point of Devil island, and in line with the Thrumcap buoy, which bears E. by N., distant about one mile.

Lichfield Rock, of small extent, with $2\frac{1}{2}$ fathoms on its shoalest spot, lies W. by N. $\frac{1}{2}$ N. two-thirds of a mile from Neverfail shoal. A white buoy, with staff and vane, lies on its eastern side, with the tower on George island in line with Sandwich point; Devil island and Hartland point touching, E. by N.; and the steeple of the chapel at Herring cove N.W. by N.

George island open east of Sandwich point, bearing N. $\frac{1}{2}$ E., leads clear to the eastward of the rock, and the citadel flagstaff just touching Sandwich point, bearing N. $\frac{1}{3}$ W., will lead through between it and the Neverfail; which is the most direct, and therefore the preferable channel, although the deepest water is between the Lichfield and the land, from which it is distant three-quarters of a mile.

Mars Rock, with $3\frac{1}{2}$ fathoms water, is the shoalest part of a rocky bank separated from the shore, between Herring cove and Sandwich

point, by a very narrow channel. A white buoy, with staff and vane, is moored in 6 fathoms on its eastern side, with the citadel flagstaff just open east of Sandwich point, the latter being distant three-quarters of a mile; Hartland point open south of the Thrumcap beaches; and the north side of Herring cove W. by S.

Middle Ground, a small gravel patch with $4\frac{1}{2}$ fathoms water, lies W. $\frac{1}{2}$ N. half a mile from the northern point of Macnab cove, E.N.E. from the steeple of a chapel at Falkland village, and N.N.W. $\frac{3}{4}$ W. three-quarters of a mile from the lighthouse on Maugher beach. The steeple of the Roman Catholic chapel at Dartmouth in line with the eastern side of George island leads to the eastward of the patch, and Chebucto head just open east of Sandwich point to the westward of it.

Pleasant Shoal, which extends nearly half a mile S.E. from Pleasant point; dries in some parts, and is covered by only a few feet of water nearly out to its edge. It is much in the way of vessels, as it diminishes the breadth of the navigable channel between it and Ives point, to half a mile. A white buoy is moored close to its eastern extremity in $7\frac{1}{2}$ fathoms, with Chebucto head just open east of Sandwich point; and the north point of Macnab island just open north of the bank of Ives point, and seen over its beach, bearing E. by N.

North-West Arm.—The entrance of the North-West Arm is between the western side of Pleasant shoal and the shoals in Purcell cove. It carries a depth of 8 fathoms; and the largest ships may ascend it through a narrow channel to within half a mile of its head, or nearly to Melville island, a distance of $2\frac{1}{4}$ miles.

Reed Rock lies 6 cables to the northward of the buoy on Pleasant shoal, on the same side of the channel, and 2 cables off shore. It is small in extent, with 5 feet water, and its position is marked by a white buoy, with staff and vane, moored in 8 fathoms, about half a cable south-west of the danger, and bearing from Ives knoll buoy W. by N. half a mile. Chebucto head just open of Sandwich point leads 2 cables to the eastward of the rock.

Belleisle Spit lies two-thirds of a mile farther in, and extends a quarter of a mile from the shore to a white buoy, with staff and vane, in 5 fathoms, from which the south-east point of George island bears E.N.E. one-third of a mile.

Leopard Spit.—About a quarter of a mile farther in, on the edge of the bank, in 5 fathoms, and distant three-quarters of a cable from the Engineer wharf, is the Leopard white buoy, with staff and vane, which, with Belleisle buoy, marks the western side of the clear deep channel between them and George island, which is $1\frac{1}{4}$ cables wide between the 5-fathom lines.

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To the eastward of George island the channel is half a mile wide, and equally free from obstructions; the shallow water does not extend beyond three-quarters of a cable from either end of George island, and not above half a cable from either side.

Dockyard Shoal.—After passing the Leopard buoy the deep water approaches very near the wharves of the city, until arriving at the shoal which extends $1\frac{1}{2}$ cables out to the south-east from the dockyard wall. The Commissioners' buoy, white, is moored on the eastern edge of this shoal in 5 fathoms, but just within it there is only a depth of 9 feet at low water.

DARTMOUTH.—Off the shore frontage of the town of Dartmouth, the 5-fathom line extends a long cable out from the wharves, and $1\frac{1}{2}$ cables south from the point of Clay cliff in Dartmouth cove. There is also a detached rock, with $3\frac{3}{4}$ fathoms, lying outside the 5-fathom line, and bearing S.W. $\frac{1}{2}$ S. $1\frac{1}{2}$ cables from the Ferry wharf. The points on the eastern side of the Narrows (above the town of Dartmouth) in one, and bearing N.W. $\frac{1}{2}$ N., lead half a cable to the westward of this rock.

BEDFORD BASIN.—There is a clear passage for the largest ships through the Narrows into Bedford basin, which has a depth of 36 fathoms, and is navigable quite to its head. The principal danger in the basin is Wellesley rock, with 13 feet water, and lies about one-third over from the eastern towards the western shore, with the outermost bare rock off the eastern shore in one with a house at the head of the basin, and bearing N.N.W. distant 3 cables. Immediately after passing the Wellesley the channel is contracted by islets and rocks on either side, to the breadth of $1\frac{1}{2}$ cables; but it has 9 fathoms in it, and leads to a secure anchorage off the entrance of Sackville river, in 7 fathoms mud.

Navy Island Anchorage.—On the eastern side of Bedford basin, $1\frac{1}{2}$ miles from the Narrows, there is a small but secure anchorage within Navy island. The entrance is to the northward of the island, and the only thing in the way is an old wreck, over which there is a depth of 3 fathoms at low water.

TIDES.—It is high water, full and change, at Halifax dockyard, at 7h 49m.; springs rise 6 feet; neaps 5 feet. The rise is greatly influenced by the winds, southerly winds causing high, and northerly winds low tides; and should the winds chance to act in accordance with the diurnal inequality, the rise of the morning and evening tides of the same day may possibly differ to the amount of a foot, or even more in extreme cases.

From the foregoing causes the rise of spring tides varies from 5 to 7 feet, and of neap tides from 4 to 5 feet above the ordinary low water.

in spring tides. Extraordinary spring tides, aided by strong southerly winds, have risen 8 feet, and extraordinary neap tides only 3 feet, above the average low water in spring tides. The ordinary rate of the tidal stream does not exceed half a knot.

DIRECTIONS.—The coast in the vicinity of Halifax is of moderate height, the hills near the shore being seldom 200 feet above the sea. To the eastward of the harbour, as far as Jedore, almost all the headlands present cliffs of reddish sand, clay, and boulders to the wasting action of the waves; whilst to the westward, as far as Mars head, granite rocks—nearly white—predominate. Hence, when standing in for the land, a stranger might know on which side of Halifax harbour he is, by the remarkable difference that exists in the colour of the shores; red denotes being to the eastward, and white to the westward of the entrance.

The bank off Sambro island, terminating in a point, at the depth of 30 fathoms, 5 miles south of the Sambro ledges, offers considerable assistance to vessels approaching Halifax from the westward, in the thick fogs which so frequently prevail. From the eastward the approach is rendered comparatively easy, by the absence of outlying dangers after passing Shut-in island, and by the soundings deepening out with tolerable regularity to 30 fathoms, at distances varying from 4 to 6 miles from the shore; but when within 2 miles of Chebucto and White heads, the depth of 30 fathoms will be found within one-third of a mile from the shore. Attention to these soundings, combined with the guns fired from Sambro lighthouse island, may enable steamers to enter the harbour notwithstanding the fog, though it would be more prudent—especially in large sailing vessels—to avoid attempting it under such circumstances.

From the Eastward.—Having passed Devil island, steer for Chebucto head, and keep Sambro lighthouse island open of White head S.W. $\frac{1}{2}$ W., in order to pass to the southward of Red head and Portuguese shoals; and when George island opens out west of the lighthouse on Maugher beach N. $\frac{1}{4}$ W. steer in on the latter course, passing to the westward of the Portuguese shoal and buoy, and between Neverfail and Thrumcap shoals. After passing the red buoy marking the latter danger, steer over for Sandwich point, until the Roman Catholic chapel at Dartmouth comes on with the east point of George island, bearing North; these marks will lead clear of all dangers up to George island, which may be passed on either side.

If passing inside the island, the Belleisle and Leopard buoys must be left to the westward, and York Redoubt should be kept open of the wharves, in order to avoid a shoal spit about a quarter of a mile to the northward of Leopard buoy. Having, with 14 feet water, passed the spit, anchorage may be selected where most convenient, either off the

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wharves of the city, or further up off the dockyard, where the Commissioners' buoy will serve to point out the Dockyard shoal.

By Night.—Approaching from the eastward by night, and being to the westward of Jedore ledges, run along the land in a depth not less than 30 fathoms, until Sambro island light is seen; then, if it be intended to pass to the southward of the Rock head and Portuguese shoals, steer for Chebucto head (remembering that, to clear the Rock head, the light on Sambro island must be kept wide open south of White head, S.W. $\frac{1}{2}$ W., and the light on Devil island nothing to the eastward of N.E. by N.) until the light on Maugher beach bears North; when steer for the latter, keeping it bearing between North and N. by E., and all dangers will be avoided excepting the Neverfail shoal, on which the least depth is $4\frac{1}{2}$ fathoms.

Having arrived abreast the Thrumcap, with Devil island light in line with its south extremity, bearing E.S.E., alter course to N. by W., or as may be necessary, to avoid the Lighthouse bank; and as soon as the light on Maugher beach bears East, steer N. by E. for Ives point (or N.N.E., if necessary, to avoid the Middle ground, on which, however, the least water is $4\frac{1}{2}$ fathoms) until the light bears S. by E.; then a N. by W. course, keeping the light astern, will lead between Pleasant shoal and Reed rock white buoys, on the western side, and Ives knoll red buoy on the eastern side, into the harbour.

Having passed Ives knoll the vessel may proceed in on either side of George island, or may anchor where convenient until daylight, according to circumstances. The light on Maugher beach disappearing behind Ives point will show the vessel's distance from George island, as she runs in to the eastward of that island, through the wider—and consequently preferable—channel during a dark night. Within George island there is nothing in the way, excepting the Dockyard shoal and the shallow water off Dartmouth.

Between Rock Head and Thrumcap Shoals.—If a N.E. wind, or other circumstances, should render the passage between the Rock head and Thrumcap shoals preferable, proceed as follows:—

Having passed Devil island, keep Graham head open south of Devil island the whole breadth of the island, which mark will lead to the southward of the Thrumcap shoal and red buoy, and when George island opens out west of the lighthouse on Maugher beach, bearing N. $\frac{1}{4}$ W., steer in on this course, until abreast of the Thrumcap buoy, when proceed as before directed.

By Night.—Having made Sambro island light, and passed Shut-in island, steer so as to pass not less than half a mile, or more than one mile, to the southward of the light on Devil island, steering W. $\frac{1}{2}$ S. until

the light on Maugher beach bears North, when steer for it until abreast the Thrumcap, or until Devil island light bears E.S.E.; then alter course to N. by W., or as may be necessary, to avoid the Lighthouse bank, and proceed as before directed. Large ships should avoid using this channel at night.

From the Westward.—Approaching from the westward during the daytime, pass Sambro lighthouse at the distance of 3 or 4 miles, and when Sandwich point opens out east of Chebucto head N. $\frac{1}{2}$ E. (the clearing mark for the eastern side of Sambro ledges), stand in N. by E. or N.N.E., according to the wind, until the citadel flagstaff opens east of Sandwich point, bearing N. $\frac{1}{2}$ W. These latter marks on, will lead between Lichfield and Neverfail shoals, and up to Mars rock white buoy, which leave to the westward.

Having passed Sandwich point—from which the shallow water does not extend beyond a cable's length—steer towards George island, keeping Chebucto head just in sight east of Sandwich point, until the vessel has passed close to the westward of the Middle ground; then open out the head more to the eastward, so as to leave the Pleasant shoal and Reed rock white buoys to the westward; or, if preferred, the Roman Catholic chapel at Dartmouth in one with the eastern side of George island, bearing North, will lead to the eastward of the Middle ground. Either of the marks just given will lead clear up to George island, after which follow the directions already given.

By Night.—In approaching Halifax harbour from the westward at night, shape a course so as to pass not less than 3 miles to the southward of Sambro island light. To insure doing so, keep in not less than 30 fathoms water, until the above light bears North.

Having crossed the narrow bank—already alluded to—which extends in a southerly direction from Sambro island into deeper water, haul up N.E., until the light on Maugher beach opens out east of Chebucto head, bearing N. by E., when steer for it, or so as to pass within a mile of Chebucto head, which is steep close to. After passing Chebucto head, continue to steer for the light, bearing between North and N. by E., and proceed as already directed.

With adverse winds and clear weather, the Admiralty Chart and leading marks already given for clearing the dangers, will enable vessels to beat in or out of Halifax harbour without difficulty.

CAUTION.—During a dark night or thick fog do not approach the Sambro ledges within the 50 fathom line, as a depth of 40 fathoms will be found half a mile to the eastward, and one mile to the southward of these dangers. For the remainder of the coast, it would not be advisable to approach within the 40 fathom line; but it must be borne in mind that

this depth may be found within the distance of 3 miles of some of the most formidable dangers between Cape Canso and Halifax; as, for instance, the Jedore ledges.

CATCH HARBOUR is a narrow arm of the sea, nearly one mile in length N. $\frac{1}{2}$ E. and S. $\frac{1}{2}$ W. The entrance lies 2 miles S.W. of Chebucto head, and the same distance North of the Sisters ledge. It has 9 feet water on its bar, with 16 feet, mud, within, where its shores are occupied by the houses and stages of fishermen. At the head of the harbour is a chapel, as well as a fine stream, the outlet of the waters of several small lakes which lie about a mile to the northward.

Bell Rock, with only 7 feet water, lies 4 cables off shore, with

south of the lighthouse; each blast will be of *five seconds* duration, with intervals of *twenty seconds*, and in calm weather it should be heard from 6 to 10 miles off.

SAMBRO LEDGES.—As the relative position of these ledges may be ascertained by referring to the Admiralty chart, it will only be necessary to state that from Smithson rock, the outermost of the western ledges with only 2 fathoms water, Sambro lighthouse bears N.E. by E. $\frac{3}{4}$ E. $2\frac{1}{2}$ miles; Pennant point N.W. by N. $2\frac{1}{3}$ miles; and Fairweather rock in one with the Isle of Man N.N.E. $\frac{1}{4}$ E. Gull rock, little more than its own breadth open of White or Catch harbour head, bearing N.E. $\frac{3}{4}$ E., also leads over this dangerous rock, as well as over Mare rock, which, with 6 feet water, lies nearly three-quarters of a mile further in.

The west end of Pennant island, on with the tangent of Pennant point



the light on Maugher beach bears North, when steer for it until abreast the Thrumcap, or until Devil island light bears E.S.E.; then alter course to N. by W., or as may be necessary, to avoid the Lighthouse bank, and proceed as before directed. Large ships should avoid using this channel at night.

From the Westward.—Approaching from the westward during the day-time, pass Sambro lighthouse at the distance of 3 or 4 miles, and when Sandwich point opens out east of Chebucto head N. $\frac{1}{2}$ E. (the clearing mark for the eastern side of Sambro ledges), stand in N. by E. or N.N.E., according to the wind, until the citadel flagstaff opens east of Sandwich point, bearing N. $\frac{1}{2}$ W. These latter marks on, will lead between Lichfield and Neverfail shoals, and on to Massack point.

FOGGY WEATHER.—On approaching Sambro island lighthouse in foggy weather, every gun fired from the ship will be answered, if heard, by two guns in quick succession from the lighthouse. Several guns should not, however, be fired in quick succession from the vessel, but time given between each for the answering guns.

It frequently happens that the weather is clear within the lighthouse, although very thick a league or two without. If it be wished to ascertain this fact the ship is to fire one gun, and three minutes after, two guns in quick succession; when, should the weather be clear within, the lighthouse will answer with the same number of guns, fired in the same manner; but should the weather not be clear within the lighthouse, one gun only will be fired in answer.

N.E., until the light on Maugher beach opens out east of Chebucto head, bearing N. by E., when steer for it, or so as to pass within a mile of Chebucto head, which is steep close to. After passing Chebucto head, continue to steer for the light, bearing between North and N. by E., and proceed as already directed.

With adverse winds and clear weather, the Admiralty Chart and leading marks already given for clearing the dangers, will enable vessels to beat in or out of Halifax harbour without difficulty.

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Bell Rock, with only 7 feet water, lies 4 cables off shore, with White or Catch harbour head East, half a mile distant, and Chebucto head N.N.E. one mile. Another rock, with $4\frac{1}{2}$ fathoms water on it, lies one cable N. by W. from the Bell rock; and as Duck reef extends $1\frac{1}{2}$ cables from the shore towards them, the channel between is reduced to the same breadth, and is moreover nearly overlapped by Duncan reef; the passage therefore cannot be recommended. Duncan cove, on the south-west side of Chebucto head, affords shelter for boats.

SAMBRO ISLAND LIGHT.—The lighthouse on Sambro island is a white octagonal tower 60 feet high. It stands near the middle of Sambro island, $1\frac{1}{3}$ miles from the shore at Cape Sambro, and S.W. $4\frac{1}{3}$ miles from Chebucto head, the western point of entrance to Halifax harbour, and exhibits, at an elevation of 115 feet above high water, a *fixed* white light, which should be visible in clear weather from a distance of 21 miles.

Vessels approaching the lighthouse in a fog, and firing a gun, will be answered from the island, where a party of artillery and a heavy gun are stationed for the purpose. The island is the resort of pilots.

Fog Trumpet.—A Dobell's fog trumpet is established 100 yards south of the lighthouse; each blast will be of *five seconds* duration, with intervals of *twenty seconds*, and in calm weather it should be heard from 6 to 10 miles off.

SAMBRO LEDGES.—As the relative position of these ledges may be ascertained by referring to the Admiralty chart, it will only be necessary to state that from Smithson rock, the outermost of the western ledges, with only 2 fathoms water, Sambro lighthouse bears N.E. by E. $\frac{3}{4}$ E. $2\frac{1}{2}$ miles; Pennant point N.W. by N. $2\frac{1}{3}$ miles; and Fairweather rock in one with the Isle of Man N.N.E. $\frac{1}{4}$ E. Gull rock, little more than its own breadth open of White or Catch harbour head, bearing N.E. $\frac{3}{4}$ E., also leads over this dangerous rock, as well as over Mare rock, which, with 6 feet water, lies nearly three-quarters of a mile further in.

The west end of Pennant island, on with the tangent of Pennant point



N. by W. $\frac{1}{2}$ W., leads two-thirds of a mile to the westward of Smithson rock.

S.W. Breaker, which almost always shows, lies $1\frac{1}{4}$ miles to the eastward of Smithson rock, and from it Chebucto head is seen over the eastern extremity of Sambro island, the latter bearing N.E. $\frac{1}{4}$ N. $1\frac{1}{2}$ miles.

The Sisters are the outermost of the eastern Sambro ledges, and from the lighthouse on Sambro island they are distant $1\frac{2}{3}$ miles, between the bearings of E. by N. and E. by S. Their position is pointed out by Black rock, 15 feet high, and from which they are distant one-third of a mile S.E. by E. Several rocks of this cluster uncover at low water, and their position can always be seen: but the Blind Sister is more dangerous, having 9 feet over it at low water; the Black rock bears from it N. $\frac{3}{4}$ W. half a mile, and Broad breaker, which almost always shows, W. $\frac{1}{2}$ N. 4 cables.

Ede Rock, with 9 feet water on it, lies nearly midway between the Sisters and Morris point, on the western side of the entrance to Catch harbour.

Hennesy Bank, Shoal Ground, Barse Ground, and Outer Bank.—These are rocky fishing grounds, with depths varying from 8 to 20 fathoms, and should be avoided by vessels during bad weather, as they cause a heavy half breaking sea. The Hennesy bank of the fishermen is a small rock with 8 fathoms over it, lying three-quarters of a mile to the southward of the Blind Sister; Sambro lighthouse bears from it N.W. by W. $1\frac{2}{3}$ miles.

The Shoal ground, with 8 fathoms water, lies a mile farther out, with the lighthouse bearing N.N.W. $\frac{3}{4}$ W. 2 miles. The Barse ground is a rock with 9 fathoms water, from which the lighthouse bears N. by E. $2\frac{1}{4}$ miles, and the Outer bank, with 14 fathoms, S.S.E. $\frac{1}{2}$ E. $2\frac{3}{4}$ miles. The Sambro bank continues out $2\frac{1}{2}$ miles beyond the Outer bank to the depth of 30 fathoms, terminating in a point, from which the lighthouse bears North $6\frac{3}{4}$ miles.

Clearing Marks.—Sandwich point in line with Chebucto head, bearing N. $\frac{1}{2}$ E., will lead one mile to the eastward of Sambro ledges. By night the light on Maugher beach, just open east of Chebucto head, bearing N. by E., will clear all the Sambro ledges, as well as the Bell rock and Duncan reef.

The lead will give little or no warning when approaching these ledges from the eastward, on which side the bank is very steep, the depth being 45 fathoms within less than half a mile from the Sisters.

SAMBRO HARBOUR, lying at the head of the bay formed between Pennant point on the west and Cape Sambro on the east, has anchorage within the Isle of Man. The heavy sea during south-westerly winds is much broken by the ledges outside; but the shelter is imperfect, and

the dangers off and in this harbour are so numerous, that it should never be attempted by a large ship, excepting in a case of extreme necessity.

DIRECTIONS.—If from the eastward, and intending to pass between or within the Sambro ledges, or on either side of Inner Sambro island, the aid of the Admiralty chart and a local pilot acquainted with all the dangers would be indispensable.

From the Southward.—Having Chebucto head well open to the eastward of Sambro island, to insure being outside the S.W. breaker, which however can generally be seen, shut in Cook point (on the west side of Sambro harbour) with the western point of Inner Sambro island, the latter bearing N. $\frac{1}{2}$ W., and steering for it will lead clear to the eastward of the S. W. breaker. Having passed this danger, continue the N. $\frac{1}{2}$ W. course, or keep the above points touching until nearly abreast Fairweather rock; then steer so as to pass midway between that rock and the western end of Inner Sambro island, and round the latter to the north-east.

When Fairweather rock and the western edge of Inner Sambro island are nearly in line, S.W. by S., alter course to N.E. by N., and this mark will lead clear to the eastward of Cowley rock, which has 10 feet water on it and seldom breaks; having passed this danger, haul to the northward and westward round the Isle of Man, and anchor within it and Black reef from a half to two cables from them, in 6 or 7 fathoms, over mud bottom.

Farther in there are several secure anchoring places for small vessels, as the Mud hole, the Basin, &c.; but the rocks are too numerous for a large vessel to venture among them with safety.

From the Westward.—To enter Sambro harbour from the westward, bring the highest hill on Cape Sambro over the western rise of Inner Sambro island, and with these marks on proceed between Pennant point and Bell rock. After passing the latter at the distance of $1\frac{1}{2}$ or 2 cables, to clear the shoal water off it to the northward, steer N.E. by E., or with the east ends of Round island and Isle of Man in line, if these tangents can be distinguished; if not, pass one or 2 cables to the eastward of the Island rock, and continue to steer N.E. by E. until Fairweather rock opens out to the southward of Inner Sambro island, which will clear the Torpey ledge.

Then, to avoid the Middle ground, steer more easterly, so as to pass not more than a cable to the northward of the west end of Inner Sambro island, which is quite bold, and when the marks for clearing Cowley rock come on, viz., Fairweather rock touching the western point of Inner Sambro island S.W. by S., steer N.E. by N., and proceed to the anchorage under the Isle of Man as before directed.

PENNANT BAY, next west of Sambro harbour, lies between Pennant point and Mars head, the latter being a rocky peninsula about 70 feet high. The bay is 3 miles broad between the entrance points, and about 2 miles deep; it is thickly studded with rocky shoals and islands, but affords shelter to those acquainted with the passages between them. The land at the head of the bay is of moderate height; Hospital hill, the highest part, rising 250 feet above the sea.

PENNANT HARBOUR, at the north-eastern angle of Pennant bay though small in extent, has secure anchorage within several small islands; but care must be taken to avoid a dangerous rocky patch known as the Middle ground, having only 13 feet water, which lies in the fairway of what is called the *good* channel between Pennant point and island.

DIRECTIONS.—When rounding Pennant point be careful to avoid the Broad shoal, which extends 2 cables off it to the southward and eastward. Hospital hill on with the western shoulder of Pennant island, will lead well clear of this danger.

After passing a cable's length to the eastward of Bald rock, steer N.E. for the Thrumcap until the Seven islands open out to the northward of Pennant island, when the Middle ground will be passed; then haul round to the eastward and northward of the Thrumcap at the distance of one cable, so as to pass between it and the rocky 3-fathom shoal, lying a quarter of a mile N.E. by E. from it. Having passed to the westward of this shoal, anchor within Martin and Saddle islands, as convenient, from one to $2\frac{1}{2}$ cables from them, in 6 or 7 fathoms, mud bottom.

TURNER BAY, about 2 miles within Mars head, and at the north-western angle of Pennant bay, is open to the S.S.E., but the anchorage is good in 8 or 9 fathoms, mud, midway between Cat island and the western shore, with Church and Tenant points in line.

DIRECTIONS.—To enter Turner bay by the western passage, bring Turner bay rock to bear N.E. $\frac{1}{2}$ E., and steer for it, passing midway between Broad rock, which covers at high water, and Puffer shoal, on which the sea is said always to break. Pass westward of Turner bay rock, between it and the Black shoal, keeping nearer to the former, which is quite bold on that side; from thence gradually haul to the northward, until the south tangents of Seven islands and Pennant island are in line, in order to avoid the 13 feet shoal which lies N.N.E. $\frac{1}{2}$ E. a quarter of a mile from Black shoal, and 2 cables distant from Tenant point. With the above marks on the vessel may haul to the westward towards the anchorage.

If the eastern passage—which is preferable in some winds—be taken,

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stand in for the western end of Mackarel island on any bearing not to the eastward of N.E. by N., until Church point is in line with the north-east side of Turner bay rock, bearing N.N.W. $\frac{3}{4}$ W.; then alter course, and steer with those marks in one, until the rock is approached; when sheer gradually to the northward, so as to pass at the distance of one cable's length north-east of it, and thence to the N.W., for the anchorage.

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CHAPTER VI.

NOVA SCOTIA:—SOUTH-EAST COAST.

MARS HEAD, TO MAHONE BAY.

VARIATION in 1867.

Prospect Harbour	-	-	19° 20' W.
St. Margaret bay	-	19° 20' W.	Mahone bay - - 19° 10' W.

From Mars head to Cross island lighthouse on the western side of the entrance of an extensive bight comprising St. Margaret and Mahone bays, the distance is $20\frac{1}{2}$ miles in a W. $\frac{1}{4}$ S. direction. This great indentation is subdivided by a peninsula, which is remarkable in appearance on account of an elevated wooded ridge, 480 feet above the sea—known as the high land of Aspatageon—extending across its neck. This peninsula terminates in New Harbour point, which lies 7 miles within the line between Mars head, and Cross island; the two bays thus formed east and west of the peninsula, being known as St. Margaret and Mahone bays.

Between Mars head and the entrance of St. Margaret bay,—a distance of 10 miles,—the coast has a general trend to the north-west, but it is very irregular in outline, being deeply indented, the whole—including numerous islands—being composed of white granite, generally bare; in some places the shore attains an elevation of 70 feet, and gradually increases towards the interior. Between the above-mentioned points there are four anchorages which in case of necessity may be used by strangers, viz., Prospect harbour, Shag and Blind bays, and Dover harbour.

Grampus Rock, with only 9 feet water, is the outer of several rocky patches extending from Mars head to the south-west; it lies S.S.W. $\frac{1}{4}$ W., upwards of one-third of a mile from the western tangent of the head, and nearly 4 cables from the nearest shore. From it Shannon and Burnt islands are just touching and in line with Dollar rock, which covers at three-quarters flood, but its position is nearly always shown by a breaker.

BACK BAY.—At the distance of a mile from Mars head in a northerly direction is the entrance to Back bay, which is rendered unserviceable as an anchorage in consequence of numerous dangers across its entrance, in addition to which the space of available deep water is not only exposed to the south-west, but is very limited in extent.

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Dollar Rock, at the entrance of Back bay, covers at three-quarters flood, but its position may nearly always be known by a break; this rock serves the useful purpose of being a good mark for the avoidance of sunken dangers. From it the middle of Breakfast island is on with the high water tangent of Betty island; and Shannon island, east point, just open south-east of Shannon bald rock.

There are two isolated patches of $3\frac{1}{4}$ and $3\frac{3}{4}$ fathoms, which lie respectively N.W. by W. $\frac{1}{2}$ W., one cable, and N.W. by N. nearly 2 cables from Dollar rock; whilst further northward, about midway between Shannon bald rock and the north-east end of Betty island, is a shoal with only 3 feet on it, which narrows the channel on its western side to about 2 cables.

PROSPECT HARBOUR is situated at the mouth of an arm of the sea known as Prospect river, upwards of 3 miles in length, and distant from Mars head about $2\frac{1}{2}$ miles in a northerly direction. The anchorage is within Heron island, on the eastern shore of the river, where ships of the largest size may find good shelter, and although there are dangers off the harbour, they are such as can easily be avoided when once the islands marking the approaches thereto have been identified.

The town of Prospect is built in a somewhat straggling manner on the narrow western point of Prospect river. The population—including that of Lower Prospect—contained in 1865 about 1,500 inhabitants, all of whom subsist on the produce of adjoining fisheries; the church (Roman Catholic) is a conspicuous object, and can be seen from a long distance at sea; the principal import is flour, and the only export fish, as the soil being sterile would render agricultural pursuits unproductive.

BETTY ISLAND.—The southern point of this island lies W.N.W. $1\frac{3}{4}$ miles from the nearest point of Mars head, and from thence its length is seven-eighths of a mile in a N.N.E. $\frac{1}{2}$ E. direction. This island—which attains an elevation of 92 feet—occupies an equidistant position off the entrances of Prospect river and Back bay.

S.E. Shoal, so called in consequence of its relative position to Betty island, is nearly a cable in extent, with $2\frac{3}{4}$ fathoms water, and breaks during an ordinary southerly gale. From the east end of the shoal Dollar rock is on with the east end of Shannon bald rock, and the eastern tangents of Betty and Burnt islands are in line.

There is a deep water channel on either side of this danger, the clearing marks west of the shoal, at a good cable's distance, being Betty and Shannon islands just touching N.N.E. $\frac{1}{2}$ E., whilst Betty and Heron islands touching N. by W. not only leads to the eastward of this danger, but clears on the western side all the rocky dangers off Mars head.

S.W. and Devereux Shoals are both isolated rocky patches lying off the south-west end of Betty island. The S.W. shoal, with only 9 feet water, is distant nearly a quarter of a mile off shore. The Devereux shoal, with $3\frac{1}{4}$ fathoms, lies nearly a cable further out.

White Horse Rock, with only $1\frac{1}{2}$ fathoms water, lies between Hopson island, and Norris bald rock, from the latter of which it bears S.E. $\frac{1}{2}$ S. a short quarter of a mile; from the rock the south point of Breakfast island is in line with the north point of Shannon bald rock.

Kittee Wittee Shoal is a rocky patch about $1\frac{1}{2}$ cables in extent, which breaks during bad weather; the shoalest spot, with 5 fathoms water, lies with the north point of Burnt island on with the north end of Norris bald rock E. $\frac{3}{4}$ S., the latter being three-quarters of a mile distant.

To clear it on the north side, bring Norris bald rock on with Breakfast island; and the same rock on with the north extreme of Heron island clears the shoal to the southward.

Heron Rock is small, detached, and shows at low water; it is steep-to on its east side, and lies about half a cable in an easterly direction from the north-east end of Heron island, there being 3 fathoms in the passage between. As this rock is in close proximity to the anchorage, care must be taken—on bringing up—to give it a clear berth. From the rock Burnt and Shannon islands are nearly touching.

TIDES.—In Prospect harbour it is high water, full and change, at 7h. 43m.; springs rise 7 feet, and neaps 6 feet.

In connexion with the tides along this coast, Captain Shortland remarks that winds influence the time of high water, especially if during one of the rotatory gales a shift of wind occurs before high water. At the commencement of a south-east gale there is a tendency to retard the time of high water, and this effect continues until the gale has reached its full height; but as the wind diminishes in force this principle ceases, and a contrary effect ensues. In extreme cases the time of high water will be found to differ fully an hour from undisturbed periods.

DIRECTIONS.—Eastern Channel.—Although the eastern passage into Prospect harbour is alike narrow and intricate when compared with the western channel, circumstances may necessitate vessels using it, and therefore the following directions are given; but the western channel should invariably be pursued under ordinary circumstances.

If from the eastward, do not approach Mars head nearer than half a mile, in order to avoid the Grampus and other shoals; and when Betty and Heron islands are just touching N. by W., proceed with these marks on until approaching the east point of Betty island, which being steep-to may be rounded within a cable's length.

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Roman Catholic church at Prospect on with the south-west end of Bald rock, and after rounding the latter on the north side bring Dover castle to touch Saul point; these marks will lead between groups of rocks which are only covered at high water.

Keeping a mid-channel course between Church point and Heron island, round the north point of the latter, taking care to keep Saul point well open of Heron island, until Burnt and Shannon islands are open of each other in order to avoid Heron rock, and then haul in and anchor in from 7 to 9 fathoms, mud, with Prospect Roman Catholic church on with the north end of Heron island, and midway between that island and the main shore.

There is another passage to the anchorage, east of Burnt island, which might be used by small vessels, but should not be attempted without local knowledge, as the deep water channel east of Heron island is very narrow and circuitous.

Western Channel.—If from the eastward, avoid shutting in Shannon bald rock with the south point of Betty island, until Norris bald rock is in line with the high water rock west of Hopson island N. $\frac{1}{2}$ W.; this latter mark will clear Devereux shoal on the western side, after which bring Norris bald rock N. by E., and proceed on that course, rounding the rock on the north side, which is steep-to; then steer east for the highest part of Heron island, taking care not to approach the high water line of Saul and Church points within a cable's length.

When the spire of Prospect church comes on with Church point alter course to round Heron island, and proceed to the anchorage as before directed.

SHAG BAY.—At the distance of $1\frac{1}{2}$ miles in a northerly direction from Norris bald rock is Shag head, which forms the eastern point of entrance common to Shag and Blind bays. Shag bay is a narrow arm of the sea, $3\frac{1}{2}$ miles in length, with a general trend to the north-east, and has good anchorage off a small cove near its head on the western shore.

In addition to the off-lying dangers common to Shag, Blind, and Dover harbours, there are others at the entrance of Shag bay, narrowing the channel east and west of Inner Gull rock to $1\frac{1}{2}$ and $1\frac{3}{4}$ cables respectively.

Shag Bay Breakers consist of a rocky ridge, one-third of a mile in length N.E. and S.W.; the two shoalest spots, with only 4 feet water, are at each extremity; and Fader head, seen between the two Gull rocks at the entrance of Shag bay, N.E. a little northerly, leads directly over them, and consequently over the long axis of the shoal.

From the south-west spot the southern tangents of Taylor island and Dover castle are in line N.W. $\frac{1}{3}$ W.; and from the north-east spot the south end of Dover castle is on with Black rock (N.E. by E. $\frac{1}{4}$ E.), which only covers at high water springs, and can therefore nearly always be seen.

Green Shoal, about $1\frac{1}{4}$ cables in length, lies to the eastward of Shag bay breakers, with a deep water channel one quarter of a mile broad between the 5-fathom lines.

The least water on this shoal is 6 feet, from whence Black point ledge and the Outer Gull rock are just touching N. by E. $\frac{1}{2}$ E., and Norris bald rock just touching the eastern tangent of Hopson island S.E. by S.

Shag bay breakers and Green shoals are cleared on the east side by bringing Inner Gull rock on with Shag head N.N.E. $\frac{1}{4}$ E., and on the west (but very close to the shoal) by Fader head and Outer Gull rock just meeting N.E. Fader head just in sight east of Inner Gull rock N.E. $\frac{1}{2}$ N. will lead between the shoals; and Norris bald rock on with the north tangent of Betty island S.E. by E. leads one-third of a mile south of the dangers.

Gull Shoal, small in extent, with one fathom water, is nearly equidistant from the Outer and Inner Gull rocks and main shore; the passage between it and the latter being $1\frac{3}{4}$ cables across. From the rock Fader head is hidden by Inner Gull rock; and Dover castle south point is just open of the northern high water of Outer Gull rock.

Frying-pan Rock, which covers during last quarter flood, is the highest part of a shoal about a cable in extent, and is distant from Black point ledge (which is 3 feet above high water) a long cable S.S.E. $\frac{1}{2}$ E. From it White island and Dover castle are just overlapping about W. by S., the navigable channel on its eastern side being a good cable across.

DIRECTIONS.—East Channel.—If from the eastward, after having cleared the shoals off the south-west of Betty island, steer to the north-west until Black point just opens of Shag head N. $\frac{1}{4}$ E.; these marks will clear the Kittee Wittee and Green shoals to the eastward and lead up to Shag head, which may be rounded close-to. Immediately after passing the head close the eastern shore, until Fader head opens well out east of Inner Gull rock N.E. $\frac{1}{2}$ N.; this mark will lead on the eastern side of the Gull shoal, after which proceed up the bay and anchor in about 8 fathoms, mud, off N.W. cove, with Fader head S.W. by S.

West Channel.—A good leading mark west of Shag bay breakers is the two Gull rocks in line N.E. by E. $\frac{1}{4}$ E. On passing the Outer Gull rock keep a good cable's length off, especially on the north side, after which close the Inner Gull to within a cable, so as to pass midway between the Inner Gull and Frying-pan rocks, and thence proceed to the anchorage as before directed.

Black Rock is the outer of the western dangers common to the three anchorages already enumerated, and lies S.E. $\frac{1}{2}$ E. a quarter of a mile from a remarkable bare rocky islet, 40 feet high, known as Dover castle.

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There is a narrow but deep water channel between it and the rocky islet, but care must be taken to avoid a 3-foot patch which lies half a cable from the Black rock in a N. by E. direction.

Cabbage Garden Shoals consist of two rocky patches off the entrance to Port Dover; the outer, about a cable in extent, has 10 feet water, and lies East a short third of a mile from the south point of Fleming island.

The inner shoal (north-west of the former) just uncovers at low water springs, and lies E.N.E. 2 cables from Fleming island.

Round Rock, with 4 feet water, is steep to all round; it lies $1\frac{1}{2}$ cables off Leary point in an easterly direction; from it the high water points of High island and Dover castle appear meeting, and Outer Gull rock is on with the north point of Shag head.

Middle Ground, on the western side of the channel leading into Blind bay, is about a cable in diameter, with two rocky rises half a cable distant from each other N.N.E. and S.S.W. The northern point is just awash at low water springs, the other has 3 feet water; Doyle and Myra islands (within Blind bay) touching N.N.E. $\frac{1}{2}$ E. leads clear to the eastward of the Middle ground and Black rock.

TIDES.—It is high water, full and change, in Blind bay at 7h. 46m.; springs rise $7\frac{1}{2}$ feet, and neaps 6 feet.

DIRECTIONS.—**BLIND BAY** is in close proximity to Shag bay, and affords good anchorage north of Myra dry ledge. Proceeding through the main channel between the Black rock and Shag bay breakers, with the two Gull rocks in line, alter course when necessary so as to pass between the Outer Gull rock and White island, or steer for Doyle island N.N.E. $\frac{1}{4}$ E., it will then appear about midway between Black point and Myra island. Avoid going to the westward of the line where Doyle and Myra islands seem to touch, in order to keep clear of the Round rock and Middle ground.

If the draught of water renders it necessary to avoid a 4-fathom patch about $1\frac{1}{2}$ cables off the north point of Myra island in an E. by S. direction, steer over on the eastern shore with Leary point and White island just open of each other, until Myra dry ledge comes on with the south tangent of Clarke island; then haul round Myra dry ledge, keeping an offing of a cable off its eastern end, and come to in about 6 fathoms, mud, in a berth equidistant from the ledge, Clarke island, and rock south of Flat island.

PORT DOVER.—As Black rock only just covers at high water springs, it is very seldom that its position cannot be identified, but on such exceptional occasions, to pass east of the rock, bring the eastern tangents of Myra and White islands to touch N.E. $\frac{2}{3}$ N., until Soi point (having houses on it) opens east of Fleming island N.N.W. $\frac{3}{4}$ W., when proceed

in that direction, and on nearing Fleming island alter course so as to pass between it and Fleming ledge, and anchor in 9 or 10 fathoms, mud, with Fleming ledge on with the south end of White island, and the east end of Dover castle touching the west end of Fleming island.

Leary point, midway between the high water lines of High and White islands N.E. $\frac{1}{2}$ E., leads through in deep water between Dover castle and Black rock, as does also Fleming ledge just open east of its island N. by E.

ST. MARGARET BAY is a noble sheet of water about 25 miles in circumference, 9 miles in depth, and upwards of 2 miles wide at the entrance, and compared with other portions of this coast is unusually clear of dangers. Its shores are well settled by an industrious population, principally of French extraction.

The distance between Dover castle and Middle point, (so called in consequence of its central position between Peggy point and Paddy head,) forming the eastern entrance of the bay, is about 4 miles, with a general trend to the north-west.

Halibut Rock is small, and covers at the first quarter flood; it is surrounded by deep water, and lies a cable's length off a salient point, known as Peggy point, about $1\frac{1}{4}$ miles S.S.E. $\frac{1}{4}$ E. from Middle point.

Dover castle open of Corny rock clears the Halibut rock to the southward; and Paddy head on with Middle point leads clear to the westward.

Middle Point Rock, with $3\frac{1}{4}$ fathoms water, lies N.W. by N. a long half mile from Middle point, and S.W. $\frac{1}{2}$ by W. $\frac{1}{2}$ W. half a mile from the remarkable boulder on Jack island. The two tangents of Paddy head and Shut-in island just touching N. by E. $\frac{3}{4}$ E. clears this rock about a cable's length on the western side.

Crawford Ledge, which just shows at low water springs, lies at the outer end of a shallow tongue, extending 3 cables in a westerly direction from a point nearly half a mile to the northward of Middle point. The ledge, which is steep to outside, lies nearly 2 cables within Middle point rock in the direction of Jack island. Peggy and Middle points in line S.S.E. leads between Crawford ledge and Middle point rock.

SHUT-IN ISLAND is two-thirds of a mile in length N. by W. and S. by E., and attains an elevation of 200 feet; its south end is half a mile distant from the main shore, and a short mile N. by E. $\frac{1}{2}$ E. from Paddy head.

Although in this latter space there is a deep water channel leading inside the island, there are numerous rocks which render this passage unadvisable without the assistance of local knowledge; the rocks referred to will be cleared by keeping Middle point open of Paddy head.



The east and west shores of Shut-in island are steep-to, but in rounding the north point do not approach nearer than $1\frac{1}{2}$ cables; within the island the holding ground is good, and the place well sheltered, secure, and smooth during southerly gales.

Tides.—At Shut-in island it is high water, full and change, at 7h. 47m.; springs rise 7 feet; neaps 5 feet; tidal stream weak.

Luke Anchorage.—At the distance of $1\frac{1}{2}$ miles N.E. $\frac{1}{2}$ E. from Shut-in island is Luke islet, 40 feet high; there is shoal water off its south-west end, which should not be approached by vessels of large draught nearer than 2 cables. The south-east point of the island is a dry stony tongue, between the end of which and the main shore the distance is nearly a third of a mile; and its northern end consists of a longer stony spit only 2 cables distant from Troop island to the north-east, but with a deep passage between; both points are steep-to.

Within the island there is excellent anchorage in from 8 to 10 fathoms, where ships may remain in perfect security during gales from any quarter.

The anchorage is very accessible; if from the southward avoid the shoal water off the south-west end of the island, and when the east end of Troop island opens east of the south-east stony point, haul up and anchor with the north end of Shut-in island seen over the south-east point of Luke island, and Big Thrum island midway between Troop island and the northern stony tongue of Luke island.

Little Thrum Island.—North of Luke island is a group of several small islets, the smallest and outer being Little Thrum island, about half a cable long; from it a shallow spit extends in a north-westerly direction a quarter of a mile; there is also shoal water on its south-west side, which should not be approached within 2 cables.

The west tangent of the inner or eastern lump of Indian point just open west of Wedge island clears the west side of Little Thrum spit, and leads about mid-channel between George island and Middle shoal.

Long Cove is another sheltered spot in the immediate vicinity of Luke anchorage, and can be entered from the latter through the narrow channel east of Troop island, bearing in mind that in the middle of its south entrance there is a small rise with $3\frac{1}{2}$ fathoms.

Another channel a quarter of a mile broad is north of Troop island, between it and George island; off the south end of the latter, shoal water extends nearly 2 cables off in a S.S.W. direction. On rounding the north point of Troop island an offing of a cable's length should be preserved.

Wedge Island, about $1\frac{1}{2}$ cables in length, and 30 feet elevation, lies three-quarters of a mile north of George island and half a mile from the nearest shore.

From the south-west end a shoal extends a quarter of a mile in a westerly direction, having at its extremity only 10 feet water. Another spit also runs out from the island $1\frac{1}{4}$ cables in a north-easterly direction.

Ringdove Shoal is a quarter of a mile in length N.N.E. and S.S.W.; from the shoalest part, with 5 feet water, Wedge island bears N.E. $\frac{1}{2}$ E. one mile, and Little Thrum island S. by E. $\frac{3}{4}$ E. three-quarters of a mile.

The green line of the north end of Luke island open to the southward of the Little Thrum, bearing S.E. by S., clears the south-west end of the shoal; and the highest part of Redman hill open north of George island E.S.E. clears the shoal on the north side.

To clear it on the west side, bring the white gable of house on East head open of Croucher island N.N.E. $\frac{1}{2}$ E.; but a better—because a natural—mark is the east end of Clam island on with the outer end of Indian point N.E.

FRENCH VILLAGE HARBOUR.—About three-quarters of a mile N.E. $\frac{1}{2}$ E. from Wedge island is Davy point, forming the south point of the entrance, which is half a mile broad. Within the point on the south shore is an indentation, off which secure anchorage may be obtained in about 11 fathoms, mud.

From abreast the anchorage the village is scattered along the whole length of the southern shore, upwards of a mile in length.

Davy Rock, 2 cables in length, with 9 feet water on its shoalest spot, lies off the entrance of French Village harbour, with Davy point S.E. $\frac{1}{4}$ E. a short third of a mile, and Indian point N. by E. $\frac{1}{2}$ E. a short half mile. The deep water channel on this, the northern side of the shoal, is narrowed to about a quarter of a mile by a spit which extends about the same distance to the south-west from Indian point.

Harbour Spit.—A short distance east of Davy point, which is steep to a spit extends in a northerly direction a long cable's length. The high land of Aspatageon open north of Davy point S.W. by W. $\frac{1}{2}$ W. clears this spit on the north side; and the outer end of Croucher island in line with the southern part of Indian point N.W. $\frac{3}{4}$ N. will lead clear on the east side.

Ambrose Rock, small in extent, with $3\frac{1}{2}$ fathoms on it, and deep water around, lies about $1\frac{1}{2}$ cables off the southern shore of the harbour; it is beyond the range of the usual anchorage, and lies with the Episcopal church belfry S.E. $\frac{3}{4}$ S.

DIRECTIONS.—**Inside Channel.**—From about half a mile west of the north point of Shut-in island steer N.N.E. until the west end of the eastern and larger lump of Indian point opens outside Wedge island N.E. by N.; steering with these marks on will lead between Little Thrum

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spit and Ringdove shoal, and when the green line of the north end of Luke island opens south of the Little Thrum S.E. by S., a vessel will be off the spit, and should steer direct for M'Donald point N.E. $\frac{1}{2}$ E., which will lead through in the deep water channel between Wedge island and Hayman point. When the latter point comes on with the stony tangent of George island, South, alter course to N. by E. $\frac{3}{4}$ E., when the ship's head should be pointing between the two lumps of Indian point, bearing in mind that shoal water extends $1\frac{1}{2}$ cables in a south-westerly direction from M'Donald point.

Proceed on the above course until Church point comes on with Davy point E. by N., and immediately alter course for the south tangent of the peninsula opposite Croucher point N.E. by E., and as Croucher island nears the outer tangent of Indian point, gradually haul to the eastward until these marks come on N.W. $\frac{3}{4}$ N., and with them in line come to in 11 fathoms, mud, with Church point E. by N. $\frac{3}{8}$ N.

Outside Channel.—After passing Shut-in island at a safe distance, steer N. by E. until Davy point (well open north of Wedge island) bears E.N.E., then alter course for the point, and proceed to the anchorage as before directed.

HEAD HARBOUR, at the north-east angle of St. Margaret bay, is alike capacious and secure, with a sufficient depth of water to accommodate ships of the largest draught. The anchorage extends from within Strawberry island along the northern shore, but the best anchorage is within Clam island, which is only a little more than a cable in extent, with a very shoal spit running out a cable's length to the north-east.

There is a deep water channel on either side of the island, but the one on the north side, being the wider of the two, is to be preferred, more especially for large ships. From between Indian point and Croucher island, which may be considered the entrance points of the harbour, the distance is a long half mile; within these points there are no detached dangers which would affect vessels of small draught, and but few to be avoided by large ships.

CROUCHER ISLAND is the outer and largest of three small islets, almost connected, which lie off the entrance of Head harbour, occupying a space of six-tenths of a mile, N.E. by E. and S.W. by W.

The main channel into the harbour is to the southward of the group, but within on the north side is a narrow deep water passage a cable's length across between the 5-fathom lines.

Off the south end of Croucher island a shoal spit extends nearly $1\frac{1}{2}$ cables, which is cleared on its south side by the extreme south part of Indian point on with the south tangent of the inner or eastern lump;

and on its east side a safe offing will be maintained by not shutting in the Episcopal church at Smelt brook with Strawberry island.

A similar spit extends in a southerly direction from Strawberry island, and is cleared on its east side by keeping Potato island open east of Strawberry island.

Strawberry Island Shoal is a detached rocky patch, with $4\frac{1}{4}$ fathoms water, having deep water all round; it is distant $1\frac{1}{4}$ cables from Strawberry island in a south-easterly direction, and lies with Black point and south end of Wood island in line W. by N. $\frac{1}{2}$ N., and East head just open east of Strawberry island N. by W. $\frac{3}{4}$ W.

Marsh Gutter Rock, with $3\frac{1}{2}$ fathoms, has deep water all round it, and lies S.E. $\frac{1}{2}$ E. $1\frac{1}{3}$ cables from the nearest point of Marsh gutter.

Sand Cove Shoal is a small detached rocky patch with $4\frac{1}{4}$ fathoms water, and lies with the south end of Wood island touching Black point E. by S. $\frac{1}{2}$ S., and the Episcopal church at Smelt brook N. by E. $\frac{1}{2}$ E., nearly.

The west tangents of Wedge island and the inner (or eastern) lump of Indian point in line S.E. by S. leads east of this shoal, and west of a long spit (extending from Sand cove in a northerly direction) with $3\frac{1}{4}$ fathoms at its extremity.

DIRECTIONS.—Being abreast of the north end of Shut-in island proceed to the N.N.E. until Clam island, east tangent, comes on with outer end of Indian point N.E. The vessel will then be clear of Ringdove shoal, and may steer N.E. $\frac{1}{2}$ N., rounding Indian point a cable off shore; and after passing the point haul to the eastward until the western tangents of Wedge island and Indian point are in line S.S.W. $\frac{1}{4}$ W.

Keeping the above marks on, and steering N.N.E. $\frac{1}{4}$ E., will lead in mid-channel between the Sand Cove shoal and Strawberry shoal; and when the north end of Strawberry island and Black point come in line W. $\frac{3}{4}$ N., steer so as to pass north of Clam island, taking care not to shut in Croucher island with the south point of Strawberry island, in order to avoid Marsh gutter shoal, with $3\frac{1}{2}$ fathoms.

A good mark for rounding the north-east spit of Clam island is to bring Black point, on the main shore side of the mid-channel line between Potato point and the main, and anchor in 9 or 10 fathoms, mud, with the east end of Clam island touching the outer end of Indian point, and Potato island its apparent breadth open south of Black point.

To pass east of Clam island, proceed on either side of Sand Cove shoal with marks already given; and when Black point comes open north of Strawberry island W. $\frac{1}{2}$ N. alter course so as to pass midway between Clam island and the southern shore, and anchor in position already described.

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INGRAM RIVER is an indentation immediately west of Head harbour, a short half mile across the entrance, from whence it runs in N. by E. $\frac{1}{4}$ E., $1\frac{1}{4}$ miles to its head, where the waters of a fresh water river are received.

The western shores of this indentation are clear; on the eastern side, half a mile from the head, is some shoal ground, which will be cleared on the western side by keeping Wood island well open of East head.

Croucher Shoal, about a cable in extent, is the only danger off the entrance to Ingram river; the least water is $3\frac{1}{4}$ fathoms, from whence Black and Snare points are in line W. by N. $\frac{1}{4}$ N., and Croucher island, west end, is on with Davy point S.S.E. The channel between Croucher shoal and island is one-third of a mile wide; the west side of the island being steep-to may be passed in safety a cable's length off. Vessels may pass east or west of the shoal by bringing East or West heads to bear N.E. $\frac{3}{4}$ N., until Snare point is well shut in behind Black point.

HUBBARD COVE, at the extreme north-west corner of St. Margaret bay, runs in for a mile N.N.W. $\frac{1}{2}$ W., from whence it takes a north-easterly trend to its head, where it receives the waters of a small lake.

Slaunwhite Ledge is a ridge of rocks and sand N. by W. $\frac{1}{2}$ W. and S. by E. $\frac{1}{2}$ E., and lies over on the eastern side of the entrance into Hubbard cove. The actual rocky ledge is about $1\frac{1}{2}$ cables in length, its highest rock on the south end only just covering at high water; but it is surrounded by an extensive plateau of shoal ground nearly half a mile in length, which terminates on its north end in a small sandy knoll known as North shoal, which uncovers at half tide, and lies 4 cables distant from Black point in line with Red bank E. $\frac{1}{2}$ N.

Green Point Shoal, a small detached rocky patch with 3 fathoms water, lies a short 2 cables N.N.E. $\frac{1}{2}$ E. from the north rounding of Green point; the shoal has deep water around it, and may consequently be passed on either side.

DIRECTIONS.—If from the southward, avoid bringing the tangent of Dauphney head to the westward of N. by W. $\frac{3}{4}$ W., which will clear Slaunwhite ledge on the western side, and when Red bank bears E. by S. $\frac{3}{4}$ S. the vessel will be abreast Green point shoal, and from thence may steer up mid-channel, anchoring as convenient.

There is a passage 2 cables broad on the east side of Slaunwhite ledge, but as there are no direct leading marks, bring the south point of Dauphney head N.W.; this course will lead north of Green point shoal, after passing which select a berth as convenient.

Mill Cove.—From Green point at the entrance of Hubbard cove the shores of St. Margaret bay takes a southerly trend, being steep close-to. At the distance of 2 miles from Green point is Mill cove, which forms an admirable anchorage during westerly winds. From thence to the south-

ward as far as N.W. cove the coast is bold, rugged, and free from danger, and may be approached in safety to a cable's length.

Having described the dangers on the west side of St. Margaret bay, it will now be necessary to draw attention to the eastern side and off-lying dangers, some of which are common to St. Margaret and Mahone bays.

GREEN ISLAND, a short third of a mile in length and 40 feet high, is the most off-lying islet marking the western approaches to St. Margaret bay; it is distant upwards of 5 miles from New Harbour point, and lies with East Ironbound island lighthouse N. $\frac{1}{3}$ W., $3\frac{1}{2}$ miles, and Cross island lighthouse W. by S. $\frac{3}{4}$ S. $6\frac{3}{4}$ miles.

South Rock has $2\frac{1}{4}$ fathoms water, and lies about a cable's length off the south-west end of Green island, from which it is separated by a narrow deep water channel. Its close proximity to the island renders a clearing mark unnecessary.

North-east Shoal, so called in consequence of its relative position to Green island, from which it bears N.E. $\frac{1}{2}$ N. $1\frac{3}{4}$ miles, is about a quarter of a mile in extent, and from its shoalest part (near the centre), with only 3 feet water, the east end of Little Tancook island is just seen east of East Ironbound island, the nearest part of the latter being more than 2 miles distant N.N.W. $\frac{1}{2}$ W., and the north extremity of Cross island just in sight north of Big Duck island.

To pass clear of this danger on the east side, keep the whole of Little Tancook island open east of East Ironbound island; and to pass to the westward, bring the east point of Great Tancook island just on with the west of East Ironbound island N.N.W. $\frac{3}{4}$ W.

This shoal breaks near low water during a heavy swell.

EAST IRONBOUND ISLAND LIGHT.—East Ironbound island is about seven-eighths of a mile in length E. by S. and W. by N., and attains an elevation of 60 feet; it lies $2\frac{1}{2}$ miles from the extremity of Aspatageon peninsula, and is clear on all sides at the distance of a quarter of a mile off shore.

The lighthouse—a square wooden building, painted white—stands on the highest part of the island, about a third of a mile from the eastern end, and exhibits two *fixed* white lights, 25 feet apart in a horizontal position; in clear weather the lights should be visible from a distance of 12 miles.

Seal Ledge consists of broken ridges of rocks, which cover at half flood, but generally shows a break. The highest part of the ledge uncovers about a cable's length at low water, and lies a short mile S.E. $\frac{3}{4}$ E. from Herring point (at the southern extremity of Aspatageon peninsula), with a deep water channel between, and N.E. $\frac{1}{2}$ E. 2 miles from the east point of Ironbound island.

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The north point of Little Tancook island a little open to the southward of New Harbour point N.W. by W. $\frac{1}{2}$ W. clears the ledge on its south side.

Gravel Island Shoals lie off the south end of Gravel island, with which they are connected by shallow bars of shingle. The outer shoal uncovers at half ebb, and at low water shows a full quarter of a mile of its length; its highest point is nearly half a mile S.S.W. from the south point of Gravel island.

The inner shoal lies a quarter of a mile South of the same point, and dries about half the size of the outer shoal; about a cable's length south-east of the inner shoal is a small rock with only one foot water on it.

There are no good clearing marks for these shoals, but White point kept to the northward of N.E. $\frac{1}{2}$ E. will clear them on the south-east side; and the east point of Gravel island kept to the westward of N. by W. will clear on their eastern side. The centre of Seal ledge (when showing) on, with the west end of East Ironbound island, W.S.W. a little southerly leads clear of the shoals on their south-east side.

S.W. ISLAND, half a mile in length and 40 feet high, forms the salient point on the western side of St. Margaret bay. The south and east sides of the island can be approached to half a cable's length, and further to the northward the shores of Owls head and Horse island are steep close to.

N.W. COVE, within Horse island, on the western side of St. Margaret bay, is not a good anchorage. If passing north of Horse island, care must be taken to avoid the Horse rock, small in extent but with only $1\frac{3}{4}$ fathoms on its shoalest part.

Charley Rock is very small and dangerous, being shaped like a wedge with its thin edge upwards, and forming an angle with the horizon. The apex of the rock has only $1\frac{3}{4}$ fathoms on it, with deep water all round, and lies half a mile E.N.E. a little easterly from the south point of S.W. island.

The tangent of Herring point touching the south point of S.W. island clears the rock on its south side; and the whole of East Ironbound island shut in behind S.W. island clears this danger on the north side.

TIDES.—The rise and fall of tide in St. Margaret bay are regular, but the tidal streams are very weak, excepting at the entrance between Shut-in island and Peggy cove on the eastern side, and from Owls head to S.W. island on the western side; between these shores the stream attains a velocity of about one knot per hour in the strength of the tide, the flood running to the northward, and the ebb to the southward, but following the trend of the shores on either side when close in.

Horse Shoe Ledge consists of ridges of rock running N.N.W. and S.S.E., which uncover at half ebb, and at low water the form of the ridges

bears some resemblance to that of a horse shoe ; the length of the shoal within the five fathom line is a long half mile N.N.W. and S.S.E., by about a quarter of a mile in breadth.

From the highest part of the ledge East Ironbound island lighthouse bears W. $\frac{3}{4}$ S. $4\frac{3}{4}$ miles, and the south point of S.W. island N. $\frac{1}{4}$ E. about $1\frac{3}{4}$ miles. The position of this danger, when covered, is generally shown by a break, unless with an unusually smooth sea.

DIRECTIONS.—On approaching St. Margaret bay from the eastward, and being clear of the dangers off the south-west end of Betty island, steer to the north-west so as to pass at a safe distance outside Halibut rock.

From on offing half a mile west of Halibut rock steer N.N.W. for a distance of 2 miles, and from thence proceed to any of the anchorages, in accordance with previous directions.

If from the southward or westward, and being outside Green island, do not bring the north point of Green island to the southward of S.W. by W. until the whole of Little Tancook island is open east of East Ironbound island, in order to avoid the north-east shoal.

To pass east of the Horse Shoe ledge bring Owls head well open east of S.W. island, and bearing N. by W., and to pass to the westward Owls head should be kept open west of S.W. island and bearing N. by E. $\frac{1}{2}$ E., in this latter case, when the tangent of New Harbour point bears W. by N., the vessel will be to the northward of the Horse Shoe ledge, and a course may be steered for Shut-in island, taking care to avoid Charley rock on the east side of S.W. island.

MAHONE BAY adjoins St. Margaret bay to the westward, being separated from it by the peninsula on which stands the high lands of Aspatageon, whose appearance in three regular swellings is very remarkable from a distance of more than 20 miles in the offing.

The entrance of the bay lies between New Harbour point at the end of Aspatageon peninsula and the east point of Lunenburg promontory, distant 9 miles S.W. $\frac{3}{4}$ W. There are numerous islands in the bay, the largest of which are Great and Little Tancook on the eastern side near the entrance.

The eastern shore of the bay is steep-to and comparatively free from dangers, but on the western side the rocks and sunken shoals are almost innumerable. Between the east point of Lunenburg and Chockle-cap islet to the northward are a series of parallel ridges lying east and west, extending in some places considerably beyond the general direction of the shore, and forming a confused mass of rocks, rendering any intelligible description impossible.

Many of the rocks uncover at low water, and show themselves more than half a mile from the high water line. About $1\frac{1}{2}$ miles N.E. of East

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point is Little Duck island, which should always be passed on the east or outside; its shores can be safely approached to within a quarter of a mile.

In the part of Mahone bay situated between Great Tancook and Refuse islands and the islands forming Chester harbour, the water is generally deep over a muddy bottom; but several abrupt rises exist, composed of boulders, gravel, and sand, some of which being near the surface constitute dangers to be avoided.

As a detailed description of all the dangers in Mahone bay would be impracticable, it is intended to allude only to those affecting the navigation of the principal channels, commencing with the islets marking the approaches, and from thence up the bay.

CROSS ISLAND LIGHT.—Cross island, about $1\frac{1}{3}$ miles long, and thickly wooded, lies immediately off the entrance of Lunenburg bay, and is the outer object marking the western approach to Mahone bay.

The lighthouse, 53 feet high, and painted red, is the frustum of a pyramid on an octagonal base; it stands on the east end of the island, and exhibits two lights vertically.

The upper light, at an elevation of 100 feet above the level of the sea, is a *revolving* white light, attaining its greatest brilliancy once every minute; the lower light, at the height of 65 feet above the sea, is a *fixed* white light. In clear weather the upper light should be seen from a distance of 14 miles, and the lower from a distance of 8 miles.

Cross island is distant from East point ledge (always above water) more than $1\frac{1}{2}$ miles, but extensive shoal ground off the northern shore of the island narrows the navigable channel to a distance considerably under a mile. Pilots frequent the island.

Hounds Ledge, consisting of parallel ridges of rock nearly a mile in length east and west, lies off the north shore of Cross island; the eastern ends of the ledge mostly uncover at low water. Green island south point touching the north end of Big Duck island E. $\frac{1}{2}$ N. clears this danger to the northward.

BIG DUCK ISLAND, about a third of a mile in length and 45 feet high, lies 2 miles N.E. $\frac{1}{2}$ E. from the east end of Cross island; the 5-fathom line around this island is about a quarter of a mile off shore.

Middle Ledge is composed of parallel rocky ridges, and has only 3 feet on its shoalest spot, from whence Green island south point bears E. by S. $\frac{1}{2}$ S. $3\frac{1}{4}$ miles; and the east point of Big Duck island S.W. $\frac{1}{3}$ W. a long 2 miles.

Cross Island lighthouse on with the east end of Big Duck island S.W. $\frac{1}{2}$ W. clears the ledge on its east side; and the lighthouse on with the west of the island S.W. $\frac{1}{3}$ S. clears the danger on the western side.

There are no good cross clearing marks, but a vessel will be to the northward of the danger with the south point of Green island bearing E.S.E.

FLAT ISLAND.—Flat island, about two-thirds of a mile in length, is somewhat remarkable in shape; on the north end is a narrow eminence 40 feet high, whilst the remainder of the island is very low. The island lies West $1\frac{1}{2}$ miles from East Ironbound island, with a deep water channel between.

South Shoal, a small detached rocky patch, with $2\frac{3}{4}$ fathoms water, and distant one-third of a mile south of the south point of Flat island, lies with the south-west points of Flat and Great Tancook islands in line.

Bull Rock is a small rocky ridge, the highest part of which uncovers at half ebb, and can be approached to the distance of one-eighth of a mile on any side. The Bull bears W. $\frac{1}{2}$ S. one mile from the south-west end of Flat island, the channel between being clear, and S. by W. $\frac{1}{2}$ W. $1\frac{2}{3}$ miles from the south-east point of Great Tancook island.

The north end of East Ironbound island open north of Flat island clears the Bull on its north side; East Ironbound lighthouse open south of Flat island clears the danger on its south side; and Little Duck island touching the west end of Cross island S.W. by S. clears the Bull on the west side. The deep water passage on the west side of Bull rock is the main channel into Mahone bay, and is a long 2 miles across.

GREAT TANCOOK ISLAND, the largest of the numerous islands studding Mahone bay, is about 2 miles in length, and 115 feet high, with an indentation on its eastern side. The island lies at the entrance of the bay, nearly midway between Aspatageon peninsula and the south-western shore.

West Shoals are three in number, on the west side of Great Tancook island, but two only are sufficiently off-lying to require description. The southernmost is about one-third of a mile in length, and the same distance off shore, with $2\frac{1}{4}$ fathoms on its shoalest part, and deep water between it and the island shore. The north end of Ironbound island on with the south end of Great Tancook island E. by S. $\frac{1}{3}$ S. clear this shoal to the southward, but there is no good clearing mark for the western side.

Middle Shoal, detached and nearly circular in form, is one-third of a mile in diameter, with less than a foot of water on its shoalest part, which lies one-third of a mile W. by N. $\frac{1}{2}$ N. from the elbow of the shingle beach on the west side of Great Tancook island, and North two-thirds of a mile from the southern shoal.

Within the Middle shoal to the north-east is the third shoal, of smaller dimensions, with $2\frac{1}{4}$ fathoms on it, one quarter of a mile from the island shore.

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1864) by a single tree, lies a good third of a mile off the north-west end of Great Tancook island, and may be considered the westernmost of three ledges about the same distance off shore.

The one next east of Star island is composed of boulders which uncover at half ebb, whilst only a small portion of the eastern ledge—which is composed of gravel—dries at low water; from this spot the tree on Star island bears W. by S., 4 cables distant, and the shoal extends to the N.N.W. for one-third of a mile before the depth of 5 fathoms is reached.

On the inshore side of these two latter ledges is a narrow channel with from $2\frac{3}{4}$ to 4 fathoms; the northern shore of Great Tancook island requires an offing of at least one-third of a mile.

LITTLE TANCOOK ISLAND, three-quarters of a mile in length and 80 feet high, occupies a nearly central position between Great Tancook island and Indian point, at the south-west extremity of Aspatageon peninsula. There are available channels on either side of the island, that on the western side being the more direct of the two, excepting for vessels of moderate draught.

S.E. Shoals consist of a cluster of detached shoal patches, over which the depths of water vary from $2\frac{3}{4}$ to 5 fathoms; the shoalest patch, with $2\frac{3}{4}$ fathoms, lies with the south point of Little Tancook island, a good half mile distant N.N.W. $\frac{3}{4}$ W., and Grassy island S.W. by W. $\frac{3}{4}$ W. nearly $1\frac{1}{2}$ miles. From this danger the centre of Green island is on with the west end of East Ironbound island S. by E.

REFUSE ISLAND.—This island and adjacent shoals lie on the western side of the main channel into Mahone bay, opposite Great Tancook island, and with the west shoals of the latter island the navigable channel is narrowed to the breadth of one mile.

East Shoal is a small detached rocky rise, with 4 fathoms on it, and deep water all round; from it the high earth cliff on the south-east point of Refuse island bears West a little southerly three-quarters of a mile.

Within the East shoal is a spit extending from the north-east point of the island in a S.E. by E. direction nearly half a mile; there are only $2\frac{3}{4}$ fathoms on this spit, more than a third of a mile from the high water line of Refuse island.

S.E. Shoal is detached and narrow, one-third of a mile long, with $3\frac{1}{4}$ fathoms on it; this spot lies from the high cliff on the south side of Refuse island S.E. $\frac{1}{2}$ S. three-quarters of a mile.

South Shoal is a large stony rise nearly half a mile long N. by E. and S. by W., by a third of a mile broad; the shoal is separated from the south side of Refuse island by a narrow 5-fathom channel, and has its shoalest part with $2\frac{1}{2}$ fathoms on the west end.

From its outer and southern end, with 3 fathoms, the high cliff of

Refuse island (already referred to) bears N.N.E. $\frac{1}{3}$ E. two-thirds of a mile.

Mason Spit is a stony ridge off the south-east end of Mason island, two-thirds of a mile in length; at half the foregoing distance from the island shore a small portion of the spit dries at low water, and from it Haddock shoal, with 3 fathoms, lies S. by E. $\frac{3}{4}$ E., a long half mile.

Coachman Ledge is a long half mile in length, N. by E. and S. by W., between the 5-fathom lines; its highest part uncovers shortly after half ebb, and at low water it shows about half a cable above water. The centre of this spot lies with Star island tree S.W. by S. nearly 2 miles distant.

S.W. Coachman, a small patch with $4\frac{1}{2}$ fathoms on it, lies with that part of Coachman ledge which dries N.E. $\frac{1}{2}$ N. rather more than two-thirds of a mile.

N.E. Coachman is another small patch with $4\frac{1}{2}$ fathoms water, from which that part of Coachman ledge which dries bears S.S.W. $\frac{3}{4}$ W. upwards of three-quarters of a mile.

Middle Shoal is nearly a quarter of a mile in length, having on its shoalest part 3 fathoms water; from it the north-east point of East Iron-bound island is just touching the west end of Little Tancook island S.E. $\frac{1}{2}$ S., and the east end of Snake island N.E. $\frac{1}{2}$ E.

Quaker Shoal, about 2 cables in length, has 4 fathoms on its shoalest part, from which the single tree on the east end of Quaker island bears N.N.E. a little more than a mile, and Round Island nubble W. by N.

Birch Shoal, two cables in length, has only $2\frac{1}{2}$ fathoms on it, from whence the south point of Birch island bears N.N.E. 4 cables distant.

Lynch Shoal is about a quarter of a mile in length N.N.W. and S.S.E., with only 9 feet water on it; from whence the north end of Clay island is just touching the southern cliffy point of Quaker island, and the south point of Lynch island E. by N. $\frac{1}{4}$ N. nearly half a mile.

Blandford Shoal is a small detached 4-fathom patch lying W. $\frac{3}{4}$ S. 4 cables from Blandford head, on the west side of Aspatageon peninsula, and N.N.W. three-quarters of a mile from Indian point.

BLANDFORD HEAD, which is steep-to, lies on the south side of Shoal cove where, as the name implies, the water is shoal. From Coachman head on the north side of the cove, the shore in a northerly direction is clear of danger to a point half a mile to the southward of Little East river; from this position to Rous point (at the western entrance of the river) the shore should not be approached within a quarter of a mile, in order to avoid several off-lying rocks. The bay between Rous point and East River point should be avoided, in consequence of shoal water and rocks.

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A description of the dangers on the western side of the east branch of Mahone bay will now be necessary, as some of them affect the approaches to Chester harbour.

Mountain Shoals, three in number, lie to the southward and eastward of Mountain island. The inner and western of the three is one-third of a mile in length and half a cable broad. On its shoalest part there are only 9 feet water, from which the south point of Mountain island bears N.W. one quarter of a mile.

The middle of the three shoals is a cable long, with $3\frac{1}{4}$ fathoms, and lies with the south point of Mountain island N.W. two-thirds of a mile distant.

The outer shoal is a small patch with $4\frac{3}{4}$ fathoms water, and from it the south point of Mountain island bears N.W. by W. nearly one mile.

Spectacle Shoal extends off the eastern side of Saddle island, and is one-third of a mile long in a North and South direction, with its centre showing at low water springs; from this spot the east end of Saddle island bears S.W. $1\frac{1}{2}$ cables.

Snake Spit extends a short quarter of a mile from the south-west side of Snake island, having on its extremity only one foot water. A deep water channel, a quarter of a mile broad, exists between Snake spit and Spectacle shoal.

Graves Shoal, nearly circular in form and detached, is small in extent, with only 3 feet water on its shoalest part, from which the south point of Graves island bears N.N.W. $\frac{1}{2}$ W. nearly two-thirds of a mile; and Lobster point S.W. by W. $\frac{3}{4}$ W. nearly one mile.

Long Spit takes its rise from the main shore between Lobster point and Graves island, and runs in a S.S.E. direction for a distance of three-quarters of a mile, with a breadth of about a quarter of a mile. The spit is composed of boulders, stones, and gravel, and uncovers as far out as a third of a mile from the shore; near the end of the dry part are some large boulders, which uncover at half ebb.

Lobster Claws are two stony ridges. The eastern claw extends from Lobster point in a S. $\frac{3}{4}$ E. direction nearly half a mile, a small portion of which uncovers about 2 cables from the point.

The western claw is detached, and about a quarter of a mile in length, with deep water all around. From the shoalest spot, with $1\frac{3}{4}$ fathoms, Lobster point bears N.N.E. $\frac{1}{2}$ E. one-third of a mile. Peninsula point just touching the north end of Norse island W. by N. clears the southern edge of the eastern claw; and the north end of Norse island W. by N. $\frac{1}{2}$ N. (having Peninsula point shut in behind it) clears the southern edge of the western claw.

Sheep Ledge consists of boulders, the highest of which only cover

during extraordinary spring tides; from this point the ledge extends half a cable to the northward, and nearly 2 cables to the southward, and at low water in this latter direction it uncovers about a cable's length.

From the highest part of the ledge the southern points of Birch and Quaker islands are in line, bearing E. $\frac{1}{4}$ N., and Round Island nubble two-thirds of a mile distant in a S. by W. direction.

Clay Island Spit extends in a south-easterly direction from the south end of Clay island, and at the distance of 2 cables there are only 2 fathoms water; beyond this the depth increases. There are $3\frac{1}{2}$ fathoms at the distance of half a mile from the island, and from this spot an irregular ridge, with 4 fathoms water, runs to the north-east and joins the shallow water off the north-west end of Quaker island, the whole forming a crooked bar composed of sand, gravel, and boulders.

Chester churches just open east of the Peninsula, N. by E. $\frac{3}{4}$ E. clears the eastern edge of Clay spit in 4 fathoms, and the south end of Woody island just open south of Quaker island E. $\frac{1}{4}$ S. clears the southern edge of the spit.

Big Fish Shoal is a small isolated rise, with $4\frac{1}{2}$ fathoms on it, from whence the south point of Big Fish island bears N. by W. a quarter of a mile; and the south end of Lynch island, just open north of Quaker island.

Chester Rock is a small rocky patch with 10 feet water, lying immediately off the entrance of Chester creek, and a little outside the line between Norse point and the neck of the peninsula.

Garret Cove is shoal, and from Norse point a ridge of boulders extends in a S.S.E. direction, terminating at the distance of nearly a cable from the point in a boulder with only 9 feet water. Zink point, to the south-east, may be approached to a cable's length.

CHESTER HARBOUR is commodious, safe, and comparatively easy of access. The town is laid out with due regard to regularity, the streets running at right angles to each other. The population numbers about 2,000, the majority of whom are engaged in the fisheries or lumber trade; a considerable amount of farm produce is raised, and a good business is carried on in manufacturing fish-barrels for the out-ports.

There are two channels into the harbour, the one to the southward being more direct than that to the eastward, which is narrow and somewhat intricate.

TIDES.—It is high water, full and change, in Chester harbour at 7h. 44m.; springs rise 7 feet, and neaps $5\frac{3}{4}$ feet.

The general surface of the water is raised a foot by south-easterly gales, and depressed the same amount by north-westerly gales. In the northern portion of Mahone bay the tidal stream is sluggish, but through the eastern

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Tancook channel it runs at the rate of one knot per hour during its full strength; and through the narrow part of the western Tancook channel the tide attains a velocity of 2 miles an hour, the flood setting to the northward, and the ebb to the southward.

DIRECTIONS, by the Tancook Channels.—If from the eastward and clear of Seal ledge, which may be known by bringing Indian point—open of New Harbour point—to bear N.W., to go through the Eastern channel, steer for the north end of Little Tancook island on a N.W. $\frac{3}{4}$ W. bearing, taking care not to approach the land between Herring and New Harbour points nearer than about 2 cables; and when to the westward of New Harbour point alter course to the northward, so as to pass in mid-channel between Little Tancook island and Indian point on the main shore.

By the western channel, when clear of the Seal ledge as before, steer so as to pass to the southward of the S.E. shoals, which may be done by keeping S.W. island open of Herring point; when Green island is open its own breadth west of East Ironbound island the S.E. shoals will have been passed, and a more northerly course may be steered for the channel, bearing in mind that the west point of Little Tancook island may be passed within a cable's length, but that when past that point care must be taken not to near the north-east side of Great Tancook island nearer than one-third of a mile.

From a position midway between Little Tancook island and Indian point, a vessel making for Chester harbour, should steer N. by W. $\frac{3}{4}$ W. until the northern points of Norse and Mountain islands are in line, and then alter course to N.W. by W. $\frac{1}{2}$ W., or so as to pass a good cable's length off the north end of Mountain island.

When Mark island opens out west of Mountain island steer W. $\frac{1}{2}$ N. to clear the Lobster claws, and after passing them—which may be known by Lynch island opening out west of Woody island—alter course so as to pass mid-channel between Zink point and Norse island, and anchor in from 6 to 8 fathoms, mud, with the north ends of Norse and Mountain islands in line, and the west ends of Norse and Quaker islands in line.

A more direct channel into Chester harbour is that between Mountain and Mark islands, and when the north point of Lynch island touches the south end of Woody island S.W. $\frac{1}{2}$ W. Mark island spit will have been passed, and the course should be altered to N.W. $\frac{1}{4}$ W., so as to pass midway between Norse island and Zink point, and anchor as before directed.

Passing through the eastern Tancook channel with a south-westerly wind, when the north point of Little Tancook island bears W.N.W., haul close round it, and if possible steer N.W. by W., in order to pass to the

southward of the Coachman ledge. When Chester churches appear midway between Woody and Lynch islands N.N.W. $\frac{1}{2}$ W., alter course to N.W. $\frac{3}{4}$ N. for the south point of Quaker island, so as to pass between the Middle and Lynch shoals.

On approaching Quaker island keep a good cable off its south-west side until Chester churches nearly touch the east tangent of the peninsula, bearing N. by E. $\frac{3}{4}$ E., when alter course for them until the south point of Norse island opens to the northward of the stony point on the north side of Quaker island bearing East; then keep to the eastward and anchor as before directed.

If with a westerly wind a vessel has run through the western Tancook channel, and proceeded sufficiently far to the northward to clear the shoal ground off the north-east side of Great Tancook island, steer N.W. $\frac{1}{2}$ W., so as to pass to the southward of Coachman ledge, until Chester churches open to the westward of Woody island, as before mentioned, when steer for the south-west side of Quaker island, and proceed as before directed.

When approaching Chester from an offing east of Cross island, steer so as to pass at a safe distance east or west of Big Duck island, and thence for the channel west of Great Tancook island, bearing in mind that the middle of Little Duck island on with Cross island lighthouse, bearing S. $\frac{5}{8}$ W., leads through the middle of the above channel, and that any part of Little Duck island on with Cross island will clear the dangers which lie off the west side of Great Tancook island and the east side of Refuse island respectively.

Having passed the Refuse island east shoal, alter course for Quaker island, and proceed in accordance with previous directions.

With an easterly wind, and north of Great Tancook west shoal, haul up and, after passing at a safe distance from Star island, bring it and the west tangent of Great Tancook island in line S. $\frac{1}{2}$ W., and with these marks on proceed between the Coachman ledge and Middle shoal, and run in mid-channel between Mark and Woody islands, continuing on until the north-west point of Quaker island touches the south point of Norse island, when alter course to N.W., so as to pass midway between Zink point and the north side of Norse island, anchoring as before directed.

Good anchorage is to be obtained in the north-west angle of Mahone bay, to the north-west of Chester harbour; the entrance to this arm of the sea lies between Clay and Frog islands, but there are several dangers to be avoided, for whose positions the mariner is referred to the chart.

Being to the westward of Birch island bring the south-west tangent of Great Tancook island open west of Birch island, two-thirds the apparent breadth of the latter island S. by E. $\frac{3}{4}$ E.; this mark will lead up the

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north-west arm in safety between the shoals, and anchorage may be selected according to circumstances.

MARTIN RIVER ANCHORAGE, on the west side of Mahone bay, is safe and commodious, with water sufficient to accommodate vessels of any draught, but the approaches being narrow and circuitous render the place difficult of access, and on no account should strangers attempt to enter this anchorage without the assistance of local knowledge.

TIDES. — It is high water, full and change, in Martin river at 7h. 43m.; springs rise $7\frac{1}{2}$ feet, and neaps $6\frac{1}{2}$ feet. The times of high water and the ranges observed in other parts of Mahone bay differ very slightly from the above.

MAHONE HARBOUR, on the west side of Mahone bay, affords secure and well sheltered anchorage in about 6 fathoms water, but, like Martin river anchorage, is difficult of access in consequence of the numerous off-lying dangers.

The entrance to the channel leading to Mahone harbour and Princes inlet lies between Hobson nose on the south and Haddock shoal on the north, the latter being the southern rise of the shoal ground extending from Refuse and Mason islands.

Hobson Nose, on the south-west side of Mahone bay, is remarkable from its being a grass-covered earthy mound, 30 feet above the sea, on a gavelly spit which dries a good third of a mile at low water. This islet should not be approached within a quarter of a mile.

Haddock Shoal, a small stony patch with 3 fathoms water, lies N. $\frac{1}{2}$ E. $1\frac{1}{4}$ miles from Hobson nose; from the shoal the lighthouse on East Ironbound island is just open to the southward of Great Tancook island.

Gull Ledges lie on the north side of the channel leading to Mahone harbour; on the northernmost of these ledges is a remarkable granite boulder which can always be seen, being about 2 feet above the sea level at high spring tides. From the boulder shoal water extends in a S.E. by S. direction three-tenths of a mile.

The south-west ledge, about half a mile in length and a quarter of a mile broad, is separated from the above by a narrow channel of deep water, and is steep-to, especially on its south side; from its shoalest part near the centre, with 4 feet water, the north point of East Ironbound island is just shut in with the south end of Great Tancook island.

Middle Patch, of small extent with $3\frac{1}{2}$ fathoms, lies in mid-channel with deep water close to, from it Bluff head bears S. by W. $\frac{1}{2}$ W. four-fifths of a mile.

Bockman Shoal, about a quarter of a mile in length, has 10 feet water on its western end, from which the north point of Bockman island bears W. by N., the nearest part of the island being half a mile distant.

Covey Ledge, consisting of detached boulders, uncovers at half ebb, its east end being a quarter of a mile distant in an easterly direction from the north-east end of Covey island; between the ledge and island is a boat channel with 4 feet water; the ledge when seen should not be approached nearer than a cable's length.

Trappean Shoal, a small rocky patch with 4 fathoms water, lies with Goat island bearing E. by N. $\frac{1}{4}$ N. distant half a mile.

Andrew Shoal, about 2 cables long, has only one foot water on its shoalest part, which is equidistant from Andrew and Westhaver islands, and lies with the centre of Goat island on with the south point of Rous island.

DIRECTIONS.—Vessels being off Hobson nose, and bound for Mahone harbour, should bring the grassy islet of Hobson nose to bear S.E. $\frac{1}{2}$ E., and by steering N.W. $\frac{1}{2}$ W. the ship will pass south of the Middle patch, and north of Bockman shoal and Covey ledge.

When the east point of Covey island touches the west end of Bockman island, alter course to W. by N. $\frac{1}{2}$ N., until approaching Westhaver island, when the channel south of Westhaver island or north of Ham island must be decided on, but if without local knowledge the former channel is recommended as being the less circuitous of the two. Westhaver island being steep to on its west side may be approached close to, and a good anchorage obtained in 5 or 6 fathoms, mud, inside Ham island to the north-west. Good anchorage may also be obtained between Trappean island and the east end of Harmon island in 7 fathoms, mud, with the southern point of Refuse island just shut in with the north end of Trappean island.

PRINCES INLET, on the south side of Harmon island, though small in extent, affords safe anchorage in 6 or 7 fathoms, mud. From an offing of about a third of a mile north of Hobson nose steer for the south point of Bockman island; this course will clear the spits off Bluff head and Sandy cove. After passing the latter, steer so as to pass midway between Bockman island and the main shore, and on nearing Little Harmon island borrow on the main shore, in order to avoid shoal water off the latter island, and come to an anchor between Harmon island and the main.

HECKMAN ANCHORAGE, to the southward of Hobson nose, is perfectly safe with a good depth of water over mud, but the channels leading to it, though deep, are rendered tortuous by several shoals which lay between Hobson nose and the anchorage; and as no direct leading marks can be given, a stranger should not attempt the anchorage without a pilot.

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TIDES.—It is high water, full and change, at Heckman anchorage at 7h. 45m. ; springs rise $7\frac{1}{4}$ feet, neaps 6 feet.

Fogs.—During the fogs which frequently prevail on this coast during July and August when the wind is to the westward of south, the southwest side of Mahone bay is generally clear.

CHAPTER VII.

NOVA SCOTIA :—SOUTH-EAST COAST.

MAHONE BAY, TO BACCARO POINT.

VARIATION in 1867.

Lunenburg -	- 19° 10' W.	Port Metway -	- 19° 10' W.
Liverpool bay	- 18° 30' W.	Shelburne -	- 17° 30' W.

FROM Cross island to Indian island, west of Cape Le Have, a distance of about 14 miles, the coast line is much indented by the entrance of Lunenburg and Le Have rivers ; but its general trend is about S.W. by W. $\frac{1}{2}$ W. The land near the coast assumes a broken and irregular appearance, in consequence of numerous hills and valleys, the former gradually increasing in elevation as they recede from the shore. At Cape Le Have earthy cliffs alternating with rock make their appearance ; the land is thickly wooded in the interior, but near the shore partial clearances have been effected, increasing each year.

Between Indian and Little Hope islands, a distance of 27 miles, the general trend of the coast line is S.W. by W. ; and between Little Hope and Ram island, a distance of 12 miles, the trend is about W.S.W.

Between Indian and Ram islands the land near the shore varies in elevation from one to two hundred feet, rising gradually towards the interior. It is generally thickly wooded, with partial clearings ; but in some cases near the coast, especially to the southward of Port Monton, some of the hills are bare of trees and covered with blueberry and cranberry bushes.

LUNENBURG BAY, about 5 miles in depth, and $2\frac{1}{4}$ miles broad between the entrance points, is open to the south-east ; but the force of gales from that quarter is much lessened by the position of Cross island, which acts as a breakwater. At the northern angle of the bay is the town of Lunenburg, with a population of about 6,000, nearly all of whom are the descendants of German families settled here by government in 1753.

The principal exports are fish, cordwood, lumber, and the produce of some good farms in the neighbourhood of the town.

LUNENBURG LIGHTHOUSE is a square wooden building, painted white, on Battery point, at the entrance of Lunenburg harbour, from which a *fixed* white light is exhibited, visible from a distance of 12 miles.

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East Point Rock is a small isolated patch, with 7 feet water, one quarter of a mile from the high land of the nearest shore; from it East point ledge bears E.N.E. nearly a quarter of a mile.

Ovens Point Rocks, off the point of that name, on the west side of Lunenburg bay, generally uncover at low water, and always break during strong winds from seaward. The outer of these rocks lie one-third of a mile in an east and south direction from the pitch of Ovens point.

Sculpin Shoal consists of a series of rocky ridges half a mile in length E. by N. and W. by S., and has only 3 feet water on its shoalest part near the western end, which is exactly midway between Blue rock island and the cliffs on the north side of Ovens point; and from it the large church tower of Lunenburg is seen through the gap east of Battery point bearing N.N.W. $\frac{1}{4}$ W.

Outer Middle Rock, situated nearly in the middle of the bay, has $2\frac{1}{2}$ fathoms on its shoalest part, from which the tangents of Ovens and Rose points are in line S. by E. a little easterly, and Big Duck island its apparent breadth open south of East point ledge.

Inner Middle Rock, of small extent, has $2\frac{1}{4}$ fathoms on it, and lies with Battery point N. by W., and Big Duck island south point on with East point ledge.

Shingles is a stony ridge half a mile in length N.N.W. and S.S.E., the northern end of which uncovers at half ebb, and is distant from Mosher's head half a mile in a N. by E. direction.

Long Shoal is a rocky patch one-third of a mile in length, having as little as 4 feet on its shoalest part, from which Battery point bears N. by E. $\frac{1}{2}$ E. a short half mile.

Moreau Point Rock is a rocky spit extending in a S.S.E. direction from the point, and having only 3 feet water on its shoalest part, which is distant about $1\frac{1}{2}$ cables from the nearest high water shore.

TIDES.—It is high water, full and change, at Lunenburg at 7h. 54m.; springs rise $7\frac{1}{4}$ feet, neaps 6 feet.

DIRECTIONS.—Lunenburg harbour is safe with all winds, but is not adapted for vessels drawing more than 15 feet water. Coming from the eastward, and wishing to pass north of Cross island, bring Lunenburg lighthouse N.W. $\frac{1}{2}$ W.; this bearing will clear Hounds ledge and East point rock; but when the south end of Big Duck island touches the southern tangent of East point, keep these latter marks on until Moreau and Battery points are just touching, when steer for them until Ovens and Rose points are in line, after which steer to the westward until a remarkable isolated tree on the bare high land to the westward of the town is seen over the eastern tangent of Moreau point N.N.W., which mark will lead east of Long shoal, and also clear the spit off Battery

point; after passing which steer for Lunenburg town, and anchor in $2\frac{1}{2}$ fathoms, mud, with the lighthouse S.S.E. and Moreau point W.S.W.

Smaller vessels may anchor nearer the town, towards which the water gradually shoals.

If from the southward, Rose point, which is steep-to, may be passed at a moderate offing. From a position half a mile east of Rose point steer N. $\frac{1}{2}$ E. until Moreau and Battery points are just touching N.N.W. $\frac{2}{3}$ W., and proceed with these objects in line west of Sculpin shoal and east of Outer and Inner Middle rocks.

On approaching the lighthouse, keep to the westward until the lone tree comes over Moreau point, when proceed as before directed.

ROSE BAY is an indentation open to the eastward, $1\frac{1}{2}$ miles across, between Ovens and Rose points. Shelter may be obtained in this bay from northerly or westerly winds; but the place is much too exposed to afford safe anchorage, except of a temporary nature. Similar remarks apply to Kings and Hartland bays, lying to the south-west of Rose bay, for both are exposed, and therefore unsafe.

WEST IRONBOUND ISLAND LIGHTHOUSE.—West Ironbound island, nearly two-thirds of a mile in length, with an elevation of 108 feet, may be said to form the eastern entrance point of Le Have river.

The lighthouse, 29 feet high, and painted white, is the frustum of a pyramid on a square base; it stands near the edge of a cliff 40 feet high on the south side of the island, and exhibits, from an elevation of 72 feet above the sea level, a *revolving* white light, attaining its greatest brilliancy every half minute; in clear weather the light should be seen from a distance of 13 miles.

LE HAVE RIVER.—From West Ironbound island on the east to Cape Le Have, an abrupt cliff with a reddish face, 95 feet high, forming the western point of the river entrance, the distance is 4 miles in an E.S.E. direction.

From its entrance the river takes a general trend to the northward, and is navigable for small vessels as far as Bridgewater, a settlement on the right bank of the river, nearly 15 miles from West Ironbound island.

The shores of Le Have river are well settled; the population export lumber, cordwood, and bark. A good description of schooner is built here, and several vessels are employed in the Labrador trade.

On the inshore side of Cape Le Have are numerous islets, which by retaining the debris of the river are now connected with each other and the main shore by a series of shallow banks, with occasional deep water holes and channels.

Shag Rock, which covers at high water, lies east one-quarter of a mile from the north end of West Ironbound island, and from it Gaff point is

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Ironbound Breaker is a small rocky toe on the outer extremity of a spit extending from the west point of West Ironbound island; it has only 4 feet water on it, and lies W. by N. a quarter of a mile off shore.

Black Rock, small in extent and 5 feet above high water, lies S.E. $\frac{1}{4}$ E. one mile from the pitch of Cape Le Have. For small vessels the rock is steep-to on all sides, but large vessels should not approach its south side nearer than half a mile on account of two small patches with $4\frac{1}{2}$ and $4\frac{3}{4}$ fathoms respectively.

The east tangents of Point Enragé and West Ironbound island in line N.E. $\frac{1}{4}$ E. will lead clear to the southward and eastward of these patches.

Cape Rock is a small detached patch with $3\frac{1}{2}$ fathoms, one quarter of a mile from Cape Le Have in a southerly direction, with deep water all round.

Between this rock and Black rock is a good deep water channel for the largest ships, and a safe leading mark through is Cross island lighthouse, on with the eastern tangent of West Ironbound island N.E. by E. $\frac{1}{2}$ E., or, as Black rock is always seen, it can be approached on its inner side much nearer than the line of the above bearing.

French Rock, with 7 feet water, is a rocky rise on what may be termed the bar to a safe anchorage within Mosher island; it has from 2 to 3 fathoms around it, and lies with the east of west Spectacle island, on with the west of east Spectacle island, and the east tangent of east Spectacle island N.N.E.

West Ironbound island lighthouse just seen clear of the north-east end of Mosher island leads clear to the southward of the rock.

Mosher Ledge, lying nearly midway between the west end of Mosher island and west Spectacle island, has only one foot water; from it the Episcopal church, opposite Oxners head (a small brown building with a belfry) is just open west of the western Spectacle island N. $\frac{1}{4}$ E., and West Ironbound island lighthouse just on with the north-east tangent of Mosher island S.E. $\frac{3}{4}$ E.

Cockawee Shoal, half a mile in length, lies between west Spectacle island and the western shore of Le Have river, and has only 4 feet water on its shoalest part. The south-west end of West Ironbound island touching the north-east end of eastern Spectacle island S.E. $\frac{1}{2}$ E. clears the shoal on its south-west side; and the house in the sandy cove on the north-east side of Mosher island open of the east end of east Spectacle island S. by E. $\frac{1}{2}$ E. clears the shoal on its eastern side. The Episcopal church bearing N. by E. clears the Cockawee on its west side.

Oxner Rock, which dries at low water, a long cable off shore, is the



highest part of a shoal extending off Oxner head for some distance along shore. At this part of the coast there are 2 fathoms at nearly a quarter of a mile from the high water line; the position of the rock is generally shown by a light.

Bull Rock.—From the shore near the Episcopal church there extends in a south-easterly direction a rocky shoal, the highest part of which, known as Bull rock, is just awash at high water extraordinary springs, and is therefore generally visible. A short cable from Bull rock, in a S.S.E. direction, is a spot with only one foot water; and another shoal spot with 3 feet water lies a short cable's length from Bull rock, in a north-easterly direction.

The Episcopal church E. by N. $\frac{3}{4}$ N. clears the shoal on the south side, and Krout point on with middle of Parkes island N.N.E. $\frac{1}{8}$ E. clears the shoal on its eastern side.

TIDES.—It is high water, full and change, at Crooked channel, entrance of Le Have river, at 7h. 51m.; springs rise $7\frac{1}{4}$ feet, neaps 6 feet.

DIRECTIONS.—Approaching Le Have river from the eastward, two passages are available, one on each side of West Ironbound island; the only danger to be avoided on passing outside the island is Ironbound breaker, which may be cleared on its western side by bringing Gaff point to bear N. by E. $\frac{1}{2}$ E.

The passage inside West Ironbound island, though more direct, is narrow; Shag rock is nearly always seen, but should it be covered the south-east tangent of Cross island on with Point Enragé E.N.E. will clear the Shag rock and lead through between the island and Gaff point.

There are several available anchorages at the entrance of and within Le Have river. With westerly winds vessels may anchor in safety anywhere along the north shore of Mosher island outside the French rock, in order to avoid which they should avoid shutting in Krout point with the east point of east Spectacle island.

With easterly winds the anchorage inside the French rock is preferable; but this position is not attainable at low water by vessels drawing more than 14 feet.

Before the east end of east Spectacle island bears N. by E., West Ironbound lighthouse should be brought just open of the north-east end of Mosher island S. E. $\frac{3}{4}$ E., and continuing on to the north-west with these objects on, anchor in $3\frac{1}{2}$ or 4 fathoms, mud, with Fort point and the east end of west Spectacle island in line N. by E.

To pass north of French rock proceed with the south-west tangents of the two Spectacle islands in line until the east end of the eastern island bears N.E. by N., when steer W. by N. and anchor as before directed.

Vessels making for the anchorage north-west of the Spectacle islands

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should pass 2 cables from the north shores of those islands, and anchor in about 3 fathoms, mud, with Bull rock midway between Fort and Krout points, and the north end of west Spectacle island on with the centre of the eastern island.

The safest anchorage about Le Have is within the river entrance to the north-west of Fort point, the deepest channel to which is on the west side of Cockawee shoal, though that to the eastward is more direct and generally used; the latter has sufficient depth at low water for vessels of 13 feet draught.

Western Channel.—Pass the Spectacle islands about a quarter of a mile distant from their northern shores, and when approaching the main shore keep the south-west tangent of West Ironbound island on with the east point of east Spectacle island, until the Episcopal Church bears N. by E., when steer for the Church until Krout point opens west of Bull rock about one-third the distance between the rock and the main shore, and then steer N.E. When the Episcopal Church bears W.S.W. alter course to E.N.E., so as to avoid the south end of Bull spit; and when Krout point bears N.N.E. steer for it until approaching the point, and then alter course so as to pass midway between Krout and Fort points:

After passing the points, continue on a northerly course until the spire church in Ritey cove nearly touches the south end of Parkes island, when alter course to N.W., and when the points of the entrance close bearing S.S.E. good anchorage will be found in $5\frac{1}{2}$ fathoms, mud. Ships may water from a stream opposite this anchorage on the south-west shore.

To pass to the eastward of Cockawee shoal, avoid shutting in the house in Sandy cove on the north-east side of Mosher island, and when Krout point bears N.N.E. steer for it, and on approaching the point proceed to the anchorage as before directed.

Bantam Shoal, a small rocky patch with only 3 feet water, lies nearly in line between Cape le Have and Green point, which forms the eastern point of the bay of the same name. This danger lies off the centre of Bantam bay, and from it Green point bears W.N.W. seven-eighths of a mile.

INDIAN ISLAND, about half a mile in length, is distant one mile S.W. by S. from Green point, with a clear deep channel between, three-fourths of a mile broad. The island shore of this channel may be safely approached to one-eighth of a mile, and Green point to 2 cables.

GREEN BAY, about $3\frac{1}{2}$ miles in depth, is open to the southward and south-west, with gradual soundings and sandy bottom. The bay is not a safe anchorage, for not only is it exposed to winds from the above quarters,

but is also objectionable during easterly gales, which generally draw round by way of south.

Small vessels will find secure anchorage inside the entrance of Crooked island channel, to enter which bring the wharf on Johnsons island in the middle of the opening E. by N. $\frac{1}{2}$ N., and run in on this course in the middle of the channel. After passing the rocky entrance keep between the mud banks on either side, which may be distinguished by the grass which grows on the mud flats, and anchor when about a cable's length off the wharf.

Green Point Rock, a small isolated patch having 10 feet water on it, lies one-third of a mile from Green point in a N.W. $\frac{1}{2}$ W. direction.

Half-way Rock, so called from its being nearly midway between Indian island and Long point, on the western side of Green bay, has $2\frac{3}{4}$ fathoms on it, and lies with Cape le Have a little open south of Green point, the latter being E. by S. $1\frac{1}{4}$ miles distant, and the south-west end of Indian island S.S.E.

Green Ledge, a quarter of a mile in extent, has a small portion which uncovers at the last quarter ebb; from this part Long point bears North seven-eighths of a mile, and Green point S.E. by E. $1\frac{1}{2}$ miles. Ships desirous of entering Green bay east of the Half-way rock and Green ledge should, on passing Indian island, avoid bringing the south-west end of Indian island to the eastward of S. $\frac{3}{4}$ E., or to the westward of S. $\frac{3}{4}$ W., in order to clear Green point rock.

PORT METWAY.—The entrance to this port lies W. by S. 6 miles from Indian island, the intervening shore between the western side of Green bay and the port being of such a character as not to require a detailed description. The entrance channel to the port has a general trend of N. $\frac{1}{2}$ E. for a distance of 2 miles, from whence it opens out into a large, shallow, and irregular basin, studded with numerous rocks and shoals.

The eastern side of the entrance consists of a series of small islands extending from the main land to a distance of about 3 miles in a S. by W. $\frac{1}{2}$ W. direction, and terminating in Frying-pan island, a small rocky islet 10 feet above high water.

In Port Metway safe anchorage is to be obtained, but in the channel leading thereto are several rocks, which render it difficult of access to strangers, who should obtain the services of a local pilot. Above the town, to the north-west, are several mills where lumber is sawn, this and fish form the principal articles of export.

METWAY LIGHTHOUSE stands on the shore of Metway head, a dark wooded headland forming the western point of entrance into Port Metway.

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The lighthouse is a square white building with a black painted square to seaward, and exhibits from a lantern 44 feet above high water a *fixed* white light, which in clear weather should be seen from a distance of 10 miles.

South-west breaker is a dangerous patch with only 6 feet water, on the south end of a rocky shoal off the entrance of Port Metway. Between it and Frying-pan island, which bears N. $\frac{1}{2}$ E. seven-eighths of a mile, there is a deep water channel nearly half a mile broad between the 5-fathom lines.

Stone Horse is a detached rock which uncovers at low water springs, and from it Metway lighthouse N.W. by W. $\frac{1}{8}$ W. appears almost touching the south tangent of Frying-pan island; from the latter the rock is distant a long third of a mile.

Rugged Rock is a detached patch lying off the extremity of a spit running out from the shore a little south of Metway head. This rock has only 7 feet water, and is marked by a breaker in heavy weather, and from it Metway lighthouse bears N. by E. $\frac{3}{4}$ E. rather more than two-thirds of a mile, and Frying-pan island E.N.E.

A remarkable granite boulder on the shore north of the lighthouse, seen clear to the eastward of it and in line with Neils point, bearing N. $\frac{1}{4}$ E. clears the rock on its eastern side.

Stony Ridge, consisting of a ridge of boulders, has $1\frac{1}{2}$ fathoms on its shoalest part, which is distant about a cable's length from the nearest high water line north of the lighthouse; from it the granite boulder already alluded to shuts in the tangent of Metway head.

Middle Island Rock, with 9 feet water, breaks in heavy weather; this rock lies on the eastern side of the channel abreast of Neils point, and is distant from the north-west end of Middle island a quarter of a mile in a W.N.W. direction.

Middle Ledge is a shoal patch about one-third of a mile in length N.E. $\frac{1}{2}$ N. and S.W. $\frac{1}{2}$ S., having on it several rocks which uncover at low water; the highest of these rocks shows soon after half ebb, and during heavy weather is always marked by a break.

On the southern end of the patch is a rock which uncovers at low water, from it Dry ledge bears N. by W. $\frac{1}{2}$ W., distant about 4 cables length.

Nautilus Rock, with 9 feet water, lies with Dry ledge N.N.E. $\frac{2}{3}$ E. a long third of a mile. Metway lighthouse open of Neils point S. $\frac{1}{2}$ W. clears the Nautilus on the east side, and the south tangent of Bass island on with the outer wharf of the town W. $\frac{3}{4}$ N. clears the rock to the northward.

Nautilus rock is on the outer end of a large flat extending from the shore between Neils point and the town a distance of $1\frac{1}{2}$ miles in a

north-west direction. The flat runs out upwards of half a mile from the shore, and is connected by a narrow neck with the shoal water on the northern part of the bay.

The south tangent of Bass island touching the outer wharf of the town W. $\frac{3}{4}$ N. leads over the neck in about 15 feet water; and Bass island north end touching the south end of Foster island W. $\frac{1}{2}$ N. just clears the southern edge of the bank extending from Foster island is an easterly direction.

TIDES.—It is high water, full and change, in Port Metway, at 7h. 50m.; springs rise 8 feet, neaps 5 feet.

DIRECTIONS.—If from the eastward, and wishing to pass between the Stone horse and South-west breaker, open Metway lighthouse to the southward of Frying-pan island, and when the lighthouse bears N.W. $\frac{1}{4}$ W. steer for it until past Frying-pan island, which is steep-to on its west side, then steer up in mid-channel between the lighthouse and Toby island, and after passing the latter bring Dry ledge to bear N. $\frac{1}{2}$ W., and steer for it, or bring Frying-pan island to bear S. $\frac{3}{4}$ E., and steer N. $\frac{3}{4}$ W., taking care to keep Metway lighthouse in sight to the eastward of Neils point, in order to clear the shoal part of the south-west flat.

When the northern wharf of the town bears W.N.W., bring Dry ledge to bear north, in order to keep well clear of Middle ledge, and when Bass island opens out north of the outer wharf of the town W. $\frac{3}{4}$ N., alter course so as to bring Bass island in the middle of the opening between the outer wharf before mentioned and the south side of Foster island; with this mark on proceed, and when the north end of Toby island comes on with Neils point S.E. $\frac{1}{2}$ S., anchor in 5 fathoms, mud.

If from the southward, approach the entrance of Port Metway with the lighthouse between the bearings of N. by W. and N. $\frac{1}{2}$ E., in order to clear South-west breaker and Rugged rock, and after passing the lighthouse at a moderate offing proceed as before directed to the anchorage.

Vessels from the westward should not bring Coffin island lighthouse to the southward of west until Metway lighthouse bears N.N.E., in order to clear the shoal water off Pudding-pan island; the course may then be altered so as to bring the lighthouse N. $\frac{1}{2}$ E., when steer so as to pass midway between it and Toby island, and proceed as before directed.

COFFIN ISLAND LIGHTHOUSE.—Coffin island, about two-thirds of a mile in length and thickly wooded, lies on the north side of Liverpool bay, of which indeed it may be said to form the eastern entrance point. The northern end of the island is distant two-thirds of a mile from the main land, and is connected by a shallow bar on which in some places the depth is only 3 feet. Shoal water runs off to the distance of 2 cables

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from the east and west shores of Coffin island, and off the south point the 5-fathom line is a good third of a mile.

The lighthouse, which stands on the southern point of the island, is the frustum of a pyramid on an octagonal base 53 feet high, and painted with alternate red and white horizontal bands, eight in number; it exhibits from an elevation of 72 feet above high water level a *revolving* white light of 40 seconds duration every two minutes. In clear weather the light should be seen from a distance of 16 miles.

LIVERPOOL LIGHTHOUSE stands on Fort point, at the eastern extremity of the town of Liverpool; it is the frustum of a pyramid on a square base, and painted white, from which, at an elevation of 30 feet above high water, is exhibited a *fixed* white light, which in clear weather should be seen from a distance of 7 miles.

LIVERPOOL BAY is an indentation running in with a general north-westerly trend for a distance of $2\frac{1}{2}$ miles from a position between the points of entrance, viz., Eastern head and Morse points, distant from each other $1\frac{1}{4}$ miles.*

This bay is dangerous—especially during the fall of the year and winter months—for all vessels excepting those of a sufficiently small draught to anchor in Herring cove. From Eastern head to the westward for the distance of a mile the shore is foul, and an offing of one-third of a mile should be maintained.

The town of Liverpool, at the head of the bay, is hidden from view on approaching from seaward. It has a population of about 7,000, and, in connexion with Milltown above, carries on an extensive trade with Halifax, the United States, and West Indies. The exports are principally lumber, cordwood, fish, and farm produce.

Ship-building is carried on to a small extent, and a considerable amount of tonnage belongs to the port; there is a patent slip adapted for a ship of 600 tons, and also a foundry where small repairs can be effected. Provisions and water can always be procured.

Fort Point Ledge extends off Fort point in a N.E. by E. $\frac{1}{4}$ E. direction; the outer end of the ledge is distant from the lighthouse a cable's length, and is marked by a buoy on its north-east end in 2 fathoms water.

TIDES.—It is high water, full and change, in Liverpool bay, at 7h. 50m.; spring tides rise 8 feet; neaps 5 feet.

DIRECTIONS.—In proceeding up Liverpool bay a mid-channel course should, if possible, be preserved, care being taken, on approaching Black point, to keep Liverpool lighthouse well open of the high water on the

* See Admiralty Chart, Ram island to Port Metway, No. 341.

south-west side of the bay, in order to keep outside the rocks off the point.

The anchorage mark in Herring cove is Moose point on with the south-east point of the cove, or with the pier of Brooklyn end on, in about 2 fathoms, mud; the holding ground is good, but a considerable sea rolls in during heavy gales between south and east.

Safe anchorage can be obtained at the entrance of the river abreast of the town, but it is only adapted for small vessels, as a bar with 4 feet water extends across the entrance; the services of a local pilot are necessary.

From Moose point to Western head, a distance of nearly 2 miles S. by W. $\frac{1}{2}$ W., the shore is free from danger at the distance of 2 cables off shore. Western head may be safely rounded at the distance of a quarter of a mile.

PORT MOUTON.—From Western head the coast takes a general trend of W. by S. $\frac{1}{2}$ S. for a distance of $3\frac{3}{4}$ miles to White point, the north-eastern point of a large and moderately deep indentation known as Port Mouton. On the south-western side of this bay are Mouton and several smaller islands, which from their position afford a safe and commodious anchorage for vessels of any draught.

There are two channels leading to the anchorage; the one north of Mouton island is available for ships of any size, but the Western channel is narrow and difficult, and not adapted for vessels drawing more than 15 feet water. The principal occupation of the settlers along the shores of the port is fishing.

White Point Rock, with $2\frac{3}{4}$ fathoms water, is of small extent, with deep water close to; from it White point bears N. by W. $\frac{1}{4}$ W., distant $1\frac{1}{4}$ miles, and the highest Brazil rock on with Halibut head (Mouton island) W. $\frac{3}{4}$ S.

Outside White point rock, at the distance of seven-eighths of a mile, is White point shoal, with 6 fathoms water, and 10 and 13 fathoms close around it. This shoal should be avoided by large vessels, because the rock rises so abruptly that the lead may possibly have missed the highest point.

Brazil Rocks form a cluster about a quarter of a mile in length; several of the rocks uncover, but one known as the Round rock is always above water, and is consequently of great service in entering the port by the eastern channel.

From the Round rock the north tangent of Mouton island bears West, and it is distant from Halibut head a long mile, the channel between being deep and free from danger. A detached rock, with only 3 feet water, lies at the distance of 4 cables in a S.E. direction from the Round rock.

Mouton Island Spit.—Mouton island, about 2 miles in length, is curve-

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shaped, with its convex side towards the east. From its north point an extensive spit runs out for nearly a mile in a N.N.W. $\frac{1}{2}$ W. direction, on the outer extremity of which is a spot with $2\frac{3}{4}$ fathoms; between this spot and a similar depth near the island there is a channel over the spit with $3\frac{1}{4}$ fathoms.

There is also a detached spot with $3\frac{3}{4}$ fathoms water a short half mile N.E. $\frac{1}{4}$ N. from the north-east point of Spectacle island.

Spectacle Island occupies a space half a mile in length, and is moderately steep-to on its north and north-west sides. Between the island and the main shore are numerous rocks, and it is also connected by a shallow rocky spit with Massacre island a long third of a mile to the south-east.

Spectacle Rock, being 3 feet above high water, can always be seen; it lies $1\frac{1}{3}$ cables from the north-east point of Spectacle island, with a deep-water channel between.

Devastation Shoal is a good third of a mile in length N. by W. $\frac{1}{2}$ W. and S. by E. $\frac{1}{2}$ E., with only 2 fathoms water on its northern end, which lies in an easterly direction three-quarters of a mile from the south point of Mouton island. There is a deep water channel between the island and the shoal, and Round rock N.N.E. will lead through the centre in 5 fathoms.

South Rock lies 2 cables off the south point of Mouton island; it uncovers at low water, and may be cleared on its west side by keeping the east end of Jacket island touching the south-west tangent of Mouton island.

Middle Rock, with 7 feet water, occupies a central position in the narrows of the western channel, between Bull rock and the rocks extending in a southerly direction from Jacket island, and limits the navigating channel on either side to little more than a cable's length.

JACKET ISLAND within Mouton island, is steep-to on its northern and western sides, but to the southward the low water line runs off about $1\frac{1}{2}$ cables in broken rocks; between Jacket and Mouton islands the ground is foul.

Bull Rock, 4 feet above high water, lies $1\frac{1}{2}$ cables off Bull point on the main land within Mouton island, and from its position is useful as a guide for the narrows. By keeping it on with the eastern tangent of Spectacle island N. $\frac{2}{3}$ W. a rock off New-house cove with $1\frac{1}{4}$ fathoms on it will be cleared on its eastern side.

There is also a rock $1\frac{1}{2}$ cables from the Bull rock in a N. by W. $\frac{1}{2}$ W. direction which is steep-to on its eastern side.

TIDES.—It is high water, full and change, at Port Mouton, at 7h. 54 m.; springs rise $7\frac{1}{2}$ feet, and neaps $5\frac{3}{4}$ feet.

DIRECTIONS.—Eastern Channel.—If from the eastward, give White point a berth of about a half a mile, and proceed to the westward, taking care to avoid shutting in the eastern point of Mouton island with Halibut point, until the white sand cliffs south of the anchorage open out North of Spectacle island S. W. $\frac{1}{2}$ W., in order to clear the shoal patch on the outer end of Mouton spit and the adjoining patch with $3\frac{3}{4}$ fathoms.

With the above marks on steer in about S.W. by W., and anchor in 6 or 7 fathoms, mud, with White point just shut in by the north end of Spectacle island, and Massacre island on with the south end of Spectacle island.

Coming from seaward, and wishing to pass between Mouton island and Brazil rock, bring Halibut head on with the north tangent of Spectacle island W.N.W., and proceed with these marks on until Round rock bears N.E. by N., when alter course to N.W., taking care not to shut in the east point of Mouton island with Halibut head until the white sand cliffs before alluded to open out North of Spectacle island, when proceed as before directed to the anchorage.

Western Channel.—When between Mutton head and the south point of Mouton island, bring Bull rock on with the east of Spectacle island N. $\frac{2}{3}$ W., and continue with these marks until approaching the rock, which should be passed on its eastern side about three-quarters of a cable distant, with the ship's head towards Spectacle rock, and this course should be continued until the south end of Jacket island bears E. by S. $\frac{1}{2}$ S., when anchorage may be obtained north of Bull point by steering W. by N. $\frac{1}{2}$ N. and bringing up in 7 fathoms, mud, with Bull rock on with the south point of Mouton island, and Spectacle rock just open west of Massacre island; at this anchorage the holding ground is good, but a disagreeable swell is experienced during easterly gales.

Should the vessel be bound to the safer anchorage west of Spectacle island, then, after passing the dangers of the western channel narrows, a course should be steered so as pass round the north end of Spectacle island, after which directions previously given should be followed.

There is a passage west of the Bull rock, and also one east of the sunken Middle rock, but neither of these passages should be attempted by strangers, as they are less direct than the one recommended.

Proceeding along the coast to the south-west, a line S.W. $\frac{3}{4}$ W. from the south point of Mouton island touches Mutton head and Jolie point on the main land. The distance between the two latter points is nearly $3\frac{3}{4}$ miles, with Little Jolie and Cadden bays intervening; Black point, off which shoal water extends a good third of a mile, being common to both.

LITTLE HOPE ISLET LIGHT.—The lighthouse stands on a small islet

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15 feet above high water, nearly 2 miles S.E. by E. $\frac{3}{4}$ E. from Jolie point. The islet is composed of small boulders, thrown up by the sea, on a rocky foundation, and from it in a northerly direction shoal water runs out a third of a mile, whilst on the south side the 5-fathom line is nearly half a mile distant from the shore of the islet.

The lighthouse is a square white building, from which at an elevation of 40 feet above high water, is exhibited a *revolving red* light, attaining its greatest brilliancy every minute; in clear weather the light should be seen from a distance of 12 miles.

Little Hope Shoal, distant 2 miles W. $\frac{3}{4}$ S. from Little Hope lighthouse, is a third of a mile long between the 5-fathom lines, and has on its shoalest point only 10 feet water, from which Lesser Hope rock, off the western point of Port Jolie, is on with Thrum point on the eastern side of Port Ebert W. by N., and the eastern tangent of Jolie point N. by E., the distance off the pitch of the point being $1\frac{1}{2}$ miles.

PORT JOLIE, an indentation 5 miles deep, is only available for small vessels, and as even for them there is no safe anchorage, the so-called port should be avoided by strangers.

PORT EBERT.—At the distance of 5 miles W. by N. from Little Hope lighthouse is Thrum point, the eastern point of Port Ebert, a narrow indentation $5\frac{3}{4}$ miles long N. by W. The entrance to the port may be easily recognized by the dark hill of Richardson head, thickly wooded and about 130 feet high, with a very abrupt fall towards the east. Within Richardson head, and stretching across the river, is a bar with only 2 fathoms water, which breaks in heavy weather. Higher up on the eastern shore, at the distance of a mile from Richardson head, is a remarkable shingle spit which runs out at right angles from the shore, and close around this spit is the channel, which is very narrow.

On the west side of the channel, opposite Shingle spit, a short cable distant, is a small rock which uncovers at low water; this rock is the northern termination of foul and shallow ground extending from a little within Richardson point.

Ebert Rocks, which uncover at low water a good quarter of a mile from the shore, form the outer toe of a spit extending from the western point of entrance to Port Ebert. Shingle point just touching Richardson head N. by E. $\frac{1}{2}$ E. clears these rocks about a cable's length on their eastern side.

TIDES.—It is high water, full and change, in Port Ebert, at 8h. 9m.; springs rise $7\frac{1}{4}$ feet, neaps $5\frac{3}{4}$ feet. The tidal current through the channel changes a little after high and low water by the shore, and during springs attains a velocity of one knot per hour.

DIRECTIONS.—Port Ebert affords safe anchorage, but only to small

vessels on account of the bar and the narrow channel. Strangers should never attempt the port without a leading wind, and even then the services of a pilot should be procured.

When coming from the eastward, and approaching Black point, avoid shutting in the south-west point of Mouton island with Mutton head, in order to clear the Black point dangers. Thrum point should be kept well open north of Lesser Hope rock, 10 feet above high water, so as to pass inside Little Hope shoal; and on nearing Thrum point do not bring Little Hope lighthouse to the southward of West until Shingle point comes on with a white house N. $\frac{1}{4}$ E. northerly. Proceed with these marks on, and when approaching Shingle point pass it about half a cable's length, and anchor in 4 fathoms water off a watercourse on the south end of a shingle beach north of Shingle point, the latter bearing S. by E. $\frac{1}{2}$ E. one-third of a mile.

GREEN ISLAND, about a cable in extent, and 45 feet high lies S.W. $\frac{2}{3}$ W. $2\frac{1}{4}$ miles from Thrum point, and a long half mile from the nearest shore, the passage between being rocky shallow, and uneven. A small rock awash at low water lies on the outer end of a spit extending from the island in a south-westerly direction at the distance of 2 cables.

SABLE RIVER.—At the distance of $1\frac{3}{4}$ miles W.S.W. of Green island is Harding point at the eastern entrance of Sable river; but as a bar with only 3 feet water (which breaks heavily in southerly gales) extends across the river entrance, and as a leading wind is required to enter or leave the river, it is evident that none but very small vessels in charge of men possessing local knowledge can make the navigation of this river available.

Bantam Rock, of small extent, uncovers at low water, and lies S.W. by S. seven-eighths of a mile from Hardings point; it is the highest point of a cluster of rocky patches which occupy a space seven-eighths of a mile in length N.N.E. and S.S.W. From Bastard rock, the south-easternmost of the group, with $3\frac{1}{4}$ fathoms water, the summit of the dark hill of Richardson head is seen over the high water tangent within Green island N.E. $\frac{1}{3}$ E.

Although there is a deep water channel between Bantam rock and the entrance points of Sable river, large vessels should keep outside these patches.

Black Rock, about 10 feet above high water, is bifurcated and at a little distance resembles two rocks; the rock is about a quarter of a mile from the shore of Hemeon head, with a narrow deep water between.

RAM ISLAND, a long third of a mile in length, with an elevation of 21 feet, lies off the pitch of Hameon head, from which it is distant half a

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mile, but the channel with $3\frac{1}{2}$ fathoms is narrowed to the breadth of $1\frac{1}{2}$ cables by shoal spits extending from the island and main shores. A dangerous rocky shoal extends in a south-westerly direction from the south end of Ram island for the distance of a mile, terminating in Emulous ledge, which uncovers at low water.*

Farm Ledge is a small detached shoal, with $3\frac{3}{4}$ fathoms water, half a mile outside Emulous ledge, the channel between having from 5 to 7 fathoms in it.

From the ledge the tangents of Black rock and Ram island are nearly touching N.E. by N., and the extremity of Western head just shut in by Gull rock W. by N. $\frac{1}{4}$ N. There is also a small patch with 5 fathoms water at the distance of half a mile S.S.W. $\frac{1}{2}$ W. from Farm ledge.

RUGGED ISLAND HARBOUR derives its name from the rugged appearance of the coast in its immediate vicinity. Black point, on the eastern side of the entrance, is $1\frac{1}{2}$ miles distant from Ram island, in a W.N.W. direction, and between this point and Western head there are numerous ledges and sunken dangers, rendering the approaches to the harbour difficult and dangerous. This place is seldom resorted to, except by fisherman, although within the harbour the anchorage is good. During southerly gales the uneven rocky ground at the entrance causes the sea to break from side to side.

GULL ROCK LIGHT.—Gull rock is a small rocky ledge about 15 feet high off the entrance to Rugged island harbour. The lighthouse is a square white building, and from an elevation of 44 feet above high water is exhibited a *fixed* white light, which in clear weather should be seen from a distance of 10 miles.

Whale Rock is the highest part of an extensive rocky shoal north-east of and almost joining Gull rock; the shoal is nearly a mile in length N. by E. and S. by W. between the 5-fathom lines, but the most dangerous part is confined to the southern half, where in addition to the Whale rock, which uncovers at low water and generally shows a break, are several sunken dangers, the southernmost of which is Kelp shoal with only 3 feet water.

From Whale rock Cape Roseway lighthouse is on with the extreme tangent of Western point, West, and is half a mile distant from Gull rock lighthouse.

Trinidad Rock is a small detached patch, with 10 feet water, near the north end of the shoal of which Whale rock is a part, and from it Gull rock lighthouse bears S.S.W. nine-tenths of a mile.

* See Admiralty Charts:—Baccaro Point to Ram Island, No. 340; scale, $m = 1\cdot4$ inches.

Eastern Bull, known also as Blow breaker, is a small rocky patch with only 4 feet water ; from it the north end of Ram island seems touching the south end of Black rock E. by N. $\frac{3}{4}$ N., and a white house near Cumming point is on with the west end of Gooseberry island N. $\frac{3}{4}$ W.

Black Point Rock uncovers at low water, and is the outer and highest point of a spit extending from Black point in a S.S.W. direction. The white house near Cumming point on with the west end of Gooseberry island N. $\frac{3}{4}$ W. clears it on its western side, and Black rock its apparent length open north of Ram island leads between the rock and Eastern Bull.

South Ledge is a small detached spot with 3 fathoms ; from it Gull rock lighthouse bears N. $\frac{1}{2}$ W., the nearest part of the rock being half a mile distant, and the highest part of Blue Gull island—on the west side of Jordan river—on with the outer end of Western head N.W. by W. $\frac{1}{4}$ W.

Long Shoal, with $3\frac{1}{2}$ fathoms, lies with the highest part of Green island on with the outer end of Western head N.W. by N., and Gull rock lighthouse N.E. a short mile.

Bull Rock, the outer of two dangers off Western head, has only 3 feet water, and its position is generally marked by a break ; from it the western extremity of Western head bears N.N.E. $\frac{1}{2}$ E. $1\frac{1}{4}$ miles ; and Gull rock lighthouse N.E. by E. $\frac{3}{4}$ E. a long 2 miles.

Within Bull rock, a quarter of a mile distant, is another detached spot, having 10 feet, with deep water between as well as all round the two patches. The highest part of Chain ledges on with the east end of Western head N.E. $\frac{3}{4}$ E. clears both shoals on the western side ; and Gull rock lighthouse on with the highest part of Ram island E. by N. $\frac{1}{4}$ N. clears them to the northward.

Chain Ledges consist of a narrow broken ridge of rocks nearly a mile in length N.N.E and S.S.W. ; the highest part of the ledges stands about 10 feet above high water, and on the southern extreme is a small rock which uncovers at low water, and generally shows a break.

From this latter rock Gull lighthouse bears S. $\frac{1}{2}$ E. over three-quarters of a mile, and the extreme of Western head N.W. by W. $\frac{3}{4}$ W.

The northern end of the ledges terminates in a rock with only 3 feet water, at the distance of a good quarter of a mile from the highest part of the ledge ; and between it and the south end of some rocky ledges south of Cranberry island is Sam rock, detached with 10 feet water ; but though deep water channels exist on either side of it, they are too narrow to be available for navigation except by small coasting vessels.

Middle Ground is an extensive shallow spit studded with rocks, several of which uncover at low water springs ; the shoal runs off from the west side of Gooseberry island, and extends more than half way across to

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Cranberry island on the western side of the entrance to Rugged island harbour. A yellow house on the eastern shore of the harbour open westward of Shag rock N.E. $\frac{3}{4}$ N. clears the Middle ground to the westward.

From the Middle ground to the northward a bank of 3 fathoms extends from the eastern shore nearly across the harbour, leaving only a narrow channel about a cable wide, with $3\frac{1}{4}$ fathoms, abreast of Carter island, thus rendering it unadvisable to attempt the anchorage within with vessels drawing more than 15 feet.

TIDES.—It is high water, full and change, in Rugged island harbour, at 7h. 59m. ; springs rise $7\frac{1}{2}$ feet, and neaps 6 feet.

The tidal current along shore between Ram island and Baccaro point is governed by the Bay of Fundy tide, the flood setting to the westward and the ebb to the eastward. The velocity increases in proceeding westward from Ram island, where the strength varies from half to one knot per hour.

There is also a current off this shore, and though the general trend is to the westward, its strength and direction are greatly influenced by winds. After easterly gales the current increases its westerly set, and it is retarded in proportion by westerly gales.

DIRECTIONS from the Eastward.—As the narrow passage inside Ram island should not be attempted by strangers, no directions are necessary ; but vessels from the eastward with a leading wind can pass between Emulous and Farm ledges in 5 fathoms by bringing the Gull rock light-house on with the outer end of Western head W. by N. ; or outside Farm ledge by bringing Government point at the entrance of Shelburne harbour on with the outer end of Western head W. by N. $\frac{3}{4}$ N.

With either of the above marks in line proceed to the westward until the white house near Cumming point comes on with the west end of Gooseberry island N. $\frac{3}{4}$ W. (the marks for leading over the Eastern Bull), when alter course for the south end of Cranberry island, and when the yellow house comes on with Shag island N.E. by N. steer for the west side of Clam island about N.N.E. $\frac{1}{4}$ E. ; the least water in this route should be 3 fathoms. Rounding Clam island at about a cable's distance, anchor in $2\frac{3}{4}$ fathoms, mud, with the west end of Clam island S.S.W., where the holding ground is good and the anchorage safe.

There is also fair anchorage on the east side of the bay between Shag rock and a position half a mile south of Clam island in from $3\frac{1}{2}$ to 4 fathoms. Care should be taken on passing Shag rock to avoid a spot with only 6 feet on it, about a cable's length to the north-west.

The anchorage within Locke island is only adapted for vessels of small draught, but it cannot be deemed secure, as the holding ground is bad.

From Seaward.—Bring Gull rock lighthouse N.N.E., and on approaching it pass about a quarter of a mile west of the rock, and when abreast of the lighthouse steer N.N.E. $\frac{1}{4}$ E. until approaching Cranberry island. When the yellow house comes on with Shag rock, alter course as before directed.

From the Westward.—After passing Western head at a moderate distance, bring it on with Cape Roseway lighthouse about west, and continue with these marks on until Gull rock lighthouse bears S.S.E. $\frac{1}{2}$ E., when steer in N.N.E. $\frac{1}{4}$ E., and proceed as before directed to the anchorage.

GREEN HARBOUR is an indentation next west of Rugged island harbour, but none but the smallest description of vessels can find shelter from southerly and south-easterly gales, which send in a heavy rolling sea. The entrance is clear of all dangers, and the harbour is easily navigable by the Admiralty chart. Anchorage can be obtained with winds from west round by north to east.

JORDAN RIVER is a deep indentation with a general trend to the northward, and is upwards of $1\frac{1}{4}$ miles in breadth at its entrance between Green island on the east and Blue Gull island on the west. The place is easy of access and comparatively free from danger, but cannot be deemed a good anchorage, in consequence of the heavy seas which run in during southerly gales.

GREEN ISLAND, which is common to Green harbour and Jordan river, is 70 feet high and half a mile in length, and about the same distance from Paterson point, the channel between carrying a depth of 15 feet water.

Blue Gull Island, about a quarter of a mile in length and 45 feet high, forms the western point of entrance to Jordan river. Between it and Jordan point to the northward the passage is full of rocks, some of which uncover at low water.

The Sisters are a cluster of rocks a good third of a mile from the western shore, at the distance of $1\frac{1}{3}$ miles from Jordan point. Two of the rocks uncover at half ebb, and generally show a break with much sea. About a cable's length to the eastward of the southernmost of the two rocks there is a spot with only 6 feet, beyond which there is deep water. Between the Sisters and the western shore there are several rocks which uncover at low water.

DIRECTIONS.—Coming from seaward, bring the west end of Green island to bear North, and after passing it at a moderate offing, steer boldly up in mid-channel, by which the Sisters rocks will be avoided, and anchor in about $3\frac{1}{2}$ fathoms on the western shore, with Western head just open of the high water line about Paterson point S.S.E., and Jordan point on with the west tangent of Blue Gull rock about S. $\frac{1}{2}$ W.

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McNUTT ISLAND, off the entrance to Shelburne harbour, is nearly 3 miles long by about half that distance wide, and near its centre attains an elevation of 130 feet. Between the eastern side of the island, which is steep-to, and the main land, is a broad clear channel leading to Shelburne harbour; but the passage on the western side is rendered impassable by an extensive shallow bar, on which in some places there is only one foot at low water.

Jig Rock, with 7 feet water, breaks in a heavy swell and lies seven-eighths of a mile S. $\frac{1}{4}$ E. from the south point of McNutt island, there being 4 fathoms over rock in the channel between. It is the only off-lying danger to be avoided when approaching McNutt island from the southward.

CAPE ROSEWAY LIGHTS.—On the south-eastern extremity of McNutt island is Cape Roseway, a remarkable white granite cliff, on which stands the lighthouse (forming a prominent day mark), painted in alternate vertical stripes of black and white, and exhibiting two vertical *fixed* white lights at the elevations of 120 and 65 feet above the sea. In clear weather the lights should be seen from the respective distances of 18 and 10 miles.

SHELBURNE HARBOUR is situated in the eastern arm of an inlet whose navigable entrance lies between the mainland and the eastern side of McNutt island. The harbour is safe and commodious, and being easy of access is admirably adapted for vessels seeking shelter. Fresh water of an excellent quality is to be obtained.

Bell Rock, being a few feet above high water, is always visible. From it Cape Roseway lighthouse bears W. by S. $\frac{1}{2}$ S. $2\frac{1}{4}$ miles, and Blue Gull island N.E. by N. $1\frac{1}{2}$ miles.

Straptub Rock lies on the south end of a shallow spit extending from Bony point on the main shore. The rock uncovers at low water, and from it Bell rock bears S.S.E. $\frac{3}{4}$ E. seven-eighths of a mile. The 5-fathom line to the southward of Straptub rock is a good quarter of a mile from the rock.

Middle Rock is a detached patch having only $2\frac{1}{4}$ fathoms on its shoalest part, but with $3\frac{1}{2}$ and 4 fathoms around; it lies E. by S. $\frac{1}{2}$ S. five-eighths of a mile from Surf point, on which is a remarkable boulder, and half a mile from the nearest shore south-west of Sand point.

Adamant Shoal, about two-thirds of a mile in extent, lies nearly in the middle of Shelburne harbour; the actual dangers are confined to two rocky patches, the easternmost of which, known as Adamant rock, has 10 feet water, and the westernmost, or Man of War rock, distant $1\frac{1}{2}$ cables W. by N. $\frac{3}{4}$ N., has only 4 feet water. There are no good cross

marks from the rocks, but for leading marks to clear them the seaman is referred to the directions.

Hart Point Rock, with only 9 feet, lies about 2 cables off Hart point, which divides the head of Shelburne inlet into two branches.

Hero Shoal, with $2\frac{1}{4}$ fathoms on it, lies on the western shore near the head of the harbour, but it is within the usual place of anchorage for ships of large draught. A white house on an elevation north-east of the town of Shelburne open south of the tower of the north church, bearing N.E. $\frac{1}{8}$ N., leads over the shoalest part of the shoal. Shelburne south church, on with the white house leads a cable to the eastward.

TIDES.—It is high water, full and change, at Shelburne, at 8h. 4m.; springs rise 7 feet, neaps $5\frac{1}{2}$ feet.

DIRECTIONS.—When approaching the entrance to Shelburne from seaward, with Cape Roseway lighthouse in sight, it can be run for in safety between the bearings N. by E. $\frac{1}{2}$ E., and W. by N. $\frac{1}{2}$ N.; the former will clear the Jig rock, and the latter will lead clear of the Bull rock.

On nearing McNutt island steer along its eastern shore, which is steep-to, at a moderate offing, and when drawing near Middle rock bring the N.E. bluff of the island to bear S.S.E. $\frac{1}{2}$ E., and steer N.N.W. $\frac{1}{2}$ W. until abreast of Surf point, which can be passed within a cable, when alter course so as to pass in mid-channel between Sand point and the land on the western shore. From this latter position, if desirous of passing east of Adamant shoal, alter course to the northward, being careful on approaching the shoal to keep Grey island open of Surf point boulder S. $\frac{3}{4}$ W., and after passing the danger select an anchorage as most convenient on the eastern side of the harbour.

If wishing to round the Adamant shoal on its western side, and being in a mid-channel position abreast of Sand point, steer along the western shore with Surf point boulder just touching the south-west high water line of McNutt island S. $\frac{1}{2}$ E., and when Churchover church tower comes on with the end of the Durphy wharf alter course to N.E. by E. $\frac{1}{2}$ E., bearing in mind that the white house before alluded to open south-east of the Episcopal church tower N.E. $\frac{1}{2}$ N. clears Hart point rock, and all dangers on the western shore between Hart point and the town of Shelburne.

There is a safe and convenient anchorage for vessels seeking temporary shelter, about half a mile north of Sand point (which should not be neared within 2 cables), in about 5 fathoms, mud, with the Red bank on McNutt island on with Sand point S. by E. $\frac{1}{8}$ E.

NEGRO HARBOUR.—The East point of this harbour lies S.W. $\frac{1}{4}$ W. $6\frac{1}{4}$ miles from Cape Roseway lighthouse; between these two points are

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several indentations, as well as Grey island and Gull rock, but they need no further description than can be obtained from the Admiralty chart. The harbour is an inlet running in about N.N.W., and derives its name from Negro island off its entrance. At the head of the harbour the River Clyde falls into the inlet; here several mills are established, from whence a small quantity of lumber is exported. Water can be obtained in small quantities. There are two channels into the harbour, but both are rendered difficult in consequence of numerous dangers. The anchorage, however, is safe in all weathers for vessels of moderate draught, and, though not so accessible as Shelburne, may be of service to vessels requiring shelter.

NEGRO ISLAND, upwards of 2 miles in length, attains a greater elevation than the adjoining coast, and is of a somewhat remarkable appearance, being all but divided in two, the connecting link being a low narrow shingle causeway. On its south-eastern end is Cape Negro, dark and rocky, from whence a barren slope rises to a conspicuous fringe of dark fir trees on the summit of the island. The cape bears from Cape Roseway lighthouse S.W. $\frac{1}{4}$ S. nearly 8 miles.

From the north-west point of the island, a long shingle spit extends in a north-westerly direction for four-tenths of a mile; it is covered at high water, but has deep water close to its outer end. The north tangent of the east division of Negro island open of the north tangent of the west division clears the spit on its north side.

Off the south-west end of the island, at the distance of a quarter of a mile, are some small rocks which uncover at low water; and off the intervening point between the north-west and south-west extremities of the island is Mackerel rock, always above water, and very useful as a mark for the western channel.

Grey Rocks, one-third of a mile in length, lie off East point; they are nearly all above water, the largest near the southern end being 10 feet above high water, and as they are steep-to on their south side they are of great service in pointing out the entrance.

Budget Rock, with only 3 feet water, generally breaks with a moderate swell, and occupies nearly a central position between East point and the north end of the outer part of Negro island; but the actual channel with 8 fathoms water is narrowed to less than 2 cables by some detached low water rocks off East point. On the north side Budget rock is steep-to, but on the island side of the rock there is a gradual slope; between this danger and a shoal point extending from Negro island is a narrow channel with 4 fathoms, but it should not be attempted by a stranger.

Buoy.—A white buoy has been placed to mark the Budget, and is of great service to strangers entering the port, but too much reliance should

not be placed on its being in its proper position, as the ice from the head of the port might possibly carry it away.

There are several other dangers on the north side of the eastern passage, such as Grog rock on the east side of the entrance to the shallow bight known as N.E. harbour, and Bartlett ledge (which just covers at high water) on the western side of the entrance, but there are no good cross marks for the dangers themselves, or clearing marks, so that the chart will be the best reference.

The Salvages, consisting of a long line of rocks nearly 2 miles in length N.E. by N. and S.W. by S., are the southernmost dangers to be avoided on approaching Negro harbour from the westward; and on their south-west end are two clusters of rocks, the highest parts of which are 10 feet above high water.

The south-east side of this extensive group of rocks is steep-to, which increases the danger of approach during thick weather or at night.

The extreme north-east rock of the Salvages uncovers only at low water springs, but generally shows a break during heavy weather; it lies with Green point (Port Latour) on with Sheep ledge, but there is no good cross mark.

Triangle Rocks are three distinct rocks nearly equidistant from each other occupying a central position in the western channel into Negro harbour; the two western rocks show at low water springs, but the eastern rock has 3 feet over it, with deep water all round. From the southern rock Cape Negro is just in line with a high water tangent next west the Cape.

The channel between Mackerel rock and the nearest of the Triangles is only 2 cables across between the 5-fathom lines, whilst the passage between the southern Triangle and Shag rock is about one-third of a mile.

TIDES.—It is high water, full and change, in Negro harbour, at 8 h. 12 m. springs rise 7 feet, ; and neaps $5\frac{3}{4}$ feet.

DIRECTIONS.—Eastern Entrance.—The Grey rocks are steep-to, and may be rounded within a cable's length, after which bring the north end of Negro island to bear W. by N. $\frac{3}{4}$ N., and steer for it with the south-west Grey rocks astern, this course will lead in mid-channel between Budget rock and the rocks off East point.

When Cape Roseway lighthouse touches the east tangent of East point, Budget rock will have been cleared, and the course should be altered to N.W. by W. $\frac{1}{3}$ W., which will lead in a direct route—but over a 3-fathom patch—for a good position off Purgatory point; when Davis island east point bears N.N.W. steer for it, and anchor on the eastern shore in about $3\frac{1}{2}$ fathoms, mud, with the north-east point of Negro island just touching—or shut in by—Shingle point.

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Western Entrance.—Coming from the westward give the south end of the Salvages a berth of a quarter of a mile, and when Cape Roseway lighthouse comes just open of Cape Negro N.E. $\frac{1}{4}$ N. you may proceed on that bearing until Purgatory point just touches Mackerel rock N.N.W. $\frac{1}{2}$ W., when steer on the latter course until the south-west point of Negro island bears E.S.E., then steer E.N.E. between Mackerel and Triangle rocks, and when Shag rock bears S. by W. $\frac{1}{2}$ W. steer north until abreast of Purgatory point, and proceed for the anchorage as before directed.

If desirous of passing south of Triangle rocks, and having Cape Roseway lighthouse just open of Cape Negro as before, bring Shag rock N.W. by W. $\frac{1}{2}$ W., and steer N.W. by W., which will lead in mid-channel between the southern Triangle and Shag rocks, and when the latter bears S.W. by W. $\frac{1}{2}$ W., alter course to north, and proceed past Purgatory point for the anchorage according to previous directions.

Cape Negro open of the high water tangent next west the Cape is a good mark for keeping south of the southern rock of the Triangle group.

PORT LATOUR.—Next west of Negro harbour is a bight, known as Port Latour, between Blanche island on the east and Baccaro point on the west.

The so-called port is a bight open to the southward, but in consequence of its numerous dangers, shallow water, and bad anchorages, it is only used by small fishing vessels. The only safe anchorage is in a small hole east of John island, and north of Ram island, but the place is small and studded with rocks, and should not be attempted by any but those possessed of good local experience.

As it is possible vessels may seek to obtain anchorage within Port Latour, a description of the dangers off its entrance are given.

BACCARÒ LIGHT.—The lighthouse stands on the extremity of Baccaro point, from which Cape Sable lighthouse bears W. by S. $7\frac{1}{2}$ miles, and is a square white building, with a black ball on its seaward face, surmounted by a lantern 49 feet above the sea, from which is exhibited a *revolving* white light attaining its greatest brilliancy every 40 seconds, and in clear weather should be seen from a distance of 12 miles.

Baccaro Outer Ledge, about a quarter of a mile in length, and $3\frac{1}{2}$ fathoms on its shoalest part, lies with Baccaro lighthouse N.W. $\frac{1}{4}$ W. nearly $1\frac{1}{2}$ miles, and Blanche island south point E.N.E. $2\frac{1}{2}$ miles.

South Ledge consists of several rocks, the south-westernmost of which is always seen, and from it the northern rock—which uncovers at a quarter ebb—bears N.N.E. $1\frac{1}{2}$ cables, and Baccaro lighthouse W. $\frac{1}{2}$ S. $1\frac{1}{2}$ miles.

Stone Horse, at the eastern end of the South ledge, has only 4 feet water, and is a quarter of a mile distant from the southern rock of South ledge in a S.E. by E. $\frac{1}{2}$ E. direction.

North Ledge, about a quarter of a mile in length, has on its northern end a rock 3 feet above high water, and on its south-west end is a small rock which is awash at low water. From the latter rock the high water line north of Baccaro point is distant three-quarters of a mile, and Baccaro lighthouse W.S.W. $1\frac{4}{10}$ miles.

Cuckold Rock, awash at low water springs, is a small detached rock between the South ledge and Baccaro lighthouse, which latter bears from the rock W. $\frac{2}{3}$ S. two-thirds of a mile.

Shot Pouch is a rocky patch two cables in extent, the centre being one-third of a mile W. by S. $\frac{1}{4}$ S. from Baccaro lighthouse.

Bantam Rocks, which uncover at low water springs, are half a cable apart, and form the highest part of a dangerous rocky ledge nearly a quarter of a mile in length. From the rocks, which nearly always break, Baccaro lighthouse bears N.E. a long mile.

Brazil Rock is a dangerous off-lying rocky patch having only 12 feet over it, with deep water close-to; it breaks heavily in bad weather, but during fine weather is very treacherous, as it is only marked by a tide rip. From the rock Baccaro lighthouse bears N. $\frac{1}{2}$ E. $5\frac{1}{2}$ miles, and Cape Sable lighthouse N.W. by W. $\frac{1}{3}$ W., 8 miles.

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CHAPTER VIII.

NOVA-SCOTIA:—SOUTH-WEST COAST;
BACCARO POINT TO YARMOUTH.

VARIATION in 1867.

Cape Sable	-	-	17° 0' W.		Seal island	-	-	16° 45' W.
Pubnico Harbour	-	-	17° 0' W.		Yarmouth	-	-	16° 55' W.

GENERAL REMARKS.—The Bay of Fundy is an extensive arm of the sea on the east coast of North America, separating the province of New Brunswick from the south-western part of Nova Scotia, and extending upwards of 100 miles in an E. by N. $\frac{1}{2}$ N. direction, with an average breadth of about 30 miles.

At the entrance of the bay are Grand Manan and smaller islets, as well as numerous dangers; on the north side are Passamaquoddy and other bays, as well as the harbour of St. John, a place of considerable commercial importance. The head of the bay is divided by a tongue of land into two branches viz:—Chignecto channel on the north, and the noble Basin of Mines on the south.

The Bay of Fundy is deep, but the navigation is rendered not only difficult, but dangerous, by numerous off-lying dangers fringing the approaches, by rapid and uncertain tides, as well as by the frequent occurrence of dense fogs.

FOGS.—The fogs frequently give but little warning, and generally follow southerly or south-westerly winds, which bring with them heat and moisture from the Gulf stream; they chiefly prevail during the months of July and August, and hang principally on the coast between Cape Sable and Bryer island and the vicinity of Grand Manan island.

On the Nova Scotia coast eastward of Bryer island the fog generally clears for a short distance off shore when the wind is to the southward of S.W., and on proceeding to the eastward the belt of clear increases in breadth. On the New Brunswick shore the fog generally clears with the wind to the westward of W.N.W.

SMOKES.—During the summer months the haze occasioned by the smoke from burning forests in the neighbouring State of Maine is almost as bad as fog, being frequently of sufficient density to obscure lights at night when only a short distance from them.

TIDES.—The tidal currents along the shores of the Bay of Fundy are uncertain both in velocity and direction, and in navigating the bay extreme caution is necessary when within tidal influences, whose velocities have been known to vary from one to eight miles an hour.

Captain R. V. Hamilton remarks that off the Tusket islands the tides are strong and eddying, and that H.M.S. *Sphinx*, though steaming at the rate of 7 knots an hour, was whirled almost completely round against the helm.

The same authority states that the offing tides are likely to mislead, and that he was informed by a fisherman that the tidal current on Brown bank—off Cape Sable—occasionally ran to the north-east for 15 hours continuously at the rate of 2 miles an hour, (which would account for vessels from Boston being so frequently set up the Bay of Fundy,) whilst at other times the set would be as strong to the south-west.

No reliance, therefore, can be placed either in the rate or direction of the off-shore tides.

PILOTS.—With the exception of St. John and St. Andrew pilots, and possibly a few at Yarmouth, there are no regular pilots for the Bay of Fundy. The fishermen and coasters are generally well acquainted with the dangers and set of the tides in the localities they are accustomed to frequent, but as a rule they are not well informed respecting the depth of water.

The St. John pilot boats will generally be found to the southward of the line between Gannet rock light and Bryer island, and between Machias Seal island and Little river on the coast of Maine. This latter locality is frequented by St. Andrew pilot boats, as well as Cape Lepreau.

BARRINGTON BAY is a spacious inlet, having for its points of entrance Baccaro point on the east and Cape Sable on the west. Near its head is an anchorage accessible by two channels, viz., east and west of Sable island, which affords a partial protection to the anchorage. The western channel must be considered impracticable to a stranger, in consequence of extensive flats and numerous dangers, which narrow the channel and render the navigation always difficult and most frequently dangerous.*

At the head of the inlet, and extending a considerable distance along the shore, is the stragglings township of Barrington, which exports fish; but few supplies of any other kind can be procured.

DIRECTIONS.—By referring to the Admiralty chart the position of the various shoals in Barrington bay will be seen, and the seaman must depend on his intelligence to avoid dangers, which it would be useless to describe in the absence of good land marks.

* See Admiralty chart: Baccaro point to Pubnico harbour, No. 339; scale, $m = 1\frac{1}{4}$ miles.

Coming from the eastward, and wishing to pass inside Bantam rocks, bring Baccaro lighthouse W.N.W., and steer for it until Cape Sable lighthouse bears W. $\frac{3}{4}$ S.; then alter course for the latter, and when the high water tangent of Cat point bears N. $\frac{1}{2}$ W. you will be clear of the Shot pouch, and a N.N.W. course will lead up the bay to a mid-channel position abreast of Clam point, from whence Lighthouse rock should be seen, and by steering for it on a N.W. by N. bearing anchorage will be found in about 6 fathoms, with the north-east point of Cape Sable island bearing W. $\frac{1}{2}$ N.

On approaching the anchorage care must be taken to avoid the extensive sand flats which surround Beach point. The best course to pursue when steering for Lighthouse rock will be to borrow slightly on the island shore, towards which the water shoals gradually, and keep in about 5 fathoms, so that by porting the helm the water will deepen. A heavy sea sets into Barrington bay when it blows hard from between south and S.E., and renders the anchorage unsafe.

There is room for a vessel to turn into this anchorage by the eastern passage, and by paying careful attention it may be done without a pilot.

The passage into Barrington bay west of Cape Sable is of such an intricate and dangerous character that no stranger would be justified in attempting it without the aid of a good pilot.

CAPE SABLE ISLAND, about 7 miles in length and of an irregular form, is only separated from the mainland by one-third of a mile. The island is thickly wooded and singularly flat, and is surrounded by dangers, especially on its south and western sides.

Cape Sable, at the south end of the island, is also the south-western extremity of the province of Nova Scotia, and is the outer end of a small island whose hillocks of blown sand, varying from 15 to 28 feet high, are continually shifted by hard gales.

CAPE SABLE LIGHT.—The lighthouse, a white building, slightly conical in form, stands on Cape Sable, and from the lantern, 53 feet above high water, is exhibited a *fixed red* light, which in clear weather should be seen from a distance of 12 miles.

Columbia Rock is a small pinnacle with 7 feet water; it was discovered by H.M.S. *Columbia* touching on it, and lies S. by E. $\frac{3}{4}$ E. one mile from Cape Sable lighthouse. Beyond this rock in a southerly direction for a distance of two-thirds of a mile are the continuations of the rocky ledges which run out from Cape Sable; over these are heavy tide rips during the strength of the tides, caused by the stream rushing over the uneven rocky bottom.

Horse Race, a rocky patch with 2 fathoms water, lies a fourth of a mile within Columbia rock, and makes a heavy tide rip.

S.W. Ledge, so named from its relative position to Cape Sable, is about half a mile in length. Near the northern end are two rocks which generally uncover at low water, and a quarter of a mile further out is a rock which generally breaks and nearly uncovers at low water springs.

From the latter Cape Sable lighthouse bears E. by N. $\frac{1}{2}$ N. $1\frac{3}{4}$ miles, and beyond it for the distance of nearly a mile in a seaward direction heavy tide rips rush over the rocky tail of the ledge, though with 6 and 7 fathoms water on it.

TIDES.—At Cape Sable it is high water, full and change, at 8h. 27m.; springs rise $8\frac{1}{2}$ feet, neaps $6\frac{1}{2}$ feet. Strong north-westerly winds lower the surface of the water, and south-easterly winds have a contrary effect, though the times of high and low water are not materially affected by either.

At the Brazil rock the stream turns about half an hour before high and low water at Cape Sable, towards which the flood stream runs about 2 knots an hour; but outside the Brazil the rate diminishes in proportion as the distance from the shore increases, whilst over the rock itself the tides rush with great rapidity and create a considerable rip.

Inshore around Baccaro point and over Bantam rocks the flood sets strong, and from the point trends towards Stony island (on the east shore of Cape Sable island), where the stream divides, the northern branch setting round Clam and N.E. points, and thence to the southward along shore towards Cape Sable; whilst the southern branch trends along the eastern shore of Cape Sable island towards the same point.

Outside Bantam rocks the flood sets towards Cape Sable, round which, for a distance of 3 miles off-shore, it attains a velocity of fully 4 knots during its strength. After rounding the cape the flood stream sets towards Seal island, passing it and through the various channels to the northward between it and Tusket island, in a general N.W. direction, at rates varying from about $2\frac{1}{4}$ to 4 knots an hour. The flood assumes a more northerly trend along the main shore. The direction of the ebb stream is nearly opposite to that of the flood, and runs with equal velocity.

SEAL ISLAND, about $2\frac{1}{4}$ miles in length, low and thickly wooded, is the most off-lying in a southerly direction of a cluster of islands extending from Frenchman point. The island is surrounded on its east, south, and west sides by shoals of a very dangerous description, and when navigating in their vicinity great prudence is required.

SEAL ISLAND LIGHT.—The lighthouse, of an octagonal form, is painted white, and stands within one-eighth of a mile of the south point of the island. From a lantern 98 feet above high water level is exhibited a *fixed* white light, which in clear weather should be seen from a distance of

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18 miles, and it bears from Cape Sable lighthouse W. by N. $\frac{1}{2}$ N $17\frac{1}{4}$ miles.

Purdy Rock is of small extent, with $2\frac{1}{4}$ fathoms on it and deep water all round, but it shows a rip during the strength of the tide, and breaks in heavy weather. From it Seal island lighthouse bears N.W. by W. $\frac{3}{8}$ W. $2\frac{1}{4}$ miles.

Blonde Rock, on which the frigate of that name was lost in 1777, is about a quarter of a mile in length, and a small portion near the middle uncovers about 2 feet at low water springs; this part lies with Seal island lighthouse N. $\frac{1}{2}$ W., $3\frac{1}{2}$ miles.

About a mile to the westward of Blonde rock is a heavy breaking rip during the strength of the tidal stream, but H.M. surveying vessel *Columbia* carried good water through it.

Elbow Shoal, a good mile in length between its 5-fathom lines, has on its northern end near Seal island a patch with $2\frac{1}{2}$ fathoms, and a similar patch near its southern extremity; the shoalest spot however, occupies a more central position, and has only 5 feet water on it. From this spot Seal island lighthouse bears N. by E., $1\frac{1}{3}$ miles, and the eastern tangent of Seal island is just on with the rock on its south point.

Zetland Shoal, so called from a vessel of that name striking on it, was reported to have only 17 feet over it, but on examination nothing less than 21 feet was found. The shoal breaks in heavy weather, and is marked by a rip during the strength of the tide; from it Seal island lighthouse bears S.W. $\frac{1}{4}$ S. upwards of $1\frac{3}{4}$ miles.

Devils Limb is a small rocky islet about 10 feet above high water springs, distant $1\frac{1}{4}$ miles from Seal island lighthouse in a N.W. $\frac{1}{2}$ W. direction. About a quarter of a mile south of the islet is a rocky shoal which uncovers at low water springs, and named Loch Foyne, after a ship of that name wrecked on it.

Limbs Limb, upwards of a mile to the northward of Devils limb shows one hour after high water, and is steep on its western side.

There is a passage inside the Limb shoals for vessels of moderate draught, but it should only be attempted by those well acquainted with it.

ANCHORAGE.—There are places of temporary anchorage on both sides of Seal island, but as the bottom is rocky and tides strong and irregular, anchors are liable to foul; the anchorages should never be used unless the wind be off the island.

MUD ISLANDS are situated to the northward of Seal island and consist of four small islands, viz., Noddy, Mud, Round, and Flat; of these Mud and Round islands may be approached within a moderate distance on their eastern side, but Noddy island should not be approached within half a mile.

From the northern end of Flat island a shoal runs off a third of a mile, terminating in a rocky toe with only 7 feet water, over which the tide causes a considerable rip. Between Seal and Noddy islands, distant $2\frac{1}{2}$ miles, there is a safe deep water channel, but one-third of the way across from Noddy island is a shoal reported to have 18 feet water, but on examination nothing less than $5\frac{1}{2}$ fathoms could be found.

The flood stream sets strong through this channel at a rate of nearly 4 knots in a N.W. direction, the ebb running to the S.E. attains the same velocity. When using the channel in thick weather it is best to borrow on Seal island shore, but as a rule—during fogs—it is advisable to pass to the southward of Blonde rock. If from the southward, and the Blonde rock in sight, Flat island just open east of Seal island will lead in safety between Blonde rock and Elbow shoal.

ANCHORAGES.—Temporary anchorage may be obtained on the east side of Mud island in about 8 fathoms, with the east end of Mud island on with the middle of Round island, and the south-east end of Mud island on with the middle of Noddy island.

A vessel may also anchor on the north-west side of Flat island, but it must be distinctly understood that the anchorages around these islands are not recommended, and should only be resorted to as a matter of convenience in fine weather, or when driven by necessity during bad weather.

Black Ledge, nearly a mile west of Mud island, is always visible, except at high water springs, when its position is marked by a breaker; it lies with the south end of Flat island N.N.E. $\frac{1}{4}$ E. $1\frac{1}{2}$ miles, and Noddy island centre S.E. $\frac{1}{2}$ S. $1\frac{1}{2}$ miles.

Mud Island Shoal, upwards of 2 miles to the westward of Mud island, has 4 fathoms on its shoalest part, but it shows a rip during the strength of the tide, and is said by the residents on Seal island to break in very heavy weather.

The shoal, which is a quarter of a mile in length, should be avoided by vessels of large draught, because the bottom being irregular it is probable the least water has not been obtained. From the 4-fathom spot on the eastern end of the shoal Seal island lighthouse is just open west of Division point S. $\frac{1}{2}$ W. 5 miles; and the south end of Mud island W. by N. $\frac{1}{2}$ N. a little over 2 miles.

In running between Noddy and Seal islands a vessel should pass to the southward of this shoal.

Soldier Ledge is a dangerous patch of rocks about $2\frac{1}{4}$ miles N.W. $\frac{1}{2}$ N. of the north point of Flat island; the passage between, though available, is not recommended, as it is possible shoal spots may exist in the parts only partially examined. A portion of the ledge, about a quarter of a mile

long, uncovers about 2 hours after high water and is very dangerous, but it generally breaks when covered.

The south-east extreme of Frenchman island open north of Bald Tusket island N.E. $\frac{1}{2}$ N. clears the Soldier ledge on its western side.

STODDART COVE lies just within the north point of Stoddart island, which is $2\frac{1}{2}$ miles from the West head of Cape Sable island; the cove affords good anchorage in all weather for vessels of not more than 9 feet draught. In entering keep on the Stoddart island shore, in order to avoid a rock awash at low water springs about a sixth of a mile off the west point of Prospect island.

SHAG HARBOUR, between Bon Portage island and the main, is adapted for vessels of any draught, and though open from South to S.S.W. is said to be sheltered from any heavy sea by the ledges off Cape Sable. In 1865 H.M. Ships *Sphinx* and *Gannet* used an anchorage west of Prospect island in about 8 fathoms, with the western tangents of Green and Stoddart islands in line, and the Baptist church of Shag harbour village on with the north end of Prospect island E.N.E. This position is to the eastward—and beyond the influence—of the strength of the tidal streams, and the holding ground is more tenacious than nearer the shore.

Captain R. V. Hamilton, of the former ship, remarks, that when making the harbour from the southward or westward in tolerably clear weather the entrance is easily distinguished, as Bon Portage island makes out well; the white beach on the south point being conspicuous under the dark trees. In entering with the flood a wide berth should be given to the south point of the island, as the tide sets directly for it at the rate of 4 miles an hour.

The holding ground at the above anchorage not being good, a long scope of cable should be given; the best holding ground is said to be above Conquer All. Southerly winds, though blowing hard at Cape Sable and Seal island, did not blow home in October and September 1865, though a ground swell was experienced at the anchorage.

TIDES.—It is high water, full and change, at Stoddart cove at 8h. 58m.; springs rise $11\frac{1}{2}$ feet, neaps $8\frac{1}{2}$ feet.

COCKERWIT PASSAGE.—At the entrance of Cockerwit or Wood harbour, and between it and the Mutton islands, there is good anchorage in from 5 to $5\frac{1}{2}$ fathoms, over muddy bottom. In the passage to this anchorage there is a rock which uncovers at low springs, having deep water close to it. Robinson Ball station (built of stone) on with the centre of Little Stony island leads right on it; but a house standing on the northern end of Stoddart island just open to the eastward of a detached rock off Prospect point leads to the eastward.

Cockerwit passage can only be used by vessels of small draught, from 8 to 9 feet water, and steered by experienced persons. On



the north sides of St. John island, at the northern entrance of Cockerwit passage, good shelter can be obtained during south-east gales. The passage between Bon Portage island and Robinson Ball can only be used by small vessels. The channel to Wood harbour has a rocky bar across its entrance, over which the water falls at three-quarters ebb; the harbour can only be entered by vessels of about 6 feet draught.

St. John Ledge, a dangerous shoal three-quarters of a mile in extent, has near its centre a patch which generally shows except at high water springs; from it the south-west tangent of St. John island bears N. by E. $\frac{1}{2}$ E. $1\frac{1}{2}$ miles.

Pubnico lighthouse open to the westward of St. John island N.E. by N. clears the ledge on its western side.

PUBNICO HARBOUR LIGHT.—The lighthouse is a square white building near the extremity of Beach point, on the eastern side of the entrance to Pubnico harbour; and from a lantern 28 feet above high water level exhibits a *fixed* white light, and in clear weather should be visible from a distance of 8 miles.*

TIDES.—It is high water, full and change, at Pubnico harbour, at 9h. 25m.; springs rise 12 feet, and neaps 10 feet.

DIRECTIONS.—Pubnico harbour affords safe anchorage to ships of large draught, and from the comparative absence of dangers at the entrance is accessible at all times.

On approaching the harbour with a leading wind, after passing St. John island, bring the lighthouse to bear N.E. by E., bearing in mind that shoal water extends off St. Ann point to the distance of a quarter of a mile; pass a cable's length from the lighthouse, and steer so as to pass close on the eastern side of the white Spar buoy, marking the outer extremity of a rocky ledge—which uncovers at low water—running out from the western shore a little within Beach point. After passing the buoy haul a little to the westward, and steer for the church, a conspicuous object on the western shore, in order to clear a shoal on the eastern shore with 11 feet water (but on which it is possible there may be a less depth, as the bottom is sharp and irregular), and when the lighthouse bears S. by W. $\frac{2}{3}$ W. steer N. by E. $\frac{2}{3}$ E., and anchor in 9 or 10 fathoms, mud, abreast of the wharves near Meres house, inclining a little to the western side of the harbour.

In the event of the Spar buoy not being in position, a good mark for clearing the western ledge is the point south of Beach point seen over the high water line of Beach point; this mark will also clear, but lead rather close to, the before-mentioned 11 feet ledge on the eastern side of the harbour.

* See Admiralty chart: Pubnico to Yarmouth, No. 2,537, scale, $m = 1\frac{1}{2}$ inches.

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By Night, Pubnico light open west of St. John island N.E. by N. clears St. John ledge; on nearing the island haul to the westward until the light bears N.E., and run in on that bearing, rounding Beach point at a cable's length, and when the light bears S.S.W. steer N.N.E. for the anchorage. The light bearing E.N.E. clears the shoal water off St. Ann point.

Water.—A fresh-water spring close to the southern wharf affords about four tons of good water daily.

St. Ann Shoal, a quarter of a mile in length, with $2\frac{1}{2}$ fathoms on it, lies with St. Ann point S.E. $1\frac{3}{4}$ miles, and the southern Twin island N.E. $\frac{1}{2}$ N. upwards of $1\frac{1}{2}$ miles.

Nearly abreast of St. Ann shoal is a rocky spit with $2\frac{1}{4}$ fathoms, extending half a mile from the main shore. The passage between these dangers is deep and two-thirds of a mile broad. From the spit the west ends of Abbot and the southern Twin islands are in line, and by keeping the west end of Abbot island open west of the southern Twin island bearing N. by E. $\frac{1}{2}$ E. the spit will be cleared a cable's length. The Twin islands in line N.N.E. $\frac{2}{3}$ E. leads in mid-channel between the Spit and St. Ann shoal.

TWIN ISLANDS, about half a mile from the shore and the same distance apart, are very small in size, with shoal water around them, leaving only a narrow deep water channel between. Off the northern Twin are two small detached shoal patches, one with $2\frac{1}{2}$ fathoms bearing N.W. by W. a third of a mile, and the other with 7 feet water N. $\frac{1}{2}$ W. nearly half a mile.

Inside Twin islands there is a narrow channel with upwards of 5 fathoms.

ABBOT HARBOUR, with $3\frac{1}{4}$ fathoms water, is formed by the narrow channel between Abbot island and the main shore, and though only a cable across at its entrance, is well adapted for vessels of small draught, being easy of access and completely sheltered from all winds.

Approaching from the southward, the west end of Abbot island on with a point on the main land within Bramble island N.E. by N. leads a quarter of a mile to the westward of St. Ann shoal and the outer patch off Twin islands, and when abreast of Stony island, bearing E.S.E., steer N.E. by E. $\frac{3}{4}$ E., and when the northern point of the harbour opens out east of Abbot island haul up and round the south-east point of the island about half a cable distant, and anchor in about $3\frac{1}{2}$ fathoms, midway between the island and the main shore.

ARGYLE.—The scattered township of Argyle lies on the main land to the northward of Abbot island. Off its shores are several anchorages but the channels leading to them are too intricate to be entered without a pilot.

WHITE HEAD ISLAND, about a quarter of a mile in length, is

rendered conspicuous by earthy cliffs of a reddish colour nearly 70 feet in height on its southward side and may be considered the south-eastern-most of the numerous islands with which the upper part of the bay between Abbot harbour and Frenchman point is studded.

White Head Ledge, about a quarter of a mile in length, uncovers near its centre at low water, and after half ebb the position of the shoal is marked by kelp. From the part which dries the south end of White Head islands bears W. $\frac{1}{3}$ N. three-quarters of a mile.

West Shoal, about a third of a mile in length, has only 12 feet water near its southern end, and from it the south end of White Head island is distant half a mile S.E.

Jones Ledge, nearly half a mile in length, dries in one spot near its centre, from which the south end of Jones island bears N. $\frac{3}{4}$ E. one-third of a mile.

GULL ISLAND, a low green island to the westward of White Head island, should not be approached on its southern side within half a mile. From its northern end a long narrow stony bar, which dries at low water, extends two-thirds of a mile in a N. $\frac{1}{2}$ E. direction.

Midway between Gull and Eastern Bar islands is a rocky path 2 cables long, having only 4 feet on its southern end.

Gull Ledge lies 2 miles S. by W. of Gull island, and has only 5 feet on its shoalest part, from which the large barn on Sheep island is on with the western high water line of Gull island.

S.W. Shoal is a small patch with $2\frac{1}{2}$ fathoms over it, with deep water close to. From it the west end of Gull island bears E. $\frac{1}{2}$ N. one mile.

TIDES.—It is high water, full and change, at Jones anchorage (Argyle) at 9h. 27m.; springs rise $12\frac{3}{4}$ feet, and neaps $10\frac{1}{2}$ feet.

JONES ANCHORAGE.—In case of emergency Jones anchorage may be rendered available by proceeding as follows, viz.:—Steer for White Head island on a N.N.E. bearing, and keep along its eastern shore, with the centre of Lear island, 60 feet high, bearing N. by E. $\frac{1}{4}$ E.; this course will lead between White Head island and ledge, and also nearly in mid-channel between Pumpkin island and Pumpkin ledge; the latter has only 2 feet on it, but is marked at half tide by kelp.

When abreast the north end of Pumpkin island, or with the west ends of Thrum and Hog islands in line N. $\frac{1}{2}$ W., alter course for the east tangent of Jones island, and run along its east shore about $1\frac{1}{2}$ cables off, where good anchorage will be found in about 6 fathoms, mud, with the centre of Ram island on with the south end of Lear island.

To run in west of White Head island, bring the east end of Thrum island on with the west end of Pumpkin island N.N.E. $\frac{1}{2}$ E., this mark

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will lead midway between White Head island and West shoal. After passing along the west of Pumpkin island steer for the channel between Thrum and Jones islands, and proceed as before directed.

BIG FISH ISLAND LIGHTS.—On the south-west end of Big Fish island at the entrance of Tuskett river stands a wooden building painted white, from which are exhibited *two fixed* white lights *horizontally*, 25 feet apart; in clear weather the lights should be visible from a distance of 12 miles.

Big Fish Rocks consist of a small cluster of rocks which uncover at low water, about a quarter of a mile north-west of Big Fish island, with $3\frac{1}{2}$ fathoms in the channel between. From them the south-west tangents of Big Fish and Eastern Bar islands are in line, and the large barn on Sheep island open of north tangent of Fish island.

TIDES.—It is high water in Tuskett river (Pinch Gut island), full and change, at 9h. 33m.; springs rise 13 feet, and neaps 10 feet.

TUSKET RIVER—Eastern channel.—Tuskett river should not be attempted at low water by vessels over 15 feet draught; it affords safe anchorage, but the two approaches being narrow and beset with dangers, require great caution when entering.

If from the southward Gull ledge may be cleared by bringing the large barn on Sheep island well open of the west end of Gull island, or just open of the east end of Gull island. After passing the ledge keep to the north-east until Big Fish island lighthouse comes on with the north end of Eastern Bar island N.N.W. $\frac{2}{3}$ W., and by steering in on this course, the shoal water of Gull island, and the half tide rock off Sheep island will be avoided. On nearing Eastern Bar island, when the east end of Sheep island bears N. $\frac{1}{8}$ W., keep carefully on this course and steer through the narrows between Wilson point and Eastern Bar island to as far as the south point of Tucker island, when alter course so as to bring Wilson point astern, S. by E. $\frac{1}{4}$ E., and anchor in about 6 fathoms, mud, off the west end of Sheep island.

Western Channel.—After passing Gull ledge, open Tucker island west of Inner Fish island N. by E. $\frac{1}{2}$ E., which is a good mark for clearing the S.W. shoal, and after passing it, keep to the north-west until Big Fish island lighthouse bears N.N.E., when continue on that course until the south end of Eastern Bar and White Head islands are in line; then steer N. by W. $\frac{3}{4}$ W. for a short distance until the east end of Mike island is just touching the west end of Tucker island N.N.E. $\frac{2}{3}$ E., and steer with these marks on, passing a cable's length west of Big Fish island, until Little Fish island just touches Big Fish island, when by keeping these marks astern, a vessel will clear Big Fish rocks on their eastern side, and avoid the shoal ground north of Big Fish island.

When Inner Fish island opens out east of Big Fish island, alter course for Pinch Gut island N.N.E. $\frac{1}{3}$ E., which should lead in deep water between Tucker island and its ledge on the west side of the channel, and when Wilson Point touches the north of Tucker island a vessel will be clear of the shoal ground north of Tucker island, and might haul to the eastward and anchor as before directed off the east end of Sheep island. Vessels should not go beyond this anchorage without the aid of local knowledge, as the channel is intricate and tide rapid.

In the narrows abreast of Plymouth settlement the stream during the strength of springs runs about 5 knots, and in the vicinity of Pinch Gut island 2 knots an hour.

Old Woman is the name given to a rock near the centre of a shoal about 4 cables long north and south, which uncovers at 2 hours' ebb, and is the most south-easterly of the dangers off Frenchman point, from which it is distant $1\frac{1}{4}$ miles. Big Fish island lighthouse N.N.E. clears this danger on its eastern side, as well as all the shoal patches and ledges, on the western shore of the western entrance to Tuskent river; the south point of Spectacle island open of south point of Pease island W. by N. clears the Old Woman on its south side.

Old Man is the largest of a small cluster of rocks which uncover about an hour before low water springs, and from it Bald Tuskent island bears S.W. by W. $\frac{3}{4}$ W. one mile. Owls head open east of Allen island N. by W. $\frac{3}{4}$ W., leads close to the eastward; and the north end of Half Bald Tuskent on with the north end of Little Bald Tuskent leads to the northward.

BALD TUSKET ISLAND is about 2 cables in extent, 50 feet high, and bare of trees; it is the most off-lying and conspicuous of the Tuskent group, but should not be approached on its north, west, and south sides nearer than one-third of a mile, in consequence of shoal water.

Little Bald Tuskent Shoal, a small detached spot with 9 feet water, lies with the east end of Marks island touching the south end of Pease island N.N.E. $\frac{3}{4}$ E., and the north end of Inner Bald island W.S.W. a long half mile.

Harriet Ledge occupies a central position on a rocky shoal three-quarters of a mile in length; the ledge itself, about a cable long, covers at a third flood, and during the run of the tide shows a considerable tide rip.

From the ledge Holmes island is just open north of Spectacle island, and the south point of Pease island touching the north of Little Half Bald island.

Cleopatra Shoal is a dangerous detached shoal 2 cables in length, with 12 feet on its shoalest part, which is marked at low water springs by a

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few long pieces of kelp. From it Half Bald island is shut in by Bald Tusket island, the latter being $1\frac{2}{3}$ miles distant. This danger has deep water all round it, and shows a rip during the run of the tide.

Half Bald island open east of Bald Tusket island clears it close-to on its east side, and open to the westward clears it on its west side.

Between the Cleopatra shoal and Bald Tusket island are two small patches with $2\frac{1}{4}$ and 3 fathoms respectively, both being marked by rips during the strength of the tides; there is a deep channel, two-thirds of a mile broad, between them and Bald Tusket island; and a similar deep water passage between them and Cleopatra shoal.

Pease Island Ledge, about a cable in extent, lies near the western end of an extensive shoal spit off Frenchman point, and covers at one-third flood; it is about a quarter of a mile from the eastern point of Pease island, with a deep water channel between. The Barn on Ellenwood island on with the north end of Pease island N.W. by N. leads between the ledge and Pease island; and the south point of Spectacle island open of south point of Pease island W. by N. clears the ledge on its south side.

Marks Island Ledge uncovers at low-water springs, and lies $1\frac{1}{2}$ cables off the west side of Marks island; it shows a considerable rip during the strength of the tide, which runs over it with great velocity.

Allen island open north of Marks island clears the ledge on its north side, and Bald Tusket island open south of Half Bald island clears the ledge on its western side.

Allen Rock lies $1\frac{1}{2}$ cables off the south end of Allen island, and shows a whirl in the strength of the tide. The barn on Ellenwood island on with south-west end of Allen island clears the rock on its south-west side; and Owls head open east of Allen island clears the rock on its east side.

Schooner Passage Rock, with 9 feet water, lies nearly midway between Owls head and Turpentine islands, with a deep water channel on either side. The east end of Murder island shut in with Candlebox island clears the rock on its west side.

Bird Rock, at the outer end of a reef extending from the south end of Owls Head island, always shows, being about 2 feet above high water springs, and occupies nearly a mid-channel position between Ellenwood and Owls Head island.

Spectacle Ledge, about 2 cables long and very narrow, has 11 feet on it, and is marked by a large rip during the strength of the tide. From the shoalest spot Spectacle island south end bears N.N.E. upwards of three-quarters of a mile; and the south end of Half Bald island E. $\frac{1}{2}$ N. $1\frac{1}{8}$ miles.

The south end of Pease island on with north end of Half Bald island clears the Spectacle ledge on its south side; and the cliff on south-west end of Ellenwood island open east of Spectacle island N.N.E. clears Spectacle ledge on its eastern side.

TIDES.—It is high water, full and change, at Ellenwood anchorage at 9h. 54m.; springs rise 13 feet, and neaps $10\frac{1}{2}$ feet.

The tide turns a little after high and low water respectively, and runs rapidly through the Tusket island passages, the tide rips being numerous and heavy. Its general set is to the north-west and south-east, but this is modified by the position and shape of the islands, which form considerable eddies, and by the main land, in the vicinity of which the tide follows its direction. The average rate is from 2 to 4 knots, and round some points its rate probably exceeds the latter; off the north-eastern point of Ellenwood island the stream runs 4 knots, and in Schooner passage 3 knots per hour.

DIRECTIONS for SCHOONER PASSAGE.—To run through Schooner passage from the eastward keep Owls head open of Allen island N. by W. $\frac{2}{3}$ W., which will clear Old Man and Little Bald Tusket shoals on the eastern side, and when the barn on Ellenwood island touches the north-east end of Pease island alter course immediately so as to keep these marks on, in order to pass to the westward of Pease island ledge, which should be rounded close-to on the flood, as it sets strong towards the south point of Pease island.

Having passed the narrows, bring Candlebox island midway between Allen and Haymaker islands, and steer for it, this course will lead clear of Haymaker ledge and Allen rock, and after passing Allen island keep to the westward until the east end of Murder island is shut in by Candlebox island, in order to pass west of Schooner passage rock.

Pass Candlebox island close-to on its west side, and steer out through narrows of the northern entrance, with the south point of Candlebox island just touching Turpentine island, until Owls head just touches the tangent of Haymaker island, and with these latter marks on steer out between Murder island shoal and the shoal spit extending from the north-west point of Murder island.

For ELLENWOOD PASSAGE.—If intending to run through Ellenwood passage, after passing Pease island ledge, keep the barn on Ellenwood island just open south of Allen island N.W. $\frac{1}{2}$ N., to clear Allen rock, and after passing it keep in mid-channel between Marks and Allen islands, altering course so as to pass between Bird rock and Ellenwood island. After passing the rock, bring it on with the east point of Marks island, which will lead through the deep water channel of the narrows, and

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continue on until Owls head and the western tangent of Haymaker island are just touching, when steer out with these marks on as before directed.

ANCHORAGES.—Good anchorage will be found in Schooner passage, off the north end of Allen island, in from 5 to 9 fathoms, mud; and there is also good anchorage to be obtained in Ellenwood passage off the barn, about $1\frac{1}{2}$ cables to the northward of Bird rock, in about 5 fathoms, gravel and sand.

To approach this anchorage from the south-west keep the cliff on the south-western point of Ellenwood island open east of Spectacle island N. by E. $\frac{1}{2}$ E., in order to clear Spectacle ledge, taking care not to open out Holmes island until past Harriet ledge.

When the south end of Pease island comes on with the north end of Half Bald island steer for the south end of Marks island, and passing it on its eastern side run up Ellenwood passage to the anchorage before described.

Gannet Rock, barely 2 cables in length, is a narrow rocky ridge having near its southern end a peak resembling a sugar loaf 50 feet high, with a lump on its northern end of almost equal elevation. From the peak Yarmouth lighthouse bears N. by E. $\frac{1}{4}$ E., nearly $9\frac{1}{2}$ miles, and Seal island lighthouse S. $\frac{1}{2}$ E., $15\frac{2}{3}$ miles; both will be in sight in clear weather.

North Rock, of very small extent, shows about half tide, and lies a quarter of a mile N. $\frac{1}{2}$ E. from Gannet rock.

South Rock, also small and showing at half tide, lies more than two-thirds of a mile from Gannet rock in a S. $\frac{1}{2}$ W. direction.

South-east rock lies nearly $1\frac{1}{2}$ miles S. by E. $\frac{1}{4}$ E. from Gannet rock, and shows two distinct breaks in heavy weather, and a considerable rip during the strength of the tide. It is steep to on its east and west sides, and from it Yarmouth lighthouse seems just touching the eastern tangent of Green island.

Gannet South Shoal lies $4\frac{1}{3}$ miles in a southerly direction from Gannet rock, the least water found being 4 fathoms; it shows a tide rip, and breaks in heavy weather. From it the outer high lump of Cape Fourchu is just open of the east tangent of Green island.

Gannet S.W. Shoal bears from Gannet rock S.S.W. $\frac{1}{4}$ W. 3 miles, and has only 3 fathoms water; it extends a quarter of a mile north and south, shows a tide rip, and breaks in heavy weather. Green island just open west of Gannet rock leads over the shoal.

Gannet Dry Ledge, about a quarter of a mile in length, uncovers at 2 hours' ebb, and generally breaks at high water; it bears from Gannet rock peak S.W. $\frac{2}{3}$ W. $1\frac{3}{4}$ miles. Although there is good water between the ledge and Gannet rock, vessels as a rule should pass outside.

Jacko Ridge consists of two rocky patches about $1\frac{1}{2}$ miles in extent,

with 27 feet over the shoalest part; it is the most off-lying of the series of detached rocky irregularities—already described—extending from Jebogue point, from which it is distant 13 miles S.S.W. This ledge should be avoided in very heavy weather as it breaks.

Green island, about one third of a mile long and 50 feet high, is distant $2\frac{3}{4}$ miles N.N.E. from Gannet rock, and the same distance S.W. $\frac{1}{2}$ S. from Jebogue point. It would be advisable to give the south point of this island a berth of at least half a mile; the other shores are steep-to.

CAUTION.—The foregoing shoals and ledges being very uneven it is highly probable that when examined the least water might not have been discovered, and vessels are therefore recommended to avoid their positions.

Reef Island Ledge, off the entrance of Jebogue river, uncovers at a quarter ebb, and is shoal all round for a considerable extent; between it and Reef island there is no safe channel, whilst to the southward shoal water extends to the distance of a mile. From the centre of the ledge Jebogue point bears N.W. by N. one mile, and the south end of Reef island E. by S. $\frac{1}{2}$ S. half a mile.

Reef Shoal, about a quarter of a mile long, has only 12 feet on its shoalest part, and causes a tide rip; although there is deep water on either side, the shoal had better be passed on its western side.

From the west end of the shoal Yarmouth lighthouse is just shut in with Jebogue point, and the south end of Reef island bears E. by N. $\frac{1}{2}$ N. $1\frac{1}{4}$ miles.

Yarmouth lighthouse open west of Jebogue point N. $\frac{1}{2}$ W. clears this reef close-to on its western side, and also leads through the inner channel.

Jebogue Point Shoal is an extensive patch, with 14 feet water, about a quarter of a mile off the pitch of Jebogue point, with from $3\frac{1}{2}$ to 5 fathoms in the channel between.

Jebogue Ledge, about one-third of a mile in extent, has only 2 feet on its shoalest part, from which Jebogue point is distant a mile N.E. $\frac{3}{4}$ E.; it is very dangerous, shows a tide rip, and breaks with an ordinary swell. There is a good channel between this danger and Green island.

Foul Ground, a short half mile in length, with only 9 feet water, lies with the south end of Reef island on with Jebogue point S.E., the latter point being $1\frac{1}{4}$ miles distant. Between the shoal and the shore in the vicinity of Jebogue point the distance is two-thirds of a mile, with a deep water channel a quarter of a mile broad, between the 5-fathom lines.

Roaring Bull is a small rock, which uncovers about 3 feet at low water springs, about a mile from the shore, and in the direct line between Green island and Yarmouth lighthouse. It lies about half a mile to the north-

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ward of a shoal spot on Foul ground, and from it Jebogue point bears S.E. by S. $1\frac{3}{4}$ miles. The rock shows a tide rip, and breaks with an ordinary swell.

TIDES.—It is high water, full and change, in Jebogue river at 10h. 4m.; springs rise 15 feet, and neaps $11\frac{3}{4}$ feet.

JEBOGUE RIVER.—The approaches to Jebogue river are studded with dangers, for which—especially in hazy weather—no good clearing marks can be given; and a bar extends across its entrance having in one place only 11 feet water.

There is, however, a safe little anchorage inside the entrance of the river, and in cases of necessity may be used by vessels of moderate draught.

DIRECTIONS.—A vessel from the south-west, and in the vicinity of Green island, should steer a course so as to pass to the westward of Reef shoal, and when the west end of Perry island appears to touch the sandy spit opposite Fox island N.N.E. $\frac{1}{2}$ E., steer for it on that bearing over the bar, and pass about midway between Fox island and the spit.

Good anchorage in smooth water, though in a limited space, may be obtained in 16 feet water about $1\frac{1}{4}$ cables inside the north point of Fox island, care being taken to keep Gannet rock in sight in the middle of the entrance in order to avoid the mud bank on the western shore and two small mud banks in the middle of the channel at its bend. Good fresh water can be obtained, the supply being about 3 tons per tide.

If from the westward, bring the end of earthy cliff to the northward of Garden head just open to the southward of Jebogue point E. by N. $\frac{1}{4}$ N., these marks will lead in good water north of Jebogue ledge and shoal; when the north end of Reef island bears E.N.E. steer for it until the west end of Perry island appears to touch the spit already alluded to, when proceed as before directed.

YARMOUTH LIGHT.—The lighthouse stands on the western side of the entrance of Yarmouth sound, at about a quarter of a mile to the northward of the extremity of the eastern prong of Cape Fourchu. The building is octagonal in shape, and painted with red and white stripes *vertically*; and from the lantern, which stands at an elevation of 117 feet above the level of high water, is exhibited a *revolving* white light, showing a bright face for $1\frac{1}{4}$ minutes, after which it is eclipsed for a space of 30 seconds. In clear weather the light should be seen from a distance of 20 miles; a bell is sounded during fog.

YARMOUTH SOUND is available as an anchorage with all winds, excepting those between south and west, when it is dangerous with strong winds; Captain R. V. Hamilton remarks, "Yarmouth sound is a good

summer anchorage for vessels of 15 feet draught, but is not safe in October, as south-westerly gales come on very suddenly, and send in a heavy sea."

The best anchorage is in about 20 feet, over sandy bottom, with the lighthouse W. by N. $\frac{1}{2}$ N. distant about a quarter of a mile. The shore inside the lighthouse should not be approached within a cable's length, as several detached rocks lie off it.

Hen and Chickens consist of a cluster of rocks extending about 2 cables' length from the shore on the eastern side of the sound opposite the lighthouse, from which they bear E. by S. $\frac{1}{2}$ S. The rocks begin to uncover about two-thirds ebb, and a good mark for clearing them on their western side is the Independent church spire, at Yarmouth on with the middle of Low beach at the head of the sound, leads to the westward.

TIDES.—In Yarmouth harbour it is high water, at full and change, at 10h. 9m.; springs rise 16 feet, and neaps 13 feet. The tidal stream changes its direction a little after high and low water by the shore respectively.

From Ellenwood island to Yarmouth the flood stream runs between the ledges inside Green island about 3 knots during its strength, with a short interval of slack water. The flood sets strong round Cape Fourchu to the northward, so that a vessel making for Yarmouth sound should haul up immediately she has cleared Roaring Bull rock.

YARMOUTH HARBOUR.—The town of Yarmouth is of considerable extent, being upwards of 2 miles in length in a continuous line; it exports a large amount of fish, and supplies can generally be obtained. Fresh water can be procured from wells; that from the lake is not good, and difficult to obtain.

The anchorage within Bunker island is safe from all winds, but the channel leading to it is narrow, circuitous, and being studded with dangers should not be attempted without a pilot, whose services can be procured by making the usual signal when off the lighthouse. In the event of a vessel being caught in the sound during a south-west gale, and compelled to run for the inner anchorage, the following directions may prove serviceable.

DIRECTIONS.—The principal danger outside the beacon at the extremity of Bunker Island ledge is a rock, with only a foot water, lying $1\frac{3}{4}$ cables from Ships stern; whilst the most important danger inside the beacon, at the distance of 3 cables, is a rock in the middle of the channel, having only 3 feet over it.

If from the Sound anchorage run to the north-east, inside the Hen and Chickens, until the north end of Ships stern bears North, and steer for it, keeping about a cable's length from its east side, and pass on the western side of the beacon about the same distance.

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After passing the beacon steer for the Independent church, keeping about 2 cables from the Bunker island shore; about $1\frac{1}{4}$ cables to the northward of Battery point, good anchorage will be found in $5\frac{1}{2}$ fathoms.

Lurcher Shoal consists of two shoal patches, distant from each other $2\frac{1}{4}$ miles N.E. $\frac{1}{4}$ E. and S.W. $\frac{1}{4}$ W., having between them a deep water channel with from 7 to 17 fathoms.

The S.W. shoal is the larger and shoaler, having only 9 feet water, and shows a considerable rip during the strength of the tidal stream; it bears N.W. by W. $\frac{2}{3}$ W. $14\frac{3}{4}$ miles from Yarmouth lighthouse, and breaks in heavy weather.

The N.E. shoal has 5 fathoms on it, and shows a good tide rip.

TIDES.—At the N.E. Lurcher shoal the ebb-stream commences at 1h. 30m. after the time of high water at Yarmouth; at neap tides it attains a velocity of $2\frac{1}{2}$ knots, the average set being $9\frac{1}{4}$ miles in a southerly direction. The flood sets in an opposite direction, its greatest rate at neaps being $2\frac{1}{4}$ miles, and its average set 8 miles. The slack is full one hour in duration.

CHAPTER IX.

BAY OF FUNDY:—SOUTH-EAST COAST.

YARMOUTH TO THE BASIN OF MINES.

VARIATION in 1867.

Bryer Island	-	-	-	17° 15'
Digby Gut	-	-	18° 25' W.	Basin of Mines - - 20° 20' W.

From Cape Fourchu, in the immediate vicinity of Yarmouth, the coast takes a general N. by E. trend as far as Cape St. Mary, a distance of $17\frac{1}{2}$ miles. This extent of coast line is of an undulating character, varying in elevation from 20 to 100 feet, and, with the exception of one off-lying danger, viz., Trinity ledge, is remarkably exempt from danger; and as a rule may be safely approached even by large ships to the distance of three-quarters of a mile.*

Trinity Ledge consists of three small rocks close together, all of which uncover at low water springs, the highest being 2 or 3 feet above the water, and the others just seen. This danger bears S.W. $\frac{3}{4}$ W. $6\frac{3}{4}$ miles from Cape St. Mary, and N. by W. $13\frac{1}{2}$ miles from Cape Fourchu; it causes a great rip during the strength of the tide, and breaks heavily in bad weather; the ledge should not be approached nearer than half a mile. Between it and Black point on the main shore, a distance of 6 miles, the bottom is broken and irregular, with comparatively shallow water, from 6 to 11 fathoms, but with nothing to bring a vessel up.

The tidal stream runs with great strength at the ledge, attaining during its strength a velocity of 2 knots; the ebb sets about S. $\frac{1}{2}$ W., and the flood N. $\frac{1}{2}$ E.

ST. MARY BAY is an arm of the sea running in from between the entrance points in a N.E. by E. direction. The entrance, which lies between Cape St. Mary and Bryer island, is about 11 miles across, and from thence the bay gradually decreases to about 3 miles in breadth.

The bay is of peculiar formation, its western shore consisting of a mere strip of land, upwards of a mile in breadth, and forming a natural breakwater for a distance of 30 miles, with a varying elevation between

* See Admiralty chart, Bay of Fundy, Sheet I, No. 352; Bay of Fundy, East Coast, Yarmouth to Petit Passage, No. 2,538; scale, $m = 1\frac{1}{8}$ inches.

430 feet at its neck and 100 feet on Bryer island. Through this natural barrier are two narrow navigable channels, known as Grand and Petit passages, through which the tide rushes with great velocity; the latter is the shortest route between St. John and Cape Fourchu, and being entirely free from danger is available for steamers or sailing ships with favourable wind and tide.

The St. Mary shore of Long island is bold to, and a vessel can run close along it, except in rounding Dartmouth point, off which some ragged rocks lie nearly $1\frac{1}{2}$ cables distant.

After passing Petit passage, the western coast of St. Mary bay, or the Digby neck shore trends about N.E. by E., and is generally bold and straight; it may safely be approached to a cable's length as far as 4 miles beyond East Sandy cove; after which the water gradually shoals all across up to the head of the bay.

The principal trade at St. Mary bay is in ship's and cord wood.

St. Mary Shoal.—To the north-eastward of East Sandy cove lies St. Mary shoal, which is the only detached danger in the bay. It is of large extent, and has a deep channel on both sides of it. A rock with only 5 feet water rises from the shoal about a third of the distance across the bay from the western shore, and from it the east point of East Sandy cove bears W. $\frac{3}{4}$ S. 3 miles, the north-west point of Gilbert cove S.E. by E. $2\frac{1}{2}$ miles, and the south tangent of the remarkable red cliff at the head of the bay E.N.E. 6 miles.

TIDES.—It is high water, full and change, at East Sandy cove at 10h. 33m.; springs rise about $21\frac{1}{2}$ feet, neaps $17\frac{3}{4}$ feet. At the head of the bay the height of the tide is affected by the winds; those from the S.W. keeping the water above its mean height, and those from the N.E. below that point. The stream sets parallel to the coast at from half to two-thirds of a knot per hour.

DIRECTIONS.—When off Cape St. Mary, and bound up the bay, the coast may be approached within half a mile until near Montegan, where it becomes low; beyond this rocky ridges extend off the coast as far as Como wharf; and the shore should be given a berth of at least a mile. Beyond Como wharf the shore becomes cleaner, until within a short distance of the entrance of the Sissibou river, where a shoal runs off. Keep about a mile off shore, and when the remarkable notch in East Sandy cove, on the Digby neck shore, shows open, haul in towards the entrance of the river and find good anchorage in about $5\frac{1}{2}$ fathoms, over mud bottom, about half a mile from the shore.

Sissibou river can only be entered by boats at low water, when only small vessels can lie afloat in it. About 4 miles to north-east of the river is Gilbert cove, affording the best anchorage in the bay, and the coast

between can be approached to about half a mile, except at a point which lies $1\frac{1}{2}$ miles to the south-westward of Gilbert point, where a shoal runs off for nearly half a mile in a direction perpendicular to the shore; a road running down from the interior to the shore points out the direction of the shoal. After passing this shoal a vessel may haul towards Gilbert point, beyond which good anchorage will be found in about 4 fathoms, over muddy bottom. Fresh water can be obtained from a stream running over the rocks near an old mill. Beyond Gilbert cove the water shoals to the head of the bay.

Anchorage.—Large vessels may anchor in St. Mary bay, anywhere between East Sandy cove and Sissibou river, in from 10 to 12 fathoms water; and with good ground tackle may ride out any gale, as the sea at this anchorage, even with south-westerly winds, to which it is exposed, becomes exhausted.

There are three anchoring places on the western shore of the bay, viz., Little river, Mink cove, and East Sandy cove, the last, being the largest and most sheltered, is most frequented. In it vessels of 12 feet draught can find good shelter from all winds between S.S.W., round by West, to N.E.; and if distressed by a south-easterly wind they can find security by running on the mud. Fresh water can be obtained at the head of the cove when the tide is up, except during dry seasons.

BRYER ISLAND LIGHT.—The lighthouse, of an octagonal shape and painted white, stands on the north-west point of Bryer island, and from an elevation of 92 feet above high water exhibits a *fixed* white light, which in clear weather should be seen from a distance of 15 miles.*

Bryer Island S.W. Ledge has only 13 feet on its shoalest part, which lies with Dartmouth point just open to the westward of Gull rock, and is distant from the latter nearly 2 miles S.W. by W, $\frac{3}{4}$ W. Between this ledge and Gull rock there is a channel $1\frac{1}{2}$ miles wide, and the rock can be approached to a quarter of a mile on its sea side.

Bryer Island North-west Ledge is of large extent, and lies to the north-west of Bryer island, with deep water close to its north-west side. There is a good passage between it and Bryer island, whose north-western shore may be approached to a quarter of a mile.

There are several shoal spots on this ledge, the principal of which are the North-west rock, Beatson rocks, and Frenchman elbow.

North-west Rock is a small patch with only 6 feet water, and from it Bryer island lighthouse bears S. by W. nearly $4\frac{1}{4}$ miles. Mourilyan mark (a large granite boulder) on a hill on Long island on with the north

* See Admiralty chart, Bay of Fundy, East Coast, Bryer Island to Gulliver Hole; No. 2,656; scale, $m = 1\frac{1}{2}$ inches.

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point of Bryer island S.S.E. $\frac{3}{4}$ E. leads clear to the northward and eastward of this rock, and the whole ledge.

Beatson Rocks consist of two small patches a cable's length apart, with 12 and 13 feet water. The north-eastern patch, with 12 feet, lies with the North-west rock E. by N. $\frac{2}{3}$ N., one mile, the passage between having nothing less than 6 fathoms; and Bryer island lighthouse south a little easterly $3\frac{3}{4}$ miles.

The North-west ledge extends some distance to the southward of Beatson rocks; during the strength of the tide it shows a heavy tide rip along its whole length, and breaks heavily on its shoal parts when there is much sea.

Gull rock (well open of Whipple point) bearing South leads to the southward of Beatson rocks in 10 fathoms, and Gull rock on with Whipple point, S. $\frac{1}{2}$ W., leads between Beatson and North-west rocks.

Frenchman Elbow is a long rocky strip, having on its shoalest part $5\frac{1}{2}$ fathoms; and lies between North-west rock and the north point of Bryer island, being about one mile distant from the former.

TIDES.—The tidal stream runs very strong over the North-west ledge, the ebb taking a southerly and the flood a northerly direction, at the rate of about 4 knots at half tide. The stream changes about three-quarters of an hour after that in Grand passage, or nearly about the time of high and low water there.

GRAND PASSAGE and WESTPORT.—Grand passage, between Bryer and Long islands, is narrow and contains several dangers, but the principal difficulty connected with its navigation is the great velocity of the tidal streams through the channel.

Close in on Bryer island there is good anchorage off the town of Westport; the only winds to which it is exposed are from N. $\frac{1}{2}$ E., to N.N.E. $\frac{1}{3}$ E., but even with these winds the water is always smooth at the anchorage recommended.

Westport carries on a considerable trade in fish, and from it limited supplies may be obtained. A small supply of fresh water may also be procured from wells.

PETER ISLAND LIGHTS.—The lighthouse is a square white building standing on Peter island at the south entrance of the Grand passage. From the roof, at an elevation of 40 feet above high water, are exhibited *two fixed* white lights, placed horizontally, which in clear weather should be visible from a distance of 10 miles. From the northward the lights are visible between the bearings S. by W. and S.S.W., and from the southward between N.N.W. $\frac{1}{4}$ W. and N.E. by E.

Passage Shoal, with 5 feet water, shows a tide rip; it lies in the

middle of the passage, and lies N. $\frac{1}{2}$ E. from the lighthouse on Peter island, and a third of a mile from its nearest shore.

Cow Ledge extends $1\frac{1}{2}$ cables off the Long island shore of the northern entrance of Grand passage; its highest part uncovers soon after high water.

Cow Ledge Shoal, with 14 feet water, lies a quarter of a mile to the northward of the highest part of Cow ledge, and S.E. $\frac{1}{4}$ E. 3 cables from the north point of Bryer island.

Peter island lighthouse bearing S. by W. $\frac{1}{2}$ W., or with the island open its own breadth west of Sand point, clears Cow ledge, and leads through the northern entrance in the deep water channel west of Cow ledge shoal.

TIDES.—At Westport it is high water, full and change, at 10h. 43m.; springs rise $20\frac{3}{4}$ feet, neaps 17 feet. The stream commences running to the southward full half an hour before high water by the shore, and runs with great velocity through Grand passage, especially through the two channels at its southern entrance, where it attains a rate of from 4 to 5 knots per hour.

DIRECTIONS.—**West of Peter Island.**—At the southern end of Grand passage there is a channel on each side of Peter island, the one on its western side being the shorter and narrower of the two, with from 16 to 20 feet water and clear of danger. If making for the western entrance, keep in mid-channel, and if the flood be running bear in mind that the tide sets with great strength directly on the south point of Peter island. When through the channel, and wishing to anchor at Westport, haul to the north-west, and anchor in from 5 to 7 fathoms, with Episcopal church S.W. $\frac{3}{4}$ W., and Baptist chapel W. $\frac{1}{2}$ N.

If bound through Grand passage, after passing through the western entrance, preserve a northerly course and avoid opening Dartmouth point east of Peter's island, until the Episcopal church bears S.W. $\frac{1}{2}$ W., when a course may be steered for the northern entrance, through which Peter island lighthouse S. by W. $\frac{1}{2}$ W., or with the island open its own breadth west of Sand point, leads in the deep water channel west of Cow ledge and Cow ledge shoal.

When the north point of Bryer island bears N.W. by W. the vessel will be clear of Cow ledge shoal and by keeping Peter island lighthouse in sight will pass a long way to the eastward of North-west ledge. After passing Cow ledge shoal, Long island may be approached to a cable's length, but the north point of Bryer island should not be rounded within a quarter of a mile.

East of Peter Island.—On nearing the passage give Dartmouth point a berth of a quarter of a mile, and pass along the east shore of Peter island, which may be safely approached to within a cable. Preserve a northerly

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course until Peter island lighthouse bears S. by W. $\frac{1}{2}$ W., and proceed through the northern entrance with the marks already given.

If intending to anchor at Westport, after passing Peter island, haul sharp round the north end of the island when the Episcopal church bears W. $\frac{1}{4}$ S., and pass between the shoal spit off the north end of the island and Passage shoal, on which the flood sets with great strength.

CAUTION.—The foregoing directions for entering Grand passage from the southward are adapted for flood tide and a leading wind, and any departure therefrom must be contingent on the state of the tide and direction of wind.

Captain R. V. Hamilton cautions strangers against attempting the anchorage off Westport without the assistance of local knowledge, as the tides in the entrance, with a velocity of 5 or 6 knots an hour, form eddies and whirlpools likely to bring a ship round against her helm and cause her being stranded.

The same officer also describes the holding ground off Westport as being good, but thinks the usual anchorage too close in shore for large ships; if further out vessels should moor, as the eddies would cause a single anchor to foul.

PETIT PASSAGE, between Long island and Digby neck, though narrow, is available for steamers, and for sailing ships also, if the latter have a favourable wind and tide.

The passage forms the shortest route between St. John and Cape Fourchu, and is almost entirely free from dangers, the exception being a small rock, with 8 feet water, lying N.N.E. $\frac{3}{4}$ E. from the lighthouse, nearly 2 cables length from the nearest part of Boar head. There is a passage with 4 fathoms between the shore and this rock, which shows a tide rip during the strength of the tide, and breaks in heavy weather.

On the western shore of the passage an eddy is formed to the northward of Eddy point, where small vessels may anchor close in shore, but they require to be moored head and stern.

BOAR HEAD LIGHT.—The lighthouse is a square wooden building painted white, standing on Boar head, the northern extremity of Long island, forming the western point of the northern entrance of Petit passage.

The light is a *revolving* light, showing alternate *red* and *white* flashes every minute; it is visible from the Bay of Fundy between the bearings of E. by S., and S.W. by W., and from St. Mary's bay between N. $\frac{1}{2}$ W. and N. by E. In clear weather the light should be visible from a distance of 14 miles.

TIDES.—It is high water, full and change, in Petit passage at 10 h. 41 m.; springs rise 22 feet, and neaps 18 feet. The stream runs

through the passage at the rate of 6 or 7 miles an hour ; the ebb from the northward, and the flood from the southward.

DIRECTIONS.—When entering the passage keep a mid-channel course until approaching Eddy point, which projects into the passage, when close the western shore, which is steeper to than the eastern side in the vicinity of Sandy point. Off the south point of Digby neck are some rocks which cover at half flood, and extend about a cable off shore in a southerly direction.

When off Cape St. Mary, and running for Petit passage on the ebb, steer for the middle of Long island until the strip of tide running from the passage towards the cape is passed ; and when within it a feeble eddy will be found on the Long island shore setting towards the passage, increasing in strength and decreasing in breadth as it nears the passage, where it extends as far as Eddy point.

When in the Bay of Fundy, and wishing to enter Petit passage on the ebb, make the Digby neck shore to the eastward of the passage, and skirt it along until in the passage, in order to avoid being swept past the entrance. The Digby neck shore is steep-to, and may be approached in safety to $1\frac{1}{2}$ or 2 cables.

COAST.—The Bay of Fundy shore of Long island is steep-to within a cable's length, until approaching Boar head, when the 8 feet detached rock already referred to must be avoided ; only small vessels or steamers with local knowledge should attempt to pass inside it.

From Petit passage the shore of Digby neck on the Bay of Fundy side is straight and steep-to as far as West Sandy cove, and may be approached with safety to 2 cables.

Between West Sandy cove and Gulliver hole the coast trends N.E. by E. $\frac{1}{2}$ E. for $10\frac{1}{2}$ miles, and from the west point of Gulliver hole to Digby gut the distance is about $8\frac{1}{3}$ miles in an E.N.E. direction, the intermediate shore being generally steep-to, and approachable with safety to 3 cables' length.

The land on Digby neck is partially wooded, more thickly on the side of Fundy bay than that of St. Mary, and slopes gradually towards the Bay of Fundy shore. At West Sandy cove and Gulliver hole there are cliffs of some height, and the hollows which run through the neck at each of these places present a remarkable appearance.

West Sandy Cove affords good anchorage, being sheltered from all winds between E.N.E. round by South to W.S.W. Care must be taken to avoid a rock with 6 feet water lying N.E. $\frac{1}{4}$ E. 3 cables off the western point of Western Sandy cove, with a deep water channel between it and the shore.

Tides.—It is high water, full and change, at West Sandy cove at 10h. 47m. ; springs rise 23 feet, neaps 19 feet.

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Gulliver Hole is free from danger, and also affords good anchorage with all winds from E.N.E. round by South to N.W. by W.

DIGBY LIGHT.—The lighthouse is a square building, painted white, with a central red stripe down the lantern gable, and two red vertical stripes on each side; it stands near the extremity of Point Prim on the western side of the entrance, and from an elevation of 76 feet above high water exhibits a *fixed* white light, which should be visible in clear weather 13 miles.

DIGBY GUT is a narrow opening half a mile in breadth, with steep acclivities on each side, and a deep water channel leading into Annapolis basin, on the western side of which stands the town of Digby.*

The shore on each side of the gut is rocky and steep-to for several leagues, as are also the points of entrance, especially the one on the eastern side, which has deep water within a few fathoms of the shore.

Within Point Prim, on the western shore of the entrance, is Man-of-war rock, distant about a cable's length from the high water line, and steep-to on its eastern side.

TIDES.—At Digby Gut it is high water, full and change, at 11h.; springs rise $27\frac{1}{2}$ feet, neaps 23 feet.

Along shore the tidal stream runs nearly parallel to its trend at the rate of from $1\frac{1}{2}$ to 2 knots, turning inshore a little before the time of high and low water respectively, and offshore a little later.

Through the gut the stream of ebb and flood sets with a velocity of 4 to 5 knots an hour, causing various eddies and whirlpools; the truest stream will be found on the eastern side.

DIRECTIONS.—Vessels wishing to obtain temporary anchor may find it at the entrance of the gut on the western side, about half a mile within the lighthouse. Here the anchorage is good in about 7 fathoms, mud, about a cable's length from the shore, and sheltered from all winds except between N.W. and E.N.E.

If proceeding to the anchorage near the town of Digby, steer a mid-channel course through the entrance, and then bring the eastern point of entrance to bear N. $\frac{3}{4}$ E., and keep it astern; this course will lead between the outer shoal tongue of an extensive spit and the western shore, and when Bear island appears midway between the points of entrance of Bear river, anchor in from 6 to 8 fathoms.

When proceeding through the narrows sudden gusts of wind are fre-

* See Admiralty chart, Bay of Fundy, Sheet 2, Digby Gut to Head of Navigation, No. 353; Bay of Fundy, East Coast, Gulliver Hole to St. Croix Bay, No. 2,561; scale, $m = 1\frac{1}{2}$ inches.

quently experienced, caused by the almost precipitous nature of the hills overlooking the gut.

Vessels bound up the river to Annapolis should obtain the assistance of local pilots.

COAST from DIGBY GUT to CAPE SPLIT.—Proceeding up the Bay of Fundy from Digby gut the coast takes a general trend of E. by N: $\frac{1}{2}$ N. as far as the small village of Morden or French Cross, a distance of about 36 miles, from whence it deflects more to the eastward as far as Scotsman bay.

The land is undulating and thickly wooded, but with partial clearings, and from the shore assumes a gradual ascent until it attains an elevation of from 400 to 600 feet at the distance of 2 or 3 miles from the sea.

To the eastward of Chute cove this regularity of formation is diversified by perpendicular cliffs about 100 feet high, and forming small bays, on the points of which settlements have been made, and piers built to facilitate shipping cordwood, which at present is the chief export. Small vessels can lay alongside the eastern sides of these piers, which act as breakwaters, where they ground every tide.

The coast from Digby gut to the eastward abounds with fresh water, which runs in streams down the slopes of the hills into the Bay of Fundy. Boats can obtain good water from the mouths of the streams after half flood.

Chute Cove lies 22 miles to the eastward of Digby lighthouse, and may be recognized by the commencement of the cliffs before mentioned.

A pier or breakwater runs off from the middle of the cove, and there is also a post office, which is in communication with Bridgetown by means of a road over the hill.

ST. CROIX BAY, about a mile to the eastward of Chute cove, is separated from it by a low green point; this bay affords the best anchorage along the coast eastward of Digby gut.

Anchorage.—Off Chute cove anchor with the breakwater S.E. distant 3 cables, and about 2 cables off shore, in about $4\frac{1}{2}$ fathoms, mud.

In St. Croix bay anchor with its west point W. $\frac{1}{2}$ S. at the distance of a quarter of a mile off shore, in 4 fathoms, mud.

MARSHALL COVE LIGHTS.—The lighthouse is a square building painted white, and stands near the inner end of the pier at Marshall cove (formerly known as Port Williams), about 2 miles east of St. Croix bay.

It exhibits two *fixed vertical* lights; the upper being a *white* light at an elevation of 60 feet above high water, and the lower a *green* light 57 feet high. In clear weather the *white* light should be seen from a distance of 5 miles, and on a nearer approach the *green* light.

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A road leads over the hill from the breakwater, from which cordwood and a small amount of agricultural produce are shipped.

PORT GEORGE lies nearly 5 miles to the eastward of Marshall cove, and exports live stock, potatoes, and cordwood; there is a post office at this place.

Wilmot Rock uncovers at half tide, and lies about $1\frac{1}{4}$ cables east of the small pier at Port George, and $1\frac{1}{2}$ cables from the high water line.

Tides.—It is high water, full and change, at Port George at 11 h. 17 m.; springs rise 32 feet, neaps 28 feet.

MARGARETVILLE LIGHTS.—The lighthouse is a square white building, standing on the extremity of a point about $4\frac{3}{4}$ miles east of Port George. It exhibits two *fixed vertical* lights; the upper being a *white* light at an elevation of 30 feet above high water, and the lower a *red* light at an elevation of 27 feet.

In clear weather the *white* light should be seen from a distance of 5 miles, and on a nearer approach the *red* light.

Care must be taken in approaching Margaretville to avoid a shoal a mile in length running parallel with the shore, from which it is distant about half a mile; the shoalest part with two feet water lies two-thirds of a mile from the small pier near the lighthouse.

Between the west end of this shoal, with 2 fathoms, and the breakwater there is a 3-fathom channel one quarter of a mile broad.

MORDEN or FRENCH CROSS lies 6 miles to the eastward of Margaretville, and may be recognized by the square tower of its Episcopal church; there is also a post office, as well as a small pier, alongside which vessels lay aground, and ship agricultural produce and cordwood.

About a third of a mile to the eastward of Morden breakwater, and 2 cables off shore, is a small bank which dries at low water. Vessels had better keep outside until there is sufficient water to pass over it.

About a mile to the eastward of Morden is Joliffe head, a high perpendicular cliff of a reddish colour; and further on are two small piers, known as Ogilvie and Gibbon breakwaters, the latter being $6\frac{1}{2}$ miles from Morden.

Anchorage.—The best anchorage near Port George is in about 5 fathoms, at the distance of one mile to the eastward of the pier.

Off Margaretville vessels should anchor within the shoal in about 5 fathoms, sand, at the distance of a quarter of a mile from the shore, with the high water line of Port George on with Margaretville point.

The anchorage near Morden is in about 6 fathoms a little to the eastward of the breakwater.

BLACK ROCK LIGHT.—The lighthouse stands on Black rock point, 9 miles to the eastward of Morden, and nearly opposite Cape D'Ore, the

northern point of entrance to the Basin of Mines. It is a square white building, and from an elevation of 45 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 12 miles.

Black Rock, from which the locality derives its name, is 21 feet above low water springs, and covers about half flood; it bears from the lighthouse E.N.E. nearly a quarter of a mile. At low water the rock dries about 200 feet outside its apex.

Small piers run out abreast of Canada creek, Chapman brook, and Hall harbour, all to the eastward of Black rock lighthouse, from which they are respectively distant one, 4, and $6\frac{1}{2}$ miles.

Outside Canada wharf, at the distance of one-third of a mile off shore, is a shoal spit having only 11 feet water.

Off Shoal point, about $1\frac{3}{4}$ miles east of Hall harbour, some rocks extend off shore a quarter of a mile.

ANCHORAGES between DIGBY GUT and CAPE SPLIT.—Vessels can anchor all along this part of the north-west coast of Nova Scotia, with winds from East, round by South, to W.S.W., in about 12 fathoms water, free from rock, at distances varying from one quarter to half a mile off shore.

In some of the bays a closer anchorage may be obtained, with soft bottom and greater shelter; but when the wind is strong from S.W. or more westerly the ebb tide, which runs at the rate of 2 knots along shore to the westward of Morden, renders the anchorage along the coast unfit for small vessels, and they are advised to stand off and on during the ebb.

To the eastward of Morden the tidal stream runs with increased rapidity, and here also, after the wind gets round to the westward and blows hard, a heavy sea comes up with the first of the flood, rendering the anchorage bad, especially for small vessels.

SCOTSMAN BAY.—Vessels bound to the Basin of Mines arriving off Cape Split and unable to get through on account of the strong ebb tide, may anchor on the west side of the cape, about one mile from its extremity, and 2 cables off shore, in about 10 fathoms, with the outer lump of Cape Split on with the nearest point bearing N. by W. $\frac{1}{2}$ W.

In the fall of the year, when the gales frequently commence from the eastward and suddenly shift to the westward, the anchorage in Scotsman bay is dangerous.

TIDES.—It is high water, full and change, at Black rock point at 11h. 29m.; springs rise 36 feet, neaps 31 feet.

ISLE HAUTE, about $1\frac{1}{4}$ miles in length and a quarter of a mile in breadth, lies 9 miles to the northward of Morden and 5 miles to the south-west of Cape Chignecto. The island attains an elevation of 320 feet, is thickly

wooded, at points, by a grassy slope. At low water it is steep-to,

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wooded, and is surrounded on all sides, excepting the east and west points, by perpendicular cliffs. Its western point is formed by a steep grassy slope, and off its eastern point is a stony spit which uncovers at low water about a third of a mile out. Excepting off this point the island is steep-to, and may be approached in safety within a quarter of a mile.

TIDES.—At Isle Haute it is high water, full and change, at 11h. 21m.; springs rise 33 feet, neaps 28½ feet.

Anchorage.—Vessels may anchor on the north-east tide of Isle Haute in about 12 fathoms, within the eddy about 1¼ cables from the east point of the island.

CAPE SPLIT is the termination of a remarkable tapering promontory, forming the southern point of entrance to the Basin of Mines, and consists of perpendicular cliffs about 200 feet high, which are divided by several deep fissures or splits, hence the name.

Two small detached rocks, which just uncover at low water springs, lie off the pitch of Cape Split in a N.N.W. $\frac{3}{4}$ W. direction, at the respective distances of one quarter and one third of a mile. There is a passage between the rocks, as well as between the inner rock and the cape. During the tide a very heavy tide rip extends considerably beyond these rocks.

CAPE CHIGNECTO is the western extremity of a promontory dividing the head of the Bay of Fundy into two branches; the one to the northward known as Chignecto channel leads into Cumberland basin and the River Petit Coudiac, whilst the southern of the two leads into the Basin of Mines.

The cape itself is very conspicuous, as the land in its immediate vicinity attains an elevation between 700 and 900 feet, being thickly wooded and intersected by valleys. On the south-east side the high land falls suddenly, and terminates in many places on the shores of Advocate bay in high cliffs. The shores of the cape have deep water close to.

CAPE D'ORE, a low green point S.E. $\frac{3}{4}$ E. 7½ miles from Cape Chignecto, is the south-western extremity of a high ridge of land, separated from that of Cape Chignecto by a deep valley.

This ridge terminates on its western side in cliffs 200 feet high, and also falls abruptly towards the low point known as Cape D'Ore, which probably derives its name from the cliffs containing a large quantity of apparently pure copper.

ADVOCATE BAY lies between Capes Chignecto and D'Ore, and near its head affords good anchorage with winds from W.N.W. round by North to E.S.E.; but care must be taken to get under weigh as soon as the wind hauls round to the southward, as in such cases it frequently veers round to, and blows hard from the westward.

ADVOCATE HARBOUR.—From the middle of Advocate bay a natural sea wall composed of stones extends in an almost continuous manner to the western point of Cape D'Ore. This wall or causeway is about 10 feet above high water, but between it and the shore of Advocate settlement—a distance of two-thirds of a mile—is a deep basin with a muddy bottom, which only dries one or 2 feet at low water springs.

Near Cape D'Ore there is an opening through the causeway at high water, and vessels pass through into the basin or harbour inside, where they of course ground at low water, but are protected by the stony wall outside.

There is a small hole near the entrance in which small craft—if moored—can lay afloat at low water. As the passage into the harbour frequently shifts during westerly gales, no vessel should attempt to enter without local knowledge.

Shoal.—About half a mile east of Cape D'Ore the shore trends to the northward towards Horseshoe cove, and forms a point, off which lies a detached stony shoal which dries at low water. The inner end of the shoal is close to the east side of the point, from whence it extends about $1\frac{1}{2}$ cables in a north-easterly direction.

CAPE SPENCER may easily be recognized by a remarkable sugar loaf rock isolated at high water, above which it rises 20 feet. The cape should not be approached nearer than 2 cables, in order to avoid a detached rock, which dries at low water, about a cables' length off shore.

SPENCER ISLAND is small, thickly wooded, and 180 feet high; it is separated from the main land near Cape Spencer by a channel about a quarter of a mile broad in which there is as little as 6 feet water.

TIDES.—At Spencer island it is high water, full and change, at 11h. 42m.; springs rise 39 feet, neaps 33 feet. The tidal stream attains a velocity of 6 knots an hour.

ANCHORAGE.—To the northward of Spencer island there is good anchorage, and safe from all winds excepting from east to south. The best place is in about 5 fathoms, mud and sand, with the east end of Spencer island S. by E. about two-thirds of a mile. Vessels tide-bound can anchor anywhere between Spencer island and Fox point, in about 5 fathoms water and half a mile off shore.

TIDES between DIGEY and CAPE SPLIT.—From Digby gut to the head of Scotsman bay the tidal stream runs parallel with the shore, and during the strength of the tide attains a velocity varying from 2 knots off Digby to about 3 knots off Black rock lighthouse, from whence to the head of Scotsman bay the rate again diminishes.

From Cape Chignecto to Cape D'Ore the flood sets nearly in a straight line, and makes a long rip off Cape D'Ore to the distance of a mile in a southerly direction, caused by meeting an eddy setting towards Cape

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D'Ore, along its eastern shore. Inshore between the above capes the flood makes a circuit of Advocate bay; but on the ebb an eddy is formed to the westward of Cape D'Ore.

At Spencer anchorage, except about the first hour of ebb, the set of the tide tends towards Spencer island. Round Cape D'Ore and Spencer island the tidal current runs from 5 to 6 knots an hour, and round the end of the rip off Cape Split it attains a velocity of 7 or 8 knots.

Close in shore the stream of tide changes its direction a little before, and in the offing a little after, the time of high and low water by the shore. Between Digby and Black rock lighthouse, it changes inshore from 15 to 30 minutes, and to the eastward of Hall harbour from one to 2 hours before the time of high and low water.

DIRECTIONS.—When approaching Cape D'Ore with a flood tide, keep well off the cape, beyond the influence of the tide rip; if with an ebb tide and a commanding breeze round Cape D'Ore close to, but unless the wind be fair and strong it would be advisable to keep the vessel in the eddy west of Cape D'Ore until the ebb has ceased running.

BASIN OF MINES.—The entrance to the Basin of Mines lies between Fox point on the north, and Cape Split; the distance between these points being $3\frac{1}{3}$ miles. The length of the basin in a straight line between Cape Split at its entrance and the town of Truro at its eastern extremity is exactly 50 miles, with a varying and very irregular breadth.

The northern shore of the basin between Fox and Economy points is high, and varies in elevation from 250 to 400 feet, gradually rising within a few miles of the coast to a well wooded range known as Cobequid mountains, being a continuation in an easterly direction of the range north of Cape Chignecto.

This mountainous range attains in some places an elevation of more than 800 feet; it is deeply intersected by numerous valleys, through which small rivers descend to the sea, and is also well wooded, but with partial clearings near the shore. To the eastward of Point Economy the shore gradually declines in altitude to the head of the basin.

The Basin of Mines receives the waters of numerous rivers, the principal being Avon river to the south-west, into whose outlet the St. Croix and Kennetcook rivers discharge their waters, and the Shubenacadie river near the head of the basin.

SOUTH SHORE.—The southern shore of the Basin of Mines is bold from Cape Split to about 2 miles south of Cape Blomidon, with high precipitous earthy cliffs, varying in elevation from 200 to 600 feet, and thickly wooded on their summits. From the above position the high ridge over Cape Blomidon slopes rapidly to the valley of Cornwallis river, where the land is well cleared and intersected by numerous valleys.

A ridge, of which Horton bluff is the eastern extremity, separates the valleys of Cornwallis and Avon. To the eastward of Avon river the land is intersected by valleys, thickly wooded in some parts, but partially cleared in others.

HORTON LIGHT.—The lighthouse is a square white building standing on Horton bluff on the west side of the entrance to Avon river. The lantern is on the gable of the building, and from it, at an elevation of 92 feet above high water, is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 20 miles.

TIDES.—It is high water, full and change, at Horton bluff at 12h. 30m.; springs rise 48 feet, neaps 40 feet.

WINDSOR.—The town of Windsor, and capital of County Hants, stands at the confluence of the Avon and St. Croix rivers; it contains the principal college in the province of Nova Scotia, and lies 30 miles N.N.W. of Halifax, with which it is connected by railway.

DANGERS OF AVON RIVER.—The approaches to Avon river are rendered difficult on account of extensive flats, which from the nature of the bottom and velocity of the tides must be continually shifting their position; and as the channels between are narrow and circuitous, without any well defined leading marks, it is absolutely necessary that strangers should obtain the services of a local pilot.

As a detailed description of these dangers would be of no possible benefit to seamen, it will suffice to give hereafter a few directions, in case of necessity, for attaining the anchorage near Horton bluff, at the entrance of the Avon.

The Hogback is a sandy shoal upwards of $2\frac{1}{2}$ miles long, very narrow, and running parallel with the shore. It dries on its south side, which is separated from Cambridge flats by a channel nearly a mile broad, having about 3 fathoms water, and is distant from the south shore $1\frac{1}{4}$ miles.

From about the centre of the part which uncovers Horton lighthouse is just touching Chivirie point S.W., and Walton tower, 205 feet high, E.S.E.

Walton Bar, composed of sand, lies a little to the eastward of the town of Walton, and dries at the distance of $1\frac{1}{4}$ miles off shore; its outer tangent is in line between the centre of the Hogback and Burncoat head lighthouse.

Between Walton bar and Burncoat head the low water line extends about half a mile off shore.

BURNCOAT HEAD LIGHT.—The lighthouse is a square white building standing on the north-west extremity of Burncoat head, and from an elevation of 75 feet above high water is exhibited a *fixed* white light, which should be seen from a distance of 13 miles during clear weather.

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TIDES.—It is high water, full and change, in Noel bay, just to the eastward of Burncoat head, at 12 h. 41 m.; springs rise $50\frac{1}{2}$ feet, neaps $3\frac{1}{2}$ feet.

Cape Sharp derives its name from a remarkably sharp eminence, 300 feet high, with which it terminates; it is $5\frac{1}{3}$ miles from Fox point, and with the shore of the Cape Split promontory, from which it is distant only $2\frac{2}{3}$ miles, forms the narrowest part of the entrance to the Basin of Mines.

Black Rock, with an elevation of 15 feet above high water, and of small extent, lies a short half mile from the nearest shore, and N.W. by W. $\frac{3}{4}$ W. three-quarters of a mile from Cape Sharp. A deep-water channel exists between the Black rock and the shore, but as the streams of tide set directly on the rock, this passage should never be attempted.

WEST BAY is about $2\frac{1}{4}$ miles across between Cape Sharp on the west and Partridge island, and three-quarters of a mile in depth. Nearly the whole of the bay is occupied by a shoal bank of sand and gravel, the shoalest spot having $1\frac{1}{4}$ fathoms, a little on the east side of the middle of the bay, and lies a good third of a mile off shore, with Cape Split just shut in with Cape Sharp.

There is nothing less than 3 fathoms on other parts of this bank, whilst within it, about a quarter of a mile from the shore, is a narrow belt of deeper water with from 5 to 6 fathoms.

West bay affords good anchorage towards its western side in about 6 fathoms, mud, with Cape Sharp bearing S.W. by W. $\frac{1}{2}$ W. half a mile distant. Here the anchorage is protected from all winds, save those from E.N.E. to South, and the tidal current—except for about one hour after low water—sets towards Cape Sharp.

TIDES.—It is high water, full and change, in West bay at 12h. 4m.; springs rise 45 feet, neaps 35 feet.

PARTRIDGE ISLAND, on the east side of West bay, though small in extent, attains an elevation of 240 feet, and is connected by means of a gravel neck to the shore. The anchorage east of this island is not good.

PARSBORO' LIGHT.—The lighthouse, octagonal in shape and painted white, stands on the eastern extremity of a low sandy spit on the west side of the mouth of Parsboro' river; and from an elevation 37 feet above high water is exhibited a *fixed* white light, which should be seen in clear weather from a distance of 9 miles.

FRAZER HEAD, next east of Partridge island, is 390 feet high, and— with the exception of two hard wood trees close together—is quite bare; the south rounding of the head should not be approached within a quarter of a mile.

THE BROTHERS are two small, thickly wooded islands about $1\frac{1}{4}$ miles to the eastward of Frazer head, and are both included within the low water

line of the main shore. A small patch of rocks which uncover lie S.E. $\frac{1}{2}$ S. about one-third of a mile from the south extreme of the southern Brother island.

FIVE ISLANDS extend in almost a straight line W. $\frac{3}{4}$ N. from the western end of Red head, the westernmost being $3\frac{1}{2}$ miles distant. The eastern island is much the largest of the group, thickly wooded, and attains an elevation of 350 feet, with steep earthy cliffs on its southern shore; these islands are nearly joined to each other and the main at low water. Between Five islands and Economy point the cliffs bordering the sea attain in some places considerable heights, and are remarkable from being red.

White Rock, so called from its appearance, is 10 feet above high water, and is in line between the eastern of the Five islands and the south-west tangent of Economy point, being $3\frac{1}{4}$ miles from the latter.

Brick Kilm Island, very small in size and about 50 feet high, with red cliffs, lies about 2 miles west of Economy point on the margin of the low water line.

Brick Kilm Ledges are two in number, with their centres bearing West of Economy point, from which the western ledge—which uncovers 2 hours before low water—is 3 miles distant. Between this ledge and White rock are numerous rocks, and strangers are advised to avoid their locality.

ECONOMY POINT, on the northern shore, is nearly $21\frac{1}{2}$ miles E.S.E. of Cape Sharp, and 4 miles N.W. $\frac{2}{3}$ N. from Burncoat lighthouse. Between the lighthouse and Economy point is the eastern limit of what may be termed general navigation, nor should this line be passed by any vessel unless in charge of a local pilot, as further up the basin are many shoals formed of loose shifting sand, which are constantly altering their position.

TIDES in the BASIN of MINES.—As the great rise and fall, as well as the velocity of the tides, form such important elements in the navigation of the Basin of Mines, it is essentially necessary that both should be carefully studied by seamen entering the basin.

In the passage to the Basin of Mines near the Cape Split shore the tidal stream attains a velocity of from 7 to 8 knots an hour, but in the centre and near the northern shore it decreases to 5 or 6 knots. Between Cape Split and the head of the basin the strength varies from about 3 knots in the wider parts to 4 knots where the channel is contracted, its direction being modified by the trend of the land.

DIRECTIONS.—In navigating the Basin of Mines seamen must bear in mind that the various banks and bars are as a rule composed of loose shifting sand, and that rapid tides and strong winds cause them to alter their positions, especially after heavy gales and in the spring on the breaking up of the ice.

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Vessels desirous of reaching the anchorage at the entrance of Avon river without the assistance of a pilot, should bring Cape Blowmidon to bear N. $\frac{3}{4}$ W., and keeping it astern on the above bearing, pass between Cross and Western bars (this course, however, will lead over $1\frac{1}{2}$ fathoms at low water,) until Horton lighthouse bears S. by W.; then steer for it on that bearing, and when the wooded point east of Horton's river comes on with the highest point of Long island anchor in about 7 fathoms.

From the fairway between the tide rip off Cape Split and Fox point steer S.E. by E. until abreast Cape Sharp, from whence if bound to Parsboro' river alter course so as to round Partridge island at a moderate distance; keep Cape Split in sight until Parsboro' lighthouse bears North, when steer for it, and pass close round to the eastward of the spit on which the lighthouse stands. This river can only be entered about one hour before high water, and when inside the lighthouse vessels can lay on the mud at low water in perfect safety.

If bound up the basin, after passing Partridge island steer about E.S.E., and when Parsboro' lighthouse bears N.W. $\frac{1}{2}$ W. keep it on that bearing, and steer S.E. $\frac{1}{2}$ E. until Burncoat lighthouse bears E.N.E., when steer for it on this bearing—which will lead clear to the southward of Brick kiln ledges—until abreast of Economy point, beyond which the services of a pilot should be obtained for reasons already assigned.

In moderate weather vessels may anchor all along the shores of the Basin of Mines, but on the northern shore the bottom is hard, and therefore the anchorage is inferior to that on the south side. Vessels may also ascend various small rivers, but the latter can only be entered at high water, and as a matter of course vessels are dry at low water.

Off Cornwallis river the best anchorage is in from 5 to 6 fathoms, sand, with Horton lighthouse just open east of Boot island S. by E. $\frac{1}{4}$ E., and the northern tangent of the south point of Perea creek W. by N. $\frac{1}{2}$ N. This anchorage may be considered good with all but north-easterly and easterly winds, and when approaching it care should be taken to avoid shutting in the west point of Partridge island with Cape Blowmidon.

CHAPTER X.

BAY OF FUNDY :—NORTH COAST.

GRAND MANAN ISLAND AND DANGERS, TO L'ETANG HARBOUR.

VARIATION in 1867.

Grand Manan island - - 17° 20' W. | Port St. Andrew - - 18° 20' W.

Intelligent and observant navigators will readily admit that, having once frequented a coast or port, they become familiar with local landmarks, and thus obtain valuable personal knowledge, which gives them increased confidence for the future ; and as one of the principal objects in view in the compilation of sailing directions is to impart confidence to strangers when approaching coasts or entering harbours with which they are not personally acquainted, rather than when leaving the same, it has been deemed advisable to construct this chapter so as to lead into the Bay of Fundy from the Manan islands and dangers along the north-west shores of the bay, in preference to preserving the continuity of preceding chapters by commencing at the Chignecto channel and proceeding to the south-west.

The province of New Brunswick, whose shores form the northern boundary of the Bay of Fundy, is bounded on the west by the State of Maine, being separated therefrom by the River St. Croix, and has a coast line of about 500 miles, which is only interrupted at the point of junction with Nova Scotia, where a low isthmus about 8 miles in breadth connects the two territories and separates the waters of Northumberland strait from those of the Bay of Fundy.

New Brunswick was first settled by the French in 1639, and it continued, in connexion with Nova Scotia, to form part of Acadia or New France till it fell into the hands of the British after the capture of Quebec in 1759 ; it was formally ratified as an English possession in 1763, and from that period was annexed to Nova Scotia until 1785, when it was erected into a separate colony.

In 1861 the population of New Brunswick amounted to 252,047, and the vessels belonging to the colony numbered 958, their estimated value being 960,000*l.* In 1863 the value of imports was 1,595,313*l.*, and of exports 1,029,329*l.*

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The general surface of this province is broken by a series of bold undulations, which do not however rise into mountains, and is traversed by many fine rivers, the principal of which is that of St. John, which flows into the well-known harbour of the same name.

Coal is found in great abundance, and iron ore and gypsum, as well as other minerals, are also to be found in considerable quantities. A great portion of the country is covered by dense forests, and the cutting and exporting of timber, which is fine, affords remunerative employment to a large number of the inhabitants. Ship building is carried on to a considerable extent throughout the province, but chiefly at St. John.

The climate is very similar to that of Nova Scotia, being subject to extremes of heat and cold; the winter lasts from November to April, the severest cold being experienced between the third weeks of December and March. The prevailing summer winds vary from South to W.S.W., when dense fogs are often produced on the shores of the Bay of Fundy, and extend 15 to 20 miles inland.

GRAND MANAN ISLAND, about $13\frac{1}{2}$ miles in length N.E. $\frac{1}{2}$ N. and S.W. $\frac{1}{2}$ S., with an extreme breadth of nearly 6 miles, is included in Charlotte county in the province of New Brunswick, and lies on the north-west side of the entrance to the Bay of Fundy, about 2 leagues from Quoddy head in the State of Maine, the channel between being free from dangers.*

From the summit of the island the land slopes gradually to the eastward, where it is partially cleared and settled; but on the western side the shore terminates in steep cliffs, some of which are nearly 400 feet high. The northern end of the island is abrupt and steep close to, as is also the whole western coast, which can be approached to a cable's length, excepting in the immediate vicinity of Dark harbour.

From South-west head the extreme dangers off Grand Manan island, viz., Old Proprietor to the south-east and Machias Seal island to the south-west, are about equidistant, viz., $10\frac{1}{2}$ miles; whilst the outer of an intermediate cluster of dangers to the southward of the island, known as Murr ledges, is $7\frac{1}{2}$ miles distant from South-west head. It is evident, therefore, that this extensive range of dangers, many of which never uncover, increases the difficulty and danger of navigation, and renders extreme caution necessary.

During fogs, with southerly and south-westerly winds, it frequently happens that a clear space, a full mile wide, extends off the northern part of the island, a fact which should be borne in mind, as it may facilitate the making off a good land fall.

* See Admiralty Chart, Bay of Fundy, Sheet 1, No. 352; scale, $m = 0.3$ inches; and Grand Manan island, with adjacent islands and dangers, No. 2,539; scale, $m = 1\frac{1}{4}$ inches.

The eastern coasts of Grand Manan abound with fish, and the interior of the island is in a rapid state of improvement. The soil is generally good, and produces every variety of fir, beech, birch, and maple in size and quality adequate to all purposes for which they are generally used.

SWALLOW-TAIL LIGHT.—Swallow-tail is the name of a headland on the north-east coast of Grand Manan island. The lighthouse, painted white, is the frustum of a pyramid on an octagonal base, and from an elevation of 130 feet above high water exhibits a *fixed* white light, which should be visible in clear weather from a distance of 17 miles.

SEAL COVE.—Good anchorage may be obtained at the head of Seal cove, which is formed between the south-eastern shore of Grand Manan and Big Wood islands, in from 4 to 5 fathoms, over muddy bottom. There is also good anchorage under the lee of Big Wood island with easterly winds; but the passage between the north end of this island and Grand Manan should not be attempted by a stranger.

The South-west head is steep-to, and may be passed at a cable's length; and after passing Buck rock the Grand Manan shore of Seal cove may also be approached to the same distance.

Buck Rock is a small rocky patch, which uncovers at two-thirds ebb, lying off the south-east point of Grand Manan island, about a quarter of a mile off shore, with deep water all round it.

Big Wood Rocks lie about a quarter of a mile off the north-west point of Big Wood island, with 5 fathoms close outside them. The inner rock generally dries, but the outer has 4 feet water over it.

TIDES.—It is high water, full and change, at Seal cove at 10h. 54m.; springs rise 20 feet, neaps 15 feet.

GRAND HARBOUR, on the south-east side of Grand Manan island, is only adapted for vessels of small draught.

GULL COVE lies on the eastern shore of White Head island, and affords good shelter from all winds except those between N. by E. round by East to S.E.

Anchor in the middle of the cove at about $1\frac{1}{2}$ cables from the shore in $5\frac{1}{2}$ fathoms, sand, with the north-east point of Gull rock bearing about S.E.

BIG DUCK ISLAND.—The anchorage under this island on its western side is in about $3\frac{1}{2}$ fathoms, mud, with the west tangent of Long island midway between High and Low Duck islands, and the south point of Big Duck island E. by S. $\frac{1}{2}$ S.

Big Duck Ledge.—To the southward of Big Duck island, at the distance of seven-eighths of a mile, is Big Duck ledge, the highest part of which never covers. This ledge should not be approached on its south side

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nearer than half a mile, nor should the narrow passage between it and Big Duck island ever be attempted; the other sides of the ledge may be approached to a cable's length.

LONG ISLAND BAY.—Good anchorage may be had within Long island in about 3 fathoms, sand, where vessels will be sheltered from all winds excepting between N. by E. and N.E. by N. Anchor with the east end of Farmer ledge on with the centre of High Duck island and the north end of Long island N.E. $\frac{1}{4}$ E. Care must be taken on approaching this island to avoid a rock awash, which lies about a quarter of a mile off the north end of Long island.

FLAG COVE.—In the northern part of Long island bay is Flag cove, where vessels may anchor in about $5\frac{1}{2}$ fathoms, stiff clay, and be protected from all winds but those between S. by E. and S.E.

In approaching this anchorage from the northward do not bring Swallow-tail lighthouse to the eastward of N.E. by E. until Low Duck island begins to open out west of Long island, in order to avoid a cluster of rocks which uncover at last quarter ebb, and which lie 2 cables off Flag point.

WHALE COVE.—In Whale cove, near the north end of Grand Manan island, good temporary anchorage may be obtained in about 5 fathoms, but it is exposed to winds from N. by W. to E. by N.

DARK HARBOUR.—On the north-west shore of Grand Manan island is a remarkable inlet, across the mouth of which the sea has thrown a shingle wall; near its south end a pier has been erected, and an opening cut through the wall, sufficient to admit a vessel of 10 feet draught at high water. Within the basin there is secure anchorage in from 5 to 7 fathoms, mud. Saw mills are erected, and the logs cut on the high land are launched over the hill side, down which they slide to the low ground beneath.

BRADFORD COVE, on the south-west side of Grand Manan island, affords anchorage off a green bank in from 8 to 10 fathoms water, about $1\frac{1}{2}$ or 2 cables off shore, and is sheltered from N.E. by N. round by East to S.W.

GRAND MANAN BANK lies to the southward of the Machias Seal islands, and is about $5\frac{1}{2}$ miles long in a north-east and south-west direction, by 2 miles broad; the depths on it being from 20 to 50 fathoms, gravel and sand, with from 60 to 80 fathoms, mud and sand, all around, though according to some fishermen there are only 10 to 15 fathoms on its shoalest part.

The least water obtained during its examination was 24 fathoms, and from this position Machias Seal lighthouse was just visible above the horizon, bearing N. $\frac{3}{4}$ E. 16 miles distant; and Gannet rock lighthouse bore N.E. $\frac{3}{4}$ E. $19\frac{3}{4}$ miles.

At half flood the stream sets over the bank N.E. by N. and S.W. by S. about $1\frac{1}{2}$ knots per hour, and during ebb attains an equal velocity in the opposite direction; it turns about half an hour after high and low water at Seal islands, and shows a tide rip of great extent. Steering for and sounding on this bank gives confidence when running into the Bay of Fundy, especially during thick weather.

MACHIAS SEAL ISLAND LIGHTS.—The island on which the light-houses stand is the larger of two islands, joined together at low water by a rocky ledge; and is the most off-lying of the dangers south-west of Grand Manan island, from the nearest part of which it is distant a little over 10 miles in a W. by S. $\frac{1}{2}$ S. direction.

The island, about a quarter of a mile long, has an elevation of 28 feet, and near its centre stand two lighthouses, painted white, of the same size and shape, 166 feet apart East and West (true). They each exhibit a *fixed* white light; the eastern light, which is 58 feet above high water, being 4 feet higher than the western light. The western lighthouse kept open to the southward of the eastern leads clear to the southward of Murr ledges.

A small shoal, with only 13 feet water, lies one-third of a mile S.E. $\frac{1}{2}$ E. from the eastern lighthouse, with deep water in the channel between it and the island. It shows a rip during the tide, and breaks in heavy weather.

Vessels desirous of visiting the lighthouses can find anchorage in the eddy on the south-east side of the islands. During foggy weather a gun is fired every four hours, and a pilot can generally be procured here. The St. Andrew pilots generally cruize off these islands.

TIDES.—It is high water, full and change, at Machias Seal island, at 11h. 5m.; springs rise 18 feet, neaps $14\frac{3}{4}$ feet.

S.E. Shoal, with only 8 feet water, breaks in heavy weather, and shows a rip during strength of tide. From it the eastern lighthouse bears N.W. $\frac{1}{4}$ N. $1\frac{1}{4}$ miles.

S.E. Ledge, with 5 fathoms water, makes a tide rip, and breaks during heavy weather; it lies with the eastern lighthouse bearing N.W. $\frac{1}{2}$ N. $5\frac{3}{4}$ miles. There is probably less water on this ledge, for the rock is very abrupt, and the lead may not have touched its highest point.

North Rock, about 4 feet above high water, is of small extent, and from it the eastern lighthouse bears S. W. by S. $2\frac{1}{4}$ miles. There is a good passage between the rock and Machias Seal islands.

North Shoal, with nearly 8 feet water, shows a tide rip, and breaks in heavy weather; from it the eastern lighthouse bears S. $\frac{1}{4}$ W. $1\frac{3}{8}$ miles, and North rock E. by N. $1\frac{1}{8}$ miles.

Middle Shoal has 3 fathoms over it, with deep water close to; it shows

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a large tide rip, and breaks in heavy weather. From it the eastern lighthouse bears W.S.W. $5\frac{1}{2}$ miles, and North rock W. $\frac{1}{4}$ S. $3\frac{1}{2}$ miles.

MURR LEDGES lie to the southward of Grand Manan island, and consist of an extensive cluster of dangers, 7 miles in length, between Gannet rock to the eastward and Bull rock to the westward; and about 3 miles broad North and South.

GANNET LIGHT.—Gannet rock is a small bare rock about 15 feet above high water, with a landing place on its north side, the best time for landing during rough weather being at low water.

On it stands an octagonal shaped lighthouse, with vertical stripes of black and white, and from an elevation of 66 feet above high water is exhibited a white light, with the following variations during every minute, viz. :—a steady white light for 45 seconds, followed by an eclipse, a white flash, and eclipse, each of about 5 seconds duration. A gun is fired to answer signals during a fog.

The western side of the rock can be approached to half a cable's length, but the eastern side is rugged, and a detached rocky shoal with only 12 feet water lies S.E. $\frac{1}{4}$ S. one-third of a mile from the lighthouse, rendering it prudent to preserve an offing of at least half a mile.

Half-tide Rock, as its name implies, uncovers at half tide, with deep water half a cable's length all around; from it Gannet lighthouse bears E. $\frac{1}{2}$ S. five-eighths of a mile, with a deep water channel between. In rough weather the rock breaks at high water.

St. Mary Ledge is the southernmost of Murr ledges, and only covers at high water springs, so that its position is almost always shown. From it Gannet lighthouse bears E. by N. $\frac{3}{4}$ N. about $2\frac{3}{4}$ miles; the rock may be approached to a cable's length.

Yellow Ledge is always uncovered, the largest rock on it being 10 feet above high water; it lies with Gannet lighthouse bearing E. $\frac{7}{8}$ N. $3\frac{1}{3}$ miles, and St. Mary ledge S.E. by E. $\frac{1}{4}$ E. three-quarters of a mile.

The ledge can be approached to 2 cables' lengths except on the southeastern side, where a rock with only 4 feet water lies in line with St. Mary ledge about a quarter of a mile from Yellow ledge. This rock breaks at low water, with a moderate swell, and at high water in very heavy weather.

Cross-jack Ledge, about a third of a mile in extent, only covers at high water springs, but it should not be approached within a quarter of a mile. It lies with Gannet lighthouse E. by S. 2 miles, and Yellow ledge S.W. by W. $1\frac{2}{3}$ miles.

A small rocky patch, which just uncovers at low water springs, and breaks in heavy weather, lies two-thirds of a mile S.W. of Crossjack ledge.

Long Ledge, nearly two-thirds of a mile in length, lies to the northward of Yellow ledge, and has two points which are about 2 feet above high

water springs. From one of these points at the northern extremity of the ledge Gannet rock lighthouse bears E.S.E., nearly $3\frac{1}{4}$ miles, and Yellow ledge S. by W. a little over $1\frac{3}{4}$ miles. Between Long and Yellow ledges there is an extensive cluster of dangers almost connected with the former ledge, leaving a clear channel only half a mile broad between Yellow ledge and the southern rock of the cluster, which shows at first quarter ebb.

West Ledge has a small spot on its northern end just awash at high water springs; it lies with Gannet lighthouse S.E. by E. $\frac{7}{8}$ E. 4 miles, and has deep water all round it, with a clear channel seven-eighths of a mile across between it and the north end of Long ledge.

Wallace Ledge, of small extent, uncovers at half ebb, and in bad weather breaks at high water. It may be approached on either side to a cable's length, and lies with Gannet lighthouse S.E. by E. $4\frac{1}{4}$ miles, and the highest part of West ledge S. by W. $\frac{1}{4}$ W. three-quarters of a mile.

Kent Shoal lies N.N.E. $\frac{1}{2}$ E. 2 miles from Gannet lighthouse, and although some of the fishermen report as little as 12 feet on it, nothing less than $3\frac{1}{2}$ fathoms at low water could be found on its examination.

Bull Rock, of small extent, has only 2 feet on it, with deep water all round to within a quarter of a mile. It lies nearly midway between Gannet and Machias Seal island lighthouses, the latter being $6\frac{3}{4}$ miles distant W. by N. $\frac{1}{2}$ N.; it shows a small rip during the strength of tide, and generally breaks.

CAUTION.—The soundings around Machias Seal islands and Murr ledges are very irregular. The principal shoals in their vicinity have been described, and the others do not amount to dangers; but it will be prudent for strangers to keep outside them. If caught near them the chart will be the best guide, and in such cases when in doubt during a calm, a vessel may anchor to the northward of Murr ledges, between them and Grand Manan island.

The Old Proprietor, the most off-lying of the dangers south-east of Grand Manan island, uncovers about half tide, and from it the south point of Three islands bears N.W. by W. $\frac{1}{2}$ W. about 4 miles distant, and Gannet rock lighthouse W. $\frac{7}{8}$ S. $5\frac{3}{8}$ miles.

The South-west head of Grand Manan island open south of Three islands N.W. by W. leads to the southward of Old Proprietor and all the dangers in its vicinity; and Big Duck island open east of Black rocks N. $\frac{1}{4}$ E. leads to the eastward of them. Strangers should carefully avoid getting within the above leading marks.

The Foul Ground to the westward of Old Proprietor is an irregular shoal, about three-quarters of a mile from north to south; on its northern end a rock, which lies N.W. $\frac{1}{4}$ N. half a mile from Old Proprietor, is just awash at low water springs.

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Rans Shoal is small and rocky with only 3 feet water on its shoalest part, from whence the south point of Three islands bears W. by N. $\frac{3}{4}$ N. $2\frac{1}{3}$ miles, and Gannet rock lighthouse S.W. by W. $\frac{2}{3}$ W. $4\frac{2}{3}$ miles.

Cheneys house—the only one on the largest of the Three islands—in one with the highest part of a ledge which never covers N.W. $\frac{1}{4}$ N. leads to the southward of the shoal; and Mark hill on Grand Manan island open to the westward of Green islands N. by W. $\frac{2}{3}$ W. leads to the westward.

Crawley Shoal may be considered to be a continuation of the Foul ground in a northerly direction. The shoalest spot has 3 fathoms water, and from it the higher of the two Black rocks bears N.N.E. $2\frac{3}{4}$ miles; the mark for it being the eastern side of Big Duck island open to the eastward of Prangle point and over the low part of Gull rock.

Outer and Inner Diamond are rocky shoals, the highest parts of which are just dry at low water springs, bearing from each other N. by E. $\frac{1}{4}$ E. and S. by W. $\frac{1}{4}$ W., nearly half a mile apart. From the Outer-Diamond, the south point of Three islands bears W. $\frac{1}{3}$ N. nearly $2\frac{3}{4}$ miles; and the higher Black rock N.E. $\frac{1}{4}$ N. $2\frac{1}{2}$ miles.

The house on the northernmost of the Three islands open to the northward of the north point of the easternmost of those islands N.W. by W. $\frac{2}{3}$ W. leads to the northward of the Inner Diamond, between it and Tinker shoal.

Tinker Shoal is about a quarter of a mile in length, and the highest part, which uncovers at low water, except at very small neaps, lies with Long point, White Head island, N. by E. $\frac{1}{2}$ E. upwards of a mile distant; and the north point of Three islands W.N.W. $2\frac{1}{4}$ miles.

The south-west head of Grand Manan island open to the northward of Three islands leads to the northward of the shoal; and Mark hill open to the southward of Pumpkin island, which should be equidistant between it and White head, N.N.W. $\frac{3}{4}$ W. leads between the Tinker and Brazil shoals.

Brazil Shoal is an extensive danger, the south-west end of which uncovers at the last quarter ebb, and its north-east end just shows above low water springs; between these two patches, which are distant from each other about half a mile, the bottom is very irregular.

From the south-west patch Long point bears N.N.W. one mile, and the higher Black rock N.E. by E. $\frac{1}{2}$ E. $1\frac{1}{3}$ miles. From the north-east patch Long points bears N.W. $\frac{3}{4}$ W. one mile, and the higher Black rock N.E. by E. $\frac{3}{4}$ E. seven-eighths of a mile.

Black Rocks are two in number, the larger and north-eastern of the two being about 10 feet above high water, and separated from the smaller rock—4 feet above the same level—by a shoal passage.

The rocks are a cable's length apart, and bear from each other N.E. by E. and S. W. by W. ; they can be safely approached on either side to a cable's length.

Bulk Head Rip extends about $2\frac{1}{2}$ miles in a S.E. by S. direction from Black rocks. The rip is caused by a sudden change in the bottom, though there is plenty of water through it.

Clarks Ground, which has 6 fathoms on it, lies with Old Proprietor S.W. by W. $\frac{1}{2}$ W. about 2 miles distant, and also shows a heavy tidal rip on the ebb.

TIDES.—About the Gannet rock the flood sets E. by N., and ebb W. by S., with a rate from 3 to 4 knots per hour ; but between the Gannet and Machias Seal islands both direction and strength constantly vary. Near the latter the tidal stream sets N.E. by N. and S.W. by S., with a velocity of about 3 knots.

In the vicinity of the Old Proprietor the stream turns about three-quarters of an hour before high and low water by the shore respectively, and runs with a great but variable velocity, attaining in some places during the strength of springs a rate of 6 knots. The ripples in consequence are large, and cause the surface to assume a boiling appearance, rendering the dangers indistinct.

Strangers are therefore strongly recommended to keep outside the clearing marks for the Old Proprietor ; otherwise the best channel is inside all the dangers, along the coast of White Head island, which may be approached on its south-eastern side to about a quarter of a mile, except at Long point, which should be passed at twice that distance.

Off Big Duck island the inshore stream runs from 2 to 3 knots in a direction parallel to the trend of the coast, about North on the flood and South on the ebb. To the northward of Fish head, as far as Long Eddy point, the stream, both flood and ebb, sets about N. by W. ; whilst further off shore the direction of the stream gradually merges into that of the bay tide, with a reduced rate of $1\frac{1}{2}$ or 2 knots. Along the west side of Grand Manan island the flood stream runs parallel to the shore about N.E. $\frac{1}{2}$ N. and the ebb S.W. $\frac{1}{2}$ S. 2 knots an hour.

DIRECTIONS.—Vessels approaching Grand Manan island from the eastward, and bound either to Seal Cove or round South-west head, should bring the latter open to the southward of the Three islands N.W. by W., in order to clear Old Proprietor and Foul ground, this course will take them in safety to Three islands, which may be passed at the distance of a quarter of a mile, and thence as occasion may require to a suitable anchorage in Seal cove.

If bound to Grand harbour, after having passed Old Proprietor, proceed to the south-westward of Rans shoal with Mark hill open to the south-

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ward of Green island N. by W. $\frac{3}{4}$ W., but it would not be advisable to enter the harbour without a pilot.

A temporary anchorage will be found about a quarter of a mile from the north-east shore of the Three islands, in about 5 fathoms, sand, and safe from all winds which have no easting in them.

If proceeding to the anchorage under Big Duck island from the southward, keep Big Duck island open to the eastward of Black rocks N. $\frac{1}{4}$ E., in order to pass to the eastward of Old Proprietor; after passing Black rocks at a moderate distance bring the western tangent of Long island, midway between High and Low Duck islands, N. $\frac{1}{2}$ W., which will lead nearly a quarter of a mile outside the rocks off Prangle point.

After passing these rocks bring the eastern points of Long and Low Duck islands in line in order to avoid the long rocky ledge, mostly dry at low water, which extends nearly half a mile to the southward of Big Duck island, and anchor with the west tangent of Long island midway between High and Low Duck islands, and the south point of Big Duck island E. by S. $\frac{1}{2}$ S.

The channel between Grand Manan island and the Coast of Maine varies from 10 to 6 miles in breadth, and in all respects may be deemed the safest passage up the Bay of Fundy, as it is deep and clear of dangers, with the shores on either side steep-to, besides being the most advantageous with the prevalent winds which are from the westward.

THE WOLVES, consisting of five islands thickly wooded, are $3\frac{1}{2}$ miles in length N.E. $\frac{1}{4}$ E. and S.W. $\frac{1}{4}$ W., and lie $8\frac{1}{2}$ miles N.E. by N. from the north point of Grand Manan island. These islands are from 60 to 100 feet in height, and along their shores, which are steep-to, temporary anchorages may be obtained in from 12 to 20 fathoms.*

The passage between East Wolf, the largest and north-easternmost of the group, and Green Wolf, has deep water, and is about 3 cables broad between the 5-fathom lines; but vessels using this channel should borrow on the Green Wolf side, in order to avoid some rocks which extend about 3 cables off the south-west shore of East Wolf.

There is also a passage between Green and Flat Wolves, but the channel is narrowed to a cable's width by some rocks off the latter island, and should not therefore be taken. The remaining two passages are not navigable except for boats, nor should any of the channels between the Wolves be attempted by strangers, unless under unavoidable circumstances.

During thick weather, or with light winds and an adverse tide, vessels may anchor anywhere between the Wolves and Beaver harbour, in from 20 to 25 fathoms, good holding ground.

* See Admiralty Chart, Campobello Island, No. 2,020; scale, $m = 2$ inches.

Wolf Rock, small in size and always above water, lies about 2 cables off the north point of East Wolf, and is separated from another small rock to the eastward by a deep channel a cable wide. Both rocks should always be passed on their northern side, and not within a distance of 2 cables.

LITTLE RIVER LIGHT.—Little River harbour on the coast of Maine lies on the west side of the western entrance into the Bay of Fundy, and is capable of affording occasional shelter.

The lighthouse, painted white, stands on an island at the entrance of the harbour, and from an elevation of 40 feet above high water exhibits a *fixed* white light, varied by a *flash* every *minute and a half*, which should be visible in clear weather from a distance of 12 miles.

The entrance to Little River harbour bears N.W. by W. $\frac{1}{4}$ W. $12\frac{1}{2}$ miles from S.W. head of Grand Manan island, and N. $\frac{1}{2}$ W. 10 miles from Machias Seal island lighthouse. The coast between the harbour and Quoddy head, a distance of 14 miles, rises to about 200 feet, and is partially wooded; it is steep-to, the general trend being N.E. by E. $\frac{1}{2}$ E.

QUODDY HEAD LIGHT.—Quoddy head in the State of Maine is the easternmost point of United States territory in the Bay of Fundy, and the nearest part of the mainland to Grand Manan island, being 6 miles distant.*

The lighthouse, standing near the eastern extremity of the head, is painted with red and white horizontal stripes, and from an elevation of 133 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 17 miles.

Fog Trumpet.—In the immediate vicinity of the lighthouse is a small white building, from whence fog signals are made by means of a Daboll trumpet, giving blasts of 5 seconds duration, with intervals of 20 seconds between the blast.

TIDES.—It is high water, full and change, at West Quoddy head at 11h. 12m.; springs rise 21 feet, neaps 17 feet.

Sail Rocks, so called in consequence of their bearing some resemblance to a ship, lie about a quarter of a mile S.S.E. from the lighthouse on Quoddy head.

Outside them to the eastward is a heavy race, so that when passing this locality it would be advisable to keep an offing from half to three-quarters of a mile from the rocks.

PASSAMAQUODDY BAY is an extensive inlet about 12 miles deep, common to New Brunswick and the State of Maine. On the western side

* See Admiralty Chart, Quoddy Head to Cape Lepreau, No. 2,013; scale, $m = 0.5$ inch.

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of the bay is the River St. Croix, being the natural boundary between British America and United States territory.*

The bay—which is never closed by ice—affords excellent shelter with a sufficient depth of water for ships of the heaviest burthen, whilst its waters swarm with fish, comprising herring, cod, and mackerel.

Across the entrance of the bay, about 10 miles wide, are numerous islands, rocks, and shoals, between which are three channels, viz., the southern, the middle or Ship channel, and the northern, known as Letite passage. The first, barely a cable wide across the narrows, is that between Campobello island and the mainland to the south-west; the Ship channel lies between Campobello and Deer islands, and though the most circuitous, is the broadest, deepest, and best; whilst Letite passage, between Macaster island and the New Brunswick shore, is alike narrow and dangerous, being only available with local knowledge and during slack tide.

CAMPOBELLO ISLAND, nearly 8 miles in length, is for the most part in a state of cultivation, and has several fine harbours, especially that of De Lute on its north-west shore. The island is only separated a cable's length from the town of Lubeck, which stands on a small tongue of land in the State of Maine, and as by referring to the chart it will be seen that this channel is only available at a certain time of tide, to suit a vessel's draught, and as at all times local knowledge must be indispensable, a detailed description of its dangers is unnecessary.

With the exception of the south-west shore the salient points of the island are steep-to and may be safely approached to one or 2 cable's length. On the eastern coast Herring bay, Schooner, and Mill coves are well adapted for temporary anchorages; but when making for the latter care must be taken to avoid a 3-fathom patch about 2 cables off the north shore of the cove.

CAMPOBELLO LIGHT.—The lighthouse, octagonal in shape, and painted white with a red cross, stands on the north-eastern extremity of Campobello island, and from an elevation of 64 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 15 miles. The light serves the double purpose of

* In November 1817 the Commissioners appointed by the respective Governments under the Treaty of Ghent (the last treaty of peace in 1814) decided that Moose, Dudley, and Frederick islands, in the Bay of Passamaquoddy, do belong to the United States; and that all other islands in the bay, as well as Grand Manan Island in the Bay of Fundy, do belong to Great Britain, in conformity with the treaty of peace of 1783.

And further that the navigable waters of the Bay of Passamaquoddy are common to both parties for the purpose of all lawful and direct communication with their own territories and foreign parts

guiding vessels into the main channel leading to Passamaquoddy bay and Head harbour adjoining.

HEAD HARBOUR.—Head harbour is formed between the island of that name and a right-angled indentation in the land at the north-east end of Campobello island, and though small, is safe, easy of access, and without detached dangers.

DE LUTE HARBOUR, on the west side of Campobello island, is well adapted for anchorage, though care must be taken to avoid Racer rock, about a cable in extent, and with only 9 feet water; it lies a little within—or to the eastward of—the line between Man-of-war head and the nearest point to the northward, and is about 2 cables distant from both.

Strangers should anchor to the westward of the line between the before-mentioned points, or if wishing to go further in, the services of a pilot should be obtained.

FRIAR BAY, also on the west side of Campobello island, is an indentation between the village of Welchpool and Friar head about a mile distant.

Here good anchorage may be obtained in about 10 fathoms, in the line with Mark island just open of Friar head, and as near as convenient to Welchpool, off which the 5-fathom line is only half a cable distant. Vessels of moderate draught may lay alongside Queen Wharf.

TIDES.—It is high water, full and change, at Welchpool (Campobello island) at 11h. 21m.; springs rise $23\frac{1}{2}$ feet, and neaps 20 feet.

WHITE HORSE ISLAND is a bare rocky islet, 68 feet high, of a whitish appearance, about $2\frac{1}{3}$ miles N.E. $\frac{1}{4}$ E. from Campobello lighthouse; and as the small islands in the neighbourhood are covered with trees, White Horse island is easily distinguished, and serves as a beacon.

East Rock, with only one foot water, lies about $1\frac{1}{2}$ cables East of the east end of White Horse island with the northern tangents of White and White Horse islands in line.

Campobello lighthouse open to the northward of the White Horse clears East rock on its north side, and White island open south of White Horse island, clears the danger on its south side.

North Rock, with one foot water, lies N. $\frac{3}{4}$ W., half a mile from the west end of White Horse island, with Adam and Barn islands just touching, and has deep water close to all around it.

CASCO ISLAND, of an irregular shape, nearly half a mile in length, with an elevation of 85 feet, lies W. by N. $\frac{1}{4}$ N. from Campobello lighthouse, and is half a mile distant from the nearest part of Campobello island. Its southern shore may be approached to a cable's length, but within it to the westward are two detached ledges, nearly equidistant

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The clearing mark to pass to the westward of these ledges is the centre of White Horse island seen between Spruce and Sandy islands E. by N. $\frac{1}{2}$ N.

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Gull Rock, of small extent, is always visible, and lies four-tenths of a mile E. by N. $\frac{1}{4}$ N. from the north-east point of Casco island. This rock may be safely approached to half a cable's length, but the north-east point of Casco island should not be neared within $1\frac{1}{2}$ cables, in order to avoid a rocky ledge.

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POPE ISLAND, about $1\frac{1}{2}$ cables in length, lies nearly in mid-channel between the shores of Campobello and Deer islands, and about nine-tenths of a mile from Casco island. In this latter channel is Green island, as well as a large ledge which uncovers; these with the ledges west of Casco island contract the navigable passage to about 2 cables and thus renders it difficult for a stranger.

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Pope Shoal, a small detached spot with 11 feet water, lies about a cable S.W. of the south point of Pope island. A safe clearing mark is White Horse island open to the southward of Casco island.

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Chocolate Shoal, with 10 feet on it, is of small extent, with deep water close to all round; it lies midway between the north point of Pope island and the south point of Chocolate cove in Deer island. Deer point open west of Indian island leads clear of, but close to, this danges on its western side; whilst the west ends of Rouen and Cherry islands in line leads between the shoal and Pope island.

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INDIAN ISLAND is narrow and about $1\frac{1}{4}$ miles in length, with an elevation of 90 feet near its north end; it is partially cleared of wood, and may be approached to $1\frac{1}{2}$ cables all round. The island lies on the eastern side of the south point of Deer island, the narrowest part of the channel between the two islands being nearly one-third of a mile.

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Ships to or from Passamaquoddy bay, may pass on either side of Indian island in deep water.

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DEER ISLAND is $6\frac{1}{2}$ miles in length N.E. by N. and S.W. by S., with an extreme breadth of $2\frac{3}{4}$ miles; it is thickly wooded, and in some places attains an elevation of 300 feet. From Little harbour on its eastern shore round by south to Doyle passage at its northern end the shore is steep-to, and may be approached to $1\frac{1}{2}$ cables, with the exception of the northern shore of North harbour, where a small cluster of rocks lie about that distance off the high water line; but the remainder of the coast, viz., from Little harbour to the point of Deer island, is studded with dangers, and its navigation should on no account be attempted by strangers, more especially as the approaches are also difficult.

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North-west Harbour, on the east coast of Deer island, is a narrow indentation with deep water, but is only adapted for small vessels, and even they should ~~moor~~, as the distance between the 5-fathom lines is only half a cable. When off the entrance of this harbour the centre of White Horse island seen between Spectacle islands E. $\frac{7}{8}$ S. leads into the anchorage.

Little Harbour is a small bay at low water within Bar island, but being small and very shallow is only adapted for boats or very small vessels. The entrance at low water is between a rocky ledge extending 2 cables to the south-west from Bar island and the shore of Deer island; it is only half a cable across, with about a foot water.

Clam Cove, on the west side of Deer island, affords good anchorage with all winds excepting from south to west, in about 9 fathoms, with Floss island on with rocks off north point of the cove, and about equidistant from the points of the cove and the small island within it.

North Harbour dries one-third of a mile within its entrance points, and although with winds off Deer island temporary anchorage may be obtained off its entrance in about 10 fathoms about midway between the north-east rocks and the south-west point of the harbour, the anchorage is inferior in every respect when compared with Clam cove only $1\frac{1}{2}$ miles distant.

PORT ST. ANDREW.—The town of St. Andrew, situated near the extremity of a promontory forming the eastern point of the River St. Croix, is about three-quarters of a mile in length, by a third of a mile broad, and contains a population of about 4,000. The streets intersect each other at right angles, and the whole town is commanded by an elevation at the back of the town, 132 feet high, on which stands the fort and barracks.*

The port itself is a tidal harbour, formed between the town and Navy island, very limited in extent and shallow, the deepest water being from 12 to 16 feet at low water, in a space not exceeding a cable in extent; whilst its only channel, with one foot water, is less than half a cable across at low water.

Off the south point of the promontory on which the town is built, a rocky ledge—which dries—extends to the southward about half a mile, its outer end being marked by a wooden beacon (East beacon of chart) which shows above the high water level from 4 to 5 feet; this beacon is the type of all the others in the vicinity of the port.

ST. ANDREW LIGHT.—The lighthouse, octagonal in shape and painted white, stands about half a cable from the high water line at the

* See Admiralty chart, Port St. Andrew, No. 1,743; scale, $m = 6$ inches.

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south end of the town, and the north side of the entrance channel; and from an elevation of 35 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 10 miles.

NAVY ISLAND, upwards of a mile in length N.W. $\frac{1}{2}$ N. and S.E. $\frac{1}{2}$ S., with an extreme breadth of about 3 cables, lies within half a mile of the main shore, the intervening space—with the exception of the narrow channel alluded to—being occupied by flats of stones and boulders, which dry at low water, extending from the island and main shore.

The south end of the island terminating in an abrupt white cliff makes like a wedge, and although only 37 feet high it becomes a conspicuous object when approaching from the southward or eastward. The south-west side of the island may be neared to $1\frac{1}{2}$ cables, but from its northern point a spit dries out nearly 4 cables in a northerly direction, and is all but connected with the low water line of the mainland north-west of the town. The eastern side of the island is also bordered by an extensive spit of rocks, boulders, and gravel, terminating in a point marked by a beacon (South beacon of chart), distant from the south point of Navy island 4 cables E. by N. $\frac{1}{2}$ N.

Within this beacon the bank is marked by two white buoys, the inner one being abreast of the narrows.

Tongue Shoal is the outer extremity of the shoal ground extending to the south-eastward of St. Andrew promontory, and at low water dries a quarter of a mile, its highest part being about 18 feet above low water springs. A beacon stands near its outer end from which the East beacon bears N.W. by W. $\frac{2}{3}$ W., seven-tenths of a mile, and the south beacon W. $\frac{1}{4}$ S. nearly a mile.

N.W. Shoal.—This danger, about $1\frac{1}{2}$ cables in extent, dries from one to 3 feet at low water, and from the beacon which marks its centre the north-west end of Navy island bears S.E. $\frac{3}{4}$ E. a long third of a mile, and the north beacon is in line with the Roman Catholic church.

TIDES.—It is high water, full and change, at St. Andrew at 10 h. 50 m.; springs rise from 24 to 26 feet, and neaps from 20 to 22 feet.

The main stream of flood sets from between Grand Manan islands and the coast of Maine in a direct line towards Cape Lepreau, and the ebb in a contrary direction; whilst the western branch, after passing along the shore of Campobello, is divided at its northern point, a portion taking an easterly trend, whilst the remainder passes into Passamaquoddy bay through the various channels. In the main or Ship channel the stream attains in some places a velocity of nearly 5 miles an hour, but after passing Deer island it becomes lost in the wide expanse of the bay, and is scarcely perceptible until it enters the River St. Croix, where it runs about 2 miles

an hour, and increases its rate in the branch of the river leading to St. Stephen to between 3 and 4 knots.

DIRECTIONS.—The usual difficulties attending navigation are much increased in the Bay of Fundy, where the mariner must expect to encounter frequent fogs of long duration, rapid and uncertain tides, and experience a difficulty in obtaining anchorage on account of the depth of water; these causes render the most unremitting attention necessary when frequenting this locality, in order to avoid the numerous dangers which mark the approaches to the bay.

Vessels bound up the bay to ports on its northern shore are recommended to use the channel west of the Grand Manan island rather than the passage on the eastern shore, for the coast of Maine is not only bold and without off-lying dangers, but during the summer months the atmosphere is generally clear on the United States shore, whilst the coast of Nova Scotia and the greater part of the Bay of Fundy are enveloped in fog.

Vessels bound to Passamaquoddy bay, after passing through the Grand Manan channel, should keep a moderate offing off the eastern shore of Campobello island, and after rounding the northern point steer so as to pass midway between the western shore of the islands and Casco, Pope, and Indian islands, taking care on approaching Pope island to keep White Horse island open east of Casco island, in order to avoid Pope shoal.

Having rounded Cherry island, steer for a mid-channel course between Deer point and Dog island, and after passing Kendall head, the north-east point of Moose island, either borrow on the Deer island shore, or bring the English redoubt over Eastport on with Kendall head in order to clear Floss ledge; a closer mark to clear the same ledge is Point Pleasant church touching the eastern tangent of Pleasant island. Beyond this there are no dangers until approaching Navy island, off Port St. Andrew; and in case of necessity good anchorage may be obtained in any part of Passamaquoddy bay, in muddy bottom.

The best anchorage outside Port St. Andrew is to the north-west of Navy island, in about 10 fathoms, clay, with the Block house on Joe point N. by $\frac{1}{2}$ E., and the N.W. beacon on with the north end of Navy island S.E. $\frac{1}{2}$ E. When approaching the N.W. shoal keep the south point of Navy island well open of the south-west shore of the island until the N.W. beacon comes on with the Kirk spire E. by N. $\frac{1}{2}$ N.

RIVER ST. CROIX.—Abreast of Joe point the river is nearly a mile across, and from thence it takes a N. by W. trend to the branch which leads up to St. Stephen; across the entrance of the branch is a bar, on which in 1866 as little as 15 feet was reported, and within it to the westward about $1\frac{1}{2}$ miles vessels moor in the narrow channel below a reef of rocks known as the Ledge, in order to ship their wood cargoes.

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Dochet Island Shoal extends about a mile to the southward of Dochet island, which lies in the middle of the river, $3\frac{3}{4}$ miles above Joe point. Two red spar beacons mark this danger, the one on its southern extremity, and the other off the east end of Dochet island; both beacons should be left to the westward.

As ships navigating the river St. Croix should always be in charge of a pilot, it is unnecessary to describe its shores in detail.

CHAMCOOK HARBOUR lies on the eastern side of the promontory on which the town of St. Andrews stands, and is formed between Minister island and the mainland. The entrance on the north side of the island, though marked by beacons, is only about three-fourths of a cable broad between the rocky ledges on either side of the entrance; and having as little as 9 feet water is only available for ships of large draught at a certain time of tide, although when inside there is good anchorage in a limited space in from 7 to 8 fathoms. This harbour is seldom frequented by anything larger than wood boats, unless for docking purposes.

Dock.—At the head of an inlet on the north side of the harbour is a wet dock sufficiently large to accommodate twenty vessels afloat; the piers will admit vessels of 34 feet beam, and a ship drawing 16 feet may pass over the sill of the dock.

HARDWOOD and HOSPITAL ISLANDS.—From the south end of Minister island to Mijic bluff at the entrance of the Magaguadavic river the distance is a little over 5 miles in an easterly direction, and to the northward of this line the shores of Passamaquoddy bay are much indented and in some places studded with islands.

In each of the bays and amongst the islands anchorage is to be found, but this locality is only frequented by ships taking in cargoes, and on such occasions they should be under the charge of a native pilot.

The two islands above named lie to the eastward of Chamcook harbour and off the entrance to Bocabec bay; together they occupy a mile in length nearly East and West, and within them on their northern side good anchorage may be obtained in about 6 fathoms, with the south end of Minister island on with the east end of Hospital island, and Mijic bluff touching the north end of Hardwood island.

L'ETANG HARBOUR lies on the east side of the northern passage into Passamaquoddy bay, and is one of the most convenient harbours in North America, affording most excellent anchorage under all circumstances; it has two entrances, and an area sufficiently large to accommodate a large squadron; it is always open during the winter months, though loose

ice is occasionally to be met with in the narrows, but never in sufficient quantities to prevent ingress or egress.*

The depth of water in L'Etang harbour—as well as in the adjoining anchorage known as Bliss harbour—is sufficient for vessels of the greatest draught, whilst the tenacity of the holding ground is unusually great. As the rise and fall of tide amounts to $23\frac{1}{2}$ feet vessels should moor slack. The town stands on a tongue of land known as L'Etang peninsula, and is in a somewhat dilapidated condition; supplies cannot be obtained.

BLISS ISLAND, off the entrance of L'Etang harbour, is $1\frac{1}{2}$ miles in length, about 50 feet high, and very irregular in outline; to the northward of the island, between it and Cailiff island, is Bliss harbour, a safe and commodious anchorage, where vessels may ride securely with every wind.

Off the western end of Bliss island a rocky tongue extends $1\frac{1}{2}$ cables from the shore, and off its northern end very shoal water runs off to nearly the same distance.

Mink Island, a small rocky islet about a third of a cable in extent and 20 feet high, lies a long cable off the north-east end of Bliss island; it is moderately steep-to on its northern side, but should not be approached nearer than a cable on its eastern side.

Mare Rock, which dries at half tide, lies two cables off the eastern shore of Bliss island, and is all but connected with the rocky spur running off to the south-east of Mink island.

Colt Rock also uncovers at half-tide, and lies a cable south of the Mare rock, and about 2 cables from Bliss island. The Colt and Mare rocks are both steep-to on their eastern sides; there is no available passage within them to the westward.

Green Island, a small islet about 50 yards in extent and about 20 feet high, stands near the extremity of a rocky ledge extending from the south-east side of Bliss island, and forms an excellent mark for clearing the ledge on which it stands; it should not be passed within a cable's length on its eastern side.

Pain Island, on the north-west side of the western entrance into Bliss harbour, is about 2 cables in extent, 109 feet high, and very steep-to on its southern side.

Man-of-war Rock, the only danger to be avoided when using the western entrance, in an extensive ledge 2 cables in length, and its highest part, which uncovers at half tide, lies one third of the way across from Man-of-war island to Bliss island; this ledge narrows the main channel on Bliss island side to about a cable, and great precaution is necessary

* See Admiralty chart, L'Etan Harbour, No. 1,857; scale, $m = 3$ inches.

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when this passage is taken by a stranger, as the leading marks through are not very direct. The centre of Mink island touching the north-western point of Bliss island leads through in mid-channel, and by keeping White Horse island shut in by the high water of Bliss island leads clear of the ledge; the Bliss island shore may be approached to one-third of a cable.

There is a passage carrying 4 fathoms to the northward of Man-of-war island and Boat rock which may be used by vessels of light draught, and a narrow channel with $3\frac{1}{2}$ fathoms between Man-of-war island and rock. The south point of Adam island seen midway between the high water of Pain island and the islet next to the north-east leads through this latter channel.

Pea Island, nearly a cable in length, and about 25 feet high, lies close off a peninsula on the eastern side of the eastern entrance into L'Etang harbour; rocks dry off to the south-west half a cable, and at the distance of $1\frac{1}{4}$ cables south-east of the island and the same distance from the shore is an isolated low water rock, but not in the way of navigation.

Half-tide Rock is very small, and lies $1\frac{1}{4}$ cables off the pitch of Deadman head; a wide clearing mark is the western end of McCann island just open of Pea island.

Roaring Bull, a cluster of low water rocks which just cover, lie to the north-west of Pea island nearly 2 cables, and narrow the channel of the eastern entrance between them and Mare rock to about a quarter of a mile; the wharves at the west end of L'Etang just in sight west of L'Etang head clears Roaring Bull cluster on their western side.

TIDES.—It is high water, full and change, in L'Etang harbour, at 11 h. 19 m.; springs rise $23\frac{1}{2}$ feet, neaps 20 feet.

DIRECTIONS.—**Western Entrance**.—Being to the north-east of White Horse island, do not shut in Mascabin point with Pain island, until the south end of McCann island comes on with the north-west high water of Bliss island, in order to avoid the rocky spur off the western point of the latter, and then steer for Man-of-war island until the middle of Mink island comes on with the north-west point of Bliss island, E. by N. $\frac{1}{2}$ N., and then proceed with these marks on nearly in mid-channel south of Man-of-war rock, which will have been passed when Boat rock opens out to the eastward of Man-of-war island.

After passing Man-of-war rock, anchorage may be selected either on the north or south sides of Bliss harbour as most convenient, in order to be beyond the influence of the tides. If on the north side a good position is in 6 or 7 fathoms, with Mink island on with the west end of Pea island and the south end of Pain island just shut in behind the north end of

Man-of-war island. On the south side, select a berth about mid-channel at the entrance of Fisherman cove, in about 8 fathoms, with Pain island just on with—or shut in by—the west point of the cove.

If bound to L'Etang harbour, after passing Man-of-war rock steer for Flea island, until Pain and Man-of-war islands are touching, and with these marks on proceed between Flea island and the rocky shoal off the north end of Bliss island. McCann island may be approached close-to on the southern and eastern sides, but care must be taken to avoid a low water rock off its north-east shore, and this may be done by borrowing on L'Etang head which is steep-to.

After passing this latter danger select an anchorage where convenient; a good position is about mid-channel abreast of Little Sturgeon cove, care being taken to keep clear of a rocky patch a cable off the northern shore.

During the depth of severe winters ice has been known to extend down the L'Etang river as far as the south end of the peninsula, but the broad part of the harbour is never frozen, nor is Bliss harbour.

Eastern Entrance.—Bring Jail island, which never covers and lies off the town, on with the east end of McCann island N. $\frac{3}{4}$ W.; this mark will lead through in mid-channel clear of all dangers up to McCann island, after which proceed as before directed; or bring the wharves at the west end of the town of L'Etang just open of L'Etang head N. $\frac{1}{4}$ W., and these marks will also lead through in deep water on the eastern side of the channel up to L'Etang head, after which proceed to the anchorage as previously directed.

If wishing to anchor in Bliss harbour run in on either of the foregoing marks, and when Pain island comes open north of Mink island steer for Flea island until Pain and Man-of-war islands are touching W. by S., when steer with these marks on and select an anchorage where convenient according to previous directions.

BACK BAY is an indentation formed between the west side of Cailiff island and the main shore, but the place is not adapted for anchorage save of a temporary nature, and therefore need not be described minutely.

Cailiff Rocks, which cover at half tide, are detached and about $1\frac{1}{2}$ cables in extent; they lie just within the entrance of Back bay, about one-third of the way across from the western shore. The west end of Bliss island on with the south point of Pain island clears them to the southward, and they will be cleared on their western side when the east end of Barn island bears S.W.

BLACK BAY is an indentation between Pea point and L'Etang head, and is moderately steep-to on its northern shore, but rocky spurs dry out $1\frac{1}{2}$ cables from the southern shore. Half a mile within the entrance, and

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Flea and Man-of-war islands all but touching leads into the bay clear of danger, and when the south-east point of Bliss island touches the small islet off the south point of Black bay anchor in about 6 fathoms.

DEADMAN BAY, on the eastern side of L'Etang harbour is open to the south-west, and is only adapted for temporary anchorage with northerly or easterly winds.

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CHAPTER XI.

BAY OF FUNDY :—NORTH COAST.

L'ETANG HARBOUR THROUGH CHIGNECTO CHANNEL TO THE
HEAD OF NAVIGATION.

VARIATION in 1867.

St. John Harbour - 18° 55' W. | Grindstone Island - - 20° 25' W.

BEAVER HARBOUR.—The entrance to this harbour lies $2\frac{1}{3}$ miles to the eastward of Deadman head, the intervening coast being rocky and steep close to the shore, excepting to the westward of Little Moose island, where a rocky patch dries to the distance of $1\frac{1}{2}$ cables from the main shore.*

The harbour, three-quarters of a mile broad between the entrance points, and upwards of a mile deep, is open to the southward, and cannot be deemed safe during strong winds from that quarter. Vessels should pass in and anchor on the western shore, in order to avoid a patch with $2\frac{1}{4}$ fathoms near the centre of the harbour. Small vessels may anchor in a bay on the western side of the harbour, opposite the village, in $2\frac{1}{2}$ fathoms, clay, where they will be almost landlocked.

The vicinity of Bliss and L'Etang harbours will prevent Beaver harbour being frequented, save as a place of temporary anchorage.

MACES BAY is an extensive bight lying between Seeley point and Cape Lepreau, the latter being distant from the former nearly 8 miles S.E. by E. $\frac{3}{4}$ E.; and from the line between the two entrance points the bay is nearly 5 miles deep, the coast line being broken into a series of smaller indentations, all of which afford anchorage for vessels taking in cargo, but only during fine weather, as the entire bay, with the exception of Seeley cove on its western side, is exposed to the full force of southerly and south-westerly winds.

SEELEY COVE.—The coast between Beaver harbour and Seeley point, a distance of $3\frac{1}{4}$ miles, takes an easterly trend, and may be safely approached to the distance of 2 cables. Seeley point may also be rounded close to; and a good anchorage from westerly and south-westerly winds may be obtained on the south side of the cove in about 5 fathoms. Care

* See Admiralty Chart, Bay of Fundy, Sheet 1, No. 352; scale, $m = 0.3$ inch.

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must be taken to avoid the northern point of the cove, from whence low water rocks extend nearly a quarter of a mile in a southerly direction.

POINT LEPREAU LIGHT.—The lighthouse, octagonal in form, and striped red and white horizontally, stands at the extremity of the point, and from elevations of 81 and 53 feet above high water are exhibited two *fixed vertical* white lights, which should be visible in clear weather from distances of 15 and 13 miles respectively. A gun is fired in answer to signals from ships during fogs.

RED HEAD, a clifty wooded point on the western side of Maces bay, lies E. $\frac{3}{4}$ N. 3 miles from Seeley point, the intervening coast being irregular and—in addition to Seeley cove—forming several small indentations; the one next west from the head, being clear of danger, with a moderate depth of water, is well adapted for temporary anchorage.

MINK BAY, on the western side of Maces bay, lies between Red head and Cranberry point, and affords temporary anchorage on the north-east and north-west sides of Mink island.

POPE LOGAN ISLET, a quarter of a mile in length, and 65 feet high, lies to the eastward of Red head, and from its northern point a rocky ledge extends $1\frac{1}{2}$ cables, leaving a channel of the same breadth, with 2 fathoms water, between it and the low water of the mainland. From the south point a rocky tongue extends to the south-west nearly in the direction of Red head.

Mink Ledge, an extensive rocky patch to the eastward of the above islet, has a small portion on its eastern end which never covers, and thus forms a natural beacon; it lies with the southern point of Pope Logan islet on with the tangent of Red head, and from it a series of rocky patches extend half a mile in a N.N.W. direction.

MINK ISLAND, about one-third of a mile across, and 104 feet high, lies half a mile to the westward of Cranberry point, and the same distance from the shore of Mink bay; the greatest depth in the latter channel being 3 fathoms. Outside the island a cluster of detached shoals run out half a mile to the southward, whilst off its western point there is a detached ledge, which dries at the distance of a quarter of a mile in the direction of Mink ledge.

LEPREAU BAY, on the north-eastern side of Maces bay, lies between Cranberry point and the shore north of Point Lepreau, and runs in to the northward to a shallow bight, where small vessels occasionally anchor beyond the reach of any very heavy sea. The only danger on the western side of the bay is off Cranberry point, from whence a cluster of low water and sunken rocks run out $1\frac{1}{2}$ cables.

THE BROTHERS are two small islets connected at low water, and form

the eastern side of the entrance of Lepreau bay. The larger island is 78 feet high, and is distant from the nearest part of Cranberry point three-fourths of a mile. From those islands a long shingle bar, which dries at low water, extends to the eastward nearly a mile, and all but joins the low water line of the shore immediately to the southward of Lepreau basin.

Lepreau Ledges extend from about a mile below Lepreau basin to the south-west for a distance of 2 miles, and terminate in a point, which dries 18 feet at low water, at the distance of a mile from the eastern shore of Maces bay. A good clearing mark for all the dangers on the eastern side of the bay is the tangent of Lepreau bay, opposite Stay point, just open west of the Brothers.

TIDES.—It is high water, full and change, in Lepreau bay, at 11 h. 18 m.; springs rise $24\frac{1}{2}$ feet, neaps 21 feet.

DIRECTIONS.—Ships from the westward intending to use any of the anchorages in Maces bay should avoid shutting in the northern point of Seeley cove with Red head until past Pope Logan islet, and (if making for the western side of Mink bay) when Notch hill bears N.N.E. steer for it, and by so doing the dangers inside Mink ledge, as well as the one off Mink island, will be avoided, and an anchorage may be selected in about 5 fathoms, with Point Lepreau shut in by Mink island, or off the western bight in 3 fathoms, with Red head midway between Pope Logan islet and the western shore, and Cranberry point just shut in by the south end of Mink island.

If intending to anchor on the north-east side of Mink island continue to keep the north point of Seeley cove just open of Red head until Notch hill comes over the east end of Mink island, when all the shoal water off Mink island will have been cleared; when the Saw mill bears North, steer for it, and anchor in about 5 fathoms, with Red head shut in by Mink island, or in $3\frac{1}{2}$ fathoms, with Cranberry point on with the middle of the larger of the Brothers, and the middle of Pope Logan island on with the west end of Mink island.

If making for Lepreau bay continue with the north point of Seeley cove just open of Red head until Notch hill comes over the east end of Mink island, and then steer for Stay point, and when Cranberry point and the north end of Mink island come in line the shoal ground off the former will have been passed, and a course should be steered into the bay, bearing in mind that the square house at the head of the bay open west of Stay point clears Hunters patch, to the southward of Stay point, after which anchorage may be selected where most convenient in about $2\frac{1}{2}$ fathoms.

A temporary anchorage for large vessels may be obtained in about 5 fathoms, with the north end of the larger Brother S.W. $\frac{3}{4}$ W., and Cranberry point on with the south end of Mink island.

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DIPPER HARBOUR.—The coast eastward of Point Lepreau as far as Split rock, upwards of 11 miles, is indented with no less than six harbours; of these Dipper harbour is the westernmost, being $2\frac{1}{2}$ miles E.N.E. from Point Lepreau. The harbour affords good shelter for vessels of about 200 tons, with winds from S.W. round by North to East; vessels should anchor rather on the western shore, as some ledges extend off the eastern side.

Plumper Rock, lies about midway between Point Lepreau and Dipper harbour, but it is close inshore, and may be avoided by keeping a quarter of a mile off shore. Between it and the harbour the shore is steep-to.

LITTLE DIPPER HARBOUR lies about $2\frac{1}{2}$ miles to the eastward of Dipper harbour, but should not be attempted without a pilot, as there are numerous dangers to be avoided. The place is only adapted for small craft.

CHANCE HARBOUR, nearly a mile east of Little Dipper harbour, is about half a mile broad at the entrance, by about a mile in depth in a northerly direction, and is easy of access. A flat rock, which dries at low water, lies half a cable east of the western point, and may be cleared on its northern side by keeping Beldon house (near the beach at the head of the cove) open north of the south point of Beldon cove. Further in, nearly in the middle of the harbour, is another rock, which dries at half tide, and may be cleared to the southward by keeping Beldon house open south of the north point of the cove.

The best anchorage for small vessels is, in about $2\frac{1}{2}$ or 3 fathoms, in Beldon cove; but this harbour, like the two former, affords but little shelter from winds from S.E. round by South to S.W.

LITTLE CHANCE HARBOUR, to the eastward of the former, is a convenient place for small vessels to anchor when waiting for the tide, but affords no shelter whatever with the wind between S.E. and S.W. It is about half a mile wide between the points of entrance, and about two-thirds of a mile broad in a N.N.E. direction. The western point of entrance should not be approached on its eastern side nearer than 2 cables, but the eastern point may be rounded at a cable's distance.

LITTLE MUSQUASH HARBOUR lies about a mile further to the eastward, and in all respects is similar in character to, and adapted to answer the same purpose as, Little Chance harbour. The entrance is about a third of a mile broad; but a mid-channel position should be maintained, as rocks dry off from either shore a considerable distance, for which no good clearing marks can be given.

MUSQUASH HARBOUR, a short mile west of Split rock, is nearly a mile broad at the entrance, and about 2 miles deep, though but little of this space is available for vessels of moderate draught.

Musquash head, on its eastern side, is steep-to and 80 feet high; but

Western head, which attains an elevation of 139 feet, has a small detached rock, with only 3 feet water, about half a cable from its northern horn. Within this horn, to the westward about 2 cables, a rocky spur extends in a north-easterly direction for the distance of $1\frac{1}{2}$ cables.

This harbour should be carefully avoided by large vessels, excepting as a temporary anchorage, though vessels in charge of a pilot might in case of necessity obtain shelter in the 5-fathom hole, about $2\frac{1}{4}$ miles up the river.

SPLIT ROCK, nearly a mile to the eastward of Musquash harbour, is 35 feet high and close to a point from whence the land takes a general trend to the north-east towards the harbour of St. John.

From Split rock to Negro head the coast is bold, with high rocky cliffs covered with wood; and from Negro head the land trends to the northward, and forms a bay, in which there is good anchorage for small craft or vessels waiting tide. Partridge island lighthouse is distant $5\frac{1}{4}$ miles from Negro head; and by steering on that course from a small offing off the head a vessel will pass outside Meogenes islands, which lie midway between, and clear of danger.

Ships may however—with local knowledge—pass inside these islands; and should the weather be bad, or fog thick, good anchorage may be obtained between the largest island of the group and the main shore, in from 4 to 5 fathoms.

ST. JOHN HARBOUR lies at the head of the bay, into which falls St. John river, the largest in New Brunswick, and one of the most remarkable and beautiful in America. The bay—upwards of 3 miles deep—lies between Meogenese island and Mispick point, the latter being distant from the former 5 miles E. by S. $\frac{1}{2}$ S.*

The harbour is safe, commodious, and always accessible; and in consequence of the great rise and fall of tide, added to the velocity of the stream, its navigation even during the winter months is never impeded by ice. About $1\frac{1}{2}$ miles to the southward of the city Partridge island forms a natural protection to the harbour, whilst its light serves as a guide when approaching the entrance.

The soundings for several miles to the southward of Partridge island range from 7 to 15 fathoms, and the bottom being muddy is admirably adapted for anchoring whilst waiting for the tide. On the bar of the main channel, east of Partridge island, the depth is about $2\frac{1}{2}$ fathoms; but within the harbour off the city there is anchorage in from 7 to 20 fathoms.

A breakwater runs out in an easterly direction from the south end of the

* See Admiralty Chart, Harbour of St. John, No. 1,551; scale, $m = 3.5$ inches.

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The city of St. John, the most important in—though not the capital of—New Brunswick, contains a population of about 25,000, and is regularly laid out on the rugged and uneven ground of a rocky peninsula projecting into the harbour at the entrance of the river St. John, and from the sea presents an imposing appearance.

On the western side of the entrance stands the town of Carleton, included in the municipality; and a little more than a mile above the city are the falls, a narrow channel about 80 yards wide by about 400 in length, where at low water the level of the river water is from 11 to 15 feet above the sea, and, as the ordinary tides flow from 23 to 27 feet, the sea level at high water is from 8 to 12 feet higher than the waters of the river.

Thus there are two falls during every tide, viz., one outward, and one inward, and vessels can only pass when the waters of the ocean and the river are on a level, and this occurs only for the space of about 10 minutes during each ebb and flow of the tide; at all other times it is either impassable, or extremely dangerous. During great freshes which generally happen between the beginning of April and the middle of May, from the melting of the snow, the falls are absolutely impassable to vessels bound up the river, as the tide does not rise to the river level.

There is sufficient depth of water for large ships as far as the falls, and beyond them the river St. John is navigable for vessels of 50 tons as far as Frederickton, the capital of the province. Immense quantities of timber are rafted down from the forests of the interior to the city of St. John, which is also an entrepôt of the agricultural and mineral products of a wide extent of country.

The commerce of St. John is very considerable. The principal imports consist of British manufacture and colonial produce, whilst the exports are timber, fish, furs and lime. Ship building is carried on to a great extent, and in 1863 there were no fewer than 521 vessels belonging to the port, representing an aggregate amount of 174,134 tons.

PARTRIDGE ISLAND LIGHT.—Partridge island off the entrance of St. John harbour is about 3 cables in length and 80 feet high; it is distant a long half mile from Negro point on the mainland, there being as little as 4 feet in mid-channel between.

The lighthouse, octagonal in shape and painted with vertical stripes of red and white, stands on the highest point of the island, and from an elevation of 119 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 20 miles.

At the distance of $1\frac{1}{2}$ cables S.S.W. $\frac{1}{2}$ W. of the lighthouse is a tower, 17698.

from whence a steam whistle is sounded during foggy weather, for a space of 10 seconds every minute.

Bell Buoy.—From the south end of Partridge island, rocks dry out to the distance of a good cable in a south-west direction, and from the north-east side of the island the low water line extends $1\frac{1}{2}$ cables to the north-east, and is marked on its eastern side by a bell buoy painted red, and moored in 3 fathoms water.

Should the buoy be gone Wesley chapel over the middle of the stone barrack N. $\frac{3}{4}$ E. clears the foul ground off Partridge island. (*See View.*)

Shag Rocks, which dry at low water, are a third of a mile in extent, and their outer end lies about four-fifths of a mile from the shore between Sheldon and Negro points; near their outer end a small spot dries 6 feet at low water. These rocks can scarcely be described as dangerous inasmuch as they lie within the line joining Sheldon point and the north end of Partridge island. By not opening out Red Head, on the eastern side of the entrance, north of Partridge island, these rocks will be avoided.

BEACON LIGHT.—The lighthouse stands on the eastern end of the spit, extending nearly half a mile from the Carleton shore on the western side of the entrance, and is an octagonal shaped building with vertical red and white stripes; from an elevation of 35 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 10 miles.*

As a description of the various banks and shoals in detail would answer no useful purpose the seaman is referred to the chart, where on an enlarged plan of the entrance to St. John harbour the relative positions of the various dangers are shown.

TIDES.—It is high water, full and change, in St. John harbour at 11 h. 21 m.; springs rise 27 feet, neaps 23 feet.

The great volume of water which runs through the harbour of St. John during the freshets from the melting of the ice and snow in April and May causes a continued superficial ebb, whose velocity varies from $2\frac{1}{2}$ to 5 fathoms; underneath this outset—sometimes 5 fathoms deep—the tides ebb and flow regularly. Abreast of the city the tidal stream runs in an hour after the time of high water by the shore, in consequence of the difference of level already alluded to; here also as a rule the flood is weak, but the ebb runs very rapidly all the way down past Meogenes island.

DIRECTIONS.—Unless in case of necessity strangers should never attempt to enter St. John harbour without the assistance of a pilot, for the narrow and intricate channel is bordered with sharp rocks, and

* The Beacon lighthouse was destroyed by fire in January 1867, and no notice of the light being re-established has been received up to the date of this publication.

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numerous accidents have occurred to vessels attempting the navigation without local knowledge.

To enter the harbour on the east side of Partridge island, bring the Wesleyan chapel over the stone barrack N. $\frac{3}{4}$ E. (*see View*) in order to clear the ledges off Partridge island; this mark will lead close to the Bell buoy, which should be passed on its eastern side, and when Carleton church comes on with Cliff end, steer for them in line, until Stone church, with a conspicuous square tower, comes on with the end of the Breakwater, N. $\frac{1}{2}$ E., and with these marks on, pass west of the red buoy off Negro point, and proceeding on until past the Beacon lighthouse, steer up the middle of the harbour and anchor off the wharves of the city.

Should the ebb have commenced it would be improper to attempt to gain the harbour until the next half flood; under such circumstances the vessel should remain outside and not attempt to anchor in the channel, where the ebb tide—especially during the freshets in the spring of the year—is so exceedingly rapid as to prevent any anchors holding.

PILOTS are always on the look out, and are sometimes fallen in with in the vicinity of Machias Seal island; during a fog by firing a gun occasionally they will generally find the ship.

It is very desirable that vessels should take a pilot before entering St. John bay, for instance at Point Lepreau, if not further down, for during thick weather the rapid tides—particularly during the freshets—render the navigation of the bay unsafe to a stranger. Steam tugs are always available off the harbour's mouth, and occasionally off Point Lepreau.

CAPE SPENCER, a bold headland, from 400 to 600 feet high, with steep rocky cliffs, is thickly wooded, and lies about 3 miles from Mispeck point, with a bay between, which only affords shelter with winds from North round to East.

In the bay, however, there are several creeks, the largest of which, Ball creek, about three-fourths of a cable broad, enables small vessels to ascend during the flood and lie aground in safety along the inner side of a small pier. On nearing the entrance of the creek bring the end of the pier about midway between the two shores, in order to avoid a rocky spur which runs off nearly a cable from the eastern point.

Black Rock, of small size and 10 feet high, lies about half a mile from Conley head, a point in the middle of the bay just described; the rock is steep to all around, without off-lying dangers.

From Cape Spencer to Cape Enragé, on the north side of Chignecto channel, the land is bold and thickly wooded, varying in height from 400 to 900 feet, and divided into hills by numerous valleys through which small streams find their way to the Bay of Fundy.

The mouths of these streams are very similar in appearance, being composed of a bar of shingle and gravel across the entrance, leaving a narrow

passage at one side through which small vessels may enter at high water, and lay on the mud at low water, generally safe from all winds. Here vessels load with timber sawn by mills near the entrance, from logs brought down the streams.

MCCOY HEAD, about 8 miles to the eastward of Cape Spencer, is a rounded point about 200 feet high, and thickly wooded; the coast between the two points form a considerable indentation, at the head of which is Black river, which dries across its entrance, but is accessible at certain times of tide for small vessels, though it is said to be unsafe at high water during heavy south-west gales.

The shore between Cape Spencer and Black river is very steep to, and may be safely approached within a cable's length, excepting in the immediate vicinity of a point about $3\frac{1}{3}$ miles to the westward of Black river, where rocks dry off a cable from the shore. There are also some rocks extending 2 cables W. by S. from the point next east of Black river.

The Sisters consist of a small cluster of rocks, about three-fifths of a mile from the shore near Entmerson creek, and about $2\frac{1}{2}$ miles to the westward of McCoy head. The outer rocks of the cluster cover at 2 hours ebb, but the inner one, about a cable further in shore, only shows at low water. There is deep water between these rocks and the shore.

RED HEAD, about 3 miles to the eastward of McCoy head, is composed of red cliffs about 50 feet high. Just within McCoy head to the eastward, good temporary anchorage may be obtained from northerly and westerly winds, in 5 or 6 fathoms, with Rogers and Red heads just in line. The entrance of Tynemouth creek lies about a mile to the eastward of Red head.

ROGERS HEAD, about $7\frac{1}{2}$ miles to the eastward of McCoy head, is about 400 feet high, thickly wooded and steep-to, with high perpendicular cliffs on its western side, and a steep slope to the southward.

QUACO LIGHT.—Quaco head, 250 feet high, is about 2 miles to the eastward of Rogers head, being separated therefrom by a valley clear of trees, and by a sharp trend of the land to the northward forms the western side of Quaco bay.

The lighthouse—with horizontal strips of red and white—stands on a small ledge of rocks close to Quaco head, and from an elevation of 58 feet above high water is exhibited a *revolving* white light, which attains its greatest brilliancy every 20 seconds, and in clear weather should be seen from a distance of 15 miles.

Quaco Shoal, on which there is as little as 9 feet water, is about a mile in length N.E. and S.W., and occupies a considerable portion of Quaco bay. There is deep water all round it.

TIDES.—It is high water, full and change, in Quaco bay at 11 h. 35 m.; springs rise 30 feet, neaps 25 feet. With the exception of the first hour of

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flood, the tide both flood and ebb, sweeps round Quaco bay, from the eastward, inside Quaco shoal.

Anchorage.—Vessels wishing to obtain temporary anchorage under Quaco head, should—on approaching the lighthouse from the westward—keep McCoy head open to Rogers head, until the Roman Catholic church tower of Quaco, comes open to the eastward of the northern cliff of Quaco head, in order to clear the outer end of the ledge on which the lighthouse stands.

There are no good leading marks into the anchorage, which is in 5 or 6 fathoms, mud, with the lighthouse S.S.W., distant about half a mile. The anchorage is unsafe with winds from N.E.—round by East—to South. Along Quaco head many ships are built, as well as in some of the creeks along shore. These and timber are the only exports from this part of the coast.

Quaco Ledge is a most dangerous ridge of jagged rocks about a quarter of a mile in length, with deep water close to around; the highest part uncovers half an hour after half ebb, and dries 13 feet at low water, and shows a heavy tide rip when covered. This danger lies $8\frac{3}{4}$ miles S.E. $\frac{3}{4}$ S. from Quaco lighthouse, and W. by N. $\frac{1}{2}$ N., $14\frac{3}{4}$ from the western end of Isle Haute. The tidal current runs about 2 knots in the vicinity of this danger.

FOUND'S POINT.—From McCumber point, on the north shore of Quaco bay, the shore between it and Founds point is clear of danger. Founds point is distinguished by its perpendicular red cliffs from 300 to 400 feet high.

TUFT POINT, also known as Long beach, lies about 5 miles to the eastward of Founds point, and is formed by an earthy bank from 30 to 50 feet high, partially cleared. About $1\frac{1}{4}$ miles to the westward of the point is Salmon river, and between the two, the 5-fathom line extends upwards of three-quarters of a mile off shore, whilst the low water line of the beach, just west of Tuft point, extends nearly half a mile off.

ST. MARTIN HEAD, about $8\frac{1}{4}$ miles to the eastward of Tuft point, is a small bare hillock 100 feet high, connected with the main shore by a narrow causeway of gravel and sand half a mile long. When seen from a distance the head makes like an island; it may be approached within a quarter of a mile, save on its western side, where there is a small patch of rocks—which dry 5 feet at low water—one-third of a mile off shore, W. by S. $\frac{1}{2}$ S. To the westward of St. Martin head, as far as Wolf creek, and to the eastward as far as Goose creek, the 5-fathom line extends two-thirds of a mile from the shore.

MATTHEWS HEAD is a bold rounded point 150 feet high, at the distance of $10\frac{1}{2}$ miles to the eastward of St. Martin head. The head itself is partially cleared, but within it the land rises to an elevation of

700 feet, and is thickly wooded. Between the two heads there are no less than five creeks, but no off-lying dangers, and the shores may be approached to a quarter of a mile.

SALISBURY BAY.—Between Matthew head and Cape Enragé, upwards of 8 miles in an E. $\frac{1}{2}$ S. direction, the land falls back into Salisbury bay 3 miles in depth; one of the salient points of the coast line of the bay is Owls head, which is 700 feet high, thickly wooded, and $3\frac{1}{2}$ miles from Matthew head. Midway between Owls head and Cape Enragé is Red head, composed of earthy cliffs from 50 to 100 feet high.

Salisbury Shoal, about $1\frac{3}{4}$ miles in length between the 5-fathom lines, lies two-thirds of a mile within the line between Matthew head and Cape Enragé, with $3\frac{1}{2}$ fathoms on its shoalest part near the centre, and cannot therefore be deemed a danger to vessels of moderate draught. Within it there is a channel a mile wide, having from 5 to 7 fathoms. The $3\frac{1}{2}$ -fathom patch lies with Cape Enragé lighthouse E. by S. $\frac{1}{2}$ S. $3\frac{3}{4}$ miles.

ANCHORAGE.—During the summer months vessels may anchor along the whole length of the coast from Cape Spencer at a moderate distance from the shore, the best place for shelter from the prevailing westerly winds being Quaco bay.

Salisbury bay is unsafe, in consequence of the frequency of westerly and south-westerly winds to which the bay is exposed, and of the sudden shifting of the wind to these quarters. The tidal stream generally sets towards Cape Enragé lighthouse.

CAPE ENRAGÉ LIGHT.—Cape Enragé is composed of perpendicular rocky cliffs about 100 feet high, and thickly wooded, excepting in the immediate vicinity of the lighthouse, which stands close to the extremity of the cape. The lighthouse is a square white building, from which, at an elevation of 120 feet above high water, is exhibited a *fixed* white light which should be visible in clear weather from a distance of 15 miles.

From Cape Enragé a rocky spur, which dries at low water, extends in a south-westerly direction a quarter of a mile.

CHIGNECTO CHANNEL divides the shores of New Brunswick and Nova Scotia at the head of the Bay of Fundy, and leads into Cumberland basin and the river Petit Coudiac; it is free from off-lying dangers, and even in thick weather the gradual decrease of soundings on either side is sufficiently well-defined to insure safe navigation.

At Cape Enragé the breadth of the channel is considerably decreased, and the northern shore is deflected more to the northward for a distance of about 10 miles as far as Grindstone island, to the northward of which the river Shepody flows into the channel, whilst on the southern or Nova Scotian shore the coast continues its general north-easterly trend towards Boss point, at the entrance of Cumberland basin.

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Abreast of Grindstone island Cape Marangouin divides the water into two branches, the northern of the two running in that direction towards the mouths of Petit Coudiac and Memramcook rivers, and the other with a north-easterly trend flowing into Cumberland basin.

The land on the New Brunswick shore is moderately high, thickly wooded, and intersected by numerous valleys; the south shore is not so elevated, and the thick woods which generally prevail are interspersed with cranberry barrens which abound with deer.

Horton Flats.—The shores on either side of Chignecto channel may be safely approached to half a mile, excepting in the vicinity of Horton flats, about 7 miles to the north-eastward of Cape Enragé. Between this position and Cape St. Mary, flats extend in a straight line a considerable distance off the high line, which here forms a bay.

GRINDSTONE LIGHT.—Grindstone island, nearly half a mile in length, lies on the north-east side of Chignecto channel, and nearly a mile to the eastward of Cape St. Mary, the southern point of entrance to Shepody river.

The lighthouse of wood, octagonal in form and painted white, stands on the western point of the island, and from an elevation of 60 feet above high water is exhibited a *fixed* white light, which should be visible in clear weather from a distance of 12 miles. The light should not be approached on its western side nearer than four cables.

Grindstone Shoal, with 10 feet water, is the shallowest part of a narrow bank of sand and mud, nearly 4 miles in length, whose north-eastern end is a little south of Grindstone island, from whence it extends S.W. by W. $\frac{1}{2}$ W., leaving a navigable channel a mile wide between it and Horton flats. The shoal spot lies six-tenths of a mile S. by W. $\frac{1}{4}$ W. from Grindstone light-house, with a passage between; the high line of the south side of Grindstone island may be approached to a cable's length.

St. Mary Ledge extends off Cape St. Mary three-fourths of a mile N.E. by E. $\frac{1}{2}$ E.; its highest point covers at four hours flood, and when uncovered may be approached to a cable's length on its south-east side.

SHEPODY RIVER.—This river falls into Chignecto channel immediately to the northward of Cape St. Mary, between which and Stiles landing, on the northern side, the distance is $2\frac{1}{2}$ miles; but the river is not accessible except at certain times of tide, and not even then except by experienced local pilots.

THE COAST.—From Cape Chignecto, the southern shore of Chignecto channel trends about N.E. by N. $6\frac{1}{2}$ miles to Squally point, the intervening shore being steep-to and without detached dangers; but from thence as far

as Apple Head lighthouse the shore should not be neared within a third of a mile.

Spicer cove is a slight and shallow indentation immediately within Squally point, but is only adapted for temporary anchorage for small vessels. The only off-lying danger is Dudgen rock, which lies about one-eighth of a mile north-east of Squally point.

Apple river, 2 miles further on, dries a little within its points of entrance, which are three-fourths of a mile apart; and from thence as far as Boss point, at the entrance of Cumberland basin, a distance of $23\frac{1}{2}$ miles, the general trend of the coast is about E.N.E.

Although several indentations occur along this line of coast, none are available for vessels save at certain times of tide. At the South Joggins there are several seams of coal, but the quality is inferior and not adapted for either steaming or domestic purposes. There are also some grindstone quarries along this coast, as well as on Grindstone island; and at Cape St. Mary good building stone is to be obtained.

The anchorage off the coal wharf at South Joggins is bad and unsafe with westerly winds, especially during the ebb.

APPLE RIVER LIGHT.—The lighthouse is a square white building, standing on the low northern point of entrance to Apple river, and from an elevation of 40 feet above high water two horizontal *fixed* white lights are exhibited, 24 feet apart, and during clear weather they should be visible from a distance of 10 miles.

TIDES.—It is high water at Spicer cove at 11h. 35m.; springs rise 37 feet, neaps $30\frac{1}{2}$ feet. At Grindstone island it is high water at 11h. 47m.; springs rise 41 feet, neaps $34\frac{1}{2}$ feet.

From Cape Spencer the flood tides set to the eastward, generally parallel to the shore as far as Grindstone island, at the average rate of about two knots, the ebb running in a contrary direction to the westward; several eddies are formed behind the salient points of this coast. In the vicinity of Cape Spencer the tidal stream changes its direction about two hours before high and low water by the shore; but further east, off Quaco head, this difference is reduced to three-quarters of an hour. Off shore the stream continues to run from a quarter to three quarters of an hour after the time of high and low water.

Off Cape Spencer a rip, which is very heavy with westerly winds, is formed on the ebb; it is caused by a strong eddy sweeping round to the bay to the westward of the cape, and impinging on the ebb tide at right angles. A similar rip occurs off Quaco head, occasioned by the tide sweeping round the bay to the southward, and meeting the main streams of flood and ebb off the lighthouse. Off Grindstone island the tidal current runs from 2 to 4 knots an hour.

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CAPE MARANGOIN is the southern termination of a promontory dividing the north-eastern arm of the bay of Fundy into two branches; viz. :—the river Petit Coudiac to the north, and Cumberland basin to the east. The cape attains an elevation of 220 feet, and from it an extensive bank, formed by the debris of the two branches, runs out in a south-westerly direction; the 3-fathom line being $1\frac{1}{2}$ miles from the cape.

Marangouin Shoal is a sandy knoll with only a foot of water, and lies near the eastern edge of the above bank, about a mile from the shore of the cape. From it the east and west tangents of Cape Marangouin bear E. by N. $\frac{1}{2}$ N., and N. by W. $\frac{2}{3}$ W., respectively, and Grindstone island lighthouse N. W. by W. 4 miles.

A good clearing mark on its southern side is Minudie point (Cumberland basin), open south of the east tangent of Cape Marangouin E.N.E.

RIVER PETIT COUDIAC.—From Grindstone island on the west, and Cape Marangouin on the east, the shore takes a general north-easterly direction for about 8 miles, where the arm of the sea is divided by Folly point, and branches off into the rivers Petit Coudiac and Memramcook.

Abreast of Folly point the Petit Coudiac is a short mile across, and from thence it takes a general northerly trend for a distance of 15 miles, to abreast of the town of Moncton, after which it takes a sudden bend to the westward, and so continues for a distance of 12 miles as far as the town of Salisbury. The eastern shore of this river is moderately high and well wooded, and between the northern point of Shepody river and Cape Demoiselle on the western shore, a narrow strip of marshy ground fringes the high land, which rises abruptly to the well-wooded Shepody hills, the highest of which attains an elevation of 1,050 feet.

Marangouin Flats on the north side of Cape Marangouin are covered at ordinary low water; the outer flat is about two-thirds of a mile long, running nearly parallel to the shore, and from it the outer edge is distant about three-fourths of a mile; the water shoals gradually off it, and the danger may be avoided by careful attention to the lead. The southern extremity of this flat lies about one mile N. E. $\frac{1}{2}$ N. from the north-western extremity of Cape Marangouin.

Grande Anse Ledge.—The western end of this ledge is rather more than a mile from the eastern shore at the distance of 4 miles from Cape Marangouin. The ledge covers at half-flood, after which it becomes dangerous; the eastern tangent of Folly point open to the westward of Coles head, and bearing N. by E., clears the ledge on its western side.

Middle Ground.—This danger dries for about $2\frac{1}{2}$ miles in a N.N.E. direction, its greatest breadth being about a quarter of a mile; its highest point near the centre being about six feet above low water springs. The southern

end lies $4\frac{1}{2}$ miles N.E. $\frac{3}{4}$ E. from Grindstone island, and its northern edge bears from Cape Demoiselle E. by N. $\frac{3}{4}$ N. rather more than a mile. The houses on Dorchester island shut in by Coles head, the latter bearing N.N.E. $\frac{1}{3}$ E., clear the Middle Ground on its eastern side; by careful attention to the lead, this bank can always be avoided.

Calhoun Flats.—To the northward of Cape Demoiselle the high land begins to deflect to the northward, whilst the low line continuing its northeasterly direction for nearly two miles forms Calhoun flats, which at this point, where the low line trends quickly to the northward, dries for nearly two-thirds of a mile from the high line with 4 fathoms at a cable's length off its outer edge.

Memramcook Spit consists of long rocky ledges extending off Coles head, and must be carefully avoided; on the outer end the highest part of the spit which uncovers during the last quarter ebb, lies a third of a mile from the Coles head shore, and $1\frac{1}{8}$ miles S. $\frac{1}{2}$ E. from Folly point.

The church on the eastern shore of Petit Coudiac above Folly point, open to the westward of Folly point and bearing N. by W. $\frac{1}{4}$ W., clears this danger on its western side.

TIDES.—It is high water, full and change, at Folly point at 11 h. 49 m.; springs rise 45 feet, neaps 38 feet. In the vicinity of the point the tidal stream runs from 3 to 4 knots an hour.

DIRECTIONS.—When off Cape Spencer and bound to the eastward, keep close to the cape if on the ebb, and avoid the tide rip already described, by passing either inside or outside. From an offing of a mile south of Cape Spencer, an E. $\frac{1}{2}$ N. course for a distance of 53 miles will place a ship about 2 miles south of Cape Enragé, but care must be taken not to pass within half a mile of the lighthouse when on a N.E. bearing, in order to avoid the rocky ledge which runs off in a S.W. direction.

If bound to Cape Chignecto, from an offing of about a mile off Cape Spencer, an East course for $19\frac{1}{2}$ miles should place the vessel on the line of bearing between Quaco lighthouse and Quaco ledge, distant nearly 5 miles from the latter; from this position Cape Chignecto will bear E. by S. $\frac{1}{4}$ S., 22 miles, and Cape D'Ore E. by S. $\frac{3}{8}$ S., 29 miles. Care must be taken to make allowance for the effect of the tides, which will modify the above courses.

Temporary anchorage may be obtained in moderate weather along the whole extent of coast between Capes Spencer and St. Mary, but when the winds—to which the coast is exposed—blows with any force the anchorage is bad, especially in localities where the strength of tide is great.

There is an anchorage to the northward of Grindstone island, between it and the mouth of Shepody river, but it is somewhat difficult of approach

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by a stranger ; to enter it from a safe offing off Cape Enragé, steer so as to bring Grindstone lighthouse N.E. by E. $\frac{1}{4}$ E., until about a mile distant, when haul a little to the northward, taking care not to shut in Cape Enragé lighthouse with Cape St. Mary, nor approach Grindstone island nearer than 4 cables. When Grindstone lighthouse bears S.S.E. $\frac{1}{2}$ E., St. Mary ledge will have been passed, and the vessel may be hauled up for the Shepody mountain; anchor clear of the shoal ground north of the lighthouse, with the latter bearing about South, and Cape St. Mary S.W. by W. ; here there will be 4 fathoms, but the holding ground is not good.

Another anchorage to the north-east of Grindstone island which is frequently used is in about 3 fathoms, mud, a short half mile N.E. by E. from the eastern point of the island.

Vessels in moderate weather may anchor anywhere off the mouth of the river Petit Coudiac below Folly point according to their draught of water, but the best anchorage is between Folly point and Stone wharf, which is as high as vessels of any size can lay afloat at low water. Here in about 3 fathoms, mud, vessels may anchor with Folly point E. $\frac{1}{2}$ N., and Indian church N. $\frac{1}{8}$ W., but as the tide current runs from 3 to 4 knots, there is a disagreeable sea when the wind is against the stream, and if intending to stop longer than a tide, it is necessary to moor in order to avoid fouling the anchor.

If intending to proceed further up the river the services of a competent pilot must be obtained, as the direction of the narrow shallow channel is frequently changed. Though there are no regular pilots, men can be procured from Hillsborough who are acquainted with the river.

RIVER MEMRAMCOOK. — From Folly point this river takes a N. by E. $\frac{1}{2}$ E. trend, its western shore being of a moderate elevation and covered with trees whilst its eastern shore is partially cleared.

There is a small hole with 9 feet water to the south-west of Dorchester island, but even small vessels should be moored, if intended to remain afloat.

CUMBERLAND BASIN is the eastern termination of the Chignecto channel and receives the waters of numerous rivers. It lies on the eastern side of Cape Marangouin, between which and Boss point the entrance is $1\frac{1}{2}$ miles across ; from this position the channel is straight and navigable for a distance of 8 miles to a little beyond Woody point on the northern shore, where anchorage may be obtained in the narrow channel in about 4 fathoms. This place, about one-third of a mile off the northern shore, is known as Sackville anchorage, where vessels should moor, and their position be selected by means of the lead.

There is also another anchorage to the eastward of Peck point on the north shore of the entrance in about 5 fathoms, mud, with the south-east

extreme of Cape Marangouin open of Peck point S.W. $\frac{3}{4}$ W., and the end of the wharf in Peck cove W. $\frac{3}{4}$ N.

Vessels may anchor anywhere between the above places, excepting during strong westerly winds which frequently occur, when the ebb stream, which attains a velocity of 4 or 5 knots an hour causes a very disagreeable sea. It is advisable to moor at any of the anchorages, especially with south-westerly winds and an ebb stream. Above Sackville anchorage only small vessels can lay afloat at low water, but trading craft lay aground on the mud.

In Cumberland basin there is a profitable shad fishery, which commences in June; the exports are coals from the South Joggins and River Hebert, as well as some agricultural produce and a few small vessels.

TIDES.—It is high water, full and change, in Cumberland basin a 11 h. 55 m.; springs rise $45\frac{1}{4}$ feet, neaps 38 feet. The rise and fall being so great the velocity of the tide is very great.

DIRECTIONS.—In running for Cumberland basin care must be taken on approaching the entrance to open Minudie point to the southward of the east tangent of Cape Marangouin bearing E.N.E. in order to clear Marangouin shoal, after passing which a course should be steered so as to pass the east extremity of the Cape and Peck point not less than an eighth of a mile, to which distance both can safely be approached.

If intending to proceed beyond Peck anchorage keep the east tangent of Cape Marangouin open of Peak point S.W. by W. $\frac{3}{4}$ W., and with these marks astern a vessel will be kept in the deep water channel to abreast of Minudie point, after which a more northerly course should be steered in order to avoid the mud bank which dries at low water, and extends to a considerable distance from the southern shore.

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