

THE
NOVA SCOTIA PILOT.

SOUTH-EAST COAST,
FROM
MARS HEAD TO CAPE CANSO,
INCLUDING
SABLE ISLAND.

BY
REAR-ADMIRAL H. W. BAYFIELD, R.N.

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THE Nova Scotia Pilot contains Sailing Directions for the south-east coast of Nova Scotia from Mars Head to Cape Canso, and also a description of Sable island and the out-lying banks.

With the exception of that portion of the directions comprised between Sheet harbour and Indian bay, in Chapter III., the whole has been compiled by Rear-Admiral H. W. Bayfield, R.N., from the excellent surveys made by him and his assistant officers between the years 1853-1856. The directions between Sheet harbour and Indian bay are by Commander J. Orlebar, R.N., who surveyed that part of the coast in 1857.

I. W.

Hydrographic Office, Admiralty, London,
March 1860.

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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 DEPTHS ARE IN FATHOMS OR FEET REDUCED
TO LOW WATER OF ORDINARY SPRING TIDES.**

THE NOVA SCOTIA PILOT.

CHAPTER I.

SOUTH-EAST COAST.—MARS HEAD TO SHUT-IN ISLAND, INCLUDING
HALIFAX HARBOUR.

VARIATION $19\frac{1}{2}^{\circ}$ W. in 1860.

MARS HEAD, in lat. $44^{\circ} 26' 16''$ N., long. $63^{\circ} 43' 24''$ W., is a rocky peninsular cape, 70 feet high, forming the western limit of Pennant bay, the entrance to which is 3 miles wide in an E.S.E. and W.N.W. direction, and about 2 miles deep. This bay is much encumbered with rocky shoals and islands, but it 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.*

TURNER BAY, about 2 miles within Mars Head, and at the north-western angle of Pennant bay, is open to the south-south-east, but the anchorage is good in 8 or 9 fathoms, mud, off the fishing coves, within Church point, on the southern shore.

DIRECTIONS.—To enter Turner bay by the western passage, bring Turner Bay rock (formerly White rock) to bear N.E. $\frac{1}{2}$ E., and steer for it, passing mid-way between the Broad rock, which covers at high water, and the 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, taking care not to haul to the westward into the bay until past 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, formerly called Macivoith point.

If the eastern passage, which is preferable in some winds, be taken, stand in for the western end of Mackarel island on any bearing not to

* See Admiralty Chart:—Nova Scotia, S.E. Coast, Mars Head to Shut-in Island, No. 2,410; scale, $m = 1\frac{1}{4}$ inches.

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 to the north-east of it, and then to the N.W., to the anchorage off the fishing coves as before.

PENNANT HARBOUR, at the north-eastern angle of Pennant bay, has secure anchorage above the islands, as stated on former charts, in which the dangerous Middle ground, with 13 feet least water is omitted, being directly in the way of vessels taking what is called the good channel between Pennant point and Pennant island. Two other shoals at the head of the harbour are also omitted.

DIRECTIONS.—To enter Pennant harbour, after passing at 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 18 feet shoal lying a quarter of a mile N.E.b.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. In rounding Pennant point, be careful to avoid the reefs which extend 2 cables off it to the southward and eastward.

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 in south-west winds is in great measure 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 from the Westward.—To enter Sambro harbour from the westward, pass between the Bull rock and Pennant point, steering N.E. b. E. for the Isle of Man ; and, having passed Bull rock, at the distance of $1\frac{1}{2}$ or 2 cables, to avoid the shoal water off it to the northward, keep the east side of the Isle of Man and Round island in line, if the latter can be made out ; if not, pass one or 2 cables to the eastward of Island rock, still steering N.E. b. E. for the Isle of Man, until beyond Torpey ledge ; then, to avoid the Middle ground, steer more easterly, so

* This Isle is the Thrumcap of the fishermen ; the name Isle of Man, however, is preferable, although not used by the natives, to avoid the confusion of so many Thrumcaps.

as to pass not more than a cable to the northward of the west end of Inner Sambro island, which is quite bold. As soon as Fairweather rock and the western edge of Inner Sambro island are nearly in line, S.W. b. S., alter course to N.E. b. N., and they will lead clear to the eastward of Cowley rock, which has 10 feet water on it and seldom breaks; having passed this, 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 Southward.—Having Chebucto head open to the eastward of Sambro island, to insure being outside of the S.W. Breaker, which however can generally be seen, bring Cook point (on the west side of Sambro harbour) in line with the western point of Inner Sambro island, bearing N. $\frac{1}{4}$ W., and steering for them, they will lead clear to the eastward of the S.W. Breaker. Having passed this danger, continue the N. $\frac{1}{4}$ W. course, keeping the marks touching until nearly abreast Fairweather rock; then steer so as to pass mid-way between that rock and the western end of Inner Sambro island, and round the latter to the north-east, until the marks come on for clearing Cowley rock, namely, Fairweather rock and Inner Sambro island touching, and bearing S.W. b. S.; when steer N.E. b. N., as before.

From the Eastward.—In passing either between or within the Sambro ledges, and within or without Inner Sambro island, the aid of the Admiralty chart, or of a native fisherman acquainted with all the dangers, would be indispensable.

SAMBRO ISLAND LIGHT.—The lighthouse on Sambro island is a white octagonal tower 60 feet high. It stands near the middle of Sambro island, at $1\frac{1}{2}$ miles from the shore at Cape Sambro, and S.W. $4\frac{1}{2}$ 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*, visible in clear weather from a distance of 21 miles. Vessels approaching the light in a fog, and firing a gun, will be answered from the island, where a heavy gun, and a party of artillery, are stationed for the purpose. It is the resort of pilots.

SAMBRO LEDGES.—These ledges being now correctly laid down on the Admiralty chart, it will only be necessary here to state that from the outermost of the western ledges, the Smithsonian rock, with 2 fathoms water on it; Sambro light bears N.E. by E. $\frac{3}{4}$ E., $2\frac{1}{2}$ miles; and Pennant point, N.W. by N., $2\frac{1}{2}$ miles. Fairweather rock in line with the Isle of Man,

N.N.E. $\frac{1}{4}$ E., and Gull rock little more than its own breadth open of White head (Catch Harbour head of the fishermen), bearing N.E. $\frac{3}{4}$ E., lead right over this dangerous rock, and also over the Mare, which, with 6 feet least water, lies nearly three-quarters of a mile farther in.

The S. W. Breaker, which almost always shows, lies $1\frac{1}{2}$ miles to the eastward of Smithson rock, with Chebucto head seen over the eastern extremity of Sambro island, which bears from it N.E. $\frac{1}{4}$ N., $1\frac{1}{2}$ miles.

The Sisters are the outermost of the eastern of the Sambro ledges, and are distant $1\frac{2}{3}$ miles from the lighthouse on Sambro island, between the bearings from it of E. b. N. and E. b. S. Their position is pointed out by Black rock, which is 15 feet high, and from which they are distant one-third of a mile to the S.E. b. E. Several of them uncover at low water, and 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.

Nick shoal and Ede or Owen rock, the latter with 9 feet water on it, lie nearly midway between the Sisters and Morris point, on the western side of the entrance to Catch harbour.

The Hennesy and Lockwood rocks, of the old charts and directions, could not be found by our parties, nor by Captain Shortland, who has also examined the alleged positions in H. M. S. *Columbia*. They doubtless do not exist, for rocks covered by only 8 or 12 feet water would cause breakers almost constantly, and thereby become conspicuous ; but neither the native fishermen nor the lighthouse keepers have ever seen them.

Hennesy Bank, Shoal Ground, Barse Ground, and Outer Bank.—These are rocky fishing grounds, which are no further dangerous to vessels than that they cause a heavy half breaking sea in bad weather. 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. b. W., $1\frac{3}{4}$ miles. The Shoal Ground, with 8 fathoms water on it, 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 least water ; the lighthouse bears from it N. b. E. $2\frac{1}{4}$ miles, and the Outer bank in 14 fathoms, S. by E. $4\frac{1}{4}$ 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.—The *fixed white* light exhibited from Sherbrook tower on Maugher beach, (see p. 14) kept just open east of Chebucto head, bearing N. b. E., will clear all the Sambro ledges, and also the Bell rock

and Duncan reef; and Sandwich point in line with Chebucto head, bearing N. $\frac{1}{2}$ E., will lead one mile to the eastward of them.

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.

CATCH HARBOUR, the entrance to which bears North from the easternmost of the Sambro ledges, and is 2 miles to the S.W. of Chebucto head, has 9 feet water on its bar, and 16 feet, mud, within, where its shores are occupied by the houses and stages of fishermen. At its head there is a chapel, and a fine stream, the outlet of the waters of several small lakes which lie about a mile to the northward.

The **BELL ROCK**, with 7 feet least water on it, lies East half a mile from White head, and 4 cables off-shore, with Chebucto head bearing N.N.E., distant one mile. Another rock, with 27 feet water on it, was discovered lying one cable N. b. W. from the Bell rock; and as Duck reef extends $1\frac{1}{2}$ cables from the shore towards them, the channel between them and the land is reduced to this breadth, and is moreover nearly overlapped by Duncan reef, and it therefore cannot be recommended. Duncan cove, on the south-west side of Chebucto head, affords shelter to boats.

HALIFAX HARBOUR*, one of the finest in the world, affords space and depth of water sufficient for any number of the largest ships with safety; and although the dangers off its entrance are such as to render great caution necessary, especially in the fogs which usually accompany all winds from the sea, it is yet easier of access and egress than any other large harbour on the coast. It is $5\frac{1}{2}$ miles wide at its entrance, from Chebucto head on the south-west to Devil island on the north-east, and it continues inland 15 miles, in a northerly direction, to the head of Bedford

* **Ice**.—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 has formed opposite the city, it has never remained long, having been 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.

basin. The city of Halifax, the capital of Nova Scotia, containing in 1853 about 25,000 inhabitants, stands on the declivity of a peninsula on the western side of the harbour, and 9 miles within its entrance. The citadel, immediately in rear of the city, is elevated 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 town of Dartmouth stands on the eastern side of the harbour, immediately opposite the Naval yard; steamers ply between it and the city continually. Eastern fort, with its tower, will be seen 2 miles farther to the southward, on the same side of the harbour.

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

The lighthouse on Devil island is octagonal, built of wood, and painted brown with a white belt. It exhibits at 45 feet above high water a *fixed red* light, visible in clear weather from a distance of about 8 miles.

Sherbrook tower, 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 at 12 miles. It bears from the Thrumcap buoy N. b. W. $2\frac{1}{2}$ miles.

PILOTS are stationed on Devil island, and several families reside there.

WESTERN SHORE of the HARBOUR.—Referring to the Admiralty plan of this harbour* for a full and accurate topographical description, including the churches, wharves, dockyard, forts, &c., it will here only be necessary to notice those objects which present themselves as most remarkable to seamen, or which may be useful for their guidance in entering or leaving the harbour.

Chebucto Head, the southern extreme of the western shore at the entrance 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, which, together with clay slate, forms the steep and barren western shore of the harbour. Proceeding northward, Portuguese cove, with its village of fishermen; and Camperdown flagstaff, on a hill in rear of it 168 feet above the sea, will be seen $1\frac{1}{4}$ miles within Chebucto head.

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, and distant $1\frac{1}{2}$ miles S.W. from Sandwich point. It is a secure

* See Admiralty Plan of Halifax Harbour, with view, No. 2,320; scale, $m = 3$ inches.

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, 177 feet above the sea, will be known by its flagstaff, and by its position, three-quarters of a mile within Sandwich point, and nearly abreast the lighthouse tower 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; so also will George island, by its redoubt and tower, which is at the same distance farther in, and off the outer part of the city.

The 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.

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 entrance of the harbour. A reef connects it with the shore, and shallow water extends from it one-third of a mile to seaward.

At three-quarters of a mile northward from Devil island 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 that 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; and 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 fit only 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 main land, 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, which forms the eastern side of the ship channel into the harbour, is 3 miles long, including its shingle beaches. It is well cultivated, and its hills of sand, clay, and boulders, rise to the height of 152 feet above the sea.

Thrumcap Islet is connected to the south-west extremity of Macnab island by long shingle beaches, inclosing a shallow pond. It is an islet at high water, 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 waves.

The Thrumcap Shoal extends one mile to the southward from the islet, and forms one of the principal dangers in the entrance of the

harbour. At its south-west extremity is 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. b. E. $\frac{1}{2}$ E., clears its south point in 5 fathoms. From the least water (18 feet), the lighthouse on Maugher beach is in one with Ives point, and is distant half a mile.

Shallow water extends also westward and northward from Maugher beach to the distance of 2 cables. In the latter direction it dries at low water, and is called the Horse-shoe, which vessels should beware of in 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 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.

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, without staff or vane, is moored in 8 fathoms, near the western side of this bank, and distant one cable west from the knoll.

DANGERS at ENTRANCE, and on WESTERN SHORE.—Having pointed out the dangers on the eastern side of the ship channel into Halifax harbour, we will now describe the dangers in the entrance, and afterwards those off the western shore.

Rock Head Shoal, the outermost and most dangerous shoal at the entrance, with 20 feet least water on it, lies with the tower of George island in line with Ives point, bearing N. b. W. ; Sambro lighthouse island touching 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.

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.

Portuguese Shoal lies W.S.W. half a mile from the Rock Head. From the least water on it, 5 fathoms, George island is just touching the west side of the lighthouse tower on Maugher beach ; Sambro lighthouse island is concealed behind Chebucto head ; and Camperdown flag-staff bears

W. b. S. A *black* buoy, without staff or vane, on its western side marks the eastern side of the preferable channel for large ships ; it is moored in 6 fathoms, with George island just open to the westward of the lighthouse tower on Maugher beach, bearing N. $\frac{1}{2}$ W. ; Camperdown flag-staff W. b. S. ; and Devil island lighthouse N.E. $\frac{3}{4}$ E.

Leading Marks.—Sambro lighthouse island well open S.E. of White head bearing S.W. $\frac{1}{2}$ W., leads clear to the southward of the Rock Head and Portuguese shoals. The tower on George island touching the east side of the lighthouse tower on Maugher beach, N. $\frac{3}{4}$ W., will lead through between them ; and George island well open to the west of the lighthouse tower 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.—From the 27 feet least water on this shoal, the eastern side of George island appears in line with the steeple of a 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, with 15 feet water on it, lies W. by N. $\frac{1}{2}$ N. two-thirds of a mile from the Neverfail. 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, and bearing E. b. N. ; and the steeple of the chapel at Herring cove, N.W. b. N. George island open east of Sandwich point bearing N. $\frac{1}{2}$ E., leads clear to the eastward of it, and the citadel flagstaff in line with Sandwich point bearing N. 4° 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 20 feet water on it, is on a rocky bank separated from the shore by a very narrow channel. A *white* buoy with staff and vane is moored in 6 fathoms on its eastern side, with the citadel flag-staff, and also the town clock, just open east of Sandwich point, which is distant three-quarters of a mile ; Hartland point open south of the Thrumcap beaches ; and the north side of Herring cove W. b. S.

Middle Ground, carrying 28 feet water, bears W. $\frac{1}{2}$ N. half a mile from the northern point of Macnab cove, and E.N.E. from the steeple of a chapel at Falkland village. The steeple of a chapel at Dartmouth in line with the eastern side of George island, leads to the eastward of it ; and Chebucto head only 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 channel between it and Ives point to half a mile. A *white* buoy, without staff and vane, is moored close to its eastern extremity in $7\frac{1}{2}$ fathoms, with Sandwich point open east of Chebucto head, and with the north point of Macnab island only just open north of the bank of Ives point, and seen over its beach, bearing E. b. 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, with 5 feet least water, and its position is pointed out by a *white* buoy, with staff and vane, moored in 8 fathoms, and bearing from Ives knoll buoy W. b. N. half a mile. Chebucto head 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 out 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.

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, together with the Belleisle buoy, marks the western side of the channel, between them and George island, which is clear and deep, and $1\frac{1}{4}$ cables wide from the depth of 5 fathoms to 5 fathoms.

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*, without staff and vane, is moored on the eastern edge of this shoal in 5 fathoms, and just within it the depth is only 9 feet at low water.

DARTMOUTH.—It only remains to notice the shallow water off Dartmouth, which extends a long cable out from the wharves to the depth of 5 fathoms, and $1\frac{1}{2}$ cables south from the point of clay cliff in Dartmouth cove. There is also a detached rock carrying 23 feet, lying outside the

5 fathoms 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 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 the Wellesley rock, which has 13 feet on it at low 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 18 feet at low water.

TIDES.—The mean of two years' observations, with a self-registering tide gauge at Halifax dockyard, gives as follows, viz. :—It is high water, full and change (the true Establishment) at 7h. 39m.; ordinary springs rise 6 feet; equinoctial springs, 7 feet; neap tides range, 3 feet, and rise to 4 feet above the level of low water springs.

The true Establishment (or time of high water on the day when the sun and moon are on the meridian together for) the year 1852 was 7h. 36m. after the moon's transit. The vulgar establishment (or time of high water on the full and change days) 7h. 49m., being the mean of fifty inferior and superior or a.m. and p.m. transits; but the diurnal inequality, aided probably by winds, caused the vulgar establishment to vary from 8h. 17m. to 7h. 20m. after the moon's transit.

The rise also is greatly influenced by the winds, southerly winds causing high, and northerly winds low tides; and if the winds chance to act in accordance with the diurnal inequality, the rise of the morning and evening tides of the same day may differ to the amount of a foot, or even more in extreme cases. From the above-named 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 tide stream nowhere exceeds 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 the remark, that, "in standing in for the land, you may know on which side of Halifax harbour you are, by a remarkable difference that exists in the colour of the shores, which, if red, denotes that you are to the eastward, and if white, to the westward of the entrance."

The bank off Sambro island, terminating in a point, and 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, until within 2 miles of Chebucto and White heads, where the depth exceeds 30 fathoms, until 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 at times to enter the harbour notwithstanding the fog, but it is seldom prudent for a large sailing vessel to attempt it under such circumstances.

From the Westward at Night.—In approaching Halifax harbour from the westward at night, shape a course to pass not less than 3 miles to the southward of the Sambro island light, steering E.N.E., and in not less than 30 fathoms water, until the light bears North; when, if not more than 6 miles from it, the vessel will have arrived at the southern prolongation of the Sambro bank. Having crossed the bank into deep water, haul up N.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 or less from Chebucto head, which is quite bold. Having done so, keep the light bearing between North and N. by E. as the vessel runs towards it, and all the dangers will be avoided excepting the Neverfail shoal, on which there is not less than $4\frac{1}{2}$ fathoms.

Having arrived abreast the Thrumcap, or brought 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, there are not less than $4\frac{1}{2}$ fathoms), until the light bears S. by E.; then a N. by W. course, keeping the light astern, will lead between the Pleasant shoal and Reed rock white buoys on the one side, and Ives knoll red buoy on the other into the harbour. Having passed Ives knoll, the vessel may proceed in on either side of George island, or may anchor in the stream of Macnab

island 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, which is the wider and preferable channel in a dark night.

Within George island there is nothing in the way, excepting the Dockyard shoal, and the shallow water off Dartmouth.

By Day.—Approaching from the westward in the daytime, pass Sambro lighthouse island at the distance of 3 or 4 miles, and when Sandwich point opens out east of Chebucto head, stand in N. by E. or N.N.E., according to the wind, until the citadel flag-staff opens east of Sandwich point, bearing N. $\frac{1}{2}$ W. Keep the citadel flag-staff only just open, running towards it, and it will lead between the 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 only 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, so as to leave the Pleasant shoal and Reed rock white buoys to the westward, in running towards George island ; or, if it be preferred, the steeple 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, on either side of which the vessel may pass into the harbour, leaving the Belleisle and Leopard buoys to the westward, if she passes between them and the island, and choosing her anchorage off the wharves of the city, or off the dockyard, where the Commissioner's buoy will point out the Dockyard shoal.

From the Eastward by Night.—Approaching from the eastward by night, and being to the westward of the Jedore ledges, run along the land in a depth not less than 30 fathoms, until the *fixed white* light on Sambro island is seen ; then, if it be intended to pass to the southward of the Rock Head and Portuguese shoal, steer for Chebucto head (remembering that, to clear the Rock head, the light on Sambro island must be kept wide open to the south-east of White head, bearing nothing to the southward of S.W. by W. ; and the *fixed red* light on Devil island nothing to the eastward of N.E. by N.), until the light on Maugher beach bears North ; when steer for it, keeping it bearing between North and N. by E., and proceeding as already directed.

By Day steer for Chebucto head until the citadel flagstaff is only just open east of Sandwich point, bearing N. $\frac{1}{2}$ W. ; then steer for it, and proceed as before.

Between the Rock Head and Thrumcap.—If a N.E. wind, or other circumstances, should render the passage preferable between the Rock Head and Thrumcap shoals, proceed as follows :—

By Night.—Having made Sambro island light as before, 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 *red* light on Devil island, steering W. $\frac{1}{2}$ S. (made good), 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.

By Day, pass the lighthouse on Devil island, steering W. $\frac{1}{2}$ S. as before directed, or so as to 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 tower on Maugher beach, bearing N. $\frac{1}{2}$ W., steer for it, until abreast the Thrumcap ; then edge away to the westward, keeping the lighthouse on Devil island in sight south of Macnab island, and over the beaches between it and the Thrumcap (so as to clear the Lighthouse bank) until the steeple of the chapel at Dartmouth comes in one with the side of George island, bearing North. These last named marks kept in one, will lead clear of all dangers into the harbour.

In adverse winds, the Admiralty Chart and the leading marks already given for clearing the dangers, will enable vessels to beat in or out of Halifax harbour without difficulty in clear weather.

COLE HARBOUR is situated at the bottom of the first bay eastward of Halifax harbour, formed between Devil and Shut-in island, which bear E. $\frac{1}{2}$ S. and W. $\frac{1}{2}$ N. from each other, distant 8 miles. The harbour has a dangerous bar of sand, over which only 3 feet can usually be carried at low water, and which is covered with breakers whenever there is any sea running. It is only with fine weather and 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 1 to 2 knots ; but immediately within it the depth diminishes to 4 or 5 feet, and narrow channels between mud flats extend 2 miles in land.

At 2 miles to the eastward of this harbour is the low Egg islet, joined to the shore by a reef and shingle beach, and having shoal water off it 3 cables to the southward, where it terminates in 5 fathoms, nearly one mile out from the shore.

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 one of those peninsulas, composed of drift sand, clay, and boulders, resting on clay slate, and united to the shore by long beaches of stones or shingle, the red cliffs

of which 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.

PORTER LAKE is 3 miles farther to the eastward, its entrance being on the western side of Graham head, which is another and similar 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 a depth of 4 or 5 fathoms, but only one foot at low water in its narrow entrance.

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 a beach of shingle. It forms the western side of the entrance to Three Fathoms harbour.

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. b. N., will clear their south-east point; and the red light 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 within a mile of them, and vessels should not approach nearer than that depth at night, or in foggy weather.

THREE FATHOMS HARBOUR, the entrance to which is close to the eastward of Shut-in island, is quite open to the southward, and affords shelter only to small vessels which can run into the narrow channel to the eastward of Ball islet, one mile within the entrance. The depth is there 3 fathoms, over muddy bottom; 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 from 3 fathoms to 3 fathoms on either side, and the depth is 22 feet, but it decreases to 8 feet a short distance within, as already noticed. It is an excellent fishing station, but is of no use to 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 II.

SOUTH-EAST COAST ; SHUT-IN ISLAND TO POPE HARBOUR.

VARIATION $20\frac{1}{2}^{\circ}$ W. in 1860.

FROM Shut-in island Jedore head bears about East, nearly $10\frac{1}{4}$ miles ; a distance in which the features of the coast are exceedingly remarkable ; every headland being a peninsula, presenting a cliff of red clay to the wasting action of the waves. These peninsulas are joined to the main land by beaches of rolled stones and shingle ; they are more or less wooded, and nowhere exceed the height of 140 feet above the sea.*

Before noticing the inlets we will first describe the dangers off this part of the coast, which were not to be found in the charts in general use previous to the Admiralty survey of 1854.

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

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.

MUSQUIDOBOIT SHOAL is of rock, and 6 cables^a 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. b. S., distant 2 miles.

These shoals, which all lie outside of a line drawn from Shut-in island to Jedore head, are exceedingly dangerous to large ships. The Musquidoboit is frequently shown 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.

* See Admiralty Chart ; Nova Scotia, S.E. Coast, Shut-in Island to Pope Harbour, No. 2,439 ; scale, $m = 1\frac{1}{4}$ inches.

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 of which extend nearly out to it, S.W. b. 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.

CHISSETCOOK INLET is half a mile wide at its entrance between Cape Entry and Story head, the latter bearing from Shut-in island N.E. b. 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 of no use 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.

PERPISAWICK INLET, the next to the eastward, is also 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, and on which there are only 6 feet at low water, a narrow channel, between mud flats uncovered at low water, commences, and is navigable for any vessel that can cross the bar to the head of the inlet, a direct distance of 5 miles. 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.

MUSQUIDOBOIT INLET is much larger than that of Perpisawick, contains many islands, and is navigable for small craft and boats 7 miles inland, to 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 the 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.

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. At low water, when the Duke rocks and the Bull reef on either side of the entrance, and the mud flats on either side of the channel, become visible, is the most favourable time for a stranger to attempt to enter this, and also the other inlets.

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

TIDES.—At the entrance of Chissetcook, Perpissawick, and Musquidoboit inlets it is high water, full and change, at $7\frac{1}{2}$ hours after the moon's transit. The rise in ordinary spring tides is $4\frac{1}{2}$ feet, and in neaps 3 feet. The ordinary rate of the tidal streams in the entrances is from 2 to 3 knots; but heavy rains, or the melting of the 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.

JEDORE HEAD is a remarkable headland, 200 feet high, having at its south-west extremity a small peninsula united to the main land by shingle beaches enclosing a small pond, and from which a reef runs out half a mile to the south-west. On its western side, the cliffs of red clay are 70 feet high, whilst on its south-eastern side Jedore cliff may be seen, also of red clay, and 135 feet in height.

JEDORE HARBOUR is the first harbour for ships to the eastward of Halifax. Its entrance, which is distant $2\frac{1}{4}$ miles to the 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 from the 3 fathoms line, and carries a depth of 26 feet at low water over what is, properly speaking, 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

6½ fathoms. The sandy beach of Marsh point will be seen running out from the western shore at 1½ miles within the entrance. The anchorage is secure within this beach in 7 fathoms over mud, and in a channel 1½ cables wide; but outside of it 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 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. But 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 1½ 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 it is also on the point of land 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 for subsistence principally upon coasting, fishing, and lumbering, 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, 3½ miles within the entrance.

DANGER 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 remarks and description of the dangers, together with the directions that follow, will enable the intelligent seaman to use it as a harbour of refuge in case of necessity.

Jedore and Arnold Rocks.—Approaching the harbour refer to the chart, and observe that Jedore rock, of clay-slate, and 50 feet in height, is

the westernmost of the islands off its mouth. It bears from Jedore head S.E. $\frac{1}{2}$ E., $1\frac{1}{2}$ miles, and the passage is clear between them, excepting some patches of 5 and 6 fathoms on which 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, and dries at low water, and can almost always be seen ; but to insure passing to the westward of it, and also of Arnold shoal, which lies three-quarters of a mile farther to the southward and has 6 fathoms on it, the harbour's mouth must be kept open to the westward of Jedore rock, from the west end of which a reef runs out $1\frac{1}{2}$ cables' lengths. To pass to the southward of Arnold rock, Long island must be kept open to the southward of the Old Man, bearing E. b. N.

Old Man, Mehanny, and Gull rocks.—The Old Man is a small rock 12 feet high, and bears from Jedore rock, in line with Jedore head, S.E. $\frac{1}{2}$ E., two thirds of a mile. It is bold on the eastern side, but a small sunken rock, with only 4 feet water on it, lies a cable's length from it to the S.W. b. S. Jedore head open to the westward of Jedore rock leads to the westward of it, and 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., 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.

TIDES.—It is high water, full and change, at Arnold cove, $2\frac{1}{2}$ miles within the entrance of Jedore harbour, 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. b. E. $\frac{1}{2}$ E. Run in with these marks touching, until Roger island touches East head, bearing S.E. b. E. ; then steer N. b. W. (to clear the Bar shoal), and when between 1 and $1\frac{1}{2}$ cables' lengths 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 it be preferred, pass to the eastward of the Old Man, which is quite bold 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 from the eastward the coasting vessels pass within Egg island, and between the South-West ledges and Long island, steering for the Jedore rock, and leaving outside of them the outermost of the ledges; but this should never be attempted by any who are not well acquainted with the place, for Macdonald and Hopkin rocks lie nearly in the way, and are the more dangerous because they are seldom shown by breakers. Besides, with a wind from the southward or eastward a thick fog often comes in very suddenly, and it would be perilous in the extreme for a stranger to be surprised by it among the ledges.

CLAMB 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 of these islands are the Gull and Mehanny rocks, and to the eastward of them Middle or Sunk rock, Spritsail, 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 Clamb bay, which affords no safe anchorage; and as they are out of the way of shipping, we shall merely refer the seaman to the chart for them, naming only Long island, which being three quarters of a mile in length and bearing from the East head of Jedore harbour S.E. b. E. 4 miles, may be easily distinguished.

EGG ISLAND, bearing S.E. b. E. $1\frac{2}{3}$ miles from the south point of Long island, is the outermost of the islands off this part of the coast. It is of rock, $1\frac{1}{2}$ cables in length and 40 feet in height, and has been strongly recommended as the most eligible site for a lighthouse on this part of the coast.

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 ; and the far more dangerous Pyche rock with only 18 feet water on it, and which bears from Egg island, in line with Jedore rock, E. b. S. $\frac{3}{4}$ S. three quarters of a mile. Also the Grizzle rock, with 4 fathoms on it, and which bears from Egg island, in line with the north-east point of Long island, N.W. $\frac{2}{3}$ N., a little more than half a mile. The passage is clear between Egg island and Flint ledge, with the exception of Passage rock, which has nearly 5 fathoms on it.

Between Flint ledge (which is 10 feet above water) and Long island, are the Tomfool shoals, with 3 fathoms water on them ; and within them Stoddart and Goose ledges, lying off the entrances of Clamb and Little harbours, which admit only small craft and boats ; and for which, together with all in Clamb bay, we again refer the seamen to the chart, in order to avoid extending these remarks to an inconvenient length, and as the safest guide.

The **JEDORE LEDGES** lie farther off shore, and will require a more particular notice, including Macdonald and Hopkin rocks. The Macdonald, which has 14 feet water on it, bears East, $1\frac{1}{2}$ miles from the south point of Long island ; and from it the East head of Jedore is seen over Spritsail rock and the west point of Barren island, bearing N.W. $\frac{1}{2}$ N. Hopkin rock has 11 feet on it, and from it the Old Man, with the breakers on Arnold rock just open to the southward of it, bears West, $1\frac{2}{3}$ miles ; Mehanny rocks, W.N.W. one mile ; the east end of Spritsail rock, North, one mile ; and the South Sister rocks, N.N.E., a long half mile. Both these rocks are very small, with deep water all around them, and break only in heavy weather.

South-West Ledges, so named in reference to Long 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., $1\frac{1}{3}$ 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 ledge, is one of the most dangerous of the ledges, having only a depth of 5 feet over it at low water, and at high tide it is only shown by a breaker

when there is a considerable sea running. From it the south end of Long island bears N. b. E. $\frac{1}{4}$ E., $1\frac{3}{4}$ miles, and Egg island E.N.E. 2 miles.

Bull Shoal, with 3 fathoms water on it, bears W. b. S. $\frac{1}{2}$ S., distant $4\frac{1}{2}$ cables from the Bull rock, and South, $5\frac{3}{4}$ cables from the south-western-most of the South-west ledges. From it the Old Man, Jedore rock, and Jedore head are nearly in one, and bear N.W. $\frac{1}{2}$ W. It is rarely shown by a breaker, and therefore is extremely dangerous.

Brig Rock has only 3 feet on it at low water, when it is usually shown by a breaker, and in low spring tides accompanied by a heavy sea, its top becomes visible between the waves. Egg island bears from it E. b. N. $\frac{1}{3}$ N. $3\frac{3}{4}$ miles ; Jedore rock N.W. $\frac{3}{4}$ N. $3\frac{3}{4}$ miles ; the Old Man (on with the centre of Jedore cliff) N.W. b. N., northerly about 3 miles ; and the westernmost of the South-west ledges, which always shows, N.E. b. E. $\frac{2}{3}$ E. $1\frac{1}{2}$ miles.

Brig Shoal, with 5 fathoms on it, bears S.E. b. S. 4 cables from the Brig rock, and from it the Bull shoal and rock are in line with the south side of Egg island, bearing E. b. N. $\frac{3}{4}$ N. This shoal is dangerous after very heavy gales, when it is said to break at irregular intervals. The Brig rock is most dangerous in fine weather, and at high water, when it is not shown by a breaker. 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 these dangers, and between them and the East Pollock.

The Pollocks are rocky fishing grounds, on which the sea breaks after heavy gales, but on which no less than $5\frac{1}{2}$ fathoms could be found ; neither do the fishermen know of any less. The least water, 33 feet, is on the Inner Pollock, from which Jedore rock, in one with the eastern extremity of Jedore cliff, bears N. b. W. 3 miles ; the Old Man, in one with the west head of Jedore, North, $2\frac{1}{2}$ miles ; and Egg island E. b. N. $5\frac{1}{2}$ miles.

The 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. b. N. $\frac{3}{4}$ N., $5\frac{1}{2}$ miles.

The Middle Pollock, in 7 fathoms, lies nearly midway between the Inner and Outer Pollocks ; and the Eastern Pollock, a very small patch of 7 fathoms, with deep water all around it, 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.

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

FISHING GROUNDS.—Of the dangers just described, the Hopkin and Macdonald rocks, Tom-fool shoal, Pyche and Grizzle rocks, and the Bull and Brig shoals near the rocks of the same name, are discoveries resulting from this survey. So also are 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, in 7 fathoms, bears S. b. W. $\frac{1}{3}$ W., $1\frac{1}{2}$ miles; and the John bank, in 12 fathoms, S. $\frac{1}{2}$ E., $2\frac{1}{2}$ miles.*

BALD ROCK is small, and only 8 feet high, and bears from Egg island W. $\frac{1}{2}$ N., $2\frac{1}{2}$ 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' lengths; and there is a sunken rock, with only 6 feet water on it, bearing from it W. b. 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 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. b. W., $2\frac{1}{2}$ miles, and S. b. E. $2\frac{1}{4}$ miles respectively, and lie directly in the way of vessels running along the coast, and are dangerous to large ships. The sea breaks over them in heavy gales.

OWLS HEAD BAY.—Owls Head, which gives its name to the bay, has a remarkable round mound and cliff at its extremity, and is the most prominent point on the western shore, $1\frac{1}{4}$ miles within the entrance. The bay lies $1\frac{1}{2}$ miles to the eastward of Bald island, 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 nowhere less than half a mile wide. They anchor near the head of the bay, on either side, according to the wind; but to be well sheltered, they must lie in less than 3 fathoms at low water. The statement in former directions, that "shipping lie land-locked in 6 or 7 fathoms" or in 5 fathoms, according to the old charts, being entirely erroneous.†

* The "Pollock Rip" of the old charts, and also the "Foul Ground" said to be doubtful off Shut-in island, were searched for in vain, and doubtless do not exist, since they are unknown to the native fishermen. The rock grazed by *H.M.S. Resistance* was doubtless the Brig rock; and the 8 fathoms, according to *H.M.S. Carnation*, one of the Pollocks.

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

The greatest danger to be avoided in entering this bay is Owl rock, which lies over towards the eastern side, with only 9 feet water on it, 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) and Cable point touching and bearing N.N.W., lead 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 only 10 feet water on it, lying North $1\frac{1}{2}$ cables from Black ledge; and the reef running out $1\frac{3}{4}$ cables from Cuckold 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.

The 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.

SHIP HARBOUR is absurdly called Charles river in the old charts and directions, whilst the channel which leads to it between the islands is termed the harbour, although it is completely open to a southerly wind and swell, and affords no secure anchorage for ships, excepting in Day cove, which is within Passage island, and in the mouth of the shallow passage leading westward into Owls Head bay; and even there a vessel must lie in less than 4 fathoms, to be entirely out of the swell that rolls in after heavy southerly gales. On the eastern side, Deep Cove in Charles island, and the narrow passages leading to Shoal bay, are full of rocks, and therefore too dangerous for general use. Nichol and Charles islands are among the largest on this coast; they are barren, of gneiss, and in no part more than 100 feet above the sea.

The western shore of Ship harbour is well settled, and so also is the eastern shore as far in as Salmon point; the hills of drift sand and clay, which attain an elevation of 226 feet above high water, affording a sufficiency of hay and vegetables for the support of cattle and sheep, although abounding in boulder stones.

The north-eastern shore within Newcombe brook is barren, the hills (of gneiss) 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 chapel stands on the western shore at $1\frac{1}{4}$ miles 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 Western Side of Entrance.—The entrance of Ship harbour, although very narrow, is not difficult with a fair wind, and within it any number of the largest ships may be moored in security; the interior of the harbour, however, is far from being free from shoals.

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, and 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. Bald rock and Egg island in one, bearing W. $\frac{1}{2}$ S., lead a third of a mile to the southward of these dangers. There is also the Middle ground with 24 feet on it, bearing from Flat ledge E.N.E. 6 cables, and the more dangerous N.E. shoal, with only 15 feet water on it, 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.

Dangers on Eastern Side.—The principal dangers on the eastern side of the entrance of Ship harbour, are the ledges off Charles island, the outermost being the Bull rock with only 4 feet on it at low 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 the numerous other rocks above and under water, will be cleared to the southward if Long point (the southern extremity of Nichol island) be kept open to the southward of the Bear rock, bearing not less than half a point to the northward of West. 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. b. W. $\frac{3}{4}$ W.

Bear Rock, which is small, and rises 4 feet above high water, is quite bold on the eastern side, but a reef, in great part 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.

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, bearing from Flat ledge S.S.E. about 2 miles; Broad shoal, from Charles point S. by E. easterly $1\frac{1}{2}$ miles; Silver shoal, from Charles point S.E. $\frac{2}{3}$ S. $3\frac{3}{4}$ miles, and from the south-east point of Outer island nearly South $2\frac{3}{4}$ miles. The least water on the two first is 4 fathoms, and on the last 5 fathoms. The sea breaks occasionally over them after heavy gales.

TIDES.—It is high water, full and change, in Ship harbour at 7h. 54m.; ordinary springs rise $6\frac{1}{4}$ feet, and neaps $4\frac{3}{4}$ 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, the melting of the winter's snow, or strong south-easterly gales, that have driven the water into the harbour, the ebbing stream is said to be much stronger.

DIRECTIONS from the Westward.—In approaching Ship harbour, Ship rock (which gives its name to the harbour) may be 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. It appears, when seen from a distance out at sea, like a vessel under sail; and, together with the western extremities of Bald island and Tucker point, forms the leading marks for running in on either side of the 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 Bald rock and Egg island in one; 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, bearing N. $\frac{2}{3}$ W., steer in with this mark on, and it will lead in 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.

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 farther in, and also on the eastern side of the narrow

channel. Having passed between O'Brien reef and Beach point, of shingle, (where the channel is only 70 fathoms wide, between the 3 fathoms line, and with 11 fathoms water in it), haul in more to the westward, and anchor midway between Salmon point and the western shore, where the depth is 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 will be easily recognized by a round wooded hill, 190 feet high, near its north-east point.

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 to the southward of Bear rock, and bearing to the northward of W. $\frac{1}{2}$ N., until Passage island disappears behind Wolf point, bearing N.W. $\frac{1}{2}$ 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, as already directed.

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, over mud; or farther 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. b. E., and the vessel will only be exposed to the swell rolling round the latter after a south-easterly gale; farther 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 bold close to on that side, and the leading marks will enable her to stand with confidence over towards the ledges off Charles island including the Western islands.

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.

SHOAL BAY, the next inlet eastward of Ship harbour, is sufficiently wide for large ships to beat in and out with ease. The coasting schooners anchor off Shellnut cove in 3 or $3\frac{1}{2}$ fathoms, mud, with the small Mary island in one with Borgle bluff (the north-east extremity of

Charles island), bearing S. b. 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 on it, and which bears N.W. $\frac{3}{4}$ N., $5\frac{1}{2}$ cables from the north point of Charles island, and N.E. b. E. $\frac{2}{3}$ E., 3 cables from Moose island, is the only danger much in the way.

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, and 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, over sand, when Round islet should be in one with Tucker point, bearing 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, over mud, with Hardwood island seen through the Tickle, and bearing W.S.W.; the latter being much the preferable berth.

DIRECTIONS.—In running for this anchorage, the dangers on the western side of the bay, namely, the ledges off Charles point and also Borgle shoal, which has 16 feet water on it, may be avoided by keeping the remarkable and highest red clay cliff, at the head of the bay open of Borgle bluff, bearing nothing to the northward of N.N.W. On the eastern side, round Outer island at the distance of half a mile or more, to avoid the reefs off it, and pass to the westward of Baltee shoal (on which, however, there are not less than 4 fathoms), by bringing Borgle bluff to bear to the northward of N.W. $\frac{1}{2}$ N. as the vessel runs up the bay.

Leave Net shoal, which has 18 feet water on it, to the eastward, by keeping the western extremity of the remarkable and highest red clay cliff already mentioned open to the westward of Mary island, bearing nothing to the westward of N.W. b. 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 bear to the eastward of S.E. b. 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; then keep away to the westward, and anchor on the line of Borgle bluff and Outer island touching, and bearing S.E. $\frac{1}{2}$ E., with the whole of 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.

TANGIER HARBOUR communicates with Shoal bay by a narrow and intricate channel, between the Inner Baltee island and the main land ; and there is also a wider passage between Baltee and Tangier islands, but it is full of rocks.

This harbour is too shallow and too full of rocks for large ships, 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 the fishing and coasting trades, the inhabitants derive a comfortable subsistence.

DIRECTIONS.—In approaching Tangier harbour, Porcupine hill should be kept well open to the westward of Ironbound island, 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 between $1\frac{1}{2}$ and $3\frac{1}{2}$ 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 the Whaleback and Shag ledges (which are 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 at low water, and over a bottom of stiff mud. There are rocks, with only 16 or 17 feet over them at low 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.

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

Supplies.—The shores of Pope harbour, and also of the adjoining Spry harbour and 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 ship building; and supplies of fresh provisions and water may be readily obtained.

Dangers on Western Side of Entrance.—Of the formidable dangers off Pope harbour, the Horse rock, with only 4 feet water on it, lies the farthest out, bearing from Pope rock, in line with the east end of Iron-bound island, S.S.E. $\frac{3}{4}$ E., $1\frac{1}{2}$ miles. 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 in 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.

All these dangers must be left to the westward in running in, and so also must Schooner rock, which has only a fathom water on it, and 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.

Dangers on Eastern Side.—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 a church, which stands more than 100 feet up on the grassy hill in rear of Bollong point, can be seen from distances of many miles out at sea; and that a chapel stands low down near the water on the western side of the point, with a cross upon it, but it had no steeple at the time of the survey in 1855.

TIDES.—It is high water in Pope harbour, full and change, at 7h. 40m.; springs rise $6\frac{1}{2}$ feet; 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 church steeple in line with Gerard head bearing N. by W. $\frac{3}{4}$ W., and it will lead in between Phoenix island and the Pope shoals. As soon as Pope head and Taylor head 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 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 the N.E. by $\overset{N.}{N}$, or for the church steeple, until the 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, over 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.

CHAPTER III.

SOUTH EAST COAST ; POPE HARBOUR TO INDIAN BAY.

VARIATION $21\frac{1}{2}^{\circ}$ W. in 1860.

THE character of the coast remains unchanged as we proceed eastward from Pope harbour. 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 the farther we advance inland, and is everywhere more or less wooded, excepting the clearances around the houses.*

SPRY BAY.—Spry harbour, in the north-west corner of Spry bay, would afford shelter to a large fleet ; the anchorage in 7 or 8 fathoms, mud, being quite secure in all winds.

Tomlees Bay, in the northern part of Spry bay, is open to the southward, and is almost full of rocks, which, together with the islets off its mouth, afford shelter to the fishing schooners near its head, where there is a wharf and store, and several respectable families residing.

Taylor Bay, on the western side of Tomlees head, is also too shallow and full of rocks for large ships ; but it affords secure anchorage for the coasting and fishing vessels, and its shores are thickly inhabited by industrious and respectable families.

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 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 no less than 5 fathoms on this rock, nor could any less be found after repeated trials.

Herring and Maloney Shoals.—The dangers on the western side of Spry bay are the Herring and Maloney shoals. The latter, which has 12 feet water on it, and is of considerable extent, is by far the most in the way.

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

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 south 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, and bearing N. $\frac{1}{2}$ E.

Rocky Patches.—There is a rocky patch with 28 feet on it, lying North a third of a mile from the Neverfail; and another, with 30 feet, 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 appearing just open to the southward of them, and distant nearly half a mile from the Ram rock, with a clear passage between.

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 the Neverfail to a third of a mile.

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. b. S., then alter course to N. b. 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 18 feet water on it, and which bears from the south extremity of that point N.N.E. a quarter of a mile, and is $1\frac{1}{2}$ cables off shore.

This is the best berth, but there is plenty of room to the northward and

westward of it; 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, and between them and Stoney island, and is only $1\frac{1}{2}$ cables wide. The marks that lead through it are, Bald rock and the eastern side of Tomlees head touching, and bearing N. by E. $\frac{1}{2}$ E.

MUSHABOON HARBOUR scarcely deserves the name, being open to S.S.E. winds. It affords indifferent shelter to vessels only on the eastern side near its head, where the 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 island, and the channel, which is to the northward of this island, is not more than 40 fathoms wide, and 12 feet, or at utmost 14 feet, is all that can be carried through at low water, and that with difficulty, instead of the “clear, deep, and bold” passage described in the directions heretofore in use.

DIRECTIONS.—The harbours next east and west of Mushaboon harbour are so superior to it, that vessels can seldom require to enter it; but should any wish to do so, the safest course for a stranger to pursue, will be to run in upon either of the eastern leading marks for Sheet harbour, until the points on the north-east side of Pyche island open out and bear N.W.; the vessel will then be well to the eastward of the Pyche shoals, and 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 rock, between it and the mainland, may then haul over to the eastward towards Botelier island and anchor off it, and to the northward of Gull rock, in 6 fathoms, over mud.

SHEET HARBOUR, which is one of the finest on the coast, 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 is quite safe immediately within it on the western side, with space sufficient for a large fleet.*

* See Admiralty Plan of Sheet Harbour, No. 2,771, scale $m = 3$ inches.

This harbour runs 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, as is also the North-east Arm and eastern shore of the harbour in a less degree ; but the western shore is uninhabited from Mitchell point to Mushaboon harbour. The hills of clay, abounding in boulders, supply the only soil susceptible of cultivation. They rest on clay-slate in nearly vertical strata, as is well displayed in the North-east Arm which has been cut in the course of time by the rapid stream at its head across the nearly east and west direction of the rock.

Supplies.—Water may be obtained in Sheet harbour, either from Watering cove or from Smelt brook on the opposite shore. Fresh provisions to some extent, and fire-wood in abundance, 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 in dark nights, or in the prevalent foggy weather, especially for large vessels ; but by day, and 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.

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, and bearing N.N.E. $\frac{3}{4}$ E. The western passage towards Sheet harbour, between these and the two following dangers, is nowhere less than three quarters of a mile wide from the depth of 5 fathoms to 5 fathoms on either side.

Mushaboon Shoal is a small rocky patch with 18 feet water on it, bearing from Taylor head S.E. $\frac{1}{2}$ E. $1\frac{1}{2}$ miles. Seldom shown by a breaker, it is exceedingly dangerous, and would be more so, were not its position pointed out by the Taylor Goose, which can always be seen, and from which it bears N.E. $\frac{3}{4}$ N. about three quarters of a mile.

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, and bearing N.E. by N. northerly.

Yankee Jack is a small rocky shoal with only 3 feet water on it, bearing from Taylor head S.E. by S. southerly $2\frac{1}{2}$ miles. W. by N. $\frac{3}{4}$ N. from it, and distant a quarter of a mile, there is another rock with 12 feet water on it. These are both exceedingly dangerous at high water, and in a smooth sea, when they are not shown by breakers; but the Taylor Goose, 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.

Logan Rock, with 20 feet water on it, bears S.W. $\frac{1}{4}$ S. about $1\frac{1}{2}$ miles from the Western Shagroost. This dangerous rock, which is seldom shown by a breaker, bears from Yankee Jack E. by S. $\frac{1}{4}$ S., and the passage between them is nearly $1\frac{1}{2}$ miles wide.

Geddes Shoal, with 5 fathoms on it, lies about three quarters of a mile farther out in a S. by E. $\frac{1}{2}$ E. direction from the Logan. From it the eastern extremity of the Western Shagroost is in line with Fishery point and bears N.N.E. $\frac{1}{8}$ 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.

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

The Western Shagroost being 6 feet above high water, can always be seen. A reef extends S.W. $\frac{1}{2}$ W. two thirds of a mile from it, dry in part and with only 4 feet at low water near its south-west extremity. To the northward of it lies, besides several rocky 4 fathom patches, the dangerous Babin shoal, the least water on which, 16 feet, 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.

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 on it, 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, and also 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 the Macdonald shoals and a shoal with 28 feet on it at low water, from which Sheet rock, bearing N. by E. $\frac{1}{2}$ E., appears touching the western point of Danberry island, and is distant nearly a mile. There is also another rocky shoal, with 30 feet on it at low water, three quarters of a mile W. by N. from the Babin shoal, and which bears from Guilford island S.S.E. $\frac{1}{3}$ 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.

TIDES.—It is high water, full and change, in Watering cove, Sheet harbour, at 8h. 6m. ; ordinary springs rise $6\frac{3}{4}$ feet, and neaps $4\frac{1}{2}$ feet : but strong winds cause great irregularities in the rise especially. 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 anywhere 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, and the rise is there about 2 feet less.

DIRECTIONS for Western 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 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. $\frac{1}{3}$ N., and run in with these marks on until the points on the northern side of Pyche island come in one, bearing N.W., 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 marks only just clear.

Having passed Guilford island and its reefs, 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 point 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 sunken rock in 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

it, and anchor any where within it, not less than $1\frac{1}{2}$ cables off shore, and in $6\frac{3}{4}$ or 7 fathoms, over mud.

Passage Eastward of Taylor Goose.—If it be desired to pass to the eastward of the Taylor Goose and Mushaboon shoals, 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., and those marks will lead in clear of all danger to Sheet rock, which pass to the westward of, and proceed as before directed.

Middle Passage.—To pass between Yankee Jack and the 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 sufficiently to clear the 28 feet shoal (page 46), which these marks lead over, and passing to the westward of the Sheet rock to the anchorage as before directed.

Eastern Passage.—To pass to the eastward of the Geddes shoal and the Logan rock, and between them and the reef off the Western Shagroost ; run in with Western island only just open to the westward of the Sheet rock, bearing N. $\frac{1}{2}$ W., and those marks will lead close to the Babin and Macdonald shoals, and up to the Sheet rock ; but as the soundings are more than usually irregular by this route, it will be preferable, after having passed the Western Shagroost, and approached Babin shoal, to haul over towards Guilford island on a N.W. line of bearing, and passing to the westward of the Sheet rock proceed as before.

If the 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. Therefore keep Sheet rock open to the westward of Danberry island, until past the rock ; then sheer over to the eastward, so as to bring the western point of Danberry island and of the 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, sheer 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.

Anchorage.—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 Watt point, and anchor off Watering cove on the western shore in 7 fathoms, over a mud bottom, and 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 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.*

EASTERN SHAGROOST lies $1\frac{1}{2}$ miles to the eastward of the Western Shagroost (described in page 45), and like it is also a low rocky ledge barely 4 feet above high water, with breaking rocky shoals on its north and west sides, but bold-to on its south-west side, and with deep water between it and Pumpkin island.

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.

BEAVER ISLAND, 40 feet high, and bearing E. $\frac{1}{4}$ N. about $4\frac{1}{2}$ miles from the Western Shagroost, 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.†

BEAVER ISLAND LIGHT.—A house‡, 35 feet high, stands on the east end of Beaver island, and exhibits, at 70 feet above the level of the sea at high water, a *white* light which *revolves every two minutes*, and is visible in clear weather from a distance of 12 miles. The house, on the roof of which the lantern is placed, is painted white, with *two black* balls to the S.S.W.

BEAVER HARBOUR is formed at the head of a straight deep channel, half a mile wide, passing 2 cables to the eastward of Beaver island. From the position of this harbour, although open to the S.S.E., it affords an excellent refuge.

Supplies.—There are about 200 inhabitants along the shores of Beaver harbour, residing principally at the cove on its west side, and at Salmon

* The directions from Sheet Harbour to Indian Bay are by Commander J. Orlebar, R.N., 1857.

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

‡ See View on Chart.

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 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.

The Beaver Harbour of the Fisherman 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 half way across its entrance, within which vessels 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.

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 on it, 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 on it, 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.

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.

Harbour Rock, of bare slate, 1. 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.

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.

Middle Shoal on the eastern side of the channel into Beaver harbour, has 15 feet water on it, and with the two neighbouring patches of 24 feet lying to the southward and westward, may be avoided by not opening Harbour rock to the westward of Rocky island.

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 north of the Brother islands, until the Harbour rock comes in line with the west end of Rocky island, bearing N.N.W.

William Shoal, with 18 feet water on it and only breaking occasionally, is the principal danger to be avoided in approaching Beaver island light, 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.

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 ; neaps range 2 feet.

DIRECTIONS.—In approaching Beaver harbour from the southward by day, when about 5 or 6 miles from Beaver island bring the lighthouse on it 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 Hardwood 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 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

4½ 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 the Harbour rock and the 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.

BAY of ISLANDS is the name commonly given to the coast between Beaver and Mary-Joseph 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 in them to admit schooners drawing 12 feet water, they are not easily described, and their safe navigation requires a more intimate local knowledge than can be acquired from the best chart. Coasters, however, use them occasionally to avoid the heavy swell in the offing; and whilst a few know the channels sufficiently well to run the whole distance from Sheet harbour to Liscomb harbour inside the islands; others again, are content, here and there, to venture within some few of the numerous islands overlying this part of the coast. The Admiralty chart, on which it is believed every rock and shoal is now correctly placed, will be useful to the coasters, and enable them, with their local knowledge to find their way in 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.

NEWTONQUODDY, the next inlet to the eastward of Beaver harbour will admit schooners of small tonnage, but it is not much frequented on account of the numerous rocky shoals and islands overlying its entrance.

BIRD ISLANDS, low and naked of trees, lie E.N.E. $3\frac{1}{4}$ miles from Beaver island lighthouse; and S.E. by S. 2 miles from them lie the Bassoon reefs; whilst other rocky shoals extend west towards the Marmot rock, noticed in page 50, line 5.

BASSOON REEFS, bearing East, distant 4 miles from Beaver island lighthouse, are composed of large rounded stones, and uncover partly 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.

HALIBUT ISLANDS, lying East 3 miles from the Bird islands, are situated on the eastern side of a channel of deep water, leading N.N.W. $\frac{1}{2}$ W. into an indifferent anchorage under the shelter of Brokenback island. They also mark the entrance into Nicomtau bay.

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

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

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

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

side of Moser river bearing N. $\frac{3}{4}$ 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, so as 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.

WHITE ISLANDS, which derive their name from cliffs of slate of highly inclined strata, showing white to seaward, are 80 feet high at their eastern extreme, and are wooded. 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 Nicomtau bay from Nicumcigum inlets.

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

Variation.—The variation of the compass at the White islands, July 1857, was $21^{\circ} 50'$ West. It is increasing at the rate of $7'$ a year.

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 the Halibut islands kept open of the west end 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 nearly on the line of the highest part of Tuffin island seen over the east point of White island, bearing N.W. by N., and is distant rather more than 2 miles from that point. By keeping the whole of Tuffin island open east of White island, it will lead to the eastward; and to the westward when it is all shut in behind White island.

DIRECTIONS.—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 cross bearings, or a couple of sextant angles between three known objects, laid off from time to time upon the chart.

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, with 12 feet water on it, lies S.W. 6 cables' lengths from the Gull ledge.

SEAL LEDGES lie N.E. by E. 2 miles from the Gull ledge, and extend $1\frac{1}{3}$ miles from south-east point of Barren island. Between these ledges and the 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. East of it are some patches of shoal water, whilst on its west 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 half a mile to the eastward of the islet, by a rock with only 10 feet water on it, lying on the north border of the Pan shoal; and to clear which, Turner point on Hawbolt island should be kept touching Smith point, and bearing W.N.W.

NICUMCIGUM INLET, the next opening to the eastward of Nicomtau bay, 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 vicinity of the excellent harbour of Mary-Joseph makes it unnecessary to attempt a description of the crooked channel leading thereto.

MARY-JOSEPH HARBOUR is secure and well sheltered, and has the advantage of entrances east and west. The inhabitants find the drift hills susceptible of cultivation, and generally keep cattle and follow fishing. A church stands on high ground in Smith cove, and may be seen from

the sea. The entrances are narrow, and should not be attempted without a pilot by any vessel drawing more than 9 feet.

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.

DIRECTIONS for western entrance to MARY-JOSEPH HARBOUR.

—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, and 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, be careful that the highest part of Tuffin island, bearing N.E. by E., shows midway between Halibut island and the low Camp island, west of the White islands, when steer in on that mark, until the southern Halibut island bears West, then bear up E.N.E. ; and when as Tuffin island is approached, Broken-back island opens north of the middle Halibut island, W. by N. $\frac{1}{2}$ N., alter course and steer E. by S. $\frac{1}{2}$ S. with that mark on astern.

Running 3 miles on this course will bring the Hubbub rocks (dry at half tide and always showing) in line with east end of the bushes on little White island ; then steer North with this mark astern, until the southwest 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 westward. Having cleared this island haul in N. by E., and, rounding Turner point, secure anchorage may be had half way between Turner and Lobster points in 7 fathoms.

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

To pass between the East and West Black ledges, observe that these ledges are bold to and separated by a channel half a mile wide. With a leading wind bring the low and wooded west end of Goose island, mid-way between the two ledges bearing 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 the Hubbub rocks, enter the channel before described.

If wishing to run between the White islands and Little White island, bring the west end of Little White island 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 ; when alter course to N.N.W., and having passed Little White island steer N.N.E., which will lead to the westward of the Hubbub rocks, and into the channel before described.

Another channel between Little White island and the West Black ledge is too narrow and intricate to be described.

DIRECTIONS for Eastern Entrance.—Being off the Gull ledge with a leading wind, bring the Gravel point of Liscomb island open of Liscomb point, bearing N.N.E. $\frac{1}{2}$ E., the mark for leading to the eastward of the Seal ledges; run in upon this course until the high barn on Hawbolt island shows open north of Barren island, when steer with the church steeple bearing N. W., and immediately Turner point, on Hawbolt island, touches Smith point, (page 54, l. 27), alter course to W.N.W. and with a careful attention to that mark ahead, proceed until the 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 from Smith point; and then W.N.W. along the north side of the channel so as to avoid Turner shoal, 9 feet rock on the left and the Middle ground on the right, a muddy flat with eelgrass, and which is cleared by keeping the Thrumcap just in sight over Smith point. Good and convenient anchorage can be had in 7 fathoms, mud, as before mentioned, about half way between Lobster and Turner points.

LISCOMB HARBOUR.—The entrance to this excellent harbour, which is capacious and landlocked and tolerably smooth at all times, is 5 miles to the eastward of Mary-Joseph, and is formed between Liscomb island and Liscomb point.* At $1\frac{1}{4}$ miles within the entrance it trends in a W.N.W. direction for 4 miles ; but at the distance of 2 miles, the north side of the channel is much narrowed by rocky shoals, to clear which, Slate cliff on the south shore should be opened out clear of the point farther east, bearing S.E. by E $\frac{1}{2}$ E., 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. There is a large cove on the north side of the harbour, named Spanish-ship bay, but it is too much encumbered by rocks to be described.

* See Admiralty Plan of Liscomb Harbour, No. 2,770; Scale, $m=4$ inches.

Supplies.—Good water can be obtained at a little brook in Liscomb harbour ; and small supplies of fresh provisions and firewood may be purchased at moderate prices.

About thirty-five families reside along the shores of the harbours of Liscomb, Little Liscomb and Jegogan ; they are not numerous, but the establishment of a day and Sunday school has been productive of great good amongst them, and the people generally are intelligent and religious. 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.—The approach to Liscomb harbour lying east of the Black Prince and other shoals, it is necessary that they should now be described.*

Hawbolt Rock, the most outlying danger, has 27 feet water on it, and lies nearly South $\frac{1}{2}$ miles from Liscomb point and $1\frac{1}{2}$ miles from the Black Prince. 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 the Little White island, the wooded hummock of which, 50 feet high, should bear W. $\frac{1}{2}$ N., leads to the southward.

Black Prince Shoal, which uncovers at half-tide, and generally breaks heavily, lies also South from Liscomb point, distant 2 miles.

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

Leading Marks.—The church steeple in Liscomb harbour, in line with Smoke point bearing 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 ; also a high barn on Hawbolt island touching the Thrumcap and bearing W. b. N. $\frac{1}{2}$ N., will clear all these shoals on the north, and is a useful mark for vessels bound to Mary-Joseph harbour.

The following are the dangers on the east side of the channel leading to Liscomb harbour :—

Saddle Rock, with 5 fathoms water on it, 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 by sighting the church steeple in Liscomb harbour west of Cranberry head, will lead to the westward.

* See Admiralty Chart :—Liscomb Island to Green Island, No. 2,519 ; scale, $m=1\frac{1}{4}$ inches.

The 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 point well open of Cranberry head, leads to the westward ; and the Black Prince in line with south point of Barren island, leads to the southward.

Liscomb Island, 120 feet high, and wooded, lies on the east side of entrance to Liscomb harbour. The Crook shoals extend S.E. nearly one mile from Crook point, the east extreme of the island ; Wedge islet bearing N.E. $\frac{3}{4}$ E., and touching Wine head, (a high clay bank east of St. Mary river), leads about half a mile to the south-east of the shoals.

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

Liscomb Shoal extends S.E. by E. half a mile from Liscomb point, the west point of the entrance to Liscomb harbour, and the least water on it is 16 feet. The church steeple, N. by W., will also clear this shoal.

TIDES.—It is high water, full and change, in Liscomb harbour at 8h. Om. ; 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 point in line touching Pye point N.W. by N. ; run in upon this mark till abreast the Mackarel shoal, then steer N. by W. for the steeple, and after passing Smoke point, which is bold-to, alter course to N.W. by W. $\frac{1}{2}$ W., and anchor in $4\frac{3}{4}$ fathoms, mud, when the entrance to Spanish-ship bay bears N.N.E.

Approaching the harbour from the westward, bring the church steeple well open of Liscomb point and stand in, so as to bring it in line with the low trees of Hemloe island, bearing N. by W. ; then steer upon this mark, and it will lead in clear of all danger, until having passed Smoke point, when the course must be altered and an anchorage obtained as before.

With an off-shore wind, in standing to the westward, take care to tack immediately the 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.

LITTLE LISCOMB HARBOUR, the entrance to which lies to the north-east of Liscomb island, has fair anchorage, but is only adapted for small craft. It may be entered safely by bringing Redman head (a steep wooded bluff, 100 feet high) touching the north-east side of Hemloe island N.W. $\frac{3}{4}$ N.; this mark will lead clear in from sea, passing three-quarters of a mile to the eastward of the Channel rock, up to Redman head, which being bold-to can be passed at the distance of a cable's length, and anchorage obtained to the north-west of the head, in 3 fathoms, mud.

If a vessel has to work into this harbour, the following marks must be attended to:—Gravel point, the north extreme of Liscomb island, touching the south-west extreme of Hemloe island, clears all shoal water off the north-east side of Liscomb island; and the south sides of Hog and Helmoe islands in one lead to the southward of the shoal south of Shag rock. Farther in it will require great caution to avoid the dangerous reef off Hog island, and for which there is no better mark than, the east end of a slate cliff up the harbour in line with the north-east point of Hemloe island, bearing N. by W. $\frac{1}{2}$ W.

JEGOGAN HARBOUR.—This deep inlet, lying immediately to the eastward of Little Liscomb, is not much frequented, and has but few settlers. Vessels drawing 18 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 the 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, a low dark rock, only 5 feet above high water, lies E.S.E. distant 6 cables from Redman head. There are several dangers off its west side, leaving a channel only 2 cables wide near Redman head.

Wedge Islet has a *beacon* erected on it, 100 feet above high water, which can be seen at the distance of 10 miles, and forms a good mark for the neighbouring harbours, as the coast is so monotonous in character and so uniformly low, that its features at a short distance are not easily made out; the islet is of clay and towards the mainland rises abruptly to the height of 50 feet.

This islet is surrounded with 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 E. $\frac{1}{2}$ E.

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.

DIRECTIONS.—A vessel intending to enter Jegogan harbour by the middle passage, between Tobacco island and the Shag ledge, should bring the north-east side of Hemloe island to touch Redman head, (the mark for entering Little Liscomb harbour,) bearing N.W. $\frac{3}{4}$ 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 the Shag ledge, and continuing the same course fair anchorage and 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 little bare gravel islet, united at low water to Tobacco island, just touching the wooded part of that island.

ST. MARY RIVER, one of the largest rivers in Nova Scotia, falls into the bay between Barachois point and Cape St. Mary, about $1\frac{1}{2}$ miles North of Wedge islet. Its entrance is obstructed by two bars of sand, over which a depth of about 10 feet may be carried at ordinary low water springs. The outer bar extends from Wharf point to Black head ; the inner bar a little below Shag reef.

For the first half mile above the bars the channel of the river is crooked and dangerous, running close to Shag reef and the east bank of the river. Nearly in the centre of the channel a little below the small low Horton islet, there is a rock with only 6 feet water on it, and at a short distance above it another 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, a 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 to the river at any time of tide, 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.—An excellent branch pilot lives in McDiarmid cove on the eastern side of the entrance to St. Mary river, and he is always ready to board 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 that is generally first 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; and so soon as the wharf and red store, a mile above the bar, are in one bearing N.N.W., steer in on that course.

As the river is approached, a remarkable tree on a distant hill will be seen over the end of the wharf; this mark would, at the time of the survey of this river in 1856, lead over the bars in the deepest water. Nevertheless to enter the river safely, a pilot is necessary, as the bars shift, and the channel is not only crooked, but the cross set of the tides upon Shag reef and Bridget shoal, makes local knowledge of the first importance.

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 to be recommended.

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.

WALTER ISLAND, lying one mile to the eastward of Cape St. Mary, is low and wooded, and a beach of sand and stones nearly unites it to the mainland at low water; 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.

WALTER SHOAL lies South three-quarters of a mile from Walter island, and the least water on it is 20 feet. 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 East half a mile from Wine head on the western side of the entrance to Indian bay. A vessel will pass close to the eastward of it by keeping Rude point in line with Fleming cliff, bearing N. by W. $\frac{1}{2}$ W.

INDIAN BAY is bounded on the east by Hollins head, and on the west by Walter island, but it is entirely open to the S.S.E., and only affords unsafe anchorage and 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 pond, from which it is only separated by a narrow beach of sand. The hills forming the shores of the pond and bay afford good soil, and are carefully cultivated by the people, whose church and school-house and neat dwellings attest their intelligence, and mark their care for the moral and religious 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 next chapter.

CHAPTER IV.

SOUTH-EAST COAST; INDIAN BAY TO CAPE CANSO.

VARIATION $20\frac{1}{2}^{\circ}$ to $22\frac{1}{2}^{\circ}$ W. in 1860.

The COAST, from Indian bay to Torbay, a distance of about 20 miles, is formed of metamorphic rocks, principally clay and micaceous slates in nearly vertical strata. On these rest the unstratified drift clay and boulders, of which the reddish cliffs are formed, that 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.

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

The Soundings are deep and irregular everywhere along this part of the coast, and vessels running along it, or approaching it in dark nights, or in 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, although not constantly, a current setting along the coast to the westward, and sometimes exceeding the rate of one knot per hour; hence vessels seldom experience any difficulty in beating 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.

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

HOLLINS HEAD, the south-west point of Hollins bay, bearing from the beacon on Wedge island, E. b. N. $6\frac{3}{4}$ miles, is a small and remarkable peninsula, united to the main land by a long beach of stones and shingle, and 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.

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 the 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. b. 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.

Castor Rock, of dark slate and 4 feet in height above the ordinary tides, 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, the westward, and the southward. The outermost of these shoals, with $3\frac{1}{2}$ 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.

Pollux Rock, lying S.S.W. $2\frac{1}{4}$ miles from Cape Mocodome, is a similar rock to the Castor, from which it bears S.E. by E. rather more than 2 miles. A reef extends from it 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, inclosing a pond which forms its south-east extremity.

The passage between this reef and the nearest of the Castor shoals is more than a mile wide, and Harbour island, touching Cape Mocodome, bearing 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.

Bingly and Taylor Shoals.—The Bingly shoal, with 15 feet water on it, lies East half a mile from the Pollux. The Taylor shoal has 18 feet 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 last-named dangers, and also the Castor shoals, being shown by breakers only when there is a heavy sea running, are among the most formidable dangers off this part of the coast.

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.

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. Or, if it be preferred, on entering haul to the westward round Bickerton island, at a distance of between one and 2 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.

FISHERMAN HARBOUR, $2\frac{1}{4}$ miles to the eastward of Port Bickerton, 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.

Rose Shoal, the most formidable of the dangers off Fisherman harbour, is a rocky ledge two-thirds of a mile long, and on which the least water is 6 feet; its outer or southern extremity bears from Cape Mocodome S.S.E. $\frac{1}{2}$ E., distant $1\frac{1}{2}$ miles, and from the Pollux N.E. by E. $\frac{3}{4}$ E., nearly 2 miles. The marks for clearing its south extremity are, Fleck point, on the northern side of Hollins bay, just open of Bickerton island, bearing N.W. by W.; and for clearing its northern extremity, Barachois head and the Cape rock in one, W.N.W.

The Bull is a small rock, which dries at low water, and bears S.E. distant $3\frac{1}{2}$ cables from Cape Mocodome; off which there are other rocks in 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 shown by breakers. The Cape rock, 4 feet high, lies S.W. by S. distant one cable from the cape.

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 high above ordinary spring tides, and in several other parts it dries, or nearly so, at low water. From its southern extremity, which is steep-to, and has only 2 feet on it at low 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 (in Country harbour) open of Country Harbour head, bearing N. by W. $\frac{3}{4}$ W. clear its eastern side.

DIRECTIONS.—To enter Fisherman harbour from the southward with a fair wind, and being within the Pollux, observe that the marks that just clear the rocks off Cape Mocodome are, Holly point (on the western side the entrance of Isaac harbour) in one with Country Harbour head, bearing N. by E. $\frac{1}{2}$ E.; therefore, to pass between the 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 the small 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 out 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.

COUNTRY HARBOUR is the finest of any on this coast east of Halifax. It may be easily recognised by the three islands on the eastern side of the channel leading to it and Isaac harbour, and 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 harbour does not commence

until we arrive at Harbour point, 3 miles farther to the N.N.W., where its entrance is 3 cables wide, and carries a depth of 11 fathoms. From thence the harbour continues from a third to half a mile in width, with a depth of from 10 to $5\frac{1}{2}$ fathoms, and of easy navigation to Stewart cove on the eastern shore, off which the anchorage is land-locked and excellent, in from $4\frac{1}{2}$ to 7 fathoms, mud, and 4 miles in from the entrance. In this distance, the only danger to be avoided is a rock, with 3 feet on it at low water, lying 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 on either side, the summits of the ridges being generally only a short distance back from the water, and increasing in elevation above the sea, as we proceed inland, from 200 feet near the entrance to 470 feet near its head. The population, thinly scattered along the shores, have hitherto been principally occupied in lumbering and the fisheries, and have made little progress in agriculture, but the drift clay, which almost everywhere covers deeply the clayslate rock, is doubtless susceptible of a remunerative cultivation.

On the western shore, at two thirds of a mile within the entrance, is Green point, of shingle, inclosing 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 harbour.

COUNTRY HARBOUR LEDGES.—The westernmost of these dangers, commonly called the Country Harbour ledges, off Fisherman harbour, and also those to the south-east of the Pollux, have been already described in page 64.

The 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. $3\frac{3}{8}$ miles) is a rock which covers at half tide, and lies on a rocky shoal about 4 cables long from N.W. to S.E., and around which the soundings are too deep and irregular to afford much warning by the lead. When it is shown by breakers, as it always is, excepting when a high tide accompanies an unusually smooth sea, there is no difficulty in passing on either side of it; the nearest danger to the westward being Taylor shoal, which

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

bears from it W. by N. $\frac{1}{4}$ N. $1\frac{1}{2}$ 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 the Tomcod shoals is 2 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.; and these marks, be it observed, lead also close inside or northward of the Taylor shoal. The name "S.W. breaker," applied to the Middle ledge in the old charts, is unknown to the native fisherman.

The Shoal Place of the fisherman is the farthest out of the easternmost Country Harbour ledges, and bears from Green island S. $\frac{1}{4}$ E. $2\frac{1}{4}$ miles. It is small and rocky, with 5 fathoms least water, and is shown by breakers only when there is a heavy sea running.

Tomcod Rock covers at high water, and lies $1\frac{1}{4}$ miles to the N.W. by N. of the Shoal place. When shown by breakers, as it usually is, it serves to warn vessels of their approach to the Tomcod shoals, which are small rocky patches lying off it in various directions, as will be seen in the chart.

The northernmost of these patches, the Gull Nest of the fisherman, carrying 18 feet water, bears from the 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 14, 20, and 24 feet 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.

TIDES.—It is high water, full and change, at one mile from the head of Country harbour, at 8h. 45m.; springs rise $6\frac{1}{2}$ feet, and neaps $4\frac{1}{2}$ feet; extraordinary tides rise 7 feet. The streams are weak, seldom exceeding half a knot.

DIRECTIONS.—With a fair wind for Country harbour, having passed the 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.,* or so as to keep the last-named marks on, until near the mouth of the harbour, which enter in mid-channel, and anchor anywhere within it, there being no detached dangers in the way, excepting the rock already mentioned as 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 muscle 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.

ISAAC HARBOUR, is separated from Country harbour by Ragged point, opposite to 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 inclosing 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 in it, but only 2 cables wide, between it and the Ragged rocks, which cover at high water, and which lie a quarter of a mile within Ragged point, and one cable off shore.

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 of the size of a frigate 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. The harbour runs in from it 3 miles farther north, with a breadth nowhere exceeding 4 cables, and there is a rapid stream and saw-mill at its head. The shores, on either side, rise gradually to the summits of the hills of drift clay and boulders, from 200 to 300 feet high, and are cultivated to some extent by a highly respectable, industrious, and religious community, whose principal occupations appeared to be coasting and the fisheries.

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

* See view on Chart.

TIDES.—It is high water, full and change, in Isaac harbour, at 7h. 40m.; springs rise $6\frac{3}{4}$ feet, and neaps $4\frac{3}{4}$ feet, but they are subject to great irregularities from the effect of the winds, as was also observed at Country harbour.

DIRECTIONS.—Entering Isaac harbour with fair wind, refer to the chart, and pass the Ragged rocks, supposed to be uncovered, at the distance of one cable, steering N.E. until within Webb reef; then steer so as to keep at the same distance from the western shore until near Holly point, from which haul over to the eastward, to avoid the shallow water which commences immediately within the point, and extends nearly halfway over from the western towards the eastern shore. Having passed a dry and small stony islet or reef, which will be observed on the western side of the harbour, anchor in the middle, not more than half a mile within Holly point, and in from $3\frac{1}{2}$ to $4\frac{1}{2}$ fathoms, mud; the smaller depth being all that can be assured, as the vessel swings to her anchor. Farther in there is a shoal with 9 feet least water on it.

HARBOUR, GOOSE, and GREEN ISLANDS, which lie on the eastern side of the channel leading to the two last-described harbours, are formed of the 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.

ISLAND HARBOUR is a bay between the two long shingle points on the north side of Harbour island. Directly abreast it, and distant a third of a mile, is Drum head, a small island, close to and joined to the mainland 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, although open to the E.S.E., is considered safe during the summer months, in 7 fathoms, mud bottom. It is, however, only fit for vessels not larger than a sloop of war, the deep water being confined to a narrow and crooked channel.

Pilots.—Several families reside on Harbour island during the fishing season, as also on the opposite mainland, from which 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 $4\frac{1}{2}$ 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.—In approaching Island harbour from the westward refer to the chart, and 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 away to the eastward, and bring Burke point (the shingle north-east point of Harbour island) in one with the remarkable hill on Goose island, bearing S.E. by S.; then run in upon these last-named marks, and anchor just outside of the line joining the two shingle points of the harbour, in 7 fathoms, muddy bottom. It is best to moor in so narrow a channel, laying one anchor to the southward in the shallow water within the bay.

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., which steer towards, and anchor as before directed.

From the Southward, having a southerly or easterly wind, enter the channel between Harbour and Goose islands, steering N.N.E., and keeping two-thirds over from the former towards the latter, to avoid the reef off Saladin point and the Middle Ground; and having passed between the latter and the reef always visible off Goose island, alter course to North until Red head and Drum head 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.

From the Eastward, the coasting vessels usually take the inner route, especially late in the autumn, when northerly and N.W. winds prevail, passing between the 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, in running towards it, until abreast Beach point (Goose island); then bring Burke point to bear W. by N., and remembering the mark for clearing Burke shoal, steer so as to pass the point to the anchorage as before.

The dangers in the offing, or 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 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.

SEAL COVE, opposite Goose island, is dry at low-water, excepting narrow channels for boats.

CODDLE HARBOUR has secure anchorage for small vessels, in from 12 to 14 feet at low water, and within Coddle island. The principal entrance is to the eastward of the island, but the dangers are too numerous there, and all the way to New Harbour head, as well as within the harbour, for any written directions to avail.*

DANGERS EAST of GOOSE ISLAND.—The dangers in the first 4 miles eastward of Goose and Green islands forbid any approach to that part of the coast in dark nights, or in the prevailing fogs, nearer than the depth of 30 fathoms.

Dutch Shoal, carrying 8 feet water, bears from Sheep-pen point, the east extremity of Goose island, E.N.E. nearly one mile. It is separated from the shallow water, that extends to the shore of that island, by a very narrow channel; and its northern edge is just cleared by the line of Burke and Beach points in one, bearing W.N.W., keeping in mind that the point of the western beach of Island harbour must at the same time be well in sight to the northward of them both.

Ragged ledge extends nearly $1\frac{1}{2}$ miles to the E.S.E. from Sheep-pen point, and from its outer extremity, which is seldom entirely covered, all the way in to the island, it dries partly 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 strewed with rocky patches with 10, 12, and 18 feet water on them, and which break heavily in bad weather.

Frying Pan, a shingle reef 4 feet above high water, lies 2 cables from the north side of Green island.

Pan rock, with 3 feet on it at low water, lies a third of a mile to the westward of the Frying Pan.

White rock, with 10 feet water, lies East one mile from Green island; and there is a rock, with 28 feet water on it, a quarter of a mile farther off

* See Admiralty Chart :—Nova Scotia, S.E. Coast, Green Island to Cape Canso, No. 2,517; scale, $m = 1\frac{1}{4}$ inches.

on the same bearing. There are other patches nearer the island, the southernmost of which, with 14 feet water, bears from its south extremity E. $\frac{1}{2}$ S. two-thirds of a mile.

Split rock, small, and awash at low-water springs, lies near the southern end of a long rocky shoal, which, together with two detached patches in 4 and 5 fathoms water, extends a full mile to the N.N.W. of the rock. The marks for clearing Ditch shoal, namely, Burke and Beach points in one, bearing W.N.W. lead also to the northward of these patches; but those points are often not easily distinguished.

From the Split rock, which is dangerous at high water and with a smooth sea, Darby point appears just open to the northward of Beach point, 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 that dries of the Brandy ledge 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.

Brandy ledge is a rocky shoal nearly a mile long, parallel to the coast, and nearly half a mile wide. From the part near the middle of it, and which covers only at high water, New Harbour head bears N. by E. $1\frac{2}{3}$ miles.

NEW HARBOUR COVE 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 shoal 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 in the river flows through a shallow and 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 which it flows.

LITTLE HARBOUR lies 3 miles to the eastward of New Harbour cove, and only admits boats at high water.

TUFFIN BANK and NET ROCK.—The Tuffin bank, with 6 fathoms water, and on which the sea is said to break occasionally after very heavy gales, and the Net rock, with 20 feet water, lie respectively S.S.W. $2\frac{1}{4}$ miles, and S.S.E. half a mile from the entrance of Little harbour.

SHAG ROCK rises 2 feet high above the ordinary high water, and lies S.E. by E. distant one mile from Little harbour. Between it and the shore, from which it is distant half a mile, there are rocks dry at half tide, and the shallow water extends from it 4 cables to the S.E.

TORBAY is of great extent, nearly 9 miles long and 4 miles deep. At its eastern end a very narrow isthmus, or "haul-over" for boats,

separates it from White Haven. 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.

There is a settlement of Acadians at Molasses harbour, and a chapel, a large wooden building without a steeple and 110 feet above the sea, will be seen on the western side of the entrance. There are settlements also at Cole and Charlo harbours, and at 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 to 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 low 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, and in some parts carrying 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, which, with 12 feet water on it, lies off the north side of the peninsula, from 3 to 6 cables' lengths from the shore, and 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 of TORBAY.—Before describing the dangers off the entrance of Torbay, observe that Berry head is not a bold headland, as erroneously stated in the old directions, but the low rocky 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. The shallow water extends off this peninsula a third of a mile to the southward, but the greater danger on the western side of the entrance is the Gull rock, with 15 feet water on it, from which Berry head bears N.E. $\frac{3}{4}$ E. nearly one mile, and the Shag rock West $1\frac{1}{4}$ miles; the Shag in one with New Harbour head, bearing W. $\frac{3}{4}$ N., leads 2 cables to the southward of the Gull rock. There is a reef, and also detached rocks, with 14, 18, and 20 feet water on them, off Berry head, the outermost lying 4 cables to the eastward of it; these must all be left to the westward in running into the bay.

Torbay Ledges, lying on the eastern side of the entrance, are still more dangerous. French rock, the farthest out, and with only 10 feet water on it, lies with Topstone ledge, off the western extremity of the Sugar islands, bearing 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 on it, and 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' lengths 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 the Brig rock, the westernmost of the ledges, in 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 affords scarcely any assistance.

DIRECTIONS.—With a fair wind into Torbay, run in with the western extremity of the Sugar islands touching Mars head, and bearing N.E. $\frac{1}{2}$ E., or with Cole Harbour head open to the westward of Topstone ledge, 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., which continue till 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 in one, bearing South; and then West or W. $\frac{1}{2}$ S. 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.

WHITEHAVEN is a secure harbour, with depth of water and space sufficient for a fleet of the largest ships, but the entrances 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, where there were only two families residing in Yankee cove at the time of our survey. On the western shore there are hills of

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

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.

WHITE HEAD ISLAND LIGHT.—White Head island, 6 cables long and 120 feet high, is so named from the whitish granite rock of which it is formed. 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 white building, 35 feet high, showing a *flashing* light, alternately flashing and eclipsing every *ten seconds*. The light is elevated 55 feet above the level of the sea at high water, and should be seen in clear weather from a distance of 11 miles.

The East Bull, one of the outer dangers of the eastern entrance to Whitehaven, lies in 6 feet water, with the lighthouse bearing N.W. distant 6 cables. Half way between it and White head is the Sculpin rock, dry at low water ; and midway between it and Millstone island, there is a rocky shoal carrying 20 feet water. The entrance to the Eastern passage into Whitehaven harbour is between this shoal and Millstone island.

South-west Bull, with 5 feet water on it, lies with the lighthouse bearing N.E. distant $6\frac{1}{4}$ cables. Rocky ground, with 4 fathoms water on it, 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. Bulls.

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 island and Fisherman island 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 the S.W. Bull.

Shag Ledge and Rocky Ledge 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 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 above water, but there are reefs between and around them: that most in the way being a rock with 6 feet water on it, 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 Threetop 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 this 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.

Threetop Island may be easily recognised 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 is to the eastward of it, and 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 Threetop island, there is a rock with $3\frac{1}{2}$ fathoms water on it, 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 opposite extremities of the Gammon islets and White Head island very slightly overlapping, and bearing S. by E. $\frac{3}{4}$ E., and 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.—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 Bulls 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 only a very little to the eastward of the Gammon islets, bearing S.S.E. $\frac{1}{2}$ E., and steer in N.N.W. $\frac{1}{2}$ W. or so as to keep those marks on astern, until the north-west end of Threetop island is nearly abeam. Then alter course to North, taking care to keep White Head island open to the eastward of the Gammon islets, 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 the reef off the islet at Yankee cove 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.

The Kelp Shoal, with only 3 feet water on it, 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 the 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, Threetop 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 20 feet water on it, lying a quarter of a mile N.W. by W. from the 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, the northern extremity of White Head island, bearing S.E. $\frac{3}{4}$ E. ; then alter course to N.W. $\frac{3}{4}$ W., or so as to keep those marks touching, and they will lead to the southward of Turtle rock and reef off Spry point. When the lighthouse becomes only a very little open to the eastward of the Gammon islets, bearing S.S.E. $\frac{1}{2}$ E., steer in N.N.W. $\frac{1}{2}$ W. and proceed as before directed.

The Eastern Passage into Whitehaven is rendered so intricate and dangerous by the Middle Ground, with only 6 feet water on it, and other shoals, that it should never be attempted in a large ship, unless in a case of necessity. Between the Middle Ground and Paddy ledge, the passage is only half a cable wide. To run in, bring the summit of the northernmost hill on Threetop 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 the Middle Ground and Paddy ledge, open out the hill a little to the northward of the point, and when abreast the reef off the 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 ; then round

Dogfish point to the westward at the distance of one cable, until it and Millstone island are touching, and bearing S.E. $\frac{3}{4}$ E.; when alter course to N.W. $\frac{3}{4}$ W., or so as to keep those marks touching, and they will lead to the southward of Turtle rock and reef; then run in N.N.W. $\frac{1}{2}$ W., with the lighthouse only a very little open to the eastward of the Gammon islets, as before directed.

RASPBERRY, CRANE, and WINE COVES are small and intricate places, abounding in sunken rocks, fit only for small craft and boats, and dangerous to all but the native fishermen.

PORT HOWE (erroneously named Raspberry harbour in the old charts), is also an exceedingly dangerous place. It has depth of water sufficient for the largest ships, but scarcely room for them to swing to an anchor in the parts that are not exposed to the swell from the southward. The best anchorage is in the mouth of the western arm, care being taken to avoid a sunken rock with only 8 feet on it, 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 it would be necessary to moor there. As a harbour of refuge, this place might on some occasions prove useful; observe, therefore, that the dangers to be avoided, in approaching from the westward, are as follows:—

Avery Shoal, with 20 feet water on it, 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 the 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 to the E.N.E. The Whale shoals and the Whale rocks, which latter dry at low water and are farther in shore, lie on the western side of the channel leading to Port Howe.

Dover Shoals and Snorting Rocks.—The Dover shoals, with 4 fathoms on them, lie on the eastern side of the channel, S. $\frac{3}{4}$ E. distant $5\frac{1}{2}$ cables from the Snorting rocks, which never cover, and 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 of a mile from the 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 only $1\frac{1}{2}$ cables wide.

DIRECTIONS.—The marks for running into Port Howe are the Black rock just mentioned, and which is 4 feet high, in one with the remarkable Sugar Loaf hill, 180 feet high, and about a mile inland from the entrance of Kyak Brook at the head of the harbour. Being outside the shoals, bring these 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 sufficiently to pass round to the eastward of the Black rock at a distance of a cable; then steer to the westward of North, as far as may be necessary to pass midway between Port island and the western shore. 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. In anchoring in the mouth of the western arm, in 8 fathoms, mud, it is only necessary to avoid the sunken rock off the point which divides the arms.

DOVER PASSAGE, between Dover island and the mainland, is frequented by the fishermen and small coasting vessels, but it has only 14 feet water in the narrowest part, which is only about 30 fathoms wide.

DOVER BAY is $2\frac{1}{2}$ miles wide at the entrance, from Dover head eastward to White point, and is 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, which only small craft and boats could find their way among. Louse harbour, on its western shore, one mile within Dover head, has depth and space sufficient for large vessels; its entrance, to the northward of Louse island, has $3\frac{1}{2}$ fathoms water in it, but it is only about 30 fathoms wide. Little Dover Run, on the opposite or eastern side, is a very narrow channel between White island and the mainland. In the narrowest part it is about 30 yards wide, and has 20 feet water in it. It leads in among the islets in 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 25 feet water, from which Dover Head bears N.W. by W. three-quarters of a mile; Bay shoal, with 30 feet water, lying nearly half-way across from Dover Head to White point, and breaking only after heavy gales; Horne shoal, with 18 feet water, lying nearly in the middle between Louse head and White island; and Lumsden shoal, with 14 feet water, from which White point bears S.E. by E. distant $6\frac{1}{2}$ cables.

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

The White point ledges extend $5\frac{1}{2}$ cables to the southward of White point; and the White rock, with 5 fathoms water on it, and which breaks after heavy gales, lies nearly half a mile farther off, with the point bearing N. by W. one mile.

The Gannet shoal, with 9 feet water on it, lies East one mile from White point; and 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 indispensable for the safe guidance of a vessel in such intricate places. The soundings are so deep and irregular near these dangers that the lead will afford little or no warning at night or in thick weather; but in the day time Cranberry island lighthouse* (the lighthouse, octagonal in shape, and painted red and white horizontally, stands on the northern end of the island, and exhibits two *fixed white lights*, one 75 feet, the other 40 feet above high water) kept open to the eastward of the trees on Cape Canso, bearing N.E. $\frac{1}{2}$ N., will lead to the eastward of the Gannet shoal, the White point ledges, and the White rock.

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 the aid of the chart or a native fisherman would be indispensable for the safe guidance of even a small vessel.

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 there is foul ground, with 6 and 9 fathoms over it, fully a mile farther out to the south-east. The south-west extremity of Dover island kept open to the southward of White point, bearing W. $\frac{1}{2}$ S., leads half a mile to the southward of these ledges, and also the dangerous Boom rock with 12 feet water on it, and from which Gannet point bears W.N.W. $1\frac{1}{2}$ miles.

The remaining dangers off Cape Canso, namely, the Boom rock just mentioned, and the Patch rock with 5 fathoms water on it, from which Cape Canso bears N.N.W. $\frac{1}{2}$ W. $1\frac{3}{4}$ miles, together with the Cape Breaker, &c., will be found described in Vol. 2, Chap. XXI., of the St. Lawrence directions, under the head of Chedabucto bay. The depth of 30 fathoms is near enough for a vessel to approach to them when the lights on Cranberry island are hidden by the dense fogs which so frequently prevail on this coast.

* See Sailing Directions for the Gulf and River of St. Lawrence, Vol. 2, Chap. 21.

CHAPTER V.

SOUTH-EAST COAST ; OFF-LYING BANKS AND SABLE ISLAND.

VARIATION $21^{\circ} 35'$ W. in 1860.

GENERAL OBSERVATIONS.—Full and complete directions for approaching the south-east coast of Nova Scotia, including Breton island, cannot well be given until the extensive banks which lie off it shall have been surveyed.

The aspect and nature of the different parts of the coast eastward of Halifax, have been stated in the preceding chapters ; but the distinctive features are often not easily perceived in the usual weather, and at the distance which the outlying dangers render it prudent for a vessel, uncertain of her position, to be kept from the shore. The lighthouses, however, on Cranberry and White Head islands, the beacon on Wedge island, and the lighthouse on Beaver island, afford great additional assistance to a stranger in ascertaining his position, when first making the land ; as would also a lighthouse if placed on Egg island. Vessels approaching Sambro island lighthouse in a fog, and firing a gun, will be answered from the island, where a heavy gun, and a party of artillery are stationed for the purpose.

In the present imperfect state of our knowledge of the banks which lie off this coast, of the depth and nature of the soundings on them and between them and the shore, no further directions can be safely given to vessels approaching the land during a dark night, or in a thick fog, than not to go into a less depth than 40 fathoms, at the same time bearing in mind that there is that depth at a less distance than 3 miles from some of the most formidable of the dangers between Cape Canso and Halifax, as for instance the Jedore ledges ; whilst 50 fathoms is near enough to the Sambro ledges, which have more than 40 fathoms water at distances of half a mile and one mile to the east and south of them respectively.

BANKS.—The principal banks lying off the south-east coast of Nova Scotia are, the Banquereau and Sable island banks, which are each about 150 miles in length, and extend to an equal distance from the coast ; but it has not yet been ascertained whether these may not be united, and form a single bank of double that extent, in a direction nearly parallel to the coast. Our knowledge of the extent, shape, and position of the smaller banks nearer the coast, including the Canso bank, and of the

nature of the soundings on and between them, is equally uncertain and incomplete: the survey of them having been necessarily deferred until the completion of the survey of the coast.* The few lines of accurate soundings which have been obtained by passing surveying vessels, have shown the inaccuracy of the charts at present in use, and the consequent necessity for a correct and complete survey of these banks, and of the whole 500 miles of sea in which they are included, from the French survey of the bank of St. Pierre to George bank of the United States coast survey. Such a survey, requiring the work of several years in an efficient steamer, would be invaluable to the numerous vessels approaching this dangerous coast in the dense fogs that so frequently prevail:—meanwhile a brief description of Sable island and its bars, the greatest danger in the way, will be useful.†

SABLE ISLAND, seen from the north, at the distance of 9 or 10 miles 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.

The 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.

* Le Have and Roseway banks were surveyed by Captain Shortland, R.N., in *H.M.S. Devastation*, Commander Baird, in September 1859.

† See Admiralty Chart, North America, East Coast, Sheet 4, No. 267, scale, $d=4$ inches; and Plan of Sable island, No. 2,171, scale, $m=0.4$ of an inch.

PRODUCTIONS.—The amount and variety of the 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 at 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.

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.

Seals, and also abundance of wild fowl, frequent the island in their seasons.

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 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 Crow's-nest, or look-out, 100 feet above the sea, is a conspicuous object on the north side of the island, and was distant (in 1852) 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 was farther inland, and was about to be removed to a more advantageous position on the south side of the island. Besides the buildings at these flagstuffs, there was an unoccupied house on the north side, distant $3\frac{1}{4}$ cables from the west end of the grassy sandy-hills.

The **WEST BAR** is dry only three-quarters of a mile out 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 in bad weather, succeeded 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** is dry in fine weather 4 miles out from the end of the grassy sand-hills. At the distance of $1\frac{3}{4}$ miles out 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 what is supposed to be a narrow channel between the Sable island bank and the Banquereau, but which has not yet been surveyed.

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 out for so many miles as to render it difficult to account for the greater number of shipwrecks having occurred on that side of the island and its bars, excepting by a neglect of the lead.

The average number of known wrecks on the island for some years past has been about two annually, but there is not unfrequently evidence of additional losses on the bars; pieces of recently wrecked vessels and their cargoes, together with the drowned bodies of their crews, being found drifted on shore by the people of the island, usually after a long continuance of foggy weather. 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, that 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.

The Middle Ground, and the ridge of sand reported to continue from it to the west and south, till it joins the West bar, require to be surveyed, before more precise directions can be safely given.

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 in southerly winds and fine weather; but there are surf boats at the establishment, which can land when ordinary boats would swamp instantly.

A life-boat, that could sail as well as row, was very much wanting to complete the efficiency of the establishment.*

The utility of a light-house on Sable island has been much discussed. It has been said that almost all the vessels wrecked upon the island have come on shore in fogs, when a light could not have been seen; but to this it may be replied, that some of those vessels ran on shore in clear nights, when a light would almost certainly have saved them. Moreover, there are occasionally brief intervals in the fogs, during which a light might be seen by vessels in the vicinity of the island and warn them of their danger. Besides, in the autumnal and winter months, when northerly winds prevail,

* This want has since been in some degree supplied, but there is no doubt but that additional life boats of the most approved construction are still wanting.

fogs are less frequent, and a light would then be consequently of great service.

It has also been objected, that a light would induce seamen to be less careful in avoiding the island, but this does not necessarily follow; and therefore, upon the whole, there seems no reason to doubt that a light on the hill at the east end of the island named, in anticipation, by the people of the island, Lighthouse hill, would be very useful. This hill is 73 feet high, and a light on it would readily be seen in clear weather from the end of the East bar, the distance being 14 miles. The west end of the island, wasting continually by the action of the sea, furnishes only an insecure site for a lighthouse, which moreover is less requisite there, since the west end of the island and the West bar may be safely approached by the lead, if a common degree of precaution be used.

CURRENTS.—The irregular currents are said to be one of the principal causes of the frequent wrecks on Sable island. Our acquaintance with the strength and direction of these currents is as yet very imperfect. It has, however, been ascertained that a branch of the Labrador current, after passing 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 winds present and at a distance; 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 that have been wrecked on Sable island were considered to be well to the eastward of it when they ran on shore.

TIDES.—It is high water, full and change, on the north side of Sable island at 7h. 30m. nearly, and on the south side about an hour earlier, and the rise at springs does not exceed 4 feet. The tidal streams are much influenced by the winds. 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 BAROMETEE.—In the spring and summer months dense fogs or rain almost always accompany all winds from the sea, from E.N.E., round 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 becomes the more necessary to attend carefully to the indications of the barometer. Strong winds from East, round 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 ; and if it be winter, with intense frost, coating the vessel, her 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 them ; and 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, and to Portland, Boston, or other harbours of the coast of the United States, is within soundings, and in foggy weather, or in any case of doubt as to his position, nothing could excuse the master of a ship, whether steamer or sailing vessel, from carrying a continuous line of soundings across this track. Another point to which attention should be paid is, that in coming from the eastward the variation of the compass rapidly decreases ; thus at the eastern edge of the Newfoundland banks the variation at present (1860) is 29° W., while in a day's run to the westward of 200 miles the variation would have become $24\frac{1}{2}^{\circ}$ W., or nearly half a point, which, if not allowed for, might easily run a vessel into danger.

POSITIONS.—The west flag-staff on Sable island is in lat. $43^{\circ} 56' 24''$ N. long. $60^{\circ} 2' 47''$ W. ; the west extremity of the grassy sand-hills in lat. $43^{\circ} 56' 44''$ N., long. $60^{\circ} 8' 28''$ W. ; and the east extremity of the grassy sand-hills in lat. $43^{\circ} 58' 57''$ N. and long. $59^{\circ} 45' 30''$ W. Such was its position 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 flagstaves 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.

TABLE OF POSITIONS on the South-east Coast of NOVA SCOTIA.

Place.	Particular Spot.	Latitude, North.			Longitude, West.			H. W. Full and Change.
		°	'	"	°	'	"	
Halifax	Dockyard Observatory	44	39	38	63	35	7	h. m. 7 49
Halifax Harbour	Lighthouse, Maugher beach	44	36	6	63	31	51.5	
Mars Head	Station on extremity	44	26	16	63	43	24	
Sambro Island	Lighthouse	44	26	11	63	33	38.5	
Devil Island	Lighthouse	44	34	48	63	27	23.5	
Graham Head	Station on summit	44	37	44	63	16	55	7 30
Jedore Head	Station on point	44	40	21.7	63	2	46	
Jedore Rock	Station on centre	44	39	48.8	63	0	29	
Jedore Harbour	Station on Marsh point	44	43	19.2	63	0	11	7 45
Egg Island	Station near centre	43	39	55	62	51	41	
Ship Harbour	Islet near Salmon point	44	46	59.5	62	48	55	7 54
Pope Harbour	{ Harbour island, north-east extreme }	44	47	50.5	62	38	42	
Taylor Head	Station on summit	44	47	24.5	62	32	40	7 40
Sheet Harbour	{ Station a quarter of a mile N.W. from Watering cove }	44	54	11	62	30	09	8 6
Salmon River	{ Station a cable's length west of wharf }	44	54	31.7	62	23	05	
Beaver island	Lighthouse	44	49	33.5	62	20	10	
Mary Joseph Harbour	Loabster point extreme	44	57	52.5	62	4	29	
Liscomb Harbour	{ Spanish-ship point, station, near Pyes wharf }	45	0	28.3	62	0	40	8 0
St. Mary River	{ Station 7 cables' lengths above Episcopal church }	45	6	12	61	57	39	7 55
Wedge Island	Beacon	45	0	36	61	52	19	
Hollins Head	Station on summit	45	4	19.5	61	44	29	
Country Harbour	Station opposite Widow point	45	14	41.5	61	46	38	8 44
Isaac Harbour	Red head, station on summit	45	9	38.7	61	38	24	7 40
Harbour Island	Station on north-east point	45	8	25	61	36	15	7 40
New Harbour Head	Station on Nob	45	9	7	61	27	53	
Berry Head	Station on extreme	45	11	37	61	18	29.5	
White Haven	{ Observation station in Mar- shall cove }	45	14	37	61	11	15	8 0
White Head Island	Lighthouse	45	11	58	61	7	59	
Canso Harbour	Steeple of Chapel	45	20	10	60	58	57	
Canso Harbour	{ Station on Cutler island, south-east extreme }	45	20	42	60	58	59	7 48
Cranberry Island	Lighthouse	45	19	49	60	55	26	

The longitude of Halifax Dockyard Observatory by the Electric Telegraph is as follows:—

	h. m. s.
Cambridge Observatory, Massachussetts	4 44 30.6 W.
Halifax Dockyard Observatory, by Electric Telegraph	0 30 9.55 E.

4 14 21.05 W. or
Halifax Dockyard Observatory 63° 35' 15" W., differing only 0.8", or a little more than half a second of time from the longitude in this table.

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