BAY OF FUNDY AND PORT OF ST. JOHN. N.B.

SPECIAL REPORT OF BOARD OF TRADE. 1887.

CITY OF PORTLAND
FAIRVILLE
CITY OF SAINT JOHN
CITY OF CARLETON
MILL POND
NAVY I^{D}
Cantilever Bridge
Suspension B.
NEW BRUNSWICK R.R.
STATION
I.C.R. GROUNDS
I.C.R. RAILWAY
HAYMARKET SQUARE
KING SQUARE
QUEEN SQUARE
QUEEN SQ.
GRAND SOUTHERN RAILWAY
CARLETON BRANCH R.R.
I.C.R. WHARF
BARRACK GROUNDS
ROUND REEF
Beacon L.
Fort Dufferin
BREAKWATER
Light F.
PARTRIDGE I^{D}
COURTENAY BAY
THE HARBOUR OF
ST. JOHN, N.B.
SCALE 0 500 1000 1500 2000 2500 FEET
SOUNDINGS IN FEET, REDUCED TO LOW WATER SPRING TIDES.
MARITIME STEAM LITH. CO. ST. JOHN, N.B.

REPORT

OF

THE SPECIAL COMMITTEE

(ST. JOHN BOARD OF TRADE)

ON THE

BAY OF FUNDY

AND

HARBOR OF ST. JOHN, N. B.

Presented at a Meeting held on February 27th, 1887.

ST. JOHN, N. B.
J. & A. McMILLAN, 98 PRINCE WILLIAM STREET.
1887.

INTRODUCTORY.

St. John Board of Trade Rooms,
March, 1887.

The Committee of the St. John Board of Trade have prepared this paper on the Bay of Fundy, based on and containing statements of facts gathered from the experience of navigators, from Government Records, official and public documents — all largely dispelling many of the errors, opinions, and statements current, and published in past descriptions of the Bay, its fogs, tides, etc.

And the Board, being strongly impressed with the opinion that this information should be printed, and have a widespread distribution in the interest of our trade, asked the City Council to assist in the expense of its publication, which they have kindly and generously consented to, and for which the Board of Trade tender them their thanks.

At the close of the last century the Bay was but little frequented by vessels from abroad, and had but a limited coasting trade. Its summer fogs, its low temperature in winter, its want of light houses — fog horns, whistles, and automatic whistling and bell buoys unknown — its tides flowing to uncertain heights and setting in uncertain directions — its rugged shores and steep cliffs — its charts, more general than special — no doubt caused the then current ideas of its dangers. Still, the navigators of that day, with their greater watchfulness, caution, and judgment, kept safely on their voyages, with not as pleasant a duty to perform as if sailing the Carribean Seas, yet meeting with as few accidents and losses as on other and better known waters in proportion to its trade.

To-day most of the risks of danger are averted. All the modern guards necessary for safe navigation are introduced and applied. Better charts — shores studded with light houses — fog horns and whistles almost within calling distances — automatic and bell buoys placed at all points of danger — its tides and their courses well known — the formation of its bottom so well described that the lead tells its locality — all these advantages dispel the fears of the olden time, and render its navigation as safe as the approaches to any other coast.

Steam is largely superseding sails in the greater trade of the ocean and coast, when drifting in calms and with tides, losing reckoning, and its attendants, will be of the past, and steamers and sailing ships can enter and navigate the Bay of Fundy guided with all the confidence and equal safety as if entering the British Channel or the neighboring waters of Passamaquoddy Bay.

JAMES A. HARDING,
President St. John Board of Trade.

REPORT OF THE SPECIAL COMMITTEE

OF THE

ST. JOHN BOARD OF TRADE

ON THE

BAY OF FUNDY AND PORT OF SAINT JOHN, N. B.

Presented at a Meeting held on 27th January, 1887.

ST. JOHN, N. B., 27*th January*, 1887.

A special meeting of the St. John Board of Trade was held this day, for the purpose of receiving the report of the committee appointed some time ago to obtain information concerning the Bay of Fundy and Harbor of St. John, in connection with the proposal to make St. John the future winter port of the Canadian mail steamers.

SIMEON JONES, Esq., presided, and explained the object of the meeting, there being a large number of members present.

ROBERT CRUIKSHANK, Esq., chairman of the committee, then read the following report and letters:

REPORT.

To the President and Members of the Board of Trade of St. John, N. B.

GENTLEMEN:

By a resolution of the Board of Trade, passed at a general meeting held on the 26th October last, the undersigned were appointed a committee for the purpose of getting information and statistics in reference to the navigation of the Bay of Fundy and the harbor of St. John, and the number of disasters occurring as

compared with the approaches to other ports, and we beg now to submit the following report as the result of our enquiries with regard to the matters referred to us. We deem it necessary, at the outset, to say, that considerable delay in carrying out the object sought to be attained has been occasioned by difficulty in procuring authentic and reliable data, caused by the destruction of so many books and papers of reference in the fire of 1877. In prosecuting our enquiries with regard to the safety of the navigation and accessibility of the Bay of Fundy and harbor of St. John, we must confess that the ignorance and prejudice which has been found prevailing with regard to them outside of this province is inexcusable. That a stretch of water such as the Bay of Fundy, and a harbor such as that of St. John, which have been frequented for the last hundred years by such a vast number of both sailing vessels and steamers, of the largest class, should be so little understood, is very unaccountable, and your committee take it that the object of the present movement is to endeavor to disabuse the public mind of so many wrong ideas as to their safety and capability for being visited by steamers of the largest and finest construction, as well as to show the eligibility of the port of St. John for being made a terminal port for the Dominion of Canada, both in summer and winter. One of the reasons for so many erroneous ideas prevailing, is attributable to the very incorrect and biased information given in recently published charts, which magnify and misrepresent the difficulties attending the navigation of the Bay of Fundy. We would instance one of these charts which has come under our notice, entitled "A Chart of the Coast of North America from the Strait of Belleisle to Boston," published by one Charles Wilson, in London, in the year 1877. In a memorandum on that chart, opposite to the entrance to the Bay of Fundy, occurs the following remark, and to which your committee would call particular attention:

"*Ships navigating the Bay of Fundy have to encounter an "atmosphere almost constantly enveloped in dense fogs; the tides*

"setting with great rapidity over the rocks and shoals, with which it "abounds, and a difficulty of obtaining anchorage on account of "the depth, so that under these circumstances the most unremitting "attention is requisite to prevent disastrous consequences, which must "necessarily attend a want of knowledge and caution."

From the tenor of the above statement, and many others of a similarly unfair and untruthful kind which have been met with, it is no wonder that strangers should feel inclined to give a wide berth to a place represented as being so dangerous. In giving rebutting evidence against such statements as the above, your committee have applied only to sources known to be of the most reliable kind, and on whose truth and accuracy the utmost dependence can be placed.

First, then: As to the statement that "the atmosphere of the Bay of Fundy is constantly enveloped in dense fogs," your committee would ask reference to a statement made up from the account regularly kept by the keeper of the fog whistle situated at

PARTRIDGE ISLAND,

at the entrance to the harbor of St. John, for the winter months for 17 years from 1870 to 1886, both inclusive. (See No. 1 of Appendix.) The fog average was:

Months.	H.	M.
November,	11	55
December,	8	9
January,	21	21
February,	16	46
March,	17	56
April,	40	4
A total of	116	11

or an average per month of 19 hours and 22 minutes, or 38 minutes per day.

And from a comprehensive return by the same party (No. 2 of Appendix), made up for the *whole year* during a period of 21

years from 1865 to 1885, your committee gather the information that the whistle was sounded from all causes on an average each month during the months of:

January,	3½ days.	May,	3½ days.	September,	4 days.
February,	3 do.	June,	6 do.	October,	2¼ do.
March,	3 do.	July,	7½ do.	November,	1½ do.
April,	2½ do.	August,	7½ do.	December,	3 do.

or an average of 3 hours and 22 minutes per day during the 21 years.

Your committee would remark that much of the time put down in this return as requiring the whistle to be sounded in the summer months, is not from fog alone, but from smoke from the burning of the forests in proximity to the shores of the Bay of Fundy, and in winter from vapor arising from the water of the Bay caused by the extreme cold prevalent in the months of January and February.

There is also to be found in No. 3 of the Appendix a statement made up from the returns by the keepers of the fog whistles situated at Machias Seal Island, Head Harbor, Point Lepreaux, and Partridge Island, showing the state of the atmosphere in the Bay of Fundy during the winter months of 1883-84 and 1884-85, from which it will be seen that during the six winter months of those two years, at the four stations named, there was, on an average, only 35 minutes of fog per day.

Also, in No. 4 of Appendix, a synopsis of the general return made to the Department of Marine and Fisheries, at St. John, of the state of the atmosphere at *all* the fog whistle stations in the Bay of Fundy for the winter months of 1880 to 1885, both inclusive, from which it will appear that during the six winter months of those six years, at all the stations together, there was, on an average, only 34 minutes of fog per day.

From these returns it is apparent how very few days fog prevailed enough to require the whistles to be sounded, and how

little foundation there is for the statement that the atmosphere of the Bay of Fundy is "*almost constantly enveloped in dense fogs.*"

Then with reference to the

SAFETY OF THE NAVIGATION

of the Bay of Fundy and accessibility of the harbor of St. John, your committee ask reference to the following documents from shipmasters and pilots of the highest respectability, and who have had the experience of a lifetime in the business of which they speak, viz:

Letter from Capt. W. A. Robinson. (See No. 5 of Appendix).

Letter from Capt. David Boddie. (See No. 6 of Appendix.)

Letter from Capt. B. B. Bustin. (See No. 7 of Appendix.)

Letter from Capt. Jos. Prichard. (See No. 8 of Appendix.)

Letter from Capt. D. Smalley. (See No. 9 of Appendix.)

Letter from Capt. J. J. Brown. (See No. 10 of Appendix.)

Letter from Capt. Hill of the "Ulunda" of the Furness Line. (See No. 11 of Appendix.)

Letter from Capt. Pike, late of the I. S. S. Line. (See No. 12 of Appendix.)

Letter from Capt. Edward Smith, of the S. S. "Damara." (See No. 12-B of Appendix.)

Statement of Capt. Chas. S. Taylor, harbor master of St. John. (See No. 13 of Appendix.)

Statement from Richard Cline, one of the St. John harbor branch pilots. (See No. 14 of Appendix.)

Statement of Pilot Rutherford. (See No. 14-B of Appendix.)

Statement from Messrs. Scammell Bros., agents for Anchor Line steamers. (See No. 15 of Appendix.)

Copy of letter from Jas. B. Hegan, acting engineer in charge for Board of Works at St. John to the Department at Ottawa. (See No. 15-B of Appendix.)

Your committee would also submit to the Board a synopsis of the record, kept at the St. John custom house, of vessels departing seaward from St. John for the seven years from 1869 to 1875, aggregating 8,943 vessels of 3,159,118 tons. (See No. 16 of Appendix.)

Also a statement of the number of seagoing steamers and sailing vessels, and coastwise steamers, and their tonnage, which arrived at the port of St. John during the ten years from 1877 to 1886, inclusive, aggregating **16,719** vessels of **5,261,658** tons. (See No. 17 of Appendix.)

Also a statement of the number of seagoing steamers and sailing vessels, and coastwise steamers, which departed from the port of St. John during the same period of *ten* years from 1877 to 1886, aggregating **16,794** vessels, of **5,532,188** tons, making of arrivals and departures during the ten years: **33,513** vessels, of **10,793,846** tons. Of these the number of seagoing sailing vessels arriving and departing from St. John aggregated **25,988** vessels, of **5,622,448** tons; and of seagoing and coastwise steamers, **7,525** vessels, of **5,171,398** tons — a total of **33,513** vessels, of **10,793,846** tons. (See No. 18 of Appendix.)

The total number of coastwise steamers which is included in the above, arriving and departing from the port of St. John for the ten years from 1877 to 1886, inclusive, was 3,898 vessels, of 1,742,765 tons. (See No. 19 of Appendix.)

There is also submitted a statement (see No. 20 of Appendix) showing the value of

IMPORTS AND EXPORTS

at the port of St. John during the ten years from 1877 to 1886, both inclusive, from which we gather that the

Imports were of the value of	$47,832,570
And the exports	36,346,794
Together, shewing a total value of	$84,179,364

(In this return is not included the value of new ships.)

There is also submitted a statement of the disasters and casualties which have occurred to vessels and their cargoes in the Bay of Fundy, coming to and going from the port of St. John, during the period from 1869 to 1886, with the estimated value of the loss as far as could be ascertained. (See No. 21 of Appendix.)

From the above documents, drawn from the St. John custom house records, and compiled by Mr. KEITH BARBER, of the Entry and Clearing Department, the calculation is made by him that the following percentages of losses have been made for the ten years from 1877 to 1886 (see statement No. 22 of Appendix), viz:

The percentage of loss of tonnage of *steamers* as compared with *total* tonnage of steam vessels entered and cleared is .08 of 1 per cent.

The percentage of loss of cargoes of *steam* vessels, as compared with the total amount of imports and exports, is .002 of 1 per cent.

The percentage of loss of tonnage of *sailing* vessels, as compared with total amount of tonnage of sailing vessels entered and cleared, is .41 of 1 per cent.

The percentage of loss suffered by cargoes of sailing vessels, as compared with the total amount of imports and exports, is .05 of 1 per cent.

The percentage of loss of tonnage of both steam and sailing vessels, as compared with the total tonnage entered and cleared, is .26 of 1 per cent.

To this latter statement your committee would direct *particular* attention, as showing the very small percentage of losses.

As an evidence of the opinion entertained by underwriters of the safety of the navigation of the Bay of Fundy, we are authorized in saying that the agents in St. John for marine insurance companies are taking risks from St. John *direct* to Europe at the same rate of premium as from Halifax, Nova Scotia, and

from Boston and Portland, thus minimizing the dangers of the Bay, which have been made such a handle of by parties who are interested in disparaging the character of our port.

Your committee would now call attention to the

ADAPTABILITY OF THE PORT

of St. John for handling a large portion of the traffic which, it is expected, will come over the C. P. R. on the completion of the so-called Megantic or Short Line Railway, and which will seek a place of shipment at an Atlantic port, in the Dominion of Canada, from the shortness of the distance to be navigated between the last port of departure in Ireland, and St. John. The sailing distance

From Moville to Halifax is	2,338 miles.
From Moville to St. John	2,538 "
From Moville to Portland, Me.	2,617 "

Taking into account the distance of railway travel between St. John and Halifax (276 miles) to reach St. John as a common centre of departure for the west by way of the Short Line Railway, and the difference in distance between St. John and Portland, Me., (about 80 miles) we think we are justified in claiming that St. John has the advantage. The harbor of St. John can even now accommodate steamers of the largest class, on both sides of the harbor, and the depth of water can be largely increased by dredging, which can be done at comparatively small expense. Steamers drawing and paying pilotage on 27 feet draft of water are loaded in the harbor of St. John, and man-of-war vessels, drawing 27½ feet, have entered and left the harbor with ease.

The coast all along from the entrance of the Bay of Fundy to the harbor of St. John is so thoroughly protected by fog whistles, automatic whistling buoys, and lighthouses, that it must proceed from the greatest carelessness or unseaworthiness (unless in very exceptional cases) that a vessel should go ashore or even touch bottom. From the entrance to the Bay of Fundy at Machias Seal Island by way of the north or west channel, and at Briar Island, on the south channel, to the harbor of St.

John, vessels do not lose the sound of one fog whistle or automatic buoy until they catch the sound of another, and the soundings by the lead are so regular and the anchorage so good, especially at the entrance of St. John harbor, that danger is reduced to a minimum, even in the thickest weather. Pilots state that they dread more to enter Boston or Portland or Halifax harbors during a fog than they do St. John, and vessels bound to New York, Boston, and Portland have sometimes to lie longer outside those harbors for tide than at St. John, and when foggy weather prevails, it is generally as dense (if not more so) at Portland and along the coast of the State of Maine as it is in the Bay of Fundy. In winter, fogs are very rare. They are more frequent in the months of June, July and August, but seldom continue so thick for days in succession as to preclude seeing land in the Bay, and neither fog nor snow prove a bar or delay to steam vessels, the navigation of the Bay being so simple — there being no treacherous shoals or rocks in the way from the mouth of the Bay to the port of St. John. We may instance the steamers of the International Steamship Company, which have plied between St. John and the port of Boston for a period extending over a quarter of a century, making three and four trips per week, each way, for part of the year, and two trips, each way, per week in winter, carrying an immense number of passengers and very large quantities of freight, and never lost a single life in all that time on that route. During the past thirty years passenger steamers have been running between St. John and the western part of Nova Scotia, and during all that time not one was lost, thus proving that neither fog nor snow interfere with steam veseels in their passage to or from the harbor of St. John, where proper care is taken.

IN THE MATTER OF ICE

in winter, your committee may confidently assert that there is not a port north of Cape Hatteras so entirely free from ice as St. John is. The ice which forms on St. John River and its tributaries terminates at the Narrows, some three miles above the falls, which are situated about a mile above St. John harbor, and is

completely debarred from escaping into the harbor by these narrows, so that there is no shell or anchor ice in the harbor in fall or winter, and in spring the thick heavy ice of the river is thoroughly rotted before breaking up and coming through the falls, and any remnants of any considerable size are thoroughly pulverized in coming over the falls; and as to the formation of ice *within* the harbor, it is impossible, owing to the great rise and fall of tide. Again, there is never any field ice in the Bay below this port. This can hardly be said of any other port on the coast north of Baltimore; in fact, there is *no port* north of Baltimore, including Philadelphia, New York, Boston, Portland and Halifax, that have not been frozen over, and had vessels cut out of the ice in them, *except St. John.* Shipmasters and owners of vessels, therefore, may be fully assured that no damage can be sustained from river, harbor or bay ice, in navigating the Bay of Fundy, or in the harbor of St. John. Under the accumulation of evidence which your committee have been enabled to place before the Board, they feel that they

MAY SAFELY ASSUME:

1st. — That the navigation of the Bay of Fundy, from its mouth to St. John, is remarkably simple and free, whether by the south or west channels; so much so, that pilots prefer making the port of St. John in bad weather to any other port on the coast.

2nd. — That the fog or cold vapor never occasions delay of steam vessels in *summer or winter*, and that there is *never the slightest obstruction from* ice.

3rd. — That Atlantic steamships need make but one straight course from their regular track to Portland and Boston up the Bay of Fundy to St. John.

4th. — That the south channel, opening into the Bay, is 18 miles in width at the narrowest part, expanding rapidly to 35 or 40 miles of unobstructed deep water navigation, which holds good all the way up the Bay to the mouth of St. John harbor,

where superior holding ground can be found, or giving clear sea room, of say 35 by 50 miles, to a stranger who might not feel confidence to enter our port in a storm.

5th. — That both the largest war and merchant ships have visited our harbor, excepting the "Great Eastern," and that she could easily be accommodated.

6th. — That the port of St. John, in so far as navigation is concerned, is not only "*one of the safest*," but actually **The Safest Port**, summer and winter, all the year round, north of Cape Hatteras.

And your committee cannot see that any valid reason can be given for St. John being deprived of being made a terminal port for the transmission of mails, passengers and freight, both to and from the western part of the Dominion of Canada, as well as to and from the Province of Quebec, for, on the completion of the gap in railroad communication now existing between Edmundston, in this province, and the Intercolonial Railroad, at River du Loup or River Ouelle, the traffic in winter time from Quebec will naturally seek an outlet at St. John, it being the nearest and most accessible open port in Canada.

And these facts should, in the opinion of your committee, weigh very forcibly with the Dominion Government in deciding to award that the British mail steamers shall be contracted with to run, after the completion of the Megantic or Short Line Railway, *at least alternately, if not altogether direct, between Great Britain and the port of St. John.*

Respectfully submitted,

R. CRUIKSHANK,
ANDRE CUSHING,
W. E. VROOM.

St. John, Jan. 26th, 1887.

APPENDIX.

Appendix No. 1.

[See page 3 of Report.]

Showing Quantity of Sea Fog at entrance to Saint John Harbor, from November, 1870, to April, 1886, inclusive.

	November.	December.	January.	February.	March.	April.
1870	*2 hrs. 30 min.	1 hr. 45 min.				
1871		1 " 00 "	30 hrs. 40 min.	19 hrs. 25 min.	47 hrs. 15 min.	16 hrs. 10 min.
1872	5 hrs. 35 min.	2 hrs. 30 min.	6 " 10 "	3 " 15 "	2 " 30 "	62 " 20 "
1873	7 " 45 "	43 " 35 "	42 " 20 "	23 " 25 "	12 " 45 "	33 " 40 "
1874	4 " 30 "	4 " 00 "	69 " 40 "	4 " 5 "	61 " 45 "	26 " 15 "
1875	4 " 10 "	13 " 05 "		37 " 10 "	1 " 00 "	44 " 10 "
1876	21 " 00 "	1 hr. 40 min.	38 hrs. 20 min.		17 " 15 "	40 " 10 "
1877	24 " 45 "	7 hrs. 15 min.	20 " 20 "	8 hrs. 45 "	38 " 45 "	41 " 40 "
1878	1 " 50 "	6 " 00 "	23 " 5 "	9 " 50 "	22 " 35 "	74 " 40 "
1879	30 " 55 "	11 " 40 "		12 " 20 "	39 " 00 "	36 " 00 "
1880	11 " 55 "	7 " 30 "	51 hrs. 45 min.	38 " 35 "		80 " 15 "
1881	16 " 35 "	7 " 30 "	7 " 45 "	25 " 20 "	7 hrs. 35 min.	8 " 20 "
1882	13 " 15 "		4 " 15 "	11 " 5 "	16 " 30 "	39 " 15 "
1883	26 " 00 "		14 " 35 "	12 " 25 "	2 " 50 "	49 " 30 "
1884	2 " 40 "	22 hrs. 00 min.	36 " 20 "	65 " 35 "	16 " 30 "	22 " 40 "
1885	20 " 50 "	9 " 00 "	8 " 15 "		1 hr. 15 min.	6 " 10 "
1886	8 " 15 "		9 " 30 "	13 hrs. 55 min.	17 hrs. 20 min.	99 " 50 "

Or an average of 38 minutes per day.

* The 2 hours and 30 minutes in November, 1870, is for Land Fog, or thickness of the land, or from the land. No Fog up to the 8th of December; or in this present month, 1886, no Fog up to the 8th.

Appendix No. 2.

[See page 3 of Report.]

Showing the number of Hours and Minutes in each month the Steam Whistle at entrance to St. John Harbor was sounded from January, 1865, to December, 1885, from all causes.

Years.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
1865	39.15	26.40	63.50	43.30	137.05	197.15	96.25	69.15	74.05	47.30	33.00	47.45
1866	48.15	52.15	74.45	65.15	31.25	88.20	118.45	64.30	89.45	35.00	56.00	46.00
1867	77.50	44.05	46.00	60.05	45.45	97.00	86.55	262.00	55.15	28.50	48.45	34.40
1868	35.00	33.45	112.45	97.55	129.25	182.50	281.45	207.50	104.20	28.00	5.05	39.15
1869	36.45	61.45	36.10	30.55	31.40	121.30	192.45	94.15	84.35	63.40	12.25	50.45
1870	75.10	61.25	23.00	27.00	62.10	160.00	200.10	208.50	56.15	23.55	15.25	47.45
1871	55.30	34.40	73.55	20.10	38.10	123.25	164.40	147.45	56.30	30.45	Lost.	46.15
1872	31.55	42.45	52.00	77.40	81.10	131.10	131.30	218.20	77.05	27.35	23.45	92.50
1873	79.55	54.10	51.05	36.45	100.40	77.35	256.15	148.30	175.00	67.25	45.40	115.50
1874	165.50	86.25	76.45	74.20	114.15	83.10	179.35	129.10	126.35	58.30	29.40	68.40
1875	86.40	88.40	33.25	67.00	79.00	167.40	187.00	298.45	97.50	48.45	27.05	63.35
1876	76.45	48.50	40.10	61.25	101.30	323.10	175.45	164.10	26.50	27.10	47.05	78.25
1877	84.10	49.20	102.40	43.55	19.50	126.45	248.20	216.35	131.15	10.55	31.10	25.30
1878	66.40	26.45	51.00	79.15	92.20	247.55	160.35	249.15	170.30	111.40	1.45	24.35
1879	93.30	81.30	92.00	84.10	288.15	183.50	142.45	151.10	93.00	66.15	76.35	212.45
1880	122.55	140.00	87.05	110.25	174.00	104.00	295.00	202.30	130.10	42.30	55.05	69.00
1881	80.45	120.30	41.35	36.45	95.50	191.20	144.00	325.40	169.30	68.35	52.10	29.35
1882	148.00	119.10	115.55	124.00	63.15	87.40	183.20	183.20	155.45	130.15	41.35	46.05
1883	126.25	79.40	97.45	80.30	131.40	225.50	230.10	125.05	162.20	105.45	45.55	108.30
1884	133.50	151.55	120.35	60.30	50.45	81.55	221.25	306.05	111.05	34.40	40.30	199.10
1885	153.10	79.40	105.20	58.40	152.50	127.35	221.10	218.55	80.20	76.20	74.15	96.05
Total	1828.00	1483.05	1498.20	1388.40	1960.21	3130.05	3918.13	3992.45	2258.00	1134.00	762.55	1543.00
Average	3½ days.	3 days.	3 days.	2½ days.	3½ days.	6 days.	7½ days.	7½ days.	4 days.	2¼ days.	1½ days.	3 days.

Appendix No. 3.

Compiled Statement showing the number of hours and the causes for which the Machias Seal Island Fog Whistle sounded during the Months of November, December, January, February, March, and April, for 1883 *and* 1884.

DATE.	November.		December.		January.		February.		March.		April.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1					0.20	Snow.	13.00	Snow.	2.30	Snow.	.45	Snow.
2			6.00	Rain.	15.50	Snow.	.25	Snow.				
3			4.00	Snow.	1.05	Snow.					14.40	Fog and Rain.
4							13.10	Snow.			8.10	Fog.
5	1.25	Fog.					13.15	Snow.	1.00	Snow.		
6	2.15	Fog.			9.45	Vapour.	21.00	Fog and Rain.	5.45	Snow.		
7					9.05	Vapour.	4.30	Snow.	4.15	Snow.		
8			0.30	Fog.					21.30	Snow.	2.30	Snow.
9	4.00	Fog.	7.15	Fog.	17.45	Snow.	13.45	Snow.	11.25	Snow.	7.40	Fog.
10	5.00	Fog.	7.15	Rain.	5.15	Fog.	1.00	Fog.	6.20	Sleet.	6.55	Sleet.
11					8.45	Snow.	1.30	Snow.	1.00	Snow.	2.30	Snow.
12	3.10	Fog.			1.30	Snow.	9.10	Snow.	4.40	Fog.		
13					3.00	Vapour.	22.30	Snow.				
14	0.30	Snow.	2.00	Fog.	6.00	Sleet.	20.40	Fog.				
15			6.05	Snow.					11.45	Snow.		
16	2.10	Snow.	10.30	Vapour.	1.00	Vapour.					16.25	Fog.
17			13.50	Snow.			0.40	Fog.	4.30	Snow.	21.10	Fog.
18			1.00	Snow.	5.50	Snow.	15.10	Fog.	.45	Sleet.	11.30	Fog.
19			9.50	Snow.	16.50	Snow.	3.55	Snow.			14.10	Fog.
20	10.15	Fog.	.20	Vapour.	22.20	Snow.	9.30	Fog.	6.35	Snow.	12.15	Fog.
21	2.20	Fog.	21.45	Vapour.	6.30	Snow.						
22	4.00	Fog.	9.30	Vapour.			4.35	Snow.			16.50	Fog.
23	9.25	Fog.	24.00	Snow.			13.15	Snow.			1.20	Fog.
24	2.35	Fog.	24.00	Snow.	6.50	Fog.	3.10	Snow.	15.05	Fog.		
25			4.50	Snow.	8.00	Snow.						
26			1.15	Snow.							3.05	Rain.
27	5.30	Fog.	1.00	Rain.					20.30	Fog.		
28			6.50	Snow.	2.35	Vapour.	10.00	Snow.	13.40	Fog.	3.05	Fog.
29							19.30	Snow.			6.20	Fog.
30	3.10	Fog.	8.00	Snow.	.30	Snow.			1.00	Snow.		
31			11.20	Snow.	12.40	Fog.			3.00	Snow.		
	55.45		181.05		160.25		213.40		135.15		149.20	

APPENDIX No. 3.—*Continued.* *Return of Machias Seal Island Fog Whistle, 1884 and 1885.*

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1					7.40	Snow.	8.55	Fog.	5.00	Sleet.	4.20	Fog.
2					7.25	Snow.			10.35	Fog.		
3					13.00	Vapour.	10.30	Vapour.			17.25	Fog.
4					1.35	Snow.			6.45	Snow.	14.15	Fog.
5	8.40	Fog and Rain.	5.00	Fog.	15.20	Snow.					5.10	Fog.
6			.25	Rain.			11.05	Fog.			.30	Snow.
7			11.50	Rain.	2.40	Hail.	19.35	Fog.				
8									22.05	Snow.	8.00	Fog.
9							2.00	Fog.	5.50	Snow.	2.15	Fog.
10					8.55	Fog.	2.00	Fog.	5.35	Snow.		
11							2.15	Fog.				
12					.40	Fog.	14.35	Fog.	.15	Snow.		
13					3.05	Snow.					8.25	Snow.
14									2.25	Snow.	1.00	Fog.
15			9.20	Snow.	7.20	Snow.	13.45	Snow.	2.15	Rain.		
16							12.35	Sleet.	9.00	Fog.		
17			13.50	Snow.	5.10	Snow.	15.00	Sleet.	1.20	Snow.		
18			6.15	Snow.					1.35	Snow.		
19	1.00	Snow.	18.10	Vapour.					16.15	Snow.		
20	11.30	Rain and Fog.	24.00	Vapour.					1.45	Snow.		
21			19.30	Vap'r & Snow.	1.50	Snow.						
22			19.35	Fog.			15.20	Vapour.				
23	.45	Fog.	5.30	Fog.			10.45	Vapour.				
24	7.50	Fog and Rain.	10.30	Snow.			9.00	Snow.				
25	.20	Snow.	8.10	Snow.			6.40	Sleet.	5.00	Snow.		
26	1.40	Fog and Rain.	16.40	Vapour.			7.25	Snow.			2.55	Snow.
27			4.05	Vapour.							8.20	Rain.
28	3.50	Fog.					21.15	Snow.				
29	7.55	Fog.	3.55	Fog.			11.15	Vapour.	6.40	Snow.	11.15	Fog.
30			5.50	Fog.							4.00	Fog.
31			9.30	Fog.					.35	Snow.		
	43.30		192.05		74.40		193.55		102.55		87.50	

APPENDIX No. 3.—*Continued.* *Return of Head Harbour Fog Whistle,* 1883 *and* 1884.

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1					1.20	Snow.	16.00	Snow.	1.25	Snow.		
2			5.30	Snow.	15.10	Snow.	1.05	Vapour.				
3			2.50	Vapour.	1.00	Vapour.	.15	Snow.			2.00	Rain.
4												
5			4.50	Snow.			11.00	Snow.				
6					5.35	Vapour.	3.50	Fog.	2.10	Snow.		
7					5.25	Vapour.			10.45	Snow.		
8							5.50	Snow.	15.55	Snow.	1.55	Snow.
9					12.40	Rain.	16.50	Snow.	9.12	Snow.	6.45	Fog.
10	3.00	Fog.					2.15	Snow.	8.25	Snow.	12.23	Snow.
11					3.15	Snow.					1.50	Snow.
12					2.00	Vapour.	11.00	Snow.	6.45	Snow.		
13					2.25	Snow.	9.35	Snow.				
14	3.30	Sleet.	10.10	Vapour.	3.45	Vapour.	19.20	Vapour.				
15									11.50	Snow.		
16	2.45	Snow.			4.30	Vapour.					13.25	Rain.
17			13.30	Snow.					7.00	Snow.	14.18	Fog.
18			2.15	Snow.	4.15	Snow.	12.50	Snow.	.45	Vapour.	2.45	Rain.
19			4.25	Snow.	14.25	Snow.	3.00	Snow.			7.05	Rain.
20	17.35	Fog.			3.00	Snow.	10.25	Snow.	6.35	Snow.	7.50	Fog.
21			13.10	Snow.							17.35	Fog.
22	.20	Fog.	2.30	Snow.			3.15	Snow.				
23	7.30	Fog.	24.00	Vapour.			5.55	Rain.				
24	1.50	Fog.	24.00	Vapour.			2.15	Vapour.	4.10	Rain.		
25			7.00	Snow.								
26												
27	5.15	Rain.	0.15	Snow.					15.00	Rain.	9.40	Fog.
28			7.45	Snow.			12.55	Snow.	10.10	Rain.	.50	Fog.
29					4.05	Vapour.	9.30	Snow.				
30	6.05	Snow.	4.20	Snow.	13.40	Snow.						
31			3.30	Snow.								
	47.50		130.00		96.30		158.05		110.07		98.21	

APPENDIX No. 3.—*Continued.* *Return of Head Harbour Fog Whistle*, 1884 *and* 1885.

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1	2.23	Snow.			1.17	Snow.	4.38	Snow.	4.25	Snow.		
2					2.30	Vapour.	4.00	Vapour.	11.20	Rain.		
3					10.15	Vapour.	12.00	Vapour.			10.40	Fog.
4									8.40	Snow.	7.20	Rain.
5	10.45	Fog.							.12	Snow.	8.00	Fog.
6					11.40	Rain.	19.25	Snow.			2.05	Snow.
7			14.22	Rain.	19.20	Snow.						
8					1.05	Snow.			11.25	Snow.	10.05	Rain.
9			1.25	Snow.					4.18	Snow.	3.00	Fog.
10									9.22	Snow.		
11			4.30	Snow.			9.00	Rain.				
12					8.35	Rain.			.50	Snow.		
13											5.15	Fog.
14									5.00	Snow.		
15			10.25	Rain.	12.10	Snow.	3.45	Snow.				
16					2.00	Snow.			7.30	Snow.		
17			11.40	Snow.	16.06	Snow.	4.10	Snow.	.20	Snow.		
18			6.30	Snow.			1.48	Snow.				
19			16.50	Vapour.					17.50	Snow.		
20	12.20	Snow.	24.00	Vapour.					2.00	Snow.		
21			24.00	Vapour.								
22			19.00	Vapour.	15.35	Vapour.						
23			2.00	Fog.	11.27	Vapour.	1.10	Snow.				
24	5.18	Snow.	10.45	Snow.	8.10	Snow.	1.45	Snow.				
25			9.20	Snow.	3.40	Snow.			1.50	Snow.		
26					.35	Snow.						
27			4.25	Vapour.							2.15	Fog.
28	4.00	Rain.	4.08	Rain.	19.17	Snow.						
29	14.10	Rain.	3.00	Rain.	11.00	Vapour.			6.30	Snow.		
30			2.05	Rain.								
31			13.40	Fog.					1.15	Snow.		
	49.56		182.05		154.42		61.41		92.57		48.40	

Appendix No. 3.—*Continued.* *Return of Point Lepreaux Fog Whistle, 1883 and 1884.*

Date.	November.		December.		January.		February.		March.		April.	
	H. & M.	Cause.	H. & M.	Cause.	H. & M.	Cause.	H. & M.	Cause.	H. & M.	Cause.	H. & M.	Cause.
1					1.05	Snow.	9.15	Snow.				
2			8.20	Snow.	6.30	Snow.	8.20	Snow.				
3												
4												
5			1.30	Snow.								
6									4.15	Snow.		
7					1.45	Vapour.			1.00	Snow.		
8							14.45	Snow.	13.20	Snow.		
9							7.55	Snow.				
10									1.10	Snow.	5.45	Snow.
11												
12							5.45	Snow.	1.30	Snow.		
13					5.00	Snow.	24.00	Fog.	1.25	Fog.		
14	2.00	Snow.										
15									7.25	Snow.		
16	4.30	Snow.	3.30	Vapour.							15.45	Smoke.
17			14.00	Snow.					6.40	Snow.		
18							7.30	Snow.				
19			4.00	Snow.	8.25	Snow.						
20	5.00	Smoke.							2.30	Snow.	13.00	Fog.
21			12.30	Snow.								
22	8.15	Fog.										
23			12.00	Vapour.								
24			13.30	Vapour.					13.00	Fog.		
25					1.15	Snow.						
26												
27												
28			1.00	Snow.			12.30	Snow.	1.45	Fog.	1.00	Fog.
29							5.15	Snow.				
30	4.10	Snow.	15.40	Snow.								
31												
	23.55		86.00		24.00		95.15		54.00		35.30	

APPENDIX No. 3.—*Continued.* *Return of Point Lepreaux Fog Whistle,* 1884 *and* 1885.

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1					12.20	Fog.	5.00	Snow.				
2												
3							3.30	Vapour.			8.00	Fog.
4									7.15	Snow.		
5	6.05	Fog.					10.30	Snow.				
6					24.00	Fog.					4.30	Fog.
7												
8												
9												
10									4.00	Snow.		
11			2.35	Snow.								
12												
13												
14									1.30	Snow.		
15					11.10	Snow.						
16												
17			9.25	Snow.	10.00	Snow.	3.00	Snow.				
18			2.15	Snow.								
19			3.00	Vapour.					12.15	Snow.		
20	5.10	Fog.	12.00	Vapour.					4.15	Snow.		
21			12.35	Vapour.								
22			5.00	Fog.	6.00	Vapour.						
23					5.20	Vapour.						
24	1.20	Fog.	18.05	Fog.	9.20	Snow.						
25												
26												
27									2.00	Snow.		
28					15.15	Snow.						
29	2.15	Rain.	10.10	Fog.					5.00	Snow.		
30												
31												
	14.50		75.05		93.25		22.00		36.15		12.30	

APPENDIX No. 3.—*Continued.* *Return of Partridge Island Fog Whistle*, 1883 *and* 1884.

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1							13.55	Fog.	.25	Snow.		
2	2.30	Haze.	5.40	Rain.			1.00	Snow.				
3	.45	Smoke.	9.40	Snow.								
4					5.45	Snow.						
5			3.40	Smoke.			4.20	Snow.				
6					8.15	Vapour.	13.20	Fog.	2.50	Snow.		
7			3.00	Smoke.	6.30	Vapour.			13.30	Snow.		
8							6.00	Smoke.	16.30	Snow.		
9	.45	Smoke.	4.15	Rain.	3.20	Snow.	16.55	Snow.	1.00	Snow.		
10	1.00	Fog.					10.30	Snow.	9.10	Snow.	10.10	Snow.
11					4.45	Snow.						
12					1.00	Snow.			19.45	Snow.	3.10	Land Fog.
13					5.15	Vapour.	14.05	Snow.	1.45	Fog.		
14	5.00	Snow.	.25	Rain.	5.30	Snow.	20.40	Fog.				
15					1.45	Vapour.			10.15	Snow.	1.30	Smoke.
16	4.30	Snow.	10.30	Vapour.	6.50	Vapour.						
17			15.00	Snow.					8.10	Snow.	3.30	Fog.
18			3.10	Smoke.	3.15	Snow.	8.30	Fog.	1.00	Snow.	4.30	Rain.
19	2.30	Smoke.	5.00	Snow.	9.10	Snow.	1.40	Snow.	2.00	Smoke.	4.00	Rain.
20	11.30	Land fog.			6.35	Snow.	2.00	Rain.	5.15	Snow.	4.00	Land Fog.
21	.30	Fog.	2.20	Vapour.	7.00	Vapour.					17.10	Smoke.
22	2.15	Fog.			5.50	Land fog.	4.45	Snow.			11.50	Fog.
23	10.15	Fog.	9.00	Vapour.			5.15	Rain.				
24	.25	Rain.	21.15	Vapour.	4.00	Rain.	4.00	Snow.	17.00	Fog and Rain.		
25			2.00	Snow.	7.15	Snow.			1.00	Fog.	.30	Rain.
26					6.35	Vapour.						
27	1.40	Rain.										
28			6.20	Snow.	5.45	Vapour.	9.30	Snow.	10.15	Mist.	5.20	Fog.
29					11.30	Vapour.	5.30	Snow.	.45	Snow.	4.50	Fog.
30	2.20	Snow.	4.30	Snow.	.20	Snow.						
31			2.45	Snow.	12.30	Fog.						
	45.55		108.30		128.40		141.55		120.35		70.30	

APPENDIX No. 3.—*Continued.* *Return of Partridge Island Fog Whistle,* 1884 *and* 1885.

DATE.	NOVEMBER.		DECEMBER.		JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.	H. & M.	CAUSE.
1							14.45	L'd Fog.	7.25	Land fog.	4.40	Rain and Fog.
2			1.30	Smoke.			7.15	Snow.	2.05	Rain.		
3			7.45	Smoke.			1.30	Vapour.			10.10	Sleet.
4									7.20	Smoke.	1.15	Rain.
5	3.20	Rain and Fog.	4.45	Smoke.	8.45	Snow.	10.15	Snow.			4.30	Rain.
6					20.30	Fog.	3.45	Snow.			12.20	Snow.
7			5.55	Rain.	1.20	Snow.	8.00	Snow.				
8			2.00	Snow.	1.00	Fog.			2.30	Snow.	4.30	Rain.
9			3.00	Snow.	2.55	Fog.			5.00	Snow.	2.00	Fog.
10	3.00	Smoke.					3.00	Rain.	5.45	Snow.		
11			8.30	Snow.	6.00	Rain.					.45	Smoke.
12									1.30	Snow.		
13	2.10	Haze.					6.45	Snow.			6.55	Land Fog.
14			2.00	Vapour.			2.30	Vapour.	6.30	Snow.		
15			11.00	Snow.	8.15	Snow.	3.35	Snow.	7.15	Land fog.		
16			.30	Snow.								
17			11.45	Snow.	14.45	Snow.	10.10	Snow.	16.00	Snow.		
18			8.30	Snow.								
19			6.00	Vapour.			.45	L'd Fog.				
20	14.30	Snow.	19.40	Vapour.					7.45	Snow.		
21			17.55	Vapour.	6.55	Snow.	2.30	Snow.				
22			5.30	Rain.	16.30	Vapour.						
23			5.00	Fog.	10.00	Vapour.	.30	Snow.				
24	5.10	Rain.	6.15	Snow.	7.30	Snow.						
25			10.00	Snow.	9.45	Snow.			6.45	Snow.	1.00	Smoke.
26	2.00	Rain.	9.30	Vapour.	4.30	Snow.	.50	L'd Fog.				
27			22.45	Vapour.			3.35	L'd Fog.	1.15	Fog.	5.15	Snow.
28			7.50	Haze.	23.00	Vapour.						
29	10.20	Rain.	4.00	Haze.	10.00	Vapour.			9.15	Snow.	2.20	Rain.
30			2.00	Fog.							4.00	Rain.
31			16.00	Fog.	1.30	L'd Fog.						
	40.30		199.35		153.10		79.40		86.20		59.40	

Appendix No. 4.

Compiled Statement of Fog, Snow, Vapour, Rain and Smoke in the Bay of Fundy, for the months of November, December, January, February, March, and April, from 1880 *to* 1886.

NOVEMBER.

	Fog.	Snow.	Vapour.	Rain.	Smoke.
	H. M.	H. M.		H. M.	H. M.
1880	11.55	18.55		5.55	18.20
1881	16.35	2.40		32.55	
1882	13.15	21.30			6.50
1883	26.00	11.50		2.05	6.00
1884	2.40	14.30		18.10	5.10
1885	20.50	2.00		43.15	8.10
1886					
Total,	91.15	71.15		102.20	44.30

DECEMBER.

1880		53.30	7.50	7.40	
1881	7.30	11.55		.40	9.30
1882		35.50	2.40	2.30	5.05
1883		66.30	21.50	10.40	9.50
1884	22.00	42.30	78.50	22.25	33.40
1885	9.00	58.15	12.15	12.45	3.10
1886					
Total,	38.30	268.30	124.05	56.40	61.15

JANUARY.

1880					
1881	7.45	49.15	21.00	2.45	
1882	4.15	90.10	44.20	2.00	7.15
1883	14.35	53.55	57.05		1.00
1884	36.20	52.05	45.25		
1885					
1886	9.30	57.35	67.20	43.30	8.00
Total,	72.25	303.00	235.10	48.15	16.15

Appendix No. 4.—*Continued.*

Compiled Statement of Fog, Snow, Rain, etc. (Continued).

FEBRUARY.

	Fog.	Snow.	Vapour.	Rain.	Smoke.
	H. M.	H. M.	H. M.	H. M.	H. M.
1880					
1881	25.20	77.45		13.35	4.10
1882	11.05	95.25	6.20	3.20	3.00
1883	12.25	43.15		24.00	
1884	65.35	75.40		7.15	3.25
1885					
1886	13.55	57.05	98.25	42.40	3.30
Total,	128.20	348.10	104.45	90.50	19.05

MARCH.

1880					
1881	7.35	25.15		9.45	
1882	16.30	76.00	2.00	17.35	2.30
1883	2.50	68.35		26.20	
1884	16.30	83.40		10.15	10.10
1885					
1886	17.20	119.05	4.00	17.50	
Total,	60.45	373.05	6.00	81.45	12.40

APRIL.

1880					
1881	8.20	20.55		7.30	
1882	39.15	71.15		13.30	
1883	49.30	21.55		7.25	
1884	22.40	10.10		9.00	18.40
1885					
1886	99.50	9.30	.50	5.15	2.30
Total,	219.35	133.45	.50	42.40	21.10

APPENDIX No. 4.— *Continued.*

AVERAGES

Of Compiled Statement of Fog, etc., at all the Fog Whistle Stations in the Bay of Fundy, for the months of November, December, January, February, March, and April, from 1880 *to* 1885, *both inclusive.*

	FOG.	SNOW.	VAPOUR.	RAIN.	SMOKE.
	H. M.	H. M.	H. M.	H. M.	H. M.
November	15.12	11.52		17.03	7.15
December	6.25	44.45	20.40	9.27	10.13
January.....	12.04	50.30	39.10	8.02	2.43
February.....	21.23	58.02	17.28	15.08	3.11
March	10.08	62.11	1.00	13.38	2.07
April	36.36	22.18	.10	7.07	3.31
Sums	101.48	249.38	78.28	70.25	29.00
Means	16.58	41.36	13.04	11.48	4.50
Or per day ...	.34	1.23	.26	.23	.10

(No. 5.)

(Letter from CAPT. W. A. ROBINSON.)

ST. JOHN, *December 4th*, 1886.

The St. John Board of Trade:

GENTLEMEN,—Having read various reports in the papers concerning the Bay of Fundy, I, as a seaman and mate employed in the coasting and foreign trade of the Bay of Fundy, from 1819 to 1824, and from that time until 1862, as master of St. John and other ships, in foreign trade, beg leave to make some statements concerning the navigation of the Bay of Fundy.

In my many years' experience, I have not met with any trouble from fogs, tides, shoals or shores. On one occasion (while mate) I returned to St. John in an English vessel, the master of which had never been in the Bay of Fundy. He consulted me on the dangers of navigating the Bay. I recommended him to make Cape Sable bank and from that point, with attention to the soundings, he could avoid all the impediments that lay in his way, and with my assistance brought his vessel to anchorage near Musquash. On nearing the Bay we obtained a St. John pilot.

My many years' experience warrants me in affirming that the Bay of Fundy can be navigated with as much ease and safety in summer fogs and winter snows as any other port in North America, notwithstanding all the unfavorable reports of ignorant or predjudiced persons.

In respect of the great rise and fall of tides, they are a great convenience and no obstruction to navigation. I have never met those various and uncertain currents so much spoken of, and, consequently, dreaded by strangers. As to charts, I prefer to use the British Admiralty publication.

The rocks and shoals in the Bay of Fundy are all within the line of soundings, and, with proper attention with the lead, may be avoided, there being a clear channel of 182 miles on a direct course from

Cape Sable bank to St. John harbor. I ask my brother shipmasters to pardon me recommending to them to be more attentive in the use of the lead, and they would avoid many of the rocks and shoals on which they may have been wrecked.

I am, yours truly,

W. A. ROBINSON.

(No. 6.)

(Letter from CAPT. DAVID BODDIE.)

ST. JOHN, N. B., *4th December*, 1886.

The St. John Board of Trade:

GENTLEMEN,— In reply to your note of yesterday, asking me to give my opinion as to safety of the Bay of Fundy for navigation, both in summer and winter, as to the regularity of the tides, and the inconvenience experienced from fog in the summer time, I beg to say that with respect to the fogs, by paying strict attention to the ship's course and the state of the tide at the same time, I never lost an hour's time in making a passage on account of fog in the Bay of Fundy. With respect to the tides, I have always found them very regular, only in the spring of the year, when the freshet from the river is running, I have found the ebb tide much stronger on the western side of the Bay than the flood, which in thick weather must be guarded against.

With respect to rocks and dangers in the Bay, I know of none but what are clearly laid down in the Admiralty charts, and can be easily avoided by using proper precaution and care, which is necessary for the safe navigation of shipping approaching, entering, or leaving any coast, bay or harbor. With respect to my experience in navigating the Bay of Fundy, as a master, I commenced 15th June, 1840, in command of the bark "Abeona," belonging to the firm of Milby & Thomas; the said vessel drew twenty feet of water when loaded, and was run between St. John and London for four years. I never met with an accident in the Bay of Fundy, except one slight collision in the summer of 1846, while in command of the brigt. "Mary," bound down the Bay in the fog. From 1847 to 1854 I had charge of a brigantine called the "P. I. Nevius," during seven years in the coasting trade between St. John and Alexandria, Va. During the seven years I navigated the Bay of Fundy, both summer and winter, I never felt any more inconvenience in na-

vigating the Bay than upon any other coast. In the winter of 1851 the river Potomac was frozen over in the month of February, and I had a good dead of difficulty and loss of time in getting out, and had to get the assistance of an ice-breaking tug boat. When I arrived at St. John, N. B., I was glad to find a splendid harbor all clear of ice or any other impediment to enter it, and with the assistance of a pilot any vessel could beat or sail into the harbor and up to the wharf, as the wind suited, and during the seven years the said vessel run between this port and Alexandria, Va., I never required the assistance of a tug boat in the harbor. Since that date I have commanded several vessels, running out of this port, and have never had an accident in the Bay of Fundy or felt any inconvenience in navigating it. In 1877 I retired from the business.

Trusting that these explanations and my simple experience may be of use to you,

I am, yours truly,

DAVID BODDIE, M. M.

(No. 7.)

(Letter from CAPT. B. B. BUSTIN.)

ST. JOHN, *December 9th,* 1886.

The St. John Board of Trade:

GENTLEMEN,— Having followed the sea for over half a century, and during that time having sailed out of St. John regularly from four to five times a year for ten years, and often afterwards, I can give an opinion of the Bay of Fundy from long experience. During the period from 1835 to 1845 I sailed between here and the West Indies as master of a vessel, and never met with the slightest accident in the Bay of Fundy. At that time we had longer spells of and thicker fog than now, and there were only five or six lights in the Bay; yet by keeping a man on the look out and lead going, I found no trouble in coming up the Bay. I have time and again entered the Bay of Fundy in a dense fog, and never seen land till I made the port of St. John. Several times I have come up the harbor on a cold winter night in a heavy gale, when it was impossible to get a pilot, and that too without any great difficulty, although there were no buoys in the harbor. With our numerous lighthouses, fog horns, and buoys now in use, it is an easy matter to make our port. I would far rather take my chances in the Bay of Fundy, making for St. John in fog, snow or storm, than to enter the ports of Boston or Portland under the same conditions. The Bay of Fundy is a safe bay, for one can always have plenty of drift and can readily tell where he is by the soundings. I consider St. John to be easier of access than any port on the Atlantic coast.

CAPT. B. B. BUSTIN.

(No. 8.)

(Letter from CAPT. JOSEPH PRICHARD.)

ST. JOHN, N. B., *December* 13*th*, 1886.

The St. John Board of Trade:

GENTLEMEN,—I have frequently come to the Bay of Fundy for twenty-eight years, and sometimes about five days before arriving in port, could not get a meridian altitude, and, consequently, had to trust entirely to the lead and distance. I have always found soundings on Sable Island bank transparent sand, and the deep water soundings between the banks and the coast of Nova Scotia always mud bottom.

La Have bank the lead strikes hard on a very fine sand at from forty to fifty fathoms, and on the east of Cape Sable the bottom is rocky and, when on the bank, coarse sand, and as we approached the west side of Cape Sable bank the sounding is black gravel and shells; then the Bay is open to the north, but it is best to keep on to the westward until the water deepens to seventy, eighty or ninety fathoms, and after that to get on the edge of the bank and sail parallel to the edge in about fifty fathoms till abreast of the Lurcher, when the water will shoal to about thirty-five fathoms, and by keeping on the same course the water will get deeper, and not to get into less than fifty fathoms till you get abreast of Briar Island. The shoal water at the Lurcher will indicate the distance up the Bay, and, consequently, the distance to run till abreast of Briar Island, and in about eighty to ninety fathoms, when we can shape our course N. E. by north for Partridge Island. By keeping a good lookout we often see the land from the masthead, over the fog, when you cannot see much more than the length of the ship from the deck, and in very cold weather, in the winter, the vapors seldom rise higher than the ship's lower mast head. In the sailing directions the method of taking the passage is up west of Grand Manan, but I always preferred the east of Grand Manan, as it is much the shorter, and I

have never had an accident. In beating along the south coast of Nova Scotia, in a fog or vapor with the wind S. W., I would not stand inshore nearer than forty fathoms of water.

As far as the vapor or fog is concerned, going to Boston or Portland you have the same to contend with.

J. PRICHARD.

(No. 9.)

(Letter from CAPT. D. SMALLEY.)

ST. JOHN, N. B., *December 4th*, 1886.

The St. John Board of Trade:

GENTLEMEN,—During the past forty-six years I have been engaged as master of vessels trading between the western part of Nova Scotia and the port of St. John (ten years of which we carried the mails between those places during the winter months), and have had ample opportunity to judge of the safety of the navigation of the Bay of Fundy. I have had no difficulty during all that time, even in foggy weather, and long before there were any fog whistles, in making our trips regularly, sometimes five in a month, never once having touched bottom.

I consider the harbor of St. John exceptionally easy of access, and safe to enter at any time of tide.

Yours truly,

DANIEL SMALLEY.

(No. 10.)

(Letter from CAPT. J. J. BROWN.)

CHATHAM, N. B., *January 16th*, 1887.

The St. John Board of Trade:

GENTLEMEN,—A good deal is written and said just now about St. John, N. B., as being a good winter port for steamers. I can vouch for the navigation of the Bay of Fundy, if proper caution is used, that is to say, in thick weather, get sounding on Cape Sable bank, on shore soundings in about 30 fathoms, and with a steamship there is no trouble in running along the edge, and as soon as you get off the bank you will be in the rips of Briar Island; then shape your course for the harbor of St. John, N. E. by N., and as soon as the shore soundings are reached you will get from twenty-five to thirty fathoms. If at daylight, the water has a reddish cast.

As an old shipmaster who sailed between St. John and the British ports for ten years in the "Lisbon" and "John Owens"—and in the days when the St. John fleet in the London and Liverpool trade embraced such fine ships as the "Peter Maxwell," "Imperial," "John Barbour," "John Duncan," "Lampedo," "Harmonides," (which latter I commanded for a time) and others, I am at a loss to understand how it has come about that the Bay of Fundy is looked upon as presenting any especial difficulties to competent navigators. The tides are simple—up and down—the soundings even, and safe to get hold of, and the approach to St. John harbor free, open, and unobstructed. I may say that I always felt as safe and sure of my position, making for and sailing up the Bay of Fundy, as I did in either the English or St. George's Channel, while St. John harbor, being more contiguous to the open Bay than most of the principal ports of either side of the Atlantic are to their deep water approaches, it seems to me—from a sailing-master's standpoint—it is one of the most desirable and safe known. In all my navigation of the Bay of Fundy I never found any difficulties and never had any mishap. Of course, strict attention to the lead is required in thick weather. In winter there is no more fog in the Bay of Fundy than elsewhere.

J. J. BROWN, Shipmaster.

(No. 11.)

(Letter from CAPT. HILL, of the "Ulunda" of the Furness Line.)

HALIFAX, 29*th December*, 1886.

The St. John Board of Trade:

GENTLEMEN,—Having been asked by you to express my views for the benefit of the Board of Trade, respecting the waters we navigate between this port and St. John, I beg to report as follows: Since the 1st of May last (1886), I have made five round trips to St. John. Twice out of the five I encountered fog from time of leaving Halifax until I was in the Bay of Fundy so far as Briar Island. From that place to St. John I had clear weather.

Three times I had clear weather the entire passage. On my return I experienced clear weather the whole five trips from time of leaving St. John until I arrived at Halifax.

The coast from here (Halifax) to Cape Sable is well lit, also the approach to Bay of Fundy; and good fog signals are provided for thick weather. Soundings I consider reliable; currents rapid, causing the navigator great anxiety in thick weather, but through sound judgment and careful study on the part of the navigator, Partridge Island should be reached with safety through the thickest weather.

Referring to my personal experience during the five trips I have made to St. John and return, I cannot but report most favorable so far as the navigation part is concerned.

Yours faithfully,

R. S. HILL,
Master S. S. "Ulunda."

(No. 12.)

(Letter from CAPT. S. H. PIKE, late of the I. S. S. Line.)

The St. John Board of Trade:

GENTLEMEN, — I have been engaged with the International Steamship Company, as pilot and as master, running their steamers between Boston and St. John, touching at Portland and Eastport, for the last thirty years, prior to which time I was engaged in the coasting and West India trade. I consider the Bay of Fundy as easy of approach and as safe for navigation as any portion of the North Atlantic coast at any season of the year and in all weathers. The snow storms, in my opinion, are not more severe in the Bay of Fundy than they are in the vicinity of Portland and Boston, while these cities also have a pretty large share of fog ; still, it always seemed to me that fog had a great love for St. John, and made its visits too long. But, notwithstanding this, I know of no place I would rather approach on the coast, in fog or bad weather. The courses of the West Channel (I am not so familiar with the south) are few and simple, and can be run without any great risk by a good pilot. I know of no bay on the North Atlantic coast so clear of obstructions to navigation as the Bay of Fundy from Moos-a-Peck, or Moss Peck, so called, on the coast of Maine, to Partridge Island (mouth of St. John harbor).

During the whole thirty years of my experience, making one or two trips per week in all seasons of the year, and in all kinds of weather, I met with but one accident in the Bay of Fundy, viz: while master of the "State of Maine," at Point Lepreaux. This accident I regard as exceptional, and I attribute it to the Point Lepreaux whistle not being in its proper place. It has since been placed in the right position. The fog whistle is a grand invention, if well attended.

The shores of the Bay are generally high, and even in foggy weather we can frequently get sight of land, either from deck or from masthead, but we are never delayed by this, having run our course

on usual time and speed, we make our points carefully, and take our departure. Our passages have been made with remarkable regularity, as all know who are acquainted with the line.

In my opinion, steamers or vessels of any kind can approach or leave St. John any time of the year, and in all weathers, with as much safety as any port on the North Atlantic coast.

The harbor of St. John is never frozen, and field ice in the Bay is much less frequent than on the coast.

S. H. PIKE.

(No. 12–B.)

(Letter from CAPT. EDWARD SMITH.)

STEAMER "DAMARA,"
HALIFAX, 31*st January*, 1887.

The Board of Trade, St. John:

GENTLEMEN,— I have much pleasure in sending you a brief report of my experience in the Bay of Fundy and harbor of St. John.

I have just recently made two voyages to St. John, and experienced thick weather on both occasions, notwithstanding which I found my way safely into the Bay and up to St. John.

I call St. John a good port, and the soundings are splendid for navigating a vessel up the Bay and right into the harbor. They are so reliable that any competent person can easily find the way into the Bay and up to St. John in the thickest and darkest night there can be.

I remain, yours truly,

EDWARD SMITH,
Master.

(No. 13.)

(Statement from CAPT. CHAS. S. TAYLOR, Harbor Master of St. John.)

The St. John Board of Trade:

GENTLEMEN, — I was about twenty years a pilot in the Bay of Fundy. I have brought many steamships up the Bay of Fundy in the summer time; not many in the winter, as during the time I was pilot steamships did not come regularly from seaward in the winter, with the exception of the Allan Line. I would have no hesitation, as a pilot, in bringing any of the largest mail steamers to the port of St. John all through the year, summer or winter, but would prefer the winter, the atmosphere, as a rule, being more clear then. With a steamer drawing twenty-seven feet of water, the harbor of St. John can be entered about half flood. I consider a large ship safe at the railway wharf in any weather. I consider the corporation pier, however, a safer wharf; the depth of water at that wharf is thirty feet at the south end and twenty-five feet at the north end, twelve feet from the pier. I consider the anchorage at Partridge Island, at the mouth of the harbor, excellent. The channel could be dredged to a sufficient depth for ships of any draught of water at low tide. I consider the John Robertson wharves well suited for permanent wharves for steamers of large size, and a very suitable wharf could be built at Sand Point, Carleton, by adding to the present, there being twenty-seven feet at low water springs. I consider the holding ground in the harbor to be very good. The steamer "Kansas" loaded at the railway pier, about three years ago, and she drew twenty-seven feet. At this time there were nine steamers in the harbor at one time, two of them respectively of 5,276 tons and 5,146 tons, and the other seven from 1,500 to 3,000 tons each. I consider the navigation of the Bay of Fundy as easy and safe as any place I know of; the running courses are few and simple, and the very few obstructions are hardly worth mentioning.

CHARLES S. TAYLOR,
Harbor Master.

(No. 14.)

(Statement from RICHARD CLINE, one of the St. John Branch Pilots.)

ST. JOHN, *7th January*, 1887.

The St. John Board of Trade:

GENTLEMEN,—I have been about thirty-nine years a St. John pilot, and have been in the habit of taking charge of steam and sailing vessels outside of Briar Island, at the mouth of the Bay of Fundy. I have brought many steamers of the Anchor Line and others from Halifax, and some from New York, and I have brought many ships of war, both British and United States, into the harbor of St. John. I was pilot on board H. M. S. "Northampton," drawing twenty-six feet, from Halifax here in August, 1878. We harbored at Liverpool, N. S., Flagg's Cove, Grand Manan, Bliss Harbor, and Digby, and from thence to St. John, and then back to Halifax. The weather was thick most of the time. I had no difficulty. At the time of the Trent affair I brought several troop ships in here, boarding them in Halifax. I had the "Jura," the "Calcutta," the "Australasian," the "Adriatic," 5,555 tons, and many others were here that winter, brought in by other pilots. Thirty years ago last summer I piloted the U. S. steamer "Mississippi" from Eastport here; she drew twenty-two feet; the weather was thick; there was no fog alarms in the Bay then, and we got along well enough, although the weather was thick. I also piloted the American ship "Great Republic," the largest merchant sailing ship ever built. We sailed up the Bay and into this port, and came to anchor in the harbor without a tug. About three hours flood would be the time to enter the harbor with a ship drawing twenty-seven feet, and the same applies to Boston and Portland, Me. The navigation of the Bay of Fundy compares most favorably with other ports and places where I have been. If a ship of deep draught of water arrives off the harbor and has to wait for the tide, she can either anchor outside Partridge Island with safety (the anchorage being excellent) or she can lay off and on, there being plenty of sea room. I would rather approach St. John in bad weather than any other port along the

coast. During the time I have been pilot, I have myself brought in two hundred steamships and have never had an accident with one of them. The aid of a tug is not necessary either in entering or leaving the port with steamships. The land of the Bay Shore is high, and one can always see it over the vapor occasioned by extreme cold weather. It can generally be seen also in foggy weather by going aloft. The soundings are good from Cape Sable into St. John, and one could come in during the densest fog by using the lead. The whistles are good and numerous, but when they cannot be heard, a pilot or captain can come up by soundings, which are very regular. From the usual track of Atlantic steamers bound to Portland and Boston, the navigation of the Bay by the south channel is plain and simple. It is a straight course from Briar Island to Partridge Island, say sixty miles. In fact, those steamers, by keeping on their regular course towards Portland and Boston a few extra miles west of Cape Sable more than is necessary to enter the Bay, can then turn and make one straight course to Partridge Island, at the mouth of St. John harbor, and this without any obstructions within twenty miles of the line sailed after entering the Bay. The south channel is broad, being eighteen miles wide at its narrowest part, which is at the entrance of the Bay, between Briar Island and the "Old Proprietor," so called. From this point inward it immediately widens to thirty-five or forty miles, which width it holds good all the way to St. John without obstruction of any kind. When piloting sailing ships out of the harbor I never anchored at the Island to await a chance on account of the fog. I always went on, thick or clear, and would work my ship out south channel, even beating out all the way if wind was ahead. I do not consider the tides dangerous by any means, but one must, of course, have some knowledge of them when entering the Bay. From Briar Island up the tides are very regular. There is never any ice in the harbor to interfere with or injure ships. There is never any field ice to contend with in the Bay, even in the severest weather. There is about eighteen feet of water in the main channel eastward of Partridge Island at low water spring tides. This could be easily dredged if desired. It would be cut clear by the tide if the breakwater was extended to the Island; that would make one of the most comfortable harbors this side of Europe.

RICHARD CLINE.

(No. 14–B.)

(Letter from SAMUEL RUTHERFORD, Pilot for the Bay of Fundy and Harbor of St. John.)

The Committee of the Board of Trade:

GENTLEMEN,— I have been thirty-four years a pilot in the Bay of Fundy. I have been to sea altogether forty-two years, and have brought large steamers of heavy draught of water into the harbor of St. John. Vessels of this class can enter about half flood. I consider the navigation of the Bay of Fundy quite safe in the winter time — the weather being then clear, as a rule. I do not consider that vapour renders navigation unsafe, as it is very seldom so high as to obstruct the view of the land — it only prevails during northerly winds, and is of short duration. When coming here from Halifax I have often taken charge from that port. I have often brought ships through the channel between the north-west Ledge and the "Old Proprietor," by the lead, and have not seen the land. I consider the holding ground off Partridge Island to be as good as any known. The bottom in the main channel on entering this port is gravel and mud, and could be dredged for large ships. The average depth of water off the Custom House, at low water springs, is ten fathoms. I consider the harbor of St. John easy of access in any weather, as the courses from Cape Sable to St. John are few and very simple, and can be run with ease, ordinary care being observed in thick weather to keep the lead going. The soundings being very regular and pronounced, and the Bay of Fundy being admirably provided with light houses, fog whistles, and automatic buoys, makes the chance of loss or damage very small indeed. I consider that the harbor of St. John and its approaches compare very favorably with any other harbor on this coast, as they never freeze over in winter, which cannot be said of any other harbor north of Hatteras.

SAMUEL RUTHERFORD.

(No. 15.)

(Statement from Messrs. SCAMMELL BROS., Agents for Anchor Line Steamers.)

The St. John Board of Trade:

GENTLEMEN,—In reply to your enquiry, we beg to advise that the Anchor Line of steamships commenced the service to this port in April, 1864, and continued to land their cargoes here until 1879, and during that period they did not meet with any disaster or experience any difficulty in navigating the Bay of Fundy, or in entering or leaving our harbor, at all seasons of the year; and in support of this statement, the owners (Messrs. Henderson Bros.) of this line, in February, 1869, memorialized the Government, Legislative Council and Assembly of the Dominion of Canada that they were prepared to conduct the postal service between Great Britain and New Brunswick, placing a large and powerful fleet of steamers sufficient to ensure a regular fortnightly communication throughout the year between Liverpool and St. John.

The number of Anchor Line steamers that visited this port during the above mentioned period was:

1864 2	1868 7	1872 6	1876 9
1865 2	1869 6	1873 9	1877 7
1866 3	1870 6	1874 13	1878 3
1867 3	1871 8	1875 9	1879 1

Since the last mentioned date we have had several of this line, besides numerous "tramp boats" that have come here in ballast to obtain outward cargoes, and consider the protection afforded mariners much greater now by the numerous lights, buoys and fog alarms, at present in operation in and at the entrance of the Bay of Fundy, than when this line were willing to maintain yearly service to this port.

It may be necessary to mention the reason for the withdrawal of the Anchor Line steamers from this port, and which is accounted for in the fact of the building of the Intercolonial Railway from Halifax to St. John, which taps the service, steamers calling at Hali-

fax and landing their cargoes, which are carried to this port and also the interior towns by the said I. C. R.

In view, however, of the fact of this port of St. John being made the winter port for the mail service of the Dominion Government, and the close connection by mail with Montreal, we may anticipate in the near future a large growing trade between this port and the Old Country, and a revival of the calling at our port again of the favorite Anchor Line steamers, which line did so much in the past to develop the trade of our port.

We are, yours truly,

SCAMMELL BROS.

St. John, N. B., January 26th, 1887.

(No. 15-B.)

(Copy of letter from JAS. B. HEGAN, C. E., acting Engineer in charge for Board of Public Works at St. John, to the Department at Ottawa.)

DEPARTMENT OF PUBLIC WORKS,
ENGINEER'S OFFICE,
ST. JOHN, N. B., *November 26th*, 1886.

SIR, — In reply to the enquiries made in your telegram of 24th instant in reference to whether steamers drawing twenty-six feet six inches can be accommodated at any of the St. John wharves without grounding, and if so, what number at a time, I have the honor to report that even in their present condition and at the lowest spring tides, vessels of the draught of water that you name can lie at the "Railway Wharf" at Carleton, or at what is called the "Corporation New Pier" on the St. John side of the harbor; in addition to which the Deep Water Railway Terminus (I. C. R.) would, excepting at the most extreme low water springs, also offer the accommodation desired. I know of one steamer, the "Missouri," loading down to twenty-seven feet at it the season before last.

There is also the "Custom House Wharf," "Robertson's Wharf" and the "Adams Wharf," Carleton, having at them eighteen to twenty-one feet at present (owing to filling up that has taken place) that can at both little expense and time expended in dredging be made to afford the depth or a greater one than that which you mention.

That you may have the fullest information on the subject, I have to add that the "Railway Wharf" at Sand Point, Carleton, is only some two hundred feet long, and should, to give perfect accommodation, and the best facilities for a steamer of large size loading or discharging properly, be added to, and for which there is the most favorable chance from its situation. The "Corporation New Pier," "Deep Water Terminus" (I. C. R.) and "Robertson's Wharf," have each a loading face of about 500 feet, and most convenient and suitable as constructed, while the "Custom House Wharf," and "Adams'" would properly require some additions.

Several other wharf properties can also easily be made available by dredging and slight additions.

The range of tide in the harbor of St. John being that of neaps eighteen feet, to spring twenty-seven feet, you can understand that ordinarily at most of the wharves named there would at an ordinary low tide be nearly or about depths required.

Yours, etc.,

JAS. B. HEGAN,
Acting Engineer in charge.

A. GOBEIL, ESQ.,
Ottawa.

Appendix No. 16.

Statement of Vessels Departing Seaward *from the Port of Saint John, N. B., for the years* 1869 *to* 1875, *inclusive.*

1869.

	NO.	TONS.
British Vessels,	684	205,059
Foreign "	274	188,930
Total,	958	393,989

1870.

	NO.	TONS.
British Vessels,	869	271,686
Foreign "	332	210,737
Total,	1,201	482,423

1871.

British Vessels,	842	221,348
Foreign "	299	196,040
Total,	1,141	417,388

1872.

British Vessels,	1,134	236,769
Foreign "	350	214,751
Total,	1,484	451,520

1873.

	NO.	TONS.
British Vessels,	1,170	251,242
Foreign "	357	205,725
Total,	1,527	456,967

1874.

British Vessels,	1,107	269,238
Foreign "	309	189,160
Total,	1,416	458,398

1875.

British Vessels,	872	276,705
Foreign "	344	221,728
Total,	1,216	498,433

RECAPITULATION.

	NO.	TONS.		NO.	TONS.
1869,	958	393,989	1873,	1,527	456,967
1870,	1,201	482,423	1874,	1,416	458,398
1871,	1,141	417,388	1875,	1,216	498,433
1872,	1,484	451,520	Total,	8,943	3,159,118

Statement of SEA-GOING STEAM *and* SAILING VESSELS *and* COASTWISE STEAMERS **Arriving** *at the Port of St. John, N. B., from* 1877 *to* 1886, *inclusive.*

YEAR.	Sea-Going.	No.	TONS.	Coastwise.	No.	TONS.
1877.	Steam Vessels,	149	127,435	Steamers,	219	74,976
	Sailing "	966	293,625			
	Total,	1,115	421,060			
1878.	Steam Vessels,	128	125,598	Steamers,	232	98,169
	Sailing "	1,078	270,732			
	Total,	1,206	396,330			
1879.	Steam Vessels,	155	131,035	Steamers,	135	69,072
	Sailing "	900	245,884			
	Total,	1,055	376,919			
1880.	Steam Vessels,	166	147,825	Steamers,	154	75,458
	Sailing "	1,258	315,955			
	Total,	1,424	462,880			
1881.	Steam Vessels,	193	180,636	Steamers,	145	78,259
	Sailing "	1,251	263,910			
	Total,	1,444	444,546			
1882.	Steam Vessels,	236	239,862	Steamers,	146	76,282
	Sailing "	1,300	253,921			
	Total,	1,536	493,783			
1883.	Steam Vessels,	180	183,151	Steamers,	216	97,024
	Sailing "	1,452	283,592			
	Total,	1,632	466,743			
1884.	Steam Vessels,	224	221,493	Steamers,	192	91,433
	Sailing "	1,680	262,978			
	Total,	1,904	484,471			
1885.	Steam Vessels,	213	163,615	Steamers,	187	99,245
	Sailing "	1,527	237,930			
	Total,	1,740	401,545			
1886.	Steam Vessels,	238	213,333	Steamers,	197	80,562
	Sailing "	1,602	258,668			
	Total,	1,840	472,001			

ARRIVING.—Total Steam Vessels, ... 1,882 Vessels, ... 1,733,983 Tons.
" Sailing " ... 13,014 " ... 2,687,195 "
" Coastwise Steamers, 1,823 " ... 840,480 "
Grand Total, ... 16,719 Vessels, ... 5,261,658 Tons.

Statement of SEA-GOING STEAM *and* SAILING VESSELS *and* COASTWISE STEAMERS **Departing** *from the Port of St. John, N. B., from* 1877 *to* 1886, *inclusive.*

YEAR.	Sea-Going.	No.	TONS.	Coastwise.	No.	TONS.
1877.	Steam Vessels,	149	127,435	Steamers,	219	74,976
	Sailing "	966	293,625			
	Total,	1,115	421,060			
1878.	Steam Vessels,	129	125,192	Steamers,	258	90,078
	Sailing "	844	282,069			
	Total,	973	407,261			
1879.	Steam Vessels,	116	116,501	Steamers,	182	87,996
	Sailing "	915	305,443			
	Total,	1,031	421,944			
1880.	Steam Vessels,	166	147,825	Steamers,	196	91,991
	Sailing "	1,198	311,055			
	Total,	1,364	458,880			
1881.	Steam Vessels,	150	160,787	Steamers,	187	93,830
	Sailing "	1,240	291,662			
	Total,	1,390	452,449			
1882.	Steam Vessels,	190	221,900	Steamers,	194	96,308
	Sailing "	1,348	310,563			
	Total,	1,547	532,463			
1883.	Steam Vessels,	173	198,247	Steamers,	239	96,186
	Sailing "	1,526	317,112			
	Total,	1,699	515,359			
1884.	Steam Vessels,	225	221,281	Steamers,	202	90,096
	Sailing "	1,736	296,134			
	Total,	1,961	517,415			
1885.	Steam Vessels,	213	163,615	Steamers,	189	98,035
	Sailing "	1,527	237,930			
	Total,	1,740	401,545			
1886.	Steam Vessels,	225	211,867	Steamers,	209	82,789
	Sailing "	1,674	289,660			
	Total,	1,899	501,527			

DEPARTED.—Total Steam Vessels, ...	1,745	Vessels, ...	1,694,650	Tons.
" Sailing " ...	12,974	" ...	2,935,253	"
" Coastwise Steamers,	2,075	" ...	902,285	"
Grand Total, ...	16,794	Vessels, ...	5,532,188	Tons.
Total ARRIVING, ...	16,719	Vessels, ...	5,261,658	Tons.
" DEPARTING, ...	16,794	" ...	5,532,188	"
Grand Total, ...	33,513	Vessels, ...	10,793,846	Tons.

Appendix No. 19.

Total Tonnage of Coastwise Steamers *Arriving and Departing from the Port of St. John, N. B., from* 1877 *to* 1886, *inclusive.*

3,898 Vessels, ... 1,742,765 Tons.

Appendix No. 20.

Imports and Exports *of the Port of St. John, N. B., from* 1877 *to* 1886.

YEAR.	IMPORTS.	EXPORTS.
1877, ...	$5,615,807	$3,432,110
1878, ...	7,366,728	2,937,714
1879, ...	4,347,883	2,930,559
1880, ...	3,143,331	3,249,718
1881, ...	4,305,248	3,301,411
1882, ...	4,997,734	4,221,830
1883, ...	5,299,793	4,247,648
1884, ...	4,621,691	4,311,193
1885, ...	4,059,009	3,813,116
1886, ...	4,075,346	3,901,495
Totals, ...	$47,832,570	$36,346,794

Total Imports, ...	$47,832,570
Total Exports, ...	36,346,794
Grand Total, ...	$84,179,364

APPENDIX

A Statement of the DISASTERS *and* CASUALTIES *which have occurred to Vessels and their period from* 1869 *to* 1886, *with the Estimated*

DATE.	NAME OF VESSEL.	AGE.	PORT OF REGISTRY.	FROM.	TO.	RIG.	TONS.
1869							
Dec. 19	Paragon,	4	St. John,	St. John,	Cardenas,	Brigt.	
April 21	Imperial,	10	London,	New Orleans,	St. John,	Ship.	
July 22	Debonaire,		Granville,	St. John,	Boston,	Schr.	
Dec. 4	Julia,		St. John,	Boston,	St. John,	"	
1870							
July 14	Labrador,		London,	St. John,	Boston,	Str.	266
April 14	M. E. Bliss,		St. John,	do.	do.	Schr.	96
June 14	Scio,		Barbados,	do.	Havana,	Bgt.	181
1871							
	Currier,		British,	London,	St. John,	Ship.	
Feb. 9	Rosilla B.,		St. John,	Portland,	do.	Schr.	107
1872							
May 5	Alumina,		Liverpool,	St. John,	Liverpool,	Bark.	699
Aug. 19	Glendon,		St. John,	Portland, Me.,	St. John,	Schr.	175
Nov. 23	Harold,		do.	St. John,	Cuba,	Bgt.	260
Jan. 8	Phœbe Ellen,		Windsor, N. S.,	do.	Havana,	"	181
Mar. 12	Sarah Sloan,		St. John,	do.	do.	Bark.	388
Nov. 28	Summer,		do.	do.	Cardenas,	Bgt.	308
1873							
Mar. 29	Annie Martha,	3	do.	Sydney,	St. John,	Schr.	126
Oct.	Annandale,	24	do.	St. John,	Hull,	Bark.	592
Feb. 21	G. W. Hunter,	2	Yarmouth, N. S.,	do.	Dublin,	Ship.	793
Jan. 29	Humber,	12	London,	Machias,	St. John,	"	1,400
Dec. 5	Jesse Hoyt,	New	Pictou, N. S.,	Sydney,	do.	Schr.	276
Dec. 13	Zingu,	"	St. John,	St. John,	Bermuda,	Bgt.	200
June 20	Merriam,		Boston, Me.,	Boston,	St. John,	Schr.	250
June 18	Memento,	20	St. Johns, Nfld.,	St. John,	Rose Blanche,	"	93
Oct. 30	Moselle,	3	St. John,	Liverpool, N.S.,	St. John,	"	108
Nov. 25	Magaguadavic,	7	do.	Shelburne,	do.	Bgt.	311
Jan. 14	Mary Jane,		Liverpool,	St. John,	Liverpool,	Ship.	787
Sept. 29	Nelson,	3	St. John,	New York,	St. John,	Schr.	149
1874							
Nov. 12	Juliet,	12	do.	Halifax,	do.	"	145
Jan. 25	Levi Hart,	New	United States,	St. John,	Cuba,	"	407
Dec. 15	Margaret Ann,	14	St. John,	do.	Boston,	"	104
Aug. 22	Ecuador,	1	do.	Sydney,	St. John,	Bark.	1,059
July 15	General Wolseley,	1	do.	Liverpool,	do.	"	720
Jan. 29	Hyack,	10	do.	St. John,	Queenstown,	"	430
1876							
May 13	Apollo,	18	Belfast,	do.	Belfast,	"	425
1877							
April 19	Otago,	3	Yarmouth, N. S.,	do.	Liverpool,	Ship.	1,095
1878							
June 23	Antwerp,	4	St. John,	Galway,	St. John,	Bark.	573
Sept. 6	Adria,	8	Parrsboro,	St. John,	Queenstown,	Schr.	118
Jan. 25	Free Trade,	11	St. John,	do.	Barbados,	"	133
July 27	Harmonides,	21	do.	Havre,	St. John,	Ship.	1,564

No. 21.

Cargoes in the Bay of Fundy, coming to and going from the Port of St. John, during the Value of the Loss, as far as could be ascertained.

Place Where Casualty Happened.	Nature of Casualty.	Cause of Casualty.	Lives Lost.	Total or Partial Loss.	Loss on Vessel.	Loss on Cargo.
Briar Island,	Loss of spars,	Stress of weather,	4			
Morra Ledges,	Stranded,	do.	23			
Grand Manan,	Wrecked,	Fog.				
Irishtown,	Stranded,					
Grand Manan,	do.	Stress of weather,		Partial,	$ 3,000	
do.	do.	do.		do.	3,000	
Long Island,	do.	Error in judgment,		Total,	5,400	
St. Mary's Bay,	do.			Partial.		
Grand Manan,	do.	Stress of weather,		do.		
Near St. John,	do.	Accidental,		do.	10,000	
Musquash,	do.	Fog,		do.	7,200	
West Quoddy,	do.	Accidental,		Total,	10,000	
Young's Cove,	do.	Stress of weather,	5	do.		
Grand Manan,	do.		10	do.		
West Quoddy,	do.	Stress of weather,		do.		
Dipper Harbour,	Foundered,	Leak,		do.	5,000	
Bay of Fundy,	Sprung a leak,	Stress of weather,		Partial,	3,000	
Grand Manan,	Stranded,	Drunken crew,		Total,	28,000	
do.	do.	Thick weather,		do.	40,000	
Little River,	do.	Stress of weather,		Partial,	7,200	
Campobello,	do.	Snow storm,		do.		
Grand Manan,	do.	Fog,		Total.		
Bay of Fundy,	do.	Struck a rock,	7	do.		
Musquash,	do.	Stress of weather,		do.	4,000	
Grand Manan,	do.	Snow storm,		do.	11,000	
Manawagonish,	do.	Stress of weather,				
Mace's Bay,	do.	Compass,		do.	9,000	
Digby Neck,	do.	Tideway,		do.	5,000	
Bass Island,	do.	Snow storm,		Partial.		
Digby Neck,	do.	Stress of weather,		Total,	4,000	
Briar Island,	do.	Fog, and error of judgment,		Partial,	12,000	
do.	do.	Fog and heavy sea,		Total,	32,000	
Bay of Fundy,	do.	Snow storm,		do.	12,000	
St. John Harbour,	do.	Hawser broke,		do.	5,300	
Manawagonish,	Dragged anchors,	Stress of weather,		Partial,	10,000	
Off Briar Island,	Collision,	Fog,		do.	1,200	
Gannet Rock Ledge,	Stranded,	do.		Total,	2,500	$264
Dipper Harbour,	do.	Stress of weather,		do.	2,500	
Gulliver's Hole,	do.	do.		do.	20,000	

APPENDIX No.

A Statement of the DISASTERS *and* CASUALTIES *which have occurred to Vessels and their period from* 1869 *to* 1886, *with the Estimated*

DATE.	NAME OF VESSEL.	AGE.	PORT OF REGISTRY.	FROM.	TO.	RIG.	TONS.
1878							
Aug. 27	Hebe,	22	Norway,	Antwerp,	St. John,	Bark.	748
Mar. 25	Liffey,	New	St. John,	Havana,	do.	"	845
Dec. 3	Owego,	21	New York,	St. John,	Liverpool,	Ship.	974
Sept. 14	Walton,	23	Liverpool,	Carnarvon,	St. John,	Bark.	577
Dec. 23	Venice,	4	St. John,	Queenstown,	do.	Bktn.	624
1879							
Mar. 7	Turkish Empire,	23	London,	St. John,	Dublin,	Ship.	1,500
1880							
May 10	Bellona,	33	Norway,	Boston,	St. John,	Bark.	295
Mar. 8	Eblana,	11	St. John,	Newport,	do.	"	651
" 12	Miramichi,	51	Norway,	St. John,	London,	"	689
Dec. 26	Keepsake,	34	Great Britain,	do.	Mumbles,	Brig.	270
" 10	Sea Lark,	8	St. John,	do.	Boston,	Schr.	69
1881							
Dec. 3	Cyclone,	2	do.	do.	do.	"	90
Jan. 3	Happy Home,	6	Windsor, N. S.,	Hamburg,	St. John,	Bark.	884
Aug. 27	H. J. Olive,	8	St. John,	Darien,	do.	Bgt.	315
May 27	John Murphy,	5	Yarmouth, N. S.,	Liverpool,	do.	Ship.	1,472
Sept. 21	Two Sisters,	9	Digby, N.S.,	St. John,	Ireland,	Schr.	130
1882							
Jan. 1	Teal,	9	St. John,	New York,	St. John,	"	147
Nov. 11	Althea,	19	Youghal,	St. John,	Youghal,	Brig.	375
Dec. 4	Sarah,	8	Yarmouth, N. S.,	do.	Norfolk,	Bark.	1,175
" 14	Scotia,	26	Liverpool,	Bahia,	St. John,	"	921
1883							
Feb. 8	Grace E. Cann,	15	Yarmouth, N. S.,	Ireland,	do.	"	683
" 20	Teal,	10	St. John,	St. John,	New York,	Schr.	147
May 20	Wm. Yeo,	21	Barrow,	Barrow,	St. John,	Bark.	756
Aug. 21	Rapid,	7	St. John,	St. John,	Port Rush,	Bgt.	325
Jan. 20	John Murphy,	7	Yarmouth, N. S.,	Havre,	St. John,	Ship.	1,471
1884							
Jan. 22	Ashlow,	3	St. John,	Kingston,	do.	Bark.	639
" 20	Anna Currier,	16	do.	Nantucket,	do.	Schr.	105
Aug. 24	Almida,	12	New York,	Boston,	do.	"	153
" 31	J. F. Whittaker,		St. John,	New York,	do.	"	210
Oct. 22	Plevna,		Liverpool,	St. John,	Carnarvon,	Bark.	656
July 12	State of Maine	1	Eastport,	Eastport,	St. John,	Str.	1,145
Aug.	Amateur,	19	Sydney,	St. John,	Boston,	Schr.	
1885							
April 25	Albuera,	10	Annapolis,	do.	Dublin,	Bark.	655
Nov. 14	Antwerp,	11	St. John,	do.	Queenstown,	"	573
June 6	Daphne,	5	St. John,	New York,	St. John,	Schr.	137
July 23	Dominion,	21	Yarmouth, N. S.,	Yarmouth,	do.	Str.	410
Aug. 5	Humacao,	2	Spanish,	Baltimore,	do.	"	1,714
" 22	Merlin,	20	St. John,	St. John,	Boston,	Schr.	98
Feb.	St. Olaves,	11	do.	do.	Liverpool,	Bark.	572
Aug. 15	Sarah Hunter,	3	do.	New York,	St. John,	Schr.	122
Sept. 5	York City,	4	Hartlepool,	St. John,	Halifax,	Str.	1,530

21.— *Continued.*

Cargoes in the Bay of Fundy, coming to and going from the Port of St. John, during the Value of the Loss, as far as could be ascertained.

Place Where Casualty Happened.	Nature of Casualty.	Cause of Casualty.	Lives Lost.	Total or Partial Loss.	Loss on Vessel.	Loss on Cargo.
S. W. Wolf,	Stranded,	Fog and error in judgment,		Total,	$13,000	
Musquash,	do.	do.		Partial,	12,000	
West Quoddy,	do.	Stress of weather,		Total,	18,000	$7,000
Murr Ledges,	do.	Fog,		do.	10,000	
Maxwell's Point,	do.	Parted chains,		Partial,	10,000	
Grand Manan,	do.	Vessel on beam ends,	7	Total,	30,000	10,221
Split Rock Cove,	do.	Fog,		do.	7,000	
Negro Head,	do.	Error of judgment,	7	do.	18,000	
Little River, Me.,	do.	Carried away anchor,		do.	7,000	5,362
Cutler River,	do.	Unknown,		do.	3,240	2,016
Head Harbour,	do.	Snow storm,		do.	600	800
Briar Island,	do.	do.		do.	1,000	
Trinity Ledge,	do.	do.	3	do.	25,000	
Briar Island,	do.	Error in ship's position,		do.	10,000	
Cape Spencer,	do.	Fog,		Partial,	20,000	840
Bay of Fundy,	do.	Dragged anchors.		Total,	3,000	
Musquash,	do.	Stress of weather,		Partial,	2,500	
do.	do.	Missed stays,		do.	2,500	
N. E. Bliss Island,	do.	Cloudy and vaporous,		do.	18,000	
West Quoddy,	do.	Stress of weather,		Total,	15,000	
Basin of Minas,	Driven up Bay an	d caught in ice,		Partial,	3,000	
Bay of Fundy,	Capsized,		6	Total,	4,000	
do.	Stranded,	Fog,		Partial,	2,500	50
Seal Island,	do.	do.		do.	2,500	700
Tusket Island,	do.	do.		Total,	40,000	
Entrance to St. John,	do.	Gale,		Partial,	6,000	
Quaco,	do.	do.		Total,	1,000	1,000
Grand Manan,	do.	do.		do.	5,000	
Goose Island,	do.	Fog,		do.	9,000	15,000
Bliss Island,	do.	Error,		do.	13,000	5,000
Point Lepreaux,	do.	Fog,		Partial,	60,000	1,000
Lubec Narrows,	do.	Tide,		Total,	1,000	
Bay of Fundy,	Leaking,	Stress of weather,		Partial,	650	
Grand Manan,	Stranded,	Fog,		do.	8,000	450
West Quoddy Head,	do.	Error of judgment,		do.	850	
Bay of Fundy,	Shaft broken,	Unknown,		do.	1,000	
Grand Manan,	Stranded,	Fog,		Total,	200,000	
Off Petit Manan,	Collision,	Error of judgment,		Partial,	1,500	635
Bay of Fundy,	Damaged,	Ice,		do.	2,000	
do.	Stranded,	Fog,		do.	1,750	350
do.	Damaged,	Tides,		do.	3,800	700

Appendix No. 22.

Percentage of Losses *made during the Ten years from* 1877 *to* 1886, *on Vessels Arriving and Departing from the Port of Saint John, N. B.*

1st. The percentage of loss of tonnage of Steamers, as compared with total tonnage of Steam Vessels entered and cleared, is ... ... .08 of 1%

2nd. The percentage of loss of tonnage of Sailing Vessels, as compared with total amount of tonnage of Sailing Vessels entered and cleared, is ... .41 of 1%

3rd. The percentage of loss of cargoes of Steam Vessels as compared with the total amount of Imports and Exports, is ... ... .002 of 1%

4th. The percentage of loss of cargoes of Sailing Vessels, as compared with the total amount of Imports and Exports, is ... ... .05 of 1%

5th. The percentage of loss of tonnage of both Steam and Sailing Vessels, as compared with total tonnage entered and cleared, is ... ... .26 of 1%