

ANNUAL REPORTS
OF THE
HARBOUR COMMISSIONERS

OF MONTREAL.

FOR THE YEAR 1881.



Commissioners :

ANDREW ROBERTSON, Esq, *Chairman.*

J. B. ROLLAND, Esq.

HUGH McLENNAN, Esq.

EDWARD MURPHY, Esq.

CHARLES H. GOULD, Esq.

HENRY BULMER, Esq.

HON. J. L. BEAUDRY (Mayor).

VICTOR HUDON, Esq.

ANDREW ALLAN, Esq.

H. D. WHITNEY, *Secretary.*

Montreal :

PUBLISHED BY ORDER OF THE HARBOUR COMMISSIONERS OF MONTREAL.

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STATEMENT

MADE BY

Mr. ANDREW ROBERTSON, Chairman,

OF THE

*Business of the Port for the year 1881, and other matters connected
with the Trust,*

AT THE PUBLIC MEETING OF THE BOARD, HELD ON 12TH JANUARY, 1882.

GENTLEMEN,

In reviewing the proceedings of the year I shall not take up all the subjects in chronological order, but touch only on a few of the more important which have been dealt with during the year. Early in the year the Board made strong representations to the Government that they should assume the cost of deepening the Lake and River channel. The Board are unanimous in the belief that this work is fairly chargeable on the revenues of the Dominion, and they have repeatedly memorialized the Government accordingly. Deputations were sent to Ottawa and interviews were had with several of the Ministers, who received us most graciously, and some of whom the deputations thought were considerably interested, if not quite convinced that the position assumed was defensible.

It was found, after great labor and trouble, that the Government could not entertain at that time the proposal for the assumption of the debt, and as a temporary expedient it was ultimately arranged that the Government in order to facilitate the reduction of the Harbour Dues, should introduce a bill that the interest on the money advanced for the purpose of deepening the Ship Channel should be

reduced from 5 to 4 per cent, and also that the Sinking Fund should be deferred. These two items, amounting to about \$30,000, coupled with the large revenue of the previous year (1880) enabled the Board to consider the question of the reduction of dues on goods and vessels. The tariff of dues on goods was remodelled, simplified and reduced, so as to produce an estimated reduction of about $22\frac{1}{2}$ per cent on these items. The tonnage dues on ships were reduced exactly $33\frac{1}{3}$ per cent., the total proposed reduction averaged 25 per cent. of the revenue for 1880.

In connection with the reduction of Harbour Dues, an effort was also made to get the Canal Tolls reduced on Class 4 or the unenumerated list, the tolls on which yielded but little revenue, being practically prohibitory on many articles. The proposal of the Board was that these goods should, going westward, having paid the St. Lawrence Canal Tolls, be free from the Welland Canal Tolls, and coming eastward, having paid the Welland Canal Tolls, they should be free of the St. Lawrence Canal Tolls. The Hon. John Henry Pope, then Acting Minister of Railways and Canals, reported favorably to council, and an order-in-council was passed carrying out the recommendation of the Board. The results for the season are not yet obtained, but when compiled will no doubt prove favorable, and the coming year will doubtless prove still more so, as the change took place too late to be of any great benefit to the early shipping of last season.

Regarding the Revenue, as has been already stated, the reduction of dues contemplated an average decrease of 25 per cent., but the actual result has been 27.04 per cent.

The Revenue of 1880 having been.....	\$326,425
25 per cent. reduction would be.....	81,606
Leaving estimated Revenue for 1881.....	244,819
Actual Revenue for 1881.....	238,140
Showing the sum of.....	\$6,679
less than was calculated. }	

The Imports show a reduction of only 12.12 per cent., against $22\frac{1}{2}$ per cent, calculated.

Exports show a reduction of 36.73 per cent., against $22\frac{1}{2}$ per cent. calculated.

Local Traffic, similarly calculated, shows a reduction of 20.67 per cent.

Vessels calculated at $33\frac{1}{3}$ per cent. show a reduction of 36.82 per cent. for steamers, and 55.73 per cent. for sailing vessels; or, putting it in another way, the imports yielded about \$12,000 more than was expected. Exports suffered a decrease of about the same amount, thus balancing the account, the loss of revenue on steamers being about \$2,000, and on sailing vessels about \$5,000, or \$7,000 in all. Had the same tonnage come during the past year as in 1880 the amount which the reduced tariff would have yielded would have been over \$10,000 on vessels. Another great loss to the revenue has arisen from the decrease in the shipments of grain, which fell off about eight million bushels.

Our revenue therefore lost from that source the amount of \$18,000 (eighteen thousand dollars). Had the same quantity been shipped as last year we would have had in these two items alone an increase of revenue of \$21,000 (twenty-one thousand dollars) under the new tariff, after deducting the loss of \$6,679 as already shown.

During last session of Parliament the Board again applied for increased powers. These were to enable the Harbour Commissioners to commute the dues on vessels plying in the Harbour of Montreal as they have for vessels plying outside of the Harbour of Montreal. Thus, while the Board can commute from Montreal to Longueuil, they cannot commute within the Harbour itself. Power was also asked that the Commissioners could make a by-law to keep the new deep-water channel for vessels of the largest draught, so as to prevent tows, rafts or light draught vessels from using these channels when they had another channel alongside, as it is found that the

rafts in passing, carry away the buoys, thus endangering the larger craft. Authority was also sought to make by-laws so as to regulate tow boats within the Harbor, and also to give the Commissioners power to make arrangements with the several railway companies for the management of the traffic upon the wharves. Unfortunately the Bill did not pass last session, but it is hoped that the powers asked for, will in the interest of the trade of the port, be granted this year.

In the early part of the year a conference was held by a sub-committee of the Board with a sub-committee from the Board of Trade, and the tug owners towing vessels between here and Quebec. A tariff was ultimately arrived at, which the tug owners after some hesitation saw their way to accept. The rates are exactly half those of the tariff that was formerly in force and made in 1873. No complaints, so far as the Board is concerned, have been heard as to the rates charged, and the tug-boat owners having laid up a good many of their boats, have found those they retained in commission more profitably employed than if they had a larger number afloat.

In this connection the following table may be of interest :

	Steamers,		Sailing Vessels,	
	Tonnage.	Per cent.	Tonnage.	Per cent.
1878.....	269,878	or 67.75	127,388	or 32.25
1879.....	378,353	" 74.63	128,616	" 25.37
1880.....	475,741	" 75.67	152,530	" 24.33
1881.....	446,457	" 83.94	85,472	" 16.06

From this it will be seen that each year shows an increase of steamers and a decrease of sailing vessels. That in 1878 the steam tonnage was 68%, and that of sailing vessels 32%. The figures for the past year are 84% of steamers, against 16% of sail, an increase in the one case of 16%, and a falling off of the sailing vessels of exactly half, which of course if continued will lessen the demand for tow boats.

Some correspondence took place during the summer

with the Board of Trade in regard to discharging heavy weights from vessels. The Commissioners have instructed their Engineer to have on hand appliances in the shape of shears, so that any vessel can have assistance at any time for lifting such weights up to the extent of 20 tons. If sufficient demand should arise, the Board will then consider whether it would be desirable to have a floating crane in the Harbour, moveable from ship to ship.

The Commissioners regret having to announce that Captain A. M. Rudolf, who had been in the employ of the Trust as Harbour Master for over twenty years died on the 9th March last. He was a most active efficient and reliable officer, one who performed his duties to the entire satisfaction of the Board. Mr. John Smail, Assistant Wharfinger, died on the 14th September; he had likewise been about twenty years in the employ, during which time he gave every satisfaction to the Commissioners.

Captain Howard was appointed to succeed Captain Rudolf as Harbour Master, and Mr. C. Opzoomer to succeed Mr. Smail as Assistant Wharfinger.

From Mr. Kennedy's report it will be seen that the progress of the deepening of the Ship Channel has this year been very satisfactory and there is every reason to believe that the 25 feet depth will be realized by the time of low water next summer.

The rock shoals at Cap Charles and Cap la Roche which are the first shallow points above Quebec are very nearly cut through to give this depth at ordinary tides. From this to Port St. Francis 25 feet has already been attained at all conditions of tide. Twelve-and-a-half miles of the long artificial channel through Lake St. Peter have already been finished to the full depth and there remains yet to be dredged only the portions below the lower and above the upper light vessels and half that between the upper and second vessels, about four miles in all.

From the head of Lake St. Peter to Pointe-aux-Trembles

the dredging is all through to 25 feet, with exception of short pieces at Isle de Grace, and the new Contrecoeur Channel. Between Pointe-anx-Trembles and Montreal the depth is everywhere attained, with the exception of small shoals below Longue Pointe and opposite Longueuil.

The dredging fleet has had a very successful season, and has lifted an aggregate of 1,375,851 cubic yards, or about 15 per cent. more than in any previous year.

In the Harbour of Montreal the principal work of the year has been the deepening of the Main Channel through the Harbour, and some of the more important basins, so as to keep pace with the deepening of the River Channel below and to provide berths for the increased draft of vessels after the 25 feet depth is attained.

The wharf extension has been confined to the extreme ends of the Harbour. A considerable part of the gap, just above the Hudon Cotton Mills at Hochelaga, has been filled in, with a broad new wharf, for the better accommodation of the lumber trade, and the Mill Street Basin and embankment at Windmill Point have been extended, with a view to connect with the railway tracks in the West, and thus afford better facilities for the growing coal and sugar trades.

Arrangements were concluded with the Q. M. O. & O. Railway to build a Ferry slip for the passage of cars to Longueuil, which has been completed and in working order for about three months.

It is satisfactory to state that during the year which has just closed, there has been no accident of any consequence to vessels between Montreal and Quebec. The tonnage of the year's business though smaller than that of last year is still the second best year on record, and it is hoped that the coming year may produce better results.

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RECEIPTS AND EXPENDITURE
OF THE
HARBOUR COMMISSIONERS OF MONTREAL
For the Year 1881.

HARBOUR COMMISSIONERS OF MONTREAL,
Secretary's Office,

MONTREAL, 8th February, 1882.

Wm. SMITH, Esq.,
Deputy Minister of Marine and Fisheries,
OTTAWA.

SIR,

I have the honour, 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, 1881.

The receipts from all sources were as follows, viz:

FROM COLLECTOR OF CUSTOMS, MONTREAL:

Wharfage on goods—Inwards.....	\$99,266	03
" " —Outwards.....	52,001	47
Tonnage Dues on Steamships.....	34,772	00
" " Sailing Vessels.....	10,445	10
	\$196,484	60

LOCAL TRAFFIC

Wharfage on goods—Inwards.....	\$4,099	25
" " —Outwards.....	1,060	23
Harbour Dues on Barges.....	11,360	02
" " Steamers.....	3,835	93
	\$30,355	43
<i>Carried forward</i>	\$196,484	60

<i>Carried forward</i>	\$30,355 43	\$196,484 60
Commutation on "	13,525 00	
Received for piling Wood on Wharves	657 83	
" " " Lumber "	3,118 00	
" " storing Coal "	2,129 00	
" " Weigh Scales "	1,026 45	
" " Rent of small Offices "	800 00	
" " Penalties	44 00	
		<u>\$41,655 71</u>
NET REVENUE		\$238,140 31

FROM DOMINION GOVERNMENT:

Received on account new Channel operations..... \$100,000 00

SUNDRY AMOUNTS RECEIVED FOR CREDIT OF NEW CHANNEL OPERATIONS:

Sincennes & McNaughton Line—Rent, Timber, &c.	\$155 52	
Beauchemin & Fils, —Sundries	14 53	
H. & A. Allan, —Rent, Timber, &c.	128 52	
D. & J. McCarthy, " "	10 27	
M. Levesque, —Iron, &c.....	5 04	
J. Jackson, —Timber	11 00	
Received Insurance on Stores burnt at Sorel.....	138 44	
" for Barge Henry Thomas	100 00	
		<u>563 32</u>
Rent of Offices in Old Building.....	1,170 00	
" " New "	2,000 00	
		<u>3,170 00</u>
Harbour Debentures, Series C, difference in rate of Exchange in payment.....		216 68
D. Sleeth charges on Wood		17 21
Received for Timber of Cattle Sheds, damaged.		6 50

SUNDRY AMOUNTS RECEIVED FOR CREDIT OF HARBOUR DREDGING:

Port Warden—Models of Harbour	\$86 90	
Pillow, Hersey & Co.—Scrap Iron	165 07	
Refund of Customs on Castings paid twice— \$120.25 and \$56.65	176 90	
S. S. Straithairly—lifting anchor	53 32	
		<u>482 19</u>

SUNDRY AMOUNTS RECEIVED FOR CREDIT OF HARBOUR REPAIRS:

Canadian Rubber Company—Work.....	132 65	
Hudon Cotton Company, "	69 91	
Beemer & Laberge, "	35 00	

Carried forward..... \$237 56 \$342,596 21

	<i>Brought forward</i>	\$237 56	\$342,596 21
	J. T. Therien, —Old Plank.....	19 55	
	J. Leveillé, —Hemlock	4 78	
			261 89
	SUNDRY AMOUNTS RECEIVED FOR CREDIT OF LIGHTING WHARVES—		
	ELECTRIC LIGHT :		
	E. R. Whitney, —Carbons	1 00	
	Montreal Water Works— “	14 51	
	J. A. J. Craig “	29 00	
			44 51
	Interest on Bank Account		2,186 56
	TOTAL RECEIPTS		<u>\$345,089 17</u>

The Expenditure was as follows :—

	Harbour Survey	\$ 179 40
	Harbour Dredging	36,795 47
	Harbour Repairs	16,421 26
	Harbour Expenses	26,641 48
	Interest on Harbour Debt	114,468 55
	Mrs. John Young—Annuity, 1881	600 00
	Wharfage and Tonnage Dues returned	468 24
	Sundry Accounts written off	813 54
	New Channel Operations	172,403 82
	Buoys and Beacons	10,231 68
	Printing, Stationery and Advertising	1,561 36
	Travelling and Incidental Expenses	747 95
	Lighting Wharves—Electric Light	2,429 57
	“ “ —Coal Oil	551 21
		2,980 78
	CONSTRUCTION ACCOUNT, <i>as under</i> —	
	Windmill Point Wharf	3,007 79
	Hochelaga Wharf, Sections 38 and 39	22,426 65
	Sections 13 and 14	1,498 00
	Railway Ferry Slip	4,722 14
		31,654 58
	Legal and Notarial Expenses	462 64
	Dominion Government Interest	52,240 00
	Harbour Railway	2,067 03
	St. Lambert's Channel, Government Survey	194 24
	Debentures paid—Series C	7,200 00
	“ “ “ E	4,800 00
	“ “ “ F	12,887 47
		24,887 47
	TOTAL EXPENDITURE	<u>\$495,819 49</u>

In reviewing the business of the year, I would state first that an average reduction of 25 per cent. was made in the Tariff of Rates and Dues. The actual falling off in the receipts from Wharfage was \$88,285, or 27.04 per cent. as compared with 1880; this was occasioned by the reduction in the number of vessels visiting the Port, and also the small amount of outward freight offering.

A copy of the Chief Engineer's Report, which is forwarded you, gives full particulars of the dredging operations, wharf building, &c., within the Harbour.

I also send you copies of the following reports: (1st) The Harbour Master's, with the comparative statements of the Trade of the Port; (2nd) that of the Superintendent of Pilots, giving particulars relative to the maintenance of the buoys in the river; and (3rd) that of the Pilotage District of Montreal.

From the Harbour Master's statements, it will be seen that each year shows an increase of steamers and a decrease of sailing vessels. That in 1878 the steam tonnage was 68 per cent. and that of sailing vessels 32 per cent. The figures for the past year are 84 per cent. of steamers, against 16 per cent. of sail, an increase in the one case of 16 per cent. and a falling off of the sailing vessels of exactly half.

The Commissioners regret having to announce that Captain A. M. Rudolf, who had been in the employ of the Trust as Harbour Master for over twenty years, died on the 9th March last. He was a most active, efficient and reliable officer, and one who performed his duties to the entire satisfaction of the Board. Mr. John Smail, Assistant Wharfinger, died on the 14th September; he had likewise been about twenty years in the employ, during which time he gave every satisfaction to the Commissioners.

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Work

The work of deepening the Ship Channel to Quebec is in a very advanced stage, and it is expected by the time of low water next season that a depth of 25 feet will be obtained. A report on the same for the past year ended 30th June, 1881, was sent to the Department of Public Works as usual.

I have the honor to be,

Sir,

Your obedient servant,

H. D. WHITNEY,

Secretary.

REPORT
ON THE
WORKS FOR THE IMPROVEMENT & MAINTENANCE
OF THE
HARBOUR OF MONTREAL
FOR THE YEAR 1881.

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

HARBOUR COMMISSIONERS OF MONTREAL,
Chief Engineer's Office,
MONTREAL, 31st January, 1882.

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 Report upon the works in the Harbour of Montreal, for the year ended 31st December, 1881.

The principal works of the year were the widening and improvement of the Ship Channel through the Harbour, the extension and deepening of the Windmill Point Basin, the construction of a Railway Ferry Wharf at the Longueuil Ferry, and the extension of the wharfage at Hochelaga.

The chief details are as follows:—

Sections 5 to 10 (Windmill Point Basin.)

A culvert was built in the latter part of the summer over the large tail-race from Gould's Mills, and a beginning was made in the construction of an embankment which is intended to form a road-bed for the proposed railway tracks to the Windmill Point Wharves.

The lower part of the basin, sections 9 and 10, has been improved by the removal of some shoal places and boulders. From this upward to the present head of the wharf, dredging was vigorously carried on throughout the summer, in widening and deepening the basin so as to make the whole length available for large vessels.

The filling up of the low places and the grading of the roadways opposite Black's Bridge, Section 8, have been nearly completed.

Cost of Culvert at Gould's Mill, Section 6, \$2,262.

Total dredging 62,100 cubic yards, costing \$27,879.

Section 11. Some dredging was done in and east of the new entrance to the Lachine Canal in removing shoal places which appear to have, for the most part, been recently formed—cost, \$959.

Sections 13 & 14. 5,355 cubic yards were dredged out of Elgin Basin, mainly consisting of sewage deposit from the large outfall sewer in Commissioners Street,—cost \$1,471.

A railway siding 600 feet in length, the property of the Harbour Commissioners, was laid down at the Messrs. H. & A. Allan's Steamship Sheds.

Section 15.—Some shallow spots in King's Basin were cleared out, cost \$416.

A railway siding 750 feet in length, also the property of the Harbour Commissioners, was laid down at the Dominion Steamship Line Sheds.

Sections 21 to 25.—The cutting away of the shoal reaching downward from the lower end of the Victoria Pier, has been continued, and the deep water entrance to the wharves in the vicinity has been much enlarged. A number of shallow places along the front of the wharves have also been deepened. Total dredged, 16,695 cubic yards, costing \$4,317.

Section 32. (*Longueuil Ferry*).—A pile wharf, with railway tracks and other appliances, has been built for the Provincial Government Car Ferry established between Montreal and Longueuil. The ferrying of cars was com-

menced on the 29th September, and the wharf was finished shortly after. Cost of the wharf exclusive of movable aprons and tracks, \$4,722.

Sections 38, 39 and 40. (Hochelaga.)—The extension of the wharfage so as to fill the gap between the Hudon Cotton Mills and the wharves above, has been continued throughout the summer. 573 feet of crib-work was sunk, and 522 feet of superstructure with corresponding back-filling were finished, leaving to close the gap only 100 feet of cribwork, and 581 feet of superstructure yet to be built. A small quantity of dredging was done in preparing foundations for the cribs. Cost of timber work of wharf, \$14,127. Filling and back filling of wharf, \$7,814. Dredging \$927.

Ship Channel in the Harbour.—Three dredges were employed during the latter part of the summer in widening and deepening the channel between the lower end of the Victoria Pier and the entrance of the Lachine Canal. Total quantity dredged 78,537 cubic yards, costing \$18,160.

HARBOUR REPAIRS.

The repairs for the year have been light, and have mainly consisted of the ordinary maintenance and repairs of the wharves and roadways.

The total expenditure under the head of Harbour Repairs has amounted to \$16,159, and compares as follows, with that of previous years:—

1875.....	\$16,449
1876.....	35,711
1877.....	26,077
1878.....	18,974
1879.....	18,819
1880.....	17,330
1881.....	16,159

DREDGING.

The Harbour dredges, derricks and tugs and the Floating Shop were quartered at Sorel, and the remainder of

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the fleet at Boucherville, during the winter of 1880-81, and the necessary repairs were as usual done at the Commissioners' works.

Dredges 2, 4 and 6 were hauled out and wintered on the ways for repairs. No. 6 dredge had the crane removed and was fitted with an Osgood boom, and strengthened so as to adapt her better for working in hard material and at greater depths. No. 2 dredge had her old crane taken off and the stronger one released from No. 6 substituted. She was also fitted with new slides for the spuds, and somewhat strengthened.

No. 4 dredge was provided with new slides for the forward spuds, and strengthened in the hull.

All the three Harbour tugs have been docked during the past summer for light repairs.

Immediately on the clearing away of the winter ice all the dredging fleet, except No. 6 dredge, was brought up to Montreal and was got to work on the 29th and 30th April. Dredge 6 was delayed for the completion of her alterations and did not commence work till 10th June. Severe frost set in in the last week of November, and put a stop to the season's dredging, on the 22nd and 23rd when the fleet was dismantled and sent to winter quarters.

The number of working days on duty commencing in spring to closing in the fall was $142\frac{1}{2}$ days for No. 6, and 172 and 178 days for each of the others; equal to an aggregate of $846\frac{1}{2}$ days of one dredge, and an average of $169\frac{3}{10}$ for each, without deductions for stoppages. The nominal working time is ten hours per day, which gives an aggregate of 8,465 hours' service; but the actual dredging time, after deducting time lost for repairs, changing positions, detention by vessels, short days in autumn and all other causes, is reduced to 6,752 hours, or an average of $79\frac{7}{10}$ per cent. of the gross time of service.

The general rise in the cost of labor and fuel, the alteration of dredge No. 6 and somewhat heavy repairs to other vessels, have all contributed to increasing the working

expenses of the dredging fleet, and the total cost for the year has therefore risen to \$54,128, which is the highest since 1876.

This, as usual, represents the total cost of working the plant, including repairs, outfit, fuel, wages, salaries, insurance and all the other outlays except interest on capital and depreciation of plant.

The total quantity dredged, including that in the Ship Channel through the Harbour, is 170,764 cubic yards, making the average cost 31 $\frac{7}{10}$ cents per cubic yard, for dredging, towing unloading and dumping.

Of the whole quantity dredged, 91,800 cubic yards were unloaded ashore by clam-shell derricks for wharf-building and other purposes, and the remaining 78,964 yards were dumped in the river from hopper-bottomed scows.

The following are the comparative cost and quantities of dredging for 1881, and five previous years:—

YEAR.	Cost.	Cubic Yards Dredged.	Cost per Cubic Yard. Cents.
1876.....	\$55,462	156,082	35 $\frac{1}{2}$
1877.....	45,103	173,449	26
1878.....	48,748	211,731	23
1879.....	41,006	189,609	21 $\frac{5}{10}$
1880.....	46,914	186,430	25 $\frac{1}{10}$
1881.....	54,128	170,764	31 $\frac{7}{10}$

The following are the cost and character of the dredging done in the different parts of the Harbour during the year:—

Sections 5 to 10, (Windmill Point Basin).—Extending, widening and deepening the basin, and cleaning bottom made in previous years. Shale, with hard pan and boul-

ders ; making usually 25 to 30 feet depth of bottom, with portions 8 to 15 feet depth—62,100 cubic yards, costing \$27,879, or an average of 44⁸⁰/₁₀₀ cents per cubic yard.

Section 11, (Windmill Point, lower end).—Cleaning up bottom, and removing deposit of gravel, &c., twenty to twenty-five feet depth ; 3,060 cubic yards, costing \$959, or 31³⁴/₁₀₀ cents per cubic yard.

Section 14, (Elgin Basin).—Cleaning out sewage and other deposit, twenty-five feet depth, 5,355 cubic yards, costing \$1,471, or 27⁴⁰/₁₀₀ cents per cubic yard.

Section 15, (King's Basin).—Cleaning out small lumps, and deposit, twenty-five to twenty-eight feet depth ; 1,327 cubic yards, costing \$416, or 31³⁰/₁₀₀ cents per cubic yard.

Sections 21 to 25.—Removing shoal, and cleaning out in front of wharves, sand, gravel, and boulders ; twenty-five to twenty-eight feet depth : strong current in greater part, 16,695 cubic yards, costing \$4,317, or 25⁸⁰/₁₀₀ cents per cubic yard.

Sections 38 and 39, (Hochelaga).—Preparing bottom for cribwork of new wharf—clay and sand—3,690 cubic yards, costing \$927, or 25¹/₂ cents per cubic yard.

Ship Channel, (opposite Sections 23 to 14).—Widening and cleaning up bottom made in former years—sand, gravel, and boulders—twenty-five to twenty-eight feet depth, 78,537 cubic yards, costing \$18,160, or 23¹⁰⁰/₁₀₀ cents per cubic yard.

Yours respectfully,

JOHN KENNEDY,

Chief Engineer.

Abstract of DREDGING done in different parts of the HARBOUR of
MONTREAL in 1881.

PLACES WHERE DREDGES WORKED.	DREDGES.	Quantities Dredged at each place.	Totals, Dredged	REMARKS.
		Cub Yds.	Cub Yds.	
Sections 5 to 10	Dredge No. 2...	11,711	62,100	Shale and hard pan, with some gravel and sand.
	" No. 4...	21,903		
	" No. 5...	8,325		
	" No. 6...	18,360		
	" No. 7...	1,800		
Section 11.....	Dredge No. 2...	2,160	3,060	Gravel and sand.
	" No. 4...	900		
Section 14, Elgin Basin...	Dredge No. 4...	5,355	5,355	Sewage.
Section 15, King's Basin..	Dredge No. 5...	1,327	1,327	Gravel and mud.
Sections 21 to 25	Dredge No. 5...	1,080	16,695	Sand, gravel and boulders.
	" No. 7...	15,615		
Sections 38 and 39, Hoche- laga Wharf.....	Dredge No. 4...	3,690	3,690	Clay and sand.
Ship Channel.....	Dredge No. 2...	21,084	78,537	Sand, gravel and boulders.
Section 14 to 23.....	" No. 5...	23,208		
	" No. 6...	765		
	" No. 7...	33,480		
Gross Total.....			170,764	

HARBOUR COMMISSIONERS' DREDGING PLANT EMPLOYED IN THE HARBOUR OF MONTREAL, 1881.

DESCRIPTION OF VESSEL.	HULL.			When Built.	ENGINES.					Depth to which Dredge can work.	REMARKS.	
	Length over all.	Breadth of Beam.	Depth of Hold.		Kind of Engine.	No. of Cylinder.	Diameter of Cylinders.	Length of Stroke.	Pressure of Steam.			Capacity of Bucket.
DREDGES.												
Crane Spoon Dredge, No. 2	Ft. in.	Ft. in.	Ft. in.	.....	Horizontal,	1	12	16	40 to 70	C. ft.	Feet.	
" " " " No. 1	77.0	26.6	6.3	1872	non-	1	14	16	40 to 70	40	32	
" " " " No. 5	77.3	27.0	6.6	1873	condensing.	1	14	16	40 to 70	40	32	
Boom Spoon " " No. 6	77.6	27.0	7.6	1874		1	14	16	40 to 75	40	35	
Crane " " No. 7	77.3	27.0	7.0	1874		1	14	16	40 to 70	70	32	
DERRICKS.												
Clam Shell Derrick, No. 1	56.8	23.9	5.9	.....	Horizontal,	1	8	12	60 to 70	.....	.....	Used as a Pile-driver
" " " " No. 2	57.0	23.6	5.9	1872	non-	2	7	12	60 to 90	.....	.....
" " " " No. 3	61.9	24.0	5.9	1875	condensing.	1	10	12	60 to 90	.....	.....
TUG BOATS.												
Tug St. Louis	67.0	15.0	8.7	1875	Vertical,	1	16	20	85 to 95	.....	.....
" St. Peter	71.6	16.6	8.6	1875	non-	1	20	22	80 to 90	.....	.....
" St. Paul	65.6	15.0	8.0	1875	condensing.	1	16	18	80 to 100	.....	.....
BARGE.												
Staghound, floating shop	103.4	21.5	7.6	1869								
SCOWS.												
7 Dumping Scows	80.0	16.0	7.6	.....							
3 Flat Scows	70.0	18.0	5.0	1875								
2 " " "	75.0	20.0	5.9	1876								
2 " " "	75.0	20.0	6.0	1878								
6 " " "	.....	.....	.....	.....				

ABSTRACT OF DREDGING DONE BY EACH DREDGE IN THE HARBOUR OF MONTREAL IN 1881.

DREDGES.	Commenced working.	Stopped working.	Time of service.	PLACES AT WHICH DREDGES WORKED.	Quantities dredged at each place.	Totals Dredged.	REMARKS.
Dredge No. 2.	April 29.	Nov. 23.	Days. 178	Sec. 5 to 10, Windmill Point. " 11 " 14 to 23, Ship Channel	Cubic yds. 11,711 2,160 21,084	Cubic yds. 34,955	Shale and hard pan, with some gravel and sand. Gravel and sand. Sand, gravel and boulders.
Dredge No. 4.	April 29.	Nov. 23.	178	Sec. 5 to 10, Windmill Point. " 11 " 14, Elgin Basin " 38 and 39, Hochelaga Wharf	21,903 900 5,355 3,690	31,848	Shale and hard pan, with some gravel and sand. Gravel and sand, Sewage and other deposit. Clay and sand.
Dredge No. 5.	April 30.	Nov. 21.	172	Sec. 5 to 10, Windmill Point. " 15, King's Basin " 21 to 25 " 14 to 23, Ship Channel	8,226 1,227 1,080 23,208	33,941	Shale and hard pan, with some gravel and sand. Gravel and mud. Sand, gravel and boulders. Sand, gravel and boulders.
Dredge No. 6.	June 10.	Nov. 22.	142½	Sec. 5 to 10, Windmill Point " 18, Ship Channel	18,380 765	19,125	Shale and hard pan, with some gravel and sand. Sand, gravel and boulders.
Dredge No. 7.	April 30.	Nov. 22.	176	Sec. 5 to 10, Windmill Point " 21 to 25 " 14 to 23, Ship Channel	1,800 15,615 33,480	50,895	Shale and hard pan, with some gravel and sand. Sand, gravel and boulders. Sand, gravel and boulders.
Gross Total.						170,764	

REPORT
OF THE
HARBOUR MASTER OF THE PORT OF MONTREAL
FOR THE YEAR 1881.

CAPTAIN THOMAS HOWARD, *Harbour Master.*

HARBOUR COMMISSIONERS OF MONTREAL,
HARBOUR MASTER'S OFFICE,
MONTREAL, 3rd January, 1882.

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 1881, with comparative statements showing the number, tonnage, classification, nationality and the greatest number of vessels in port at one time; also, statements showing the dates of the opening and closing of navigation, first arrival from sea and the last departure for sea, with statements showing the number and tonnage of inland vessels, and the greatest number in port at one time during the past ten years.

Five hundred and sixty-nine (569) sea-going vessels arrived in port this season, of the aggregate tonnage of 531,929 tons: three hundred and twenty-nine (329) of which were built of iron, of the aggregate tonnage of 456,834 tons, and two hundred and forty [240] were built of wood, of the aggregate tonnage of 75,095 tons, showing

a decrease of 141 vessels, and 96,242 tons, in tonnage, from the season of 1880, but an increase of 24,960 tons over 1879.

There were 12,829,796 feet of lumber shipped for South America this season in 27 vessels, of the aggregate tonnage of 16,269 tons, showing an increase of 4,863,533 feet and 6,145 tons in tonnage.

The increase of wharf accommodation made this year at Hochelaga will greatly facilitate this important growing trade.

The new year commenced with fine, bright weather, good sleighing and cold. The cars made their first trip for the winter season on the ice railway from Hochelaga to Longueuil on the 5th of January, the month throughout continued cold.

February set in cold, on the 1st the thermometer registered 8° below zero, as the month advanced it got mild; on the 11th the roads were bad and sloppy.

March set in mild; on the 1st we had rain, on the 7th wheeled vehicles were in use; 22nd, men were employed removing the ice railroad; 24th, road to Laprairie getting bad, latter part of the month was fine and mild.

April set in mild and clear. Crossing to St. Lamberts and Laprairie with sleighs ceased; on the 8th the ice commenced breaking up; 13th, the channel opposite the city was clear; 15th, the water was drawn off Lachine Canal; 19th, steam tug W. C. Francis arrived in port, being the first arrival of the season; 23rd, steamer Laprairie made her first trip to Laprairie. On the 27th, S. S. Peruvian arrived from Sorel where she had wintered. 28th, steamer St. Francis arrived from Cornwall, being the first vessel down the rapids. 29th, S.S. Valetta from Cow Bay, arrived, the first from sea.

May 1st, mild with rain. The Harbour Commissioners' Cattle Sheds were destroyed by fire, at 5 P.M., said to be accidental, they were of little value as cattle were shipped direct from the cars or yarded at Point St. Charles. The

ground that the sheds occupied is now used as a lumber yard for City use, which is a great accommodation to those in the trade. On the 2nd, the S.S. Buenos Ayrean arrived from Glasgow. On the 10th the S.S. Parisian arrived on her first trip to this port; she was much admired, and when here, was visited by thousands. She is the largest vessel that has ever been in the Harbour, and no doubt will prove a great success. On the 11th we had a heavy thunder-storm, lasting two hours with hail.

The summer throughout was very dry, particularly in the west and north, causing the water in the Harbour to be unusually low.

September 29th, the new steamer South Eastern commenced running from Hochelaga to Longueuil in connection with the Q., M., O. & O. Railway, crossing their cars to connect with the South Eastern Railroad, which is of great advantage to both these roads. The new wharf built at Hochelaga by the Commissioners this season answers well for the transshipping of cars.

October 4th, we had hard frost, doing great damage to fruit and vegetables of all kinds. On the 6th, there were only 21 feet 5 inches in the Harbour, being 9 inches lower than it was on the 3rd of October, 1880, when it had reached its lowest point. The month through was cold, with prevailing north-easterly winds.

November 1st, fine and mild weather, which continued till the 12th, when we had our first snow storm, on the 13th rain. Sunday the 20th, S.S. Valetta and S.S. Waldensian left at 6 A.M., being the last Atlantic steamers for the season. 23rd, brig Queen, cleared for Porto Rico, but had to winter in Quebec, the weather setting in cold. 23rd, steamer Quebec left for winter quarters; 28th, last boat passed into Lachine Canal; weather continued cold to the close of the month.

December commenced with rain. Saturday, 10th, steamer Laprairie went to winter quarters; no ice in the Harbour. Sunday, 25th, Christmas Day, fine and mild, no appearance

of snow: dust in the streets. Ferry boat to Longueuil running regularly; water in the Harbour continues very low; 27th, dense fog in the morning; 29th, very mild with rain most of the day; 31st, fine and mild; in the afternoon a light flurry of snow; south-west winds prevailed throughout the month.

The year closed with open navigation; no appearance of its closing. The Longueuil Ferry continues to make her regular trips.

Yours, respectfully,

(Signed), THOMAS HOWARD,
Harbour Master.

PORT OF MONTREAL.

Statement showing the Nationality and Tonnage of sea-going vessels that arrived in Port during the season of 1881 that were navigated by 15,160 seamen.

NATIONALITY.	NO. OF VESSELS.	TONNAGE.
British	516	505,094
Norwegian	22	10,996
Austrian	12	6,254
German	7	2,840
Spanish	3	998
American	3	865
Belgian	2	3,633
Portuguese	1	327
Swedish	1	314
French	1	257
Italian	1	351
Total	569	531,929

PORT OF MONTREAL.

Comparative Statement showing the dates of the Opening and Closing of Navigation, first arrival from Sea and last departure for Sea, the past ten years.

YEAR.	Opening of Navigation.	Closing of Navigation.	First Arrival from Sea.	Last Departure for Sea.
1872....	May 1.	Dec. 8.	May 5.	Nov. 28.
1873....	April 25.	Nov. 26.	" 4.	" 21.
1874....	" 25.	Dec. 13.	" 11.	" 21.
1875....	May 3.	Nov. 29.	" 9.	" 22.
1876....	April 27.	Dec. 10.	" 8.	" 23.
1877....	" 17.	Jan. 2, '78.	April 29.	" 24.
1878....	March 30.	Dec. 23.	" 20.	" 24.
1879....	April 4	" 19	May 1.	" 24.
1880....	" 17.	" 3.	" 2.	" 22.
1881....	" 21.	Jan. 2, '82.	April 29.	" 23.

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.*

YEAR.	No. of Vessels.	TONNAGE.	Greatest Number in Port at one time.
1872.....	7,150	936,782	309..... June 8
1873.....	6,751	933,462	296..... June 8
1874.....	6,855	956,837	301..... June 14
1875.....	6,178	811,410	256..... Aug. 4
1876.....	6,083	786,083	262..... Nov. 9
1877.....	6,333	847,978	258..... Oct. 3
1878.....	5,502	764,243	261..... Oct. 15
1879.....	5,698	817,243	227..... Nov. 6
1880.....	6,489	1,044,380	253..... July 7
1881.....	6,030	949,380	191..... Nov. 4

PORT OF MONTREAL.

COMPARATIVE STATEMENT, shewing 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.	Barques.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.
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	8,056	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	6,683	165	50,526
1879.....	62	40,686	2	1,733	59	33,271	1	457	16	3,660	80	8,573	220	88,380
1880.....	88	62,688	3	2,492	59	36,294	1	413	17	5,001	68	6,562	236	113,450
1881.....	104	80,040	1	734	44	10,666	2	553	13	2,502	48	4,883	212	99,378

PORT OF MONTREAL.

COMPARATIVE STATEMENT, shewing 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.

Year.	Steamships.	Tonnage.	Ships.	Tonnage.	Barques.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.	Greatest Number in Port at one Time.
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	4,680	59	8,581	149	12,583	702	412,478	84.....Aug. 28.
1874	266	262,096	50	46,938	167	80,667	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	123	14,498	602	391,180	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	143	76,816	11	3,252	41	9,715	119	12,606	710	628,271	67.....Aug. 4.
1881	321	446,457	5	4,640	104	60,617	9	2,377	30	6,152	100	11,686	569	531,929	59.....Aug. 18.

REPORT
OF THE
SUPERINTENDENT OF PILOTS.

JOSEPH LEVEILLÉ, *Superintendent of Pilots.*

HARBOUR COMMISSIONERS OF MONTREAL
Superintendent of Pilot's Office,
MONTREAL, 4th January, 1882.

H. D. WHITNEY, ESQ.,
Secretary,

Harbour Commissioners of Montreal.

SIR,

I beg to submit for the information of the Harbour Commissioners, the following report of the work performed in connection with the buoys and beacons on the River St. Lawrence, from the Harbour of Montreal to Pointe-aux-Trembles en-bas, for the season of navigation of 1881.

It will be remembered that the tug John Pratt having the previous autumn been caught in the ice, was obliged to winter in the River St. Maurice, Three Rivers, where I joined her on the 21st of April, and she continued work throughout the season until the 28th November, when she went into winter quarters at Sorel. During the summer the buoys were repeatedly inspected, and at the close of the season most of them were lifted and taken to the shipyard, Sorel, except those in Lake St. Peter [sixty-two wooden ones] which were left in position, as the Steamer Polino, was expected to come up to discharge her cargo at Montreal, but the weather turning suddenly very cold, it was decided to winter her at Quebec.

As mentioned in my last annual report, owing to the early setting in of winter in 1880, all the buoys were left in position, and it is with pleasure I state that during the summer most of them were recovered. On my first tour of inspection the Lavaltrie buoys [fifteen] were found in place, but they were water-logged; they were replaced by new ones and taken to the ship-yard to dry; also in Lake St. Peter, several wooden ones were found, as were also fourteen iron buoys, which are never taken up, were found not to have moved; sixty-two new wooden buoys were put down in the Lake, and new ones at Becancour, Champlain, Caps Levrard, la Roche and Charles. As the water fell during the summer all the old buoys were gradually found with the exception of one iron and nine wooden buoys belonging to Lake St. Peter.

This year special channels having been marked out for the rafts, the buoys were in consequence much less displaced than in former years.

There are at present wooden buoys enough at the Sorel shipyard to make up two complete sets without taking into account those remaining in position on Lake St. Peter, there being in stock about one hundred new ones, this will allow the old buoys to be left for two years to dry, by which time they will be again required. There are also on hand enough anchors and chains for the both sets.

The following list shows the number of beacons, and also number and description of buoys employed to mark out the various portions of the Ship Channel:—

	Wooden buoys.	Iron buoys.	Barrels.	Beacons.
Pointe-aux-Trembles-en-bas.	1	.....	.....	.....
St. Croix.....	1	.....	.....	.....
Richelieu Rapids.....	3	.....	.....	.....
Cap Charles.....	3	.....	.....	.....
Poullier à Rayer.....	1	.....	.....	.....
Grondine Pt.....	.....	.....	.....	2
Cap la Roche, old channel.....	.....	1	.....	.....
do do new channel.....	4	4	.....	.....
Grondine.....	.....	.....	.....	2
Cap Levrard	8	1	.....	2
St. Pierre des Becquets.....	.....	.....	.....	1
Champlain.....	3	.....	.....	2
Becancour.....	10	1	.....	1
Cap Madeleine.....	.....	.....	.....	2
Lake St. Peter.....	62	14	.....	.....
Contreœur Channel.	17	1	11	6
Isle Deslauriers.....	.....	.....	.....	2
Varenes, Grand Ile .....	.....	.....	.....	2
Contreœur to Montreal.....	21	.....	.....	.....
Harbour of Montreal.....	7	.....	.....	.....
In all.....	141	22	11	22

During the summer the buoys in the Richelieu River, between St. Johns and Rouses Point, and also those on the Riviere des Prairies, between St. Vincent de Paul and the village St. Joseph, or Riviere des Prairies, were inspected.

I have the honor to be,

Sir,

Your most obedient servant,

[Signed], JOSEPH LEVEILLÉ,
Superintendent of Pilots.

REPORT
OF THE
PILOTAGE DISTRICT OF MONTREAL
FOR THE YEAR 1881.

HARBOUR COMMISSIONERS OF MONTREAL,
Secretary's Office,
MONTREAL, 17th January, 1882.

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, 1881.

No examination of Apprentice Pilots to be licensed as Branch Pilots was held during the year, it being considered that the number of Pilots on the list was sufficient for all the requirements of the trade, and consequently there were no apprentices admitted.

Joseph Barnabé *dit* Lafreniere, aged 68, in accordance with the 36th section of the Act 36 Vic., cap. 54, was granted a license to pilot for one year.

The number of Pilots remains the same as at last report, there being no deaths.

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 1881.

No.	NAME.	AGE.	EARNINGS.	REMARKS.
1	F. A. Maynard	62	\$485 75	
2	Joseph Leveillé	64	.....	Supt. of Pilots.
3	Hector Hamelin	64	484 63	
4	Zephirin Bouillé	53	1,261 75	
5	Placide Gaillardet	66	460 59	
6	Jos. Barnabé dit Lafrenière	68	383 73	
7	Cyrille Belisle	54	578 92	
8	Adolphe Lisé	52	415 87	
9	George Raymond	52	977 68	
10	Augustin Naud	55	628 15	
11	Hubert A. Belisle	51	398 07	
12	Athanase Dufresne	48	1,700 62	
13	J. B. Dorval	50	202 99	
14	L. N. Bouillé	55	1,000 00	Pilot Str. Montreal.
15	Edouard Naud	39	427 72	
16	Pierre Gagnon	54	1,012 43	
17	Jean George Belisle	42	606 02	
18	O. Naud	41	999 32	
19	J. O. Hamelin	48	840 00	
20	Jos. Chandonnet	41	1,266 62	
21	Louis A. Bouillé	42	1,059 43	
22	Prudent Boudet	40	1,612 59	
23	Elzear Belisle	47	592 54	
24	Joseph Pleau	44	1,175 59	
25	Celestin Brunet	39	1,340 08	
26	Louis Belisle	36	1,937 20	
27	Damase Caien	41	259 76	
28	Ulric Groleau	34	552 53	
29	Alfred Frenette	42	566 48	
30	Alfred St. Armand	38	725 62	
31	Philippe Belanger	43	952 32	
32	Victor Gagnon	43	487 83	
33	Narcisse Perrault	44	1,115 44	
34	Treflè Toupin	34	626 28	
35	Cleophas Auger	35	1,118 73	
36	François Desjordy	37	448 07	
37	Ferdinand Labranche	36	1,033 66	
38	David Perrault	40	423 75	
39	Alexis Gauthier	35	1,025 07	
40	Louis Z. Bouillé	33	1,060 78	
41	Joseph Toupin	32	816 58	
42	Laurent Gauthier	32	822 54	
43	Jean Arcand	29	477 36	
44	Delevoie Naud	30	828 77	
45	Wilbrod Gauthier	30	666 95	
46	Louis Mayrand	34	429 79	
47	George Dufresne	33	146 91	
48	Norbert Arcand	29	322 28	
49	Uldoric Toupin	27	429 64	
50	Tancrede Bouillé	28	572 98	
			37,758 91	
	Pilotage paid at Three Rivers to various pilots..		982 80	
	Total		\$38,741 71	

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

BRITISH:		
Steamers.....	\$30,186 83	
Sailing Vessels.....	4,547 01	
		\$34,733 84
FOREIGN:		
Steamers.....	\$ 339 77	
Sailing Vessels.....	3,668 10	
		4,007 87
		\$38,741 71

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...	33	Champlain.
2	Nestor Arcand	25	Deschambault.
3	Gedeon Groleau.....	29	Grondines.
4	Néré Belisle	29	Deschambault.
5	Hubert Perrault.....	32	Montreal.
6	Odilon Portelance....	28	Grondines.
7	Leboire Perrault	32	Deschambault.
8	John Naud	26	"
9	Joseph Hurteau	21	Contrecoeur.
10	Wilfred Raymond ...	27	Deschambault.
11	Adolphe Richard	33	Contrecoeur.
12	Joseph Langlois.....	26	Pointe-aux-Trembles, en bas.
13	Edouard Perrault....	31	Deschambault.
14	Lyderic Bouillé	24	"
15	Elié Bouillé	22	"
16	N. Edson Angers.....	31	"
17	Honoré Dussau.....	28	"
18	Joseph Dusseau	25	"
19	Narcisse Paquet.....	27	"
20	J. B. Nadeau.....	23	Levis.
21	Arthur Brière	24	Portneuf.
22	Aubert Naud.....	27	Deschambault.
23	J. Sifroy Labranche..	25	Portneuf.
24	Alexis Perrault.....	19	Deschambault.

It is satisfactory to be able to state that there were no casualties of any consequence to vessels within this pilotage district, and no complaints were made against any of the pilots.

The maintenance of the buoys in the River and the Harbour was performed as usual by the Commissioners, and also the buoying of the Richelieu River between St. Johns and Rouse's Point, and of the Riviere des Prairies.

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 the current into the Harbour	5 00	5 00

The amount of receipts were as follows:—For poundage, which is 5 per cent. on the earnings of the Pilots, \$1,939.32, including that on vessels coming only to Three Rivers; interest on investments, \$2,022.66. Sundries—poundage from Sorel for 1880, \$23.28.—Total, \$3,985.26. The disbursements were \$2,682 paid as pensions to old and infirm pilots and widows of pilots.

I have the honor to be,

Sir,

Your most obedient servant,

H. D. WHITNEY,

Secretary.

REPORT

UPON THE

DEEPENING OF THE SHIP CHANNEL

Between Montreal and Quebec

FOR THE YEAR 1881.

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

HARBOUR COMMISSIONERS OF MONTREAL,
Chief Engineer's Office,

MONTREAL, 27th February, 1882.

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 1881 in deepening the Ship Channel between Montreal and Quebec.

The results of the year's working are, on the whole, very good. The increased rates of wages, fuel and stores have increased the total expenses beyond the average of recent years, but on the other hand, the quantity of work done is so much larger than ever before that the

average cost per cubic foot is less than in any year having so large a proportion of rock dredging. The depth being made in the dredged channel is 25 feet at low water, except at Cap la Roche and Cap Charles, where the cutting is in rock, and the depth is made 25 feet at half-tide. The breadth at all places where the channel is straight is not less than 300 feet, and at bends and other points where navigation is difficult it is increased to about 450 feet.

The places at which the largest quantity of work has been done during the year are Cap Charles, Cap la Roche, Lake St. Peter, Contrecœur, Cap St. Michel and Pointe aux Trembles.

The following are the chief details:—

Cap Charles.—On June 9th, when the water had fallen sufficiently to allow of commencing work, dredging was resumed with one dredge, and continued till October 22nd. A stone-lifter was also employed a good part of the season. The portions of the new channel which remained to be deepened to 23 feet 3 inches at low water were cut through, and the boulders were also lifted from the upper margin of the shoal by the stone-lifter.

The main cutting is all of shale rock, as before, and there were raised during the summer 14,625 cubic yards, scow measurement, besides 1,690 cubic yards of boulders. Total cost, \$13,748, or an average of 84²/₁₀₀ cents per cubic yard.

Pouillier Rayer.—A commencement in the improvement of the channel at Pouillier Rayer was made by clearing away the boulders from the furthest projecting points on the south side of the shoal, or north side of the channel. An irregular space of some 800 feet in length by 250 feet in extreme breadth was thus improved, and about 857

cubic yards of boulders lifted. Cost, \$900, or \$1.05 per cubic yard

Cap la Roche.—Dredging was resumed on the 8th and 9th June, and continued by two dredges till the 3rd and 14th November; assistance was also frequently rendered by the two stone-lifters.

The lower margin of the shoal was further cleared of boulders, and a space, amounting in all to about 3,200 feet by 150 feet, was dredged through the shale to 22 feet deep at low water.

Total quantity of dredging, all shale rock, 40,325 cubic yards, and of boulders lifted, 1,210 cubic yards; cost, \$28,539, or 69⁴⁰/₁₀₀ cents per cubic yard.

Becancour.—A few days were spent by a dredge and a stone-lifter, at the close of the season, in clearing off the tops of some boulder shoals on the new line of channel in the traverse above the bend. A length of 2,300 feet was thus gone over, and the obstructions removed, and it only remains to be tested to give a depth of 25 feet at low water, and a minimum breadth of 300 feet throughout the new line. Total dredging, consisting of boulders, with occasionally a little clay, 330 cubic yards; boulders raised by stone-lifters, 38 cubic yards. Total cost, \$1,503, or \$4.68 per cubic yard.

Port St. Francis.—During high water, in spring, two dredges and a stone-lifter were employed on the Iron and Force Shoals. The material still consists of boulders bedded in hard pan, and the rate of dredging was therefore very slow. The points of both shoals are, however, now nearly cut through, at 25 feet depth, and of sufficient width to afford a very fair channel.

Total quantity raised by both dredges and stone-lifter, 6,636 cubic yards, costing \$7,567, or \$1.14 per cubic yard.

Lake St. Peter.—Deepening to 25 feet was continued from April 26th to October 8th and 14th, with two large bucket dredges, and from August 9th to October 8th with an ordinary dredge. Total quantity dredged, 924,600 cubic yards; costing \$35,105, or 3⁸/₁₀ cents per cubic yard.

Ile de Grace.—One dredge was employed from September 5th to the close of the season, in widening and straightening the channel, and the greater part of the work necessary to secure 25 feet depth is now finished. Total quantity dredged, 28,875 cubic yards; costing \$7,358, or 25¹/₂ cents per cubic yard.

Contrecoeur Channel.—About two months' time of a dredge was spent in the early part of the summer at Ile St. Ours and the Bell-Mouth, and at various dates after the 10th October, when the weather became too stormy to work on Lake St. Peter and other exposed places, dredges from those points were sent to finish up the season until at the close of work, on November 25th, there were six in all engaged.

At Ile St. Ours the dredging is all done to 25 feet. In the main channel, all but a few small detached pieces are finished, and at the junction with Contrecoeur Traverse only one-fourth of a mile in length by half the breadth remains to be done. Total dredged, 197,550 cubic yards; costing \$24,680, or an average of 12¹³/₁₀₀ cents per cubic yard.

Cap St. Michel.—Below the Cape a channel 25 feet deep and 300 feet to 450 feet wide has been cut through, and from the Cape to the head of Ile Delorier the whole is finished to the same depth and 450 feet wide. Total quantity dredged, 77,115 cubic yards, costing \$14,717, or 19⁰⁸/₁₀₀ cents per cubic yard.

Varennés.—A number of places of an aggregate length of half a mile, which on being tested were found not to be of the full required depth, were run over by a dredge and deepened to 25 feet. Total quantity raised, 18,480 cubic yards, costing \$5,518, or 29⁵/₁₀₀ cents per cubic yard.

Pointe aux Trembles.—Several places were deepened from 23 to 25 feet, so as to give a through channel of the latter depth, though not yet of the full breadth intended. Total quantity dredged, 61,920 cubic yards; costing \$9,504, or 15⁵/₁₀₀ cents per cubic yard.

Montreal Harbour.—Deepening and widening the main Ship Channel, from below the Victoria Pier to the foot of the Lachine Canal, was continued with three spoon dredges. Total quantity dredged, 78,537 cubic yards; costing \$18,160, or 23¹/₁₀₀ 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 cost of working the dredging plant for the past year, as compared with recent years, has been materially increased by advanced rates of wages, fuel and stores, as well as by some increase in the extent of repairs entailed by the greater age of the wooden hulls of the vessels. The total expenses for the year—including repairs, outfit, fuel, wages, salaries, insurance and every expense except interest and depreciation of plant—were for the Ship Channel fleet proper \$149,140.92, and for the portion of the Montreal Harbour plant employed on the Channel in the Harbour \$18,157.91, making a total of \$167,300.83. The total quantities dredged are 1,393,692 cubic yards of earth and 60,096 cubic yards of rock and boulders, making an aggregate of 1,453,788 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 $\frac{4}{10}$ cents.
1876	8..	922,808	130,744	14 $\frac{1}{10}$ "
1877	7 to 8..	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 $\frac{5}{100}$ "
1881	8 elevators...	1,375,251	\$149,141	10 $\frac{84}{100}$ "
	1 to 4 spoons..	78,537	18,160	23 $\frac{12}{100}$ "
		1,453,788	\$167,301	11 $\frac{43}{100}$ "

The measurement of the quantity dredged is by tally of the scows, which, when filled level, hold 80 and 150 cubic yards for the ordinary and large sizes respectively, but are reckoned at 60 and 120 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 to four Spoon Dredges, during portion of season.
 One side-wheel Tug.
 Eight Screw Tugs.
 One Stone-Lifter, with steam power.. No. 1 (old).
 One Stone-Lifter, " " .. No. 2, 1878.
 Five Barges (coal tenders and smiths' shops).
 Nineteen hopper bottom scows.
 Three flat scows.

All the elevator dredges which constitute the Ship Channel fleet proper, except No. 1, commenced work at dates between April 26th and April 29th, which was as early as the clearing away of the ice permitted. No. 1, which was unable to work to as great a depth as the others, was fitted up when the river had fallen sufficiently, and commenced work on June 25th. No. 1 was stopped on November 19th, to be wintered in dry dock, Montreal, and all the others were stopped on the 25th November by severe freezing weather, and were laid up at Sorel for the winter.

The number of days on duty, reckoning all except Sundays from the day of leaving winter quarters till returning, was 127 days for No. 1 dredge, and 182 to 185 days, or an average of 183 $\frac{2}{3}$ days, for the other seven, and an aggregate of 1414 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 stoppages on Saturdays, time lost in changing positions, accidents, repairs and delays of all kinds, so that the time during which the dredges were actually dredging was 10,904 hours, or an average of 7 $\frac{7}{10}$ hours per day for the whole season.

The dredges and tugs have been free from serious mishaps or delays, the general conditions of the work have been favorable, and the year's work, as shown by the foregoing comparative tables, gives a larger result in quantity dredged than ever before.

The rock working dredges, from having been engaged on irregular cutting and amongst boulders on the margins of the shoals, have not raised so much as in 1880, and show an average of 143 cubic yards of shale rock per dredge per day for the past year, as compared with 170 cubic yards the year before.

The Lake St. Peter dredges have, on the other hand, had good favourable cuts, and the average of the two large bucket dredges has risen to 2905 cubic yards per day, as against 2681 cubic yards in 1880.

At Contrecoeur, which is the next most important point, the average of all the dredges was very good, taking into account the unfavorable circumstances under which they work in the cold, stormy weather and short days at the close of the season.

During the winter of 1880-1, the old dredge No. 1 and the tug John Brown were, on account of the age and weakness of the hulls, laid up in dry dock at Montreal, but the other dredges and tugs were, as usual, wintered at Sorel, and the repairing and spring outfitting were done at the Commissioners' ship-yard.

The scows, coal barges, &c., were, by the sudden closing in of winter, nearly all caught at Sorel, and wintered there also.

The following are the principal repairs made upon each vessel during the past year:—

Dredge No. 1.—Light repairs to engine and boiler; some new deck beams; machinery and bucket-frame repaired; hull caulked in dry dock.

Dredge No. 3.—Fitted with a new lower tumbler, new brasses to top tumbler; shoot repaired and a number of

minor repairs to machinery; part new deck and bulwarks; hull caulked above water-line.

Dredge No. 8.—Top tumbler repaired, strengthened and covered with new steel plates; repairs to parts of main engine; steam pumps and winches overhauled; boilers had light repairs; top sides of hull caulked.

Dredge No. 9.—Winches and steam pumps thoroughly overhauled; boilers repaired; shoot repaired; new deck at both ends, under winches; part new rail and stanchions; bucket frame repaired, and fitted with part new transoms; deck and top sides caulked.

Dredge No. 10.—New bars on top tumbler; winches and steam pumps had important repairs; one main side timber of bucket frame and several transoms renewed; part new rail and stanchions; new deck, both ends under winches; deck and top sides caulked.

Dredge No. 11.—Breasting winches repaired; bucket frame stiffened with additional tie-rods; shoot repaired; deck renewed under breasting winches, and new floor in engine-room hold; top sides caulked.

Dredge No. 12.—Steam winches and pumps thoroughly overhauled and repaired; deck repaired, and part new floors below; top sides caulked.

Dredge No. 13.—Winches and pumps repaired; boilers repaired; shoot repaired; new deck under both end winches; bucket frame repaired; part new covering board and stanchions to rail; hull repaired and caulked above water; deck partly caulked.

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

- 163 small buckets, without teeth, repaired.
- 61 teeth for small buckets made.
- 65 small buckets repaired and fitted with teeth.
- 62 large “ rivetted.
- 31 scrap iron small bucket links made.
- 14 small bucket links re-forged.

206 small bucket links repaired in eyes.
 134 " " " " otherwise.
 306 small single links repaired in eyes.
 22 large " " re-bushed.
 720 small pins reforged.
 209 large " "
 100 " " made new.
 49 new bucket teeth made.
 2 pairs side rods for lifting bucket.
 1 pair side chains for " "

Steamer John Young.—Cylinder covers turned and covered with boiler plate; new springs and repairs to main steam pistons; light repairs to boilers; new bulwarks, new stanchions, and some new covering board aft to replace others carried away by accident.

Tug St. John.—New piston rings and springs and followers to main engine; valve motion repaired; boiler and heater repaired.

Tug St. Francis.—Piston rod turned and stuffing box bushes renewed; link motion repaired; boiler repaired.

Tug Delisle.—Light repairs to engine and boiler; new deck and new cabin floor; top sides caulked in spring; hauled out during summer, and about one-fourth new planked and caulked all over.

Tug Minnie F. Parsons.—Light repairs to engine, boiler and hull.

Tug St. James.—Non-condensing cylinder of 16 inches diameter by 20-inch stroke taken off and replaced by compound tandem cylinders of 14 and 28 by 20 inches; condenser and other appurtenances added; feed pump taken out and injector substituted; boiler repaired and funnel lengthened; alterations to joiner work, and light repairs to hull.

Tug C. J. Brydges.—Link motion thoroughly repaired and refitted; heavy repairs to boiler, consisting of new

fire box, new flues, new back head sheet, 98 new tubes, and new smoke-stack; new guard, bulwarks and part of rail; new piece of sheer strake; new floors in cabin and forecastle; new berths in latter; deck and top sides caulked.

Tug John Brown.—Boiler repaired; new smoke-stack; stem partly renewed; partly caulked below and above water line while in dry dock.

Stone-lifter No. 1.—Light repairs to steam-winch; rail and stanchions partly renewed; part new covering board.

Stone-lifter No. 2.—Light repairs to steam-winch; part new deck; deck and top-sides caulked.

Barge Caroline.—New covering board, new hatches and part new deck; new rail; top sides caulked.

Barge Dreadnaught.—Ordinary light repairs, and top sides caulked; new bow during summer in place of one damaged by collision.

Barge Henry Thomas.—Bow hauled out and repaired.

Barge Hope.—Ordinary repairs.

Barge Waverley.—Ordinary repairs.

Tug John Pratt.—Hauled out and part new planked on hull; caulked all over.

Sixteen scows hauled out and more or less repaired and caulked; several were new planked on ends.

One flat scow fitted up for testing the depth of the Channel.

Four dredges' boats and two tugs' boats repaired.

BUOYS AND BEACONS.

The buoys of the Ship Channel have been maintained as usual, under the immediate care of the Superintendent of Pilots.

At Cap la Roche much difficulty was experienced in keeping the ordinary wooden buoys visible in all condi-

tions of the tide, and large iron buoys were substituted, with very satisfactory results.

Additional screw anchors were put down in the upper end of Lake St. Peter on the line of the Ile au Rasin lights, and at the bends of the Contrecœur Channel.

Yours respectfully,

JOHN KENNEDY,
Chief Engineer.

ABSTRACT OF DREDGING done at different places in 1881, in deepening the SHIP CHANNEL between MONTREAL and QUEBEC to 25 feet.

PLACES WHERE DREDGES WORKED.	DREDGES.	Quantities dredged at each place.	TOTALS DREDGED.		REMARKS.				
			Earth, &c.	Rock.					
Cap Charles...	Dredge No. 11.	Cub. Yds. 14,625					
	S. Lifter No. 1.	443							
	" No. 2.	1,247							
Pouillier Rayer	S. Lifter No. 2.	857	16,315	Shale, rock and boulders. Boulders.				
			857					
Cap la Roche ..	Dredge No. 10.	20,400	42,535	Shale, rock and boulders.				
	" No. 13.	20,925							
	S. Lifter No. 1.	438							
	" No. 2.	772							
Beacœur.....	Dredge No. 13.	330	330		} Boulders, with some clay.				
	S. Lifter No. 1.	8							
	" No. 2.	30							
Pt. St. Francis.	Dredge No. 10.	2,340	38	} Boulders, with some clay.				
	" No. 11.	3,945							
	S. Lifter No. 1.	351							
Lake St. Peter.	Dredge No. 3.	80,730	} Boulders.				
	" No. 8.	407,235							
	" No. 12.	436,635							
Ile de Grace...	Dredge No. 1.	23,715	924,600	Soft Clay.				
	" No. 13.	2,160							
Contrecoeur Ch.	Dredge No. 1.	10,500	28,875	Sand, silt and clay.				
	" No. 3.	25,295							
	" No. 8.	81,540							
	" No. 9.	5,745							
	" No. 10.	3,150							
	" No. 11.	16,455							
	" No. 12.	35,985							
	" No. 13.	17,880							
	Cap St. Michel.	Dredge No. 3.				30,825	197,550	Clay, with some stones.
		" No. 9.				46,290			
Varennes.....	Dredge No. 9.	18,480	77,115	Clay, with boulders.				
Pt. aux Tremb.	Dredge No. 1.	29,445	18,480	Clay, with some stones.				
	" No. 3.	9,570							
	" No. 9.	22,905							
Montreal Har..	Total	1,315,155					
	Dredge No. 2.	21,084							
	" No. 5.	23,208							
	" No. 6.	765							
	" No. 7.	33,480							
Total Earth, } Gravel, &c. }			78,537	Clay, gravel and sand.				
Total Rock & } Boulders. }				60,096					
Gross Total....				1,453,788					

Abstract of DREDGING done by each Dredge in 1881 in Deepening the SHIP CHANNEL between Quebec and Montreal 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.	
Elevator Dredge No. 1.	June 25	Nov. 19	<i>Days.</i> 127	Ile de Grace Contrecoeur Channel Pointe aux Trembles	<i>Cubic Yds.</i> 26,715 10,500 20,445	<i>Cubic Yds.</i> 66,660 21,084	<i>Cubic Yds.</i>	Sand, silt and clay. Clay, with some stones. Clay, with some boulders. Clay, gravel and sand.
Spoon do. No. 2.	.....	.....	92	Harbour of Montreal	21,084	21,084	.....	Soft clay. Clay, with some boulders. Clay, with boulders. Clay, with some boulders.
Elevator do. No. 3.	April 25	Nov. 25	185	Lake St. Peter Contrecoeur Channel Cap St. Michel Pointe aux Trembles	80,730 38,285 30,825 9,570	147,420	.....	Clay, gravel and sand. Clay, gravel and sand. Clay, gravel and sand.
Spoon do. No. 5.	.....	.....	93½	Harbour of Montreal	23,208	23,208	.....	Clay, gravel and sand.
Do. do. No. 6.	.....	.....	3½	Harbour of Montreal	765	765	.....	Clay, gravel and sand.
Do. do. No. 7.	.....	.....	95	Harbour of Montreal	33,480	33,480	.....	Clay, gravel and sand.
Elevator do. No. 8.	April 23	Nov. 25	184	Lake St. Peter Contrecoeur Channel	407,235 81,540	488,775	.....	Soft clay. Clay, with some boulders. Clay, with some boulders. Clay, with boulders. Clay, with some stones. Clay, with some boulders.
Do. do. No. 9.	April 25	Nov. 25	185	Contrecoeur Channel Cap St. Michel Varembes Pointe aux Trembles	5,745 46,290 18,480 22,905	93,420	.....	Shale rock. Hard pan and boulders. Clay, with some boulders.
Do. do. No. 10.	April 28	Nov. 25	182	Cap la Roche Pt. St. Francis Contrecoeur Channel	..... 2340 3150	5490	20,400..........	.....
<i>Carried forward.</i>					880,302	880,302	20,400	

Abstract of DREDGING done by each Dredge in 1881 in Deepening the SHIP CHANNEL between Quebec and Montreal to Twenty-five—(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>Cubic Yds.</i> 880,302		<i>Cubic Yds.</i> 20,400	
Elevator Dredge No. 11	April 28	Nov. 25	Days 182	Cap Charles Pt. St. Francis Contrecoeur Channel	<i>Cubic Yds.</i> 3,945 16,455		14,625	Shale rock. Hard pan and boulders. Clay, with some stones.
Do. do. No. 12	April 26	Nov. 25	184	Lake St. Peter Contrecoeur Channel	436,635 35,985	20,400		Soft clay. Clay, with some stones.
Do. do. No. 13	April 25	Nov. 25	185	Cap la Roche Becancour Ile de Grace Contrecoeur Channel	330 2,160 17,880	472,620	20,925	Shale rock. Boulders, with some clay. Sand, silt and clay. Clay, with some stones.
Stone-Lifter No. 1	April 27	Nov. 19	178	Cap Charles Cap la Roche Becancour Pt. St. Francis		20,370		Boulders. Do. Do. Do.
Do. No. 2	May 4	Nov. 19	172	Cap Charles Ponillier Bay Cap la Roche Becancour			1,247 857 772 30	Boulders. Do. Do. Do.
Total Earth, Gravel, &c						1,393,692		
Total Rock and Boulders							60,096	
GROSS TOTAL							1,453,788	

DREDGING PLANT employed in Deepening the SHIP CHANNEL between Montreal and Quebec in 1881.

DESCRIPTION OF VESSEL	HULL.				ENGINES.				Capacity of Bucket.	Depth to which dredge work.	REMARKS.
	Length over all.	Breadth of Beam.	Depth of Hold.	When Built.	Tonnage Register.	Kind of Engines.	No. of Cylinders.	Diam. of Cylinder.				Length of Stroke.	Pressure of Steam.
	ft. in.	ft. in.	ft. in.				Inches.	Inches.	Lbs.	Feet.	
DREDGES.											
Elevator Dredge No. 1	130 0	27 0	0 0	1832		Side lever condens'g	1	27	5 to 25	24	Wooden Hull, re-built [1850, 1889.
" " " No. 3	135 0	28 0	10 0	1874		Two coupled vertical direct acting condens'g engines to each dredge.	2	16	35 to 60	4	Wooden Hull.
" " " No. 8	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
" " " No. 9	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
" " " No. 10	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
" " " No. 11	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
" " " No. 12	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
" " " No. 13	135 0	29 0	10 0	1874			2	20	35 to 60	4	"
STEAMERS AND TUGS.											
John Young	125 0	22 0	8 1	1875	102.32	Independent beam.	2	30	45 to 50		Wooden Hull.
M. E. Parsons	76 0	15 0	6 6	1864	22.42	Condensing.	1	18 1/2	80 to 90		"
St. Francis	80 0	17 0	7 9	1875	37.93		1	20	80 to 87		"
St. John	80 0	17 0	7 9	1875	37.93		1	20	80 to 87		"
John Pratt	65 0	19 2	7 3	1874	21.41	Vertical non-condensing.	2	14	70 to 80		"
Delisle	52 5	17 9	7 0	1869	17.07		1	18	80 to 90		"
John Brown	76 0	15 0	7 0	1857	28.00		1	18	60 to 70		"
C. J. Brydges	72 0	15 0	7 0	1874	21.29		1	20	70 to 80		"
St. James	62 0	17 0	8 2	1875	54.57	Vertical compound.	2	14 & 28	70 to 80		"
BARGES.											
Waverly	110 0	20 11	1 4	1870	176.60						Wooden Hull.
Dreadnought	104 2	21 5	1 4	1869	136.42						" Sold Sep. '81.
Henry Thomas	100 8	22 9	1 7	1865	143.40						"
Hope	98 0	20 0	6 6	1864	98.00						"
Caroline	163 8	22 6	3 3	1872	132.95						"
Stone Lifter No. 1	65 0	22 0	0 0	1858		Steam Winches.					"
No. 2	75 0	24 0	0 9	1878		Steam Winches.					"
SCOWS.											
					No. of Scows.	Capacity of each Scow, Cubic Yards.					
2 Hopper-bottomed	80 0	16 0	7 0	1870	30 & 31						3 Hoppers.
" " "	80 0	16 0	6 9	1874	33 to 40						"
" " "	54 6	18 0	7 7	1875	47 & 48						"
" " "	58 0	19 9	7 3	1876	49 & 50						" All wood.
" " "	80 0	18 0	7 9	1879	51 & 52						"
" " "	89 0	18 0	7 9	1880	53 & 54						"
3 Flat Scows											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.

AUDITORS' REPORT.

WESTERN CHAMBERS,
22 St. John Street,
MONTREAL, 7th March, 1882.

*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, 1881, 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, &c., 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 their 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 Balances as stated in the Ledger at 31st December, 1881.

The Debentures paid during the year were submitted to us and checked with the amounts charged to Debenture Accounts. We also examined the Record of Debentures

issued, and found the amount of the different issues shown therein to be outstanding to correspond with the balances at the 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, 1881, and (2) Statement of Receipts and Disbursements during the year, prepared by your Secretary-Treasurer. and beg to certify that they are correctly drawn up from the Books of the Trust.

We have, as usual, found the book-keeping correct and efficient.

We have the honor to be, Sir,

Your most obedient servants,

(Signed,) RIDDELL & STEVENSON,

Auditors.