

Harbour Commissioners  
of Montreal.

ANNUAL REPORTS  
1899.

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ANNUAL REPORTS  
OF THE  
**Harbour Commissioners**  
OF MONTREAL,  
FOR THE YEAR 1899.



**Commissioners :**

ROBERT MACKAY, Esq., PRESIDENT.  
JONATHAN HODGSON, Esq. R. PREFONTAINE, M.P. (MAYOR.)  
ROBERT BICKERDIKE, M.L.A. JAMES CRATHERN, Esq.  
ALPHONSE RACINE, Esq. JOHN TORRANCE, Esq.  
EUSTACHE H. LEMAY, Esq. JOSEPH CONTANT, Esq.  
WILLIAM FARRELL, Esq. ANDREW ALLAN, Esq.

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DAVID SEATH, SECRETARY.  
JOHN KENNEDY, M. INST. C.E., CHIEF ENGINEER.  
CAPTAIN T. BOURASSA, ACTING HARBOUR MASTER.  
ROBERT A. EAKIN, WHARFINGER AND PAYMASTER.

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**Montreal :**

PUBLISHED BY ORDER OF THE HARBOUR COMMISSIONERS OF MONTREAL.  
1900.

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March 16 1918

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## STATEMENT

MADE BY

**MR. ROBERT MACKAY, President**

**HARBOUR COMMISSIONERS OF MONTREAL,**

ON THE

**BUSINESS OF THE PORT FOR THE YEAR 1899, AND  
OTHER MATTERS CONNECTED WITH THE TRUST,**

AT A MEETING OF THE BOARD HELD ON 24TH JULY, 1900.

---

GENTLEMEN,—

In the statement which I had the honour to present to this Board on the 26th March, 1899, I was able to report the conclusion of the agreement made by and between this Harbour Commission, the Corporation of the City of Montreal, and the Dominion of Canada, by which the extensive additions and improvements to our Harbour facilities so long sought for, and so earnestly promoted by this Board, were assured.

By the completion of this agreement many difficulties which had before been a subject of discussion by this Board were removed. The plans for the works of enlargement and improvement of the Harbour were decided on and adopted. The system of wharves to be built was settled; other matters which had been in controversy were finally arranged; and it has now become an accepted fact that in all matters relating to its Harbour, and the river channel to deep water, Montreal is to be considered as the National Port of the Dominion.

When the new works of improvement and enlargement contemplated by the arrangements above stated shall have been carried into effect, the Harbour will be fully equipped to accommodate the large and increasing trade which it is expected will in consequence be brought to this port, and also

to furnish accommodation to the largest vessels engaged in inland transport service (in the promotion of which such large sums have been expended by our Government) as well as the large ocean steamers now coming to this port and expected to come in the near future.

A considerable part of the new works was carried on during the past year ending 31st December, 1899. These comprised the completion of the new high level pier in sections 17 and 18; the commencement of the pier in sections 13 and 14 and of the shore wharf between that and the entrance of the Lachine Canal; the enlargement of deep water in the Windmill Point Basin, and the widening of the ship channel from Victoria Pier to the entrance of the Lachine Canal.

Extensive dredging was continued throughout the summer, consisting of the dredging away of the Island shoal and other extensive works, in all a total of 781,514 cubic yards at an expenditure of \$72,013.47.

Work was continued on the Guard Pier to the extent of an expenditure for the year 1899 of \$16,580.93, making the total cost to 31st December last \$355,500.00.

The work connected with the maintenance and necessary repairs to the Harbour Works for the year to 31st December was of about the average amount, and was covered by an expenditure of \$52,325.05, which was paid out of the Revenue Account.

A complete and detailed statement of these various new works and improvements is contained in the able report of the Chief Engineer, which has been submitted for your information.

#### REVENUE AND EXPENDITURE.

The Ordinary Revenue for the year was . . . . .	\$296,598 33
The Ordinary Expenditure was :	
For Management, Maintenance and Repairs. . . . .	\$ 90,716 25
For Interest on Bonded Debt and an annuity of \$600 . .	152,953 84
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The Ordinary Revenue was practically the same as that of 1898, which was in excess of 1897 by \$41,181.47. The revenue was affected by the decrease of tonnage coming to the port owing to the number of vessels taken from this route for the transport service to South Africa.

The increase of Revenue from Imports for the year was 13 per cent. over last year, and from local wharfages only 11 per cent. There was a decrease of the Revenue from Exports of 11 per cent.

#### CAPITAL ACCOUNT.

The expenditure on Capital Account for the year was \$354,292.60, paid out in connection with the new works and enlargements carried on or completed. Of this sum the City of Montreal has to contribute as its share \$82,264.89.

There was received during the year from the Dominion Government, under Act 59 Vic., chap. 10, the sum of \$300,000.00 on account of expenditure made on new works during 1898 and 1899.

There is yet to be received towards the cost of the new Harbour Works and Improvements already agreed on:—

From the Dominion of Canada on Loan.....	\$2,400,000 00
From the City of Montreal :	
Under contract made 12th Sept., 1899 . . .	\$556,372 33
Towards Guard Pier Construction . . . . .	10,978 32
	<u>567,350 65</u>
	<u>\$2,967,350 65</u>

The total debt of the Commission at the close of the year 1899 was \$3,822,000.00, carrying an average yearly interest of about  $3\frac{7}{8}$  per cent.

The traffic which passed through the Harbour during the year continued large, although affected by circumstances already alluded to.

The arrivals were 801 sea going-vessels, with a tonnage of 1,517,611, as against 868 vessels and 1,584,072 tons in 1898.

Of Inland vessels there were 8,877, showing an increase of 1,936 vessels as compared with last year.

The vexed question of Pilotage has engaged the attention of the Commissioners, and several amendments to the By-Laws have been made which it is hoped may prove satisfactory. Parliament has also dealt with the question and amended the Pilotage Act by creating a Court for the trial of pilots.

The accidents to vessels on the river between this Port and Quebec, during the year, were happily of a limited character and did not entail any serious loss. It is hoped that the work of deepening and widening the channel, improved buoying and lighting, and other improvements now being energetically carried out by the Government will lessen the danger of any such accidents in the future.

Shortly after the return of the Commissioners from their visit to the ports of the United States, an application was received from W. J. Conners, Esq., of Buffalo, N.Y., asking for an allotment for a term of years of wharf space upon which to erect elevators and freight warehouses.

To this application the Commissioners gave their serious consideration, but as their views and those of Mr. Conners and his associates were far apart, no agreement was arrived at.

In November the Commissioners through advertisements in the Press asked for applications from parties desiring to secure sites in the Harbour upon which to erect elevators and freight warehouses. The only application received which conformed to the terms of the advertisement and could be entertained was that of W. J. Conners, of Buffalo, Richard Harcourt and Elias Rogers, of Toronto, and Alfred Brunet, of Montreal.

A draft agreement with these parties was prepared and submitted to the different commercial bodies in the City for suggestions, which suggestions were in many cases acted on, and an agreement arrived at which was approved by the aforesaid commercial bodies and the Government, and finally

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signed on the 9th January, 1900, Messrs. Connors and his associates having deposited with the Commissioners \$50,000.00 as a guarantee of good faith. By the terms of the agreement no work could be proceeded with until after the plans and specifications had been approved of by the Commissioners and the Hon. the Ministers of Public Works and Railways and Canals.

On 16th April the plans for the grain elevator to be erected on the existing pier at Windmill Point were received, and on the 7th May the specifications for the same were submitted.

As the agreement called for an elevator of 3,000,000 bushels capacity and the plans and specifications were for the construction of a 1,000,000 bushel elevator or working-house, to which was to be added a storage warehouse of 2,000,000 bushels capacity, a delegation from the Commissioners consisting of Messrs. R. Préfontaine, Mayor; James Crathern, E. H. Lemay and John Kennedy, Chief Engineer, proceeded to Duluth and Minneapolis to examine elevators and storage houses constructed at these places on the same principle as proposed by Messrs. Connors and his associates. This delegation reported in favour of the plans and specifications as submitted being approved, which was done by the Commissioners on 14th May. The plans were also approved on behalf of the Hon. the Ministers of Public Works and Railways and Canals on 29th May, and the specifications on the 4th June.

On 26th May plans and specifications for the freight warehouses proposed to be erected on the existing pier at Windmill Point were received, and approved by the Commissioners on the 28th May. The plans were also approved on behalf of the Hon. the Ministers of Public Works and Railways and Canals on the 8th June, and the specifications on the 18th June.

Since the approval of the plans and specifications, Mr. Connors and associates have informed the Commissioners that they have asked for bids from contractors for the construc-

tion of the different buildings and expect that the work of construction will shortly be begun.

At the request of the Finance Committee of the City of Montreal, the Commissioners entered into a contract to carry out the portion of the Harbour Improvements pertaining to the City, for the balance of the \$1,000,000.00 loan on hand available for that purpose and amounting to \$631,317.85 and a contract was signed on 12th September, 1899. By this agreement unnecessary delays will be avoided in the carrying out of the improvements which otherwise would have been occasioned on account of the works being so closely connected with each other; this matter was undertaken by the Commissioners reluctantly, but as the only solution of the difficulty.

By the Act 62-63 Vic., chap. 36, assented to on 11th August, 1899, section 4 of chap. 47 of the Statutes of 1898 was amended by substituting \$250,000.00 in lieu of \$750,000.00 as the sum to be applied by the Commissioners towards works of improvement in that part of the Harbour below the point known as St. Mary's current, the difference of \$300,000.00 to be applied in the construction of Harbour Improvements at Windmill Point, according to plans and specifications to be approved by the Hon. the Minister of Public Works.

The plans and specifications for this improvement were submitted to the Hon. the Minister, and approved on the 13th February and 21st March, 1900.

On an application from the Department of Public Works asking for permission to construct Works of Improvement in that portion of the Harbour below the point known as St. Mary's current, a By-Law was passed and the Commissioners granted the application and notified the Department on the 2nd May, 1900, and tenders have been asked for.

GENTLEMEN,—

I feel that you will agree with me that great progress has been made during the past three years in the work of en-

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larging and improving the Harbour, fitting it to meet the requirements of the growing trade of the Dominion, and bringing its capacity and equipment to the stage of coping with the growing trade coming here from the West, as well as accommodating all the classes of ocean steamers and vessels which are making this Port their destination. During the past year our staff has worked constantly and faithfully to this end; the Harbour Fleet has been engaged night and day during the whole season, and I am certain that the labours of the Commissioners during the year have done much to contribute to the advancement of the work which forms at present such a large part of the duties of this Harbour Commission.

An Act

**H**ER Majesty  
Senate  
follows:—

**1.** Section  
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## 62-63 VICTORIA.

### CHAP. 36.

An Act respecting the Harbour Commissioners of  
Montreal.

[Assented to 11th August, 1899.]

HER Majesty, by and with the advice and consent of the  
Senate and House of Commons of Canada, enacts as  
follows:—

1. Section 4 of chapter 47 of the statutes of 1898 is hereby <sup>1898, c. 47.</sup> amended by substituting “two hundred and fifty thousand dollars” in lieu of “seven hundred and fifty thousand dollars,” as the sum to be applied by the Corporation of the Harbour Commissioners of Montreal towards the building or the improvement of wharfs, structures and other accommodations, including the building of a dry dock, in that part of the Harbour of Montreal below the point known as St. Mary’s Current.

2. The remaining portion of the seven hundred and fifty <sup>S. 4 amended.</sup> thousand dollars mentioned in the said section 4 of chapter 47 of the statutes of 1898, that is to say, the sum of five hundred thousand dollars, shall be applied by the said Corporation in the construction of harbour improvements at the Windmill Point basin and wharf in the said Harbour of Montreal, the plans, specifications and estimates for such improvements to be submitted to the Minister of Public Works, and to be subject to his approval, before such improvements are commenced or proceeded with.

Improvements  
at Windmill  
Point basin  
and wharf.

SUMMARIZED STATEMENT OF OPERATIONS  
OF THE  
**Harbour Commissioners of Montreal,**

FOR THE YEAR ENDED 31st DECEMBER, 1899.

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

MONTREAL, 10th July, 1900.

JOHN HARDIE, Esquire,

*Acting 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 Honourable the Minister of Marine and Fisheries, Summarized Statement of the Operations of the Trust for the year ended 31st December, 1899.

The net Ordinary Revenue was \$296,598.33 against \$296,593.42 of the previous year, maintaining the increase of \$41,176.56 obtained in 1898 over 1897, notwithstanding the decrease in tonnage caused by the withdrawal of vessels for transport service to South Africa.

The revenue from imports increased 13 per cent. and that from exports decreased 11 per cent., while local wharfages show an increase of 11 per cent.

The cost of Management, Maintenance and Repairs, apart from Expenditure on Capital Account was \$90,716.25, while the Interest and Annuity (of \$600.00) were \$152,953.84. The difference as between Ordinary Revenue and Ordinary Expenditure was \$52,928.24.

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The amount charged to Capital Account for the year was \$354,292.60 as against \$119,752.36 in the previous year, towards which the City of Montreal contributes \$82,264.89 on account of work on the Guard Pier and Harbour Improvements.

The sum of \$300,000 was received on loan from the Dominion of Canada, under the Act 59 Vic., Chap. 10, on account of Works of Improvement carried out in the years 1898 and 1899.

The Dominion of Canada has still to advance on loan to the Commissioners, for Harbour Improvements, the sum of \$2,400,000.00 and the amount still chargeable to the City of Montreal for future work as per contract entered into on the 12th September, 1899, was \$556,372.33, and for the Guard Pier construction \$10,978.32.

The total bonded debt at the end of the year was \$3,822,000.00, on which the average rate of Interest is about  $3\frac{7}{8}$  per cent.

The usual Reports for the past year, of the Harbour Master and The Montreal Decayed Pilots' Fund have already been transmitted to you, while those of the Montreal Pilotage District and the Chief Engineer on the Works for the Improvement and Maintenance of the Harbour are transmitted herewith.

I have the honour to be,

Sir,

Your obedient servant,

DAVID SEATH,

*Secretary.*

## HARBOUR COMMISSIONERS OF MONTREAL

SUMMARIZED STATEMENT OF OPERATIONS FOR THE YEAR ENDED 31st DECEMBER, 1899.

BALANCE AND RECEIPTS.	REVENUE.	CAPITAL.	DISBURSEMENTS AND BALANCE.	REVENUE.	CAPITAL.
Balance from 1898.....	\$88,924 08		Refunds of Wharfage Dues.....	151 19	
Held for Montreal Decayed Pilots, Fund in trust:			Administrative Staff: Salaries and fees.....	20,037 32	
Harbour Debentures and City Stock.....	\$51,000 00		Miscellaneous Expenses: Taxes, heating, print- ing, advertising, travelling, legal, notarial and other expenses.....	11,957 39	
Cash in City and District			Electric Lighting of Harbour.....	3,845 25	
Savings Bank.....	2,667 74		Maintenance of dredging.....	316 05	
	\$53,667 74		Accident account: Provision for legal liability insurance, etc., (see contra for credit).....	1,906 54	
			Harbour Surveys.....	391 12	
<i>Receipts during 1899:</i>			Buoys and Beacons.....	113 61	
Collector of Customs Montreal:			Harbour repairs: Maintenance of wharves, etc., (see contra for credit).....	52,325 05	
Wharfage Dues on Imports.....	\$114,585 00		Interest and Exchange.....	600 00	
do do Exports.....	138,024 52		Harbour of Montreal Establishing Boundary.....	152,353 84	250 00
Wharfinger Local Traffic.....			Windmill Point Wharf and Basin: Dredging, macadamizing, etc.....		26,448 23
Wharfage Dues not paid at Customs House in 1897 and 1898 and collected after audit.....	47 94		Harbour Enlargement, New approach\$		224,206 61
Rentals of Harbour Track and Properties.....	12,318 77		do do		
For credit of the following accounts:			(See contra for credit)		
Harbour Repairs Scrap sold.....	73 08		Harbour Dredging.....		1,354 04
Accident account, refund.....	75 00		Hochelaga Construction.....		683 82
Printing, Stationery, etc., refund.....	10 00		Harbour Railway.....		5,847 77
Legal and Notarial Expenses, refund.....	18 00		Guard Pier Construction (See contra for credit)		16,580 93
Interest charged to City of Montreal.....	545 16		Flood Protection Wall do do		10,355 67
Harbour Plant: Sale of old engines.....		300 00	Harbour Plant, Deduction made for depreciation do do		67,644 05
Guard Pier Construction.....		7,319 37	Real Estate No. 2, Im- provements do do		1,244 50
City, Flood Protection Wall: City of Montreal's proportion.....		10,355 67	Harbour Dredging Fleet Montreal's proportion repaid to Depositors.....		4,120 19
Sand sold.....	2 67		Pensions to old pilots and widows. \$		5,224 88
Montreal's proportion.....	3,368 00		Audit of Fund, Postage Stamps, etc.		\$366,632 41
dredges, etc.....					243,997 36
Harbour Enlargement: Use of diver.	6 60				\$610,629 77
City of Montreal's proportion.....	64,592 52		Disbursements on Capital Account.....		
Chart account: Charts sold.....			do Revenue do		
Security Deposits for due fulfillment of con- tracts.....		7,662 29	Total Disbursements.....		
			Balance 31st December, 1899.		



## MONTREAL HARBOUR COMMISSIONERS' TARIFF

The following rates shall be levied as hereinafter set forth on the after mentioned articles when landed or shipped in the harbour, or moved by rail on the harbour tracks or deposited within the harbour. *No discount allowed.*

Coal,	Seeds of all kinds,	} 6 cents per ton.	
Coke,	Unhulled Rice,		
Grain,	Wet Wood Pulp,		
Ballast,	Earthen Drain-Pipes,	} 8 cents per ton.	
Cement,	Marble and all other		
Clay,	Stone,		
Fire-Bricks,	Slate,		
Ganister,	Whiting,		
Gypsum,	Iron Ore,		
Phosphates,	Coarse Salt in bags		
Sand,	and bulk,		
Scoriæ-Blocks,			
Apples,	Neat Cattle,	} 12 cents per ton.	
Bottles in crates or mats,	Onions and vegetables,		
Corn Starch and Malt,	Oranges, Lemons and other green fruits,		
Crates and their contents,	Pitch,		
Dry Wood Pulp,	Potatoes,		
Fish,	Sheep,		
Flour and Meal,	Straw,		
Glucose Sugar,	Swine,		
Glucose Syrup,	Tallow,		
Hay,	Tar,		
Horses,	Tobacco,		
Lard,	Steel Rails for railways and tramways,		
Lard-oil and Oil-cake,	Fish-plates,		
Meat,	Zinc and Lead Ores,		
Pig and Scrap Iron,	Raw and Refined		} 16 cents per ton.
Pot and Pearl Ashes,	Sugar,		

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Bricks, 8 cents per thousand.

Cordwood, 4 cents per cord.

Lumber and Timber, 8 cents per thousand  
feet board measure.

On all goods, wares and merchandise, except } 20 cents per  
bullion and specie, not elsewhere specified, } ton.

On goods upon which, in the opinion of the Harbour Commissioners, it is not convenient to ascertain the rates according to the above provisions, it shall be lawful for the said Commissioners to levy a rate of one-fifth of one per cent. on the value thereof.

On packages measuring under ten cubic feet and weighing less than two hundred and fifty pounds, 5 cents.

No entry shall be less than 5 cents.

Only one rate shall be levied on property covered by the foregoing provisions when landed on the wharves for reshipment, and not having been removed from the wharves.

Barges landing bricks, cordwood, sand and hay allowed ten running days in which to discharge their cargo on which the above wharfage rates will be paid. After that delay they will pay one half of one cent per day on their registered tonnage for every day that they remain at the wharf.

No fish is allowed to be sold on the property of the Harbour Commissioners.

On all goods except bricks, cordwood, sand and hay remaining on the wharves more than four clear working days after notice given for their removal by the Harbour Master in the case of goods imported, there shall be levied additional rates as follows:—

On cement, one cent per barrel per day.

On salt, one-half cent per bag per day.

On iron, one-half cent per hundredweight per day.

On bricks, 10 cents per thousand per day.

On drain-pipes and all other non-enumerated articles, one-half cent per hundredweight per day.

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6 cents per  
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8 cents per  
ton.

12 cents per  
ton.

16 cents per  
ton.

For the purpose of this By-Law a ton shall be calculated as being 2,000 pounds weight, or forty cubic feet measurement, according as the goods to which the same applies have been or shall be, carried by water by ton weight or ton measurement.

The weight of the articles hereinafter described may be estimated as follows:—

Ashes, pot or pearl, three barrels to one ton.

Apples, flour, meal, potatoes, nine barrels to one ton.

Fish, meat, pitch, tar, seven barrels to one ton.

Horses, two to one ton.

Neat cattle, three to one ton.

Sheep, fifteen to one ton.

Swine, ten to one ton.

Wines and Liquors, 2 butts or pipes, or 4 hhds., or 8 quarter casks, or 16 octs., or 32 half octs., or 30 cases to one ton.

Molasses, Imp. gal., 13 lbs.; packages, puncheons, 124 lbs.; hhds. and tierces, 80 lbs.; barrels, 46 lbs.;  $\frac{1}{2}$  barrels, 23 lbs.

HARBOUR COMMISSIONERS' OFFICE,  
Montreal, 24th July, 1899.

# Pilot

F. GOURD  
Deputy

SIR,—

I have the honor to acknowledge the receipt of your letter of the 17th inst. in relation to the importation of Fishes and Fishes for the Montreal, etc., of all kinds, etc., of all kinds, etc., in the last year, which has exceeded the following:

The following table shows the number of Steamships and Sailing Vessels which have arrived at Montreal, etc., of all kinds, etc., in the last year, which has exceeded the following:

Steamships  
Sailing Vessels

Steamships  
Sailing Vessels



# REPORT

OF THE

## Pilotage District of Montreal FOR THE YEAR 1899.

HARBOUR COMMISSIONERS OF MONTREAL,

*Secretary's Office,*

*Montreal, February 28th, 1900.*

F. GOURDEAU, ESQUIRE,

*Deputy Minister of Marine and Fisheries,  
Ottawa.*

SIR,—

I have the honour, by direction of the Harbour Commissioners of Montreal, as the Pilotage Authority, to transmit, for the information of the Honourable the Minister of Marine and Fisheries, the following report of the Pilotage District of Montreal, for the year ended December 31st, 1899.

The accompanying statement gives the names, earnings, etc., of all the pilots for the past season, and shows a decrease in the latter of \$4,459.57 from 1898, in which year they exceeded those of any previous year by almost \$10,000.

The total amount of Pilotage Dues was received from the following services, namely :

### BRITISH.

Steamships .....	\$65,587 51	
Sailing Vessels .....	535 36	
	<hr/>	\$66,122 87

### FOREIGN.

Steamships .....	\$ 8,648 81	
Sailing Vessels .....	16 00	
	<hr/>	\$ 8,664 81

Total .....		<hr/>	\$74,787 68
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Before the opening of navigation, the selection of pilots was made as usual by the Montreal Shipping Firms, who had been asked in writing if they desired to avail themselves of the privilege granted in by-law 109.

On the 4th April, Pilot Zéphirin Bouillé, 70 years of age was granted a renewal of his license for another year, after being examined under the provisions of by-law 103. On the 26th May, however, he tendered his resignation and was placed on the pension list from the 15th August.

Before the opening of navigation, Pilot François Desjordy, of Lavaltrie, who had been pensioned on the 1st May, 1897, for impaired eyesight, furnished medical certificates to the effect that his sight had not improved, and was, in consequence, continued on the pension list until 1st May, 1900.

There are now 54 pilots on the list, which, in virtue of by-law 99, is limited to 55.

In March, an examination of Apprentice Pilots was held at which there were eight candidates, of which Messrs. Anthyme Perrault and Achille Bélanger passed a satisfactory examination, and were granted permits in accordance with by-law 96 of the Commissioners.

The following list gives the names, age, residence and date of license of each Apprentice Pilot now serving his time under this Authority :

## LIST OF APPRENTICE PILOTS.

No.	NAME.	AGE.	RESIDENCE.	Date of License.
1	*Perrault, Anthyme	31	Deschambault .....	14th Oct., 1890
2	*Bélanger, Achille .	26	Lotbinière.....	11th " 1892
3	Raymond, J. N....	30	Ste. Anne de la Pérade.	14th " 1890
4	Pleau, J. E. ....	29	Deschambault.....	11th Nov., 1890
5	Veillet, George.....	30	Ste. Anne de la Pérade.	19th July, 1892
6	Labranche, Melville	25	Portneuf .....	11th Oct., 1892
7	Gagnon, Albert....	24	Three Rivers .....	11th " 1892
8	Paquin, Azarias....	26	Deschambault.....	11th " 1892
9	Gignac, Arthur....	26	Portneuf .....	11th " 1892
10	Paquet, Damien....	26	Deschambault. ....	30th May, 1893
11	Bourassa, Henri....	24	Deschambault.....	24th Oct., 1893
12	Angers, Alfred.....	23	Ste. Anne de la Pérade.	30th Jan., 1894
13	Gariépy, J. A. U....	20	St. Alban .....	2nd June, 1896

\* Permit issued 4th May, 1899 [Art. 96 Harbour Commissioners' By-laws].

STATEMENT showing the Number of Branch Pilots for and above the Harbour of Quebec, during the year 1899, their Age, Residence, No. of Pilotages, Earnings, and whether Employed on Special Service or Tour-de-Rôle.

No.	NAME.	Age.	RESIDENCE.	DATE OF BRANCH.	REMARKS.	Number of Trips to Montreal.		Number of Trips to Intermediate Places.		Total No. of Trips.	Earnings to Montreal.	Earnings to Intermediate Places.	Total Earnings.	Employed on Special Service or Tour-de-Rôle.
						In.	Out.	In.	Out.					
1	*Bouillé, Zéphirin...	70	Deschambault	March 1, 1855	Licensed for 1899...	2	1			3	\$ 163 89		\$ 163 89	Allan Line.
2	Naud, Onésime	57	do	March 16, 1870		16	16			32	1,751 60		1,751 60	do
3	Chandonnet, Jos.	58	Lévis	August 2, 1870		11	13			24	1,272 23		1,272 23	Leyland Line.
4	Bouillé, Louis A.	62	Deschambault	Sept. 1, 1870		12	11			23	1,164 62		1,164 62	Elder, Dempster & Co.
5	Beaudet, Prudent	58	{ 89 Massue Street, Quebec.	Oct. 10, 1870		15	14			29	1,735 60		1,735 60	Dominion Line.
6	Bellislie, Elzéar	65	Deschambault	do		16	16			32	966 30		966 30	J. G. Brock & Co.
7	Pleau, Joseph	62	{ Ste. Anne de la Pêrade	do		14	14			28	1,043 82		1,043 82	Hy. Dobell & Co.
8	Brunet, Célestin	55	{ 947 St. Dominique Montreal	Feb. 28, 1872		22	22			44	1,807 25		1,807 25	Dom. Coal Co., Ltd.
9	Groleau, Ulric	51	Grondines	Oct. 30, 1872	{ Member of the Tour-de-Rôle Committee	9	7	1	1	18	688 15	\$ 76 27	764 42	Tour-de-Rôle.
10	Frenette, Alfred	60	Portneuf	do		12	13		5	30	1,093 18	209 50	1,302 68	Head Line.
11	St. Amant, Alfred	55	Deschambault	do	{ Member of the Tour-de-Rôle Committee	10	11	2	3	26	904 45	158 52	1,062 97	Holme Line.
12	Bélangier, Philippe	60	Lotbinière	April 8, 1874		11	10	1	2	24	1,159 83	95 53	1,255 36	Furness, Withy & Co.
13	Perrault, Narcisse	62	Deschambault	April 9, 1874	{ Treasurer of the Pilots' Committee	18	19		3	40	1,896 30	125 32	2,015 62	Donaldson Line.
14	Auger, Cléophas	53	Point Lévis	Sept. 22, 1874	{ President of the Pilots' Committee	18	18	1	2	39	1,907 47	116 93	2,024 40	do
15	Labranche, Ferd.	52	Portneuf	April 8, 1875		15	15			30	1,700 81		1,700 81	Elder, Dempster & Co.
16	Bouillé, Louis Z.	49	Deschambault	Jan. 16, 1878	{ Secretary of the Pilots' Committee	11	12		6	29	1,074 94	239 20	1,314 14	do
17	Gauthier, Laurent	48	do	Dec. 10, 1879		15	16			31	1,878 46		1,878 46	Dominion Line.
18	*Arcand, Jean	46	do	do	{ President of the Tour-de-Rôle Committee	6	7	1	3	17	463 58	124 59	588 17	Tour-de-Rôle.
19	Nault, Delavoie	46	do	do		24	26	1	1	52	1,983 42	53 82	2,037 24	Dom. Coal Co., Ltd.
20	Gauthier, Wilbrod	46	do	do	{ Member of the Pilots' Committee	15	16			31	1,828 96		1,828 96	Allan Line.
21	Mayrand, Louis	52	{ Ste. Anne de la Pêrade	Dec. 9, 1880		5	3	4	3	15	327 62	199 65	527 27	Tour-de-Rôle.
22	Dufresne, George	50	Deschambault	Dec. 10, 1880		9	9	1	2	21	796 30	98 56	894 86	Hy. Dobell & Co.
23	Arcand, Norbert	46	Champlain	do	{ Member of the Pilots' Committee	22	22			44	1,812 41		1,812 41	Dom. Coal Co., Ltd.
24	Bouillé, Tancrede	45	Deschambault	Dec. 11, 1880		15	15			30	1,677 20		1,677 20	Allan Line.
25	Arcand, Nestor	43	do	Feb. 20, 1884		22	22			44	1,773 92		1,773 92	Dom. Coal Co., Ltd.
26	Nault, Jean	42	do	do	{ Member of the Pilots' Committee	16	16		4	36	1,566 64	160 81	1,727 35	Thomson Line.
27	Dussault, Joseph	47	do	do		23	22			45	1,813 88		1,813 88	Dom. Coal Co., Ltd.
28	Groleau, Gédéon	43	Grondines	May 20, 1887		9	7			16	708 70		708 70	Tour-de-Rôle
29	*Bellisle, Néré	48	Deschambault	do		23	22			45	1,819 72		1,819 72	Dom. Coal Co., Ltd.
30	*Perrault, Liboire	53	{ 232 City Hall Avenue, Montreal	April 20, 1888		6	11		3	20	670 23	102 05	772 28	Tour-de-Rôle.
31	Raymond, Wilfrid	44	Deschambault	do		16	16		2	34	1,667 66	80 00	1,747 66	Thomson Line.
32	Hurteau, Joseph	38	{ 779 St. Andre St. Montreal	Mar. 20, 1889		14	14		1	29	1,588 23	41 13	1,629 36	Allan Line.
33	Perrault, Edouard	49	Deschambault	do		9	8		1	18	920 54	44 95	965 49	Furness, Withy & Co.
34	Bouillé, C. Lydorie	42	do	do		16	16		3	32	1,798 51		1,798 51	Elder, Dempster & Co.
35	Dussault, Honoré	46	Ste-Pétronille	July 16, 1889		18	16	1	1	36	1,387 22	56 63	1,443 85	Dom. Coal Co., Ltd.
36	Brière, Arthur	42	Portneuf	April 28, 1891		14	14		28	42	1,599 41		1,599 41	Elder, Dempster & Co.
37	Labranche, J. Sifroi	45	do	do		5	4	5	2	16	298 75	163 75	462 70	Tour-de-Rôle.
38	Perrault, Alexis	36	Deschambault	do		10	11		21	21	1,214 76		1,214 76	Johnston Line.
39	*Dufresne, N. Côme	38	do	June 23, 1891		8	8	1	3	20	786 40	161 84	948 24	{ Tour-de-Rôle and Furness, Withy & Co.
40	Nadeau, Jean B.	40	Lévis	April 11, 1893		13	11		1	25	1,124 97	38 50	1,163 47	Head Line.
41	Naud, Aubert	46	Deschambault	July 11, 1893		14	13			27	1,524 69		1,524 69	Allan Line.
42	Sauvageau, Jos.	38	do	Oct. 10, 1893		20	19			39	1,553 92		1,553 92	Dom. Coal Co., Ltd.
43	Dussault, Napoléon	37	do	April 3, 1894	{ Member of the Pilots' Committee	13	14		4	31	1,262 90	161 63	1,424 53	Lord Line.
44	Arcand, Barthélemi	37	do	do		7	9	2	5	23	663 57	210 88	874 45	Tour-de-Rôle.
45	Bellislie, Prudent	36	do	do		23	23			46	1,883 25		1,883 25	Dom. Coal Co., Ltd.
46	Arcand, George	35	do	do		10	7		2	19	744 12	75 84	819 96	Tour-de-Rôle.
47	Toupin, Constant	33	Three Rivers	do		21	20	1	1	43	1,693 94	58 63	1,752 57	Dom. Coal Co., Ltd.
48	Perreault, George	34	Deschambault	Sept. 11, 1894		13	12		2	27	1,298 41	75 56	1,374 97	Leyland Line.
49	Bouillé, Narcisse	40	do	Oct. 9, 1894		11	11			22	1,246 68		1,246 68	Johnston Line.
50	Leveillé, Joseph	36	Batiscan	June 18, 1895		17	17		3	37	1,702 33	118 85	1,821 18	Thomson Line.
51	Perron, Sévère	41	Deschambault	April 14, 1896		19	18	3	3	43	1,495 78	184 36	1,680 14	Dom. Coal Co., Ltd.
52	Angers, Albéric	25	{ Ste. Anne de la Pêrade	Mar. 15, 1898		20	19			39	1,600 16		1,600 16	do
53	*Bellisle, Arthur	37	Deschambault	Sept. 20, 1898		9	9	1	3	22	646 87	87 38	734 25	Tour-de-Rôle.
54	Hamelin, G. Théo.	25	Grondines	do		20	19	1		40	1,478 92	34 23	1,513 15	Carbray, Routh & Co.
55	Bellislie, Cyrille	31	Deschambault	do		6	10	3	3	22	641 72	152 48	804 20	Tour-de-Rôle.
											\$71,269 29	\$3,48 39	\$74,787 68	

\*See Pilotage Report.

HARBOUR COMMISSIONERS' OFFICE,

MONTREAL, 15th January, 1900.

DAVID SEATH,

Secretary.

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LIST OF APP

No.	
1	Gariépy,
2	Frenette,
3	Hamelin,
4	Perron, T
5	Angers, J
6	Patoine J
7	Frenette,
8	Gauthier,
9	Perrault,
10	Hamelin,
11	Gauthier,
12	Arcand, J
13	Gauthier,
14	Royer, fils
15	Gariépy,
16	Perrault,
17	Brunet, E
18	Carpentier
19	Fortier, J
20	Rivard, F
21	Mayrand,
22	Arcand, A
23	Frenette,
24	Gariépy, B
25	Arcand, A
26	Bouillé, F
27	Lachance,
28	Perrault,
29	Labranche

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real Decayed  
Statements

Twenty-nine applicants to be placed on the list of Apprentice Pilots were also examined on the 16th August, and the Commissioners have not yet decided how many new apprentices will be licensed.

## LIST OF APPLICANTS FOR LICENSE OF APPRENTICE PILOTS.

No.	Name.	Residence.	Date of Application.
1	Gariépy, A. J. P. ....	Lachevrotière .....	16th Jan., 1894
2	Frenette, Oswald .....	Portneuf .....	1st March 1894
3	Hamelin, Chas. B. ....	Champlain .....	17th Nov., 1896
4	Perron, Tancrède .....	Deschambault .....	28th " 1896
5	Angers, J. B. ....	Ste-Anne de la Pérade..	28th " 1896
6	Patoine Jr, J. B. ....	Sydney, C. B. ....	3rd Dec., 1896
7	Frenette, Delavoie .....	Portneuf .....	25th Jan., 1897
8	Gauthier, Laurent J. ....	Deschambault .....	26th March 1897
9	Perrault, fils, David. ....	" .....	8th April, 1897
10	Hamelin, Fortunat .....	" .....	19th " 1897
11	Gauthier, Adélaré .....	" .....	6th May, 1897
12	Arcand, J. Emilien .....	" .....	7th " 1897
13	Gauthier, Cyriac .....	" .....	9th " 1897
14	Royer, fils .....	Quebec, 306 St. Valier St.	23rd " 1897
15	Gariépy, Henri .....	Lachevrotière .....	24th " 1897
16	Perrault, Jean .....	Deschambault .....	25th " 1897
17	Brunet, Edouard .....	Montreal .....	2nd " 1898
18	Carpentier, Eugène .....	Champlain .....	28th June, 1898
19	Fortier, J. Philéas .....	St. Jean, Ile d'Orléans .	27th Aug., 1898
20	Rivard, Frs. Xavier .....	Grondines .....	12th Sept., 1898
21	Mayrand, Joseph .....	Lachevrotière .....	6th Nov., 1898
22	Arcand, Arthur .....	Portneuf .....	9th " 1898
23	Frenette, Georges .....	" .....	15th " 1898
24	Gariépy, Hercule .....	Deschambault .....	18th " 1898
25	Arcand, Alfred .....	Grondines .....	11th April, 1899
26	Bouillé, Henri .....	Deschambault .....	5th Aug., 1899
27	Lachance, Napoléon .....	Riv Lafleur, Is. of Orleans	6th " 1899
28	Perrault, Joseph .....	Deschambault .....	16th " 1899
29	Labranche, L. Geo. ....	Portneuf .....	16th " 1899

The amounts received and expended by the Harbour Commissioners, as Pilotage Authority of the District, apart from their receipts and disbursements in trust for the Montreal Decayed Pilots' Fund, of which the Annual Report and Statements have been sent you, were as follows:

## RECEIVED.

From H. & A. Allan, fo. two copies of evidence <i>re</i> "Gallia" Investigation .....	\$	10 00
" Pilots, $\frac{2}{7}$ of the Pilotage Dues on sundry vessels .....		8 51
" Collector of Customs, Three Rivers, $\frac{2}{7}$ of the Pilotage Dues on vessels to and from Three Rivers and Batiscan. ....		22 35
" Collector of Customs, Sorel, $\frac{2}{7}$ of the Pilotage Dues on vessels to and from Sorel .....		7 91
" Collector of Customs, Montreal, $\frac{2}{7}$ of the Pilotage Dues on vessels to and from Montreal .....		1,416 24
Total .....	\$	1,465 01

## EXPENDED.

By Deficiency, brought forward from 1898 .....	\$	868 48
" Pilots in attendance at examination of apprentices .....		292 40
" Cléophas Auger, Pilot, expenses in connection with in- spection of the channel .....		26 37
" Dominion Express Company, parcel to Pilotage Agent at Quebec .....		0 35
" Urquhart & Wright, stenographer's fees in "Gallia" In- vestigation .....		37 00
" Geoffrion, Geoffrion & Roy, professional services in con- nection with pilotage matters. ....		283 15
" H. Hains, stenographer's fees <i>re</i> investigation into collision between S.S. "Turret Court" and "Ramillies" ....		8 00
" Urquhart & Wright, stenographer's fees in "Greta Holme" Investigation .....		12 10
" Urquhart & Wright, stenographer's fees <i>re</i> investigation into collision between S.S. "Turret Court" and "Ramillies" .....		1 50
" L. A. Cusson, stenographer's fees in "Greta Holme" In- vestigation .....		18 00
" Urquhart A Wright, stenographer's fees in "Sophie Rickmers" Investigation .....		14 00
" N. C. Dufresne, pilot, travelling expenses <i>re</i> "Turret Court" and "Ramillies" Investigation .....		8 70
" Jos. Paquin, Bailiff's fees .....		1 57
" Joseph Thibaudeau, salary as Montreal Pilotage Agent to Quebec .....		600 00
" Joseph Thibaudeau, allowance for stationery, postage, etc.		19 83
" Printing, stationery, etc. ....		31 00
Total .....	\$	2,222 45

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The above statement shows a surplus of revenue over expenditure for the year 1899 of \$101.04, but owing to the deficiency brought forward from 1898, there still remains an over expenditure for five years of \$757.44.

The tariff of Pilotage Dues was the same as has been in force since March, 1877, and is as follows :

From the Harbour of Quebec to Three Rivers and the opposite side of the River St. Lawrence, or any place above Portneuf and below Three Rivers :

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water :

Upwards .....	\$ 1 50
Downwards.....	1 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water :

Upwards .....	1 75
Downwards.....	1 75

For the pilotage of any vessel under sail, for each foot of draught of water :

Upwards .....	2 60
Downwards.....	1 90

From the Harbour of Quebec to Sorel and the opposite side of the River St. Lawrence, or any place above Three Rivers and below Sorel :

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water :

Upwards .....	\$ 1 50
Downwards.....	1 50

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water :

Upwards .....	1 87½
Downwards .....	1 87½

For the pilotage of any vessel under sail, for each foot of draught of water :

Upwards .....	3 15
Downwards .....	2 10

From the Harbour of Quebec to the Harbour of Montreal, or to any place above Sorel and below the Harbour of Montreal :

For the pilotage of any vessel in tow, or propelled by steam (except as hereinafter mentioned), for each foot of draught of water :

Upwards .....	\$ 2 00
Downwards .....	2 00

For the pilotage of any sea-going vessel propelled by steam, for each foot of draught of water :

Upwards .....	2 50
Downwards .....	2 50

For the pilotage of any vessel under sail, for each foot of draught of water :

Upwards .....	4 20
Downwards .....	2 80

From the Harbour of Montreal to Sorel, or to any place above Sorel and below Hochelaga, and from Sorel, or any place above Sorel and below Hochelaga, to the Harbour of Montreal, for each foot of draught of water for each such pilotage :

Upwards .....	\$ 1 00
Downwards .....	1 00

For the removal of any vessel from one wharf to another, within the limits of the Harbour, or from any of the wharves into the Lachine Canal ; or out of the said canal to any of the wharves in the Harbour ; or from the foot of the Current ; or from Longueuil into the Harbour ; or from the Harbour to the foot of the Current or to Longueuil ; for each service .....

5 00

The following is a list of accidents and mishaps which called for investigation.

At 1.10 p.m., on the 14th May, the SS, " Gallia," in charge of Pilot Zéphirin Bouillé, in rounding Pointe aux Soldats, a little above Stone Island lighthouse, near Sorel, grounded in the mud.

The pilot reported at length and claimed that the cause of the accident was the sudden jamming of the wheel.

After a careful inquiry and a visit to the scene of the accident, in company with the Chief Engineer of the De-

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partment of Marine and Fisheries, the Commissioners came to the conclusion that the grounding was due to three causes :

1. To the inefficiency of the steam steering gear of the vessel.

2. To the want of proper and constant supervision on the part of the Captain, as he is always in charge of his ship.

3. To the error of the pilot in allowing the steamer to come at full speed around the bend in the river, and, in consequence, the pilot was suspended for two months.

The vessel was afterwards successfully floated, and an examination of her hull proved that no injury had been sustained.

The following complaint was received from Messrs. Furness, Withy & Co., Ltd. : " We desire to advise you that Pilot Liboire Perrault, in charge of the SS. " Sophie Rickmers," when leaving this port on the 10th August, did some damage to the SS. " Philadelphian " of the Leyland Line. The damage to this steamer can only be attributed to the very faulty handling and incompetent management of this pilot, inasmuch as the damage was caused through his incompetency ; and, again, it occupied some time, some two or three hours, to get the steamer clear of her berth. There has been further damage to a barge, which was moored at the end of Victoria Pier, through the steamer having approached too closely to the end and colliding with the barge when turning.

The Commissioners held an investigation and suspended the pilot for a period of two months.

Coming up the river on the 5th August, the SS. " Turret Court," in charge of Pilot Néré Bellisle, about a mile and a half below Pointe à Citrouille lighthouse, Batiscan, ran into SS. " Ramillies," which was coming from an opposite direction and was heavily loaded.

Both vessels sustained injury, the Rainvilles had to be beached but was afterwards got off and both vessels continued their voyage.

Although no complaint was lodged, the Commissioners

decided to hold an investigation, and, after hearing both pilots, it was deemed advisable to examine one of the officers of the "Turret Court," who was duly summoned to appear, but failed to do so, and the investigation is still pending.

Coming down the river with the SS. "Greta Holme" on the 4th September, Pilot Jean Arcand grounded the ship about 250 feet below the black buoy at Point Verchères.

Upon a complaint being made, an investigation was held, the result of which was that the Commissioners decided to suspend the pilot for ten months and condemned him to pay the costs of the investigation. The vessel sustained no injury.

Coming down the river on 25th October, the SS. "Turret," drawing twelve feet, grounded near Verchères, while in charge of Pilot Arthur Bellisle. No damage to the ship.

A complaint was laid against the pilot by the owners of the vessel, Messrs. Peterson, Tate & Co., and, after a careful investigation, *Pilot Bellisle* was suspended, until 1st August, 1900.

He took a writ of *certiorari*, and the case is pending in the Superior Court.

In connection with these accidents, it may be remarked that about one hundred vessels (out of a total number of 801 sea-going vessels), passed down the channel during the season drawing 26 feet and over and up to 28 feet 7 inches.

The water in the channel kept at a fairly satisfactory depth throughout the season, except in the three last months, when it went below the normal, 27 feet 6 inches, several times. From the 1st May to the close of ocean navigation, the highest mark reached was 36 feet 8 inches, and the lowest 26 feet 8 inches, on the 26th October.

Appended is a list of vessels which passed down during the latter part of the season drawing 26 feet and over, with

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the relative depth in the channel on the day of passage, as indicated by the Government gauge at Sorel:

STATEMENT SHOWING DRAUGHT OF STEAMSHIPS FOR PART OF SEASON OF 1899, DRAWING 26 FEET AND OVER.

DATE	STEAMER	Draft when stationary in Harbour by Pilot's Report.	Depth of water in channel by Sorel Gauge.
Aug. 2	SS. Roman (down) . . . . .	27'6"	28'4"
3	Sedgemore " . . . . .	26'6"	28'4"
3	Lake Huron " . . . . .	26'	28'4"
4	Monteagle " . . . . .	26'	28'4"
4	Virginian " . . . . .	26'2"	28'4"
5	Vancouver " . . . . .	26'4"	28'4"
8	Pomeranian " . . . . .	27'8"	28'3"
9	Torr Head " . . . . .	26'	28'1"
10	Monterey " . . . . .	26'6"	28'1"
10	Laurentian " . . . . .	27'2"	28'1"
11	Manchester City " . . . . .	26'3"	27'11"
12	Dominion " . . . . .	26'6"	27'9"
13	Hurona " . . . . .	27'	27'9"
13	Pinemore " . . . . .	26'6"	27'9"
17	Sardinian " . . . . .	26'2"	27'2"
18	Ikbal " . . . . .	26'6"	27'2"
19	Cambroman " . . . . .	26'	27'3"
22	Sarmatian " . . . . .	26'6"	28'1"
25	Milwaukee " . . . . .	27'	28'2"
31	Maplemore " . . . . .	26'	26'7"
Sept. 1	Iona " . . . . .	26'6"	27'
7	Fremona " . . . . .	26'3"	26'9"
13	Pomeranian " . . . . .	26'	26'6"
21	Monterey " . . . . .	26'	27'6"
Oct. 5	Montfort " . . . . .	26'6"	28'5"
5	Ottoman " . . . . .	26'	28'5"
7	Vancouver " . . . . .	26'6"	28'7"
8	Manchester } Enterprise }	26'6"	28'5"
12	Monteagle " . . . . .	26'	27'8"
17	Pomeranian " . . . . .	26'6"	27'3"
Nov. 3	Amarynthia " . . . . .	26'	28'

On the 16th September an investigation was held by the Commissioners on a complaint made by Pilots Gédéon Groleau and Jean Arcand against Jean Nault, line pilot, of having

piloted the SS. "Gallia" from Sorel to Quebec. The complainants claimed that this ship should have been piloted by a Tour de Role pilot.

After hearing the parties, the Commissioners took the case *en délibéré*.

The semaphores at Cap Santé and Cap à la Roche were worked throughout the season, and were of great benefit to the pilots passing at those places at the lower stages of the tide.

In view of reports that certain vessels had been discharging ashes in the channel, the same Notice to Mariners as was published in last year's report was sent to the Shipping Firms and Pilots.

The usual edition of the tide-tables, which were furnished by the Department of Marine and Fisheries, was issued by the Commissioners in both English and French and was very freely distributed among the Pilots and the Shipping Firms.

I have the honour to be, Sir,

Your obedient servant,

DAVID SEATH,  
*Secretary.*

F. GOURDEAU,  
*Deputy*

SIR,—

I have the  
Commissioners of M  
information of  
Fisheries, the u  
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ended 30th De  
30th December

REPORT AND STATEMENTS

OF THE

MONTREAL DECAYED PILOTS' FUND

FOR THE YEAR 1899.

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HARBOUR COMMISSIONERS OF MONTREAL,

SECRETARY'S OFFICE,

MONTREAL, January 10th, 1900.

F. GOURDEAU, Esquire,

*Deputy Minister of Marine and Fisheries,*

OTTAWA.

SIR,—

I have the honour, by direction of the Harbour Commissioners of Montreal, to transmit you herewith, for the information of the Honourable the Minister of Marine and Fisheries, the usual Statements (1) Receipts and Disbursements of the Montreal Decayed Pilots' Fund for the year ended 30th December, 1899, and (2) Assets of the Fund at 30th December, 1899.

The following is an abstract of the former :

RECEIPTS.		
5 p.c. of pilotage dues, collected at Montreal .....		\$3,540 61
“ “ “ Three Rivers and Batiscau..	55 90	
“ “ “ Sorel .....	19 77	
“ “ payable on War Vessels, &c .....	21 27	
Amount collected and applied under paragraph 62 of the Pilotage Act.....	54 00	
		<hr/>
		\$3,691 55
Interest on Investment and cash in bank .....	2,325 57	
		<hr/>
Total .....		\$6,017 12

DISBURSEMENTS.		
Pensions to old Pilots and widows of Pilots and minors.....	\$5,189 88	
Audit of the fund for 1898 .....	25 00	
Postage stamps and stationery .....	10 00	
		<hr/>
Total.....	\$5,224 88	

Showing a gain for the year of \$792.24.

Before the opening of navigation pilot François Desjordy, of Lavaltrie, who had been on the pension list since the 1st May, 1897, on account of impaired eyesight, again submitted medical certificates to the effect that his sight had not improved. In view thereof he was continued as a pensioner until 1st May, 1900.

Pilot Louis Bellisle, of Deschambault, who was licensed on 28th February, 1872, died on the 28th December, 1898, aged 53 years, and his widow died on the 3rd January, 1899, leaving three minor children, to whose tutor a pension of \$37.33 per quarter was granted.

Retired Pilot George Raymond, of Deschambault, licensed on the 20th June, 1861, and placed on the pension list on the 1st July, 1889, died on the 30th October, 1899, aged 70 years.

Widow J. Leandre Dessureau, of Sorel, who had been a pensioner for nine years, died on the 9th April, 1899, and, as is customary, the full pension for the current quarter ending 30th April, was paid to her legal heir.

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one pilot.

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Pilot Zéphirin Bouillé, of Deschambault, who was licensed on the 1st March, 1855, and the senior pilot, whose license was renewed at the opening of the navigation season, resigned, and was placed on the pension list from the 15th August, 1899.

At the close of the year there were twenty-two pensioners, namely, nine old pilots, twelve widows, and the minors of one pilot.

I have the honour to be, Sir,

Your obedient servant,

DAVID SEATH,

*Secretary.*





## THE MONTREAL DECAYED PILOTS' FUND.

Cr.

1899.

By pensions paid to the following for three months,  
ending 1st February :—

Feb. 2.	Widow L. David Bouille, Deschambault.....	\$ 29 33
"	" Jos. Leandre Dessureau, Sorel.....	37 33
"	" Athanase Dufresne, Deschambault.....	37 33
"	" Victor Gagnon, Champlain.....	37 33
"	" Placide Gaillardet, St. Grégoire-le-Grand..	37 33
"	" Alexis Gauthier, Deschambault.....	32 00
"	" J. Octave Hamelin ".....	37 33
"	" Joseph Leveille ".....	37 33
"	" Adolphe Lisé, ".....	37 33
"	" David Mathieu, Grondines.....	32 00
"	" Zéphirin Mayrand, Contrecoeur.....	37 33
"	" Edouard Naud, Sorel.....	32 00
"	" Joseph Toupin, Champlain.....	32 00
"	Old Pilot Cyrille Belisle, Deschambault.....	90 00
"	" Damase Cayen, Portneuf.....	90 00
"	" Francois Desjordy, Lavaltrie.....	90 00
"	" J. B. Dorval, Cap de la Madeleine.....	90 00
"	" Pierre Gagnon, Three Rivers.....	90 00
"	" Augustin Naud, Montreal.....	90 00
"	" David Perrault, Deschambault.....	90 00
"	" George Raymond, St. Casimir.....	90 00
"	" Trefflé Toupin, Roberval.....	90 00
	Forward.....	\$ 1,265 97

DR. DAVID SEATH, TREASURER, IN ACCOUNT WITH

1899.	Forward.....	\$ 3,812 74
May 31.	To Collector of Customs, Montreal, $\frac{5}{7}$ Trinity dues collected in May.....	437 05



Forward.....	\$ 4,249 79
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THE MONT

1899.

May 3. W

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May 26. R

## THE MONTREAL DECAYED PILOTS' FUND.

CR.

1899.

By pensions paid to the following for three months,  
ending 1st May :

May 3.	Widow L. David Bouille, Deschambault .....	\$ 29 33
"	" Jos. Leandre Dessureau, Sorel.....	37 33
"	" Athanase Dufresne, Deschambault.....	37 33
"	" Victor Gagnon, Champlain.....	37 33
"	" Placide Gaillardet, St. Grégoire .....	37 33
"	" Edouard Naud, Sorel .....	32 00
"	" Alexis Gauthier, Deschambault.....	32 00
"	" J. Octave Hamelin, Deschambault .....	37 33
"	" Joseph Leveille, Montreal .....	37 33
"	" Adolphe Lisé, do .....	37 33
"	" David Mathieu, Grondines.....	32 00
"	" Zephirin Mayrand, Contrecoeur .....	37 33
"	" Joseph Toupin, Champlain .....	32 00
"	Heirs Louis Bellisle, Deschambault, from 28th December, 1898.....	51 00
"	Old Pilot Cyrille Belisle, Deschambault.....	90 00
"	" Damase Cayen, Portneuf.....	90 00
"	" François Desjordy, Lavaltrie .....	90 00
"	" J. B. Dorval, Cap de Madeline.....	90 00
"	" Pierre Gagnon, Three Rivers.....	90 00
"	" Augustin Naud, Montreal.....	90 00
"	" David Perrault, Deschambault .....	90 00
"	" George Raymond, Deschambault.....	90 00
"	" Trefflé Toupin, Normandin .....	90 00
May 26.	Riddell & Common, audit of this fund for the year ending 31st December, 1898 .....	25 00

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Forward..... \$ 2,607 94

DR. DAVID SEATH, TREASURER, IN ACCOUNT WITH

	Forward.....	\$ 4,249 79
1899.		
June 16.	To 5 per cent. of pilotage dues on tug "Sweepstakes" from Montreal to Quebec, draft 12 feet .....	1 50
" 30.	To Collector of Customs, Montreal, $\frac{5}{8}$ Trinity dues collected in June.....	564 28
July 19.	To City of Montreal, six months' interest, to 1st July, on \$5,000 of Montreal City Stock.....	125 00
" 31.	To Collector of Customs, Montreal, $\frac{5}{8}$ Trinity dues collected in July.....	583 00
" 31.	To Montreal Harbour Coupons, due 5th July, 1899 : Series R, Nos. 20 and 102 = 2 x \$15 00 = \$ 30 00 " R, " 42 and 117-119 = 4 x 30 00 = 120 00 " R, " 84 = 1 x 60 00 = 60 00 " D, " 21 and 45-49 = 6 x 25 00 = 150 00 " F, " 164-182 = 9 x 20 00 = 180 00 " G, " 289-290 = 2 x 20 00 = 40 00 " H, " 64-65, 139-142 = 6 x 20 00 = 120 00 " J, " 231-246 = 16 x 20 00 = 320 00	1,020 00
Aug. 23.	To J. S. Labranche, $\frac{5}{8}$ of pilotage dues on yacht "Thetis," from Montreal to Quebec, draft 9 ft..	1 12
" 31.	To Collector of Customs, Montreal, $\frac{5}{8}$ Trinity dues collected in August.....	580 98
Sept. 20.	To Pilot George Arcand $\frac{5}{8}$ of pilotage dues on H.M.S. "Pearl," Quebec to Montreal, draft 17 feet 2 inches .....	2 14
" 25.	To Pilot Celestin Brunet $\frac{5}{8}$ of pilotage dues on H.M.S. "Pearl," Montreal to Quebec, draft 17 feet.....	2 12
" 30.	To Collector of Customs, Montreal, $\frac{5}{8}$ Trinity dues collected in September .....	531 90
Forward.....		\$ 7,664 83

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## THE MONTREAL DECAYED PILOTS' FUND.

CR.

1899.

Forward..... \$ 2,607 94

By pensions paid to the following for three months  
ending 1st August :

Aug. 3.	Widow L. David Bouille, Deschambault.....	29 33
"	" Athanase Dufresne, " .....	37 33
"	" Victor Gagnon, Champlain.....	37 33
"	" Placide Gaillardet, St. Gregoire.....	37 33
"	" Alexis Gauthier, Deschambault .....	37 33
"	" J. Octave Hamelin, " .....	37 33
"	" Joseph Leveille, Montreal .....	37 33
"	" Adolphe Lisé, Batiscan .....	37 33
"	" David Mathieu, Grondines .....	32 00
"	" Zephirin Mayrand, Contrecoeur .....	37 33
"	" Edouard Naud, Sorel .....	32 00
"	" Joseph Toupin, Champlain.....	32 00
"	Heirs Louis Bellisle, Deschambault.....	37 33
"	Old Pilot Cyrille Belisle, " .....	90 00
"	" Francois Desjrody, Lavaltrie.....	90 00
"	" J. B. Dorval, Cap de la Madeline.....	90 00
"	" Pierre Gagnon, Three Rivers.....	90 00
"	" Augustin Naud, Montreal .....	90 00
"	" David Perrault, Deschambault.....	90 00
"	" George Raymond, " .....	90 00
"	" Treffe Toupin, Normandin.....	90 00
"	" Damase Cayen, Portneuf .....	90 00

Forward..... \$ 3,873 91



## THE MONTREAL DECAYED PILOTS' FUND.

CR.

	Forward.....	\$ 3,873 91
1899.		
	By pensions paid to the following for three months ending 1st November :	
Nov. 1,	Widow L. David Bouille, Deschambault.....	29 33
"	" Athanase Dufresne, " .....	37 33
"	" Victor Gagnon, Champlain.....	37 33
"	" Placide Gaillardet, St. Gregoire.....	37 33
"	" Alexis Gauthier, Deschambault .....	32 00
"	" J. Octave Hamelin, " .....	37 33
"	" Joseph Leveille, Montreal .....	37 33
"	" Adolphe Lise, Batiscan.....	37 33
"	" David Mathieu, Grondines.....	32 00
"	" Zephirin Mayrand, Contrecoeur .....	37 33
"	" Edouard Naud, Sorel... ..	32 00
"	" Joseph Toupin, Champlain .....	32 00
"	Heirs Louis Bellisle, Deschambault .....	37 33
"	Old Pilot Cyrille Belisle, " .....	90 00
"	" Damase Cayen, Portneuf.....	90 00
"	" Francois Desjordy, Lavaltrie.....	90 00
"	" J. B. Dorval, Cap de la Madeline.....	90 00
"	" Pierre Gagnon, Three Rivers.....	90 00
"	" Augustin Naud, Montreal.....	90 00
"	" David Perrault, Deschambault.....	90 00
"	" George Raymond " .....	90 00
"	" Treffe Toupin, Normandin.....	90 00
"	" Zephirin Bouille, Deschambault .....	75 00
	Forward.....	\$ 5,214 88

1899.	Forward.....	\$ 8,549 07
Dec. 6,	To Collector of Customs, Three Rivers, $\frac{5}{8}$ Trinity dues for season 1899.....	55 90
15,	To Collector of Customs, Montreal, $\frac{5}{8}$ Trinity dues, balance for 1889.....	24 55
27,	To Collector of Customs, Sorel, $\frac{5}{8}$ Trinity dues for season 1899.....	19 77
31,	To Montreal City & District Savings Bank, interest at rate of 3 per cent. per annum on money at deposit during 1899 .....	35 57
Total.....		\$ 8,684 86

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Dec. 30, By sta  
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## THE MONTREAL DECAYED PILOTS' FUND.

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549 07

1899.

55 90

Forward..... \$ 5,214 88

24 55

Dec. 30, By stationery and postage on pensions remitted  
during 1899..... 10 00

19 77

31, By balance to January, 1900 ..... 3,459 98

35 57

684 86

Total..... \$ 8,684 86

DR. DAVID SEATH, TREASURER, IN ACCOUNT WITH

THE MONT

## STATEMENT OF THE FUND.

## MONTREAL HARBOUR DEBENTURES.

<i>Nos.</i>	<i>Series.</i>	<i>Due.</i>	<i>Interest.</i>	
20 and 102	R	5th July, 1906	6 p.c.	2 x \$ 500,00 = \$ 1000 00
42 and 117-119	R	5th July, 1906	6 p.c.	4 x 1000,00 = 4,000 00
84	R	5th July, 1906	6 p.c.	1 x 2000,00 = 2,000 00
21 and 45-49	D	5th July, 1915	5 p.c.	6 x 1000,00 = 6,000 00
164-172	F	5th July, 1917	4 p.c.	9 x 1000,00 = 9,000 00
289-290	G	5th July, 1918	4 p.c.	2 x 1000,00 = 2,000 00
64-65	H	5th July, 1921	4 p.c.	2 x 1000,00 = 2,000 00
139-142	H	5th July, 1921	4 p.c.	4 x 1000,00 = 4,000 00
231-246	J	5th July, 1924	4 p.c.	16 x 1000,00 = 16,000 00

## CITY OF MONTREAL CONSOLIDATED FUND.

165	Due 1st July, 1910, Interest 5%	50 x \$100,00	5,000 00
	Cash in Montreal City and District Savings		
	Bank at 3 per cent.....		3,459 98
	Total.....		\$ 54,459 98

DAVID SEATH,  
*Treasurer.*

MONTREAL, 31st December, 1899.

We h  
for the ye  
have foun  
Debentures  
described i  
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COUNT WITH

THE MONTREAL DECAYED PILOTS' FUND.

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00 = \$ 1000 00  
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 ..... 3,459 98  
 ... \$ 54,459 98

EATH,  
*Treasurer.*

We hereby certify that we have examined the entries for the year 1899, as recorded in the preceding pages, and have found them to agree with vouchers on file; also that Debentures and Certificates to the amount of \$54,459.98, as described in statement on opposite page, have this day been submitted for our inspection.

RIDDELL & COMMON, C. A.,

*Auditors.*

MONTREAL, 6th February, 1900.

**REPORT**  
OF THE  
**HARBOUR MASTER OF THE PORT OF MONTREAL**  
FOR THE YEAR 1899.

HARBOUR MASTER'S OFFICE,  
MONTREAL, JANUARY 4th, 1900.

DAVID SEATH, ESQ.,  
*Secretary,*  
*Harbour Commissioners of Montreal.*

SIR,—

I beg to submit, for the information of the Harbour Commissioners of Montreal, the following as my Annual Report for the year ending 31st December, 1899.

Appended thereto will be found six comparative statements showing respectively, for the past ten years,

- (1) The number, tonnage and classification of sea-going vessels that arrived in port ;
- (2) Those that arrived from the Maritime Provinces ;
- (3) Number and tonnage of inland vessels ;
- (4) The dates of the opening and closing of navigation, etc. ;
- (5) The number and tonnage belonging to the different nationalities ;
- (6) The number and tonnage of vessels consigned to the different agents.

From these statements it will be seen that 801 sea-going vessels arrived in port during the past season with a tonnage of 1,517,611 tons, a decrease of 67 vessels and 66,461 tons from the previous years.

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Sheep,  
Horses,  
Hay,

Of these vessels 761 were built of iron or steel, with a tonnage of 1,507,292, and 40 were built of wood with a tonnage of 10,319.

Of inland vessels there arrived 8,877, with a tonnage of 1,899,097 tons; an increase over the previous year of 1936 vessels, and 91,205 tons; making a grand total of vessels of all classes, of 9,678 vessels and a tonnage of 3,416,708 tons; an increase over the previous year of 1,869 vessels of all classes, and 24,744 tons.

Some of the principal items of exports and imports ( as obtained from the best sources of information ) were :

#### EXPORTS

*Lumber.*—To the United Kingdom and Continental ports :

1899	1898
288,862,521 feet.	323,435,266 feet.
A decrease of 34,572,745 feet.	

*Lumber.*—To River Plate :

1899	1898
1,201,266 feet.	11,993,924 feet.
A decrease of 10,792,658 feet.	

*Grain*—

	1899	1898
Wheat,	9,852,131 bushels.	8,989,669 bushels.
Corn,	13,274,750 "	19,214,299 "
Peas,	1,252,549 "	1,648,705 "
Oats,	3,926,564 "	6,781,239 "
Barley,	1,081,147 "	321,297 "
Rye,	366,061 "	983,979 "
Flaxseed,	609,350 "	771,071 "
Buckwheat,	179,195 "	
Total	30,541,702	38,710,259

Showing a decrease of 8,168,557 bushels.

	1899	1898		1899	1898
Flour,	1,320,372 barrels.	857,168 barrels.	Increase	463,204 barrels.	
Meal,	40,554 "	39,911 "	"	643 "	
Eggs,	117,643 cases.	190,018 cases.	Decrease	12,375 cases.	
Cheese,	1,816,985 boxes.	1,836,261 boxes.	"	19,276 boxes.	
Butter,	462,115 p'kgs.	300,161 p'kgs.	Increase	161,964 p'kgs.	
Apples,	286,473 barrels.	389,508 barrels.	Decrease	103,035 barrels.	
Cattle,	81,804 head.	94,136 head	"	12,332 head.	
Sheep,	58,277 "	33,499 "	Increase	24,778 "	
Horses,	4,739 "	4,024 "	"	715 "	
Hay,	12,000 tons.	19,072 tons	Decrease	7,072 tons.	

## IMPORTS.

*Coal :*

	1899	1898		
From Great Britain	20,650 tons	37,808	Decrease	17,158 tons.
" United States	259,492 "	235,983	Increase	23,509 "
" Maritime Provinces	965,014 "	849,863	"	116,151 "
Total	1,245,156	1,123,654	"	121,502

Of the above quantities there were discharged :

	1899	1898		
In the Harbour:	1,023,539 tons.	877,014 tons.		
In the Canal :	221,617 "	246,640 "		
	1,245,156 "	1,123,654 "		

*Cement :*

200,368 bbls.                      361,843 bbls.      Decrease 161,475 bbls.

*Scrap Iron :*

11,886 tons.                      21,066 tons.      Decrease 9,180 tons.

There arrived in the Harbour the following vessels belonging to the British North Atlantic Fleet, namely : H. M. S. "Talbot," "Pearl," "Physche" and the torpedo destroyer "Quail," all of which arrived on September 18th, and left again on the 23rd September.

There is a decrease in the number and tonnage of the vessels arriving during the season, but this is accounted for by the fact that many of the regular line steamers were employed during the autumn as transports to South Africa, which, had they made their regular trips to Montreal, would have given a substantial increase in the tonnage over last year.

Owing to the Harbour improvements in progress some of the lines had to give up part of the space assigned to them last spring, but provision was made for them elsewhere, and on the whole I think very little inconvenience was felt.

Yours respectfully,

T. BOURASSA,

Acting Harbour Master.

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## WEATHER REPORT FOR 1899

DATE.	WIND. (AT 8 TO 9 A.M.)	TEMP.	REMARKS.
Jan. 1	West	11 below	Fine day, crossing on ice Longue Pt
2	North East	Zero	Snowing
3	East	29 above	Fine day
4	South East	25 "	Raining
5	Strong S E	38 "	Fine day, water 36.6
6	South East	22 "	Snow flurry
7	North East	22 "	Fine day
8	West	4 "	Snowing
9	East	Zero	Crossing to Longueuil
10	North West	18 below	Cold day
11	North	8 "	Fine day [track on river
12	West	Zero	Fine day, roads to St. Lambert, ice
13	North	8 above	Dull day
14	North East	28 "	Snowing
15	South East	30 "	"
16	West	34 "	Fine day
17	East	38 "	Dull day, ice shoved at 2 p.m.
18	West	7 "	Fine day
19	"	12 "	"
20	East	22 "	"
21	North East	32 "	Dull day
22	East	34 "	"
23	West	24 "	Fine day
24	East	36 "	Rain
25	North West	14 "	Fine day
26	"	22 "	Snowing
27	West	Zero	Fine day
28	East	10 above	Dull day
29	West	5 below	Fine day
30	"	8 "	Dull day
31	"	8 above	Fine day
Feb. 1	North	10 "	"
2	West	12 "	"
3	North East	6 "	Snowing
4	North	10 "	Dull day
5	West	10 "	Fine day
6	East	8 "	" [broke away
7	North	Zero	Ice shove at St. Lambert, road
8	North East	6 above	Snowing
9	West	3 "	Fine day
10	South West	4 below	"
11	West	6 "	"
12	"	5 "	"
13	East	3 above	"
14	West	12 "	"
15	North East	19 "	"
16	West	23 "	"
17	South	32 "	Dull day
18	South West	38 "	"

## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND. (AT 8 TO 9 A.M.)	TEMP.	REMARKS.
Feb. 19	South	44 above	Fine day
20	West	40 "	"
21	North	37 "	"
22	South	36 "	Heavy rain
23	West	28 "	Fine day
24	"	12 "	"
25	"	16 "	"
26	"	10 "	Dull day
27	"	37 "	"
28	East	34 "	Fine day
Mar. 1	West	24 "	"
2	North East	20 "	"
3	"	30 "	Dull day
4	South East	38 "	Sleet
5	South West	40 "	Dull day
6	West	26 "	Fine day
7	Strong North	18 "	Dull day
8	North East	24 "	Fine day
9	West	30 "	"
10	East	20 "	"
11	South	33 "	Dull day
12	East	28 "	Rainy day
13	West	26 "	Fine day
14	North East	20 "	"
15	East	32 "	"
16	West	26 "	Ice shoved on S. side of Gd. Pier
17	North	Zero	Fine day, closing the ramps
18	"	6 above	Fine day
19	"	22 "	Snowing
20	North East	18 "	"
21	West	16 "	Fine day
22	North East	23 "	Snowing
23	East	29 "	Fine day
24	West	24 "	"
25	East	18 "	"
26	"	28 "	"
27	West	32 "	Dull day
28	North	32 "	"
29	West	30 "	Snowing
30	"	30 "	Fine day
31	North	28 "	"
April 1	West	32 "	"
2	North	28 "	"
3	West	38 "	"
4	"	32 "	"
5	North East	30 "	"
6	East	31 "	"
7	North East	32 "	"
8	"	37 "	Rainy day

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## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND.		TEMP.	REMARKS.
	(AT 8 TO 9 A.M.)			
April 9	South West		34 above	Rainy day
10	East		34 "	Fine day. Crossing at Longueuil
11	"		38 "	" First shove at 2 p.m.
12	"		40 "	Rainy day
13	North		44 "	Dull day
14	East		38 "	Fine day
15	West		48 "	"
16	"		55 "	"
17	"		50 "	"
18	East		46 "	"
19	West		40 "	"
20	South East		54 "	"
21	North		42 "	Dull day. Open ramps.
22	West		45 "	"
23	East		55 "	Fine day
24	"		48 "	" Opening of navigation, Strs. Longueuil and Hochelaga from Boucherville
25	South East		52 "	Fine day
26	"		46 "	"
27	"		47 "	"
28	South		60 "	"
29	East		60 "	Dull day
30	West		80 "	Fine day
May 1	East		58 "	"
2	South East		52 "	"
3	East		48 "	"
4	"		46 "	"
5	North East		50 "	"
6	South		58 "	"
7	West		57 "	"
8	North East		54 "	"
9	"		52 "	"
10	South West		56 "	"
11	"		66 "	"
12	West		68 "	"
13	South East		70 "	"
14	North West		46 "	"
15	East		52 "	"
16	West		53 "	"
17	East		50 "	"
18	South West		57 "	Dull day
19	North East		54 "	"
20	East		50 "	Rainy day
21	West		56 "	Fine day
22	North East		52 "	"
23	East		63 "	"
24	West		73 "	"
25	North East		70 "	"

e of Gd. Pier  
ramps

## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND.	TEMP.	REMARKS.
	(AT 8 TO 9 A.M.)		
May 26	West	72 above	Fine day
27	East	50 "	Rainy day
28	North East	58 "	Fine day
29	South West	60 "	Rainy day
30	East	58 "	Fine day
31	North West	69 "	"
June 1	"	76 "	"
2	South	66 "	Dull day
3	East	65 "	Fine day
4	"	69 "	Rainy day
5	West	72 "	Dull day
6	North West	80 "	Fine day
7	South East	62 "	"
8	West	74 "	Dull day
9	"	70 "	Fine day
10	North East	60 "	"
11	"	69 "	"
12	West	74 "	"
13	"	79 "	"
14	North	78 "	Dull day
15	West	66 "	Rainy day
16	"	57 "	Dull day
17	North West	69 "	Fine day
18	West	67 "	"
19	North East	70 "	"
20	South West	63 "	Heavy rain and thunderstorm
21	East	65 "	Fine day
22	West	68 "	"
23	"	68 "	Dull day
24	"	74 "	Fine day
25	North East	75 "	"
26	East	70 "	"
27	North East	69 "	"
28	South East	56 "	Rainy day
29	North East	70 "	Fine day
30	North West	65 "	"
July 1	West	74 "	"
2	North	87 "	"
3	North West	80 "	"
4	West	78 "	"
5	South West	73 "	"
6	North West	76 "	Rainy day
7	South East	69 "	Fine day
8	North East	63 "	"
9	North West	66 "	Rainy day
10	"	75 "	Fine day
11	West	74 "	"
12	North West	76 "	"
13	East	70 "	"

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## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND. TEMP.		REMARKS.
	(AT 8 TO 9 A.M.)		
July 14	North	74 above	Fine day
15	South West	74 "	"
16	West	78 "	"
17	North	74 "	"
18	North East	73 "	"
19	"	60 "	"
20	"	70 "	"
21	East	62 "	Rainy day
22	"	59 "	Fine day
23	"	60 "	"
24	"	69 "	"
25	South West	75 "	"
26	North West	75 "	"
27	East	78 "	"
28	North West	76 "	"
29	West	75 "	"
30	North East	71 "	"
31	East	69 "	"
Aug. 1	North	77 "	"
2	West	77 "	"
3	North West	72 "	"
4	"	75 "	"
5	"	79 "	"
6	West	78 "	"
7	North East	70 "	"
8	North West	66 "	"
9	West	64 "	"
10	South West	63 "	"
11	"	70 "	"
12	West	69 "	Rainy day
13	South East	65 "	Fine day
14	East	60 "	"
15	South West	68 "	"
16	North East	65 "	"
17	North West	80 "	"
18	West	76 "	"
19	North East	79 "	"
20	North West	85 "	"
21	South West	85 "	"
22	South East	78 "	Rainy day
23	North East	68 "	"
24	East	66 "	Fine day
25	North West	75 "	Dull day
26	South East	66 "	Fine day
27	West	70 "	"
28	South	72 "	"
29	South West	74 "	"
30	North West	74 "	"
31	"	76 "	"

derstorm

## WEATHER REPORT FOR 1899—Continued.

DATE.		WIND.	TEMP.	REMARKS.
		(AT 8 TO 9 A.M.)		
Sept.	1	North East	62 above	Fine day
	2	"	64 "	"
	3	West	60 "	Rainy day
	4	North East	56 "	Fine day
	5	South East	64 "	"
	6	East	58 "	"
	7	South East	57 "	"
	8	East	66 "	"
	9	North East	60 "	"
	10	West	64 "	"
	11	"	66 "	"
	12	"	61 "	Rainy day, hail storm
	13	North	59 "	Fine day
	14	East	51 "	"
	15	North	53 "	"
	16	East	54 "	"
	17	North	75 "	"
	18	South West	70 "	"
	19	South	58 "	"
	20	North West	55 "	Rainy day
	21	East	61 "	Dull day
	22	South East	53 "	Rainy day
	23	North East	45 "	Fine day
	24	West	54 "	Rainy day
	25	South East	63 "	"
	26	North	68 "	"
	27	"	49 "	Dull day
	28	North West	60 "	Fine day
	29	South West	62 "	"
	30	West	51 "	"
Oct.	1	East	36 "	Cloudy, with snow falling
	2	North East	31 "	Dull day
	3	East	44 "	Fine day
	4	West	48 "	"
	5	North East	57 "	"
	6	South West	51 "	"
	7	West	40 "	"
	8	East	46 "	Rainy day
	9	South East	48 "	"
	10	West	62 "	Dull day
	11	East	50 "	Temp. at 3 p.m., 69-
	12	South East	63 "	Dull day
	13	North	54 "	"
	14	North West	60 "	Fine day
	15	North	64 "	"
	16	East	52 "	"
	17	West	68 "	"
	18	South West	60 "	Dull day
	19	West	57 "	Fine day

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## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND. TEMP.		REMARKS.
	(AT 8 TO 9 A.M.)		
Oct. 20	North East	43 above	Fine day
21	East	38 "	"
22	West	45 "	"
23	South West	48 "	"
24	East	47 "	"
25	South West	63 "	"
26	North West	66 "	"
27	South East	44 "	Rainy day
28	"	44 "	"
29	North West	43 "	"
30	South West	46 "	Fine day
31	North East	44 "	"
Nov. 1	East	44 "	Rainy day
2	North East	33 "	Fine day
3	South	37 "	"
4	"	42 "	Rainy day
5	West	38 "	Fine day
6	North East	42 "	"
7	West	44 "	"
8	East	44 "	Dull day
9	North West	42 "	"
10	North East	56 "	Fine day
11	South West	28 "	" First snow of season at 2.30 p.m.
12	North West	26 "	Fine day. First sleigh roads
13	North	24 "	"
14	West	32 "	Foggy day.
15	South West	38 "	Fine day
16	North	33 "	"
17	East	27 "	" Str. Hamilton to winter quarters.
18	South West	39 "	Fine day
19	West	40 "	"
20	East	39 "	"
21	South East	36 "	"
22	North East	40 "	Dull day
23	"	39 "	Fine day
24	"	34 "	"
25	East	36 "	"
26	North East	38 "	"
27	West	40 "	"
28	"	42 "	Dull day
29	North East	43 "	Fine day
30	North West	38 "	"
Dec. 1	South West	42 "	"
2	North East	43 "	Dull day
3	West	48 "	Fine day
4	North East	30 "	Snowing
5	North West	24 "	Fine day

## WEATHER REPORT FOR 1899—Continued.

DATE.	WIND.	TEMP.	REMARKS.
	(AT 8 TO 9 A.M.)		
Dec. 6	North East	24 above	Snowing. Harbour fleet put in to winter quarters opposite Harbour Office.
7	West	26 "	Fine day
8	North West	23 "	"
9	North	17 "	"
10	South East	36 "	"
11	West	41 "	Rainy day. Removing the lights
12	South West	57 "	"
13	North East	41 "	"
14	"	20 "	Fine day
15	North	24 "	Heavy snowstorm
16	"	13 "	Fine day
17	South East	35 "	"
18	West	37 "	Dull day
19	South	42 "	Rainy day
20	West	30 "	Fine day
21	South	38 "	Dull day
22	West	30 "	"
23	South East	32 "	Fine day
24	North	34 "	Rainy day
25	South West	31 "	Fine day
26	West	24 "	"
27	South West	24 "	"
28	West	26 "	"
29	South East	20 "	Snowing
30	West	1 "	Stormy day. Closing of navigation
31	"	11 below	Fine day

T. BOURASSA,

*Acting 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.

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.

Years.	Steamships.	Tonnage.	Ships.	Tonnage.	Barkes.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.	Number in Port.
1890	624	889,189	9	13,127	33	19,442	2	590	8	1,323	70	6,671	746	930,332	37 Sept. 3
1891	631	903,043	11	16,113	15	11,054	1	149	9	2,127	58	6,171	725	938,657	46 Aug. 19
1892	658	1,004,396	8	11,705	21	15,405	1	149	4	809	43	4,243	735	1,036,707	39 July 12 <sup>57</sup>
1893	737	1,128,658	3	4,014	11	8,893	.....	.....	5	1,856	48	8,356	804	1,151,777	42 July 19
1894	684	1,079,313	3	4,344	14	9,609	.....	.....	5	901	28	2,762	734	1,096,909	32 May 23
1895	592	1,055,611	1	1,545	9	7,714	.....	.....	7	1,689	31	2,827	640	1,069,386	25 June 18
1896	669	1,200,543	5	7,350	6	4,003	.....	.....	9	2,052	20	2,520	709	1,216,468	37 July 29
1897	752	1,368,395	.....	.....	8	3,958	.....	.....	7	1,745	29	4,904	796	1,379,002	40 July 28
1898	830	1,567,436	2	3,023	12	10,031	.....	.....	5	1,478	19	2,104	868	1,584,072	42 Aug. 1
1899	771	1,509,668	.....	.....	7	3,530	.....	.....	3	1,048	18	3,365	801	1,517,611	39 July 29

T. BOURASSA, Acting Harbour Master.

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.

YEARS.	Steamships.	Tonnage.	Ships.	Tonnage.	Barques.	Tonnage.	Brigs.	Tonnage.	Brigantines.	Tonnage.	Schooners.	Tonnage.	Total No. of Vessels.	Total Tonnage.
1890	252	235,722	.....	.....	.....	.....	.....	.....	1	170	42	3,714	295	239,606
1891	272	260,702	.....	.....	2	1,462	.....	.....	2	520	29	3,067	305	266,751
1892	289	275,040	.....	.....	3	2,215	1	149	2	340	36	2,214	331	280,958
1893	333	324,188	.....	.....	.....	.....	1	169	.....	.....	34	2,577	368	326,934
1894	349	362,945	.....	.....	3	2,323	.....	.....	4	609	23	2,230	379	362,107
1895	256	296,256	.....	.....	.....	.....	.....	.....	5	1,070	30	2,734	291	300,060
1896	252	292,850	.....	.....	1	178	.....	.....	4	734	15	1,188	272	294,981
1897	298	364,936	.....	.....	.....	.....	.....	.....	2	376	31	1,051	311	366,363
1898	327	372,274	.....	.....	.....	.....	.....	.....	.....	.....	14	1,397	341	373,671
1899	336	415,825	.....	.....	.....	.....	.....	.....	.....	.....	7	646	343	416,471

T. BOURASSA, Acting Harbour Master.

COMPARATIVE  
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YEARS.
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## 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.	NUMBER OF VESSELS.	TONNAGE.	GREATEST NUMBER IN PORT AT ONE TIME.
1890.....	5,162	966,959	167.....20 Oct.
1891.....	5,268	1,119,484	151..... 7 Sept.
1892.....	5,200	1,049,600	159..... 6 Aug.
1893.....	5,244	1,153,600	158.....25 July.
1894.....	4,666	979,809	172.....20 May.
1895.....	4,498	943,717	165.....20 July.
1896.....	4,832	1,004,117	160.....11 June.
1897.....	6,384	1,134,346	200.....30 July.
1898.....	6,941	1,807,892	216.....12 Aug.
1899.....	8,877	1,899,097	219.....28 July.

T. BOURASSA,

*Acting Harbour Master.*

## 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.*

YEARS.	OPENING OF NAVIGATION.	CLOSING OF NAVIGATION.	FIRST ARRIVAL FROM SEA.	LAST DEPARTURE FOR SEA.
1890.....	April 14	Dec. 3	April 30	Nov. 24
1891.....	" 17	" 17	" 27	" 21
1892.....	" 13	" 23	" 23	" 27
1893.....	" 24	" 4	May 3	" 23
1894.....	" 12	" 26	April 27	" 24
1895.....	" 20	" 6	" 27	" 25
1896.....	" 22	" 19	" 28	" 23
1897.....	" 17	" 19	" 30	" 24
1898.....	March 31	" 12	" 26	" 28
1899.....	April 24	" 30	" 27	" 29

T. BOURASSA,

*Acting Harbour Master.*

STATEMEN  
going  
1899,

## PORT OF MONTREAL.

STATEMENT showing the Nationality and Tonnage of Sea-going Vessels that arrived in Port during the Season of 1899, that were navigated by 30,686 seamen.

Nationality.	Number of Vessels.	Tonnage.
British.....	678	1,342,027
Norwegian.....	95	140,334
German.....	8	14,756
Danish.....	6	13,200
American.....	13	5,444
Austrian.....	1	1,850

T. BOURASSA,

*Acting Harbour Master.*

**REPORT**  
ON THE  
**Works for the Improvement and Maintenance**  
OF THE  
**HARBOUR OF MONTREAL,**  
FOR THE YEAR 1899.

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

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

MONTREAL, March 10th, 1900.

DAVID SEATH, ESQ.,

*Secretary,*

*Harbour Commissioners of Montreal*

DEAR 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, 1899 :

NEW WORKS.

The principal new works of the year are :—The completion of the new high level pier in Sections 18 and 19 ; the commencement of construction of another pier in Sections 13 and 14 and of the shore wharf between that and the entrance of the Lachine Canal ; the enlargement of deep water area in the

Windmill Pier  
through the  
Lachine Canal

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Windmill Point Basin ; and the widening of the Ship Channel through the harbour from Victoria Pier to the entrance of the Lachine Canal.

The principal details are as follows :—

*Sections 4S to 5S.*—A portion of the roadway on the new wharf on the south-east side of the basin was graded and macadamized. About 43,014 cubic yards of earth, ashes and other filling stuff sent in from city excavations, furnaces, etc., were used in extending the wharf embankment at the lower end of the new wharf.

The Dominion Coal Co. last spring built, on the wharf leased to them, an elevated coal pocket with machinery for unloading coal from vessels and discharging it into cars or carts. In order to serve the pocket and other parts of the wharf the Commissioners, at the request of the Grand Trunk Railway, laid down two railway tracks beneath the pocket, one close in rear of it, and one above winter water level at the rear or south-east side of the wharf embankment. All the tracks were connected with those of the Grand Trunk Railway and are leased to that Company on the same conditions as are the other tracks on the wharves. The aggregate length of the four tracks laid on the Harbour Commissioners property is 4,939 feet, and upon a strip of property, the ownership of which is in dispute between the Harbour Commissioners and the Grand Trunk Railway Co., 610 feet ; total 5,549 feet.

*Sections 5 to 10.*—The Windmill Point Basin was deepened, chiefly along the south-east side opposite Sections 7 and 10, by blasting and dredging and by dredging alone, for the double purpose of enlarging the deep water area of the basin and for furnishing rock filling for the cribwork of the harbour enlargement works. The quantity dredged was 43,758 cubic yards, measured loose, chiefly shale, and trap rock with some hard pan. Of the rock, 14,840 cubic yards, measured solid, was blasted, and the remainder was dredged without blasting. Expenditure on dredging and blasting \$16,666.85.

There was also expended on dredging and depositing chargeable to other works where the material was deposited \$5,042.68.

*Entrance to Windmill Basin.*—Some blasting and dredging were done for the double purpose of enlarging the entrance channel and for furnishing rock for filling the cribwork of the harbour enlargement works. Quantity of rock blasted, 5,550 cubic yards measured solid; quantity of rock and earth dredged, 5,936 cubic yards measured loose. Expenditure on dredging and blasting \$5,032.63. There was also expended on dredging and depositing chargeable to other works where the material was deposited \$382.97.

*Harbour Improvement Works, Sections 12, 13 and 14.*—Instructions were given by the Commissioners on 26th September 1899 to proceed with the construction of the shore wharf and pier of Plan 12 A 2, in Sections 12, 13 and 14. The old wharf between the entrance of the Canal and the small basin in Section 12, was built in 1859 and founded at 14 feet depth, at low water of 13 feet on the lock sill, or 18 feet higher than the foundation of the new wharf which is to connect with it. In order to protect the old wharf foundation and allow of dredging for the new, a row of close piling was driven round the corner of the old wharf and the heads of the piles tied in by anchor bolts, 50 feet long by 1½ in. diameter. The new foundation was then dredged out and the first crib of the new shore wharf was sunk in place on Oct. 6th. Another was sunk soon after and a third on Nov. 22nd.

In dredging out the foundations for the new cribwork, rock of fairly smooth surface was struck at level 65.50 to 68.50 above harbour datum, or 25' 6" to 28' 6" below lowest water. This rock was dredged off to level 64.50 to 62.50 and the cribs founded upon it. The cribs are each 131 feet in length, making 393 feet aggregate length placed before the close of navigation. All were filled and back filled, and they were partly prepared for receiving the concrete retaining wall which is to be built upon them.

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Dredging for the foundations of cribs on the north or down stream side of the new pier in Sections 13 and 14 was commenced about the middle of September and by the end of the month two cribs, 131 feet long each, were sunk at the in-shore end. Two more cribs of similar length were sunk in November in continuation of the north side of the pier, making an aggregate of 524 feet placed by the close of navigation. A temporary crib of 80 feet long was also sunk in the same line at the inshore end of the pier to retain the end filling until the shore wharf is built. All the cribwork was built up to about level 103.00 (9 feet above low water) and filled and back filled so as to be above ordinary spring water level and allow of building being continued on the approaching opening of navigation. The cribwork is founded on hard earth bottom at level 62.00 to 63.50 (32' 0" to 30' 6" below low water of 13 feet on the lock sill) and it is to be continued up to the top of the pier, instead of being stopped at low water and surmounted by a concrete wall as will be done in the shore wharf adjoining.

Six other cribs of 826 feet aggregate length were at the close of the working season under process of construction, afloat, and had been built up to heights varying from 6 to 10 feet.

The building of the new pier will entirely close the deep water channel to the part of the harbour above, and a new channel is therefore being dredged through the Island Shoal clear of the site of the pier. By the close of navigation the new channel had been roughly cut through to depths varying from 14 to 28 feet at low water.

The quantities of the principal items of work on the new shore wharf and pier, in sections 12 to 14, up to the close of navigation are :

Dredging for crib foundations, 34,099 cubic yards; cribwork sunk in place, permanent 917 feet, temporary 80 feet; filling 151,613 cubic yards; cribwork afloat under construction 826 feet.

Expenditure on cribwork \$41,622.39 ; on dredging and on filling and backfilling of cribwork \$21,866.38 ; total \$63,488.77.

*Harbour Enlargement Works: Sections 17 and 18.*—The building of the new pier opposite Jacques Cartier Square, which was commenced in 1898, was resumed last spring and was carried on by day until 19th June, and after that by day and night until the virtual completion of the pier in November. Cribwork of a length of 453 feet had been sunk in place at the stoppage of work in 1898 ; the building of cribs afloat was resumed on April 20th, 1899, two cribs of 161 feet each were sunk in place on May 26th and others at intervals until September 9th, when the last was sunk, making 1,520 feet sunk in 1899 and 1,973 feet, frontage measurement, in the whole pier. A temporary crib, 60 feet long, was also put down on the down stream side for connecting the inner end of the new cribwork with the old. At the end of August a length of 515 feet of the wharf at the inshore end of the up stream side had been made ready for use, and on Aug. 31st it was put into service by the berthing of the S.S. Roman for discharging and loading. Other parts were afterward made ready for use in succession until the whole had been put into service before the close of navigation.

The cribwork is founded at level 62.00 to 64.00 above datum, or 30 feet 0 inches to 32 feet 0 inches below low water of 13 feet on the old lock sill ; the top of the wharf at its edge, is finished off at level 116.50 and the centre of the pier is rounded up to level 118.50. The cribwork is 42 feet in breadth at the bottom and is stepped in to 14 feet at the top ; the outer face is of sawn square timber, laid with close joints, and the remainder of round timber ; the face timber and the front tie timbers, above ordinary summer water level, are of white pine and all the remainder is of hemlock. The timbers are strongly fastened with  $\frac{7}{8}$  inch square drift bolts and the cribwork is assisted in sustaining the earth pressure by  $1\frac{1}{2}$  inch anchor bolts, placed about 10 feet apart and 17 feet from the top, and running back into the pier to about 64 feet from the face.

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The front compartment of the cribwork is filled with rock to a height of 8 to 12 feet from the bottom, and the remainder with earth dredgings. Of the remainder of the pier, about 90 per cent. of the filling is of dredgings, chiefly, of very soft silt, and 10 per cent is of scavengings and stuff of all sorts from the city. Much settlement of the filling of the body of the pier is therefore to be expected and in view of this only a small part of the area of the top has been macadamized, and that only lightly, and the remainder has been covered with shale rock dredgings. It is intended to add rock until the expected settlement ceases, after which the roadways and other parts of the pier not required for buildings, platforms, etc., may be suitably paved. The outer end of the pier has two stairways of 9 feet in width, cut down a depth of 13 feet from the top, for affording convenient access to small craft.

The dimensions of the pier and the quantities of materials in its construction are :

Length, upstream side.....	850 feet
“ downstream side.....	800 “
Breadth, at top.....	285 to 300 “
Height at edges above harbour datum .....	116.50 feet
“ “ “ lowest recorded water.....	22 feet 4 inches
“ “ “ highest recorded water during navigation season.....	6 feet 10 inches
Height above crib foundations .....	52 to 56 feet
Wharf frontage.....	1,978 lineal feet
Wharf area.....	244,480 square feet
Lumber in cribwork ; hemlock, square and round.....	427,538 lineal feet
Lumber in cribwork ; pine, square and round.....	102,823 lineal feet
Plank ; hemlock and spruce.....	234,475 feet B.M.
Iron spikes, anchor bolts, etc.....	468,300 lbs
Dredging, in preparing crib foundations .....	80,347 cubic yards
Filling, measured in solid.....	519,000 “
Expenditure in 1898.....	\$ 40,682 90
“ 1899 .....	157,348 98
Total .....	\$198,031 88

*Island Shoal.*—The dredging away of the shoal has been continued throughout the summer for the purpose of provid-

ing channel room past the new piers and for furnishing the filling required for their construction.

Quantity dredged during the summer 781,514 cubic yards. Expenditure \$72,013.47. Portion charged to works where the material was used, \$68,651.21 ; charged to Dredging account, \$3,362.26.

*Section 35.*—A piece of siding track, 1,049 feet in length was laid for connecting the main line on the wharf, used by the C. P. Railway Co., with a yard for shipping cattle which the Company enclosed on the wharf. The track was planked between and on each side of the rails, and was anchored down to blocks buried beneath so as to prevent its being floated or moved by ice in winter. Expenditure, \$1,285.32.

*Guard Pier.*—The rounding up of the top of the embankment and finishing it to full height was resumed on Aug. 30th, at a point 385 feet from the Victoria Bridge, and was carried on to 5,225 feet from the bridge and there stopped at the close of the working season, Dec. 5th. The remainder of the pier is accessible to the floating derricks and can therefore be raised without the use of the land derrick and cars.

The quantities and kinds of stuff placed in the pier in 1899 are :

	Cubic yards.
Dredged from Windmill Point Basin and approach, shale, trap and hardpan.....	9,642
Dredged from Island Shoal, hard pan, gravel and sand.....	51,727
Dredged from Section 12, hardpan and rock.....	750
Dredged from Section 43, Maisonneuve, stone and sand.....	150
Received from steamships, earth, etc.....	262
Total cubic yards, scow and box measurement	62,531

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The expenditures upon the guard pier to the end of 1899, and the proportion payable by the City, are as follows :

Expended to end of 1898 .....	\$ 338,919 57
Expended in 1899.....	16,580 93
	\$ 355,500 50
Total Expenditure to end of 1899.....	\$ 355,500 50
Proportion payable by the City to end of 1899.....	80,593 68
	\$ 274,906 82
Balance being net expenditure on the part of the Harbour Commissioners to end of 1899.....	\$ 274,906 82

#### REPAIRS.

The total cost of maintenance and repairs of the harbour works in 1899 is \$52,251.97, and it compares as follows with the expenditure of previous years :

1875 .....	\$16,499	1888 .....	\$49,520
1876 .....	35,711	1889 .....	51,892
1877 .....	26,077	1890 .....	56,380
1878 .....	18,974	1891 .....	49,109
1879 .....	18,819	1892 .....	72,175
1880 .....	17,330	1893 .....	58,644
1881 .....	16,159	1894 .....	75,455
1882 .....	27,962	1895 .....	50,081
1883 .....	35,768	1896 .....	55,211
1884 .....	44,869	1897 .....	46,259
1885 .....	42,158	1898 .....	58,847
1886 .....	64,989	1899 .....	52,252
1887 .....	64,984		

The breaking up and clearing away of the harbour ice occurred at an earlier date in spring than the average. The principal movements of the ice at the breaking up, and a movement which took place in winter, were as follows :

On the night of the 4th and 5th January, after a thaw, a heavy movement of the ice in the river outside of the Guard Pier and past its lower end, accompanied by a sudden rise of the water, took place and caused a movement of the entire field of ice inside the Guard Pier in an upstream direction through a distance of about 28 feet. The field moved in an unbroken mass and broke a number of electric light posts which had been left standing on the wharves, and destroyed about 120 feet of the Montreal Warehousing Co's. new grain

carrier on the upper end of the Windmill Point Basin wharf, by breaking and carrying away the feet of the high tressels on which it was supported and causing it to fall. The steamer Filgate, which was being wintered in the old canal basin, No. 1, was slightly injured by being shoved against the wharf wall, but the Harbour Commissioners' dredging fleet and the steamer Paul Smith, which were being wintered in the Windmill Point Basin, clear of the wharves, suffered no damage.

No other movement of ice occurred until the morning of March 16th, when a slight shove took place in the main channel near the lower end of the gap, accompanied by a rise of the river from 26 to 29 feet depth on the lock sill. Other movements occurred in the St. Mary's current on the 11th and 13th April and opened the central main channel from the Victoria Bridge to the Longueuil Ferry. On the 15th a quantity of ice came down from Laprairie Bay and, passing under the sheet at Hochelaga, caused a rise of the water to 32 feet on the lock sill. On the 16th a quantity of Lake St. Louis ice passed down the Lachine Rapids. On the 17th a movement took place in the Laprairie Bay, and enough ice passed down to completely fill the openings opposite the city and raise the water to 33 feet 8 inches. On the 17th a general movement took place, accompanied by a rise of water to 37 feet 2 inches. Heavy shoves followed on the 18th and 19th, accompanied by rises of water until it reached 38 feet 6 inches on the sill, the height of the top of the revetment wall, and the highest point during spring, at noon of the 19th. After this the ice gradually cleared away and the water fell until on the 24th it was at 26 feet.

Navigation commenced by the running about in the harbour of the Harbour Commissioners' tug, St. Peter, on 21st. The Richelieu & Ontario Navigation Co's. ferry boat Longueuil arrived up from Boucherville on the 24th, and the steam barge Victoria from Sorel on 25th.

The heavy shoving of the ice at the high level of water on the 18th and 19th caused the lodging of much ice on all

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the wharves not protected by the guard pier. The following are the approximate quantities left on the several wharves at the opening of navigation :

LOCALITY.	DIMENSIONS			QUANTITIES
	LENGTH	BREADTH	AVERAGE DEPTH	
Sections 16 and 17, opposite St. Gabriel Street .....	150 feet	25 feet	4 feet	694 c. yds.
Section 18, opposite Jacques Cartier Square .....	70 "	90 "	5 "	1,166 "
Section 19, Bonsecours Pier...	100 "	95 "	3 "	1,055 "
Section 20, opposite Bonsecours Market .....	150 "	50 "	4 "	1,111 "
	90 "	40 "	4 "	533 "
Section 20, Victoria Pier :				
Upper End, aggregate....	25 "	10 "	2½ "	23 "
Lower End, aggregate....	150 "	100 "	11 "	6,111 "
Sections 21 to 23 .....	950 "	100 "	5 "	17,600 "
Sections 23 to 27 .....	1,030 "	95 "	14 "	50,737 "
Section 28 .....	300 "	15 "	3 "	500 "
Sections 28 and 29 .....	940 "	50 "	6 "	10,444 "
Sections 29 to 31, small cakes, say .....				20 "
Sections 31 to 33 .....	1,150 "	60 "	8 "	20,551 "
Sections 33 to 35 .....	1,400 "	50 "	5 "	13,000 "
Section 36 .....	350 "	160 "	8 "	16,600 "
Section 37 .....	490 "	125 "	4 "	9,074 "
Section 38 .....	450 "	120 "	10 "	20,000 "
Section 39 .....	150 "	100 "	5 "	2,777 "
Sections 39 and 40 .....	400 "	100 "	9 "	13,333 "
Section 46, outer end of Sugar Refinery Pier .....	100 "	15 "	3 "	163 "
Total quantity cubic yards .....				185,492 "

The clearing away of the ice from the sites of the steamship sheds, ferry steamer berths and other places first required for use, was commenced on April 23rd, and was carried on with gangs of men, horse scrapers and carts, assisted by two of the floating steam derricks, at such rate as was requisite and by 1st May the wharves were practically cleared. The force employed at the beginning was 125 men; by the 23rd April it had been increased to 350 men; on the 25th it was

700, and from that it was gradually decreased to the completion of the clearing on May 6th.

Cost of ice clearing: men's wages and tools, \$6,315.36; derricks' work, \$345.00; total \$6,660.36.

The pier in Section 43, Hochelaga, was seriously injured by the shoving of the ice and the scour of the water across it. The cribwork was not damaged, but at about one third of the length of the pier from the inshore end, a channel, of 4 to 10 feet deep and 85 feet wide, was cut across the pier, and macadamizing, earth filling and parts of the railway tracks were carried over into the basin at the down stream side. Nearly the whole of the remaining area of the pier was ploughed across by the ice and much of the macadamizing carried into the basin.

In Section 46 the macadamizing of the pier was also badly torn up and parts of it carried over the side, but the cribwork and railway tracks were not injured. The coping and face timber and planking of the wharves, from Section 24 at the Canadian Pacific Railway elevators to Sections 43, Hochelaga, suffered damage at several places.

The down stream inner corner of the Victoria Pier, Section 19, which is pile work, was badly damaged.

The following are the principal items of repair work done during 1899:

*Section 5, Windmill Point Basin.*—Screens of 4 inch plank, held by suitable timbers and tie bolts, were made and placed on the upper part of the mouths of the two raceways discharging into the head of the basin, in order to stop the surface current of the races and allow vessels to lie conveniently alongside the wharf. Cost \$221.89.

*Sections 6 and 7.*—Strong board fences were placed along the Commissioners' boundary line across the raceways of the Malleable Iron Co. and Peck, Benny & Co's. to prevent the possibility of persons falling in. The gratings of all the raceways at the mouths of the culverts under the wharves were also repaired to prevent bathers from being carried in.

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*Section 15.*—The pile work of the down stream side of the pier leading out to the Island wharf was repaired by cutting the piles down to the water line and substituting a framing and new top timbers and planking. Area, 20 feet by 60 feet. Cost \$267.61.

A new paved stone foot-way was laid across the Island wharf.

*Section 16.*—An area of 45 by 25 feet, at the outer angle of the wharf, which had been lifted by the ice, was rebuilt with new top timbers and planking and two new piles.

*Section 18.*—The front of the cribwork above water, which is badly decayed, was strengthened by upright timbers and anchor bolts of 1½ inches by 32 feet, in order to make it stand until the proposed new wharf is built in front.

*Section 19.*—A new plank walk of 250 by 23 feet was laid throughout the length of the pier for the use of the ferry boat passengers. Cost \$220.10.

*Section 20.*—The pile work top of the down stream corner of the Victoria pier, which was badly damaged by last winter's ice shove, was rebuilt with new piles and new top timbers and planking. Area repaired, 3,500 square feet. Cost \$1,034.27.

The pile work along the inner side of the pier was repaired at several places by cutting and splicing piles and renewing timbers, etc.

A slip of 9 feet wide, 12 feet long and 3 feet deep at lower end, was made in the outer upstream face of the pier for giving access to small steamers occupying it.

*Sections 22 and 23.*—The timber of 450 feet of the upper part of the cribwork wharf, which was built in 1862 and had become badly decayed, was entirely removed to a depth of 4 to 6 feet from the top. An examination of the bottom of the front of the wharf by a diver, showed some undermining

by the scour of the swift current, and the place was protected from further damage by driving a close row of fourteen piles in front. Cost \$2,856.79.

*Section 24.*—The cribwork of the wharf, which is old and was founded at about 16 feet depth at low water of 13 feet on the sill, had become undermined by the current and ships' propellers, and by the deepening of the basins to 27 feet at low water, and had settled down and pitched forward at the top throughout a length of 300 feet. It had already been protected and strengthened by close piling in front and it was, last summer, further secured by anchor bolts,  $1\frac{1}{2}$  inches in diameter by 48 feet long, put in at about 12 feet apart. The timber work was also renewed to 3 to 4 feet down and built up to proper height, and the filling and roadway in rear made good. Cost \$1,232.17.

*Section 27.*—The top of the wharf, which had been damaged by ice shoves, was repaired by renewing 50 feet in length of the upper two courses of coping timber. The filling which had gone out of the top of the cribwork was replaced.

*Section 28.*—Three places in the timber work of the wharf, of an aggregate length of 150 feet, which had been damaged by ice shoves, were repaired by renewing the upper three front courses and coping and the top planking and sleepers. Cost \$332.47.

*Section 29.*—Repairs were made to two places of the timber work where damaged by ice.

*Sections 27 to 30.*—The face planking, which had been much damaged in places by ice, was renewed or thoroughly repaired over an aggregate length of 1,425 lineal feet of front. The coping was also renewed at several places. Cost \$199.73.

*Sections 30 to 35.*—The upper timbers and coping of the cribwork were damaged in many places by the ice. Repairs

were made by feet of face timber and top planking.

*Section 31.*—Repairs occurred in diaphragms and repairs were made by filling the lost filling at the front and by the Commissioner's strong, safe coating of the coal to the face planking.

*Section 32.*—Ice and scouring were put off by putting about 100 feet of ice scoured out by the ice and levelling the top and ties for 200 feet which had been damaged by the whole 700 feet of ice up-stream out of the wharf had been torn.

*Section 33.*—Repairs somewhat damaged.

*Sections 34 and 35.*—Repairs of the two wharves.

*General.*—Repairs generally made by the work of the wharves. The watering was efficiently carried out.



were made by putting in 756 lineal feet of coping, 225 lineal feet of face timber and renewal of a considerable part of the top planking of 1,500 feet of wharf. Cost \$529.49.

*Section 37.*—Subsidence of the wharf filling and timber occurred in different places under the tracks of the coal towers, and repairs were made by wedging up the timbers and replacing the lost filling by broken rock. A careful examination of the front and foundation of the cribwork was made by the Commissioners' diver in December and the whole found in strong, safe condition. About 225 lineal feet of wharf just east of the coal tower tracks was repaired by renewal of the top and face planking and coping. Cost \$455.88.

*Section 43.*—The pier, which was seriously damaged by ice and scour, as above described (p. 11), was repaired by putting about 8,200 cubic yards of earth and rock in the scoured out places; putting down 47 toises of new macadam and levelling and replacing what remained; furnishing rails and ties for 240 feet of railway track; relaying 350 feet more which had been displaced, and securing with anchor bolts the whole 700 feet; putting new top planking on 25 feet of the up-stream outer end and replacing a few face planks which had been torn off. Cost \$4,233.11.

*Section 46.*—The macadamizing of the pier, which was somewhat damaged by the ice, was resurfaced and repaired.

*Sections 74 and 75, Longue Pointe.*—The macadamizing of the two wharves were re-surfaced and repaired.

*General Repairs.*—Ordinary general repairs were liberally made wherever needed upon the roadways and timber work of the wharves, and the whole kept in good condition. The watering and cleaning of the roadways was also efficiently carried out. Macadamizing stone to the extent of 531

toises was used in the maintenance of the roadways, and was distributed as follows :

	TOISES.
Sections 5 to 10.....	53
Sections 12 to 20.....	97½
Sections 21 to 30.....	170½
Sections 31 to 40.....	119
Sections 41 to 47.....	91
Total.....	530½

*Electric Lighting.*—Tenders for lighting the wharves by arc lamps of 9.6 amperes were called for in April last and a contract given to the Royal Electric Co., the lowest tenderers, for lighting for three years, at 15 cents per lamp per night.

Lighting was commenced on April 26th with three lamps. nine more were added on the following day, and by the 1st of May 57 lamps were in operation. The number was gradually increased to 101 lamps on the 15th, to 114 on the 18th and 116 on the 26th May. On August 11th two lamps were put on the new pier at Section 17; on August 25th another was added, and on the completion of the pier in November five additional lamps were put on, making eight lamps in all on the new pier. Some lamps were removed from the Allans' sheds early in November, and, as the sheds of other companies were taken down, the lamps were removed from them also.

On December 6th, the lamps between the Longueuil Ferry and the east end of the harbour were discontinued, and by the 11th the whole of the lighting, with exception of three lamps at the Longueuil Ferry, had been discontinued. The lights at Longueuil Ferry were kept in operation for the convenience of Longueuil Ferry passengers until the 30th December, at which date the ferry boat ceased running and the lights were discontinued.

The greatest number of lamps in use at one time was 122 and the total lighting for the season was equivalent to 25,635 lamps for one night. The total cost was \$3,845.25.

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## NOTES.

*Wintering Vessels.*—A twin hull cattle boat, belonging to Messrs. Gordon and Ironside, is being wintered in the harbour alongside the Harbour Commissioners' dredging fleet, opposite the entrances of the Lachine Canal, and is the only vessel, besides those of the Commissioners', which is taking advantage of the winter harbour.

*Grain Conveyor.*—The Montreal Warehousing Company's high level conveyor on Sections 5 and 6, Windmill Point basin, which was demolished by the ice in January, 1899, was re-built on strong supports early in the summer, and was lengthened to reach 500 feet along the basin, so as to load large ships. The extension was made under a new agreement between the Harbour Commissioners and the Company, dated June 13th, 1899, and the former agreement of June 15th, 1898, was annulled.

*Coal Pocket.*—The Dominion Coal Company built upon Sections 4S and 5S, early in summer, an elevated coal pocket of cribwork foundations and steel framing, provided with modern and highly efficient machinery for unloading coal from ships and discharging into carts and railway cars. The pocket is 412 feet by 27 feet and of 50 feet height; the storage capacity is 6,000 tons and the unloading capacity is 1,000 tons per hour.

*Cattle Shipping Yard.*—The Canadian Pacific Railway Co. enclosed a cattle yard on the wharf on Section 32, on a space allotted by the Commissioners, for the purpose of receiving cattle from railway cars and sending them to ships by lighters. The yard is 300 feet long by 40 feet wide and is accessible to boats on one side and to cars on the other.

## DREDGING PLANT AND DREDGING.

The dredging plant used in 1899 is all owned by the Harbour Commissioners, and consisted of three dipper dredges, five floating derricks, one single land derrick, one drilling and blasting boat, five tug-boats, twenty-one flat deck scows, two hopper bottom scows, a testing boat and a floating shop. Dimensions and other particulars of the different vessels are given in the annexed table.

In addition to the plant which was used, the Commissioners have two dipper dredges which have become unsuited to the present harbour works, and are for sale.

The land derrick was wintered on the guard pier and all the floating plant was wintered in the Windmill Point Basin, opposite Sections 6, 7 and 8.

In a movement of the field of ice, which took place on January 4th. the floating plant was moved with it a distance of about 28 feet, but suffered no damage.

The repairs to the hulls and machinery of the dredging fleet were made by the Commissioners' own men, with the exception of foundry work and some heavy machine work and forging, which were done at neighbouring shops, and steel castings, which were procured partly in Montreal and partly in the United States. The repairs to both dredges and derricks were heavier than usual, mainly for the reason that they were worked both night and day, instead of day only, and that the dredging, where not in rock, was in very tough silt, which required the utmost power of the dredges to break it up.

The following are the principal items of repairs made to the several vessels during the year :

*Dredge No. 1.*—Crank shaft pinion renewed in iron and afterwards in steel; iron intermediate spur wheel replaced by a steel one; 6 foot sheave under deck renewed twice; two new brackets for holding spud rope sheaves below deck; two new sheaves on top of forward spuds; new friction clutch driver

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for stern spud drum; bucket handle of wood with steel plating, replaced by a new one wholly of steel; plain grate bars replaced by a set of rocker bars; feed water heater taken out and discarded and exhaust pipe altered; funnel renewed; steel bucket rope renewed twice; one pair of steel swinging table ropes renewed; upper steel spud ropes of both forward spuds renewed; stern spud chain replaced by steel rope; anchor straps of back stays of **A** frame renewed; planking of top sides of hull renewed; oak covering board renewed; deck partly renewed; hawse pipes of backing chain renewed three times.

*Dredge No. 2.*—Heater discarded and taken out; exhaust pipe altered; iron pinion on crank shaft replaced by a steel one; iron pinion on intermediate shaft replaced by one of steel; one spur wheel of main drum temporarily repaired where cracked in rim; main drum temporarily repaired; new bushing and key in six-foot sheave under deck; new bush in six-foot sheave at upper end of boom; lower end of boom strengthened with steel plates; back stay of **A** frame repaired; steel bucket rope renewed twice; one swinging rope renewed; new hinge for holding forward spud keeper; hawse pipe for backing chain renewed four times.

*Dredge No. 3.*—New grates with revolving bars put in boiler in place of ordinary grates; heater discarded and taken out; exhaust pipe altered; main hoisting drum temporarily repaired where cracked; six-foot sheave under deck renewed; one bracket for holding forward spud sheaves under deck replaced by an old spare one, and the other replaced by a new one; bed plate of pivot of foot of boom replaced by a new one; forked pivot casting on top of **A** frame replaced by a new one; two large bolts renewed in forward spud hinge chain for hoisting after spud taken out and replaced by a steel rope; steel bucket rope renewed four times; hawse pipe of backing chain renewed six times.

*Derrick No. 2.*—Put into dry dock and caulked; **A** frame strengthened; clam shell repaired.

*Derrick No. 4.*—Phosphor bronze bushes of spud drums renewed; clam shell temporarily fitted with teeth for clearing ice off wharves in spring; steel main ropes of forward spuds renewed; hoisting rope of clam shell renewed; complete set of spuds put on to replace a set broken by a field of running ice in spring; one spud renewed during summer.

*Derrick No. 5.*—Bevel wheels of spud gearing renewed by two new ones of iron and one of these afterwards replaced by a steel one; clam shell bucket temporarily fitted with teeth for clearing ice off the wharves in spring; two spuds renewed.

*Derrick No. 6.*—Bevel wheel of spud gearing renewed in iron; clam shell temporarily fitted with teeth for clearing ice off wharves in spring.

*Tug Aberdeen.*—Piston refitted and ground; a broken set of propeller blades replaced by a new set; new rocker grates put in.

*Tug St. Peter.*—Boiler repaired with a patch on the front of the furnace and another on the side; new head put on rudder to replace a broken one; broken stem replaced by a new one.

*Drill Boat.*—New upright boiler of 4 feet diameter by 10 feet high added to replace a former one which had been taken off; funnel of large boiler renewed; one new drill cylinder made; slides of drill frames repaired; put into dry dock and caulked in the corners and sides and in parts of bottom.

*Scows.*—Flat Scow No. 31 was largely rebuilt; the bracing of the hog frames, the deck beams, deck and deck cover-

ing were all repaired wh lightly repaired

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ing were all renewed and other parts were overhauled and repaired where requisite. Fifteen other flat scows were lightly repaired in the fender ribbons, decks, sides and ends.

*Dredge Boxes*—About 100 boxes were almost wholly re-built and repairs were made to all others.

*Derrick Floats*.—The three timber floats used in front of Derricks 4, 5 and 6, which had become decayed and much damaged, were replaced by new ones of much stronger build

*Punts*.—Twelve punts of 16 to 18 feet long, were built to increase the stock or to replace others worn out or destroyed by accident.

*Spare parts*.—The following spare parts were made :

A steel bucket handle (afterward put on Dredge No. 1).

A seven-yard dredge bucket.

Two four-yard clam shells of new pattern.

A propeller 7 feet 10 inches diameter, (afterwards put on new tug Robert Mackay).

Three Douglas fir forward spuds for dredges, 36 inches square by 60 feet.

One Douglas fir after spud for dredges, 24 inches square by 60 feet.

Three Douglas fir spuds for derricks, 21 inches square by 66 feet.

The following buckets were repaired for general use :

Two 7-yard dredge buckets had the lips renewed.

Five new doors were fitted to dredge buckets.

Three old clam shells for the large derricks were thoroughly overhauled and repaired.

*Dredges 6 and 7* were cared for but not used.

*Derrick No. 3*, built in 1875.—The wooden hull had become unfit for service by decay and the derrick was therefore dismantled. The machinery was stored at the shipyard on the guard pier and the hull used as a floating store for the ship carpenters.

*Tug M. P. Davis*.—The wooden hull, built in 1879, was unfit for longer use and not worth repairing. The machinery and valuables were therefore taken out and the hull abandoned.

#### NEW PLANT.

In view of the large extent of the harbour works undertaken, the Commissioners ordered the building of the following additional working plant, which was carried out :

Tugboat *Robert Mackay*, for attending dredges: Length between perpendiculars, 71 feet; length over all, 81 feet 9 inches; moulded breadth, 17 feet 6 inches; depth, 10 feet; steel hull; mainly according to Lloyd's requirements for highest classification, but in some respects of greater strength, in order to suit it for its special service; fore and aft compound engine, with cylinders of 16 and 32 inches diameter and 24 inches stroke; jet condenser and independent air pumps; boiler, with rectangular furnaces and return tubes, having 1,500 square feet heating surface and certified for 140 lbs. per square inch working pressure; steam steering gear; steel deck house, having accommodation for day and night crews, and room in wheelhouse for ten passengers. Built by Messrs Carrier, Laine & Co., at Levis, Que., according to plans and specifications of the Commissioners' Chief Engineer. Contract price, delivered and equipped complete, \$20,482. Delivery was to have been made by 1st May, 1899, but was not made until September 24th.

*Derrick No. 1*.—A floating derrick for unloading dredgings from flat deck scows, with wooden hull, 74 feet 8 inches long by 26 feet 4 inches wide over frames and 76 feet long

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by 27 feet 6 inches wide over guards, 7 feet 6 inches depth over deck and floor beams and 8 feet over planking. The main machinery and boiler are those of one side of the double land derrick used in the construction of the guard pier, the same as those of the large floating derricks, and of the following particulars: Horizontal non-condensing hoisting engine, with two cylinders 12 inches diameter and 14 inches stroke, driving, by double gearing, a hoisting drum of 24 inches diameter and a tripping drum of 36 inches diameter; swinging engine, with two cylinders 7 inches diameter and 8 inches stroke; spud gear worked from main engines and the spuds lifted and pinned up by wire ropes working on drums, which are driven by friction clutches and held fast by friction brakes; boiler of locomotive type 45 inches diameter of shell and 14 feet length; boom 79½ feet long to centre of upper sheaves, set to a horizontal reach of 69 feet from the centre of turntable and middle line of hull; clam shell (or grapple) bucket, ordinarily used for unloading scows, of 4 cubic yards capacity, closed and lifted by sheaves and a one inch diameter steel rope, which is connected single with the hoisting drum, and opened by a similar rope connected with the tripping drum; main and swinging engines and boiler built by John McDougall, Montreal, in 1892-93; other machinery and the hull built at the Commissioners' shops in 1899; set to work 9th November; cost, exclusive of original machinery, \$12,052.46.

*Dumping Scows Nos. 36 and 37.*—Two dumping scows of 200 cubic yards capacity each, for serving dredges; wooden hulls, chiefly of southern pitch pine. Dimensions of each over all: Length, 106 feet; breadth, 26 feet 10 inches; depth, 9 feet 6 inches; five pockets of 40 cubic yards each when filled level with deck; doors, 15 feet 9 inches by 4 feet 6 inches each leaf, giving a clear opening of 8 feet by 15 feet 9 inches, all five pairs opened and closed simultaneously by a pair of hydraulic cylinders worked from the force pumps of the tug or dredge. Built at the Commissioners' shops in

summer of 1899. A third similar dumping scow was also built nearly complete, except the gates and the apparatus for working them. Expenditure on the three in 1899, \$25,679.53.

*Dredge No. 4.*—A contract was made in December, 1898, for the building of a dredge similar to the Commissioners other dredges, Nos. 1, 2 and 3, but with steel hull and stronger machinery. Delivery was to have been made by 1st June last, but had not been made at the close of navigation last fall, and now cannot be made until the approaching opening of navigation.

*Repairing Berth.*—The necessity of using every part of the harbour wharves for last year's shipping deprived the dredging fleet of a repairing berth at any of them. As a temporary measure, the guard pier was taken possession of and a light pile wharf of 116 feet by 50 feet was built on the inner or west side for the use of the dredging fleet and the ten ton hand derrick was placed upon it. The floating machine shop was moored at the end and a wooden carpenter's shop was built on the top of the bank opposite.

The dredging fleet was served throughout the summer by the tugs St. Peter, St. Louis and Aberdeen, and, after October 7th, by the new tug Robert Mackay. Service was also rendered by the small tug M. P. Davis in carrying men and stores, running messages, etc. About one-third its time was occupied in this way, the remainder being occupied in towing timber and other services for the wharf-building work.

The dredges were got to work in the spring as soon as the clearing away of the ice permitted. Dredge No. 2 commenced work on April 26th; No. 3 commenced on April 27th, and No. 1 on May 1st. The completion of the large new pier in Sections 18 and 19 by the close of navigation and the undertaking of other works in contemplation involved an extent of dredging beyond the capacity of the three dredges if worked by day only, and two of them were therefore

worked night and day as long as was necessary to supply the deficiency. Night work was started by dredge No. 3 on June 19th, and by No. 1 on July 3rd, and both continued night and day work until the close of the working season. Dredge No. 2 worked by day only. Dredge No. 1 was stopped for the season on November 30th, No. 2 on December 1st, and No. 3 on December 5th. All were employed in harbour work throughout the summer, except No. 1, which was used from May 28th to June 23rd, inclusive, in dredging out the S.S. Gallia, which ran aground at Isle de Grace, Lake St. Peter, at the time of falling water. The aggregate number of shifts or watches during which they were on duty on the harbour works, reckoning all days of the day dredges and all nights and days of the night-and-day dredges, except those of Sundays and holidays, was: For No. 1, 287 day and night shifts; for No. 2, 187 day shifts, and No. 3, 331 day and night shifts, making in all 805 shifts. The nominal working hours of each shift were eleven, except in spring and fall, when they were ten; and the aggregate for all the dredges throughout the season was 8,485 hours. The aggregate of actual working time that is, the time which the dredges actually dredged, exclusive of that lost for repairs, changing positions, detention by ships, irregularities of scow service, and all other causes, was 6,222 hours, or an average of  $73\frac{1}{2}$  per cent. of the nominal working hours. The percentage of time of actual working is smaller than the average of recent years, mainly because of the conditions incident to night work. Repairs, changing of buckets, changing of places of work, overtaking irregularities in scow service and such like, which, when working by day only could be made good by overtime, must, when working both night and day, be made good in working hours, and therefore involve detention.

Derricks Nos. 4 and 5 were set to work on 24th April, clearing ice from the wharves; No. 4 was so employed for three days and No. 5 for  $8\frac{1}{2}$  days. Derricks No. 2 and 6 commenced unloading scows on 27th April, and the new derrick No. 1 on

9th November. No. 2 was not worked between 21st July and 29th August and was entirely withdrawn from service on October 18th, but the others were kept at work until the end of the season. Derrick No. 4 was worked night and day from the time of commencing night work to the end of the season, and the other derricks were worked sometimes by day and night and sometimes by day only, as found necessary.

Drilling and blasting was commenced by the drill boat on 1st May and work was continued until November 28th, when it was sent into Cantin's dock, for slight repairs to the hull previous to being wintered with the fleet in the harbour.

The total outlay for working the whole fleet, except the drill boat, was \$100,162.95, which embraces the entire cost of working the plant and machinery, including repairs, outfit, wages, salaries, management charges, insurances, allowance for depreciation of plant, and all charges of every kind, except interest on capital. The allowance for depreciation of plant is \$15,726.49 and it includes not only the estimated depreciation of the plant in use in 1899, but that upon all the Commissioners dredging plant whether in use or not. It is also to be noted in making comparison with previous years, that depreciation was not included in the cost of dredging in any year previous to 1899.

The cost of maintaining and working the three dredges and the tugs and scows which served them, was \$74,831.69 or an average of \$92.96 per day per dredge.

The cost of maintaining and working the five floating derricks for unloading scows was \$25,331.26, or \$27.56½ average per day for 919 days' aggregate service.

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The following are the comparative costs and quantities of dredging for 1899, and for previous years:—

YEARS.	CUBIC YARDS DREDGED.	TOTAL COST DOLLARS.	COST PER CUBIC YD. CENTS.	REMARKS.
1875...	151,719	68,979	45	
1876...	156,082	55,462	35 $\frac{50}{100}$	
1877...	173,499	45,103	26	
1878...	211,731	48,748	23	
1879...	189,609	41,006	21 $\frac{63}{100}$	
1880...	186,430	46,914	25 $\frac{16}{100}$	
1881...	170,764	54,128	31 $\frac{69}{100}$	
1882	187,339	53,598	28 $\frac{30}{100}$	Spoon dredges & stone-lifters. Elevator dredges.
	9,429	13,254	\$1.40 $\frac{60}{100}$	
	196,768	66,852	33 $\frac{26}{100}$	Totals and average.
1883	36,358	17,956	49 $\frac{38}{100}$	Spoon dredges & stone-lifters. Elevator dredges-lifting rock and boulders and clearing up.
	6,990	19,385	\$2.77 $\frac{30}{100}$	
	43,348	37,341	86 $\frac{14}{100}$	Totals and average.
1884...	125,648	49,468	39 $\frac{37}{100}$	Spoon dredges and stone-lifters.
1885...	69,494	28,563	41 $\frac{10}{100}$	" " "
1886...	57,728	25,772	44	" " "
1887...	36,993	23,259	62	" " "
1888	73,150	36,690	50 $\frac{16}{100}$	Elevator dredges.
	2,077	1,333	64 $\frac{18}{100}$	
	75,227	38,023	50 $\frac{54}{100}$	Totals and average.
1889	205,283	54,574	26 $\frac{58}{100}$	Spoon dredges and stone-lifter. Elevator dredge.
	9,420	2,996	31 $\frac{80}{100}$	
	214,703	57,570	26 $\frac{81}{100}$	Totals and average.
1890...	186,670	53,674	28 $\frac{60}{100}$	Spoon dredges and stone-lifter.
1891	259,267	49,571	19 $\frac{12}{100}$	Spoon dredges. Elevator dredge.
	43,290	14,232	32 $\frac{37}{100}$	
	302,557	63,803	21 $\frac{8}{100}$	Totals and average.
1892...	361,947	93,595	25 $\frac{58}{100}$	Spoon dredges.
1893...	235,280	93,050	39 $\frac{55}{100}$	" "
1894...	312,430	98,858	31 $\frac{64}{100}$	" "
1895...	496,528	99,400	20 $\frac{2}{100}$	" "
1896...	401,938	103,317	25 $\frac{70}{100}$	" "
1897...	284,844	68,211	23 $\frac{95}{100}$	" "
1898....	456,458	61,012	13 $\frac{37}{100}$	" "
1899.....	963,131	100,163	10 $\frac{77}{100}$	" "

It will be noticed that notwithstanding the disadvantages of night work, and the addition of the allowance for depreciation of plant in 1899, the average cost of dredging in that year was decidedly lower than in any previous year, and that it was only about one-third to one-half of the usual averages.

The cost and character of the dredging in different parts of the harbour in 1899 are given below. All the quantities are either scow measurements from the tallied number of flat deck and dumper scow loads of measured average capacity, or box measurement from the tallied number of boxes placed on scows, containing four cubic yards per box.

The cost of dredging in each case includes its proportion of all the costs of maintaining and working the dredges, tugs and scows, as explained on p. 25; but does not include the cost of unloading the dredgings from scows by derricks, which is separately given.

*Sections 5 to 10 (Windmill Point Basin).*—The dredging of 1899 chiefly consisted in dredging up blasted and partly blasted rock on the south-east side of the basin in sections 7 to 10, and for the remainder in cleaning up the work of former years in different parts of the basin. Total quantity dredged, 43,738 cubic yards, scow and box measurement, shale and trap rock with some earth; average cost  $19\frac{2}{3}$  cents per yard; depth of water to which dredging was done, at the then existing stage of water, 30 to 38 feet. Unloading dredgings by floating derricks and filling into cribwork or cars,  $3\frac{1}{4}$  cents per yard additional.

*Section 11 (approach to Windmill Point Basin).*—Deepening and widening the channel; shale and trap rock, part blasted and part not, boulders, gravel and hardpan; 30 to 38 feet depth; 5,396 cubic yards, scow and box measurement; cost  $10\frac{3}{4}$  cents per yard. Unloading by floating derricks and filling into cribwork or cars,  $3\frac{1}{4}$  cents per yard additional.

*Section 12.*—Dredging out old pile and cribwork wharves cutting into bank in rear and deepening for site of new cribwork wharf; the cutting was chiefly of soft earth in the upper part, but hardening with increase of depth to hardpan at the bottom, 34 to 36 feet depth; 18,289 cubic yards, scow and box measurement, cost  $17\frac{1}{4}$  cents per yard; part unloaded by floating derricks cost  $3\frac{1}{4}$  cents per yard additional.

Cleaning out ships' berths; mud and rubbish overlying hard pan; 30 to 35 feet depth; 750 cubic yards scow measurement; cost  $17\frac{3}{4}$  cents per yard. Unloading by derricks,  $3\frac{1}{4}$  cents per yard additional.

*Section 14.*—Dredging sites for the cribwork of the new pier; sewage deposit, mud and hard pan; 34 to 36 feet depth; 5,650 cubic yards, scow and box measurement; cost  $9\frac{1}{2}$  cents per yard. Unloading by derricks  $3\frac{1}{4}$  cents per yard additional.

*Section 17.*—Dredging sites for the cribwork of the new pier; chiefly tough silt; 35 to 38 feet depth; 57,324 cubic yards, scow and box measurement; cost  $7\frac{3}{4}$  cents per yard. Part unloaded by derricks cost  $3\frac{1}{4}$  cents per yard additional.

*Sections 22 and 23.*—Deepening the basin and cleaning out ships' berths; chiefly fine grained hard packed silt; 32 to 35 feet depth; 26,700 cubic yards, scow and box measurement; cost 7 cents per yard. Unloading by derricks,  $3\frac{1}{4}$  cents additional.

*Section 43.*—Cleaning out ships' berths; soft sand and silt; 32 to 36 feet depth; 3,150 cubic yards, scow measurement; cost  $11\frac{7}{8}$  cents per yard. Unloading by derricks,  $3\frac{1}{4}$  cents additional.

*Section 43 to 46.*—Dredging on sides of shoal; chiefly coarse sand; 35 to 40 feet depth; 9,900 cubic yards scow measurement; cost 10.6 cents per yard. Unloading by derricks,  $3\frac{1}{4}$  cents per yard additional.

*Island Shoal.*—Dredging inner side of shoal and making a channel through the shoal; tough silt of variable quality; the upper part, to a depth of 3 to 6 feet, was generally so tough and hard that the bucket teeth did not cut and crumble it like ordinary earth, but split it off in masses with a cleavage like rock; beneath was softer stuff, but still tough, difficult dredging. The depth of water on the shoal where dredged was generally from nothing to 10 feet, and on the remainder from 10 feet to 20 feet; the depth to which dredging was done was 25 to 38 feet. Dredges worked nearly always night and day. Quantity dredged, 781,514 cubic yards, scow and box measurement; cost  $6\frac{3}{4}$  cents per yard. Of this 695,427 yards was unloaded from the scows by derricks into cribwork and in rear in making the new pier in sections 17 and 18, and the new pier and wharf sections 12 to 15. Cost of such unloading,  $3\frac{1}{4}$  cents per yard.

*Aggregate Dredging.*—The aggregate quantity dredged at all places during the year was 963,131 cubic yards, box and scow measurement, and the average cost was 7.551 cents per yard. Of this quantity 177,510 cubic yards was carried and discharged by dumping scows, the cost of which is included in the dredging. The remaining 785,621 cubic yards was carried on flat scows, either on the open deck from which it was unloaded by clam shells and floating derricks, or in 4 yard boxes which were lifted and dumped by the derricks. All the dredged stuff thus unloaded by derrick was deposited in or behind cribwork for wharf building, and on the site of future wharf extension at Windmill Point, and on cars for making the guard pier. The average cost of the whole derrick work, apart from the scow service, was 3.22 cents per cubic yard, scow or box measurement.

*Rock Blasting.*—The rock drilled and blasted was Utica shale and trap, the trap being imbedded in the shale in beds, veins and pockets, in the proportion of about two-thirds of

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trap to one third shale; grade line of finished bottom, 38 feet to 30 feet below water surface at the time of working.

Working days, May 1st to November 28 .....	180 days
Working time per day .....	11 hours
Number of holes drilled and blasted .....	4,395 holes
Average depth of each hole, in rock .....	7.48 feet
Average depth of each hole from surface of water	32.10 feet
Total quantity of rock drilled and efficiently blasted, measured in solid to 6 inches below finished bottom .....	20,486 cubic yds.
Total cost including depreciation of plant .....	\$16,273.83
Cost per cubic yard, measured in solid .....	79.83 cents.

Appended are tables giving additional particulars of the dredging work and dredging plant in 1899.

Yours respectfully,

JOHN KENNEDY,

*Chief Engineer.*

HARBOUR DREDGING.—Abstract of Work done by each Dredge for the Harbour of Montreal in 1899.

VESSELS.	PLACES AT WHICH DREDGING WAS DONE.	TIME OF SERVICE.		QUANTITIES DREDGED.		CHARACTER OF SOIL.
		Days and Nights.	Total.	Cubic Yards.	Total Yards.	
Dredge No. 1 . . . . .	Island Shoal . . . . .	238½	287	285,044	320,469	Hardpan, silt and stones. Silt and sand. Hardpan and some rock. Hardpan, sand and timber. Sand, stone, macadam, etc. Sand.
	New Pier, Section 17, Crib seats . . . . .	3		3,400		
	New Pier, Section 14, Crib seats . . . . .	5½		5,650		
	New Wharf, Section 12, Crib seats . . . . .	24½		13,325		
	Section 43, Clearing Up . . . . .	4		3,150		
Sections 43 to 46, Deepening . . . . .	11½	9,900				
Dredge No. 2 . . . . .	Island Shoal . . . . .	57½	187	54,777	148,435	Tough silt and stones, some hardpan and shale. Tough silt and stones. Hardpan, stones and timber. Trap and shale, some hardpan. do do
	New Pier, Sections 17 and 18, Crib seats . . . . .	27½		39,000		
	New Wharf, Section 12, Crib seats . . . . .	9		4,964		
	Entrance to Windmill Point . . . . .	6½		5,936		
	Windmill Point . . . . .	86½		43,738		
Dredge No. 3 . . . . .	Island Shoal . . . . .	276	331	441,693	494,227	Silt, sand and stones, some shale. Silt, sand and stones. Silt and stones, hardpan and rock. Gravel, sand and stones. Hardpan, some rock.
	New Piers, Sections 17 and 18, Crib seats . . . . .	16		14,924		
	New Pier, Section 14, Crib seats . . . . .	16½		10,160		
	Deepening Berths, Sections 22 and 23 . . . . .	20½		26,700		
	Clearing Out Berth, Section 12 . . . . .	1½		750		
GRAND TOTALS . . . . .			805		963,131	

HARBOUR DREDGING.—Statement showing the number of days worked by each dredge and the quantity dredged at each place in the Harbour of Montreal in 1899.

HARBOUR DREDGING.—Statement showing the number of days worked by each dredge and the quantity dredged at each place in the Harbour of Montreal in 1899.

PLACES WHERE DREDGES WORKED.	VESSEL.	TIME OF SERVICE.		QUANTITIES DREDGED.		CHARACTER OF SOIL.
		Days and Nights.	Total.	Cubic Yards.	Total Yards.	
Windmill Point, Sections 7 to 10	Dredge No. 2	86½	86½	43,758	43,758	{ Trap and shale rock, some hardpan and earth.
Entrance to Windmill Point	Dredge No. 2	6½	6½	5,936	5,936	{ Trap and shale rock, some hardpan, gravel and boulders.
Island Shoal, Sections 12 to 20	Dredge No. 1	238½	572½	285,044	781,514	{ Hardpan, silt and stones. { Tough silt and stones, some hardpan and shale. { Tough silt and stones, some hardpan and shale.
	Dredge No. 2	57½		54,777		
"	No. 3	276		441,693		
New Pier, Section 17, Crib Seats	Dredge No. 1	3	46½	3,400	57,524	{ Silt and sand. { Tough silt and stones. { Silt, sand and stones.
	" No. 2	27½		39,000		
	" No. 3	16		14,924		
New Pier, Section 14, Crib Seats	Dredge No. 1	5½	22½	5,650	15,810	{ Hardpan and some shale. { Silt and stones, some hardpan and rock.
	" No. 3	16½		10,160		
New Wharf, Section 12, Crib Seats	Dredge No. 1	24½	33½	13,325	18,289	{ Hardpan, sand and timber.
	" No. 2	9		4,964		
Clearing Berth, Section 12	Dredge No. 3	1½	1½	750	750	{ Hardpan, some rock.
	" No. 3					
Deepening Berth, Sections 22 and 23	Dredge No. 3	20½	20½	26,700	26,700	{ Gravel, sand and stones.
	" No. 3					
Deepening Sections 43 to 46	Dredge No. 1	11½	11½	9,900	9,900	{ Sand, stone, macadamizing stone etc.
	" No. 1	4		3,150		
Clearing Berth—Section 43	Dredge No. 1		4			
GRAND TOTALS			805		963,131	

HARBOUR DREDGING.—Statement showing cost of Harbour Commissioners' dredging by different dredges, with their proportion of tug and scow service for 1899.

VESSELS.	Dredge service.		Tug service.		Scow service and sundries.		Dredge with tug and scow service added.		Time of service.		Cost per work in day of dredge.		Quantity dredged.		Average cost per cubic yard.		Additional cost for unloading by derricks.		Proportions of materials dredged.	
	\$	cts.	\$	cts.	\$	cts.	\$	cts.	Days	Nights.	\$	cts.	Cubic yards.	Cts.	Cts.	Earth	Rock.			
Dipper Dredge No. 1.	14,852.33		6,571.05		5,330.65		26,754.03		287		93.22	320,469	.0835	.03222	66½%	33½%				
" " No. 2.	10,845.35		4,281.45		3,473.30		18,600.10		187		99.47	148,435	.1253	"	100					
" " No. 3	15,751.30		7,578.39		6,147.37		29,477.56		331		89.06	494,227	.0596	"	100					
Totals and averages.	\$41,448.98		\$18,430.89		\$14,951.32		\$74,831.69		805		\$92.96	963,131	.0755	.....	94½%	5½%				

For full particulars of materials dredged at different places by the various dredges, see detailed statements in the preceding report.

... of cost of working the different vessels employed

HARBOUR DREDGING.—Statement showing particulars of cost of working the different vessels employed in harbour dredging in 1899.

VESSELS.	Repairs and Maintenance.	Fuel.	Wages.	Proportion of salaries of staff.	Estimated Depreciation of plant.	GRAND TOTALS.		Service. Days or nights.	Cost per day or night.
						Cost.	Total cost.		
Dipper dredge No. 1.....	\$ 5,510.42	\$ 2,299.71	\$ 5,096.85	\$ 685.40	\$ 1,259.95	\$14,852.33	287	\$51.75	
" " No. 2.....	3,652.07	1,599.36	3,692.84	480.50	1,420.58	10,845.35	187	58.00	
" " No. 3.....	4,941.45	2,865.79	5,656.39	723.31	1,564.36	15,751.30	331	47.59	
Totals.....	14,103.94	6,764.86	14,446.08	1,849.21	4,244.89	\$41,448.98	805	51.49	
Dipper dredges.—Totals.....						943.10	23	41.00	
Floating Derrick No. 1.....	240.76	140.35	513.92	48.07	.....	3,512.53	142	24.73	
" " No. 2.....	905.92	312.72	1,685.71	157.62	420.56	7,322.80	281	26.06	
" " No. 4.....	1,565.51	1,491.33	3,905.08	347.79	447.09	6,580.21	224	29.42	
" " No. 5.....	1,096.47	851.16	3,851.72	310.39	469.87	6,962.62	249	27.96	
" " No. 6.....	92.02	1,025.23	4,211.75	329.81	43.81	.....	919	27.56	
Totals.....	4,710.68	3,416.79	14,178.18	1,194.28	1,831.33	.....	313	21.34	
Floating derricks—Total.....						6,679.20	293	17.82	
Tug Aberdeen.....	851.45	1,863.46	2,741.75	293.16	929.38	5,219.75	203	16.93	
Tug St. Peter.....	643.02	1,335.03	2,498.65	240.51	502.54	3,437.75	203	16.93	
Tug St. Louis.....	413.08	784.99	1,746.53	158.47	331.68	1,555.19	80	19.44	
Tug Robert Mackay.....	165.54	463.49	847.26	79.30	.....	1,538.60	198	7.77	
Tug M. P. Davis.....	214.49	351.07	784.52	72.52	116.00	.....	1087	16.96	
Tugs.—Total.....	2,287.58	4,798.04	8,618.71	843.96	1,882.60	.....	.....	.....	
Scows and plant not in use.....	6,974.56	.....	.....	482.09	7,545.17	.....	.....	.....	
Grand Totals.....	28,076.76	14,979.69	37,212.37	4,359.54	15,563.99	100,162.95	.....	.....	

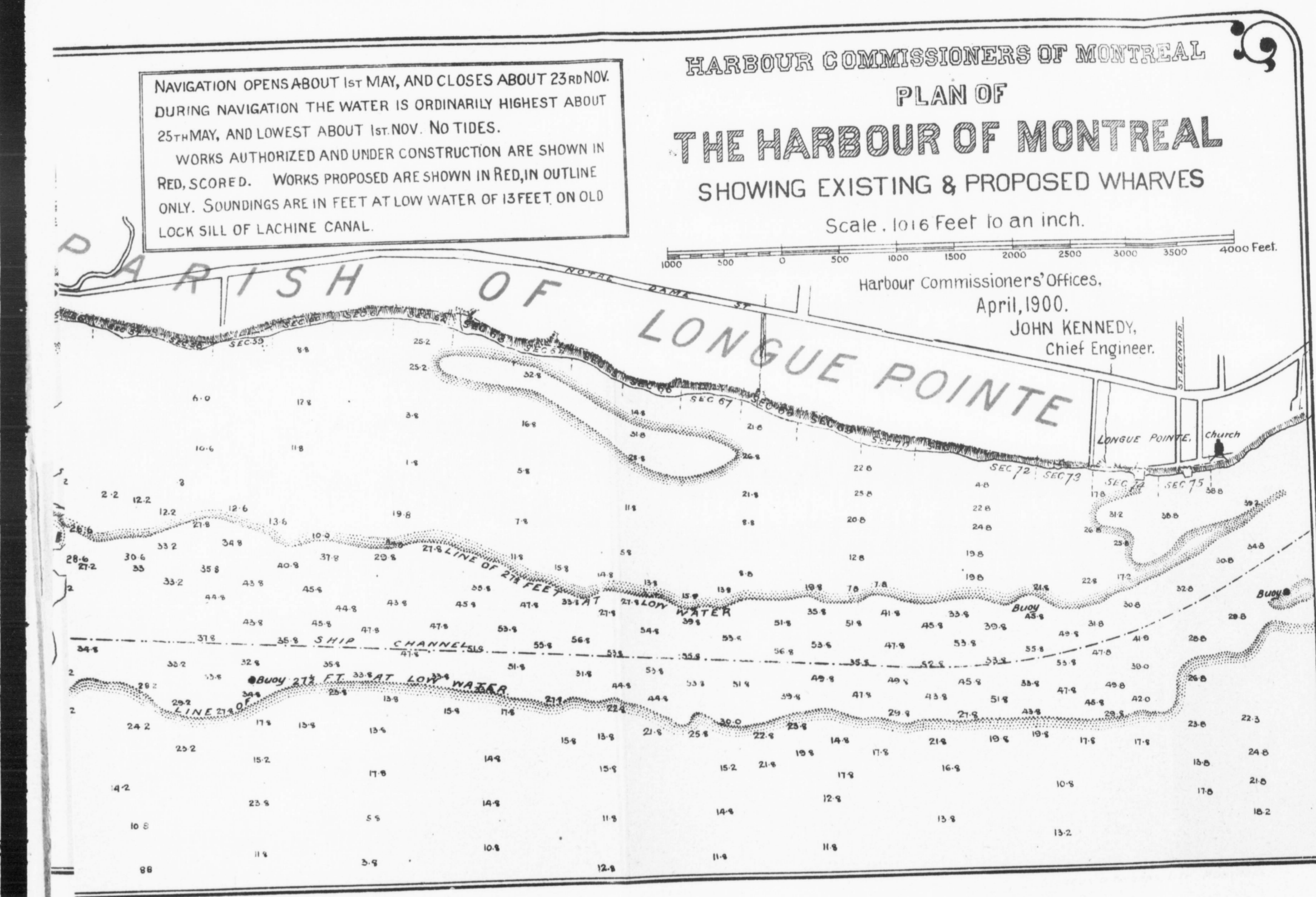
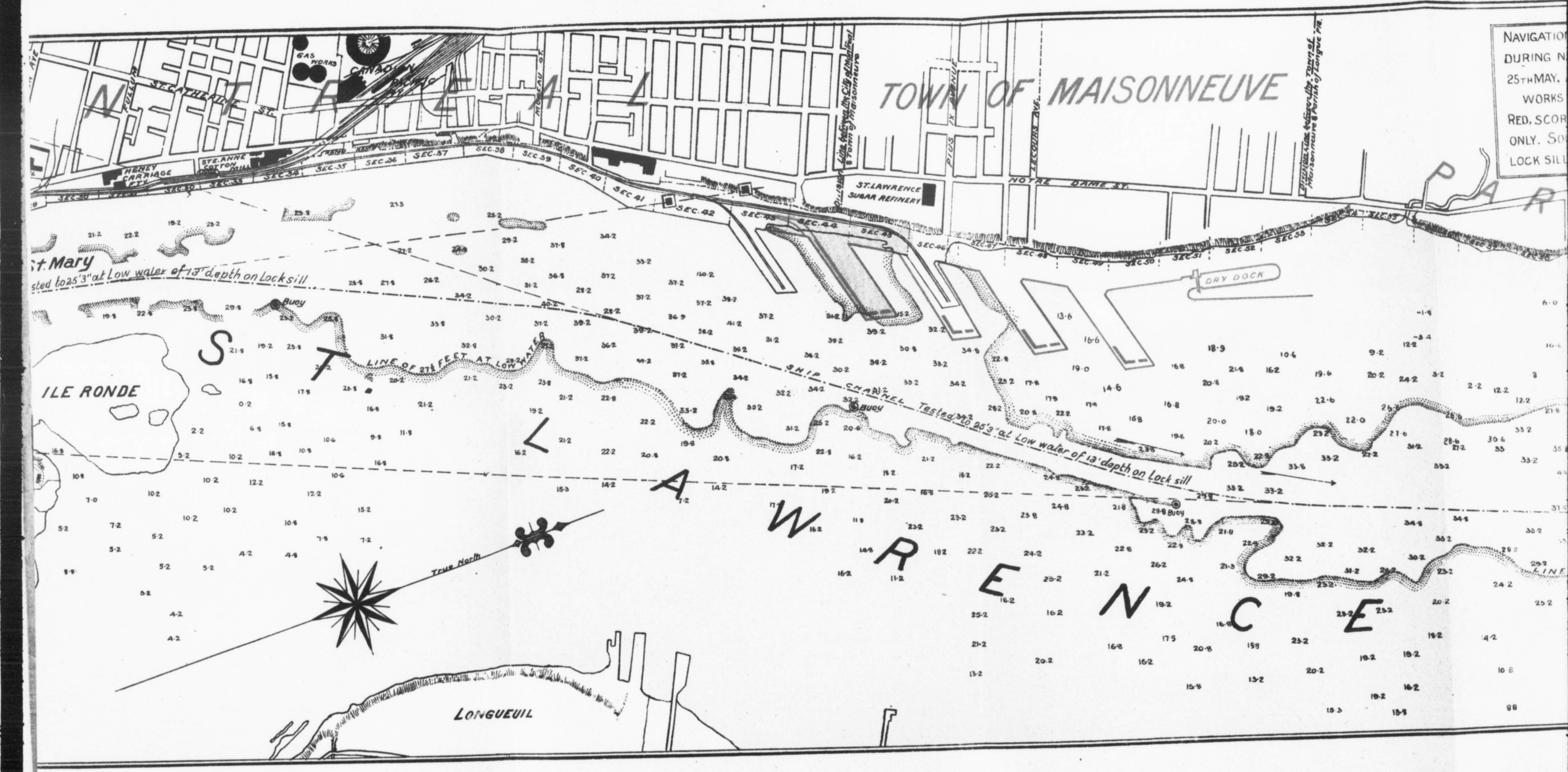
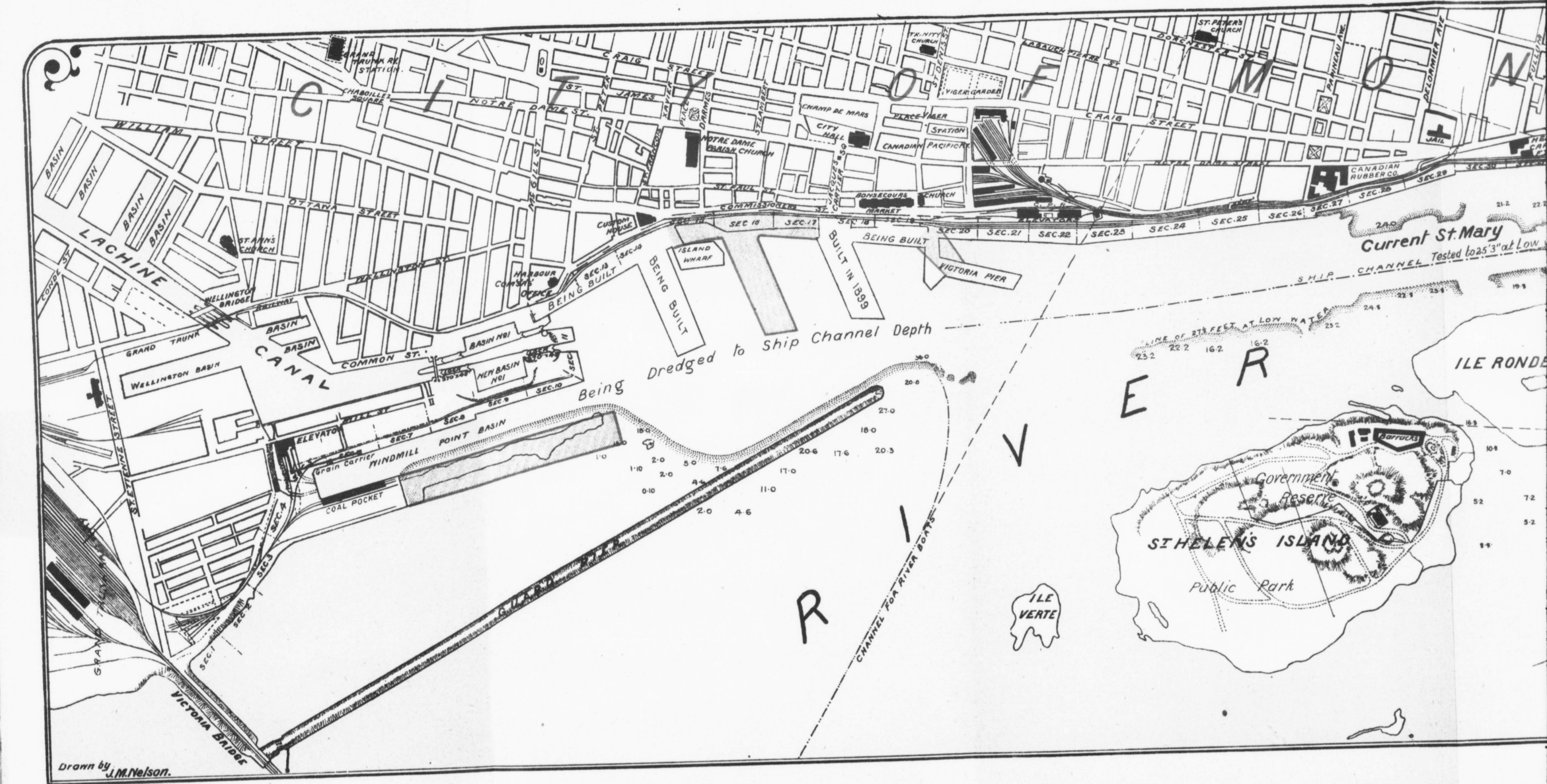
LIST OF HARBOUR COMMISSIONERS' DREDGING PLANT, 1899.

DESCRIPTION OF VESSEL.	HULL.			ENGINES.					REMARKS.	
	Length.	Breadth.	Depth.	When Built.	Kind of Engine.	No. of cylinders.	Dia. of cylinders.	Length of Stroke.		Pressure of Steam.
<b>DREDGES.</b>	Ft. In. over all.	Ft. In. beam.	Ft. In. over all.				Inches.	Inches.	lbs.	Depth to which Dredge can work.
Boom Spoon Dredge, No. 1	90 0	36 0	9 6	1890-1	Horizontal.	2	16	18	110	40
" " " " No. 2	90 0	36 0	10 3	1892	" " "	2	16	18	128	40
" " " " No. 3	90 0	36 0	10 3	1894	non-condensing.	2	16	18	120	40
" " " " No. 6	77 0	27 0	7 6	1874	" " "	1	14	16	85	35
" " " " No. 7	77 3	27 0	7 0	1874	" " "	1	14	16	85	32
<b>DERRICKS.</b>										
Clam Shell Derrick, No. 1	76.0	27 6	8 0	1899	Horizontal	2	12	14	110	..
" " " " No. 2	57 0	23 6	5 9	1872	" " "	2	7	12	85	..
" " " " No. 4	75 0	26 10	7 6	1892	non-condensing.	2	12	14	110	..
" " " " No. 5	75 0	26 10	7 6	1892	" " "	2	12	14	110	..
" " " " No. 6	75 0	26 10	7 6	1892	" " "	2	12	14	110	..
Land Derrick	42 0	40 0	..	1892-3	" " "	2	12	14	110	..
<b>DRILLING AND BLASTING BOAT.</b>	80 0	27.0	5 6	1895	" " "	..	..	..	110	..
<b>TUG BOATS.</b>			Hold							
Tug St. Louis	67 0	15 0	8 7	1875	Vertical non-condensing.	1	16	20	85	..
" " St. Peter	71 6	16 6	8 6	1875	" " "	1	20	22	85	..
" " M. P. Davis	40 5	10 7	5 3	1879	" " "	1	10	12	95	..
" " Aberdeen	79 3	18 3	9 0	1895	Vertical condensing.	1	16	24	125	..
" " Robert Mackay	81.9	17 6	10.0	1899	" " "	1	16	24	140	..
<b>TESTING BOAT</b>	73 3	14 0	Overall	..	..	..	..	..	..	..
<b>FLOATING SHOP</b>	73 3	14 0	3 1	1897	..	..	..	..	..	..
	133 0	29 0	10 0	..	..	..	..	..	..	..
<b>SCOWS.</b>					Capacity.					
1 Flat deck Scow	No. 6	18 0	5 0	1873	45 cubic yds.	..	..	..	..	..
" " " " No. 11	70 0	18 3	5 1	1874	45	..	..	..	..	..
" " " " No. 17	70 0	20 2	6 0	1876	" " "	..	..	..	..	..
" " " " No. 18	75 0	20 4	6 3	1876	" " "	..	..	..	..	..
" " " " No. 19	75 4	20 3	6 5	1878	" " "	..	..	..	..	..
" " " " No. 19	75 4	20 3	6 5	1878	" " "	..	..	..	..	..
" " " " No. 20	75 6	20 3	6 3	1878	" " "	..	..	..	..	..
" " " " Nos. 21 & 22	85 0	25 0	7 5	1891	" " "	..	..	..	..	..
" " " " Nos. 23 & 24	85 0	25 0	6 9	1891	" " "	..	..	..	..	..
" " " " Nos. 25 to 30	85 0	25 0	6 9	1892	" " "	..	..	..	..	..
" " " " Nos. 31 to 35	85 0	25 0	6 9	1893	" " "	..	..	..	..	..
2 Dump Scows Nos. 36 & 37	106.0	26.19	9.6	1899	" " "	..	..	..	..	..

\* The tug M. P. Davis was dismantled in the fall of 1899. Dredge No. 1 and Derrick No. 4 were hired to The London Salvage Association, in May and June, 1899, for the purpose of floating S.S. Gallia aground in Lake St. Peter.

2 Dump Scaws No. 36 & 37 106.0 26.19 9.6 1869 200

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Dredge No. 1 and Derrick No. 4 were hired to The London Salvage Association, in May and June, 1899, for the purpose of floating S.S. Gallia  
aground in Lake St. Peter.



NAVIGATION  
DURING NOV.  
25<sup>TH</sup> MAY,  
WORKS  
RED, SCORED  
ONLY. SHIP  
LOCK SILL

NAVIGATION OPENS ABOUT 1<sup>ST</sup> MAY, AND CLOSES ABOUT 23<sup>RD</sup> NOV.  
DURING NAVIGATION THE WATER IS ORDINARILY HIGHEST ABOUT  
25<sup>TH</sup> MAY, AND LOWEST ABOUT 1<sup>ST</sup> NOV. NO TIDES.  
WORKS AUTHORIZED AND UNDER CONSTRUCTION ARE SHOWN IN  
RED, SCORED. WORKS PROPOSED ARE SHOWN IN RED, IN OUTLINE  
ONLY. SOUNDINGS ARE IN FEET AT LOW WATER OF 13 FEET ON OLD  
LOCK SILL OF LACHINE CANAL.

HARBOUR COMMISSIONERS OF MONTREAL  
PLAN OF  
**THE HARBOUR OF MONTREAL**  
SHOWING EXISTING & PROPOSED WHARVES  
Scale: 1016 Feet to an inch.  
Harbour Commissioners' Offices,  
April, 1900.  
JOHN KENNEDY,  
Chief Engineer.

Drawn by J.M. Nelson.