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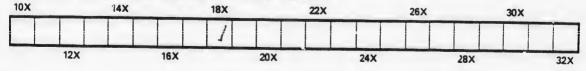
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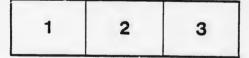
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REPORT

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ACCOMPANYING PLAN FOR

HARBOR IMPROVEMENTS

IN THE

PORT OF QUEBEC,

SUBMITTED TO THE

QUEBEC HARBOR COMMISSIONERS

BY

STADACONA

WITH REMARKS THEREON AND SUGGESTIONS RELATING THERETO.

BY ALEXANDER SEWELL, P.L.S., C.E.

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THE PROPOSED IMPROVEMENTS

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IN THE

HARBOR OF QUEBEC.

The Quebee Harbor Commissioners, having resumed their sittings, and expecting that a decision will soon be arrived at in the awarding of the prizes offered by them, in competition, for the most feasible and economical plan for improvements in the Harbor of Quebec, and having been one of the competitors, under the signature "Stadacona" I consider this an opportune time to give certain suggestions on the subject and explanations of my plan to the public, so that they may thoroughly understand the reasons stated in my report, (a copy of which will be found below,) and to appreciate the object of my plan.

The following is the Report which I transmitted to the Harbor Commissioners in conformity to their advertizement.

To the President and Directors of the Harbour Commissioners of Quebec.

GENTLEMEN,-

The undersigned hereby draws your attention to the accompanying Plans, Elevations, and details, with estimate of cost of Harbour improvements asked for by advertisement in the local neswspapers.

lle considers it necessary to submit the following explanations of the advantages that would result from the adoption of the plan and practical application of the suggestions contained therein.

The site for these improvements is within the city limits and far outside of the Commissioners line, on the Fly Bank; as represented on all chart of the Harbour of Quebec, directly opposite "Anse des Meres" and "Cape Diamond Coves."

By inspection of the plan, it well be seen, by the soundings marked thereon, that the depth of water on this Bank is so inconsiderable that a vast saving in the construction of improvements, in comparison with other places, would be effected. To this would be added the advantage of undoubted protection from Easterly and Westerly gales.

In the choice of this locality must be considered its centrality for shipping and transhipping at all states of the tide, which with the extensive appliance of Steam Tugs, Elevators, Winches and Cranes would prove an invaluable desideratum.

The plan proposed is to erect a wharf constructed of timber, open work, running from low water line, and extending outwards therefrom, eleven hundred feet, of one hundred feet in width and of an average height of twenty-six feet—then at the end of such wharf another, of one thousand feet long, to be erected lengthwise on the Fly Bank in the shape of the letter L and one hundred feet wide, and so placed that at one hundred feet therefrom will be found the required depth of water for vessels of the largest draft coming to this port, to load and discharge cargoes with the greatest security at wrought iron pontoons, of a total length of 1200 feet, in sections of 400 feet—moved by chains directly and diagonally and connected with the wharf by iron girder bridges, working on a hinge to the rise and fall of the tide.

In accordance with the wants and progress of the trade, these wharfs may be constructed and prolonged to any extent that may be required, as well as utilized as a place for the deposit of ballast.

A handsome revenue could be realized by creeting warehouses with elevators connected therewith on the wharfs, there being ample space for such and affording large accomodation, at all seasons of the tide, for every description of craft with produce and merchandize for shipment and transhipment.

It is proposed to construct the wronght iron pontoons, placed five feet apart, of the following dimensions—sixty feet long, ten feet wide and five feet deep--being connected together by rectangular wrought iron kelsons, and covered with a timber deck flooring and planking, having an area of an acre; the river face of the pontoons to be sheathed with timber as a protection.

By reference to the plan of details the construction thereof may be readily understood.

The pontoons are constructed in 400 feet sections, in order to secure their removal with safety to the land side of the wharf, at the close of the season, for security during the winter.

In conclusion, the site proposed is certainly the most eligible one within the limits of our harbour.

The River St. Charles Estuary is to a certain degree advantageous, but has the following drawbacks, an inevitably immense outlay for dredging, an exposed situation and tidal interruption.

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The present projected improvements viz: the prolongation of Dalhousie Street, the extension of the North Shore R.R. and the Graving Dock, being all central in this locality, with independent improvements, aside from the Harbor Commission, suggest the advisability of making choice of other more favorable parts of our Harbor adapted to economical improvements.

Here annexed is the estimate of cost.

Construction of wharfs, open timber work 6 inches loaded and planked	\$270,000	
Wrought iron Pontoons with timber decks and Bridge con-	Φ=10,000	
necting with wharfs	380,000	
Eight warehouses of 3 stories (all in timber.)		
Two commodious Sheds on Pontoons	45,000 5,000	
Expenditure for modern appliances, as Elevators, Cranes,	0,000	
Winches, &c., &c.,	25,000	

\$725,000

I have the honor to be

Gentlemen,

STADACONA,

Quebec Post Office.

Quebec, November, 1874.

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It is hardly necessary to state that the absolute requirements in any project of harbor improvements must provide, firstly, for expedition in discharging and loading vessels. secondly, enlarged wharf area; thirdly, facilities for loading and discharging: keeping in view a strict economy in construction and in future maintenance and repairing.

As stated in the correspondence of "Mercator" (given below) published in the "Morning Chronicle" and dated tha 26th December last, the duration of the shipping season rarely exceeds five months; the neces sity for *expedition* is therefore undoubted. The letter of "Improvement," published in the "Chronicle" and dated 7th April last, (given below) states that the large number of steamers, now arriving at our port, has created an increased demand for loading berths, displacing sailing vesfels, which now have to be berthed either at Point Levis, or at distances far srom the business centre; thus an *enlarged wharf area* is greatly needed. Any one who has been in the habit of frequenting the Lower Town wharfs must have seen the difficulties which ship masters and others have to overcome in the loading and discharging of vessels. The great difference between the high and low tides is the cause of these difficulties, necesitating a great loss of time in the arrangement of the machinery used in transporting cargo between the shore and the vessel. Therefore in any scheme of improvement, increased *facilities* for *loading* and *unloading* must be provided for.

Now I claim that in my Report and Plan these absolute desiderata are provided for.

The Fly Bank therein mentioned and shown, extending from Cape Diamond to Point a Pizeau, offers natural advantages not possessed by other harbors; the shallowness of the water on it, the peculiarity of its surroundings and its immense length enable the Commission to effect almost unparalleled improvements and the most desirable results, and this at a comparatively trifling cost, the outlay of which would rapidly be repaid by the custom which the locality must command. It may also be mentioned that these improvements may be made gradually, commencing at the eastern end of the bank and proceeding, as required, towards its western extremity.

In enumerating the advantages of the Fly Bank, its position, as within the city limits, cannot be overlooked. Within easy access of the business portion of the city, merchants would find it more convenient and entailing a less loss of time than when vessels are berthed for miles along the coves, the constant communication between shipmasters and their consignees, so necessary, could be more cheaply and efficiently maintained. Its position within a mile of the Grand Trunk Ferry gives it advantage over the St. Charles of two miles distance from the present only Railway Station in the harbor. The construction of the North Shore Railway will alse add to the many advantages, for by the widening of Dalhousie and other streets that Railway can be continued up to the neighbourhood of the Fly Bank, where goods can be transhipped for the West.

The depth of water on the Bank is from two to twelve feet, so that piers could be built thereon at a cheaper rate than in any other part of the harbor, requiring but little expense in construction. The pontoons are sixty feet wide and placed at a distance of one hundred feet from the pier, making a total of one hundred and sixty feet, at the end of which there are twenty six feet depth at low water on the river side; on the shore side vessels of the greatest tonnage could load at all states of the tide. Instead of iron, wooden pontoons or floating piers might be placed on the shore side of the pier, costing not more than one tenth part of iron pontoons.

The position of the Fly Bank ensures it an almost perfect freedom from gales and consequently danger from ice in winter. In remarking u as

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upon this "Improvement" recommends this place, were a pier built such as I have mentioned, as a good wintering locality.

By the use of pontoons the present difficulties in loading and discharging would be done away with, for vessels would then always be on the same level with the pontoon, on which the goods would be placed and afterwards removed to the pier.

This large pier could also serve as a discharging place for ballast, and many years must elapse before its use for such could be ended.

Warehouses constructed on the pier could be built, of large dimensions and ample for the storage of many cargoes; and we may here mention that the isolation of the pier would be a safe guard against fire, and a consequent reduction in insurance rates.

It will be apparent, that the advantages to be gained from the construction of these wharfs on the Fly Bank will place Quebec in a position superior to Montreal in regard to harbor room and equal in its facilities for loading and discharging, in which port vessels are now loaded within the space of twenty four hours.

In comparing this locality with that of the mouth of the St. Charles, it must be acknowledged that this locality must ever suffer from the detention of ice in the spring. The construction of the breakwater has retarded the breaking up of the ice by about ten days, but what must be the result if the wharfs, piers and docks, proposed by some of those who have sent in blans, were erected. The opening of the St. Charles would be retarded fully a month, and the docks themselves be useless ice blocks, whilst the rest of the harbor would be filled with shipping. This could never possibly happen through any constructions on the Fly Bank' and this fact must give it great advantage over the mouth of the St. Charles. It must be admitted that wet docks, on account of the sevority and length of the winter, are unsuitable, and that pontoons alone are practicable.

In reference to cost, I am confident that the improvements I propose could be made for the sum mentioned in my report, \$725,000. The necessity of dredging the St. Charles, to make any use of it, is admitted ; but what a sum of money would such require? There are 875,000 feet in the area of an acre, having a mean depth of twenty feet, the depth necessary to be drèdged in the St. Charles, at the usual rate, by the most improved machinery used in dredging, one hundred acres, the number of acres acknowledged to be necessary to utilize the mouth of the St. Charles, would cost about \$9,000,000. This amount would not include the cost of constructing piers and warehouses, which would cost, supposing the piers were built partly of stone and wood, over \$12,000,000 making a total in round numbers of \$21,000,000, to improve the mouth of the St. Charles, which, when effected, would result in Quebec having a useless property for eight months in the year, and necessitate the constant dredging out the debris, which yearly comes down with the St. Charles, and that thrown up by the St. Lawrence in Eastern gales, and deposited by the flow and ebb of the tides.

In conclusion 1 would say that it devolves upon the Commissioners to judge of the plans submitted to them, for on them may depend the adoption of localities, which may, or may not, prove adaptible to the purposes of the trade of the Port; a trade which is, year by year, increasing in importance and magnitude, and requiring, more and more, the science of man to add to the generous gifts which nature has bequeathed to this part of Canada. Upon them and cheir approval may depend whether or not Quebec remains the head of Ocean Navigation.

ALEXANDER SEWELL,

P. L. S. C. E.

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(To the Editor of the Morning Chronicle.)

MR. EDITOR,—My attention itas been drawn to the plans for the improvement of the harbor of Quebec, covering an immense area and comprising wharfs, piers, graving docks, sea-walls, wet docks, locks and gates, lately filed with the Harbor Commission, in competition for the prizes offered by that body for the best and most feasible. It strikes me as almost increditable that these improvements have been put down at low estimates of about five hundred thousand dollars. It is a matter of curiosity to me by what calculations that sum was arrived at by certain of the competitors.

The plan for damming the St. Charles by the construction of a wall across its mouth is not original in conception. By referring to the plan of the late Mr. Wallace, bearing date Sept. 12th, 1855, and filed with the Harbor Commission, it will be seen that this was advocated by him. The idea is that of a wet-dock, and is open to many objections. Our long winter season ponsiderably shortens the working summer time, five months generally being allowed for the shipping interest of Quebec to get through its work. It is therefore unnecessary to state how valuable time is in this port, and that a moment cannot be spared in the despatch of loading and discharging vessels. It must be taken into consideration that, were this St. Charles dock built, it would have the effect of keeping the ice in the St. Charles for probably three weeks beyond the usual time. To meet the requirements of the shipping the dock gates should have to be open every tide, a proceeding which must lower the water in the dock to an impracticable shallowness. In fact, unless during the spring tides, it would be almost impossible to allow of the entry and outlet of vessels, for

the neap tides are so low that opening the gates then would empty the dock and leave it a useless waste. Thus the delay in the opening and shutting of the gates must have a disastrons effect on shipping. Another question which would inevitably arise is the effect of the flooding of the shores of the St. Charles ; the damage it would cause the riparian proprietors, timber merchants, and shipbuilders, for the most part, where yards would be rendered useless by being covered by water, and who certainty would not tamely s + mit to a curtailment of their rights. I do not think that the construction of a wet dock at the mouth of the St. Charles would benefit the shipping trade. But Quebee is not without localities which might easily be turned to an advantage, and among them I consider the Fly Bank, extending from Lampson's Cove to Point-a-Pizeaa, as particularly ad pted to facile improvement. The low depth of water covering it renders the construction of wharfs thereon simple and uncostly, and there vessels con a be laden and discharged at all times of the tides in perfect security from storms. With pontoons, a shore connection and warehouses, the wharfs on the Fly Bank would prove an enormous advantage to the shipping interest: Its centrality, occupy ing a middle place in the long line or docks and coves, now frequented by vessels must be greatly enhanceed, when the construction of the North Shore Railway up the St. Lawrence shore will bring this shipping locality into easy access with all the West. The comparatively triffing cost at which this Fly Bank improvement could be made is another advantage not to be overlocked.

In reference to the Graving Dock I consider that the month of the St. Charles is the best locality that could be chosen.

The Harbor Commissioners should not be rash in their selection of the prize plans: the advantages of each should be carefully weighed, and the ultimate benefits derived from their adoption made a subject of calculation and investigation.

Jam, Sir,

MERGATOR.

Quebec, 26th Dec., 1874.

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(To the Editor of the Morning Chronicle.)

DEAR Six,—As the question of harbor improvements at last being seriously considered, I beg leave, through your valuable columns, to submit the following, namely : The building of a large pier on the upper end of Fly Bank, below the outward channel from Wolfe's Cove, into which vessels could discharge the ballast with advantage, and by yearly augmentation of said pier downwards it would become commodions enough to hold all the coal which at present so blackens this part of the eity, thereby affording the city a large space for improvement. But this is not the only benefit to be derived from a pier being built there; owners of steamers and other cluft, besides being put to great inconvenience and expense in sending their cruft 90 miles and more to winter elsewhere, take away employment from hundreds, idle about our own port, whereas they would willingly winter their crafts under the Bank if the Harbor Commissioners would build said pier at the above mentioned place, when nature has evidently intended there should be one, with a little artificial help.

I would also suggest the necessity of having the inside channel dredged for the egress of loaded vessels, which could be done at a trifling cost, as one to three feet in some places would suffice. Of course it is understood that a swing bridge, connecting the pier with the shore, be constructed.

In consequence of the yearly increasing number of sea going steamers at this port, sailing vessels' loading berths, are being bought up and rented for their (the steamers) accommodation; so that loading vessels' berths are becoming scarce yearly. Now most of the captains trading to this port with large vessels, though having experienced inside of the bank as the safest loading berths, often unwillingly have to load in exposed places, owing to the little bit of dredging not being done yet, but which they, as well as I, hope soon to see commenced.

I am, yours respectfully,

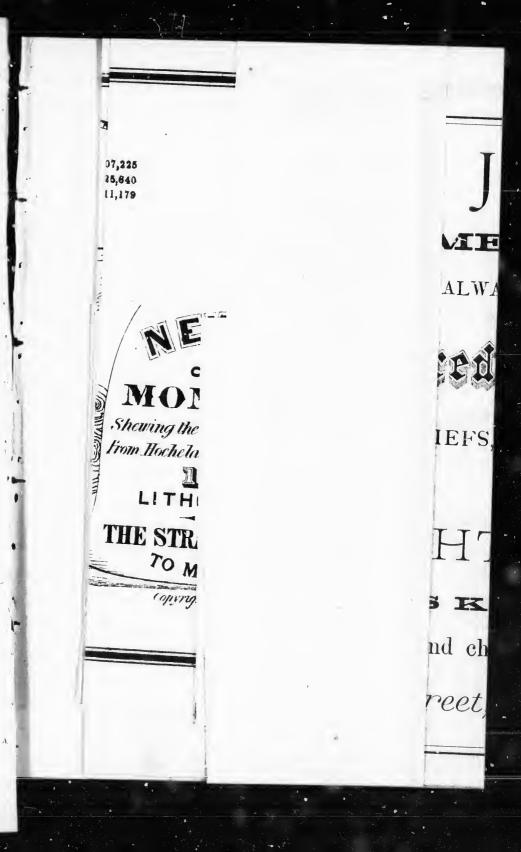
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Quebec, 6th April,1875.

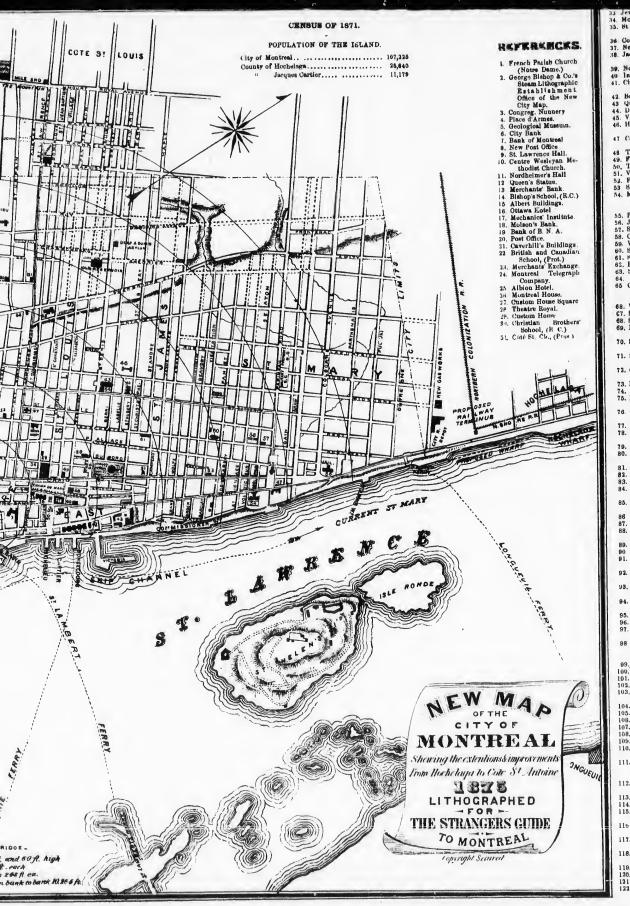
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 St. Paul's Ch., (Pres.)
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 92. Dorchester 54. Wes. Methodist Church.
 93. American Presbyter-ian Church.
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95. Convent Mt. St. Mary.
96. St. Anto-ine Markét.
97. St. Joseph Ch., (R.C.) and Asylums.
98. Chaboilles Mission Church, (American Presbyterian.)
99. American House,
100. Dominion Buildings.
101. Hay Market
103. St. Stephen's Church, (Epis.)
104. New Cite Gas Works.
105. Wealeyan Church.
106. Bata Ana S Pres. (R.C.)
107. St. Gabriel Market.
108. Chabriel Market.
109. Church. (R.C.)
107. St. Gabriel Market. 108. Canada Pres. Church.
109. St Joseph's, (R. C.)
110. Bonaventure Station, G. T. B 111. Montreal Young Men's Christian As-sociation Building. 112. Commercial Academy (R. C.) 113. Asile de Nazarein. Alie de Nayareu.
 K. Koz Charch, (Pres)
 St. James' Cathedral, (R. C.)
 St. Ann's School, (R. C.)
 St. Ann's School, (Protestant,)
 Montreal Warchous-ing Company.
 St. Jude's Ch., (Pres)
 St. Matthew's Church, (Pres.)

(Pres.)

