

ANNUAL REPORTS  
OF THE  
HARBOUR COMMISSIONERS  
OF MONTREAL  
FOR THE YEAR 1880.



Commissioners :

ANDREW ROBERTSON, Esq., *Chairman.*

J. B. ROLLAND, Esq.

HUGH McLENNAN, Esq.

EDWARD MURPHY, Esq.

CHARLES H. GOULD, Esq.

HENRY BULMER, Esq.

SEVÈRE RIVARD, (Mayor.)

VICTOR HUDON, Esq.

ANDREW ALLAN, Esq.

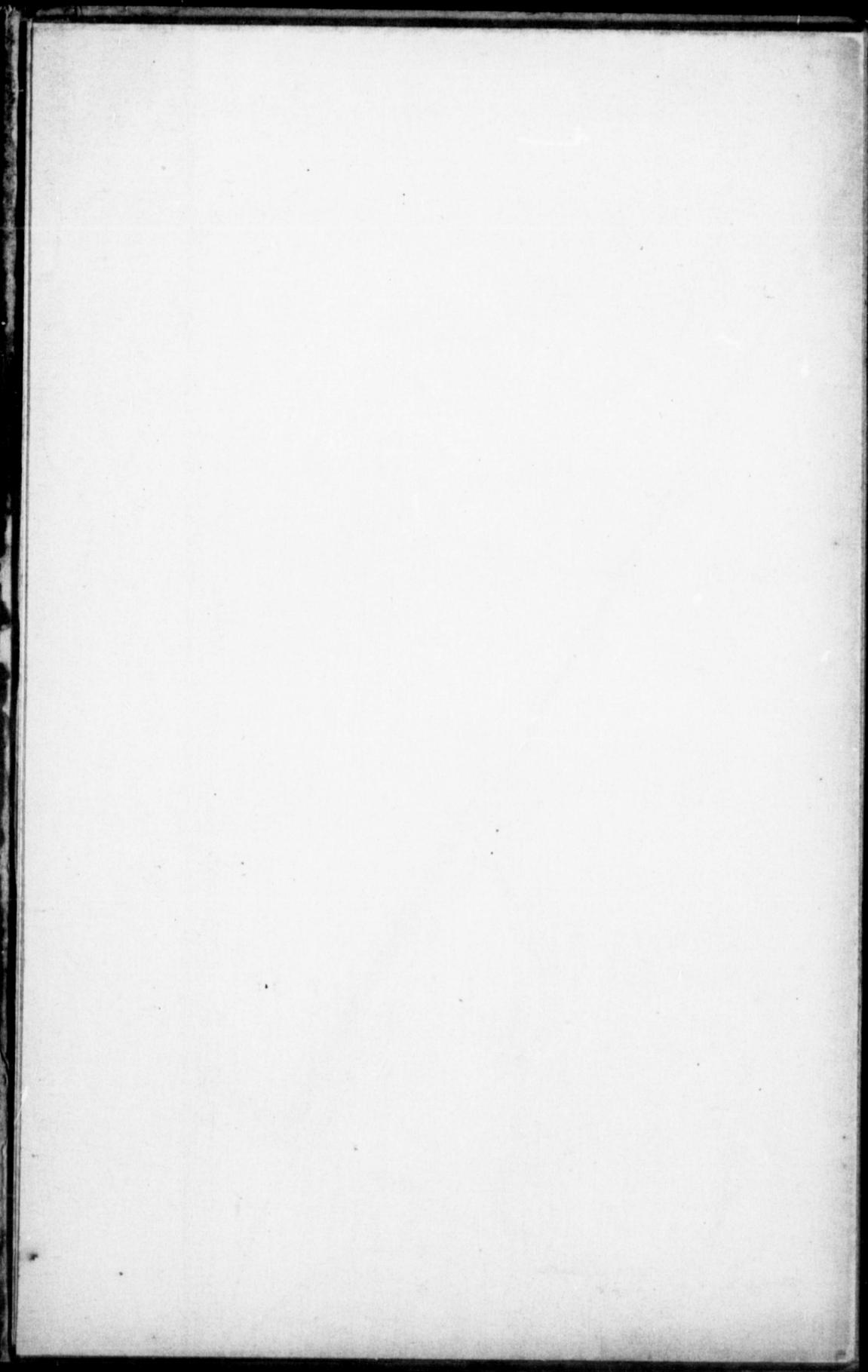
H. D. WHITNEY, *Secretary.*

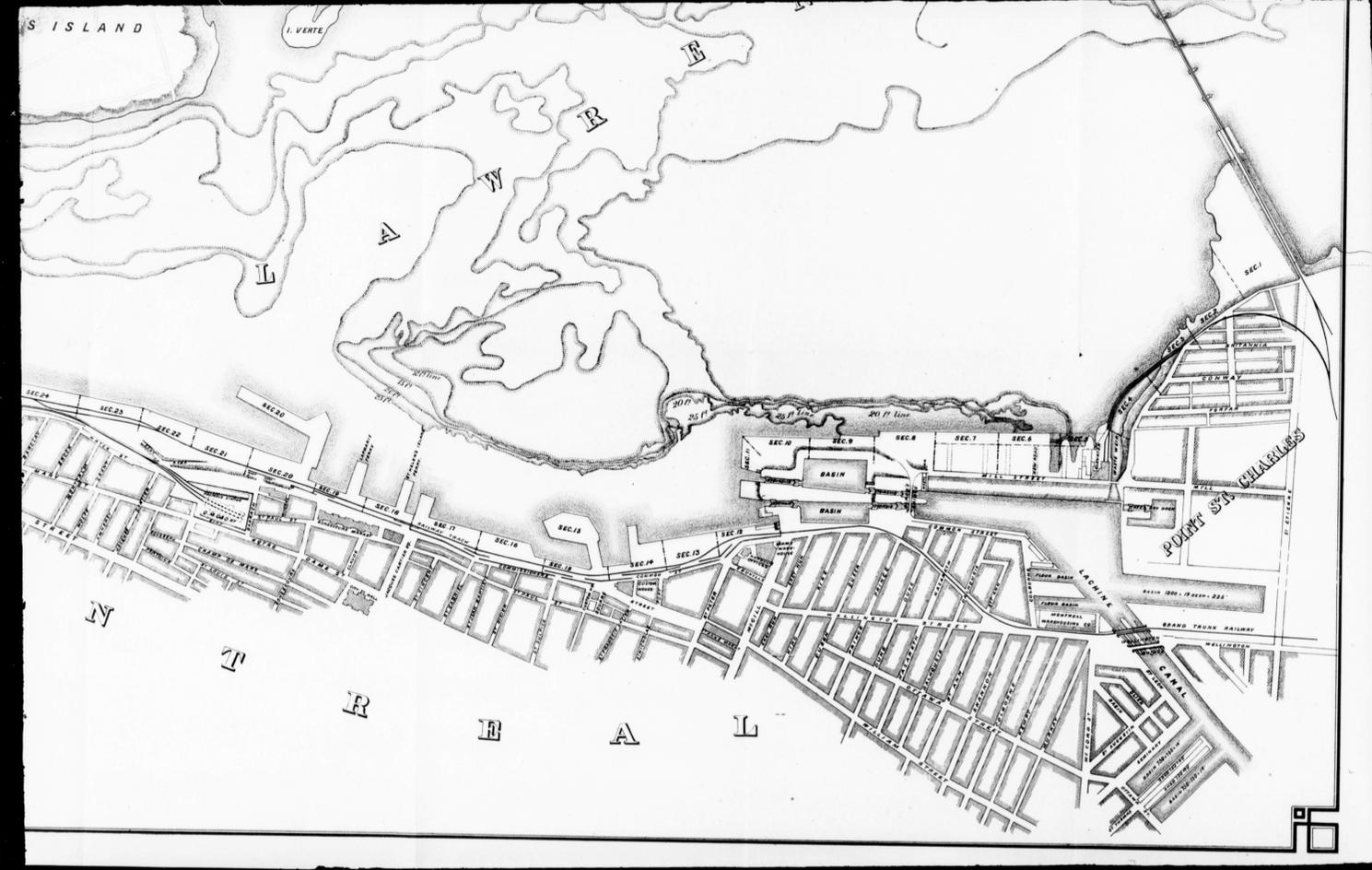
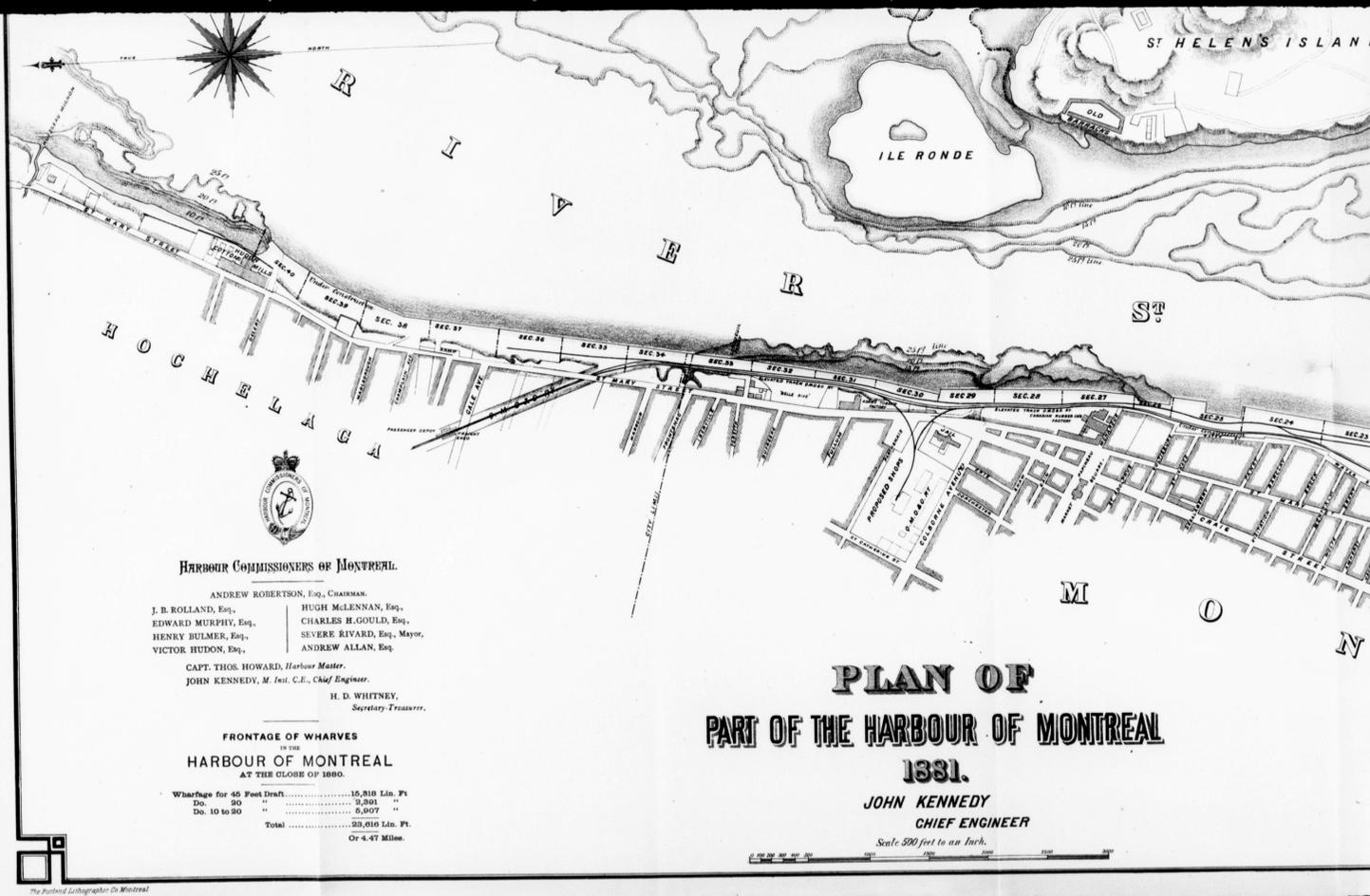
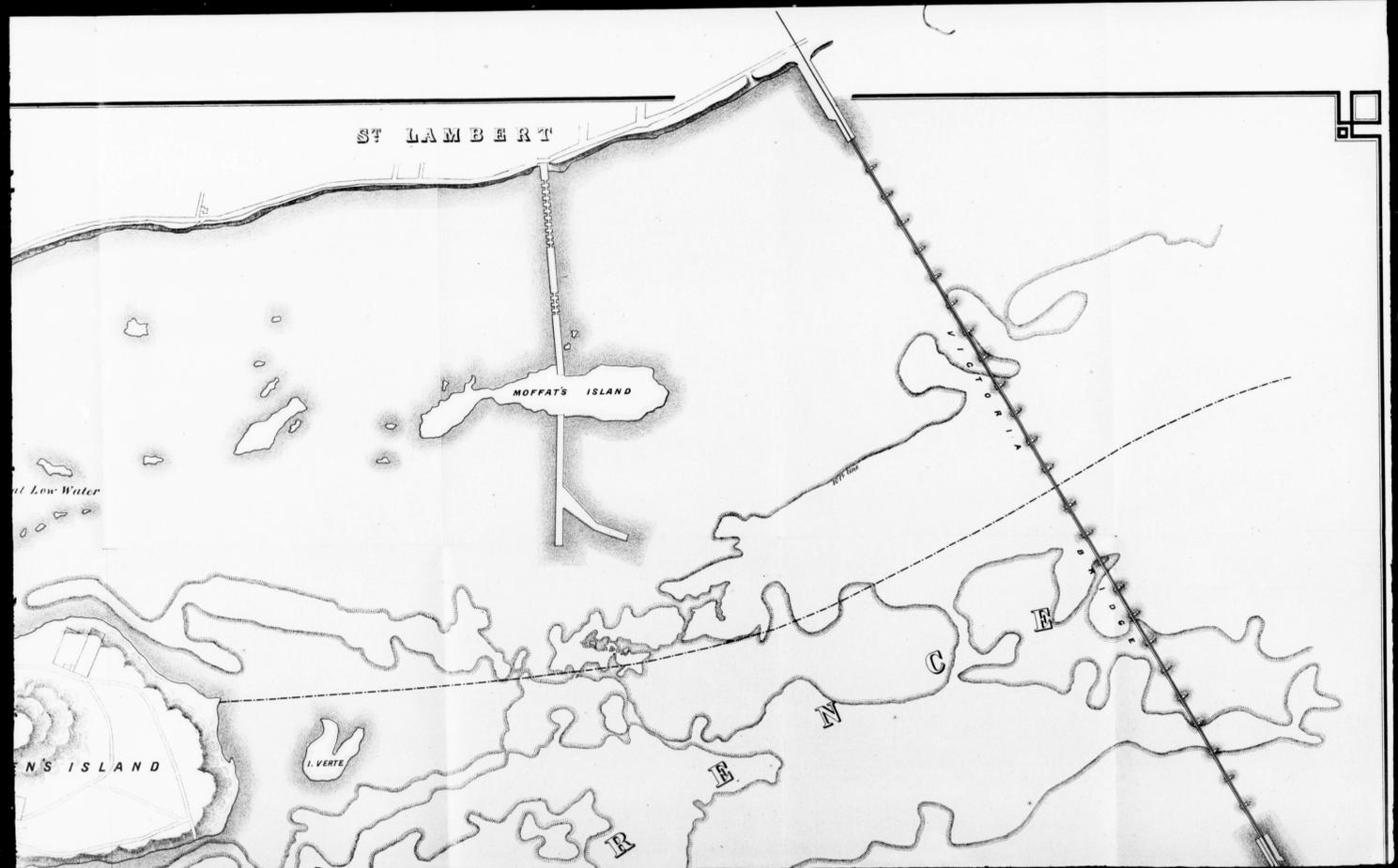
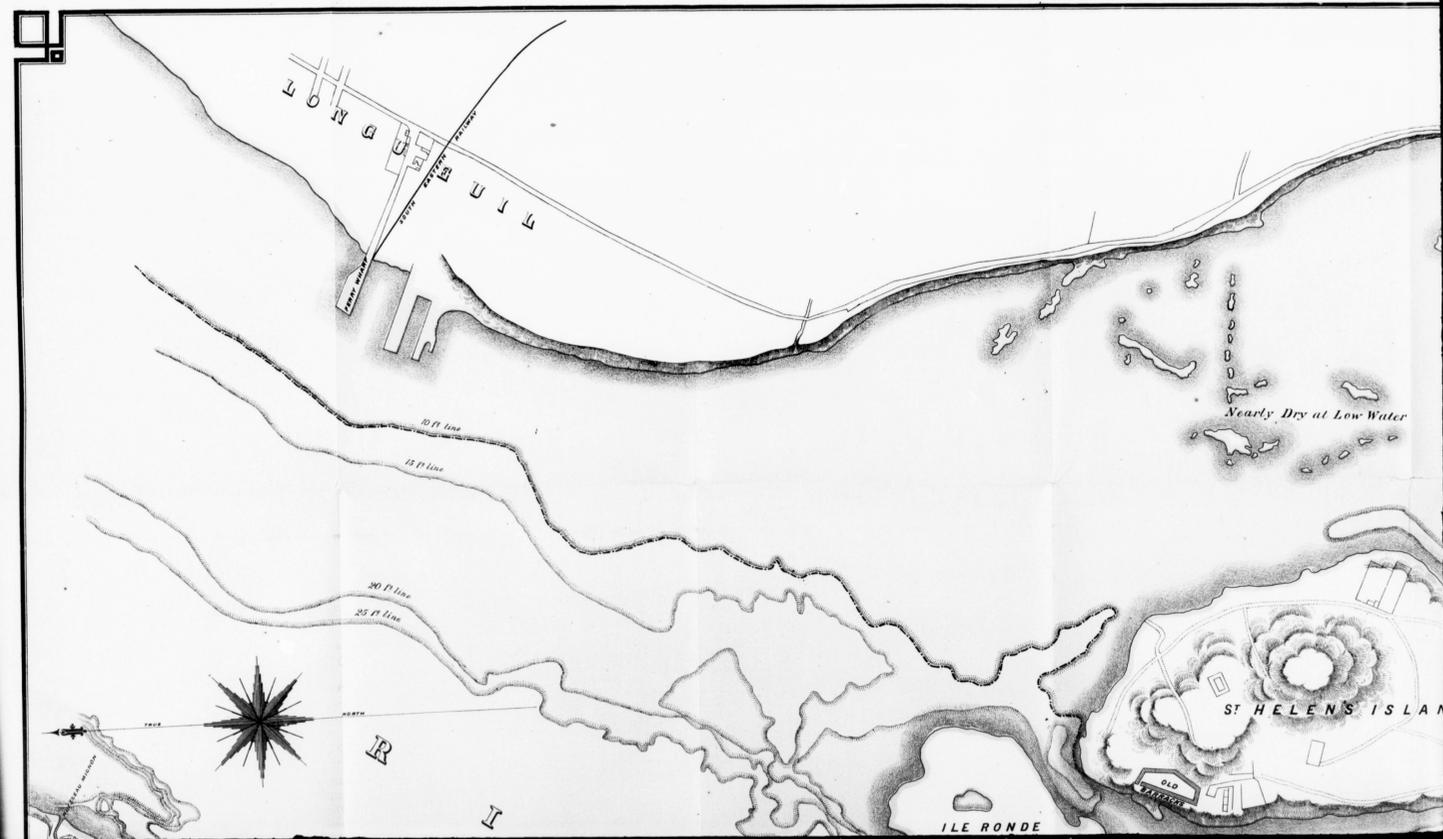
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# STATEMENT

MADE BY

MR. ANDREW ROBERTSON, Chairman,

ON THE

*Business of the Port for the year 1880, and other matters connected  
with the Trust,*

AT THE PUBLIC MONTHLY MEETING OF THE BOARD, HELD ON THE 10TH FEB'y, 1881.

The Chairman, Mr. ROBERTSON, said :—

In presenting the accounts for the past year it gives me great pleasure to state that there has been a most marked and gratifying increase in the revenue, which is the largest on record.

The year 1874 yielded the largest amount to that time, although it had not the largest tonnage. The year 1879 exceeded that year by 83,546 tons, while the year 1880 has exceeded that of 1879 by 121,302 tons, or of 1874 by 203,848 tons; an increase of 23·93 per cent. over 1879, and of 48·37 per cent. over 1874.

The number of vessels which arrived in 1874 has not yet, however, been exceeded, there were,

In 1874, 731 vessels, averaging.....	590 tons.
“ 1879, 612 “ “ .....	828 “
“ 1880, 710 “ “ .....	885 “

The revenue for the last three years was as follows :

1878 .....	\$226,726
1879 .....	269,576
1880 .....	331,294

An increase over 1879 of \$61,718, or 22·88 per cent. ;  
and over 1878 of \$104,568, or 46·12 per cent.

The sources from which the revenue is chiefly obtained may be mentioned, they are as follows :

Tonnage dues on vessels—

1878 .....	\$73,126
1879 .....	86,432
1880 .....	107,740

Inward wharfage dues on goods—

1878 .....	\$59,215
1879 .....	84,207
1880 .....	112,965

Outward wharfage dues on goods—

1878 .....	\$54,583
1879 .....	67,644
1880 .....	82,303

Local dues on goods—

1878 .....	\$30,683
1879 .....	27,065
1880 .....	23,417

It will thus be seen that all the branches of the revenue have increased on 1879, except the local dues, which show a falling off during the year of \$3,648, as compared with 1879. This can only be accounted for by the increased railroad facilities now being afforded. The surplus on the whole year, however, is \$61,718, as already shown.

The imports of sugar were in

1878.....	12,289,843 lbs.
1879.....	64,375,656 "
1880.....	74,952,000 "

Increase for 1880... 10,576,344 " or 24<sup>·</sup><sub>19</sub> per cent.

Giving thereby an increase of \$1,500 to the revenue in comparison with previous year, and fully \$6,000 on that of 1878.

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## Coal imported in

1878.....	142,754 tons.
1879.....	189,231 "
1880.....	244,718 "

Increase for 1880. 55,487 " or 29<sup>·</sup>32 per cent.

Of the coal imported during these years, there came from the Maritime Provinces in

1878.....	55,917 tons.
1879.....	117,256 "
1880.....	163,766 "

Increase for 1880. 46,510 " or 39<sup>·</sup>65 per cent.

## From other ports, in

1878.....	86,837 tons.
1879.....	71,975 "
1880.....	80,952 "

Increase for 1880... 8,977 " or 12<sup>·</sup>47 per cent.

The revenue has been increased from coal by fully \$5,500 this year. It may be here stated that the great staples of grain, iron, steel rails, coal and sugar yielded last year over one-half of the total wharfage dues.

#### HARBOUR EXTENSION AND REPAIRS.

In consequence of the absence of Mr. Kennedy, who has gone to Bermuda on account of his health, we have not yet received his full reports.

That concerning the Harbour has come. Without referring to every item, the following may be noted: The completion of the improvement in Sections 13 and 14, for the accommodation of the Allan Line; also the extension at Sections 16 and 17, for the accommodation of the Dominion and London Lines; the extension of the Hoche-

laga Wharf downwards 427 feet, to medium water level, which will be proceeded with to usual level so soon as the season permits.

The Brush Electric Light has been introduced, and has, as will be seen from his report, answered to his entire satisfaction. This change has enabled vessels to load by night almost as well as by day, and has thus increased the facilities of the Port for rapid despatch.

Cattle sheds were erected for the convenience of the shippers, but they did not meet with the patronage they deserved or was expected. Whether they will be continued after another season is a question which, unless they pay expenses, is worthy of consideration. If it is to the interest of the shippers that they should be there, they should be used. The rates charged, even were every head to pass through them will hardly pay for the expenses incurred.

Mr. Kennedy's report on the Lake and River Channel will be included in the yearly printed report when it has been obtained.

#### THE HARBOUR MASTER'S REPORT.

The following summary, compiled from the Harbour Master's Report, shows the ratio of increase in the vessels visiting the Port, whether from abroad or the Maritime Provinces, and whether steam or sail,—the increase of steam on the whole being 25·80 over 1879, and of sail, 23·25, the whole increase for the year being 23·90 on ocean tonnage, and 27·80 on inland craft. The proportion of ocean steam tonnage has been 75·72, and of sailing ships 24·28, against 74·44 and 25·56 for 1879.

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The average size of the steamers in 1879 was 1,309 tons; in 1880, 1,341 tons. Of sailing vessels, 398 tons in 1879, and in 1880, 428 tons.

	1879.		1880.		Ratio of Increase.
	Vessels.	Tons.	Vessels.	Tons.	
Ocean Vessels.....	612	506,969	710	628,271	23. <sup>20</sup>
Inland ".....	5,698	817,243	6,489	1,044,380	27. <sup>80</sup>
Total.....	6,310	1,324,213	7,199	1,672,651	26. <sup>30</sup>
Steamers.....	289	378,353	354	475,741	25. <sup>80</sup>
Sailing Ships.....	323	128,616	356	152,530	23. <sup>24</sup>
Total.....	612	506,969	710	628,271	23. <sup>20</sup>
Of the foregoing Vessels, the following came from the Maritime Provinces:—					
Steamers.....	62	40,686	88	62,688	54. <sup>00</sup>
Sailing Vessels.....	158	47,964	148	50,762	6. <sup>50</sup>
Total.....	220	88,380	236	113,450	28. <sup>40</sup>

The Increase of 1880 over 1878 was in

Ocean Tonnage.....	58. <sup>14</sup>	per cent.
And of Inland Tonnage.....	36. <sup>65</sup>	per cent.
1878 Ocean Vessels.....	516	397,266 tons.
" Inland.....	5202	764,243 "
" Total.....	5718	1,161,509 "

#### THE TOWAGE QUESTION.

At the beginning of the year Captain Rudolf was requested to ascertain, as far as he possibly could, the distance each vessel was towed, and the amount paid for the service. These were divided into two classes; the

first consisting of vessels over 600 tons, the second under that, and exceeding 250 tons.

There were in all 77 vessels over 600 tons, of these, 36 vessels, 43,646 tons or 1,212 tons average, belonged to the Clipper ships of the Allan, Beaver and Kidston lines, who are no doubt well posted as to what should be paid for the service performed; for these no returns were therefore obtained. There were 41 vessels, 33,550 tons, or 818 tons average, of which, information was obtained from 38 vessels, 30,486 tons or 802 tons average. These vessels were towed a distance of 15,991 nautical miles, and the sum paid for the service was \$19,263. The rate of the Beaver Tariff would have cost \$28,745, and under what is known as the Tariff of 1873 of double that sum, viz., \$57,490.

These 38 vessels, of 802 tons each, were towed an average of 420 nautical miles, at a cost of \$507, equalling \$1.20 per mile or 63.<sup>29</sup> cents per ton.

The Beaver Tariff would have cost \$1.79 per mile or 94.<sup>29</sup> cents per ton. The Tariff of 1873, \$3.48 per mile or \$1.88<sup>58</sup> per ton, or double that of the Beaver Tariff.

Of the vessels between 600 and 250 tons, which are looked upon as port-of-call vessels, 147, of 60,702 tons, came to the port. Of these, returns were obtained from 112 vessels of 46,326 tons, or 413 tons each.

These vessels were towed a distance of 43,723 nautical miles, the sum paid for the service was \$37,926. The rate by the Beaver Tariff would have been \$53,435, and by the Tariff of 1873, \$106,870.

These 112 vessels averaging 413 tons, each were towed 390 miles, for the sum of \$338, being 82 cents per ton or 86 cents per mile. The Beaver Tariff would have cost respectively, \$477 or \$1.15 per ton, or \$1.23 per mile, while the Tariff of 1873 would have been exactly double the Beaver Tariff.

Combining these two classes we have a total of 150

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vessels, aggregating 76,812 tons, of 572 tons average, which were towed 398 miles, at a cost of \$381. The Beaver Tariff for the same service would have cost \$548 each, or by the Tariff of 1873, \$1,096 each vessel.

So far as could be ascertained only four vessels paid any considerable excess over the Beaver Tariff, and no vessel paid anything near the Tariff of 1873. One of these vessels got a rebate satisfactory to their owners thus leaving three, which, had they been towed at the Beaver Tariff, would have paid \$2,545. The Captains reported they had paid \$3,479, while the Tug-Boat owners admit that they only received \$3,003, but they say that in some cases they allow their agents to give a discount off the bill, which may help to explain the difference in those cases.

From the foregoing statement it appears that the business has been conducted during the season at rates uniformly low, and that the exceptional cases in which an excessive rate was paid, the overcharge must have arisen from the lack of information furnished to the master in view of a St. Lawrence voyage, or his having dishonestly entered into collusion with the Tug service.

#### PILOTAGE.

There were 44 pilots actually employed during the year, whose gross earnings amounted to \$46,885, from which has to be deducted \$2,345, equalling 5 per cent., for the Decayed Pilot Fund. With this deduction, the lowest amount received by one pilot was \$538, the highest \$2,008, the average being \$1,013 for the season. Pilot Mathieu has, through loss of sight, been compelled to retire on the Pilot Fund.

The following letter was received from the Honorable the Minister of Public Works:

OTTAWA, 29th June, 1880.

SIR,

In order to be in a position to fully enter into and discuss the questions recently laid before the Federal Government by the several deputations from the East and West of Canada—viz., the freedom, as far as practicable, of the St. Lawrence route,—I am desirous of acquiring certain information, which, I believe, the Harbour Commissioners of Montreal and other public bodies can furnish me with, the possession of which would enable me, together with my colleague, the Minister of Railways and Canals, to lay before the Privy Council such report upon the subject as would form the basis of our discussions.

I have therefore the honor to request that you will furnish me with the following statements:

1st. A statement showing the comparative cost of Transport via the Erie Canal and the St. Lawrence Canal.

2nd. The Tolls charged on both routes.

3rd. A statement showing the comparative cost of Harbour Dues in Montreal, New York, Philadelphia, Boston and Baltimore.

4th. What reduction in Dues your Board would recommend, either as to tonnage dues on vessels, or wharfage rates on goods, in order to successfully compete with the ports above mentioned.

5th. The comparative cost of Pilotage at all the above-mentioned ports, and what remedy your Board would propose in order to reduce the cost of this service below Quebec, as also from Quebec to Montréal.

6th. What remedy your Board would propose to lessen

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the cost of Towage of sailing vessels from Father Point to Quebec and from Quebec to Montreal.

I will thank you to let me have the information above named as soon as practicable, and also to furnish any data bearing upon this subject.

I remain, Sir,

Your most obedient servant,

(Signed,) HECTOR LANGEVIN.

To the Chairman

Montreal Harbour Commissioners,

Montreal.

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In answer to the above the following reply was sent :

HARBOUR COMMISSIONERS OF MONTREAL,

SECRETARY'S OFFICE,

To the MONTREAL, 30th September, 1880.

Honorable HECTOR LANGEVIN, C.B.,  
Minister of Public Works,

And Honorable Sir CHARLES TUPPER, K.C.M.G.,  
Minister of Railways and Canals,  
OTTAWA.

GENTLEMEN, — The letter from the Honorable Mr. Langevin of the 29th June last requesting information concerning the ports of New York, Philadelphia, Boston, Baltimore and Montreal, was duly received.

Answers thereto have been delayed owing to the difficulty of procuring the necessary information as to the various ports named, but I have the honor now to reply as far as possible to questions therein contained :

FIRST.—*A statement showing the comparative cost of transport viâ the Erie and St. Lawrence Canals.*

In answer to this, comparison may be made between

the cost of transport from Chicago to New York, 1,400 miles by water, and Chicago to Montreal, 1,260 miles by water.

Reference to statement A herewith appended will show that for the three years 1879, 1878 and 1877, the average freight rate per bushel of wheat, as nearly as can be ascertained, was from Chicago to New York 10.<sup>66</sup>/<sub>100</sub> cents, and to Montreal 10.<sup>33</sup>/<sub>100</sub> cents, being a difference in favor of Montreal of 5.<sup>33</sup>/<sub>100</sub> mills. Corn it will be seen was 1.<sup>00</sup>/<sub>100</sub> mills in favor of Montreal. But when the difference of mileage is taken into account, Montreal is dearer by 3.<sup>00</sup>/<sub>100</sub> mills on wheat and 7.<sup>00</sup>/<sub>100</sub> mills on corn than New York.

	C.M.
Thus, if 1,400 miles cost 10. <sup>66</sup> / <sub>100</sub> cents, 1,260 miles should cost.....	9.60
The actual rate from Chicago to Montreal.....	10.09
	-----
Being as already stated 3. <sup>00</sup> / <sub>100</sub> mills against Montreal.....	.39
	C.M.
Corn in place of 9. <sup>66</sup> / <sub>100</sub> would be.....	8.57
Corn, Chicago to Montreal, actual cost.....	9.33
	-----
Making a difference against Montreal and in favor of New York of 7. <sup>00</sup> / <sub>100</sub> mills.....	.76

SECOND.—*The tolls charged on both routes.*

In statement B will be seen a list of chief articles comparing the Erie and St. Lawrence Canal tolls. Vessels of all kinds are free on the Erie, as also are Agricultural Products whether vegetable or animal, domestic spirits, woollens and cottons. Steamers are charged on the St. Lawrence Canals 2<sup>1</sup>/<sub>4</sub> cents and sail or other vessels 3<sup>3</sup>/<sub>4</sub> cents per ton; Agricultural Products 35 cents and unenumerated, in which are placed domestic manufactures, 60 cents. Salt is charged on the Erie 35 cents per ton for home and 87<sup>1</sup>/<sub>2</sub> cents for foreign salt. 20 cents is only charged on St. Lawrence. Coal and petroleum are charged respectively 8<sup>3</sup>/<sub>4</sub> cents and 17<sup>1</sup>/<sub>2</sub> cents per ton on the Erie, as against 20 and 40 cents by the St. Lawrence; unenumerated by Erie 35 cents, by St. Lawrence 60 cents. The

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remainder including grain, etc., is cheaper by St. Lawrence 20 cents against 35 cents for Erie.

A copy of the Erie rates is hereto appended (B 1.) The St. Lawrence rates will be found in Inland Revenue Report of 1879, page 179.

*THIRD.—A statement showing the comparative cost of Harbour dues in Montreal, New York, Philadelphia, Boston and Baltimore.*

The basis on which the charges are arranged at the different ports is so diverse that no satisfactory comparison can be made with Montreal.

In Boston, Philadelphia and Baltimore, the principal wharves are either owned or leased by companies or private parties, and the rates of wharfage, and the items on which it is charged are determined only by commercial considerations and vary greatly from time to time. In New York the wharves are also owned by or leased by companies or persons, but the rates of wharfage, although fixed by law, apply only to a portion of the wharves. The large railway and ship lines as a rule are owners or lessees of the wharves they occupy, and therefore only pay wharfage in the form of interest or rent.

In Boston, the custom is to charge the vessel no wharfage, but to charge it on the cargo, except in the case of grain shipped at the stationary elevators of the Railway Companies on which no wharfage is charged.

In New York, on the other hand, vessels not at their own wharves pay wharfage at the rates fixed by law and the cargo is free, but in the case of the vessels receiving grain at the railway stationary elevators the practice is to make no wharfage charge, either to vessel or grain. The legal rate for vessels in foreign trade lying at the wharves of general wharfingers is two cents for the first 200 tons and  $\frac{1}{2}$  cent for each additional ton per day when receiving or discharging cargo, and half rates when lying idle.

Coastwise and inland vessels are charged a different and lower tariff.

In Philadelphia, the wharves are also private property or leased to private parties, but there are no legal regulations as to wharfage. The custom known is to charge about  $\frac{3}{4}$  cent to one cent per ton per day on vessels and nothing on cargo.

The large railway and steamship lines as a rule own the wharves they use, and vessels at the railway elevator wharves pay wharfage as at other places.

In Baltimore, the city has built a number of wharves where city property fronts on the Harbour, but all other wharves are private property, and the city as well as others compete for business as best they can. There are no wharfage charges established by law, and as the wharf room is generally in excess of the demand, the competition is keen, but sometimes the reverse is the case and the rates are therefore extremely variable.

In a general way the practice is to charge both the vessel and cargo, but at the railway wharves at which the bulk of the foreign shipping lies, steamers pay nothing, sailing vessels about  $\frac{1}{2}$  cent per ton per day, and cargo passing over the railway pays nothing.

In all these ports the wharves are usually provided with store houses, and a very considerable part of the wharfingers revenue is derived from storing goods, and very frequently the wharfage proper is made subordinate to the storing.

In the case of the elevator on the railway wharves, the wharfage is entirely merged in the freight or elevating charges on the grain.

The harbour dues on foreign shipping and cargoes, so far as they can be ascertained and epitomised, will be found in statement C hereto appended.

FOURTH.—*What reduction on dues your Board would recommend either as to tonnage dues on vessels or wharfage*

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*rates on goods, in order to successfully compete with the ports already mentioned ?*

Montreal can only be properly compared with New York. The ports of Philadelphia, Baltimore and Boston may be said to be purely railroad ports in so far as the carriage of cereals is concerned, having practically no canal communication with the Western States, while New York has the Erie Canal against our Welland and St. Lawrence Canals; and as Montreal is only a summer port, say six to seven months a year, she must for her cereal exports depend mainly (till our Pacific Railway is opened through) on our canal system, and in this connection it may be well to give the receipts by canal and Railway at New York.

Statement D hereto appended shows the receipts by canal and railway during seven months of navigation, as well as for the whole year.

In the seven months of canal navigation, it will be seen that in 1877 there was received at New York . . . . . 47,248,265 bus.  
which was increased in 1879 to . . . . . 54,095,806 "

being increase of . . . . . 6,847,541 "

or 14 per cent.

During the same seven months in 1877 there came by rail to New York . . . . . 30,526,406 bus.  
and in 1879 . . . . . 59,820,200 "

showing an increase of . . . . . 29,293,794 "

or 96 per cent.

For the whole year of 1877 the total amount received by canal was . . . . . 48,356,176 bus.  
and for 1879 . . . . . 57,044,406 "

an increase of . . . . . 8,688,230 "

or 18 per cent.

For the whole year of 1877 the total amount received by rail was . . . . . 50,892,967 bus.  
and for 1879 . . . . . 101,929,243 "

an increase of . . . . . 51,036,276 "

or 100½ per cent.

As it is clear therefore that rail is now competing in a

marked degree against water communication, and as our port depends almost entirely on canals, the greatest reduction possible should be made so as to enable Montreal to hold her fair share of the trade. Were it possible to entirely abolish the tonnage and wharfage dues as well as the canal tolls, it would no doubt be a great advantage to the Port, but pending that desirable result, every reduction possible should be tried, say in tonnage dues on sail and steam ocean craft, as well as on the inland craft carrying through cargoes either way. Goods should have their wharfage rates reduced by being charged on box, bale or other kinds, without reference to the contents as at present, thus greatly simplifying the tariff and assisting the carriers whether by land or water, who are obliged to grant their bills of lading, weight and contents unknown.

Such a reduction of the charges would help the Port materially, but would of necessity entail a large loss to the revenue, and could only be undertaken when the Government assumes the Lake and River debt as well as the cost of buoying of the St. Lawrence and of any future improvements to the Ship Channel which may become necessary, as is done in case of similar works elsewhere.

In New York, Philadelphia, Boston and Baltimore, all the lighting, buoying and dredging not only of the rivers, but also of the harbours, is carried out at the expense of the Federal Government, thus leaving to the cities or other proprietors of wharves only the expense of constructing their own wharfage.

*FIFTH — The comparative cost of pilotage at all the above mentioned Ports, and what remedy your Board would propose in order to reduce the cost of this service below Quebec as well as from Quebec to Montreal.*

By reference to statement E, will be seen the rates charged at the respective ports.

Montreal, it will be observed, has by far the longest pilotage, the distance from sea being 345 miles.

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The same rate per foot for all draughts is charged on the St. Lawrence, and in this respect we are entirely different from the practice at all the other ports, which is to charge a higher rate the deeper the draft, and which certainly seems fair to the smaller vessels. A 12 foot vessel to and from Montreal pays \$141.00, and the same vessel at New York and Philadelphia only \$76.<sup>00</sup>/<sub>100</sub>, or \$64.<sup>70</sup>/<sub>100</sub> less, while a 24 foot vessels pays at Montreal \$282, against New York \$270, a difference of only \$12, or about four per cent., as against over 80 per cent. on the small vessel.

It will be also noted in the statement that a vessel under sail from Quebec to Montreal is charged \$4.<sup>00</sup>/<sub>100</sub> up and \$2.<sup>50</sup>/<sub>100</sub> down, or \$7.00 per foot, while if towed only \$1.00 is charged. As a rule, however, all the sailing vessels are now towed between Quebec and Montreal up and down.

Below Quebec the tariff is the same whether sailing up or being towed, but as a great deal less time is consumed and great labor and anxiety avoided in towing, it seems reasonable that a reduction should be made upon the rates for vessels in tow of at least 33<sup>1</sup>/<sub>3</sub> per cent.

Between Quebec and Montreal it has been suggested that when tugs have a Branch Pilot on board, that vessels under 500 tons register, or if larger when drawing under 16 feet water, should not be required to employ a pilot. If this can be done it would no doubt help the smaller class of vessels, which are so much wanted for *ports of call*.

SIXTH.—*What remedy your Board would propose to lessen the cost of towage of sailing vessels from Father Point to Quebec, and from Quebec to Montreal?*

This question is a very difficult one to answer. Some years ago, about 1874, a tariff was agreed to by the tug boat owners, which at the time was considered very high by the ship owners, and discounts were subsequently given till the tariff was practically abandoned, and for probably the last three years, barely one-third to one-half of the tariff rate has been paid by regular trading vessels.

Strange vessels however, coming to the river for the first time, are met by the tugs, and if they are unaware of the competition, are sometimes induced to pay tariff rates, the captains supposing the tariff has a legal status, and they are much surprised to afterward find that it is simply an obsolete tariff of the tug owners themselves, and that they have been overcharged.

Captains conversant with the route make their own bargains, and as has already been noted, manage to arrange for from one-third to one-half of the rate of 1874.

If the tug owners could be got to agree upon reasonable maximum rates so that the strangers would feel that they were not imposed upon, it would no doubt in the end not only benefit the tug owners themselves, but would prevent much vexation and annoyance to vessels visiting our river for the first time.

The very low average rates of the last three years have been very disastrous to the tug boat owners, and it is patent to any observer that with a few exceptions of the class named, vessel owners have little cause to complain of the rates charged during that time.

I am having prepared a list of as many as possible of the vessels which have been towed to the Port this year, with amount paid for towage, the results of which when completed will be furnished to you for your information.

In addition to this, a statement is also being prepared at the Custom House showing the tonnage dues and amounts received on the different classes of goods, both for inward and outward wharfage, for the present season.

This will enable the Board to determine what reductions or alterations should be made, and the probable loss of revenue to be caused thereby.

I have the honor to be,  
Gentlemen,

Your obedient servant,

ANDREW ROBERTSON,

*Chairman.*

FREIGHT  
New  
and  
Cana

Year.	b
1879.....	
1878.....	
1877.....	
Totals ....	
Average	

Year.	b
1879.....	
1878.....	
1877.....	
Totals ..	
Average	

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## STATEMENT A.

FREIGHT RATES of Wheat and Corn from Chicago to New York *via* Buffalo and Erie Canal—1,400 miles—and to Montreal *via* Welland and St. Lawrence Canals—1,260 miles—in years 1879, 1878 and 1877.

W H E A T .					
Year.	New York.		Montreal.		c. m.
	Per bushel.	Per ton.	Per bushel.	Per ton.	
	c. m.	\$ c. m.	c. m.	\$ c. m.	
1879.....	11 60	3 86 66	9 94	3 31 36	
1878.....	9 15	3 04 39	8 95	2 98 33	
1877.....	11 24	3 74 66	11 38	3 79 20	
Totals ....	31 99	10 66 21	30 27	10 08 79	
Average	10 66	3 55 40	10 09	3 36 26	
					New York, per bushel... 10 66
					Montreal do .... 10 09
					Difference in favor of Montreal..... 57
					\$ c. m.
					New York, per ton..... 3 55 40
					Montreal do ..... 3 36 26
					Difference in favor of Montreal..... 19 14

C O R N .					
Year.	New York.		Montreal.		c. m.
	Per bushel.	Per ton.	Per bushel.	Per ton.	
	c. m.	\$ c. m.	c. m.	\$ c. m.	
1879.....	10 44	3 72 50	9 87	3 54 28	
1878.....	8 31	2 96 78	8 43	3 01 06	
1877.....	9 83	3 51 07	9 70	3 46 70	
Totals ..	28 58	10 20 35	28 00	10 20 04	
Average	9 52	3 40 12	9 33	3 34 01	
					New York, per bushel... 9 52
					Montreal do ... 9 33
					Difference in favor of Montreal..... 19
					\$ c. m.
					New York, per ton..... 3 40 12
					Montreal do ..... 3 36 26
					Difference in favor of Montreal..... 6 11

Although, as appears by above tables, wheat was carried at  $5\frac{1}{10}$  mills less per bushel, and corn  $1\frac{1}{10}$  mills less per bushel from Chicago to Montreal, when the difference of distance to Montreal, which is 140 miles or

10 per cent. less than to New York, is taken into account and a corresponding reduction is made on the freight rates, it shows that the carriage to New York is cheaper by 3% mills per bushel for wheat, and for corn 6% mills for an equal distance on New York route.

STATEMENT B.

COMPARATIVE STATEMENT of Canal Tolls on principal articles of commerce from Lake Erie to Montreal *via* Welland and St. Lawrence Canals, and from Lake Erie to New York *via* Erie Canal.

	Erie.	Welland and St. Lawrence.
	Cents.	Cents.
Steamboats—per ton.....	Free.....	2 $\frac{1}{2}$
Sail and other boats .....	do .....	3 $\frac{1}{2}$
Grain—per ton.....	35	20
Iron .....	35	20
Salt—home.....	35	20
Salt—foreign.....	87 $\frac{1}{2}$	20
Coal .....	8 $\frac{3}{4}$	20
Iron ore.....	17 $\frac{1}{2}$	5
Sawed lumber.....	52 $\frac{1}{2}$	15
Potroleum .....	17 $\frac{1}{2}$	40
Agricultural Products, vegetable and animal.....	Free.....	35
Pork, beef, bacon, cheese.....	do .....	35
Butter, lard, tallow, wool.....	do .....	35
Cotton, tobacco, hemp, clover .....	do .....	35
Flax Seeds, hops, cattle, sheep .....	do .....	35
Hogs, horses.....	do .....	35
Unenumerated .....	35	60
Cordwood .....	70	40
Domestic Spirits.....	Free.....	60
Domestic Woollens .....	do .....	60
Domestic Cottons.....	do .....	60

RATES OF TOLL  
On Persons  
Oswego  
the Op

Toll is to be contained excepted.

Boats.....

Fur and peltry

Ashes, pot and  
Ashes, leached  
Lath, per M. p  
Lath, per 1,000  
Staves and be  
Shingles, per  
Shingles, per

Slab wood, per  
Cordwood, d

LUMBER NO.

White pine,  
boards, pla  
and other s  
thick (exce  
Lumber No  
Oak, hickory,  
butternut, r  
and cherry.  
Hemlock and

LUMBER NO. 2

Boards, plank  
for fences,  
other sawe  
reduced to  
enumerated  
of red ceda  
cord, after  
tain 1,000 f  
Hemlock and

RATES OF TOLL, 1880.—B. 1.—ESTABLISHED BY THE CANAL BOARD.

On Persons and Property transported on the Erie, Champlain, Oswego and the Cayuga and Seneca Canals, to take effect on the Opening of Navigation.

Toll is to be computed upon the weight ("1,000 Pounds per Mile") of all articles contained in the following List, unless otherwise stated opposite to the articles excepted.

	Towards Tide.			From Tide.		
	CTS.	M.	FR.	CTS.	M.	FR.
Boats.....	Free.			Free.		
THE FOREST.						
Fur and peltry.....	Free.			Free.		
PRODUCT OF WOOD.						
Ashes, pot and pearl.....	0	0	5	0	0	2½
Ashes, leached.....	Free.			Free.		
Lath, per M. per mile.....	0	0	1	0	0	1
Lath, per 1,000 lbs. per mile.....	0	0	7½	0	0	7½
Staves and heading.....	Free.			Free.		
Shingles, per M. per mile.....	0	0	1¼	0	0	1¼
Shingles, per 1,000 lbs.....	0	0	5	0	0	5
WOOD FOR FUEL.						
Slab wood, per cord.....	0	1	0	0	1	0
Cordwood, do. ....	0	2	0	0	2	0
LUMBER NO. 1*—By weight per 1,000 lbs. per mile.						
White pine, white wood, bass wood, cedar boards, planks, scantling, and all sidings and other sawed stuff less than one inch thick (except such as is enumerated in Lumber No. 3) .....	0	0	7½	0	0	7½
Oak, hickory, beech, sycamore, black walnut, butternut, maple, ash, elm, fir, tamarac, yew and cherry.....	0	0	5	0	0	5
Hemlock and spruce.....	0	0	3½	0	0	3½
LUMBER NO. 2*—By measurement per 1,000 feet per mile.						
Boards, planks, scantling, railroad ties, pickets for fences, and sawed timber, sidings and other sawed stuff less than one inch thick reduced to inch measure (except such as is enumerated in Lumber No. 3); and all kinds of red cedar, cedar posts, estimated that a cord, after deducting for openings, will contain 1,000 feet .....	0	1	5	0	1	5
Hemlock and spruce, per 1,000 feet per mile...	0	1	0	0	1	0

B. 1—Continued.

	Towards Tide.			From Tide.		
	CTS.	M.	FR.	CTS.	M.	FR.
LUMBER No. 3*—By weight per 1,000 lbs. per mile.						
Hoop poles, hand spikes, rowing oars, broom handles, spokes, hubs, tree-nails, fillies, boat and ship knees, plane stocks, pickets for fences, railroad ties, last blocks, stuff (manufactured or partly manufactured) for boxes, chairs and bedsteads, hop poles, brush handles, brush backs, looking-glass backs, gun stocks, plough beams and plough handles.....	0	0	7½	0	0	7½
Sawed stuff for window blinds not exceeding one-fourth of an inch in thickness.....	0	2	0	0	2	0
TIMBER.†						
Square and round, transported by rafts, per 100 cubic feet.....	0	5	0	0	5	0
AGRICULTURE.						
<i>Products of Animals.</i>						
Pork .....	Free.			Free.		
Beef.....	“			“		
Bacon.....	“			“		
Cheese.....	“			“		
Butter .....	“			“		
Lard, tallow and lard oil.....	“			“		
Wool .....	“			“		
Hides .....	0	0	5	0	0	2½
<i>Vegetable Food.</i>						
Flour .....	Free.			Free.		
Wheat .....	0	0	5	0	0	2½
Rye.....	0	0	5	0	0	2½
Corn.....	0	0	5	0	0	2½
Corn meal.....	Free.			Free.		
Barley .....	0	0	5	0	0	2½
Barley malt.....	0	0	5	0	0	2½
Oats.....	0	0	5	0	0	2½
Bran and ship stuffs.....	0	0	5	0	0	2½
Peas and beans.....	0	0	5	0	0	2½
Apples.....	0	0	5	0	0	2½
Potatoes.....	0	0	5	0	0	2½
Dried fruit.....	Free.			Free.		
<i>All other Agricultural Products.</i>						
Cotton .....	Free.			Free.		
Manufactured tobacco.....	“			“		
Hemp.....	“			“		
Clover and grass seed.....	“			“		
Flax seed.....	“			“		
Hops.....	“			“		

Domestic spir  
Oil meal and  
Leather.....  
Furniture.....  
Bar and pig le  
Pig iron.....  
Bloom and ba  
Castings and  
Domestic woo  
Domestic cott  
Domestic salt  
Foreign salt..

Sugar.....  
Molasses.....  
Coffee.....  
Nails, spikes  
Iron and steel  
Railroad iron  
Flint enamel,  
All other mer

Live cattle, h  
Stone, lime an  
Gypsum.....  
Rock, phosph  
Anthracite co  
Bituminous c  
Copper ore...  
Iron ore.....  
Petroleum or  
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\* Lumber s  
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B. 1—Concluded.

	Towards Tide.			From Tide.		
	CTS.	M.	FR.	CTS.	M.	FR.
<b>MANUFACTURES.</b>						
Domestic spirits.....	Free.			Free.		
Oil meal and cake.....	“			“		
Leather.....	“			“		
Furniture.....	0	0	5	0	0	2½
Bar and pig lead.....	Free.			Free.		
Pig iron.....	0	0	5	0	0	2½
Bloom and bar iron.....	0	0	5	0	0	2½
Castings and ironware.....	0	0	5	0	0	2½
Domestic woollens.....	Free.			Free.		
Domestic cottons.....	“			“		
Domestic salt.....	0	0	5	0	0	5
Foreign salt.....	0	1	2½	0	1	2½
<b>MERCHANDISE.</b>						
Sugar.....	0	0	5	0	0	2½
Molasses.....	0	0	5	0	0	2½
Coffee.....	Free.			Free.		
Nails, spikes and horse shoes.....	0	0	5	0	0	2½
Iron and steel.....	0	0	5	0	0	2½
Railroad iron.....	0	0	5	0	0	2½
Flint enamel, crockery, glassware.....	0	0	5	0	0	2½
All other merchandise.....	0	0	5	0	0	2½
<b>OTHER ARTICLES.</b>						
Live cattle, hogs and sheep.....	Free.			Free.		
Stone, lime and clay.....	0	0	5	0	0	2½
Gypsum.....	0	0	5	0	0	2½
Rock, phosphates and superphosphates.....	Free.			Free.		
Anthracite coal.....	0	0	1¼	0	0	1¼
Bituminous coal.....	0	0	1¼	0	0	1¼
Copper ore.....	0	0	5	0	0	2½
Iron ore.....	0	0	2½	0	0	2½
Petroleum or earth oil, crude or refined.....	0	0	2½	0	0	2½
Articles not specified.....	0	0	5	0	0	2½

\* Lumber shall not be cleared by measurement when carried in a boat having other articles on board paying toll by weight, but such lumber shall in all cases be also cleared by weight.

When a cargo is composed entirely of lumber, which can be cleared by weight or measurement, the whole of such cargo shall be cleared by measurement or weight as the shipper or master may elect, and in no case shall a portion of any such cargo be cleared by measurement and the other portion by weight.

† In the measurement of timber, bark adhering to the wood and refuse stuff are to be estimated as forming part of the timber, and to be rated accordingly.

I certify the foregoing to be a correct list of the rates of toll established by the Canal Board, with the concurrence of the Legislature, to take effect on the opening of navigation.

G. W. SCHUYLER, Auditor.

Canal Department,  
Albany, State of New York, }  
16th April, 1880.

STATEMENT C.  
COMPARATIVE STATEMENT of Wharfage charges on Vessels in Foreign Trade and on Staple Goods in various Atlantic Ports in 1880.

	MONTREAL.	BOSTON.	NEW YORK.	PHILADELPHIA.	BALTIMORE.
Steamships in foreign Trade.....	1½c. per ton per day.	Free—except when not receiving or discharging cargo.	{½c. per ton per day on each 200 tons; ¼c. on each 100 tons, ½c. rate when lying idle. Receiving or discharging grain at Elevators—Free.} do do	1c. per ton per day.	Free at Railway wharves. About ½c. per ton per day at other wharves.
Sailing Vessels.....	¾c. do do	do do	No wharfage on goods.	½ to ¾c. do.	About ¼c. per ton per day.
Coal, Ballast, Bricks.....	10c. per ton.				10c. per ton.
Iron, Steel and Iron Rails.....	25c. do				15c. do
Agricultural Implements, Machinery.....	30c. do				20c. do
Grain in bulk—per 100 bushels.....	25c. except Oats.				25c. per 100 bushels.
Oats, per 100 bushels.....	15c.				25c. do
Flour, Beef, Pork, Fish.....	2c. per barrel.				3c. per barrel.
Dry Goods—per 2,000 pounds or 40 c. ft. 50c. per ton.					5c. per ton.
Groceries not enumerated, in small bxs. 30c. do					1c. per box.
Ales, Beer.....	25c. do				3c. per barrel.
Liquors.....	40c. do				3c. do
Crockery, Earthenware, &c., in crates. 15c. do					10c. per crate.
Glassware and China in packages.....	20c. do				5c. per box.
Butter.....	30c. do				1c. per package (say 30c. per ton.) 5c. p. bale (say 20c. p. ton.)
Cotton, Hemp.....	30c. do				1c. per bag.
Coffee, Dried Fruit.....	30c. do				6c. p. hoghead (say 6c. per ton.) 10c. per hoghead (say 15c. p. ton.)*
Sugar.....	30c. do				
Molasses.....	30c. do				

\*NOTE—Half rates if received from or delivered to lighters outside. Free at Railway wharves if goods are received or forwarded by rail. This note refers only to Baltimore.

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STATEMENT C.—*Continued.*

## PORT OF NEW YORK.

All vessels in foreign trade pay 30 cents per ton per annum to the Federal Government, but having paid at one American Port are free at others for 12 months from date of payment.

Part of the wharves are owned by the City Department of Docks, and the remainder by companies or private persons, but the wharves belonging to the City are all leased by the year and the dues from these as well as from other wharves are all collected by the lessees or owners.

The rental charged for one of the City piers of modern construction of 550 to 600 feet in length by 75 feet is about \$30,000 per annum, and for old piers of 400 or 500 feet long, from \$8,000 to \$15,000 per annum. The large Ship and Railway lines are, as a rule, lessees or owners of the wharves used by them.

The custom of the Port is to charge wharfage on vessels only, the cargo (unless stored on the wharf) being free; at the Railway Elevator wharves, vessels taking grain are also free, all dues being included in the freight or elevating charges.

The rates of wharfage on vessels are limited by statute of the State of New York, and for vessels in foreign trade are as follows:

Vessels of 200 tons and under, 2 cents per ton per day.

Vessels over 200 tons, 2 cents per ton per day for the first 200 tons, and  $\frac{1}{2}$  cent per ton for the additional tonnage.

Vessels not receiving or discharging cargo, half rates.

Coastwise, river and canal boats, &c., are charged different and lower rates.

## PORT OF BOSTON.

Vessels in foreign trade are charged a yearly Government tax of 30 cents per ton, provided it has not been already paid in another American port.

The wharves are all in the hands of companies or individuals who charge wharfage at such rates and in such manner as may be agreed upon.

The State Government has reclaimed a large space and built extensive docks at South Boston, but these also are leased or to be leased to Railway companies.

The custom of general wharfingers is to charge wharfage on cargo and not on the vessel while loading or discharging, but this is mere custom and there are no legal restrictions.

The following may be considered the wharfingers' nominal tariff on staple goods from which discounts, varying from 25 to 75 per cent., are allowed, according to quantity and circumstances.

- General merchandise if by measurement,  $\frac{1}{2}$  cent per c. ft.
- do do if by weight, 30 cents per ton.
- Iron and steel, 40 cents per ton.
- Grain loaded at the Railway Elevators, free.

## PORT OF PHILADELPHIA.

Vessels in foreign trade pay the yearly Government tax of 30 cents per ton, if not previously paid at another American port.

The wharves are all owned by companies or individuals, except a few built by the City on City property, but these are leased by auction, so that practically all the wharves are under private control.

The wharfage rates are subject to no legal restriction except that a wharfinger is not allowed to discriminate between different vessels or to prevent a vessel from occupying his wharf when otherwise idle.

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The custom is to charge wharfage on vessels, but none on the cargo unless stored on the wharf. The majority of wharves are however well provided with sheds in which goods are stored when required, and for this storage charges are made which yield a considerable part of the wharfinger's revenue.

The larger Steamship and Railway companies as a rule own or lease the wharves they occupy.

The following are average wharfage charges on vessels:

At Girard Point Grain Elevator:—

Steamers .....	1 cent per ton per day.
Sailing vessels under 500 tons.....	\$3 per day.
“ “ 500 to 800 “ .....	\$4 “
“ “ 800 to 1000 “ .....	\$5 “
“ “ over 1000 “ .....	\$6 “

At wharves for general wharfage:—

Vessels under 500 tons.....	\$4 per day.
“ 500 to 600 “ .....	\$5 “
“ 600 to 800 “ .....	\$6 “
“ 800 to 1000 “ .....	\$7 “
“ over 1000 “ .....	\$10 “

#### PORT OF BALTIMORE.

Vessels in foreign trade pay the yearly Government tax of 30 cents per ton, if not previously paid at another American port.

The wharves are all owned by companies or individuals, except a few built by the City on City property.

The shipping engaged in foreign trade, and especially the steamers, are as a rule berthed at the Railway Companies' wharves, and at these no wharfage charges are made upon steamships or upon goods passing over the railways.

Coastwise and inland vessels are usually berthed at private or City wharves, and the custom is to charge wharfage on both vessel and cargo. There is however no legal tariff or restriction, and in consequence of keen

competition between the wharfingers for some time past, the charges have been exceedingly variable. Nearly all the wharves are provided with store houses, and in the case of goods paying storage the wharfage charges proper, both on vessel and cargo, are greatly modified.

The following rates payable under the tariff of the Baltimore and Ohio Railway wharves, on goods not passing over the railway, may be taken however as average wharfage charges :

Bags—Coffee, dried fruit, seeds, spices.....	1 cent each.
“ Nitrate soda, feathers, nuts, rice.....	1½ “
Bales—Hides, hemp, cotton, dry-goods.....	} 5 “
“ Indigo, matting, bark.....	
Barrels—Flour, beef, pork, lard, fish, Ale in glass....	} 3 “
“ Liquors, Vinegar, Sal Soda, oil.....	
Boxes—Canned good, candles, cheese, raisins.....	} 1 “
“ Tobacco, oranges, lemons.....	
“ Meat.....	½ “
“ Herrings.....	3 “
Cases—Dry Goods, &c., under 40 c. feet.....	5 “
“ “ under 80 c. feet.....	10 “
“ “ over 80 c. feet.....	25 “
“ Tobacco.....	5 “
Casks—Tallow, liquors.....	5 “
Crates—Crockery, &c.....	10 “
Grain, in bulk—per bushel.....	¼ “
Coal, bricks, ballast.....	10 cents per ton.
Iron, steel, salt, slate, plaster.....	} 15 “
Bones, granite, marble.....	
Agricultural implements, cordage.....	} 20 “
Machinery, grindstone.....	

Steamers are free at Railway wharves.

Sailing vessels 400 to 600 tons.....	\$1.50 per day.
“ “ 600 to 800 “.....	1.75 “
“ “ 800 and over.....	2.00 “

Aggregat

Year

1879 .....  
1878 .....  
1877 .....

Receipt  
inclusive

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1879 .....  
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## STATEMENT D.

Aggregate Receipts of Grain, Flour and Meal in New York  
during years 1879, 1878 and 1877.

## RECEIPTS FOR TWELVE MONTHS.

Year.	By Canal.	Coastwise.	By Rail.	Total.
	Bushels.	Bushels.	Bushels.	Bushels.
1879 .....	57,044,406	4,151,241	101,929,243	163,124,800
1878 .....	63,905,872	3,606,219	85,350,079	152,862,170
1877 .....	48,356,176	4,064,639	50,892,967	103,315,000

Receipts during seven months' navigation, May to November,  
inclusive:—

Year.	By Canal.	Coastwise.	By Rail.	Total.
	Bushels.	Bushels.	Bushels.	Bushels.
1879 .....	54,095,806	2,393,514	59,820,220	116,309,540
1878 .....	62,319,667	2,074,562	46,881,467	111,275,696
1877 .....	47,248,265	2,185,216	30,526,406	79,959,889

Receipts during five months winter, December to April,  
inclusive:—

Year.	By Canal.	Coastwise.	By Rail.	Total.
	Bushels.	Bushels.	Bushels.	Bushels.
1879 .....	2,948,600	1,757,727	42,109,023	46,815,350
1878 .....	1,586,205	1,531,657	38,468,612	41,586,754
1877 .....	1,107,911	1,879,421	20,366,561	23,353,893

New York proportion of Exports in 1877 was 50.10 per cent.

Do. do. do. 1879 was 49.75 per cent.

Montreal do. do. 1877 was 13.55 per cent.

Do. do. do. 1879 was 8.77 per cent.

For details, see Statement D., 2nd part.

## STATEMENT D—2ND PART.

Showing the ratios of exports of Grain, Flour and Meal, for years 1879, 1878 and 1877 from the following Ports.

PORTS.	1877	1878	1879
New York.....	50.10	50.74	49.75
Philadelphia.....	10.82	14.06	12.13
Baltimore.....	20.74	18.69	22.26
Boston.....	4.79	6.09	6.29
Montreal.....	13.55	10.42	8.77
Total.....	100.00	100.00	100.00

Philadelphia, Baltimore and Boston, it will be seen, have made considerable gain at the expense of New York and Montreal. The loss of New York is comparatively trifling, being only  $\frac{3}{100}$  per cent., while Montreal in the two years has lost no less than  $4\frac{7}{100}$  per cent.

## STATEMENT E.

Rates of Pilotage of steamers at various Ports, from 12 to 24 feet draft of water, from May to November—Winter rates higher.

Draft of Water	Montreal.	New York.	Philadelphia	Baltimore.	Boston.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
24 Feet.	282 00	270 00	264 00	240 00	222 00
22 do	258 50	247 50	242 00	220 00	181 50
20 do	235 00	192 00	200 00	200 00	150 00
18 do	211 00	172 80	162 00	180 00	117 90
16 do	188 00	121 60	144 00	160 00	92 80
14 do	164 50	106 40	116 48	112 00	76 30
12 do	141 00	76 80	76 80	96 00	55 56

## PILOTAGE DISTANCES:—

Montreal to Father Point.....	345 miles.
New York to Sandy Hook.....	25 "
Philadelphia to Light Boat.....	128 "
Baltimore to Cape Henry.....	160 "
Boston to Sea.....	8 "

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Steamers and sailing vessels are charged the same rates at all ports except Montreal, but the latter when towed from Quebec to Montreal and back, are charged \$2.00 per foot, being 50 cents less than steamers.

Vessels between Quebec and Montreal when under sail, are charged \$4.<sup>00</sup> per foot upward and \$2.<sup>00</sup> per foot downwards, equalling \$7.00 per foot, but when towed only \$4.00 is charged for both ways.

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HARBOUR COMMISSIONERS OF MONTREAL.

MONTREAL, 1st December, 1880.

The Hon. H. L. LANGEVIN, C. B.  
&c. &c.

DEAR SIR, — Feeling the importance and the urgent necessity for some action regarding the River and Lake Channel debt, the Board of Harbour Commissioners have prepared a Memorial to His Excellency the Governor in Council on the subject which will be sent up to-morrow. I have the honor now to send you herewith two printed copies of the same, as also copies of the memorandum submitted to the Hon. Minister of Public Works by this Board in 1879.

I am requested to ask your most favorable consideration of these documents, and I confidently trust the result will be satisfactory to us.

Will you be good enough to let us know when you will be in a position to receive a deputation from this Board on the subject. The time is getting short now, but the Board had hopes that you would desire to take up the question before the meeting of Parliament.

Allow me also to ask if you have looked at the draft of the Bill sent by this Board to the Hon. Minister of Marine.

Recent events on the River, added to representations by those interested in its navigation, render it necessary that the powers asked for in that Bill should be obtained, and we trust you will secure its passage the coming session.

If you desire it a few more copies of the memorial will be sent.

With highest regards,

I remain,

Your most obedient servant,

HENRY BULMER,

*Acting Chairman.*

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To His Excellency the Right Honorable Sir John Douglas Sutherland Campbell, Marquis of Lorne, P.C., K.T., G.C.M.G., Governor-General of Canada, &c., &c., in Council assembled.

The Memorial of the Harbour Commissioners of Montreal respectfully represents,

That your memorialists feel it to be their duty to approach your Excellency in Council, with reference to the important work with the direction of which they are charged by the Government of the Dominion.

That on the 31st of March, 1879, they had the honor of submitting to members of your Excellency's Government, a memorandum (a printed copy of which is herewith enclosed), setting forth the progress that had been made since the year 1851, in deepening and enlarging the channel through Lake St. Peter, showing that since the 12th June, 1851, the channel which at that time had only an available depth of 12 feet, had been so far improved and enlarged as to have a minimum depth of 22 feet, and a minimum width of 300 feet. And that in order to attain that measure of success, your memorialists had then expended out of the loan provided for by the 36 Vic., Chap. 60, a sum of \$1,120,000, of which an outlay of about

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\$500,000 was represented by plant and machinery, all of which still remain on hand.

That since your memorialists submitted that memorandum they have continued the works for the improvement of the channel, and in so doing, a further sum of \$304,000 was expended upon them during the years 1879 and 1880, by means of which a large portion of this channel, has been further deepened to a minimum depth of 25 feet.

That if your memorialists are permitted to continue their operations during next season, they will be able to complete the deepening of the entire channel to the above stated minimum depth of 25 feet, and that the expenses of so doing will not exceed the amount authorized to be raised under the Act above mentioned for the purpose of deepening the channel to a minimum depth of 22 feet at low water. The value of the plant and materials on hand being sufficient to cover the apparent excess of the total expenditure above the sum of \$1,500,000 contemplated by the said Act.

That while your memorialists do not deem it necessary to trouble your Excellency with similar observations to those contained in the said memorandum respecting the value and advantages to the country and to its trade, of the work which they have been mainly instrumental in carrying through during the last 30 years; they beg leave to refer to those observations, and to state that the further experience of two seasons confirms them in the opinion they have expressed as to the incalculable importance to the Dominion of the improvement of the great marine highway of the St. Lawrence. And they would urge upon your Excellency's consideration, the reasons given in that memorandum for regarding the expenses of that improvement as properly chargeable upon the revenues of the Dominion, rather than upon those of the Harbour of Montreal.

Your memorialists desire further to observe that public

attention has been forcibly attracted during the past seasons to the necessity for lightening the burthens upon shipping frequenting the harbours of the St. Lawrence accessible to seagoing vessels, and more especially the Harbour of Montreal. Not specially in the interest of that harbour, but of the entire trade and shipping of the Dominion ; the prosperity of which depends upon establishing the charges upon shipping at rates which will compare favorably with those of the Northern and Central Harbours of the United States. And with this view, some reduction of the existing rate of charges in the Harbour of Montreal, and its approaches has been urgently pressed both upon your memorialists and upon the public generally.

That as shown by the said memorandum the interest paid by your memorialists in 1878, upon the amount thus expended under the Act of 1873, was \$46,949, and that during the year 1879 the increased expenditure increased the amount of interest paid in that year to the sum of \$54,532.72, while the total revenue of the Harbour from ships and steamers during the summer season was only \$58,417.50, shewing a margin only of \$3,884.33, out of the total receipts from sailing and steam vessels visiting the Harbour, to assist in covering the maintenance of the Harbour and the payment of the debt appropriate to it, now amounting to nearly \$1,800,000. And that when the returns for the recently closed season of navigation have been received, the results will be in a similar proportion to those of the season of 1879.

That from the foregoing statement of facts it is obvious that no reduction can be made upon the existing Harbour dues, so long as the Harbour is held liable for the interest upon the expenditure on the Lake St. Peter and River channel. And that in fact the expenditure of the entire appropriation will throw upon the Harbour an annual payment by way of interest greater than the entire present revenue of the Harbour, derived from sailing and steam vessels.

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That moreover in order to maintain the position of the Harbour of Montreal as the great terminal port for sea-going vessels, improvements and extensions of various kinds are needed and have been recommended by eminent engineers, which it is impossible for your memorialists to contemplate making while burthened with the interest of the expenditure upon the river channel. And that such improvements are as essential to the maintenance and encouragement of the shipping trade of the St. Lawrence, as the reduction of the expenses to be incurred in reaching and using ports on that river and especially the Harbour of Montreal.

That in view of the facts already stated it is impossible for your memorialists to contemplate any material improvement of the Harbour or any reduction of rates, so long as they are burthened with the interest upon the expenditure made in the improvements of the channel of the River St. Lawrence; and they would respectfully urge upon your Excellency's consideration the fact that the cost of those improvements to the channel of the River St. Lawrence, are as properly and justly chargeable upon the country, as the cost of the series of canals of which that great highway forms the extension. And that there is no more ground for throwing the burthen of those improvements upon the Harbour of Montreal, than there would be for imposing upon the localities at the termini of the various canals of the Dominion the expenses of constructing those canals.

That in the spring of the present year your memorialists again brought the said memorandum, and the facts and circumstances which had afterwards transpired, under the notice of your Excellency's Government; and that they then had the honor of receiving from members of your Excellency's Cabinet an assurance that your Excellency's Government would be prepared to submit to Parliament at its next Session a scheme for the relief of the trade by the St. Lawrence route, which would include

the assumption of the debt incurred for the improvement of the Lake and River.

That your memorialists communicated that assurance to the public through the Board of Trade of Montreal, and by other means, and that it was received with great satisfaction.

Your memorialists therefore would respectfully and earnestly urge upon your Excellency in Council, that some measure be taken for the relief of your memorialists, and of the Harbour of Montreal from the share of the public burthen thus unjustly imposed upon them, in order that your memorialists may avail themselves of the portion of their revenue heretofore appropriated to the payment of interest upon the cost of that public work, in order to reduce the burthens upon shipping and to complete the improvement of the Harbour of Montreal as the central shipping port of the Dominion.

And your memorialists as in duty bound will ever pray.

(Signed,) HENRY BULMER,  
*Acting-Chairman.*

(Signed,) H. D. WHITNEY,  
*Secretary.*

HARBOUR COMMISSIONERS' OFFICE,  
Montreal, 1st December, 1880.

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WM. SMITH  
*Deputy*

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RECEIPTS AND EXPENDITURE  
OF THE  
HARBOUR COMMISSIONERS OF MONTREAL  
*For the Year 1880.*

HARBOUR COMMISSIONERS OF MONTREAL,  
*Secretary's Office,*

MONTREAL, 2nd February, 1881.

WM. SMITH, ESQ.,  
*Deputy Minister of Marine and Fisheries,*  
OTTAWA.

SIR,

I have the honor, by direction of the Harbour Commissioners of Montreal, to forward herewith, for the information of the Honorable the Minister of Marine and Fisheries, statements of the receipts and disbursements of the Trust for the year ended the 31st December, 1880.

The receipts from all sources were as follows, viz:—

FROM COLLECTOR OF CUSTOMS, MONTREAL:

Wharfage on goods—Inwards .....	\$112,965.20	
“ “ —Outwards .....	82,303.21	
Tonnage Dues on Steamships .....	55,043.87	
“ “ Sailing Vessels .....	23,598.85	
	\$273,911.13	

LOCAL TRAFFIC.

Wharfage on goods—Inwards .....	4,027.58	
“ “ —Outwards .....	843.64	
Harbour Dues on Barges .....	16,695.36	
<i>Carried forward</i> .....	\$21,566.58	\$273,911.13

<i>Brought forward</i> .....	\$21,566.58	\$273,911.13
Harbour Dues on Steamers .....	6,402.24	
Commutation " " .....	16,983.33	
Received for piling Wood on Wharves .....	606.60	
" " " Lumber " .....	2,748.00	
" " storing Coal " .....	1,653.96	
" " Weigh Scales " .....	1,000.00	
" " Rent of small Offices " .....	869.30	
" " Cattle Sheds " .....	629.55	
" " Penalties .....	54.00	
		<u>52,513.56</u>
NET REVENUE .....		\$326,424.69
FROM DOMINION GOVERNMENT:		
Received on account new Channel operations .....		\$140,000.00
SUNDRY AMOUNTS RECEIVED FOR CREDIT NEW CHANNEL OPERATIONS:		
H. & A. Allan — Timber Rent, &c. ....	111.25	
D. & J. McCarthy, — Timber, &c. ....	49.52	
J. R. Booth, — Damage to Dredge No. 3 .....	62.00	
R. Reford & Co., " — Wharf at Sorel ...	50.51	
Sincennes & McNaughton Line — Timber, &c. ....	90.00	
Sundries .....	12.58	
		<u>375.86</u>
Rent of Offices in Old Building .....	1,020.00	
" " New " .....	2,187.50	
		<u>3,207.50</u>
Fines Collected .....	10.00	
Debentures sold, Series A .....	100,000.00	
Received for Cancelled Insurance Stamps .....	223.35	
" from S. Filgate, for Str. Richelieu .....	1,000.00	
		<u>100,223.35</u>
SUNDRY AMOUNTS RECEIVED FOR CREDIT OF HARBOUR DREDGING:		
Capt. D. White—Damage to Dredge No. 4 .....	180.00	
Towing Barges in the ice .....	152.00	
		<u>332.00</u>
SUNDRY AMOUNTS RECEIVED FOR CREDIT OF HARBOUR REPAIRS:		
Montreal Fire Department—Plank .....	44.73	
J. Walsh, — Old Plank .....	2.50	
J. T. Therien, — " " .....	50.00	
		<u>97.23</u>
Interest on Bank Account .....		2,090.10
		<u>2,090.10</u>
TOTAL RECEIPTS .....		<u>\$573,760.73</u>

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## CONSTRUCTION

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## The Expenditure was as follows:—

Harbour Survey .....	\$ 405.09
New Channel Operations .....	149,898.39
Buoys and Beacons .....	4,258.11
Harbour Dredging .....	36,679.51
"    Repairs .....	17,427.82
"    Expenses .....	25,437.45
Printing, Advertising and Stationery .....	1,833.46
Interest on Harbour Debt .....	112,721.38
Travelling and Incidental Expenses .....	535.46
 CONSTRUCTION ACCOUNT, <i>as under</i> —	
Board of Engineers—Harbour Plans .....	\$2,500.00
Sections 13 and 14 .....	6,185.75
Section 17 .....	7,600.55
Victoria Pier, Section 20 .....	3,246.05
Windmill Point Wharf .....	2,006.93
Hochelaga Wharf, Sections 38 and 39 .....	6,374.86
Section 29 .....	1,478.85
	29,392.99
Legal Expenses .....	698.55
Lighting Wharves—Electric Light .....	8,626.54
"    "    —Coal Oil .....	677.49
	9,304.03
Wharfages returned .....	209.11
Expenses collecting Wharfages at Longue Pointe .....	3.50
"    moving Barge Pierreville .....	1.50
Brissette & Normandin—Refund of Rent paid for timber lot .....	225.00
Cattle Sheds .....	6,014.60
Dominion Government Interest .....	58,902.74
Latrine .....	460.36
Harbour Railway .....	972.46
New Dredging Plant—Tug C. J. Brydges .....	5,000.00
"    "    —New Scows .....	1,619.76
	6,619.76
Sundry Accounts written off .....	298.86
	\$462,300.13

The receipts from Wharfage are largely in excess of any previous year, being \$61.075 more than 1879, and \$45,292 over 1874, which was the year of our greatest revenue prior to this. The local traffic continues to fall off, being \$2,567 less than last year, which is caused, as

has already been stated in former reports, by the increased railway facilities.

The Chief Engineer's Report, which is forwarded you, contains a full account of the works within the Harbour. You will notice that mention is made therein to the lighting of a large portion of the Harbour by the Brush Electric Light.

The following Annual Reports are also transmitted : (1st) The Harbour Master's, with comparative statements of the trade of the port ; (2nd) The Superintendent of Pilots, with reference to the maintenance of the Buoys in the Harbour and River, and, (3rd), That for the Pilotage District of Montreal.

It will be seen from the Harbour Master's statements, that the total amount of tonnage, inland and sea-going, is 1,672,651 tons—the largest on record and an increase over last year of 348,259 tons. The sea-going steam tonnage shows an increase of 205,863 tons over 1878, and of 97,388 tons over 1879. The average size of the vessels is also larger, and the opening of the new channel at Cap la Roche has enabled them to load down two feet more than formerly, thus making a large saving in light-erage, etc.

The deepening of the Ship Channel between Montreal and Quebec is progressing most satisfactorily. The Chief Engineer's Annual Report on this matter for the year ended the 30th June last, has been forwarded to the Department of Public Works, as usual.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed)

H. D. WHITNEY,

*Secretary.*

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REPORT ON THE WORKS  
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IMPROVEMENT AND MAINTENANCE  
OF THE  
**HARBOUR OF MONTREAL**  
For the Year 1880.

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JOHN KENNEDY, M. Inst. C.E., *Chief Engineer.*

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HARBOUR COMMISSIONERS OF MONTREAL,  
*Chief Engineer's Office,*

MONTREAL, 20th January, 1881.

H. D. WHITNEY, ESQ.,  
*Secretary.*

SIR,

I beg to submit, for the information of the Board of Harbour Commissioners, the following Report upon the works in the Harbour of Montreal during the year 1880.

The principal works of the past year are the enlargement and deepening of the Windmill Point Basin; the renewal, from water line upward, of the old wharf in Sections 12 and 13, and raising it up to standard level; the completion of the new wharf in Sections 13 and 14, and the consequent removal of the outer end of Wellington Pier and filling of part of Metcalfe Basin; the widening out of the wharf in Section 17 to the line of that in Section 16; the renewal of the lower end and inner side of Victoria Pier, Section 20, from the water line upward and raising it to the standard level; the dredging away of a great part of the shoal between the front of the wharves

in the main channel opposite Sections 22 to 25; the construction to medium water level of 427 feet of wharf in Sections 38 and 39, between the Hochelaga and Hudon Wharves; the further deepening and improvement of the main Ship Channel through the Harbour from opposite Section 21 up to Section 13; the installation of electric lighting on the wharves of the central part of the Harbour; and the construction of cattle sheds.

The following are the chief details:—

*Sections 5 to 10 (Windmill Point Basin and Wharf).—* There was no extension in length of timber work of the wharf this year, but the upper end, which was left unplanked in 1879, was entirely finished in 1880, and the back filling in rear was also carried up to the finished height and to the full breadth of the Harbour property.

The roadway ceded to the Harbour Commissioners from their property to Mill Street at the boundary line between hydraulic lots 11 and 12, has been graded so as to afford more easy and direct access to the wharf in Section 6.

Dredging to the extent of 43,000 cubic yards has been done in deepening and widening the basin, and the work has so far progressed that at low water, vessels drawing 20 feet are now berthed up to a distance of 1,930 feet from the lower end of the wharf, and vessels of 15 feet or under are berthed to 500 feet further up.

Expenditure in 1880 on wharf, back-filling and roadway, \$2,186; on dredging, \$16,430.

*Section 11.*—Some shallow places in front of the wharf between the new entrance of the Lachine Canal and the outer corner of the Windmill Point Wharf, were dredged out to a depth of 24 feet, at a cost of \$1,750.

*Sections 13 and 14.*—At the close of work in 1879, the new wharf under construction across the basin and in line of the wharf in Section 12 and 13 had been carried up to six feet above low water mark, about one-third of the basin

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had been filled up, and the greater part of the projecting end of Wellington Pier had been removed. Work was vigorously resumed at the opening of navigation in 1880, and by 2nd June the timber work of the new wharf was finished; and by 7th July the basin was filled in, and the whole work completed for use. The length of broken wharf frontage abolished by the improvement is 817 lineal feet, and the length substituted in line of Sections 12 and 13 is 328 lineal feet, together with an increased wharf area of 29,400 square feet.

Expenditure in 1880: Timber work, \$1,533; back-filling and macadamizing, \$4,167; dredging, \$4,385. Total, \$10,088.

*Section 17.*—In order to increase the effective accommodation of the wharves, in Sections 16 and 17, which were divided into two portions, each of which was longer than necessary to berth one ordinary ship, but not enough for two, the wharf in Section 17 was extended forward into the Basin to the line of that in Section 16, thus making a continuous wharf line of 892 feet, and gaining 18,488 square feet in area.

The new piece of wharf is of pile work, 425 feet in length of front, 62 feet in breadth at one end and 25 feet at the other, and has 25 feet and over in depth at low water. Cost, \$7,654.

*Sections 22 to 25.*—The clearing away of the shoal extending from Victoria Pier, Section 20 to Section 28, has been continued throughout the summer, two dredges having been engaged upon it the greater part of the time. The upper and wider half of the shoal has now been deepened to 25 feet at low water, but the dredging remains to be proved and any overlooked lumps removed. Quantity dredged this summer, 69,800 cubic yards, at a cost of \$12,277.

*Sections 38 and 39.*—Plans and estimates for the construction of a wharf, to fill the space between the Hochelaga

and Hudon Wharves, 1,102 feet in length, were made in the early part of the summer, and on 1st September the Board ordered the work to be carried out. Construction was commenced forthwith at the up-stream end, and by the close of navigation 427 lineal feet of crib-work had been built up about two feet above low water level, and the back-filling also made. A considerable quantity of back-filling has also been deposited from the derricks, but it is not yet levelled down on the remaining part of the beach. Expenditure, \$7,040.

*Sections 40 to 41.*—A considerable quantity of surplus dredgings have been deposited along the beach both above and below water line, from the Hudon Wharf downward, so as to be utilized in the construction of any wharves which may hereafter be required.

*Ship Channel in the Harbour.*—Though not a part of the harbour work proper, the deepening of the Ship Channel through the Harbour is usually noted in the Harbour Report. This year one to three dredges have been employed in deepening to 25 feet at low water, and widening the part of the channel from opposite Section 21 to near the mouth of the Lachine Canal. Total quantity dredged, 47,500 cubic yards, at a cost of \$10,500.

*Electric Lighting of Wharves.*—For over two years past the various systems of electric lighting which appeared to have been successfully brought into use on an extensive scale have been carefully watched, with a view to ascertaining if any of them might be applied with advantage to lighting the Montreal wharves, so as to allow of cargo being handled with facility during night. After extended correspondence with prominent makers of apparatus on this continent and abroad, and with users of the light on a considerable scale, and on comparing the estimated cost with that of other systems of lighting, the Board arranged last spring with the Brush Electric Light Company of

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New York to furnish apparatus for lighting the central part of the Harbour on certain conditions, the chief of which was that the Board might purchase the apparatus or not as might seem fit after sufficient trial.

Lighting was commenced on June 11th, with one machine and sixteen lamps, and after seven weeks use the apparatus was purchased, together with an increased number of lamps, so as to reach additional wharves; and the lighting was continued with satisfactory results till the close of navigation. Power was, through the kindness of the Dominion Government, furnished temporarily from an engine in the Custom House.

The lighting equipment, as it stood till taken down at the close of navigation, consisted of one Brush dynamo-electric machine, working a single circuit of 14,600 feet, or  $2\frac{3}{4}$  miles in length, on which are arranged 21 lamps, any 16 or lesser number of which may be used at once on such wharves as vessels desire to handle cargoes during night, the remaining lamps being simply switched out, as a gas lamp may be turned off. The length of the district covered by the lamps is  $1\frac{1}{2}$  miles, and the wharf frontage (including piers) is 9,100 lineal feet, or nearly  $1\frac{3}{4}$  miles, over which the light of the 16 lamps may be distributed as desired.

The system is worthy of note, as being the first known example of lighting an extensive line of wharves by electricity.

The capital cost of the apparatus, including all but the engine, was \$6,981. The gross outlay for working from 11th June to November 22th, equal to 22,694 hours lighting of one lamp, was \$1,596, or  $7\frac{1}{3}$  cents per lamp per hour. This does not include interest or depreciation, but, on the other hand, it includes many expenses incident to the installation of a new system and to the working of an engine which is not adapted to the purpose, and which, from its construction and position, is by no means economical in fuel or attendance.

*Cattle Sheds.*—In order to provide suitable shelter for cattle and other live stock, kept waiting for export shipment, a series of partly covered pens were built in the early part of the summer on the wide space in rear of the wharves on Section 22. They cover an area of 66,000 square feet, giving an aggregate capacity for about 1,100 cattle, and are divided in 13 pens of different sizes, holding 45 to 125 head.

Each pen is provided with a light roof covering, nearly half its area, and with feeding and watering troughs, platforms for receiving animals from railway trains or discharging for shipment, &c., and the whole are built so as to allow of being erected in spring and taken down in autumn to avoid damage by ice. Cost, \$5,258.

#### HARBOUR REPAIRS.

The total expenditure for maintenance and repairs was this year \$17,330, and compares as follows with previous five years :

1875.....	\$16,449
1876.....	\$35,711
1877.....	\$26,077
1878.....	\$18,974
1879.....	\$18,819
1880.....	\$17,330

The repairs have largely consisted of the many light works necessary to the proper maintenance of the wharves, roadways, and other parts of the Harbour property, only the following being worthy of special note.

*Sections 12 and 13.*—The oldest portion of the wharf, 835 feet in length, had become sunken and decayed, was taken down to near low water level in the latter part of the summer and rebuilt to the standard level, and the roadway in rear was also made up to corresponding height. Cost, \$3,766.

*Section 20, Victoria Pier.*—The lower end and portion

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of the inshore side of the pier not previously repaired, was this year taken down to low water and renewed, and raised to the standard level. The part thus repaired is 827 feet in length, and with the other parts treated in the same way in the last three years, completes the renewal of the whole pier above water and raising it to the height of the newer wharves. Expenditure in 1880, \$3,499.

#### DREDGING.

The Harbour dredges and two tugs were quartered at Sorel, and the remainder of the fleet at Chenal du Moine and Boucherville during the winter of 1879-80, and the whole received the usual winter repairs and outfit at the Commissioners' Works.

Immediately on the clearing away of the St. Lawrence ice the dredges were brought up to Montreal and were got to work on the 26th April, and were kept working without serious casualty till the 20th and 22nd November, when they were driven off by the sudden closing in of continued severe frost. The fleet consisted as usual of five spoon dredges, two clam-shell derricks for unloading scows, three tugs, thirteen flat scows and seven hopper bottomed scows, and one floating shop for machinery repairs, details of which will be found in the appended tables.

The number of working days on duty from commencing in spring to closing in the fall, was 179 each for two of the dredges, and 180 each for the other three, equal to an aggregate of 898 days of one dredge, and an average of 179½ for each without deductions for stoppages. The nominal working hours are ten per day, giving an aggregate of 8980 hours, but there were lost by stoppages and detentions of all kinds 1351½ hours, leaving 7,628½ hours actual dredging, or 85 per cent. of the nominal time.

Dredges 2, 4 and 5 were put in dry dock during the

summer for caulking and light repairs below water line, causing a loss of time of 3, 3½, and 5 days respectively.

Derricks 2 and 3 were hauled out on the ways at Section 40, also for caulking and light repairs, causing a loss of time of 2 and 5 days respectively.

The tug St. Peter was put in dry dock and received a new propeller wheel, and caulking and light repairs below water.

The total quantity dredged during the working season was 186,430 cubic yards, and the total cost of working the fleet—including repairs, outfit, fuel, wages, salaries, insurance and all other outlays, except interest on capital and depreciation of plant,—was \$46,914<sup>100</sup>, giving, therefore, a general average cost of 25½ cents per cubic yard for dredging, towing, and unloading or dumping.

About 111,217 cubic yards were unloaded ashore by clam-shell derricks for wharf building and other purposes, and the remaining 75,213 cubic yards were dumped in the river from hopper bottomed scows.

Compared with the five previous years, the results are as follows:

YEAR.	Cost.	Cubic Yards Dredged.	Cost per Cubic Yard. Cents.
1875.....	\$68,979	151,719	45
1876.....	55,462	156,082	35½
1877.....	45,103	173,449	26
1878.....	48,748	211,731	23
1879.....	41,006	189,609	21 <sup>63</sup> / <sub>100</sub>
1880.....	46,914	186,430	25 <sup>16</sup> / <sub>100</sub>

The following are the details of the character and cost of the dredging done at different parts of the Harbour:—

*Sections 5 to 10 (Windmill Point Basin).—Enlarging and*

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deepening the Basin, and cleaning bottom made in former dredging—hard pan with boulders, and occasionally shale; twelve to thirty feet depth of water ahead at date of dredging; 43,266 cubic yards, costing \$16,430, or 37<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Section 11 (Windmill Point).*—Clearing up bottom and removing small shoals, gravel, clay and hard pan; twenty to twenty-eight feet depth of water; 4,668 cubic yards, costing \$1,750, or 37<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Sections 12 to 14 (Queen's Basin).*—Removing old pier, removing small shoals, and cleaning up bottom—clay, gravel, stones and hard pan; twenty to thirty feet depth of water; 12,735 cubic yards, costing \$4,388, or 34<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Section 14 (Elgin Basin).*—Cleaning out sewage and other deposit; twenty to twenty-eight feet of water; 2,317 cubic yards, costing \$366, or 15<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Sections 22 to 25.*—Removing shoal and cleaning bottom, sand, gravel and clay; twenty-two to thirty feet depth of water; 69,817 cubic yards, costing \$12,277, or 17<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Sections 38 and 39 (Hochelaga).*—Making foundations for crib-work of new wharf—clay, sand and gravel; twenty to twenty-eight feet of water; 6,153 cubic yards, costing \$1,202, or 19<sup>100</sup>/<sub>100</sub> cents per cubic yard.

*Ship Channel (opposite Sections 13 to 21).*—Widening and cleaning up bottom made in former years; twenty-two to twenty-eight feet depth of water; 47,474 cubic yards, costing \$10,501, or 22<sup>100</sup>/<sub>100</sub> cents per cubic yard.

Yours respectfully,

(Signed), JOHN KENNEDY,  
Chief Engineer.

## Abstract of DREDGING done in the HARBOUR of MONTREAL in 1880.

PLACES WHERE DREDGES WORKED.	DREDGES.	Quantities Dredged at each place.	Dredged Totals.	REMARKS.
		Cub. Yds.	Cub. Yds.	
Section 5 to 10, Windmill Point Basin.....	Dredge No. 4 ..	16,998	43,266	Hard pan, boulders and some Shale.
	" No. 5 ..	4,252		
	" No. 6 ..	21,431		
	" No. 7 ..	585		
Section 11, Windmill Pt.	Dredge No. 2 ..	2,418	4,668	Gravel, clay and hard pan.
	" No. 5 ..	135		
	" No. 6 ..	1,530		
	" No. 7 ..	585		
Section 12 to 14.....	Dredge No. 2 ..	540	12,735	Clay, gravel, stones and hard pan.
	" No. 4 ..	1,305		
	" No. 5 ..	9,720		
	" No. 6 ..	270		
" No. 7 ..	900			
Section 14, Elgin Basin .	Dredge No. 2 ..	2,317	2,317	Sewage and other deposit.
Section 22 to 25 .....	Dredge No. 5 ..	19,125	69,817	Sand, gravel and clay.
	" No. 6 ..	585		
	" No. 7 ..	50,107		
Sections 38 and 39 .....	Dredge No. 4 ..	6,153	6,153	Clay, sand and gravel.
Section 13 to 21..... Ship Channel.....	Dredge No. 2 ..	39,667	47,474	Sand, gravel and boulders.
	" No. 4 ..	1,080		
	" No. 5 ..	2,835		
	" No. 7 ..	3,892		
Gross Total.....			186,430	

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ABSTRACT OF DREDGING DONE BY EACH DREDGE IN THE HARBOUR OF MONTREAL IN 1880.

DREDGES.	Commenced working.	Stopped working.	Time of service.	PLACES AT WHICH WORK WAS DONE.	Quantities dredged at each place.	Totals dredged.	REMARKS.
Dredge No. 2.	April 26.	Nov. 22.	Days. 180	Sec. 11, Windmill Point " 12 to 14 " 14, Eight Basin " 13 to 21, Ship Channel	Cubic yds. 2,418 540 2,317 38,667	Cubic yds. 44,942	Gravel, clay and hard-pan. Clay, gravel, stones and hard-pan. Sewage and other deposit. Sand, gravel and boulders.
Dredge No. 4.	April 25.	Nov. 20.	179	Sec. 5 to 10, Windmill Point Basin " 12-14 " 38 and 39 " 13 to 21, Ship Channel	18,908 1,305 6,153 1,080	25,536	Hard-pan, boulders and some shale. Clay, gravel, stones and hard-pan. Clay, sand and gravel. Sand, gravel and boulders.
Dredge No. 5.	April 25.	Nov. 22.	180	Sec. 5 to 10, Windmill Point Basin " 11 " 12 to 14 " 22 to 25 " 13 to 21, Ship Channel	4,952 735 9,720 13,125 2,833	36,967	Hard-pan, boulders and some shale. Gravel, clay and hard-pan. Clay, gravel, stones and hard-pan. Sand, gravel and clay. Sand, gravel and boulders.
Dredge No. 6.	April 25.	Nov. 20.	179	Sec. 5 to 10, Windmill Point Basin " 11 " 12 to 14 " 22 to 25	21,431 1,590 1,270 555	23,816	Hard-pan, boulders and some shale. Gravel, clay and hard pan. Clay, gravel, stones and hard pan. Sand, gravel and clay.
Dredge No. 7.	April 26.	Nov. 22.	180	Sec. 5 to 10, Windmill Point Basin " 11 " 12 to 14 " 22 to 25 " 13 to 21, Ship Channel	585 585 900 50,107 3,852	56,069	Hard pan, boulders and some shale. Gravel, clay and hard pan. Clay, gravel, stones and hard pan. Sand, gravel and clay. Sand, gravel and boulders.
Gross Total.						186,430	

HARBOUR COMMISSIONERS' DREDGING PLANT EMPLOYED IN THE HARBOUR OF MONTREAL, 1880.

DESCRIPTION OF VESSEL.	HULL.			When Built.	Kind of Engine.	ENGINES.				Capacity of Bucket.	Depth to which Dredge can work.	REMARKS.
	Length over all.	Breadth of beam.	Depth of hold.			No. of Cylinders.	Diameter of Cylinder.	Length of Stroke.	Pressure of Steam.			
DREDGES:												
Spoon Dredge, No. 2.....	77.0	23.5	6.3	1872	Horizontal, non-condensing.	1	12	16	40 to 70	40	30	
" " " No. 4.....	77.3	27.0	6.6	1873								
" " " No. 5.....	77.6	27.0	6.6	1874								
" " " No. 6.....	77.0	27.0	7.0	1874								
DERRICKS:												
Clam-shell Derrick, No. 1.....	56.8	23.9	5.9	1872	Horizontal non-condensing.	2	8	12	60 to 70	.....	.....	.....
" " " No. 2.....	57.0	23.6	5.9	1872								
" " " No. 3.....	61.9	24.0	5.9	1875								
TUG-BOATS:												
Tug St. Louis.....	67.0	15.0	8.7	1875	Vertical, non-condensing.	1	16	20	85 to 95	.....	.....	.....
" St. Peter.....	71.6	16.6	8.6	1875								
" St. Paul.....	65.6	15.0	8.0	1875								
BARGE:												
Stagbound, floating shop.....	103.4	21.5	7.6	1889	.....	.....	.....	.....	.....	.....	.....	.....
SCOWS:												
Dumping Scows.....	80.0	16.0	7.6	1875	.....	.....	.....	.....	.....	.....	.....	.....
Flat Scows.....	70.0	18.0	5.0	1875	.....	.....	.....	.....	.....	.....	.....	.....
" " " ".....	75.0	20.0	3.9	1876	.....	.....	.....	.....	.....	.....	.....	.....
" " " ".....	75.0	20.0	6.0	1878	.....	.....	.....	.....	.....	.....	.....	.....
" " " " various sizes and ages.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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REPORT  
OF THE  
HARBOUR MASTER OF THE PORT OF MONTREAL  
FOR THE YEAR 1880.

CAPT. A. M. RUDOLF, *Harbour Master.*

HARBOUR COMMISSIONERS OFFICE,  
MONTREAL, 4th January, 1881.

H. D. WHITNEY, ESQ.,  
*Secretary,*  
*Harbour Commissioners of Montreal.*

SIR,

I beg to submit for the information of the Board of Harbour Commissioners, the following as my annual Report for the year 1880, with accompanying comparative statements, showing the numbers, tonnage, classification, &c., of vessels that arrived in port the past ten years.

On the first of January the weather was fair, and pleasant, the thermometer at 8 a.m. registering 4° above zero, in the afternoon, it was very much milder, wind south west, sleighing good, the river opposite the City, was full of floating ice, passing slowly downwards, and the water six feet over the wharves, and still rising; teams were crossing the river, about two miles below Longueuil, and landing two miles above Long Point. On the second of January, the water reached its highest point, seventeen feet four inches (17½) above the summer level; the ice then became stationary, a road was made over it from Longueuil to Hochelaga, and teams crossed the same day, several people on foot, also crossed from

St. Lamberts to the City. On the third of January, a road was made to St. Lamberts, and teams crossed, people crossed on foot, from Laprairie the same day. On the fifth of January a road was made to Laprairie, and teams crossed the same afternoon. On the 13th January, the Managers of the Quebec, Montreal, Ottawa, and Occidental Rail Road and the Managers of the South Eastern Rail Road, commenced laying a track on the ice, from Hochelaga to Longueuil, connecting the two roads, and completed it on the 30th; the following day, the road was opened and ready for business, and trains commenced running regularly. The average height of the water in the Harbour in January, was 13 feet 5 inches above the summer level, and the average temperature for the month at 8 a.m. was 19° Fahrenheit. The coldest day of the month was the 30th, the thermometer at 8 a.m. registering 2° below zero.

February commenced with a heavy snow storm, the weather during the month was changeable, but not as cold as the previous February. The average height of water in the Harbour during the month was 11 feet above the summer level, (gradually falling) and the average temperature at 8 a.m. 16°. The coldest day was the 2nd the thermometer registering at 8 a.m. 10° below zero.

March commenced with clear bright weather; there was a scarcity of snow for good sleighing, and many wheeled vehicles were to be seen in the streets; on the 5th, 6th and 7th, several inches of snow fell, and on the 8th, sleighing was very good and wheeled vehicles disappeared; the sleighing continued fair up to the 18th, when the weather grew mild, snow and ice began to thaw rapidly, wheels again appeared in the streets, and increased daily until they came into general use. The average height of water in the Harbour in March was 10 feet 3 inches above the summer level, and the average temperature at 8 A.M. 18°. The coldest day of the month was the 11th, the thermometer registering at 8 A.M. 5° below zero.

On the 30th inches above rise again.

April con noon of the toms of we day a comm railroad, co river, and i 4th. All p pleased, as shove of th of the 5th body of ice that day w still rising in the mor piling it Mouton Is feet; the above the An open Island to a There was day. On Longue P the Harbo of ice was the Harbo wharves w some dista ber of lab the princi wards, an two schoo ville, wh number c

On the 30th the water reached its lowest point, 5 feet 3 inches above the summer level, and on the 31st began to rise again.

April commenced with fine mild weather, on the afternoon of the 1st the ice in the river began to show symptoms of weakness and decay. In the evening of the same day a commencement was made to remove the ice-bridge railroad, connecting Hochelaga with Longueuil, from the river, and its removal was completed on the night of the 4th. All parties interested in the enterprise were well pleased, as it proved to be a complete success. The first shove of the ice opposite the city took place in the morning of the 5th April, and again in the afternoon, when a large body of ice passed downwards; the water in the Harbour that day was 10 feet 8 inches above the summer level, and still rising. On the 6th the ice shoved again, and early in the morning of the 7th a very heavy shove took place, piling it in several places very high, particularly on Mouton Island, where it was piled up to the height of 44 feet; the water in the Harbour at that time was 17 feet above the summer level, and immediately began to recede. An open channel was then to be seen from St. Helen's Island to as far as could be seen above the Victoria Bridge. There was no crossing on the ice from the south shore this day. On the 9th, teams crossed from the south shore to Longue Pointe. On the 13th, a large quantity of ice left the Harbour; the water falling rapidly, a large quantity of ice was deposited upon the wharves from one end of the Harbour to the other. On the 14th, the tops of the wharves were visible. On the 15th, the channel was open some distance below the cotton factory, and a large number of labourers were engaged in removing the ice from the principal wharves; the ice daily kept moving downwards, and the water continued to recede. On the 17th, two schooners (river craft) arrived in port from Boucherville, where they wintered. On the 20th April a large number of labourers were still employed in removing ice

and snow from the wharves. On the 21st, the ferry steamer "Longueuil" arrived in port, and immediately commenced running her regular trips; the steamer "Berthier" also arrived in port from Sorel, the first boat of the season from that place. The Steamship Companies commenced erecting their sheds on the wharves, and all necessary arrangements were being made for the reception of the spring fleet. On the 22nd, market steamers "Chambly" and "Hero" arrived in port from Sorel, and the market steamer "Berthier" left port on her first trip. The tug steamers "St. Paul" and "St. John" arrived in port from Sorel, with dredges, derricks, scows, &c., property belonging to the Harbour Trust. On the 26th April there were a considerable number of small vessels in the Harbour; the dredges commenced work in deepening the Channel, and the Harbour in front of the city began to have quite a lively appearance. On the 29th April the ice bridge at Cap Rouge, near Quebec, gave way, and the following day the Channel was open from this port to the sea. The average height of water in the Harbour in April was 8 feet 10 inches above the summer level, and the average temperature at 8 A.M. was 38°. The coldest day of the month was the 12th, the thermometer at 8 A.M. registering 17°.

On the 1st of May, the steamer "Montreal" arrived in port from Sorel, and left the same evening for Quebec, on her first trip. On the 2nd May the steamship "Prussian" arrived in port from Glasgow, the first vessel from sea, and on the 4th the ship "Abeona," arrived in port from Glasgow the first sailing vessel from sea, from that date vessels arrived daily, and by the middle of the month there were a considerable number in port and business fairly commenced. The improvements made in the Harbour were of great advantage to the trade, of the port, the wharves being all in good condition and although the tonnage has never been as large, as it has been this year, there was ample accommodation for all

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vessels that arrived, and not one of them was at any time detained for want of a suitable berth to transact their business in.

There were 7,966,263 feet of lumber shipped for South America this season in 20 vessels of the aggregate tonnage of 10,124 tons, this business is carried on at the lower end of the Harbour, and no doubt will yearly increase; when the wharves, that are now in course of construction, at that point, are completed they will afford extensive accommodation for that branch of industry.

Seven hundred and ten (710) seagoing vessels arrived in port this season of the aggregate tonnage of 628,271 tons, 395 of which were built of iron of the aggregate tonnage of 523,638 tons and 315 were built of wood of the aggregate tonnage of 104,633 tons. These vessels were navigated by 18,046 seamen, and composed of the following, nationalities, numbers, and tonnage.

NATIONALITY.	NUMBER.	TONNAGE,
British.....	643	595,151
Norwegian.....	24	11,517
Austrian.....	17	8,977
American.....	8	3,832
Spanish.....	5	1,907
German.....	3	2,285
Hungarian.....	3	1,484
Swedish.....	3	1,331
Italian.....	2	927
Belgian.....	1	500
French.....	1	360
Total.....	710	628,271

On the 21st November, the weather turned cold, and ice began to form rapidly. On the 22nd the last of the seagoing vessels left port for sea. On the 25th all inland vessels left the port, excepting the Longueuil and Laprairie ferry steamers, the Lachine Canal was closed the same day. On the 27th November, the Laprairie ferry steamer was sent to winter quarters (Boucherville). On the 29th the steamer "Star" arrived in port from Sorel and left the following morning for the same place. On the 1st December we were visited with a heavy snow storm, after that date the ice in the river increased daily, and the water continued to rise. On the 3rd December the river being full of ice and so closely packed, it was impossible to navigate the Longueuil ferry steamer any longer, she was consequently sent to winter quarters at Boucherville. At the time of the opening of navigation the water in the Harbour was seven feet above the summer level, or 29 feet in ship channel, it kept up well until 23rd May when it gradually began to recede, and on the 2nd October it reached its lowest point, nine inches below the summer level or  $21\frac{3}{4}$  feet in ship channel, after that date it began to rise again, and on the 29th December it reached its highest point  $14\frac{1}{2}$  feet above the summer level, on the 30th it began to recede again, and on the last day of the year it was  $13\frac{1}{2}$  feet above the summer level, and gradually falling, a road was commenced on the ice to connect St. Lamberts with the City, and the road below St. Helen's Island connecting Longueuil with the City was in general use.

Yours respectfully,

(Signed) A. M. RUDOLF,  
Harbour Master.

Comparative  
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YEAR.
1871....
1872....
1873....
1874....
1875....
1876....
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## PORT OF MONTREAL.

*Comparative Statement showing the Dates of the Opening and Closing of Navigation, first arrival from Sea and the last departure for Sea, the past Ten Years.*

YEAR.	Opening of Navigation.	Closing of Navigation.	First Arrival from Sea.	Last Departure for Sea.
1871....	April 8.	Dec'r 1.	April 22.	Nov'r 29.
1872....	May 1.	" 8.	May 5.	" 28.
1873....	April 25.	Nov'r 26.	" 4.	" 21.
1874....	" 25.	Dec'r 13.	" 11.	" 21.
1875....	May 3.	Nov'r 29.	" 9.	" 22.
1876....	April 27.	Dec'r 10.	" 8.	" 23.
1877....	" 17.	Jan'y 2, '78.	April 29.	" 24.
1878....	March 30.	Dec'r 23.	" 20.	" 24.
1879....	April 24.	" 19.	May 1.	" 24.
1880....	" 17.	" 3.	" 2.	" 22.

*(Signed,)*

A. M. RUDOLF,

*Harbour Master.*

HARBOUR OFFICE,

4th January, 1881.

## PORT OF MONTREAL.

*Comparative Statement showing the Number and Tonnage of  
Inland Vessels that arrived in Port the past Ten years,  
with the greatest number in Port at one time.*

YEARS.	No. of Vessels.	TONNAGE.	Greatest Number in Port at one time.
1871.....	6875	824,787	281.....Oct'r 6
1872.....	7150	936,782	309.....June 8
1873.....	6751	933,462	296.....June 8
1874.....	6855	956,837	301.....June 14
1875.....	6178	811,410	256.....Aug. 4
1876.....	6083	786,083	262.....Nov'r 9
1877.....	6333	847,978	258.....Oct'r 3
1878.....	5502	764,243	261.....Oct'r 15
1879.....	5698	817,243	227.....Nov'r 6
1880.....	6489	1,044,380	253.....July 7

(Signed) A. M. RUDOLF,  
Harbour Master.

HARBOUR OFFICE,  
4th January, 1881.

PORT OF MONTREAL.  
Comparative Statement showing the Number, Tonnage and Classification of Sea-going Vessels that arrived in Port from  
the Maritime Provinces the past Ten Years.

PORT OF MONTREAL.

Comparative Statement showing the Number, Tonnage and Classification of Sea-going Vessels that arrived in Port from the Maritime Provinces the past Ten Years.

YEAR.	Steamships.	Tonnage.	Ships.	Tonnage.	Barkens.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.
1871.....	42	18,469	4	3,488	19	8,449	8	1,714	27	3,929	133	9,213	233	45,262
1872.....	68	39,378	3	2,364	32	16,067	3	533	48	7,545	147	11,572	301	77,450
1873.....	91	59,061	6	4,790	36	18,595	6	1,422	36	4,824	98	8,656	273	96,748
1874.....	104	53,903	3	2,046	26	15,681	3	622	42	6,036	108	10,493	286	88,781
1875.....	120	69,544	3	1,874	27	13,180	2	331	35	5,397	92	8,526	279	98,852
1876.....	87	47,199	1	739	30	15,451	4	993	25	4,220	67	7,322	214	75,924
1877.....	72	39,277	5	4,306	25	13,566	3	758	18	2,744	37	3,924	160	64,575
1878.....	42	21,812	2	1,132	32	15,749	3	954	21	4,196	65	6,684	165	59,526
1879.....	62	40,686	2	1,733	59	33,271	1	457	16	3,660	80	8,573	229	88,380
1880.....	88	62,688	3	2,492	59	36,294	1	413	17	5,001	68	6,562	235	113,450

HARBOUR OFFICE, 4th January, 1881.

(Signed) A. M. RUDOLF, Harbour Master.

PORT OF MONTREAL.

Comparative Statement showing the Number, Tonnage and Classification of Sea-going Vessels that arrived in Port the past Ten Years, with the Dates of the greatest number in Port at one time each year.

Years.	Steamships.	Tonnage.	Ships.	Tonnage.	Barques.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.	Greatest No. in Port at one time.
1871..	142	146,327	99	92,502	170	82,363	26	6,539	47	7,839	180	15,551	664	351,721	89...Oct. 27.
1872..	215	217,713	67	62,775	182	87,199	20	5,221	68	11,504	175	14,388	727	398,800	84...Oct. 30.
1873..	242	245,237	72	65,823	164	75,594	18	4,660	59	8,581	147	12,583	702	412,478	84...Aug. 28.
1874..	266	262,096	50	46,938	167	80,677	15	3,928	64	10,688	169	19,096	731	423,423	76...July 6.
1875..	256	255,435	40	39,895	138	63,167	17	3,833	53	9,801	138	13,981	642	386,112	60...Aug. 18.
1876..	240	262,829	40	37,303	146	66,002	18	4,700	35	5,848	133	14,498	602	398,180	61...July 24.
1877..	247	261,764	41	41,904	108	56,909	10	2,560	25	4,987	78	8,735	513	376,859	59...Oct. 19.
1878..	207	269,878	44	47,577	113	58,711	9	2,610	34	6,537	109	11,953	516	397,266	45...June 3.
1879..	289	378,353	33	38,412	121	65,223	5	1,404	37	8,560	127	15,017	612	506,969	49...Aug. 13.
1880..	354	475,741	42	50,141	141	76,816	11	3,252	41	9,715	119	12,606	710	628,271	56...Aug. 4.

HARBOUR OFFICE, 4th January, 1881.

(Signed,)

A. M. RUDOLF, Harbour Master.

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REPORT  
OF THE  
SUPERINTENDENT OF PILOTS.

JOSEPH LEVEILLÉ, *Superintendent of Pilots.*

HARBOUR COMMISSIONERS OF MONTREAL,  
*Superintendent of Pilots' Office,*  
MONTREAL, 4th January, 1881

H. D. WHITNEY, ESQ.,  
*Secretary,*  
*Harbour Commissioners of Montreal.*

SIR,

I beg to submit, for the information of the Harbour Commissioners, a report of what has been done for the maintenance of the buoys during the season of navigation of 1880.

The tug "John Pratt" was employed in this work 74 days, reckoning from the 16th April, the date she left Montreal in the spring. After having spent several days in Sorel in preparing the buoys, I commenced to place them on the 24th. From then to the 1st May three trips had to be made to Sorel to procure buoys. On the first trip, 13 were taken; on the second, 50; and the third, 35; making a total of 98 buoys that were put down. Besides these, several extra buoys were taken to replace those which were too old or had been damaged by the ice, and also some that were lost. As has already been mentioned in my first report, dated 19th May, 33 buoys were left in place for the winter; only 11 were found to be carried away in the spring, and they were subsequently recovered during the summer, and also six iron buoys, with their

chains and anchors. As it constantly happens that the buoys are displaced or lose their vertical position, which it is impossible to prevent, close attention is required to keep them in good order, so that they may be as conspicuous as possible. It would be well, also, if the pilots were more particular in reporting any derangement of the buoys, so as to prevent accidents. As the water lowers and the bad weather of autumn approaches, frequent inspections are required in order to put down buoys at different places for the greater safety of navigation.

It is with pleasure that I state that the "John Pratt" has been at my entire disposal this year, and that I have had all the liberty desirable for these visits; and I was therefore able to keep the buoys in much better order than heretofore, and to avoid the complaints which were made the previous year. Unhappily, in spite of the utmost vigilance, it was impossible to keep them always in good order, but still a great improvement has been made. Tugs and rafts should be compelled to take, at certain places, different channels from those of the deep draft vessels, and which have been marked out for them by special buoys; as it is, they do the most damage, carrying away this season no less than fifteen buoys and five barrels.

The extremely early cold weather of this year, which has been so disastrous to navigation, has also caused much loss in my department, and I regret to have to report that it was impossible to save a single buoy, except those of the harbour, seven in number: the most of them lost with their chains and anchors.

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The following is a table showing the number of buoys that were used, and where they were placed :—

	Wooden buoys.	Iron buoys.	Barrels.
Montreal to Sorel .....	43	....	....
Contrecoeur .....	....	....	18
Lake St. Peter .....	48	17	....
Iles Plattes .....	....	3	....
Becancour .....	8	1	....
Champlain .....	5	....	....
Cap Levrard to Richelieu Rapids..	20	1	....
Cap La Roche .....	8	....	....
In all.....	132	22	18

Notwithstanding this loss, I think there will be enough buoys for next season what with those in the shipyard and those that may be found; there are also six iron buoys on hand.

The Chief Engineer has been furnished with a statement of the quantity of chain and number of anchors and weights that will be required for the work in the coming spring.

The following is a list of the beacons on the River, and the channels which they indicate :—

PLACES WHERE BEACONS ARE PLACED.	NUMBER.	CHANNEL INDICATED.
Grondine Point . . . . .	2	Cap La Roche new channel.
Grondine . . . . .	2	Levrard.
Champlain . . . . .	2	Champlain.
Becancour . . . . .	1	Becancour Bend.
Cap Madeleine . . . . .	2	Becancour Traverse.
Contrecoeur . . . . .	6	Contrecoeur Channel.
Pointe Marie . . . . .	2	Pointe Marie.
Grande Ile . . . . .	2	Opposite Varennes Village.
Ile Delorier . . . . .	2	Opposite Cap St. Michel.

I have the honor to be, Sir,

Your most obedient servant,

(Signed,) JOSEPH LEVEILLÉ,  
*Superintendent of Pilots.*

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REPORT  
UPON THE  
DEEPENING OF THE SHIP CHANNEL  
Between Montreal and Quebec  
FOR THE YEAR 1880.

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JOHN KENNEDY, M. Inst. C. E., *Chief Engineer.*

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HARBOUR COMMISSIONERS OF MONTREAL,  
Chief Engineer's Office,  
MONTREAL, 21st February, 1881.

H. D. WHITNEY, Esq.,  
*Secretary.*

SIR,

I beg to submit, for the information of the Harbour Commissioners, the following report upon the work accomplished during the year 1880, in deepening the Ship Channel between Montreal and Quebec.

The work of the year has consisted of the prosecution of the dredging of the Channel with substantially the same plant and force as in the previous year. At Cap Charles and Cap la Roche, where the cutting is in rock, the intended depth is 25 feet at meantide during low summer water, but at all other places the depth being made is 25 feet at low water, with a breadth at all places where the Channel is straight of not less than 300 feet, and increased to about 450 feet at curves and other points where navigation is difficult.

The places at which the largest amount of work has

been done are Cap Charles, Cap la Roche, Cap Levraut, Lake St. Peter, Contreccœur Channel, and Cap St. Michel.

The progress made at each point, the present condition of the work, and the cost during 1880, are as follows:—

*Cap Charles.*—On 25th May, which was as early as the high water permitted, one dredge was set to work to continue the shale rock excavation, and with occasional assistance from the stone-lifters, continued until withdrawn at the approach of winter on 15th November. During this time a cut of 1656 feet long by 150 feet wide was completed to a depth of 23 feet 3 inches at low water. To complete the Channel at this point there still remains to be dredged on the north side about 600 feet in length by 150 feet in width. On the south side the dredging is about completed, but at the upper entrance there still remains a distance of about 600 feet to be cleared of boulders.

The quantity of shale rock dredged during the summer is 24,825 cubic yards, and of boulders lifted 633 cubic yards, making in all 25,458 cubic yards, costing \$15,278, or an average of 60 cents per yard.

*Cap la Roche.*—On the 29th April, or as early as practicable after the opening of navigation, a stone-lifter was set to continue the clearing up of the boulders at the lower end of the north half of the new Channel, and on the 7th and 20th May respectively, she was followed by two dredges, which through the summer continued the shale rock dredging also on the north half breadth until the 3rd and 10th November, when they were withdrawn for the winter.

In the beginning of June, when the water had fallen so that the Cap la Roche old channel no longer afforded sufficient depth for large vessels, the south half breadth of the new Channel, which was dredged through in the fall of 1879, was again buoyed off, and after the Commissioners had given facilities for such pilots as desired

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to become acquainted with the new Channel, it was declared open for navigation by public advertisement dated 6th July, 1880.

The half breadth of the Channel thus opened was 150 feet in width, and afforded a depth of from  $19\frac{1}{2}$  feet at lowest water to 30 or 35 feet at highest water.

On the 25th September work had so far progressed as to allow of the north side buoys being moved so as to give 50 feet additional breadth or 200 feet of available channel, and on the 10th November last they were further moved, so as to throw the whole 300 feet in width open to navigation to the same depth. The boulders had also been cleared off, the rock to the south side of the channel proper in bell-mouth form, commencing at 120 feet in additional breadth at the lower entrance and running out at 800 feet up, so as to reduce the chance of damage to any vessel which might run outside the channel lines at the lower entrance.

As the work stood at the close of navigation, the south half breadth is finished through for  $19\frac{1}{2}$  feet draft at lowest water, and about 550 feet are dredged to 22 feet deep, and the above-mentioned bell-mouth was also cleared of boulders. Of the north half breadth 350 feet is 20 feet in depth at lowest water, 1220 feet is 23 feet 3 inches, and the remainder or about 3200 feet is 22 feet deep.

During the summer there were dredged 52,905 cubic yards of shale rock, and the stone-lifters raised 2,395 cubic yards of boulders, making in all 55,300 cubic yards, at a cost of \$33,179, or an average of 60<sup>00</sup>/<sub>100</sub> cents per cubic yard.

*Cap Levraut and vicinity.*—In the early part of the summer, a dredge was set to finish the main cutting on the St. Ann's shoal above Cap Levraut, and on its completion, the whole Channel, from the head of Cap la Roche new channel to deep water at Batiscan, was carefully examined and wherever necessary it was dredged, so as to give a depth of 25 feet at lowest water. Some

5,970 feet in length were traversed, and the work mainly consisted in cutting off the tops of small shoals of tough clay, and removing boulders. Total quantity dredged 19,203 cubic yard, costing \$10,469, or  $54\frac{1}{2}$  cents per cubic yard.

*Champlain and Champlain Point.*—The sand bar at Champlain Point (or Pointe Citrouille) was cut through to 25 feet at low water, and all the remaining clay and boulder shoals in the Channel opposite Champlain Village were also cut away to the same depth. Total quantity dredged 24,675 cubic yards, costing \$7,044, or  $28\frac{1}{2}$  cents per cubic yard.

*Port St. Francis.*—During spring, while the river was too high to allow of the rock dredges working in the tidal water at Cap Charles and Cap la Roche, one of them was employed on Iron and the other on Force Shoal, consisting of tough clay and boulders. Total quantity dredged 2,866 cubic yards, at a cost of \$3,600, or  $\$1.25\frac{1}{2}$  cents per cubic yard.

*Lake St. Peter.*—During last winter, the bends in the Channel at No. 1 and No. 2 Light Vessels, and at the white buoy (below No. 3, Light Vessel) were surveyed and buoyed out to correct forms, and on the opening of navigation, the two large bucket dredges and an ordinary dredge were set to deepen the bends and shape them to the lines marked out. After this was completed the ordinary bucket dredge was withdrawn and the other two left to carry the deepening of the straight Channel from the point at which it was left off the previous year. The work accomplished during the summer, the deepening and widening of the three bends to 25 feet depth at low water, with a width of 325 to 450 feet, and of an aggregate length of 2 miles together with the deepening also to 25 feet of  $2\frac{1}{8}$  miles in length of the straight Channel. Total quantity dredged 806,000 cubic yards, costing \$31,600, or an average of  $3\frac{1}{3}$  cents per cubic yard.

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*Contrecœur Channel.*—During high water in spring, one of the rock dredges worked for a short time at St. Ours Island; and in July, when the water had fallen sufficiently to allow of working the old No. 1 dredge, she was set to deepen the bell-mouth. During the stormy weather in fall, two rock working dredges and the two large bucket dredges were also brought up and worked the former at St. Ours Island, and the latter in the main Channel near the bend, until the close of the season. Total quantity dredged 175,215 cubic yards, costing \$19,811, or an average of 11 $\frac{3}{10}$  cents per cubic yard.

*Pointe Marie.*—Some small lumps beyond the limits of the previous year's dredging were cleared away. Total quantity 2,160 cubic yards, costing \$685 or 31 $\frac{7}{10}$  cents per cubic yard.

*Cap St. Michel.*—During the winter and early summer a survey was made from the line of the Ile Ste. Therese, lights to deep water below Cap St. Michel, and proper lines established for completing the improvement of the Channel between those points.

In the early part of the summer one dredge was engaged removing the more prominent obstructions, and in the fall two dredges were employed in the more systematic improvement to 25 feet depth at low water. Total quantity dredged during the season 57,795 cubic yards, costing \$13,501, or 23 $\frac{1}{3}$  cents per cubic yard.

*Varenes.*—A small lump near the Ile Ste. Therese lower lights was removed. Quantity dredged 3,090 cubic yards, costing \$1,370, or 44 $\frac{1}{3}$  cents per cubic yard.

*Harbour of Montreal.*—One to four of the Harbour spoon dredges were employed during the summer in deepening and widening the Ship Channel, through the Harbour from opposite the lower end of Victoria Pier to near the mouth of the Lachine Canal. Total quantity dredged 47,471 cubic yards costing \$10,501, or 22 $\frac{11}{100}$  cents per cubic yard.

Abstracts of the quantity dredged at each place and by each dredge, together with other information as to the work, will be found in the annexed tables.

The total cost of working for the past year—including repairs, outfit, fuel, wages, salaries, insurance, and every expense except interest and depreciation of plant—was for the Ship Channel fleet proper \$136,536.76, and for the portion of the Harbour plant employed on the Channel in the Harbour \$10,500.84, making a total of \$147,037.60. The total quantities dredged are 1,138,099 cubic yards earth and 81,132 cubic yards rock, making an aggregate of 1,219,231 cubic yards. Compared with the previous years since the resumption of the Ship Channel deepening, the cost and quantity of work done are as follows:—

Years.	No. of Dredges.	Quantity Dredged, cubic yds.	Total cost.	Average cost per cubic yard.
1875	7 to 8..	820,773	\$134,744	16 $\frac{1}{10}$ cents.
1876	8..	922,808	130,744	14 $\frac{1}{10}$ "
1877	8 to 9..	1,262,308	137,830	10 $\frac{8}{10}$ "
1878	8 elevators ...	966,973	\$124,891	12 $\frac{9}{10}$ " }
	1 to 3 spoons..	117,663	24,125	20 $\frac{5}{10}$ " }
		1,084,636	\$149,016	13 $\frac{8}{10}$ " }
1879	8 elevators ...	813,391	\$135,519	16 $\frac{66}{100}$ " }
	2 to 5 spoons..	29,819	7,835	26 $\frac{26}{100}$ " }
		843,210	\$143,354	17 " }
1880	8 elevators ...	1,171,757	\$136,537	11 $\frac{65}{100}$ " }
	2 to 4 spoons..	47,474	10,500	22 $\frac{11}{100}$ " }
		1,219,231	\$147,037	12 $\frac{5}{100}$ " }

The measurement of the quantity dredged is by tally of the scows, which, when filled level, hold 80 cubic yards, but are reckoned at 60 cubic yards each to allow for imperfect filling.

#### DREDGING PLANT.

The working fleet employed consisted of the following vessels :—

One Clyde built Elevator Dredge.....	No. 1 (old).
One Elevator Dredge .....	No. 3 (later date).
Four " " .....	Nos. 9, 10, 11 & 13 of 1874.
Two " " .....	Nos. 8 & 12, large buckets, of 1874.
Three Spoon Dredges, during a small portion of the season.	
One side wheel Tug.	
Eight Screw Tugs.	
One Stone-Lifter.....	No. 1 (old).
One Stone-Lifter, with steam power.....	No. 2, 1878.
Five Barges (coal tenders and smiths' shops).	
Nineteen hopper bottom scows.	
Three flat scows.	

All the dredges belonging to the Ship Channel Fleet, except No. 1, commenced work at dates between April 29th and May 3rd, which was as early as the opening of navigation permitted. No. 1 dredge, which is unable to work to as great a depth as the others, was fitted up when the river had fallen sufficiently, and commenced work on the 26th July, and all continued working until the 22nd November, when they were taken to winter quarters on the sudden setting in of severe frost.

The number of days on duty, reckoning all except Sundays, from the day of leaving winter quarters till returning, was 102 days for No. 1 dredge, and 175 to 181 days or an average of 178 $\frac{7}{10}$  days for the other seven, and an aggregate of 1363 days for the whole eight dredges.

The nominal working hours during the long days of summer are 12 hours per day, but the actual dredging time is reduced by short days in autumn, early stoppage on Saturdays, time loss in changing position, accidents and delays of all kinds, so that the time during which the

dredges were actually dredging was 9,844 hours, or an average of  $7\frac{22}{100}$  hours per day for the whole time on duty.

The three rock working dredges have done remarkably well, owing doubtless to the fewer boulders met with, improved and strengthened buckets and links, and the increased skill of the Captains and men. The average work for every day on which the dredges on shale cutting, was 170 cubic yards per dredge of loose rock measured in the scows.

The large bucket dredges for soft clay have also done very well. Their daily average on Lake St. Peter for whole time while stationed there was this year, 2681 cubic yards each, as against 1692 cubic yards, the best year's average made with ordinary buckets, while the cost has been reduced from  $5\frac{1}{2}$  to  $3\frac{3}{4}$  cents per cubic yard, or a saving amounting to \$12,971 on their past summer's work on Lake St. Peter besides a proportional saving on their Contreccœur work.

Dredge No. 1 and the Tug John Brown were, on account of the age and weakness of the hulls, wintered in dry dock, at Montreal; but the other dredges and tugs were as usual wintered at Sorel, and the repairing and spring out-fitting were done at the Commissioners' ship yard.

The scows and coal barges, etc., were nearly all wintered at Chenal du Moine.

No casualties of serious nature have occurred to the fleet during the year.

The following are the principal repairs made upon each vessel during the year.

Dredge No. 1, boiler repaired and new ash pans made, shoot thoroughly repaired, wintered in dry dock, hull caulked where requisite above and below water, four new deck beams, new covering board and part new deck.

Dredge No. 3, received 150 fathoms new  $\frac{5}{8}$  breasting

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chain, new upper tumbler shaft turned and planed, chute repaired and heavy repairs to boilers, light repairs to hull.

Dredge No. 8, slight repairs to upper tumbler, ordinary repairs to deepening frame, rollers, etc.; one new smoke stack, slight repairs to boilers, chute taken out and rebuilt with heavy steel plates and bars, new blocking under chute. During summer was docked, caulked and repaired below water line.

Dredge No. 9, received 150 fathoms new  $\frac{5}{8}$  breasting chain, slight repairs to boilers, chute taken out and renewed with heavy steel plates and bars, new blocking under chute. During summer was caulked and repaired below water line in dry dock.

Dredge No. 10, received 150 fathoms new  $\frac{5}{8}$  breasting chain, ordinary spring repairs to engines and hulls.

Dredge No. 11, got 150 fathoms new  $\frac{5}{8}$  breasting chain, new dead eye and cap, top tumbler shaft planed and refitted on shaft; slight repairs to boilers, chute taken out and rebuilt with heavy steel plates and bars, new blocking under chute, ordinary repairs to the hull in the spring.

Dredge No. 12, new dead eyes complete, cross head of bucket frame and side rods repaired, slight repairs to boilers, chute taken out and rebuilt with heavy steel plates and bars, new blocking under chute, hoisting winch taken from deck and placed on top of frame, part of deck renewed, and other ordinary repairs to hull in the spring.

Dredge No. 13, received 150 fathoms new  $\frac{5}{8}$  breasting chain, bottom tumbler refitted with one new side and new bars, slight repairs to boilers and chute, ordinary repairs to hull in the spring.

The following buckets, pins, etc., were repaired or made and distributed amongst the dredges as required :

334 intermediate links for small buckets were entirely reforged and provided with moveable steel bushes.

195 intermediate links for small buckets were repaired.

116 small buckets for earth dredging were rebuilt.

28 do. do. for earth dredging had new lips and otherwise repaired.

101 do. do. for rock dredging, etc., were rebuilt.

1018 link pins for large buckets were re-forged.

258 new link pins for large buckets were made.

135 old link pins for large buckets reforged.

187 new link pins for small buckets made.

Steamer John Young, had piston followers faced on lathe, two new smoke stacks, slight repairs to boilers.

Tug John Pratt, light spring repairs, docked and caulked, new propeller wheels 4 feet 10 inches diameter, 6 feet 3 inches in pitch put on, and stern bearings repaired and strengthened.

Tug John Brown wintered in dock and caulked below water where necessary.

Tug St. James, piston refitted and new rings, slight repairs to boilers.

Tug St. John, piston faced and refitted, new follower and bolts, 12 boiler tubes taken out, scraped and cleaned on lathes, slight repairs to boilers, rudder taken out and strengthened.

Tug St. Francis, docked, caulked and repaired below water line, new brass bush for stern bearing.

Tug Delisle, docked during summer, caulked and repaired below water line.

Tug C. J. Brydges, docked during summer, caulked and repaired below water line.

Stone lifter No. 1, provided with steam-winch, worked by steam taken by means of hose from any vessel she may be assisting.

The Buoy scow, provided with double steam-winch

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worked by steam from tug, and with two new cranes, and otherwise equipped for assisting in placing buoys.

16 hopper bottomed scows hauled out and repaired, several of them provided with new gates and new ends.

The tug C. J. Brydges was purchased in June for \$5,000, and added to the fleet.

Two new hopper bottomed scows, 86 feet by 18 feet, by 8 feet 6 inches, and of 150 cubic yards capacity, were built in the Commissioners' yard during winter at a cost of \$5,907.

A list of the vessels with the principal dimensions and other particulars is given in the appended tables.

#### BUOYS, BEACONS AND LIGHTS.

The buoys of the Ship Channel have been maintained in the usual manner, and under the immediate care of the Superintendent of Pilots. In order to give accuracy and permanence to the buoying of Lake St. Peter, screw anchors were put down at the bends of No. 1 and No. 2 Light vessels, and at the White Buoy, and also at intervals along the straight lines between them.

New Light-houses were erected by Government during the past winter to replace the temporary lights on the upper range of Ile Ste. Therese, and during summer new towers were also erected, but not lighted at Ste. Emélie to act as range lights for the Cap Charles' new Channel.

#### CASUALTIES.

The S.S. Ottawa and Ship Boyne, while endeavoring to pass downwards at Cap la Roche, on the 22nd November last, grounded and sunk—the former on Cap la Roche shoal, and the latter on the beach half a mile below the Cap Charles light-houses. The particulars in both cases have so far as ascertained been given in a special report.

Yours respectfully,

JOHN KENNEDY,  
*Chief Engineer.*

## HARBOUR COMMISSIONERS OF MONTREAL.

*Abstract of DREDGING done at different places in 1880, in deepening the SHIP CHANNEL between Montreal and Quebec to 25 feet.*

PLACES WHERE DREDGES WORKED.	DREDGES.	Quantities Dredged at each place.	TOTALS.	ROCK.	REMARKS.
		<i>Cub. Yds.</i>	<i>Cub. Yds.</i>	<i>Cub. Yds.</i>	
Cap Charles...	Dredge No. 11	24,825			
	S. Lifter No. 1.	279			
	" No. 2.	354			
Cap la Roche ..	Dredge No. 10.	23,730		25,458	Shale, rock and boulders.
	" No. 13.	29,175			
	S. Lifter No. 1.	299			
	" No. 2.	2,126			
Cap Levraut...	Dredge No. 9.	18,915	18,915	55,300	Shale, rock and boulders.
	S. Lifter No. 1.	288		288	Hard clay and boulders. Large boulders.
Champlain P't. & Champlain.	Dredge No. 3.	24,675	24,675		
Pt. St. Francis.	Dredge No. 10.	1,605			Hard clay, sand and boulders.
	" No. 11.	1,175			
	S. Lifter No. 1.	86	2,780		Hard clay and boulders.
Lake St. Peter.	Dredge No. 8.	387,945		86	Large boulders.
	" No. 9.	28,245			
	" No. 12.	389,805			
Contrecoeur Chl	Dredge No. 1.	63,975	805,995		Soft clay.
	" No. 8.	50,040			
	" No. 11.	1,425			
	" No. 12.	52,680			
	" No. 13.	7,095			
Pointe Marie ..	Dredge No. 3.	2,160	175,215		Clay and stones.
Cap St. Michel.	Dredge No. 3.	38,385	2,160		Clay with boulders.
	" No. 9.	19,140			
Varenes.....	Dredge No. 9.	1,029	57,795		Clay, gravel and sand.
	" No. 10.	2,070			
Montreal Har.	Dredge No. 2.	39,667	3,090		Clay, gravel and sand.
	" No. 4.	1,080			
	" No. 3.	2,835			
	" No. 7.	3,892			
			47,474		Sand, gravel and boulders.
Total Earth, } Gravel, &c. }			1,138,099		
Total Rock & } Boulders... }				81,132	
Gross Total.....				1,219,231	

Abstract of DREDGING done by each Dredge in 1880 in Deepening the SHIP CHANNEL between Montreal and Quebec to Twenty-five Feet.

DREDGES.	Com- menced Working.	Stopped Working.	Time of Service	PLACES AT WHICH WORK WAS DONE.	QUANTITIES DREDGED.			REMARKS.
					Earth, Gravel, &c.	Totals.	Rock.	
			Days.		Cubic Yds.	Cubic Yds.	Cubic Yds.	
Elevator Dredge No. 1.	July 26	Nov. 22	102	Contrecoeur Channel.	63,975	63,975	.....	Clay and stones.
Spoon do. No. 2.	.....	.....	159½	Harbour of Montreal.	39,667	39,667	.....	Sand, gravel and boulders.
Elevator do. No. 3.	April 29	Nov. 22	178	Champlain. Pointe Marie. Cap St. Michel	24,675 2,160 38,385	65,220	.....	Hard clay, sand and boulders. Clay, with boulders. Clay, gravel and sand.
Spoon do. No. 4.	.....	.....	11	Harbour of Montreal.	1,080	1,080	.....	Sand, gravel and boulders.
Do. do. No. 5.	.....	.....	15½	Harbour of Montreal.	2,835	2,835	.....	Sand, gravel and boulders.
Do. do. No. 7.	.....	.....	15	Harbour of Montreal.	3,892	3,892	.....	Sand, gravel and boulders.
Elevator do. No. 8.	April 26	Nov. 22	181	Lake St. Peter. Contrecoeur Channel	387,945 56,040	437,985	.....	Soft clay. Clay and stones.
Do. do. No. 9.	April 26	Nov. 22	181	Cap Levrant Lake St. Peter Cap St. Michel Vareunnes	18,915 28,245 19,410 1,020	67,590	.....	Hard clay and boulders. Soft clay. Clay, gravel and sand. Clay, gravel and sand.
Do. do. No. 10.	May 3rd	Nov. 22	175	Cap la Roche	23,730	23,730	.....	Shale, rock and boulders.
				Pt. St. Francis Vareunnes	1,695 2,070	3,675	.....	Hard clay and boulders. Clay, gravel and sand.
Do. do. No. 11.	April 30	Nov. 22	177	Cap Charles Pt. St. Francis Contrecoeur Channel	24,825 1,175 1,425	26,000	.....	Shale, rock and boulders. Hard clay and boulders. Clay and sand.
<i>Carried forward.</i>					688,519	48,555	.....	

*Abstract of DREDGING done by each Dredge in 1880 in deepening the SHIP CHANNEL between Montreal and Quebec to Twenty-five feet—(Continued)*

DREDGES.	Com- menced Working.	Stopped Working.	Time of Service	PLACES AT WHICH WORK WAS DONE.	QUANTITIES DREDGED.			REMARKS.
					Earth, Gravel, &c.	Totals.	Rock.	
<i>Brought forward.</i>			<i>Days.</i>		<i>Cubic Yds.</i>	<i>Cubic Yds.</i>	<i>Cubic Yds.</i>	
Elevator Dredge No. 12.	April 26.	Nov. 22.	181	Lake St. Peter. Contrecoeur Channel.	380,805 52,680	433,485	48,555	Soft clay. Clay and stones.
Do. do. No. 13.	April 29.	Nov. 22.	178	Cap la Roche.	29,175	442,485	29,175	Shale, rock and boulders.
Stone Lifter No. 1.	May 5.	Nov. 13.	116	Contrecoeur Channel. Cap Charles. Cap la Roche. Cap Levrault. Pt. St. Francis.	7,065 279 297 288 86	7,065		Clay and stones.
Stone Lifter No. 2.	May 5.	Nov. 13.	166	Cap Charles. Cap la Roche.	254 2,126		922	Large boulders. Do. do. Do. do. Do. do.
Total Earth, Gravel, &c.						1,138,099		
Total Rock and Boulders.							81,132	
<b>GROSS TOTAL</b>							<b>1,219,231</b>	

**DREDGING PLANT employed in deepening the SHIP CHANNEL between Montreal and Quebec in 1880.**

DESCRIPTION OF VESSEL	HULL.				When Built.	Tonnage Register.	ENGINES.					REMARKS.
	Length over all.	Breadth of Beam.	Depth of Hold.	Depth of Hold.			Kind of Engines.	No. of Cylinders.	Diameter of Cylinder.	Length of Stroke.	Pressure of Steam.	
	ft. in.	ft. in.	ft. in.	ft. in.			Inches.	Inches.	Lbs.	C. Ft.	Feet.	
<b>DREDGES.</b>												
Elevator Dredge No. 1	130 0	27 0	9 0	10 0	1882		27	30	5	4	24	1859.
" " No. 3	135 0	29 0	10 0	10 0	1874	Side lever condensing	16	48	20	4	35	Wooden Hull, re-built in
" " No. 8	135 0	29 0	10 0	10 0	1874	Two coupled vertical direct acting condensing engines to each dredge.	20	32	35	16	35	Wooden Hull.
" " No. 9	135 0	29 0	10 0	10 0	1874		20	32	35	4	35	" "
" " No. 10	135 0	29 0	10 0	10 0	1874		20	32	35	4	35	" "
" " No. 11	135 0	29 0	10 0	10 0	1874		20	32	35	4	35	" "
" " No. 12	135 0	29 0	10 0	10 0	1874		20	32	35	16	35	" "
" " No. 13	135 0	29 0	10 0	10 0	1874		20	32	35	4	35	" "
<b>STEAMERS AND TUGS.</b>												
John Young	125 0	22 0	8 1	6 6	1875	Independent beam engines.	30	96	45			Wooden Hull.
M. E. Parsons	176 0	15 0	7 7	6 6	1864	Direct acting non-condensing engines.	18 1/2	20	80			" "
St. Francis	80 0	17 0	7 9	7 9	1875		20	22	80			" "
St. John	92 0	17 0	7 3	7 3	1874		14	16	70			" "
John Pratt	92 0	19 2	7 5	7 5	1869		18	20	80			" "
Delisle	62 5	14 6	7 0	7 0	1875	Vertical non-condensing.	18	20	60			" "
John Brown	76 0	15 0	7 9	7 9	1875	Direct acting non-condensing eng s.	16	20	70			" "
St. James	76 0	17 0	8 2	8 2	1875		20	22	70			" "
C. J. Brydges	62 2	16 0	8 0	8 0	1874		20	22	70			" "
<b>BARGES.</b>												
Waverly	110 0	20 11	7 1	7 1	1870							Wooden Hull.
Drednaught	104 2	21 5	7 4	7 4	1869							" "
Henry Thomas	100 8	22 9	7 7	7 7	1865							" "
Hope	98 0	20 0	6 6	6 6	1864							" "
Caroline	103 8	22 6	8 3	8 3	1872							" "
Stone Lifter No. 1	65 0	22 0	6 0	6 0	1858	Steam Winches						" "
" " No. 2	75 0	24 0	7 9	7 9	1878	apacity of each Scow, Cubic Yards.						" "
<b>SCOWS.</b>												
2 Hopper-bottomed	80 0	16 0	7 0	7 0	1870							3 Hoppers.
" " "	80 0	16 0	6 9	6 9	1874	80						" "
" " "	54 6	18 0	7 7	7 7	1875	47 & 48						" "
" " "	58 0	19 9	7 3	7 3	1876	49 & 50						" "
" " "	89 0	18 0	7 9	7 9	1879	51 & 52						" "
" " "	89 0	18 0	7 9	7 9	1880	53 & 54						" "
<b>Flat Scows</b>												Borrowed from Harbour Works.

NOTE.—Different Spoon Dredges belonging to the Montreal Harbour Works were, in addition to the above, temporarily employed upon the Ship Channel.

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REPORT  
OF THE  
PILOTAGE DISTRICT OF MONTREAL  
FOR THE YEAR 1880.

HARBOUR COMMISSIONERS OF MONTREAL,  
*Secretary's Office,*

MONTREAL, 10th January, 1881.

WM. SMITH, ESQ.,

*Deputy Minister of Marine and Fisheries,*

OTTAWA.

SIR,

I have the honor, by direction of the Harbour Commissioners of Montreal, to submit herewith, for the information of the Honorable the Minister of Marine and Fisheries, the annual report of the Pilotage District of Montreal, for the year ended the 31st December 1880.

An examination of Apprentice Pilots was held by the Commissioners on the 9th, 10th and 11th ultimo, and at which thirteen candidates presented themselves, but only the following five were successful, and they have received their licenses as Branch Pilots, viz:—

Louis Mayrand, George Dufresne, Norbert Arcand, Uldoric Toupin and Tancrede Bouillé.

Joseph Barnabé dit Lafrenière, aged 67, in accordance with the 36th Section of the Act, 36 Vic. Cap. 54, was granted a license to pilot for a year.

Pilot Onesime Naud, the elder, aged 76, was superannuated on 1st January, and Pilot P. M. Mathieu, aged 61, was at his own request, superannuated on 1st September, on account of failing sight.

There were no deaths amongst the pilots the past year

The following is a list giving the name and age of each pilot, for and above the Harbour of Quebec, acting under authority of this Commission, with the earnings of each during the season of navigation of 1880:—

No.	NAME.	AGE.	EARNINGS.	REMARKS.
1	P. M. Mathieu .....	61	\$622 26	Superan'ted Sept. 1.
2	F. A. Mayrand .....	61	740 89	
3	Joseph Leveille .....	63	.....	Supt. of Pilots.
4	Hector Hamelin .....	63	902 04	
5	Zephirin Bouillé .....	52	1,641 19	
6	P. Gaillardet .....	65	703 99	
7	Jos. Barnabé dit Lafrenière	68	565 76	
8	Cyrille Belisle .....	53	819 65	
9	Adolphe Lisé .....	51	573 29	Suspended for 3 mos.
10	George Raymond .....	51	1,594 75	
11	Augustin Naud .....	54	1,411 13	
12	Hubert A. Belisle .....	50	644 74	
13	Athanase Dufresne .....	47	1,365 81	
14	J. B. Dorval .....	49	634 00	
15	L. N. Bouillé .....	54	1,000 00	Pilot Str. <i>Montreal</i> .
16	Edouard Naud .....	38	675 16	
17	Pierre Gagnon .....	53	1,250 04	
18	Jean George Belisle .....	41	658 76	
19	O. Naud .....	40	1,448 15	
20	J. O. Hamelin .....	47	677 91	
21	J. Chandonnet .....	40	2,039 76	
22	Louis A. Bouillé .....	41	1,039 76	
23	Prudent Boudet .....	39	2,022 43	
24	Elzear Belisle .....	46	620 04	
25	Joseph Pleau .....	43	1,132 29	
26	Celestin Brunet .....	38	1,594 31	
27	Louis Belisle .....	35	2,114 06	
28	Damas Caien .....	40	453 87	
29	Ulric Groleau .....	33	723 80	
30	Alfred Frenette .....	41	878 91	
31	Alfred St. Arnaud .....	37	852 12	
32	Phillipe Belanger .....	42	944 17	
33	Victor Gagnon .....	42	849 18	
34	Narcisse Perrault .....	43	1,451 91	
35	Trefle Toupin .....	33	738 39	
36	Cleophas Auger .....	34	1,544 90	
37	Francois Desjordy .....	36	948 91	
38	Ferdinand Labranche .....	35	1,115 11	
39	David Perrault .....	39	854 27	
40	Alexis Gauthier .....	34	1,356 14	
41	Louis Z. Bouillé .....	32	1,269 46	
42	Joseph Toupin .....	31	948 88	
43	Laurent Gauthier .....	31	830 48	
44	Jean Arcand .....	28	721 30	
45	Delovie Naud .....	29	846 69	
46	Wilbrod Gauthier .....	29	961 15	
47	Louis Mayrand .....	33	.....	Branched Dec. 9, '80.
48	George Dufresne .....	32	.....	" " 10 "
49	Norbert Arcand .....	28	.....	" " 10 "
50	Uldoric Toupin .....	26	.....	" " 11 "
51	Tancrede Bouillé .....	27	.....	" " 11 "
			\$47,040 06	
	Pilotage paid at Three Rivers to various pilots.		844 89	
	Total .....		\$47,884 95	

The above amount was received from the following sources, viz. :—

BRITISH :		
Steamers .....	\$32,306 77	
Sailing Vessels.....	10,767 37	
		\$43,074 14
FOREIGN :		
Steamers .....	\$ 219 39	
Sailing Vessels .....	4,591 42	
		\$4,810 81
		\$47,884 95

The following list shows the name and age of each Apprentice serving his time under the authority of this Trust:—

No.	NAME.	AGE.	RESIDENCE.
1	Alphonse Cossette...	32	Champlain.
2	Nestor Arcand .....	24	Deschambault.
3	Gedeon Groleau.....	28	Grondines.
4	Néré Belisle .....	28	Deschambault.
5	Hubert Perrault.....	31	Montreal.
6	Odilon Portelance ...	27	Grondines.
7	Leboire Perrault ...	31	Deschambault.
8	John Naud .....	25	"
9	Joseph Hurteau ....	20	Contrecoeur.
10	Wilfred Raymond ...	26	Deschambault.
11	Adolphe Richard....	32	Contrecoeur.
12	Joseph Langlois.....	25	Pointe aux Trembles, en bas.
13	Edouard Perrault....	30	Deschambault.
14	Lyderic Bouillé ....	23	"
15	Elie Bouillé .....	21	"
16	N. Edson Angers....	30	"
17	Honore Dusseau.....	27	
18	Joseph Dusseau.....	24	
19	Narcisse Paquet.....	26	Deschambault.
20	J. B. Nadeau.....	22	Levis.
21	Arthur Briere.....	23	Portneuf.
22	Aubert Naud .....	26	Deschambault.
23	J. Sifroy Labranche..	24	Portneuf.
24	Alexis Perrault .....	18	Deschambault.

The casualties on the river were of a minor character, with two exceptions.

On the 16th June, in the afternoon, the S.S. "Polynesian," in charge of Pilot Adolphe Lisé, went aground near Port St. Francis, and was obliged to lighter nearly her entire cargo before getting off; the vessel was not otherwise much damaged. An investigation was held, and evidence taken under oath, which went to show that the pilot was

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causing the steamship to be driven at too great and unnecessary rate of speed. The pilot was sentenced to be suspended from piloting for three months. He then made application to the Superior Court for a writ of *certiorari*, which was refused.

On the 11th August, the S.S. "Waldensian," Pilot Pierre Gagnon, grounded at Point-aux-Trembles en bas, and was considerably damaged, as was also a portion of her cargo. The agents made no complaint against the pilot, as this portion of the river is not within the jurisdiction of the Trust, and is not properly buoyed, but asked that an inquiry be held. As the result of this inquiry, it appeared the pilot was in the Channel keeping his regular landmarks, and that at the place in question it was always considered there was plenty of water, but owing to the opening of the Cap la Roche new channel, vessels were enabled to load down two feet more than in previous years, and this was probably the cause of the accident. The Commissioners therefore decided that no action should be taken against the pilot, but ordered soundings to be taken, and placed a buoy to mark out a channel suitable for the increased draft of water of the vessels.

On the 17th November, the S.S. "Lombard," in charge of Pilot Francois Desjordy, collided with the barques "Farewell" and "Luis Martinez," in tow of tug "Challenger," and was driven ashore. She got off on the 20th without damage, having lightered a portion of her cargo. No complaint was made against the pilot.

On the 22nd November, about mid-day, the S.S. "Ottawa," Pilot Joseph Chandonnet, went aground between the new and old channels at Cap la Roche. The weather being very cold and considerable drift ice in the river. In endeavoring to save the vessel a large portion of her cargo was jettisoned, but without success, and she is now likely to become a total wreck. No complaint having yet been made against the pilot, the Commissioners have ordered an inquiry, which will be held on the 7th instant, with a view of ascertaining the cause of the disaster.

And on the same day, a short time afterwards, the ship "Boyne," Pilot Joseph Toupin, in tow of the tug "Champion No. 1," while endeavoring to pass through the old channel at Cap la Roche, struck a boulder, and was so badly damaged that it was found necessary to beach her a short distance below Cap Charles, where she now lies a complete wreck. In this case also no complaint was made, and the inquiry has been fixed for the same date as the above.

The maintenance of the buoys in the Richelieu River, between St. Johns and Rouse's Point, and in the Rivière des Prairies, which devolves on the Commissioners, was duly attended to.

The following is the Tariff of Pilotage now in force in the Pilotage District of Montreal:—

QUEBEC TO MONTREAL, OR VICE VERSA.	Upwards.	Downwards.
Pilotage of Vessels in tow of Steamer, for each foot of draught of water . . . . . }	\$2.00	\$2.00
Pilotage of Vessels propelled by steam, for each foot of draught of water . . . . . }	2.50	2.50
Pilotage of Vessels under sail, for each foot of draught of water . . . . . }	4.20	2.80
Moving a Vessel from one Wharf to another in the Harbour of Montreal, or from foot of Current into the Harbour . . . . . }	5.00	5.00

The amount of receipts were as follows: for poundage, which is five per cent. on the earnings of the Pilots, \$2,394.23, including that on vessels coming only to Three Rivers; interest on investments, \$1,836.96; sundries, \$24. Total, \$3,255.19. The disbursements were \$2,166.57, paid as pensions to old and infirm pilots and the widows of pilots.

I have the honor to be,

Sir,

Your most obedient servant,

(Signed,)

H. D. WHITNEY,  
Secretary.

To the C

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## AUDITORS' REPORT.

WESTERN CHAMBERS,  
22 St. John Street,  
MONTREAL, *February 17, 1881.*

*To the Chairman  
of the  
Harbour Commissioners of Montreal.*

SIR,

Having audited the Books of Account of your Secretary-Treasurer for the year ending 31st December, 1880, we would beg to report thereon as follows :—

We first checked the Wharfinger's Cash Book, the summations of which we found correct, the items appearing therein corresponding with counterfoils of receipts issued by him for wharfages collected. \* We next checked the Secretary-Treasurer's Cash Book, and verified the items appearing to credit of Harbour Revenue, consisting of Dues, Tolls, etc., collected (1) by Wharfinger and (2) by Custom House, Montreal, with Returns of such collections furnished to the Secretary-Treasurer. The items of disbursement under the various classified heads we found properly charged and vouched, the calculations, extensions and summations of the Pay Sheets having been previously checked by us.

We checked the Bank Accounts with the Pass Books and accounts rendered by the Banks, verifying the balance as stated in the ledger at 31st December, 1880.

We examined the Record of Debentures issued, and found the amounts of the different issues shown therein to be outstanding, to correspond with the balances at credit of the various Debenture accounts in the ledger.

With regard to the Coupons paid during the year, we verified the various amounts charged to Harbour Interest

in the Secretary-Treasurer's Cash Book with the debit entries in the Bank of Montreal "Coupon Account."

Finally we examined (1) the Balance Sheet at 31st December, 1880, and (2) Statement of Receipts and Disbursements for the year, prepared by your Secretary-Treasurer, and we beg to certify that they are correctly drawn up from the Books of the Trust.

We have much pleasure in again certifying to the excellent order in which the Books of the Trust are kept.

We have the honor to be, Sir,

Your most obedient servants,

*(Signed,)*

RIDDELL & STEVENSON,

*Chartered Accountants.*