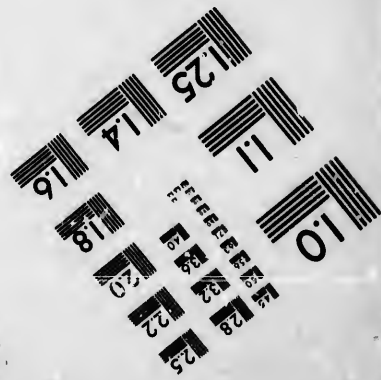
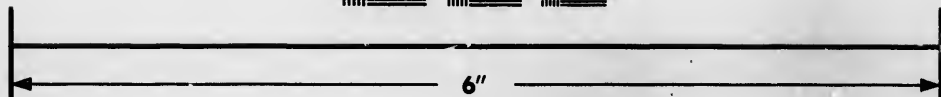
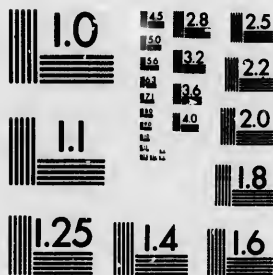


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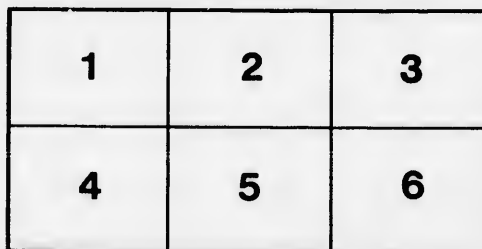
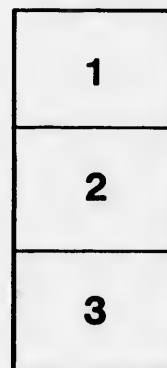
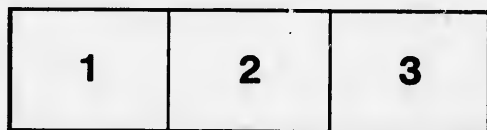
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REPORT

UPON

THE HARBOR

OF

SAINT JOHN, NEW BRUNSWICK.

By THOMAS H. KEEFER,

TORONTO.

SAINT JOHN, N. B.

PRINTED BY BARNES AND COMPANY,

PRINCE WILLIAM STREET.

1861.



REPORT

To THOMAS McAVITY, Esquire,

Mayor of the City of Saint John.

SIR—

In obedience to your telegraph, I arrived in Saint John on the thirtieth of November, and remained there until the eleventh of December. Upon applying for instructions, I ascertained that the Committee did not desire to direct my investigations, but gave me to understand that it had been decided to obtain an examination into, and report upon, the whole question of the protection and improvement of the harbor, previous to any further outlay being made. It was pointed out to me, as an instance of protection required, that a considerable portion of the ballast deposited between the Breakwater and the Battery, had worked its way back into the harbor to an extent which had shoaled the water in front of the Breakwater nearly twenty feet; and in the matter of improvement it was explained that the chief requirement was an increase of deep water wharfage, where the larger class of ships, now frequenting the port, could lie water borne at all times of tide. As there exists an upper and a lower cove, an east and a west side, each having claims of its own, it was evident the Committee, as representing the interests of the whole City and of the Province, intended to place the subject in my hands, if possible, without comment; and appreciating their motives, I set about obtaining for myself that insight into the requirements of the Port, which under other circumstances might have been given to me in the form of written instructions. I feel it not only due to the Committee to make this statement, but to myself, for it explains the unavoidable delay in making my report, and will also to a certain extent account for any deficiencies, if I have failed to take the proper view of the wants of the community.

In order to arrive at the extent of the changes which have taken place, I endeavored to procure as many charts of dif-

ferent dates, as well as city surveys, shewing the advance of the low water line at different periods, and the amount of shoaling which has taken place in the vicinity of the wharves. I found however that there has been no hydrographic survey of the harbor made since the Admiralty one of 1844—the original of which Commander Shortland kindly placed at my disposal; and although the plans of the City shew a low water line, it is difficult where the range of tides is so great, to refer low water lines to the same datum. Through the attention of Mr. Perley I obtained an old hydrographic survey of the harbor made in 1761, one hundred years ago, which bears evidence of having been carefully executed. As it appears that until very recently the harbor was exposed to damage by the refuse of saw mills and the want of sufficient precaution in the discharge of ballast, it would be of little value, even if it were possible to attempt to establish the ratio of encroachment for any given period, because this has been made under circumstances which no longer exist. I will therefore only state the conclusions I have arrived at, from an inspection of the harbor itself, of the few charts and surveys to be obtained, and from general considerations, on the important question of its exposure to deterioration from causes beyond the control of the authorities.

The width and depth of the river Saint John above the Falls, and the character of its bed and shores for a considerable distance up, are such as to give a pretty safe guarantee against the descent of alluvion of a character which could form any serious deposit in the harbor. The stretch alluded to is a cess pool into which the coarse detritus from the swifter current, shallower water, and more friable shores of the intervale lands above, is sure to be precipitated, leaving only to the transporting power of the freshet that portion which, if it reach the harbor, will with a trifling exception remain suspended until it is carried out to sea. From the narrowness of the harbor it is evident no considerable portion which had passed the falls could be dropped until it reached the wide water below the battery. Here on the foul ground at the entrance to the harbour some silting up might, in the course of time, be looked for; but a comparison of 1761 with the present time shews very little change except in the channel between Partridge Island and the west shore—which was in 1761 marked as “The Channel;” and which appears to have had deeper water then than now, although how much of this may be traced to the sawmills it would be difficult to conjecture: for the reason that there is wide, deep, and slack water enough above the falls to arrest the wash of the up country, and that the shores of the lower

part of the river are rock-bound, it is probable that the saw mills have contributed in an important degree to any shoaling which may have taken place at the mouth of the harbor. In fact the volume of water discharged by a river of such magnitude as the St. John, combined with the great range of tide you enjoy, give assurance that the danger of any serious encroachments from natural causes—either within or at the mouth of your harbour—is very remote.

The effect of a strong south west wind blowing into Courteney Bay, would, in some conditions both of ebb and flood tide, cause a littoral current northward, around the breakwater, with transporting power sufficient to work the ballast deposited in that quarter into the harbor, pushing forward both upstream and toward mid channel a submerged embankment. This would, however, be confined in its action both by the limited amount of the material acted upon, and by its heavy nature. I do not think, therefore, that any of the deposit at and above Reed's Point wharf, has derived its origin from the ballast ground, but that there are other causes sufficient to account for the silting up in this quarter. The wash from the gutters and sewers of the City, as improvement progresses, would, in the lapse of time, produce a decided and perceptible effect on the soundings in the slips, and at the head of the wharves. The rapid descent of the streets from the high ground surrounding the harbor gives the rains and thaws great scouring and transporting power; and by excavations for gas, water, or sewerage, by the mud brought in on wheels, and that worked up through paving or macadamizing, as well as from streets unpaved, and even the gradual degradation of the rock itself, a constant and fresh supply is exposed to this action. The ponding up of the water for tide mills also, by scouring the flats under a considerable head of water, as well as the natural contributions of the creeks flowing into the harbor, are also important aids to the silting up around the wharves. These sources in connection with what has been contributed by sawmills, the escaped filling from wharves and ballast handling, as well as from the operations on the wharves, will account for the silting up above Reed's Point,—the whole extent of which, judging from the number of years of its growth, and measuring it by the cost of removal by dredging, cannot be considered as very serious. Nor can this deposit be now considered as altogether an unmixed evil. The growth of the commerce of the City, and the larger class of ships to be accommodated would, under any circumstances, have involved an extension or reconstruction of many of the old wharves,

and a considerable amount of filling would have been required. So far as this filling in from causes above mentioned has been one in the direction of new improvements, it should be taken into account. It is evident, however, that resort must sooner or later be had to the dredging machine; for it is not only a great deal cheaper, but in every way better, to bring deep water up to the wharves, than to encroach upon the harbor by extending the wharves as fast as shoaling takes place.

In determining the requirements of the harbor, we must refer to the character of the commerce of the port. From a comparison of the returns of 1851 and 1858, it appears that the export of square timber had fallen almost one-half, while that of deals had increased; and, I am informed, that the timber supply must diminish, while that of spruce deals can be increased to any extent for which harbor accommodation could be provided. The requirements of the deal trade are peculiar, as the loading takes place from scows instead of wharves; large piling ground, accessible to scows at some time of tide is therefore required, and this is afforded not only by the slips, but by the shores of the river above the harbor. As the subject of wet docks has been mooted in connection with an increase of deep water accommodation, it may be as well to mention, that while the great range of tide offers peculiar facilities for the conversion of some of the larger slips and mill ponds into wet docks, yet, since those docks could only communicate with the rest of the river and harbor at high water, they would be unsuited to the peculiar requirements of the only trade of sufficient magnitude to warrant the great expense entailed in their construction. If the commerce were of that varied character and magnitude, by which it would be required to load many slips ex-warehouse, with cranes and other appliances,—or, if there were no other mode of obtaining berth room sufficient for the shipping frequenting the port, wet docks would be essential; but, for the present, I see nothing to warrant their great cost. The same argument—the absence of any great necessity—applies to dry docks; the construction and working of which are still more expensive. With such a range of tide, that the keel of any ship can be seen at every tide, all ordinary repairs can be performed expeditiously, as well as economically, in any of the slips (which require only to be gridironed to be converted into graving docks), without interfering with the loading or discharging of the vessel.

The value of the slips for this purpose, as well as for those of loading and sheltering scows, and the accommoda-

tion of small craft (which must be provided for as well as the large), is, in my judgment, a fatal objection to the proposal of anything like a continuous wharf or esplanade, which would have the effect of closing up many of them. Such a course would be attended with difficulties and much expense, on account of the private interests involved, and could only be carried out by the aid of special legislation; and I think it fortunate, that so extensive and important as well as expensive a scheme, is, like docks of either kind, not essential to the harbor. The esplanade wharf proposition has, I believe, been suggested to give a fair run to the current, and thus keep the harbor clean by tidal action; but, as the slips, if evils, are necessary ones (for it would be impossible to afford the accommodation in a harbor already limited, without them), it will be found as effectual occasionally to resort to the dredging machine; the small annual outlay for this purpose will be less than the interest of the capital required for works which would prevent this deposit. But, while a continuous wharf on the harbor line is not essential for the protection of the harbor, nor the only means of affording the greatest length of deep water wharfage, the other extreme of cutting up the wharf lots into frontages of 25 and 50 feet, should be avoided, and where it exists, remedied. The heads of the wharves between Reed's Point and Robert Rankin & Co., should, when extended to the harbor line, have a sufficient breadth to moor the largest ships, and this can be done without encroaching upon the necessary number of slips.

The harbor line may require some readjustment. From the amount of shoaling reported, it may be presumed that it originally ran nearly every where in 20 feet depth at low tide, in which case it would be far enough out, except in those places where it did not leave sufficient room between it and the bank, and where it could be moved outward without destroying the general contour of the harbor, or without extending into an excessive depth of water. Several wharves, such as, Lawton's, Merritt's, Disbrow's, and the Custom House one, were sunk in deep water, and the original depth could now be restored by dredging, if the heads of these wharves would bear the removal of the deposit without giving way. As there is only about 20 feet between some of these and the harbor line, this is hardly sufficient space for the stability of an independant pier head. In order, then, to obtain room for a new and substantial frontage to existing wharves, it may be necessary to advance the harbor line. If the old wharves were out of the way, in many cases the harbor line might be brought in,

and the new wharves set back, by dredging the site for them as far as the position of the rock will permit; or, where the shore is not too bold, the site for slips could be first dredged, and jetties run out, giving a deep water berth on each side of them, as well as at the head. In this latter way only, the largest possible amount of water frontage can be obtained. But as the shore between Reed's Point and Market Slip is bold, it will be found more convenient in the end, if a space sufficient is reclaimed from the harbor to permit the extension of Water Street to Reed's Point, with wharfage and slip room outside, and thus give proper access to the river southward of the Custom House. Wherever, therefore, this reclamation is needed, the old wharves, even the most dilapidated ones, will be valuable, as so much filling at least; and it will be necessary, in order to convert them into deep water wharves, to construct new heads—in some cases, perhaps, extending beyond the harbor line. In fact, the existing wharves must, to a great extent, govern the character of any new improvement, and where it becomes necessary to approach so close to them by dredging as to threaten undermining, precautionary measures must be resorted to, and in some cases a total or partial removal may be necessary. In the case of those flats having a deep mud deposit, where deep water frontage can be formed by dredging, the principal obstacle is the old wharves—the narrowness of the slips not permitting the construction of new deep water faces outside of them. Where such are founded above low water, their removal, in part or in whole, will be easy; and if in deep water, they can be dredged without difficulty. I have not been able to obtain borings, to show how far dredging could be resorted to, and whether in any or all of the flats at the upper and lower coves, and in Carleton, deep water frontage could be obtained; but the foregoing remarks are of general application, although in speaking of existing wharves and pier heads, special reference has been made to a portion of the harbor for the purpose of illustration. Called upon to say what should be done with the harbor as a whole—and (looking to the future), "how should the unoccupied portions be turned to account?" I think it but prudent, that after attention to any necessary and general works of protection, improvements should first be made in the direction of the existing centres of business, as far as these are capable of affording the increased facilities. So far as these improvements may depend on individual enterprise, of course the quarter in which they are carried on may safely be left to competition. As a considerable por-

tion of the harbor is public property, I will give my opinion as to the manner in which this should be dealt with; but if some equitable and feasible scheme is arranged, by which the increased facilities can be obtained, under the direction of the harbor authorities, at the private wharves, it would be the interest of all parties to adopt it. But, if the difficulties are insuperable, the improved accommodations offered by the Corporation, on their own property, will necessarily give rise to individual exertion in self defence. There are cases, however, where the proprietors (as trustees or minors) may not have the power; and others, where they may not have the means to carry out extensive improvements in the required quarter; and therefore, at Montreal, private interest was extinguished by purchase, and the whole wharfage was vested in Commissioners; while, at Toronto, the general scheme of improvement was carried out by the Corporation, on terms defined by the Legislature. Whatever the system adopted, some control over the manner in which the wharves are constructed should be exercised by the harbor authorities. It is not sufficient to keep them within the harbor line—they should not be allowed to approach so near it (unless founded at the full depth required), as to leave insufficient space for an independent head, constructed in deep water. Also, where the bottom is shelving, the foundation of the head, at least, should always be dredged, otherwise there will be a tendency to slide outward. Moreover, to prevent eddies and deposits, much irregularity in the projection of the wharves should not be permitted, and the due proportion and direction of pier heads to secure convenient ingress and egress to and from the slips, should be maintained.

In treating the question as a whole, it is impossible to pass over in silence the future Railway requirements. As I understand that no preference has been expressed for any particular mode of connection by the Railway authorities, and the question is an open one, I will not be guilty of interference in alluding to it only in general terms, as one intimately connected with the future of the harbor. Assuming that a railway will, at some future day, connect the City with the Maine frontier, it must, by means of the Canada and New Brunswick line, also connect the harbor with Woodstock, and perhaps, in time, with the upper St. John. The extension of the Shediac line from its present terminus in the City, across the river, to connect with the line coming from the West, will be a work involving so large an outlay for the distance, that it has occurred to me

it may be postponed for a considerable period after the Western line is in operation, because the Province, as well as the City, would naturally first desire to extend railway facilities as far as practicable, before grappling with the expensive question of terminal accommodation at the principal sea port, and the right of way through a large City. In this event, the Western line would seek connection with the harbor on the Carleton side; and I am now under the impression (without any information as to the facilities of approach on that side, but assuming them to be feasible), that, looking to the limited frontage of the harbor, and the great comparative extent required for railway purposes in connection with the peculiar trade of the port, a water terminus on *both sides* of the harbor will be found advisable. In the absence of a Railway Bridge, the connection across the river must be maintained by ferry; and from the absence of ice, and the narrowness of the harbor, this could be done under the most favorable circumstances. The small amount of through freight which would be carried parallel to the sea, could be taken over without transshipment at high water only, while passengers could cross at all times of tide. As far as it is practicable, the railway should connect with all the wharves; but if deals or sawed lumber become an article of traffic, a railway wharf of considerable extent will be required for those country shippers who may not own wharf property in the City. It is not every point which is accessible or suitable for this purpose, and therefore, if these views are correct, this question should be considered by the railway and the City authorities in due time. I can, of course, only refer to the question, as the selection will be governed by the practicability of approaches.

With regard to the proposal to close up Buttermilk channel, it does not appear that the advantages gained would compensate for the known and unknown disadvantages attending it. Its value to the navigation of the river is admitted, and it appears to me the effect of closing it would be to diminish instead of increase the amount of accommodation in the harbor. If closed by a deep water wharf across its mouth or outlet, Nelson and Wellington slips and the shores of the channel itself would be cut off from access to the harbor below Navy Island. If openings are left for these, then the channel is not closed and the object sought (of concentrating the ebb upon the deposit at head of East side wharves) is not attained, although its navigation would be seriously interfered with. If closed at the head or inlet of the channel by a simple dam across to Navy Island, no deep water wharfage is attained, and although its effect on

the harbor cannot be fully determined, it is more than probable that the set of the stream at high water would be deflected, from the dead water or eddy of the upper cove towards Sand Point, having no longer the discharge from Buttermilk channel to counteract it; at all events, the immediate effect of the concentration would be felt at Hilyard's and Rankin's wharves; but below Navy Island, the quantity of water not being increased, or the width of the river diminished, no effect would be perceived upon the wharves between upper and lower coves.

I am informed that even in freshets, Buttermilk channel is dry at low water spring tide across its inlet. This shews that it is not necessary to the discharge of the river, and that closing it up would not render the ascent of the river by the main channel at Navy Island, *under the same conditions*, any worse than it is now; but, from the abrupt change of direction in the river at this point, I am of opinion that a dam across this channel would retard the making of the flood tide, that it would not rise so high above, nor ascend the river so far as it now does. Whether there would be any inconvenience or disadvantage in this to the navigation, it would be for better informed parties to say, and experience only would determine the importance of the effect produced, which might only prove slight; but, as a general principle, any obstruction to the flood is not only objectionable for the reasons stated, but because just in proportion to the diminution of the flood, is the scouring power of the ebb reduced. Lastly, whenever it is desired to resort to the reach above the Island for deep water wharfage, this channel can be made passable at high water, if not so already, and be at certain seasons more easily navigated than the main one.

The construction of wharves on the Carleton side, has forced the stream against the southern end of Navy Island, and no doubt much sand washed out has gone to increase the deposit in the harbor. Without destroying the navigation of Buttermilk channel, Navy Island can be turned to account for deep water wharfage and convenient ballast ground, by running a line of wharves in deep water, nearly parallel with low water line below the Island, into, and behind which, ships and scows could discharge ballast nearly at all times of tide. The want of communication with the main land would not be any bar to its use for the storing and shipping of deals brought by water, or the establishment of mills, while its insulated position would be valuable, with such extensive inflammable stocks as it would contain.

In projecting improvements in the different sections of the

harbor I would explain that they are only general, and may be modified considerably without injury, in order to conform to any arrangement of the harbor line, or to effect a compromise when required. The precise position of some of the works may also be varied upon the acquisition of more definite knowledge on the nature of the foundations and the position of the rock. Moreover, as it is not probable that the different improvements will be at once carried out, circumstances not now discernible may modify considerably any present plans. My aim has been to show what the different sections are capable of, and to lay down some general principles of improvement without presuming to say which should have the precedence, or when any one should be undertaken. The questions of estimates and detailed plans were not, for obvious reasons, included in my arrangement, nor can they be profitably taken up until some specific work is determined on.

THE BREAKWATER.

The shore line between the breakwater and the battery is, I understand, wholly on made ground; and, as is easily accounted for by its limited length, the southern extension of this breakwater has not had the effect of arresting the irruption into the harbor of the ballast deposited in this quarter. In its present position it is manifest that the greater portion of ballast, whether dumped from the shore or dropped from scows, will pass the breakwater; and it is in consequence of this, I believe, that further deposit of ballast in this quarter has been prohibited. The sea has probably now formed its own slope to the beach, and levelled the ballast around and in front of the harbor, so that it is not probable that any great addition to the evil will be made so long as no more ballast is deposited there. If the acquisition of additional deep water wharfage, or sheltered wharfage itself, could be combined with protection to the harbor, and formation of valuable land for the city, a considerable expense in this quarter would be justified; but as the situation is not favorable to either of these, any work of extension must be viewed simply as the formation of a sea-wall to protect the area intended to be filled in. Its use as a ballast ground by scows, should, I think, be discouraged, as, unless there is an inspector to each scow, she will be as often discharged outside as inside the extension. For that portion of the ballast discharged upon the east side wharves and carted to this point, I presume it is the best or one of the best places for deposit, as well as for surplus excavations from streets and foundations in this quarter of

the city. The object then should be to enclose the largest area with the least proportional expense, and at least as much land as will equal in value the cost of the protection wall. If a breastwork were run across from the breakwater to the battery, it is evident there would be a considerable outlay without corresponding acreage; besides, the position of such a work would be most exposed to be undermined by the waves. If extended parallel with the "split" on the west side, about seven hundred feet to the reef which points from the battery toward the beacon, and then returned on this reef a short distance toward the shore, I think the best direction for a permanent frontage will be obtained. and the enclosed space, when filled up, will repay the outlay,

Until steps are taken to provide a ballast ground for scows at Navy Island or behind the proposed Carleton breakwater, they can be discharged behind or into the extension of the old breakwater after half tide—a passage in this extension being left in the deepest water—and care being taken that they are not discharged outside of, or near this opening. If the return breastwork in the battery reef is carried to the shore, this aperture in the extension can do no harm, as there will be slack water always inside.

For a ballast wharf in this quarter: by deepening the entrance to the lower cove with a dredge and running a wharf from the chamfered angle of the breakwater toward Reed's Point wharf, two berths at least could be made for large craft, and complete shelter be afforded to the cove. The outside of this wharf could be used in moderate weather, and at all times when improvements on the split or Carleton side are carried out, so as to give it shelter. The southern extension of the present breakwater is, I understand, founded in 18 feet at low water: by removing the deposit in front, a berth to this draught can be given at this point. The material dredged from this neighbourhood can be disposed of in and behind the new breastwork.

Above Reed's Point I have continued Water Street southward, and moved out the harbor line at lower end, to give the same width outside of this street below the custom house wharf as there now is above it. I have shown some extensions and fillings, which of course may be modified to suit proprietors or circumstances. I have projected the frontage with a view of giving a deep water berth of sufficient length to moor ships of different sizes, while as far as possible maintaining the principal slips. There may be some difficulties in the way of the extension of Water street, but they are less now than they ever will be; and if a rail track is carried along the wharves, this street will be indispensable.

In the upper cove, long wharf and St. Helena wharf, which were both originally in 20 feet water, may have a new frontage outside the present one in a dredged bed, thus adding to the deep water wharfage, without objectionable encroachment on the harbor: or, without any encroachment, the old heads may be reconstructed in deep water. The basin between long wharf and north slip is sufficiently wide to admit of a channel being deepened from its entrance, if there exists nothing to prevent dredging; and if this can be done, deep water frontage to a considerable extent can be afforded here.

Upon the Carleton shore the deep water frontage below Navy Island is limited to the stretch between Sand Point and Rodney wharf. To increase this deep water accommodation, it will be necessary either to extend a line of wharfage southward from Sand Point along the edge of the split; or, if the rock permits, resort to the dredging out of some of the slips and the reconstruction of the wharves adjoining. The nature of the formation in the extensive cove on the Carleton side, now occupied by slips, wharves, and mill ponds, as well as in the upper and lower coves on the east side, should be carefully ascertained by boring, to show to what extent dredging, if found desirable, may be carried on; because, whether resorted to now or not, present improvements should be made with reference to the possibility or otherwise of its being done, to a greater or less extent for dock or other purposes, at some future day.

As a preliminary to an extension from Sand Point downward, a breakwater is required to shut out the sea coming in through the west channel. This has been recommended by Commander Shortland, who suggests sinking some condemned craft on the flats, by which means a breastwork would be thrown up by the sea and the protection be obtained at moderate cost. If the ground will hold piles, these might also be tried at a small cost, and, if found to answer, might be driven close enough to break the sea. I have no means of judging of the force of the sea in this quarter other than that arising from the nature of the construction of the beaon, and the length of time it has maintained its position; from which it would not appear that formidable works are required for this breakwater. If a railway should ever approach the water at this point, the rock excavations from the track could be employed in the construction of the breakwater—the space enclosed between which and Sand Point, as well as the deep water frontage, would be available for its export and import traffic. In such a case the direction

of the approach may make it advisable to alter the direction of the breakwater and protect a much larger area.

Looking to the situation of the beaecn on one side, and the round reef upon the other, the time will come when the port will be extended down to these points—and in all present arrangements this eventuality should be borne in mind.

The Carleton mill pond, as well as the beach below Sand Point, are marked out upon the City plan into streets and squares, evidently with the intention of converting them sooner or later into dry land. As the harbor of St. John is virtually the Atlantic harbor of New Brunswick, and as, already, the size of the port is none too large for its present trade, the time cannot be far distant when every foot between Navy Island and the beaecn, which can be covered with tide water, will be required. A harbor so easy of access for the largest ships, so near the main track between Europe and America, and so free from ice, possesses every natural attraction; and cannot fail to be sought, not only by regular traders or vessels seeking your products, but by that large class, which would otherwise go to Europe in ballast either for sale or order; by those which are returning; or by those which are trading to the West India Islands, to the Pacific or Indian Ocean. Your only present means of supplying a large tonnage are derived from your exports of the prodnet of the forest; and the trade in deals, timber, and lumber, is one which requires a large area of water, shallow as well as deep, and large piling ground. The trade in deals is said to be capable of indefinite extension, limited only by the question of shipping accommodation: and however much it may be overdone at times, or however unprofitable it may prove to the pioneers, these are but the natural results of a trade in which one profitable year adds many new dealers, and in which the supply cau so easily outrun the demand: and more particularly one which is so dependent on the vicissitudes of the shipping interest. The presnption is that the trade will increase and require all the facilities of which the harbor is capable; and as this is the main dependance of the City and the Province, it is clearly your policy to foster it; and as you cannot afford to excavate basins out of solid rock, or reclaim an outer harbor from the sea, the coves should not be filled up farther than is necessary for commercial purposes.

In all the arrangements connected with the wharves, provision should be made for hydrants, fed by a sufficiently large pipe, as near as practicable to the lumber piles and shipping. In a harbor where so much inflammable material

is stored, and where so many craft are helpless while the tide is out, fires may be most disastrous; but with the unequalled advantages you possess for a supply of water at high pressure, you have the question under full control. While on this point I would remark (having seen some proposal in relation to steam fire engines suggested), that if you avail yourself of the full pressure which I understand is within your reach, every hydrant in the City will be superior to any steam fire engine. In Montreal, Quebec and Hamilton the fire engine has not been used for years where the pipes are laid. Large fires cannot necessarily take place, and in Montreal the effect upon insurance has been such that the reduction in the annual premiums, which has been brought about by the high pressure system in their works, is equal to the interest upon the cost of the works themselves.

I append a statement showing the number of vessels, under and over 500 tons, cleared *in each month* of 1859 for ports in the United Kingdom, from which the greatest number to be provided for at one time may be inferred. This statement was prepared for me by Mr. Ferguson, of the firm of Rankin & Co., to whom, with the Hon. John Robertson, and the Comptroller of Customs, Mr. Smith, I am indebted for much valuable information with respect to the commerce of the port.

I have the honor to be, Sir,
Your obdt. servant,

THOMAS H. KEEFER.

Toronto, March 1st, 1861.

ABSTRACT OF VESSELS

Cleared at St. John, N. B., for the United Kingdom in 1859.

MONTHS.	Under 500 Tons.		500 Tons to 1000 Tons.		Over 1000 Tons.		TOTAL.	
	No. of Vessels.	Tonnage	No. of Vessels.	Tonnage	No. of Vessels.	Tonnage	No. of Vessels.	Tonnage
January,...	9	3,365					9	3,365
February,...	6	2,275	8	5,445	1	1,665	15	9,375
March,...	4	1,335	7	4,915	6	7,127	17	13,377
April,...	3	1,171	7	5,876	8	10,094	18	17,141
May,...	40	13,073	16	11,549	10	11,862	66	35,894
June,...	41	14,239	27	21,071	14	16,722	82	52,032
July,...	35	12,187	18	11,187	19	25,102	72	48,476
August,...	43	13,080	12	7,197	14	19,057	69	39,334
September,...	16	5,254	8	5,925	3	3,805	27	14,984
October,...	9	2,981	6	4,365	3	3,362	18	10,708
November,...	10	3,626	12	8,941	1	1,148	23	13,695
December,...	12	4,448	10	6,982	2	2,065	24	13,495
Total,...	228	77,034	131	93,313	81	101,449	440	271,876

Add

The following Ocean Steam Vessels:—

North Briton,.....	1	1,487
Nova Scotian,.....	1	1,487
Indian,.....	1	1,151
Hungarian,.....	1	1,487
Anglo Saxon,.....	1	1,165
Nova Scotian,.....	1	1,487

446 280,143

. KEEFER.

