

ANNUAL REPORTS  
OF THE  
**Harbour Commissioners**  
OF MONTREAL,  
FOR THE YEAR 1897.



**Commissioners :**

ROBERT MACKAY, Esq. PRESIDENT.

|                         |                                |
|-------------------------|--------------------------------|
| JONATHAN HODGSON, Esq.  | R. WILSON SMITH, Esq. (MAYOR.) |
| ROBERT BICKERDIKE, Esq. | DAVID G. THOMSON, Esq.         |
| ALPHONSE RACINE, Esq.   | JOHN TORRANCE, Esq.            |
| EUSTACHE H. LEMAY, Esq. | JOSEPH CONTANT, Esq.           |
| WILLIAM FARRELL, Esq.   | ANDREW ALLAN, Esq.             |

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ALEXANDER ROBERTSON, SECRETARY.  
JOHN KENNEDY, M. INST. C. E., CHIEF ENGINEER.  
CAPTAIN THOMAS HOWARD, HARBOUR MASTER.  
CAPTAIN T. BOURASSA, DEPUTY HARBOUR MASTER.  
ROBERT A. EAKIN, WHARFINGER AND PAYMASTER.

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**Montreal :**

PUBLISHED BY ORDER OF THE HARBOUR COMMISSIONERS OF MONTREAL.  
1898.

*With the Compliments  
of the  
Harbour Commissioners of Montreal.*

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## TABLE OF CONTENTS.

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|  | PAGE. |
|--|-------|
| President's Statement.....                   | 5     |
| The St. Lawrence Tides and Tide Tables.....  | 15    |
| Memorandum to Dominion Government.....       | 17    |
| General Statement of Operations .....        | 20    |
| Auditors' Report .....                       | 25    |
| Tariff.....                                  | 26    |
| Report of Pilotage District of Montreal..... | 29    |
| Report of Montreal Decayed Pilots' Fund..... | 56    |
| Harbour Master's Report .....                | 71    |
| Chief Engineer's Report .....                | 89    |

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## STATEMENT

MADE BY

**MR. ROBERT MACKAY, President**

**HARBOUR COMMISSIONERS OF MONTREAL,**

ON THE

**BUSINESS OF THE PORT FOR THE YEAR 1897, AND OTHER  
MATTERS CONNECTED WITH THE TRUST,**

AT THE MEETING OF THE BOARD HELD ON 29TH MARCH, 1898.

GENTLEMEN,—

The time has again come round when it is usual for your President to give a statement of the business of the Port for the past calendar year and mention briefly the principal subjects which engaged your attention during that time.

As you will remember, the season was a very busy one, necessitating the holding of a good many extra meetings to deal with the subject of the proposed enlargement and improvement of the Harbour, and also with the difficulties which arose in connection with pilotage matters.

In my last statement the hope was expressed that a satisfactory arrangement would be concluded at an early day by which the proposed improvements would be at once commenced. I regret that this hope has not thus far been realized; but, in view of the very full consideration given to it by yourselves and by all the commercial bodies of the City, as well as the more special and recent representations made to the Government for aid to carry out the long delayed and much needed improvements, I would again express a strong hope that before long such arrangements will be made as will permit the works to be commenced and carried out without any unnecessary delay.

Shortly after my last statement, the Department of Public Works submitted a Plan for the Board's consideration, which

was considered at several meetings during July, the Chief Engineer of the Public Works Department, the City Surveyor, and your own Engineer being present to explain the features of the said Plan and those of the No. 6 Plan, formerly adopted by the Commissioners. This Plan showed three piers of 230 feet wide and 1000, 900 and 750 feet long respectively, with a width of shore wharf of 275 feet. As this Plan did not, however, seem to furnish sufficient accommodation in the central part of the Harbour, another Plan, No. 19, was prepared by the instructions of the Harbour Commissioners, which showed four piers of 230 feet wide, and a shore wharf of 200 feet, giving a berthing capacity for eighteen ships of 500 feet long, with 3,100 lineal feet of spare space in addition. This being submitted to the different commercial bodies, through their several representatives on the Board, was on the whole favourably received by them, and approved by the Board. It was also approved of by the Special Committee of the City Council, as well as by the Marine Underwriters' Association.

On the 11th October, the Honourable Minister of Public Works, accompanied by the Right Honourable Sir Wilfrid Laurier, Premier, attended in the Commissioners' Board Room a conference at which representatives of all the commercial bodies were present, who submitted in turn the views of the said bodies. It being evident from the result of this conference that a plan locating four piers between the entrance of the Lachine Canal and the Victoria Pier, would not be accepted, another Plan, 12A, was prepared early in November, slightly differing from the Government Plan received in July, and after due consideration being given to it, it was forwarded for the approval of the Minister of Public Works, on the following understanding: That no portion of the cost of carrying out the said Plan will be borne by the Harbour Commissioners; that is, that the cost be borne by the Government, and that the Plan be on the high level. Although no formal approval has yet been given of the said Plan, No. 12A, there is good reason to believe that it is acceptable to the Government. It is hoped also that the long and very full consider-

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ation of the subject by all the commercial bodies, as well as the further experience gained from the arrival of vessels of very large tonnage, will be of advantage to the Government and the Commissioners in coming to a wise decision upon this very important matter.

The urgent necessity for increased accommodation will be shown by the figures contained in the following remarks, and more especially by the reports of the different Departments of the Harbour service, as well as by the applications now before you for accommodation during the ensuing season, in many of which largely increased accommodation is applied for, as being absolutely necessary to the maintenance of the trade previously done, and to give facilities for trade which the shipping firms state is only limited by the accommodation that can be afforded.

In regard to the Harbour Revenue, the year 1897 was again notable for the large increase in exports; the revenue from imports, however, showed a slight falling off. The total revenue for the year was \$255,416.86, as compared with \$258,131.76 in 1896. The small apparent decrease is accounted for by the higher tariff of May and June, 1896, and with the same tariff for both years, the figures would have shown an increase of about \$10,000 last year. The cost of management, maintenance and repairs, apart from expenditure on capital account, was \$81,463.11. The interest was \$140,738.56, showing a surplus as between revenue and ordinary expenditure of \$33,319.34. The expenditure on capital account was \$156,751.04, the work being on the Windmill Point Basin and Wharf, the dredging of the Harbour, the Guard Pier, the extension of the Island Wharf, and of the western wharf at Longue Pointe, and additional railway sidings.

The bonded debt of the Harbour was increased during the year by \$90,000, received from the Government loan for expenditure on the Windmill Point Basin and Wharf. The total bonded debt at the end of the year was \$3,412,000, on which the annual average rate of interest is  $4\frac{1}{2}$  per cent.

By the Harbour Master's returns, it will be noted that 796 sea-going vessels arrived during the season, with a total tonnage of 1,379,002 tons, being 87 more vessels and an increase of 162,534 tons more than in 1896. The tonnage of the inland vessels was 1,134,346 tons, being an increase of 130,229 tons over the previous year.

A considerable addition was made to the wharfage space in the Harbour by the completion of the new wharf across the head of the Windmill Point Basin and its extension 800 feet down the south-east side, making, in all, an addition of 1351 feet to the wharf frontage of the basin. The new south-east side wharf is 300 feet in width, and is made 3 feet 9 inches higher than the average of other wharves, in order to better adapt it to the needs of the coal trade.

A lesser but important addition to the wharfage was the lengthening of the outside of the Island Wharf 132 feet, making it 442 feet long, and thus fitting it to accommodate a steamship of the largest class, instead of only a small steamer as before.

The most westerly of the two wharves at Longue Pointe, built some years ago by the Sisters of Providence, was purchased by the Harbour Commissioners last fall, and the wharf enlarged to 100 feet length of front, so as to accommodate the larger river barges.

The railway facilities on the wharves were increased by a new siding laid on the Windmill Point Wharf for the coal trade, one at the Canadian Pacific Elevators for cattle shipment, and two at Hochelaga for lumber shipments, making in all  $1\frac{1}{2}$  miles of additional track.

The principal dredging work of the summer was directed toward the deepening and enlarging of the Windmill Point Basin, the widening and deepening of the Ship Channel through the Harbour between the entrance of the Canal and Maisonneuve, and the deepening of a number of shallow places between the channel and the wharves at Hochelaga.

The Guard Pier was lengthened at its upper end, so as to reduce the opening between it and the Victoria Bridge to 300

feet in width. It has been to provide for the opening on the Pointe St. Charles within the Harbour.

The pilotage law of the year, 1897, incorporated amendments for a week's trial. They are all so good that it seems probable that it will be reported. A bill to oppose the law was taken by the House. The Bill had been passed.

During the winter, the expense to the Government for the maintenance of the wharves was found to be insufficient. A bill was applied to the Government. Meantime, the Harbour Commissioners have alleged grievances. It is to be hoped, that the Government will take the necessary steps.

Regret is expressed that the season has not been so successful as the previous one. The Cap-a-loup has been a result of the season. A part of the wharves have been himself was committed to the Fisheries. It is to be frequented by the testing or the accuracy of the

feet in width at high water, and the effect this winter has been to prevent the entrance of sufficient ice to cause shoving on the Point St. Charles Flats and upper part of the basin within the Guard Pier.

The pilotage matters with which you had to deal during the year, and more especially the opposition to the proposed incorporation of the pilots, and their strike, which continued for a week, or rather more, during the latter part of June, are all so fully dealt with in the report to the Government, that it seems scarcely necessary to do more than allude to said report. After very careful consideration, it was resolved to oppose the incorporation of the pilots, which course had been taken by the Commissioners on previous occasions when a Bill had been applied for from Parliament.

During the strike, which caused so much anxiety and extra expense to the owners and agents of the shipping of the Port, it was found that the by-laws respecting pilotage were quite insufficient to meet such a difficulty, and the Government was applied to for the repeal and amendment of certain of them. Meantime, shortly after the opening of this year, the Pilotage Commission appointed by the Government to enquire into alleged grievances of the pilots, began its sittings, and, it is to be hoped, will make its report in time to be acted upon by the Government during the approaching season of navigation.

Regret has to be expressed that one very serious accident occurred in the river between Montreal and Quebec during the season, namely, the striking of the steamship "Arabia" in the Cap-à-la-Roche Channel on the 26th September. The result of the very full enquiry held into this accident, during part of which the Honourable the Minister of Public Works himself was present, and also his Chief Engineer, was transmitted to the Departments of Public Works and Marine and Fisheries, with the recommendation that the channel should be frequently and carefully examined in the matter of its testing or sweeping for possible obstructions, and also as to the accuracy of the buoying. It was also suggested that a

semaphore should again be placed at St. Jean des Chaillons, to indicate to passing vessels the exact depth of water in the channel, and which it is hoped the Government will establish.

Another accident that occurred which is worthy of mention was the unfortunate collision between the United States steamship "Yantic" and the steamship "La Canadienne," off Pointe-à-Pizeau, in Quebec Harbour, shortly before daylight on the 29th October. After a lengthy trial, the pilot of the former vessel was found guilty, and suspended until 1st July next.

Although there were other accidents during the season none of them was of much consequence.

From the lists of deep draught vessels and accidents given in the pilotage report, it would appear that, with careful navigation, the channel is a safe one for both large and deep draught vessels, but, in view of the occurrences during last year, no doubt greater precautions will be taken in the future.

In view of the foregoing, the following summary of the operations for the improvement of the Ship Channel between Montreal and Quebec during the past year, and also what is proposed to be done during the current year, will, no doubt, be of interest to the public, as coming from the Chief Engineer of the Department of Public Works, Ottawa:—

"The work in course of execution is that entered upon in 1895. It consists of the widening, straightening and deepening, where necessary, of the channel between Montreal and Cap Charles, and in the original dredging of a channel, for use at all stages of the tide, through the shoals at Grondines, Lotbinière, Cap Santé, Ste. Croix and St. Augustin.

"One elevator dredge worked throughout the season in Montreal Harbour, under the direction of the Chief Engineer of the Commissioners.

"The work of widening and deepening the curves at Longue Pointe and Pointe-aux-Trembles was completed, as well as the widening or partial removal of the *pouillier* opposite Longue Pointe church.

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"At Contrecoeur considerable work was done towards the completion of the widening of the bell-mouth curve, commenced in 1896.

"A few small lumps on the St. Ours Traverse were also removed.

"The sand bars at Champlain were dredged. This is the only place where the channel has been found to fill in to any extent, and dredging is required about every three years.

"The Barre-à-Boulard Channel, at Lotbinière, was completed to a width of 400 feet in 1896, but, owing to the strong current at this place and the difficulty of maintaining buoys, it was decided to widen this channel to 500 feet while the plant was in place and fitted for this difficult work. This widening was finished just before the dredge had to be taken into winter quarters in 1897.

"A good commencement was made with the new dredge 'Laurier' on the new work of a 500-foot channel through the Ste. Croix Bar. There is at present only 22 feet of water over this shoal at low water. Owing to the heavy weather frequently experienced at this place, and the great range of the tides, none of the old plant was suitable for this work. The dredge 'Laurier' and plant were especially designed for this work and for work in exposed places, requiring dredging, below Quebec.

"It is the intention to keep four elevator dredges, with the necessary tugs, stone-lifters and plant, in efficient operation, and for that purpose, and in view of the probable necessity for further deepening and possible widening, the old plant, as it gives out, is being gradually reconstructed.

"Two new dredges and tugs have already been constructed and successfully operated, and two others are being commenced.

"A hydrographic survey is in progress between Longue Pointe, the eastern limit of Montreal Harbour, and Portneuf, to connect with the survey made between Portneuf and Quebec in 1893 and 1894. This work is necessary to locate new triangulation points, to fix a new datum, to gain information for the proper disposal of dredged material, etc.

"Owing to the frequent groundings of steamships, between Montreal and Quebec, all coming with the extreme low water, trouble with the pilots and increased traffic, decided measures were taken to examine into the causes of these groundings and the condition of the channel. It is remarkable that only one grounding took place after that supervision began, the steamship 'Lake Superior' grounding and remaining over night on a sand bar at Champlain, at which a dredge had been placed to work a few days before. This good result was no doubt due to the reduction of all gaugings by 10 inches, an absolute proof that vessels were allowed to load beyond a safe depth.

"The Champlain channel was the only place where filling in was found, but two buoy anchors, a sunken buoy, and a large boulder were found in the channel at Cap à la Roche and removed. The positions of several buoys were found to be incorrect and reported.

"It may be remarked that of the four serious accidents on the St. Lawrence route where heavy loss resulted, one, the steamship 'Arabia' took place between Montreal and Quebec, while the other three, the steamship 'Arcadia', the steamship 'Baltimore City' and the steamship 'Turret Cape' took place below Quebec.

"Official notice has been given of the completion of the widening at Longue Pointe and Pointe aux Trembles, so that the buoys may be placed to show the increased width. The widening at Contrecoeur will also be available early in 1898.

"The Department of Marine was advised early in 1896 of the desirability of changing the range lights to better indicate the Barre à Boulard channel, but so far it has not been done.

"The work for the coming season will consist of a continuation of the work of widening and deepening where found necessary, between Montreal and Cap Charles with the two old dredges. The Barre à Boulard Channel will be tested, and if found clear, the heavy moorings will be lifted and the dredge taken to work on the shoals at Cap Santé. The

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dredging at Ste. Croix will also be pushed, so that the half width of the channel may be available as soon as possible."

The Chief Engineer of the Department of Marine and Fisheries, having been asked for a memorandum of improvements made by that Department in aids to navigation between Montreal and Quebec during the past year, has noted the rebuilding of the Ile à la Pierre lighthouse on a steel and concrete foundation, the removal of the Semaphore from Lotbiniere to Cap Santé and the placing of additional buoys late in the season, under the instructions given by the Harbour Commissioners to the Buoy Contractors. He has also furnished a sketch of the progress of the tidal service to show the basis upon which the tide table for Cap Santé is prepared, which, I would suggest, should be inserted in our annual pamphlet as an appendix to these remarks.

I would also recommend that the Memorandum *re* Government aid for Harbour improvement, dated 22nd March, which has just been approved, be printed in the same pamphlet.

The settlement of the boundary line between the Harbour lands and those of adjacent proprietors in the Parish of Longue Pointe was carried on, so that now only a limited number of lots remain to be defined. Above the Windmill Point Basin, however, the boundary between the Harbour property and that of the Grand Trunk Railway Company has not been so easy of settlement, and has now resulted in an action en bornage having been taken by the Commissioners against the Railway Company.

On 1st August, Mr. Joseph Contant was elected by La Chambre de Commerce du District de Montreal as its representative on the Board, the term of Mr. L. E. Morin having expired. A vote of thanks was tendered to the latter gentleman for the valuable services he had rendered during his four years' term, and Mr. Contant welcomed to his seat.

The Board has also been deprived this year of the valuable services of His Worship Mayor R. Wilson-Smith, who, as the City's representative, was most active in his support of the interests of this Commission at all times. He has been

replaced on the Board by his successor in the Mayoralty, His Worship Raymond Prefontaine, M.P., from whose ability and experience much is expected in connection with this Commission. In bidding farewell to Mayor Wilson-Smith it is but right that we should acknowledge the value of his services to this Commission so readily given at all times.

At the time of Queen Victoria's Diamond Jubilee, in June, the Harbour was honoured by a visit from Her Majesty's Cruiser "Talbot," the finest war vessel that has ever come up the river further than Quebec, her Commander being Captain E. Gamble. Her stay in port was as usual much appreciated by the citizens, and gave eclat to the celebration of the Jubilee.

On 30th August the Commissioners had the honour of joining in the welcome to the Right Honourable Sir Wilfrid Laurier, G.C.M.G., Premier, on his return from his visit to the British Isles and France, to take part in the Jubilee celebrations in London.

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## THE ST. LAWRENCE TIDES AND TIDE TABLES.

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A systematic study of the tides and currents has been undertaken by the Department of Marine and Fisheries, known as the Tidal Survey; and for the purpose of tracing the progress of the tides and obtaining tidal data, a series of tide gauges has been erected on our eastern coasts. One of the earliest of these was placed at the Levis Dry Dock in November, 1893, to obtain the Quebec tide. Like the other gauges, it is furnished with a self-registering instrument, by which a continuous record of the tide is obtained day and night throughout the year. The next in the series were placed at Father Point, the Pilot Station; and at South-West Point, Anticosti.

Tide Tables for Quebec were prepared as early as possible from this record. They were first issued by the Tidal Survey for the year 1896, which was the first time that tables based upon the direct observation of the tides were available. These tables give the height of the tide as well as the time; the height being measured from the same datum level as used for the Admiralty chart of Quebec Harbour. They give also the means of knowing the depth of water on the sill of the Levis dry dock at any high water.

The tide tables for 1898 are based upon the height of the tide at every hour during a period of two complete years; namely November, 1893, to January, 1896.

With these tables a series of Tidal Differences is given; which enables the time of high and low water to be found throughout the St. Lawrence from Three Rivers to Anticosti. These have been worked out by the Tidal Survey from simultaneous observations of the tide, as explained in the Publication of the Harbour Commissioners.

A special tide table has also been prepared to show the time of the tide at the Ste. Croix Bar, as this is now the shallowest point in the river above Quebec. This is computed from the Quebec tables by difference of time, based upon the simultaneous observations above referred to, and compared also with the record obtained during the season of 1897 at the semaphore at Cap Santé. The difference in time for Quebec is not the same for high water and low water; and there is also a variation in the difference during the course of the season which is allowed for. These tables are thus as correct as they can be made from all the information that has yet been obtained.

Another special tide table for Father Point was also prepared last season; based upon simultaneous observations during two complete years. This was prepared in manuscript only, and posted at the Lighthouse at Father Point, as the expense of printing could not be met by the Tidal Survey. It was there accessible to the Pilots, and has been much appreciated by them. If they knew the time at which the current turns with reference to the time of high water, the tables would be of still greater service; but as yet no direct investigations have been made by the Tidal Survey to ascertain this relation throughout the tidal portion of the St. Lawrence.

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## MEMORANDUM

ON BEHALF OF

### THE HARBOUR COMMISSIONERS OF MONTREAL

Submitted to the Right Honourable the Premier of the  
Dominion of Canada on 24th March, 1898.

In submitting to the Honourable Ministers the Resolutions passed by the Harbour Commission relating to the proposal made to secure the aid of the Government in the expenditure required for the immediate and necessary improvement of the Port facilities of the Harbour of Montreal, the Committee of the Board charged with that duty desire again to place before the Honourable Ministers the claims of the Harbour for direct aid and support from the Government of the Dominion:—

1. The work is a National work, as the Port is generally admitted to be the National Port of the Dominion.
2. The proposed improvements and additions are absolutely required to meet the present, and provide for the future trade of Canada which has its headquarters, both as to exports and imports, at the City of Montreal.
3. The aid and support asked from the Government is a necessity forced upon the Harbour Commission from the fact that the charges required to pay the present obligations of the Commission for interest on existing loans, maintenance of present property and equipment, dredging, and other regular expenses have reached a sum which requires the levying of Harbour Dues to the full extent that the shipping interests of the Port can bear. The greatest reduction possible in all expenditures has been made by the present Commission, and it has been practically admitted by all the interests concerned

(including the Government) that the charges on the shipping and trade coming to the Port must not be increased.

4. As already represented to the Government, the Commission considers it has a just claim against the Government for expenditures and interest thereon made by the Harbour Commission at various times in improving and deepening the St. Lawrence Channel between Montreal and Quebec—a work which the Government have since assumed as a National work. The claim made by the Commission on the Government in this matter is about \$2,000,000, and although the claim has not been admitted by the Government, the Commission consider it proper to again urge it on the Government in connection with their present demands for assistance and support.

5. No Government assistance has at any time been given to the Montreal Harbour Commission, and although the Port is now the National Port of the Dominion, all the great works connected with the Harbour have been paid for by the Harbour Commission, and out of revenues derived from charges on the shipping and imports and exports, which charges have now reached a limit which cannot be increased.

6. It is with regret that the Harbour Commission approach the Government with their present request for assistance, but the Commission consider that they would fail in their duty, not only to the interests committed to their charge, but to the trade and commerce and the greater interests of the Dominion, if they did not, at this stage of the progress of our country, take means to provide at this Port for the necessary accommodation required for the shipping interests and the import and export of goods at this the great centre of our commerce and commercial enterprises.

7. The manner and extent of assistance required from the Government, the Commission have placed within the narrowest limit possible of cost and responsibility to the country. The sum required for the proposed improvements will increase the debt of the Harbour Commission to the total amount of \$6,500,000. On this total debt the Commission propose to

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pay interest at the rate of two and a half per cent. per annum, making the annual payment of interest, \$162,500. This is the utmost sum the Commission feel justified in imposing as a tax on the import and export trade of the Port, and is an increase over the present amount at their disposal for the purpose. All that the Commission requires of the Government is that the Government take over the payment of the interest on the present debt of the Commission. This debt, consisting of Bonds maturing at different times and carrying various rates of interest will, in due course of time, lapse, and thus relieve the country of any further expenditure in this connection (as the rate of interest guaranteed by the Commission is about as much as the Government pays for its present loans).

8. As the Honourable Ministers will see from the Accountant's statements submitted, the largest sum required will be that for the present year (after which time it is hoped the amount will be regularly decreased until extinguished altogether) and will amount to but \$40,000, and taking the small sum required, and considering the large interests that will be served by its aid, the promotion of such a large section of the trade and commerce of the Dominion, and consequent general welfare and prosperity of the people of this country, the Committee hope that the Honourable Ministers will consider it their duty and privilege to grant the respectful and reasonable request of the Harbour Commission of Montreal.

On behalf of the Harbour Commissioners of Montreal,

(Signed) ROBERT MACKAY,  
*President.*

(Signed) R. PREFONTAINE,  
*Mayor of the City of Montreal and  
Harbour Commissioner.*

HARBOUR COMMISSIONERS' OFFICE.)  
Montreal, 22nd March 1898. }

GENERAL STATEMENT OF OPERATIONS  
OF THE  
**Harbour Commissioners of Montreal,**  
FOR THE YEAR ENDED 31st DECEMBER, 1897.

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

MONTREAL, April 20th, 1898.

F. GOURDEAU, Esquire,  
*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, General Statement of Operations of the Trust for the year ended 31st December, 1897.

The net ordinary revenue was \$255,416.86, or \$2,714.90 less than 1896. The small decrease is accounted for by the fact that a higher tariff of wharfage dues was in force during May and June, 1896, and with the same tariff for both years the figures for 1897 would have shown an increase of about \$10,000. As in the year 1896, there was again a large increase in the revenue from exports, while that from imports showed a slight falling off. The expenditure for management, maintenance and repairs, and interest, was \$222,097.52 net, leaving a surplus over working expenses of \$33,319.34. It having been found by the executive that the interest on Harbour Debentures, as well as the half-year's annuity payable to Mrs. Young under the Commissioners' Act, had not heretofore been provided for in the financial statements of the Trust as accrued to 31st December, these liabilities for the last six

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months of 1897 have been charge d up in the books and shown in the Statement and amount to \$70,183. The surplus of revenue during the past three years, having amounted to over \$100,000, covers this amount, and for the future the yearly revenue will only be chargeable with the interest of the twelve months during which that revenue accrued.

The expenditure on new works and plant for the year amounted to \$156,751.04, apart from \$1,000 shown as paid to the Longue Pointe Providence Sisters for all their rights in a wharf at Longue Pointe, and \$1,609.34 expended on Guard Pier Construction on behalf of the City of Montreal, which sum is still owing by that corporation, as well as the amounts similarly expended in 1895 and 1896, or a total of \$32,410.73, including \$3,046.14 of interest to 31st December last.

Under the Act 59 Vic., ch. 10, the Government of Canada advanced to the Commission the sum of \$90,000 on the security of a Montreal Harbour Debenture bearing interest at the rate of  $3\frac{1}{2}$  per cent. per annum for the purpose of completing a certain portion of the new Windmill Point Wharf and Basin, on which work \$100,000, also obtained from the same loan, had been expended during the previous year.

The usual reports for the past year of the Montreal Pilotage District, the Montreal Decayed Pilots' Fund, and the Harbour Master, have already been transmitted to you, while that of the Chief Engineer on the works for the improvement and maintenance of the Harbour is transmitted herewith. From the Harbour Master's report it will be noted again that there was a considerable increase in the number and tonnage of both sea-going and inland vessels as compared with 1896 and previous years. Of the former there were 87 vessels and 162,534 tons, or  $13\frac{1}{3}$  per cent. more, and of the latter 130,229 tons, or about 13 per cent. more.

I have the honour to be, Sir,

Your obedient servant,

ALEXANDER ROBERTSON,

*Secretary.*



Wharfinger for Local Traffic.

|                                |                     |
|--------------------------------|---------------------|
| Wharfage Dues on Goods Inwards | \$ 6,295 22         |
| Do do Outwards                 | 2,106 00            |
| Communication on Steamers      | 8,670 00            |
| Rental of spaces for Lumber    | 3,207 20            |
| Do do Coal                     | 3,051 74            |
| Do do Coal Elevators           | 1,350 00            |
| Do do Small Offices            | 1,308 38            |
| Do do Scales                   | 1,000 00            |
| <b>Do</b>                      | <b>\$ 26,898 60</b> |

Carried Forward

\$ 216,587 37

\$ 184,168 31

GENERAL STATEMENT OF OPERATIONS (Continued).

|               |               |
|---------------|---------------|
| REVENUE.      | CAPITAL.      |
| \$ 216,587 37 | \$ 184,168 31 |

RECEIPTS.

|  |               |
|--|---------------|
| Brought Forward  | \$ 26,898 60  |
| Wharfinger for Local Traffic (continued)                               | 633 35        |
| Rental of spaces for Firewood  | 83 20         |
| Do do Hay Shed   | 50 00         |
| Do do Quebec Basin for row-boats                                       |               |
| Do do  |               |
| Dominion Cotton Mills Co., Ltd., rental of land at Hochelaga           | 250 00        |
| Do do  | 2 75          |
| Storage of Market Wagons in Harbour Yard                               | 1,886 44      |
| Dominion Coal Co., Ltd., balance of rental of space for coal elevators | 3,766 50      |
| Do do  | 4,995 50      |
| Canada Pacific Railway Co., rental of tracks                           | 300 00        |
| Grand Trunk Railway System, do do                                      |               |
| John Lee & Son, rental of portion of Harbour Yard                      | 25 29         |
| Beaverline of Steamships, outstanding wharfage dues on exports         | 42 01         |
| do do  |               |
| John Magor & Son.  |               |
| Total Ordinary Revenue   | \$ 255,521 01 |

Windmill Point Basin, for credit of, from the Department of Railways and Canals, for hire of drill boat, coal and explosives

Harbour Expenses, for credit of, from Deputy Harbour Master, amount received by him from owners of market wagons for sending same to the Harbour Yard (paid out through Harbour Expenses)

Department of Marine and Fisheries for stove and pipes for semaphore

Printing, Stationery, etc., for credit of, for postage stamps, etc., supplied to the Montreal D. P. Fund

Harbour Dredging Fleet, for credit of, City of Montreal, for dredging sewage

Department of Railways and Canals, wages and expenses of No. 4 Dredge in Lachine Canal

Department of Railways and Canals, wages of carpenters sawing timber

Three Rivers Harbour Commission, six days' use of No. 1 Dredge

Garth & Co., scrap copier, etc

Pillow & Hersey Mig. Co., iron scrap

P. Amesse, cast scrap

Petersen, Tate & Co., damage to dredge

J. & B. Grier, use of scow

Sinclairnes, Mc.N., Line, tug services

|               |               |
|---------------|---------------|
| 13 22         | 10 00         |
| 2,002 46      |               |
| \$ 257,546 69 | \$ 184,576 30 |

Carried Forward

Accrued to 31st December, 1897, but only paid in January, 1898

Harbour of Montreal, Surveyors' fees for establishing boundary Windmill Point Basin, dredging and blasting. (See contra for credit.)

Windmill Point Wharf, cribwork, filling and macadamizing

Carried Forward

\$ 294,518 36

\$ 90,349 04

|               |              |
|---------------|--------------|
| REVENUE.      | CAPITAL.     |
| \$ 294,518 36 | \$ 90,349 04 |

DISBURSEMENTS AND BALANCE.

|  |             |
|--|-------------|
| Brought Forward  |             |
| Harbour Plant, advertising tug for sale  | \$ 63 20    |
| Do Auctioneer's Fees on sale   | 46 73       |
| Do (See contra for credit)   | \$ 100 93   |
| Steel Rails  | 136 71      |
| Do   | 126 91      |
| New Wood Lathes  | 211 95      |
| Do New Water Troughs   | 2,371 85    |
| Do New Latrines  | 3,621 71    |
| Do New Testing Saw   |             |
| Guard Pier Construction, dredging material and depositing on embankment. (See contra for credit)   |             |
| Harbour Railway, new sidings   |             |
| Longue Pointe Western Wharf, extension to wharf  |             |
| Longue Pointe Providence Sisters for all their rights in wharf   |             |
| Ship Channel in upper part of Harbour  |             |
| Island Wharf, Pilework extension   |             |
| Hochelaga Construction, Deepening from Section 40 to 45  | 16 to 40    |
| Harbour Dredging   |             |
| The Constructing and Paving Co. of Ontario, Ltd., deposit made in 1896 as security for due fulfilment of Macadam Stone Contract in 1897      |             |
| Pilotage Expenses, Legal Services from 1st July, 1896, to 31st Dec., 1897, salary and expenses of Quebec Agent, etc. (See contra for credit) |             |
| Montreal Deceased Pilots' Fund   | \$ 5,589 84 |
| Pensions to old pilots and widows  | 25 00       |
| Audit of Fund for 1896 by Messrs. Riddell & Common   | 15 80       |
| Postage stamps and stationery  |             |
| Refund of percentages overpaid during the Pilots strike in June  | 139 02      |
| Total Disbursements  | \$ 662 68   |
| Balance at 31st December, 1897.  |             |
| Cash on hand   | 19,649 32   |
| Balance at credit of Current Account in Bank of Montreal   | 100 00      |
| Balance at credit of Coupon Account in Bank of Montreal  |             |

Disbursements on Capital Account

Disbursements on Revenue Account

Balance at 31st December, 1897.

Cash on hand

Balance at credit of Current Account in Bank of Montreal

Balance at credit of Coupon Account in Bank of Montreal

|               |               |
|---------------|---------------|
| \$ 170,367 43 | \$ 294,518 36 |
| \$ 464,885 79 |               |

Carried Forward

\$ 20,411 40

\$ 464,885 79

GENERAL STATEMENT OF OPERATIONS (Continued).

| RECEIPTS.   | REVENUE.      | CAPITAL.      | BALANCE.  | REVENUE.      | CAPITAL.      |
|---|---------------|---------------|---|---------------|---------------|
| <i>Brought Forward</i> .....  | \$ 257,546 69 | \$ 184,576 30 | <i>Brought Forward</i> .....                              | \$ 20,411 40  | \$ 464,885 79 |
| Harbour Repairs, for credit of, from Harbour employees for old timber and cuttings .....  | 2 55          |               | Collector of Customs, Montreal .....                      | 1,034 97      |               |
| P. Amesse, for mast scrap .....   | 70 00         |               | Dept. of Railways & Canals .....                          | 285 44        |               |
| Peck, Benny & Co., scrap iron, etc. ....  | 55 46         |               | Beaver Line of Steamships .....                           | 25 29         |               |
| Harbour Plant, for credit of, from sale at auction of Tug Emma Munson .....   | \$1,348 35    |               | City of Montreal .....                                    | 32,410 73     |               |
| Refunds of unearned insurance thereon .....   | 12 30         |               | Alexander Riendeau .....                                  | 172 80        |               |
| Guard Pier Construction, for credit of, from the City of Montreal for its proportion of cost of work done in 1897                       |               |               | The Standard Agency .....                                 | 150 00        |               |
| City of Montreal, for interest on its proportion of cost of the Guard Pier during 1895 and 1896, up to 31st December, 1897 .....        |               |               | J. & R. McLea .....                                       | 100 00        |               |
| Dominion Government, under the Act 59 V.c., ch. 10, balance of estimated expenditure on the upper portion of Windmill Point Basin ..... |               |               | John Magor & Son .....                                    | 42 01         |               |
| Pilotage Expenses, for credit of, for Ship Channel Charts sold  |               |               | Damase Naud .....   | 5 00          |               |
| Dues, and Sundries .....  | \$1,801 77    |               | Value of materials in stock.                              | 34,226 24     |               |
| Fine for breach of By-Law No. 81 .....  | 20 00         |               | Coal .....  | 2,601 21      |               |
| Apprentice Pilot's license fee .....  | 5 00          |               | Macadam stone .....                                       | 1,031 10      |               |
| Expenses of witnesses in collision case .....   | 10 00         |               | Timber .....  | 3,424 70      |               |
| Montreal Decayed Pilots' Fund, for account of, 5% of all Pilotage Dues, and Sundries .....  | \$3,664 62    |               | Lumber .....  | 1,355 22      |               |
| Interest on Invested Funds .....  | 2,215 16      |               | Shin Yard stock .....                                     | 3,623 79      |               |
| Receipts on Capital Account .....   |               |               | Floating Shop stock .....                                 | 10,977 89     |               |
| Receipts on Revenue Account .....   |               |               | Harbour Yard stock .....                                  | 524 64        |               |
|   |               |               | Discount on Harbour Debentures H .....                    | \$10,477 11   |               |
|   |               |               | Discount on Harbour Debentures J .....                    | 12,960 32     |               |
|   |               |               | Less following payable at 31st Dec., 1897:                | \$ 101,213 66 |               |
|   |               |               | Interest and Annuity as above .....                       | \$70,183 00   |               |
|   |               |               | Harbour Coupons outstanding .....                         | 617 50        |               |
|   |               |               | Providence Sisters at Longue Point .....                  | 1,000 00      |               |
|   |               |               | Accounts for legal services <i>v.</i> Pilotage, etc. .... | 958 01        |               |
|   |               |               | Montreal Decayed Pilots' Fund (held in trust)—            | 72,758 51     |               |
|   |               |               | Harbour Debentures and City Stock \$51,000 00             | \$ 28,455 15  |               |
|   |               |               | Deposit in City and District Savings Bank .....           | 1,878 43      |               |
|   |               |               |   | 52,878 43     |               |
|   |               |               |   |               | \$1,333 58    |
|   |               |               |   |               | \$ 546 219 37 |

ALEXANDER ROBERTSON,  
Secretary.  
MONTREAL, 18th April, 1898.

Verified as per report,

RIDDELL & COMMON,  
Auditors.

MONTREAL, 18th April, 1898.

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Dear Sir,—

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ALEXANDER ROBERTSON,  
*Secretary.*  
MONTREAL, 18th April, 1898.

VERIFIED AS PER REPORT,  
RIDDELL & COMMON,  
*Auditors.*  
MONTREAL, 18th April, 1898.

MONTREAL, 19th April, 1898.

THE CHAIRMAN,  
HARBOUR COMMISSIONERS OF MONTREAL,  
MONTREAL.

Dear Sir,—

We beg to report having completed the audit of your Secretary-Treasurer's books for the year ended 31st December, 1897, and that the Balance Sheet as at that date and General Statement of Operations for the year, herewith submitted bearing our certificate, are correctly drawn up therefrom.

It will be noted that the Interest accrued to 31st December, 1897, on Debentures, etc., as well as the proportion of Annuity accrued to the same date (the whole aggregating \$70,183.00) have been duly charged up in the books of the Trust and in the Statement of Operations herein referred to. This is in accordance with the suggestion contained in our report dated 9th April, 1895, and has the present effect of charging the year 1897 with interest for eighteen months instead of twelve,—thus turning an actual surplus of revenue for that year amounting to \$33,319.34 into a nominal deficiency (as per Revenue Account in the books) of \$36,863.66.

Your obedient servants,

RIDDELL & COMMON,  
*Auditors.*

## MONTREAL HARBOUR COMMISSIONERS' TARIFF.

(By-law 130 of By-laws of the Corporation of the Harbour Commissioners of Montreal.)

“The following shall be the tariff of rates from the date of the coming into force of the present by-law:—

On coal, coke, grain and seeds of all kinds,  $7\frac{1}{2}$  cents per ton.

On ballast, cement, clay, earthen drain-pipes, fire-bricks, gypsum, lime, marble and all other stone, phosphates, salt sand, scoriæ-blocks, slate, whiting, iron ore, 10 cents per ton.

On apples, oranges, lemons, and other green fruits, crates and their contents, flour and meal, fish, meat, pitch, potatoes, tar, horses, neat cattle, sheep, swine, hay, straw, wood-pulp, tobacco, lard, lard-oil, and oil-cakes, steel rails for railways and tramways, 15 cents per ton.

On pig and scrap iron, pot and pearl ashes, 20 cents per ton.

On bricks, 10 cents per thousand; on cordwood, 5 cents per cord; on lumber and timber, 10 cents per thousand feet board measure.

On all goods, wares and merchandise, except bullion and specie, not elsewhere specified, 25 cents per 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-fourth of one per cent. on the value thereof.

No entry shall be less than five cents.

Only one rate shall be levied on property covered by the foregoing provisions when landed on the wharves for reshipment only.

The foregoing rates, less twenty per cent., shall be levied as hereinabove set forth on the said articles when landed or shipped in the harbour, or moved by rail on the harbour tracks or deposited within the harbour:

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**R E P O R T**  
OF THE  
**PILOTAGE DISTRICT OF MONTREAL**  
For the Year 1897.

HARBOUR COMMISSIONERS OF MONTREAL,  
SECRETARY'S OFFICE,  
MONTREAL, February 22nd, 1898.

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 31st December, 1897.

The accompanying statement gives the names, earnings etc., of all the pilots for the past season, and shows an increase of \$3,205.70, or about 5 p.c. as compared with 1896, and, had it not been for the pilotage fees lost by the licensed pilots on about 30 vessels during the time of the strike in June, would have shown a total of about \$71,485.00, or about \$2,000.00 more than in 1893, in which year the earnings were the largest on record, viz: \$69,307.86.

The total amount of Pilotage Dues, as therein shown, was received from the following services, namely:—

|                      |              |              |
|----------------------|--------------|--------------|
| BRITISH.             |              |              |
| Steamships.....      | \$ 64,240 34 |              |
| Sailing vessels..... | 781 40       |              |
|                      | \$ 65,021 74 |              |
| FOREIGN.             |              |              |
| Steamships.....      | \$ 3,610 70  |              |
| Sailing vessels..... | 109 25       |              |
|                      | 3,719 95     |              |
| Total.....           |              | \$ 68,741 69 |

The past year has been an exceptionally busy and anxious one for the Pilotage Authority. During the session of Parliament the proposed incorporation of the pilots, followed by

their strike on the eighteenth of June, required much careful deliberation on the part of the Commissioners. After due consideration at several meetings during the months of April and May, it was decided to oppose the proposed Bill of Incorporation, as being unnecessary and contrary to the interests of trade and navigation. In this the Commissioners followed the same action as was taken in 1884, when the pilots had previously sought incorporation. The Commissioners' interests were placed in the hands of their solicitors, and were also carefully watched by their president and other members when the Bill was before the Private Bills' Committee of the House of Commons and Senate, respectively. The Bill, after considerable amendment, was reported by the Private Bills' Committee of the House of Commons, and passed its third reading there, but was thrown out by the Private Bills' Committee of the Senate.

On the same day, the eighteenth of June, the fifty-two pilots in active service went on strike, and after six o'clock that evening not one could be provided for the many vessels requiring them until Saturday afternoon, the 26th of June. During this week the Commissioners held almost daily sessions to deal with the difficulty and to try pilots for the refusal of their duty. The Shipping Interest considered the situation so grave that they pressed upon the Commissioners the repeal of certain of their By-laws by which they were hampered in the matter of examining and licensing their pilots. These representations met with the approval of the Commissioners. The By-laws were repealed, and amended By-laws forwarded for the approval of the Governor-General-in-Council, which has not yet, however, been given. Requests were also made that more buoys should be placed at certain points recommended by the Commissioners' Chief Engineer, more especially below the Platon. These recommendations were also forwarded to the Department of Marine and Fisheries, which, during the autumn, gave its concurrence therein.

The result of the trials held was that eight pilots were

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found guilty of refusing service. Four of these were dismissed as pilots, and, at the request of the Minister, sentence was suspended on the other four. A writ of certiorari was applied for in each of these cases, and the conviction of six of them was quashed by the Superior Court, on the ground that the bailiff's return of the service of the summons was irregular. In the other two cases the conviction was maintained, namely, those of Messrs. Philippe Belanger, of Lotbiniere, and Prudent Beaudet, of Quebec, while the six, whose conviction was quashed, were Messrs. Alexis Perrault, Jean Arcand, Joseph Sauvageau, Elzear Bellisle, all of Deschambault; Louis Mayrand, of Ste. Anne de la Perade, and Honore Dussault, of St. Petrouille.

Joseph Pleau, of Ste. Anne de la Perade, was also tried on the same charge, but acquitted; while complaints were laid against several other pilots on the same ground, but, owing to the Minister's request, summonses were not issued

The experience gained by these circumstances shows that by the By-laws, as they existed at the time of the strike, and as they still exist, the hands of the Commissioners are completely tied, and it becomes impossible for them to deal with such a crisis as arose last summer in a way to give security and satisfaction to the numerous interests involved in the navigation of the St. Lawrence. Had it been in the power of the Commissioners to examine and license competent men, the number of whom is, with good reason, believed to be very large, it is more than likely that the strike would not have occurred, or at least would not have lasted for any time. It has also brought out very prominently the difficulty the Commissioners have always found in dealing with the trials of pilots. Such trials must, of necessity, be held promptly and disposed of speedily, otherwise it would be impossible to secure, in many cases, the evidence of essential witnesses. These necessities frequently cause trifling irregularities in procedure which often do not affect the merits of the case. They, however, furnish the grounds for a writ of certiorari, and these writs are almost invariably maintained. At the

time the Commissioners' Acts were consolidated in 1894, it was thought that this difficulty had been overcome by providing that these trials should be governed by Part 58 of the Criminal Code as an appeal is provided by that part of the Act, which really gives a right to a new trial, and, as an appeal is provided, it was supposed the writ of certiorari would not lie. The Judges of the Superior Court, however, have interpreted the law differently, and still issue writs of certiorari in these cases. The result is that the Commissioners find themselves where they were before their present Act was passed, and the part of it concerning this procedure is a dead letter. This state of affairs tends very largely to diminish the disciplinary powers of the Commissioners over the pilots, and it has become almost impossible for the Commissioners to inflict and enforce punishment even for grave offences. In view of the foregoing the Commissioners would respectfully request that the Government will so amend the By-laws and Statutes which now govern the Montreal Pilotage District as to give the Commissioners fuller control over the pilots, or failing this, relieve them from all responsibility in the matter of pilotage jurisdiction.

With reference to the better distribution of the pilotage work, which had been a cause of grievance to the Tour de Role, or general service pilots, for three years back, the Commissioners, after much consideration, passed early in the season the following By-law, which was forwarded for the approval of the Governor-General-in-Council, the third and fourth clauses being an addition to the By-law in force respecting pilots taking special service. The amendment was designed to give the Tour de Role pilots some increase of fees, and more especially keep them familiar with the navigation by passing more frequently and regularly up and down the river:—

“109. Any pilot may, subject to the Commissioners' approval, agree with not more than one agent of Transatlantic Line vessels for special service for a season of navigation on any vessels of such line for not exceeding thirty trips between Montreal and Quebec, either up or down, or with the agent of any Gulf Port Line vessels for similar service on any vessels

of such Line trips which will employ pilots for each

“No pilot of navigation is entitled to a

“And on the part of the Gulf Port Line both upward and downward, and the responsible for the said Tour de Role, while the fees for such said Tour de Role are one-third re-

“Nevertheless the Gulf Port vessels for each season with each third of the right to duty

Approval of the come of the then before the pool all the the member

The Bill for the By-laws on the work during they would account of the ter during the This was made ground for exceptions, was considered

of such Line for not more than the proportionate number of trips which would fall to such pilot if such Line employed two pilots for each three vessels.

“No pilot making such engagement shall, during the season of navigation to which the same is intended to apply, be entitled to any duty as pilot by turn or in rotation.

“And on every third upwards trip from the commencement of the season of navigation, both of Transatlantic and Gulf Port Liners, the special service pilot shall take with him, both upwards and downwards, the first Tour de Role pilot in turn, and the former, while in charge of the steamer and responsible for her safety, may receive such assistance from the said Tour de Role pilot as the former may require from the latter, while the special service pilot shall share the pilotage fees for such trip both upwards and downwards with the said Tour de Role pilot in the proportion of two-thirds and one-third respectively.

“Nevertheless, any one pilot may be allowed to serve a single Gulf Port vessel or two Transatlantic vessels throughout the season without being obliged to take a Tour de Role pilot on each third trip, as above mentioned, and without having any right to duty as pilot by turn or in rotation.”

Approval thereof was, however, not given, pending the outcome of the proposed incorporation, the Bill for which was then before Parliament, and under which it was proposed to pool all the pilots' earnings and divide them equally amongst the members.

The Bill having failed to become law, the Commissioners' By-laws on Pilotage again governed the distribution of the work during the season, but were not so strictly enforced as they would have been had the pilots' strike not occurred. On account of this the Tour de Role pilots appealed to the Minister during the autumn, who asked for a report on the matter. This was made to the effect that there was comparatively small ground for complaint, the earnings showing that, with three exceptions, no pilot earned less than from \$800 to \$900, which was considered a fair amount for the Tour de Role men, while

the few who earned only from \$650 to \$700 must have lost a share of their work through sickness or other causes. Had the proposed new By-law, however, been put in operation, it is believed, there would have been no reasonable cause for dissatisfaction last year.

On 7th April, pilot Zephirin Bouillé, 68 years of age, was examined and granted a renewal of his license for another year.

In May, pilot Francois Desjordy submitted a Montreal oculist's certificate, as well as one from his own doctor at Lavaltrie, stating that his eyesight was impaired to such an extent that it would not be safe for him to continue his duties at that time, in view of which he was placed on the pension list for one year from 1st May.

In September, pilot Liboire Perrault applied for superannuation on account of failing health, but the medical certificates submitted were not considered sufficient to warrant this, especially in view of his having worked throughout two-thirds of the season and earned \$669.00. On a renewal of his application through the Minister, a full report was made on the facts, and Mr. Perrault was promised that his appeal would receive due consideration in April next.

On 7th, 8th, and 9th April, an examination of apprentice pilots was held, and, of four candidates who presented themselves, Messrs. Arthur Bellisle, Theodule Hamelin, and Cyrille Bellisle were found competent, and were granted a permit under By-law 96 to make fifteen double trips between Quebec and Montreal with various Branch Pilots.

On 26th and 30th June, apprentice pilot Alberic Angers was examined, and, having been found competent, was granted a permit. The names of these four apprentice pilots have now been placed at the head of the following list as qualified to receive their license when additional pilots become necessary, the last mentioned having been ordered to be placed first on the list in view of circumstances connected with the pilots' strike, at the time of which, it may also be here

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| No. |           |
|-----|-----------|
| 1   | Angers,   |
| 2   | Bellisle, |
| 3   | Hamelin,  |
| 4   | Bellisle, |
| 5   | Pleau, J. |
| 6   | Perrault, |
| 7   | Raymond,  |
| 8   | Veillet,  |
| 9   | Labranco, |
| 10  | Gagnon,   |
| 11  | Paquin,   |
| 12  | Gignac,   |
| 13  | Belange,  |
| 14  | Paquet,   |
| 15  | Bourassa, |
| 16  | Angers,   |
| 17  | Gariépy,  |

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noted, the Commissioners cancelled a resolution of 5th March, 1895, by which the number of fifty-five pilots allowed by By-law 99 was to be gradually reduced to fifty.

## LIST OF APPRENTICE PILOTS.

| No. | NAME.                     | AGE. | RESIDENCE.              |
|-----|---------------------------|------|-------------------------|
| 1   | Angers, Alberic.....      | 23   | Ste. Anne de la Perade. |
| 2   | Bellisle, Arthur.....     | 36   | Deschambault.           |
| 3   | Hamelin, Théodule.....    | 23   | Grondines.              |
| 4   | Bellisle, Cyrille.....    | 29   | Deschambault.           |
| 5   | Pleau, J. E.....          | 28   | Ste. Anne de la Perade. |
| 6   | Perrault, Anthyme.....    | 29   | Deschambault.           |
| 7   | Raymond, J. N.....        | 27   | Deschambault.           |
| 8   | Veillet, George.....      | 26   | Ste. Anne de la Perade. |
| 9   | Labranche, Melville.....  | 23   | Portneuf.               |
| 10  | Gagnon, Albert.....       | 22   | Three Rivers.           |
| 11  | Paquin, Azarias.....      | 24   | Deschambault.           |
| 12  | Gignac, Arthur.....       | 24   | Portneuf.               |
| 13  | Belanger, Achille.....    | 24   | Lotbinière.             |
| 14  | Paquet, Damien.....       | 24   | Deschambault.           |
| 15  | Bourassa, Henri.....      | 24   | Deschambault.           |
| 16  | Angers, Alfred.....       | 21   | Ste. Anne de la Perade. |
| 17  | Garipey, J. Arthur W..... | 18   | St. Alban.              |

The Committee of Pilots have expressed the opinion that the number of apprentices should be limited to 12 or 15, while the number of names on the list has generally been from 20 to 25.

Five apprentices returned in last year's list have been struck off on account of having failed to report any service during the past two seasons; while applications are on file from the following for a license as apprentice pilot, to whom the reply was returned that their applications would be recorded in the order of their receipt, and would be dealt with when it was considered necessary to license more apprentices. Most of these, it is believed, are endeavouring to learn the river, and some are also making ocean voyages as required of regular apprentices:—

## LIST OF APPLICANTS FOR LICENSE AS APPRENTICE PILOTS.

| No. | NAME.                      | RESIDENCE.             | Date of Application. |
|-----|----------------------------|------------------------|----------------------|
| 1   | Gariépy, A. J. P. ....     | Lachevrotiere. ....    | 16th January, 1894.  |
| 2   | Frenette, Oswald. ....     | Portneuf. ....         | 1st March, 1894.     |
| 3   | Hamelin, Chas. B. ....     | Champlain. ....        | 17th November, 1896  |
| 4   | Perron, Tancrede. ....     | Deschambault. ....     | 28th November, 1896  |
| 5   | Patoine, J. B., Jr. ....   | Sydney, C. B. ....     | 3rd December, 1896.  |
| 6   | Frenette, Delevoie. ....   | Portneuf. ....         | 28th January, 1897.  |
| 7   | Gauthier, Laurent J. ....  | Deschambault. ....     | 26th March, 1897.    |
| 8   | Perrault, David fils. .... | Deschambault. ....     | 8th April, 1897.     |
| 9   | Hamelin, Fortunat. ....    | Deschambault. ....     | 19th April, 1897.    |
| 10  | Gauthier, Adelard. ....    | Deschambault. ....     | 6th May, 1897.       |
| 11  | Arcand, J. Emelien. ....   | Deschambault. ....     | 7th May, 1897.       |
| 12  | Gauthier, Cyriac. ....     | Deschambault. ....     | 9th May, 1897.       |
| 13  | Royer, fils. ....          | 306 Valier St., Quebec | 23rd May, 1897.      |
| 14  | Gariépy, Emelien. ....     | Lachevrotiere. ....    | 24th May 1897.       |
| 15  | Gariépy, Henri. ....       | Lachevrotiere. ....    | 24th May, 1897.      |
| 16  | Perrault, Jean. ....       | Deschambault. ....     | 25th May, 1897.      |

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, certified by Messrs. Riddell and Common, Auditors, were as follows:—

## RECEIVED.

|  |          |
|--|----------|
| Surplus carried over from 1896. ....   | \$250 42 |
| From Elder, Dempster & Co., expenses of Capt. Chatard, piloting S. S. Memnon during pilots' strike. .... | 4 00     |
| " Wm. Johnston & Co., Ltd., Pilotages made during strike. ....   | 155 83   |
| " Pilot Onesime Naud, fine for violation of By-law 81. ....  | 20 00    |
| " U. S. Navy Department, copy of evidence <i>re</i> Yantica-La Canadienne Inquiry. ....                  | 28 70    |
| " Hamburg-American Packet Co., two copies of evidence <i>re</i> Arabia Inquiry. ....                     | 45 40    |
| " E. L. Bond, copy of evidence <i>re</i> Arabia Inquiry. ....  | 22 70    |
| " Petersen, Tate & Co., copy of evidence <i>re</i> Turret Cape-State of California Inquiry. ....         | 20 63    |
| " H. & A. Allan, copy of evidence <i>re</i> Turret Cape-State of California Inquiry. ....                | 20 63    |
| " Do. Expenses of Pilot Alexis Perrault in this case. .  | 10 00    |
| " H. & A. Allan, copy of evidence <i>re</i> Iona-Grecian Inquiry. ....                                   | 28 79    |

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" Alexis Perrau  
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| From The R. Reford Co., Ltd., copy of evidence <i>re</i> Iona-Grecian Inquiry .....                             | \$ 28 79   |
| “ Pilots, 2 per cent. of the Pilotage Dues on sundry vessels. ....  | 6 63       |
| “ Collector of Customs, Three Rivers, 2 per cent. of the Pilotage Dues on vessels to and from Three Rivers. . . | 37 76      |
| “ Collector of Customs, Sorel, 2 per cent. of the Pilotage Dues on vessels to and from Sorel. ....              | 10 67      |
| “ Collector of Customs, Montreal, 2 per cent. of the Pilotage Dues on vessels to and from Montreal. ....        | 1,391 24   |
| “ Damase Naud, fee for Apprentice Pilot's License. ....   | 5 00       |
| Total .....   | \$2,087 19 |

## EXPENDED.

|   |          |
|---|----------|
| By Abbotts, Campbell & Meredith, for legal services in connection with pilotage matters during 1896. .... | \$135 00 |
| “ Geoffrion, Dorion & Allan, for legal services in connection with pilotage matters during 1897 .....     | 846 88   |
| “ Angers, DeLorimier & Godin, for costs of six pilots' certioraris .....                                  | 315 40   |
| “ Urquhart & Wright, Stenographers' fees at pilot inquiries, and copies of evidence .....                 | 410 85   |
| “ George Smart, Stenographer's fees at pilotage inquiries .....   | 60 00    |
| “ Committee of Pilots, expenses in connection with examination of apprentices .....                       | 194 00   |
| “ Augustin Naud, allowance as examiner at apprentice examinations .....                                   | 5 00     |
| “ Joseph Hurteau, allowance as examiner at apprentice examinations. ....                                  | 10 00    |
| “ George Raymond, allowance as examiner at apprentice examinations. ....                                  | 5 00     |
| “ Celestin Brunet, allowance as examiner at apprentice examinations. ....                                 | 5 00     |
| “ Joseph Thibaudeau, salary as Montreal Pilot Agent at Quebec .....                                       | 600 00   |
| “ Joseph Thibaudeau, expenses <i>in re</i> trial of P. Beaudet .....                                      | 11 00    |
| “ Joseph Thibaudeau, allowance for postage, stationery and books .....                                    | 29 32    |
| “ Hector Fiset, expenses as witness at Turret Cape-State of California Inquiry .....                      | 12 60    |
| “ Alexis Perrault, expenses as witness at Turret Cape-State of California Inquiry .....                   | 10 00    |

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| By Captain Chatard, expenses during strike.....   | \$ 4 00          |
| “ John Kenneby, do do .....   | 14 80            |
| “ W. L. Scott, do do .....  | 98 45            |
| “ Capt. Beaudet, allowance for services during<br>strike .....                                | 30 00            |
| “ Capt. Chatard, allowance for services during<br>strike.....                                 | 10 00            |
| “ Lemieux & Lane, Quebec, legal services ren-<br>dered in connection with strike.....         | 15 00            |
| “ Refunds of percentages of 2 per cent. collected<br>during strike but afterwards repaid..... | 55 60            |
| “ Telegrams.....  | 19 74            |
| “ Bailiffs' fees.....   | 12 75            |
| “ Printing, Advertising, Stationery, &c.....  | 48 96            |
|   | ————— \$2,959 35 |

The deficiency of \$872.16 has been carried forward at the debit of Pilotage expenses of 1898, and it is expected that under normal conditions, the receipts from the 2 per cent of all pilotage fees will hereafter cover the necessary yearly expenses as well as pay off the very exceptional ones incurred during 1897.

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 |

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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—

|                 |      |
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| 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 Hochelega, 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 such service.....

5 00

The following is a list, with particulars, of accidents which occurred to vessels while on their passage between Quebec and Montreal and vice versa during the past season of navigation.

Towards evening of the 26th September the SS. Arabia, drawing 25 to 25½ feet, while passing down through the Cap a la Roche channel, at dead low water, struck heavily, and had to be run aground a little further down the channel, where she remained for several days, and was then floated and taken to the dry dock at Quebec.

A lengthy inquiry was held into this accident, with the result that the pilot, Sévère Perron, was found to have acted imprudently in passing through this difficult part of the channel with such a large and deep draft vessel at the time of dead low water, and a full report was made to the Government with reference to the great care which should be exercised in examining this and other parts of the channel, where boulder obstructions might arise through the action of the ice, etc., and also as to the great need of the buoys being carefully placed to mark the exact edge of the channel and examined frequently to see that they were in proper position.

On September 16th the SS. Iona, downwards, and the SS. Grecian, upwards, met at the bend opposite the upper part of the Three Rivers wharves, and, as the Iona touched the bottom and sustained damage, a complaint was lodged by the master and agents against the pilot of the Grecian for having violated the Commissioners' by-law No. 81, which requires that an upcoming vessel at this point should remain below until a downward vessel has passed.

After a full inquiry the Commissioners found Pilot Onesime Naud, of the Grecian, guilty of violating the by-law, and fined him twenty dollars, but without costs, in view of his long previous good record as a pilot.

About 5 a. m., on 29th October, the U. S. S. Yantic and the Dominion Government SS. La Canadienne, the former on her way upwards and the latter downwards, came into collision off

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Pointe à Pizeau, Quebec Harbour. The former at the time was in charge of Pilot Sévère Perron and the latter of Apprentice Pilot Alberic Angers. The former, having been put on his trial and a lengthy inquiry made into all the facts of the collision, was found guilty and suspended from 23rd November 1897 to 1st July, 1898.

On 11th September, just below No. 2 Lightship in Lake St. Peter, the SS. State of California, downwards, and the SS. Turret Cape, upwards, had a slight collision.

After a long inquiry into the circumstances thereof, the Commissioners found that Pilot Zephirin Bouillé, who was in charge of the former vessel, was not to blame, but no action was taken against Mr. Joseph Sauvageau, who was in charge of the Turret Cape, he being one of the four pilots who were then under suspended sentence in connection with the pilots' strike.

The SS. Vancouver, upwards, in charge of Pilot George Arcand, ran aground on the south side of the channel at the Bellmouth Curve, Contrecoeur, on 11th September. After inquiry, the pilot was considered not to blame for the grounding, which only necessitated some little lightening to the vessel without any damage to the ship.

The same vessel, drawing 23 feet, in coming up through the Cap la Roche channel on 17th October, touched, it is supposed, the south side of the channel, quite close to the black buoy opposite St. Jean des Chaillons Church, while in charge of the same pilot, against whom a complaint was lodged. The finding come to was that, while not guilty of the charge of breach and neglect of duty, nevertheless he should be strongly censured for having passed the said black buoy at a distance not compatible with safe navigation, especially in view of the conditions of wind and tide at the time of his passage and of his knowledge of the steering of the said steamship from experience on previous voyages during the past season. Shortly afterwards, a writ of certiorari was applied for by this pilot and granted, and the case is now before the Superior Court.

The SS. "Strathgarry," in charge of Pilot Constant Toupin, touched opposite Cap Santé, and also on the St. Croix Bar, on 1st August. The Commissioners, at the inquiry, found that this vessel had gone down the channel with a heavy list to port, and, being a very flat-bottomed ship, probably drew from 2 to 3 feet more than the draft with which she was cleared, namely, 24 feet 9 inches. They accordingly censured the pilot for want of care, and took occasion to call the attention of the Port Warden to the circumstances of her touching, with the result that this officer made a full explanation as to her clearance by him, but he also decided that thereafter no vessel should be allowed to leave the harbour with a greater list than five degrees.

On October 1st, the SS. Kildona, while coming upwards in charge of Pilot Barthelemi Arcand, ran aground on the south side of the channel at the bend opposite Cap Levrard, but, after trial, the complaint against the pilot was dismissed.

The SS. Madura, on 27th October, while in charge of Pilot George Dufresne, ran aground lightly, but without sustaining damage, on the south side of the Windmill Point Basin, in Montreal Harbour, and on inquiry into the matter, it was found that the black spar buoy marking the south side of the Basin (which has not yet been dredged to its full width), was considerably out of place, and also that another steamship lay at the wharf on the northwest side of the Basin, with an elevator and two barges all abreast, thus narrowing the channel very much. The pilot was accordingly acquitted, and the attention of the buoy contractors and the Harbour Master called to the need of guarding against the difficulties caused to vessels through these errors.

The brig "R. L. T.," in tow of the tug "Dauntless," having anchored over night a little below No. 2 Lightship, in Lake St. Peter, on the morning of 17th August grounded on the north bank of the channel when the tow was starting, but came off the same afternoon. The inquiry asked for could not be completed, owing to the "Dauntless" being in the Lower St. Lawrence during the rest of the season, but under

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all the circumstances the pilot, Liboire Perrault, could hardly be blamed.

The SS. Tyr, while in charge of Jean Arcand, grounded on the shoal just above Longue Pointe, on July 13th, but, after some lightening, came safely into port without having sustained damage. No action could be taken against the pilot, as he was then under dismissal for refusal to take duty during the time of the strike.

During the pilots' strike the steamship "Beechdene" grounded off St. Pierre des Becquets on June 24th. After some delay, she was floated and reached Montreal on 26th June, and, as far as is known, was not damaged.

The SS. Turret Bay, on June 26th, was run aground on the Gentilly Shoal, opposite Champlain, and, after considerable difficulty, was floated.

No action could, of course, be taken against the pilot in either of these cases, as each was an unlicensed pilot.

In addition to the foregoing accidents, into each of which an inquiry was held by the Commissioners, and of which a few only resulted in serious damage to the vessels concerned, it is thought well to mention the following groundings and touchings, as to which no complaint was made by the vessel agents, and no action thought necessary by the Commissioners, other than sending particulars of them to the Department of Public Works for attention, where it might be thought that there was some obstruction in the channel.

On the 15th August the SS. Cilurnum, in charge of Pilot Ulric Groleau, grounded above the Cap Charles Bar through the wheel jamming to port.

The SS. Milwaukee, drawing 27 feet 3 inches, in charge of Pilot L. A. Bouillé, touched in the channel at Champlain on 21st August.

The SS. Queensmore, in charge of the same pilot, on 4th September, with a draft of 28 feet, touched lightly in the channel opposite Longueuil, and on the following day in Lake St. Peter near No. 1 Lightship, at Three Rivers, and at Champlain. This ship had also five degrees of list to starboard.

The SS. Lake Huron, drawing 25 feet 2 inches, in charge of Pilot Joseph Chandonnet, touched opposite Champlain on October 6th, while the SS. Lake Superior, drawing 25 feet, in charge of the same pilot, grounded in the middle of the channel at the same point on 20th October. Before this grounding occurred a dredge had been placed to remove a small sandbar which had formed diagonally across the channel and was found to have been the cause of the several recent touchings at this point.

In addition to the vessels above mentioned as having touched opposite Champlain, the SS. Vancouver, on 18th September, with draft of 26 feet 3 inches, touched, as did also the SS. Montcalm on 16th October, drawing 25 feet, the dredge being then at work.

The SS. Bjorgvæn, while in charge of Pilot Ulric Groleau, on October 7th, grounded on the south side of the channel at Pointe aux Trembles, en haut, and, after considerable lightening, was enabled to come into port undamaged. The cause of the grounding was a sheer taken by the steamer.

On the 15th October the steamship Bengore Head, drawing 22 feet 5 inches, with Pilot Alfred Frenette, grounded near No. 2 Lightship in Lake St. Peter in a dense fog, but, in so far as is known, sustained no damage.

The SS. Turret Cape, in charge of Pilot Joseph Dussault, grounded lightly opposite No. 3 Lightship in Lake St. Peter on the 15th October, on account of fog.

The SS. Turret Bell, in charge of Pilot Edouard Perrault, grounded on the north side of the channel, some little distance below the Maisonneuve Pier, Montreal Harbour, on the 21st October, at 6.15 p.m. when trying to reach her berth after dark.

The SS. Montevidean, drawing 23 feet, in charge of Pilot Tancrede Bouillé, grounded on the 26th September between Lightships Nos. 1 and 2, in Lake St. Peter, owing to the breaking of the steering gear, and after considerable lightening was enabled to proceed to Quebec without having sustained damage.

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deep draft

The touching of the SS. Queensmore at Three Rivers on 5th September (mentioned above), as well as that of the SS. Vancouver at the same place on the 18th of the same month, when drawing 26 feet 3 inches and in charge of Pilot George Arcand, and also the report sent in by Pilot Prudent Bellisle to the effect that the SS. Hurona had, on 30th September, while drawing 26 feet and passing the black spar buoy opposite the mouth of the St. Maurice River, at a distance of about 125 feet therefrom, rolled on account of not having sufficient water underneath her, would appear to be accounted for by a report received from the Buoy Engineer on the 1st October, which stated that he had found the said buoy dragged about 900 feet below and 140 feet south of its proper position and replaced it. There is no doubt that these three pilots steered by the displaced buoy, rather than by the land marks, and in consequence touched the point of the shoal which the buoy is placed to mark.

According to the captain of the SS. Montezuma, that vessel, when passing through the Contrecoeur Traverse and Channel, on 19th June, with a draft of 28 feet, was thought to be very close to the bottom, although at the time the channel should have had over 32 feet of water in it. In reference to this report, it should be noted that on the trip referred to, the Montezuma had no pilot on board, but was following a tug. On the circumstances being reported to the Chief Engineer of the Public Works Department, he replied that he was satisfied the depth shown by the Sorel gauge was available in that part of the channel, but that vessels with such a draft of water should pass through it at a very low rate of speed, owing to the small depth of water on the banks on either side of the channel.

In connection with the foregoing accidents and mishaps, it is thought well to include herein a list of all the steamships which passed through the channel drawing 26 feet of water and over, with the depth of water in the channel as indicated by the Sorel gauge on the corresponding date, as it shows that with careful navigation very large vessels can pass with deep drafts, except during the last two months of autumn.

STATEMENT SHOWING DRAFT OF STEAMSHIPS FOR  
SEASON OF 1897, DRAWING 26 FEET AND OVER.

| DATE.       | STEAMER.             | DRAFT<br>When Station-<br>ary in Harbor<br>by<br>Pilot's Report. | DEPTH<br>OF WATER<br>IN CHANNEL<br>by<br>Sorel Gauge. |
|-------------|----------------------|--|---|
| May         | 7 SS. Montezuma down | 27'4"  | 36'8"   |
|             | 8 Manitoban "        | 26'3"  | 36'3"   |
|             | 9 Tritonia "         | 26'3"  | 36'   |
|             | 13 Arcadia "         | 27'2"  | 34'3"   |
|             | 21 Hurona "          | 26'6"  | 34'5"   |
| June        | 24 Gerona up         | 26'  | 34'7"   |
|             | 29 Ottoman down      | 26'3"  | 35'2"   |
|             | 1 Alberta "          | 26'10"   | 33'8"   |
|             | 2 Gerona "           | 27'  | 34'2"   |
|             | 6 Arabia "           | 27'4"  | 33'6"   |
|             | 10 Tritonia "        | 26'  | 32'6"   |
|             | 12 Queensmore "      | 27'7"  | 32'   |
|             | 13 Rossmore "        | 26'7"  | 32'7"   |
|             | 15 Norwegian "       | 26'  | 32'10"  |
|             | 19 Montezuma "       | 28'  | 32'3"   |
| July        | 21 Sarmatian "       | 26'  | 31'6"   |
|             | 3 Ottoman "          | 26'4"  | 30'11"  |
|             | 3 Merrimac "         | 26'  | 30'11"  |
|             | 3 Armenia "          | 26'10"   | 30'11"  |
|             | 4 Milwaukee "        | 26'  | 30'9"   |
|             | 10 Laurentian "      | 26'6"  | 29'11"  |
|             | 25 Queensmore "      | 26'5"  | 30'2"   |
| Aug.        | 1 Montezuma "        | 27'4"  | 30'1"   |
|             | 3 Arabia "           | 26'2"  | 29'8"   |
|             | 5 Merrimac "         | 26'3"  | 29'5"   |
|             | 14 Vancouver "       | 26'  | 29'4"   |
|             | 14 Laurentian "      | 26'1"  | 29'4"   |
|             | 17 Pomeranian "      | 26'3"  | 29'6"   |
|             | 19 Montcalm "        | 27'1"  | 29'4"   |
|             | 20 Hurona "          | 26'  | 29'1"   |
|             | 21 Rossmore "        | 26'1"  | 28'9"   |
|             | 21 Milwaukee "       | 27'3"  | 28'10"  |
|             | 28 Belgian King "    | 26'4"  | 28'9"   |
| Sept.       | 29 Armenia "         | 27'1"  | 29'4"   |
|             | 31 Norwegian "       | 26'3"  | 29'4"   |
|             | 4 Queensmore "       | 28'  | 28'10"  |
|             | 7 Sarmatian "        | 26'6"  | 28'4"   |
|             | 11 Ottoman "         | 26'1"  | 28'7"   |
|             | 11 Merrimac "        | 26'  | 28'7"   |
|             | 12 Montezuma "       | 26'2"  | 28'6"   |
|             | 14 Sardinian "       | 26'5"  | 28'6"   |
|             | 18 Vancouver "       | 26'3"  | 27'10"  |
| 29 Hurona " | 26'                  | 27'10"   |   |

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By information received from the Department of Public Works, it has been learned that several improvements were made in the channel during the season, in continuation of the work carried on during the previous years, while the Department of Marine also made improvements in the lighting and buoying. The Semaphore, previously maintained at Lotbiniere, was removed early in the summer to Cap Santé, and indicated throughout the remainder of the season each three inches of rise and fall of the tide on the Cap Santé Shoal and St. Croix Bar.

The Commissioners issued their annual edition of "Tide Tables and other information connected with the ship channel between Montreal and Quebec," embodying the Tide Tables for Quebec, and also one specially prepared for the St. Croix Bar by the Tidal Survey Branch of the Department of Marine and Fisheries, which, as in the previous year, were kindly furnished to the Commissioners by the Department for that purpose. These Tide Tables were, as in previous years, much appreciated by the officers of vessels and the pilots, amongst whom they were freely distributed without any charge, while the set of twenty-two charts of the Ship Channel from Montreal to Quebec, also published by the Commissioners a few years ago, were in demand, especially by the shipping firms and river pilots, during the time of the strike of the licensed pilots.

The buoys marking the Ship Channel were maintained by the contractors, The Sincennes-McNaughton Line, as in other recent years. The placing of the buoys in spring was commenced on 21st April and was completed on 14th May. The taking up of the buoys at the close of the season of navigation was, by order of the Minister of Marine and Fisheries, commenced on the 25th November, which was immediately after the passage of the last steamship downwards, and was completed on the 30th November. An additional buoy was placed in September to mark the northwest point of the Three Rivers shoal. In compliance with representations by the Marine Underwriters' Association last September, authority

FOR

DEPTH  
WATER  
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Gauge.

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was given for the placing of fifteen additional buoys for the better marking out of the channel, especially below Grondines. The contractors prepared thirteen of the new buoys as quickly as possible and placed them between the 25th and 31st of October. The other two of the desired number were required for the Richelieu Rapids, where only large steel cylinder buoys are suitable, and, as there were none in stock and they could not be built in time to be of service before the close of the season, they could not be placed.

The annexed two tables show the character and positions of all the buoys and beacons along the channel, both old and new.

I have the honor to be,

Sir,

Your obedient servant,

ALEXANDER ROBERTSON,

*Secretary.*

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| No. | s<br>l. | Earnings<br>to Inter-<br>mediate<br>Places. | Total<br>Earnings. | Employed on<br>Special Service,<br>or on<br>Tour-de-Rôle. |
|-----|---------|---|--------------------|---|
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STATEMENT showing the number of Branch Pilots for and above the Harbour of Quebec, during the year of 1897, their Age, Residence,  
No. of Pilotages, Earnings, and whether employed on Special Service or Tour-de-Rôle.

| No.     | NAMES.               | AGE. | RESIDENCE.                                   | DATE OF BRANCH.    | REMARKS.  | No. of Trips to Montreal. |      | No. of Trips to Intermediate places. |      | Total No. of Trips. | Earnings to Montreal. | Earnings to Intermediate Places. | Total Earnings. | Employed on Special Service, or on Tour-de-Rôle. |
|---------|----------------------|------|--|--------------------|---|---------------------------|------|--------------------------------------|------|---------------------|-----------------------|----------------------------------|-----------------|--|
|         |                      |      |  |                    |   | IN.                       | OUT. | IN.                                  | OUT. |                     |                       |                                  |                 |  |
|         |                      |      |  |                    |   |                           |      |                                      |      |                     |                       |                                  |                 |  |
| 1       | Bouillé, Zéphirin... | 68   | Deschambault....                             | March 1, 1855      | New license for 1897..... See letter press.                             | 15                        | 16   |                                      |      | 31                  | \$1,730 96            |                                  | \$1,730 96      | Allan Line.                                      |
| 2       | Naud, Onésime....    | 55   | Deschambault....                             | March 16, 1870     | Fined..... See letter press.  | 16                        | 16   |                                      |      | 32                  | 1,722 83              |                                  | 1,722 83        | Allan Line.                                      |
| 3       | Chandonnet, Jos...   | 56   | Levis.....                                   | August 2, 1870     |   | 15                        | 12   |                                      |      | 27                  | 1,545 40              |                                  | 1,545 40        | Beaver Line.                                     |
| 4       | Bouillé, Louis A...  | 60   | Deschambault....                             | September 1, 1870  |   | 13                        | 15   | 1                                    |      | 29                  | 1,514 28              | 30 35                            | 1,544 63        | Elder, Dempster & Co                             |
| 5       | Beaudet, Prudent...  | 56   | { 452 St. Joseph }<br>{ St., Quebec... }     | October 10, 1870   | Member of Pilots' Committee. See letter press....                       | 9                         | 12   | 1                                    | 2    | 24                  | 952 50                | 79 00                            | 1,031 50        | Hamburg Am. P. Co.                               |
| 6       | Béllisle, Elzear.... | 63   | Deschambault....                             | October 10, 1870   | See letter press....  | 9                         | 6    | 2                                    | 1    | 18                  | 594 66                | 81 63                            | 676 29          | Tour-de-Rôle.                                    |
| 7       | Pleau, Joseph.....   | 60   | { St. Anne de la }<br>{ Pérade..... }        | October 10, 1870   | See letter press....  | 10                        | 11   |                                      |      | 21                  | 995 97                |                                  | 995 97          | Tour-de-Rôle.                                    |
| 8       | Brunet, Célestin...  | 53   | { No. 147 St. Paul }<br>{ St., Montreal... } | February 28, 1872  |   | 20                        | 21   |                                      |      | 41                  | 1,747 89              |                                  | 1,747 89        | Carbray, Routh & Co.                             |
| 9       | Béllisle, Louis....  | 51   | Deschambault....                             | February 28, 1872  | Secretary of Pilots' Committee.....                                     | 16                        | 14   |                                      |      | 30                  | 1,480 61              |                                  | 1,480 61        | Elder, Dempster & Co                             |
| 10      | Groleau, Ulric....   | 49   | Grondines.....                               | October 30, 1872   |   | 10                        | 9    | 1                                    | 1    | 21                  | 837 95                | 52 50                            | 890 45          | Tour-de-Rôle. [Co.                               |
| 11      | Frenette, Alfred...  | 58   | Portneuf.....                                | October 30, 1872   |   | 14                        | 17   |                                      | 1    | 32                  | 1,465 62              | 40 25                            | 1,505 87        | McLean, Kennedy &                                |
| 12      | St. Amant, Alfred..  | 53   | Deschambault....                             | October 30, 1872   |   | 13                        | 10   |                                      |      | 23                  | 1,014 21              |                                  | 1,014 21        | Tour-de-Rôle.                                    |
| 13      | Bélangier, Philippe. | 58   | Lotbinière.....                              | April 8, 1872      | See letter press....  | 8                         | 9    |                                      |      | 17                  | 846 42                |                                  | 846 42          | Tour-de-Rôle.                                    |
| 14      | Perrault, Narcisse.  | 60   | Deschambault....                             | April 9, 1874      |   | 17                        | 17   |                                      |      | 34                  | 1,777 23              |                                  | 1,777 23        | Donaldson Line.                                  |
| 15      | Auger, Cléophas...   | 51   | Point Lévis.....                             | September 22, 1874 | President of Pilots' Committee.....                                     | 14                        | 15   |                                      |      | 29                  | 1,542 67              |                                  | 1,542 67        | Donaldson Line.                                  |
| 16      | Labranche, Ferd...   | 50   | Portneuf.....                                | April 8, 1875      | Member of Pilots' Committee.....  | 18                        | 14   |                                      |      | 32                  | 1,680 05              |                                  | 1,680 05        | Elder, Dempster & Co                             |
| 17      | Bouillé, Louis Z...  | 47   | Deschambault....                             | January 16, 1878   |   | 15                        | 15   |                                      |      | 30                  | 1,683 25              |                                  | 1,683 25        | Allan Line.                                      |
| 18      | Gauthier, Laurent.   | 46   | Deschambault....                             | December 10, 1879  |   | 12                        | 14   |                                      |      | 26                  | 1,511 21              |                                  | 1,511 21        | Dominion Line.                                   |
| 19      | Arcand, Jean.....    | 44   | Deschambault....                             | December 10, 1879  | See letter press....  | 9                         | 11   | 1                                    | 2    | 23                  | 811 47                | 91 83                            | 903 30          | Tour-de-Rôle.                                    |
| 20      | Nault, Delevoie....  | 44   | Deschambault....                             | December 10, 1879  |   | 20                        | 21   | 2                                    |      | 43                  | 1,545 27              | 32 13                            | 1,577 40        | Dominion Coal Co.                                |
| 21      | Gauthier, Wilbrod.   | 44   | Deschambault....                             | December 10, 1879  | Member of Pilots' Committee.....  | 15                        | 15   |                                      |      | 30                  | 1,592 16              |                                  | 1,592 16        | Allan Line.                                      |
| 22      | Mayrand, Louis...    | 50   | { St. Anne de la }<br>{ Pérade..... }        | December 9, 1880   | See letter press....  | 18                        | 16   | 1                                    |      | 35                  | 1,343 53              | 26 55                            | 1,370 08        | Dominion Coal Co.                                |
| 23      | Dufresne, George...  | 48   | Deschambault....                             | December 10, 1880  |   | 10                        | 6    |                                      |      | 16                  | 652 85                |                                  | 652 85          | Tour-de-Rôle.                                    |
| 24      | Arcand, Norbert...   | 44   | Champlain.....                               | December 10, 1880  |   | 18                        | 18   | 1                                    | 2    | 39                  | 1,452 65              | 74 10                            | 1,526 75        | Dominion Coal Co.                                |
| 25      | Bouillé, Tancrède.   | 43   | Deschambault....                             | December 11, 1880  |   | 13                        | 16   |                                      |      | 29                  | 1,583 31              |                                  | 1,583 31        | Allan Line.                                      |
| 26      | Arcand, Nestor....   | 41   | Deschambault....                             | February 20, 1884  |   | 17                        | 15   | 2                                    | 2    | 36                  | 1,256 37              | 117 95                           | 1,374 32        | Dominion Coal Co.                                |
| 27      | Nault, Jean.....     | 40   | Deschambault....                             | February 20, 1884  |   | 20                        | 18   |                                      |      | 38                  | 1,682 04              |                                  | 1,682 04        | Dominion Coal Co.                                |
| 28      | Dussault, Joseph...  | 41   | Deschambault....                             | February 20, 1884  |   | 20                        | 21   |                                      | 1    | 42                  | 1,642 22              | 40 33                            | 1,682 55        | Dominion Coal Co.                                |
| 29      | Groleau, Gédéon...   | 45   | Grondines.....                               | May 20, 1887       |   | 11                        | 9    | 1                                    | 1    | 22                  | 872 80                | 62 88                            | 935 68          | Tour-de-Rôle.                                    |
| 30      | Béllisle, Néré....   | 43   | Deschambault....                             | May 20, 1887       |   | 18                        | 17   |                                      |      | 35                  | 1,417 63              |                                  | 1,417 63        | Dominion Coal Co.                                |
| 31      | Perrault, Liboire... | 51   | { 147 St. Paul St., }<br>{ Montreal..... }   | April 20, 1888     |   | 7                         | 8    | 1                                    | 1    | 17                  | 618 84                | 50 32                            | 669 16          | Tour-de-Rôle.                                    |
| 32      | Raymond, Wilfrid.    | 42   | Deschambault....                             | April 20, 1888     |   | 13                        | 11   | 1                                    | 1    | 26                  | 1,193 73              | 54 35                            | 1,248 08        | Johnston Line.                                   |
| 33      | Hurteau, Joseph...   | 36   | { 588 St. Denis St., }<br>{ Montreal..... }  | March 20, 1889     |   | 15                        | 16   |                                      |      | 31                  | 1,673 51              |                                  | 1,673 51        | Allan Line.                                      |
| 34      | Perrault, Edouard..  | 47   | Deschambault....                             | March 20, 1889     |   | 11                        | 12   | 1                                    | 1    | 25                  | 968 70                | 50 12                            | 1,018 82        | Dominion Coal Co.                                |
| 35      | Bouillé, C. Lydoric  | 40   | Deschambault....                             | March 20, 1889     |   | 12                        | 13   |                                      |      | 25                  | 1,409 29              |                                  | 1,409 29        | Beaver Line.                                     |
| 36      | Dussault, Honoré...  | 44   | St. Petronille...                            | July 16, 1889      | See letter press....  | 14                        | 12   |                                      |      | 26                  | 1,005 91              |                                  | 1,005 91        | Henry Dobell & Co.                               |
| 37      | Brière, Arthur....   | 40   | Portneuf.....                                | April 28, 1891     |   | 13                        | 11   | 2                                    | 1    | 27                  | 1,207 70              | 96 45                            | 1,304 15        | Thomson Line.                                    |
| 38      | Labranche, J. Sifroi | 43   | Portneuf.....                                | April 28, 1891     |   | 9                         | 9    | 3                                    | 2    | 23                  | 747 94                | 123 05                           | 870 99          | Tour-de-Rôle.                                    |
| 39      | Perrault, Alexis...  | 34   | Deschambault....                             | April 23, 1891     | See letter press....  | 18                        | 16   |                                      |      | 34                  | 1,402 43              |                                  | 1,402 43        | Dominion Coal Co.                                |
| 40      | Dufresne, N. Come    | 36   | Deschambault....                             | June 23, 1891      |   | 11                        | 16   |                                      | 1    | 28                  | 1,123 98              | 26 25                            | 1,150 23        | Tour-de-Rôle. [Co.                               |
| 41      | Nadeau, Jean B...    | 38   | Levis.....                                   | April 11, 1893     |   | 16                        | 15   |                                      |      | 31                  | 1,434 53              |                                  | 1,434 53        | McLean, Kennedy &                                |
| 42      | Naud, Aubert.....    | 44   | Deschambault....                             | July 11, 1893      |   | 15                        | 14   |                                      |      | 29                  | 1,546 40              |                                  | 1,546 40        | Allan Line.                                      |
| 43      | Sauvageau, Joseph    | 36   | Deschambault....                             | October 10, 1893   | See letter press....  | 18                        | 14   | 1                                    | 1    | 34                  | 1,278 27              | 60 38                            | 1,338 65        | Dominion Coal Co.                                |
| 44      | Dussault, Napoleon   | 35   | Deschambault....                             | April 3, 1894      |   | 14                        | 13   |                                      |      | 27                  | 1,353 36              |                                  | 1,353 36        | Thomson Line.                                    |
| 45      | Arcand, Barthelem    | 35   | Deschambault....                             | April 3, 1894      |   | 11                        | 12   |                                      | 2    | 25                  | 1,084 86              | 66 25                            | 1,151 11        | Tour-de-Rôle.                                    |
| 46      | Béllisle, Prudent.   | 34   | Deschambault....                             | April 3, 1894      |   | 14                        | 14   | 2                                    | 2    | 32                  | 1,384 98              | 118 28                           | 1,503 26        | Dominion Coal Co.                                |
| 47      | Arcand, George....   | 33   | Deschambault....                             | April 3, 1894      | Censured. See letter press....  | 12                        | 11   | 1                                    | 2    | 26                  | 1,119 79              | 98 00                            | 1,217 79        | Dominion Line.                                   |
| 48      | Toupin, Constant...  | 31   | Three Rivers.....                            | April 3, 1894      | Censured. See letter press....  | 12                        | 13   |                                      | 1    | 26                  | 1,064 48              | 38 50                            | 1,102 98        | Tour-de-Rôle.                                    |
| 49      | Perreault, George... | 32   | Deschambault....                             | September 11, 1894 |   | 18                        | 18   |                                      |      | 36                  | 1,145 15              |                                  | 1,145 15        | J. G. Brock.                                     |
| 50      | Bouillé, Narcisse... | 38   | Deschambault....                             | October 9, 1894    |   | 13                        | 14   |                                      |      | 27                  | 1,378 93              |                                  | 1,378 93        | Johnston Line.                                   |
| 51      | Leveillé, Joseph...  | 34   | Batiscan.....                                | June 18, 1895      |   | 18                        | 16   |                                      | 1    | 35                  | 1,459 55              | 28 50                            | 1,488 05        | Intercolonial Coal Co.                           |
| 52      | Perron, Sévère....   | 39   | Deschambault....                             | April 14, 1896     | Suspended from 23rd November until 1st July, 1898. See letter press.... | 11                        | 11   |                                      | 2    | 24                  | 1,027 47              | 76 13                            | 1,103 60        | Tour-de-Rôle.                                    |
| Total.. |                      |      |  |                    |   |                           |      |                                      |      |                     | \$67,125 61           | \$1,616 08                       | \$68,741 69     |  |

HARBOUR COMMISSIONERS' OFFICE,  
MONTREAL, 18th January, 1898.

ALEXANDER ROBERTSON,  
Secretary.

TABLE showing  
of the  
navigation

| No.<br>of<br>Buoy |       |
|-------------------|-------|
| 3                 | St. A |
| 4                 |       |
| 5                 |       |
| 6                 | Point |
| 7                 | Point |
| 8                 |       |
| 9                 | Point |
| 10                | St. A |
| 10a               | Les I |
| 11                | Cap   |
| 11a               |       |
| 12                | Plate |
| 13                | Port  |
| 13a               | Gron  |
| 13b               |       |
| 13c               |       |
| 14                | Batt  |
| 14a               | Batt  |
| 14b               | Hors  |
| 15                | Cadi  |
| 16                | Cap   |
| 17                |       |
| 18                |       |
| 18a               |       |
| 18b               | Poui  |
| 18c               |       |
| 19                | Poui  |
| 19a               |       |
| 19aa              |       |
| 19b               | Cap   |
| 20                |       |
| 21                | Cap   |
| 22                |       |
| 23                |       |
| 24                |       |
| 24a               |       |
| 24b               |       |
| 25                |       |
| 25a               |       |
| 26                | Cap   |
| 27                | Cap   |
| 28                | Bati  |
| 29                |       |
| 30                |       |
| 31                |       |
| 32                |       |
| 33                |       |
| 33a               |       |

TABLE showing in detail the number, locality and description of the Buoys on the Ship Channel near the close of navigation in 1897.

| No. of Buoy | LOCALITY.                             | Shape.     | Color.  | Wood or Metal. |
|-------------|---------------------------------------|------------|---------|----------------|
| 3           | St. Augustin Shoal.....               | Spar.....  | Red.... | Wood.          |
| 4           | " ".....                              | ".....     | ".....  | "              |
| 5           | " ".....                              | ".....     | ".....  | "              |
| 6           | Pointe Aubin.....                     | ".....     | Black.. | "              |
| 7           | Pointe aux Trembles (en bas).....     | ".....     | ".....  | "              |
| 8           | " ".....                              | ".....     | ".....  | "              |
| 9           | Pointe du Quart d'heure.....          | ".....     | Red.... | "              |
| 10          | St. Antoine.....                      | ".....     | ".....  | "              |
| 10a         | Les Ecureuils Bank.....               | ".....     | ".....  | "              |
| 11          | Cap Santé Traverse.....               | ".....     | Black.. | "              |
| 11a         | " ".....                              | ".....     | ".....  | "              |
| 12          | Platon.....                           | ".....     | ".....  | "              |
| 13          | Portneuf.....                         | ".....     | Red.... | "              |
| 13a         | Grondines Anchorage.....              | ".....     | Black.. | "              |
| 13b         | " ".....                              | ".....     | ".....  | "              |
| 13c         | " ".....                              | ".....     | ".....  | "              |
| 14          | Batture Simon.....                    | Cylinder.  | Red.... | Steel.         |
| 14a         | Batture du Chene.....                 | ".....     | Black.. | "              |
| 14b         | Horseback Shoal.....                  | ".....     | Red.... | "              |
| 15          | Cadieux Shoal.....                    | ".....     | Black.. | "              |
| 16          | Cap Charles.....                      | ".....     | ".....  | "              |
| 17          | ".....                                | ".....     | Red.... | "              |
| 18          | ".....                                | ".....     | Black.. | "              |
| 18a         | ".....                                | ".....     | Red.... | "              |
| 18b         | Pouillier Rayer.....                  | ".....     | ".....  | "              |
| 18c         | ".....                                | ".....     | Black.. | "              |
| 19          | Pouillier Rayer, (South shore).....   | Spar.....  | ".....  | Wood.          |
| 19a         | ".....                                | Cylinder.. | ".....  | Steel.         |
| 19aa        | ".....                                | ".....     | Red.... | "              |
| 19b         | Cap a la Roche Curve.....             | ".....     | ".....  | "              |
| 20          | ".....                                | ".....     | Black.. | "              |
| 21          | Cap a la Roche (Casque d'Eveque)..... | ".....     | Red.... | "              |
| 22          | ".....                                | ".....     | Black.. | "              |
| 23          | ".....                                | ".....     | Red.... | "              |
| 24          | ".....                                | ".....     | Black.. | "              |
| 24a         | ".....                                | ".....     | Red.... | "              |
| 24b         | ".....                                | ".....     | Black.. | "              |
| 25          | " " (North Channel).....              | Spar.....  | Red.... | Wood.          |
| 25a         | " " (Anchorage).....                  | Cylinder.  | Black.. | Steel.         |
| 26          | Cap Levrard.....                      | ".....     | ".....  | "              |
| 27          | Cap Levrard.....                      | ".....     | Red.... | "              |
| 28          | Batiscan Traverse.....                | Spar.....  | Black.. | Wood.          |
| 29          | ".....                                | ".....     | Red.... | "              |
| 30          | ".....                                | ".....     | Black.. | "              |
| 31          | ".....                                | ".....     | Red.... | "              |
| 32          | ".....                                | ".....     | Black.. | "              |
| 33          | ".....                                | ".....     | Red.... | "              |
| 33a         | ".....                                | ".....     | Black.. | "              |

TABLE OF SHIP CHANNEL BUOYS FOR 1897.—Continued.

| No. of Buoy | LOCALITY.                     | Shape.    | Color. | Wood or Metal. |
|-------------|-------------------------------|-----------|--------|----------------|
| 33b         | Batture St. Pierre            | Spar.     | Black  | Wood.          |
| 34          | Batiscan Anchorage            | "         | "      | "              |
| 35          | "                             | "         | Red    | "              |
| 36          | "                             | "         | Black  | "              |
| 37          | "                             | "         | Red    | "              |
| 38          | "                             | "         | "      | "              |
| 39          | Batture Perron                | "         | Black  | "              |
| 39a         | "                             | "         | Red    | "              |
| 39b         | Pointe Citrouille             | "         | Black  | "              |
| 41          | "                             | "         | Red    | "              |
| 42          | Champlain                     | "         | "      | "              |
| 43          | Champlain                     | "         | Black  | "              |
| 44          | Champlain                     | "         | "      | "              |
| 45          | Ile Bigot                     | "         | "      | "              |
| 46          | Becancour, Lower Traverse     | "         | "      | "              |
| 47          | "                             | "         | "      | "              |
| 48          | "                             | "         | "      | "              |
| 49          | Becancour Bend                | Cylinder. | Red    | Steel.         |
| 51          | "                             | Spar.     | "      | Wood.          |
| 52          | Becancour, Upper Traverse     | "         | Black  | "              |
| 53          | "                             | "         | "      | "              |
| 54          | "                             | "         | "      | "              |
| 55          | "                             | "         | "      | "              |
| 56          | Cap Madeleine                 | "         | "      | "              |
| 57          | "                             | "         | "      | "              |
| 57a         | "                             | "         | "      | "              |
| 57b         | "                             | "         | "      | "              |
| 57c         | Three Rivers                  | "         | Red    | "              |
| 58          | "                             | "         | Black  | "              |
| 58a         | "                             | "         | "      | "              |
| 59          | Force Shoal                   | "         | Red    | "              |
| 59a         | Port St. Francis              | "         | Black  | "              |
| 60          | Iron Shoal                    | Cylinder. | Red    | Steel.         |
| 60a         | Nicolet Bank                  | Spar.     | Black  | Wood.          |
| 61          | English Bank, Lake St. Peter. | Cylinder. | "      | Steel.         |
| 61a         | "                             | Spar.     | Red    | Wood.          |
| 61b         | Nicolet Traverse,             | "         | Black  | "              |
| 62          | Curve at Lightship No. 3,     | Taper     | "      | Steel.         |
| 63          | "                             | Spar.     | "      | Wood.          |
| 64          | "                             | "         | Red    | "              |
| 65          | "                             | "         | Black  | "              |
| 66          | "                             | "         | "      | "              |
| 66a         | "                             | "         | Red    | "              |
| 67          | "                             | Taper     | Black  | Steel.         |
| 68          | L'ship No. 3 to White Buoy,   | Spar.     | "      | Wood.          |
| 69          | "                             | "         | Red    | "              |
| 70          | "                             | "         | Black  | "              |
| 71          | "                             | "         | "      | "              |
| 71a         | "                             | "         | Red    | "              |
| 72          | "                             | "         | Black  | "              |

| No. of Buoy |      |
|-------------|------|
| 73          | L'sh |
| 74          |      |
| 75          |      |
| 76          |      |
| 76a         |      |
| 77          |      |
| 78          |      |
| 79          |      |
| 80          |      |
| 81          |      |
| 81a         |      |
| 82          |      |
| 83          |      |
| 84          |      |
| 85          |      |
| 86          |      |
| 86a         |      |
| 87          | Whi  |
| 88          |      |
| 89          | Whi  |
| 89a         |      |
| 90          |      |
| 91          |      |
| 92          |      |
| 93          |      |
| 94          |      |
| 94a         |      |
| 95          |      |
| 96          |      |
| 97          |      |
| 98          |      |
| 99          |      |
| 99a         |      |
| 100         |      |
| 101         | No.  |
| 101a        |      |
| 102         |      |
| 103         |      |
| 103a        |      |
| 104         |      |
| 105         | Ligh |
| 106         |      |
| 107         |      |
| 108         |      |
| 109         |      |
| 109a        |      |
| 110         |      |
| 111         | No.  |

TABLE OF SHIP CHANNEL BUOYS FOR 1897.—Continued.

| No. of Buoy | LOCALITY.                                  | Shape   | Color.   | Wood or Metal. |
|-------------|--|---------|----------|----------------|
| 73          | L'ship No. 3 to White Buoy, Lake St. Peter | Spar    | Black .. | Wood           |
| 74          | " " " "                                    | "       | Red .... | "              |
| 75          | " " " "                                    | "       | Black .. | "              |
| 76          | " " " "                                    | "       | " " " "  | "              |
| 76a         | " " " "                                    | "       | Red .... | "              |
| 77          | " " " "                                    | "       | Black .. | "              |
| 78          | " " " "                                    | "       | " " " "  | "              |
| 79          | " " " "                                    | "       | Red .... | "              |
| 80          | " " " "                                    | "       | Black .. | "              |
| 81          | " " " "                                    | "       | " " " "  | "              |
| 81a         | " " " "                                    | "       | Red .... | "              |
| 82          | " " " "                                    | "       | Black .. | "              |
| 83          | " " " "                                    | "       | " " " "  | "              |
| 84          | " " " "                                    | "       | Red .... | "              |
| 85          | " " " "                                    | "       | Black .. | "              |
| 86          | " " " "                                    | "       | " " " "  | "              |
| 86a         | " " " "                                    | "       | Red .... | "              |
| 87          | White Buoy Bend,                           | Taper   | W. & B.  | Iron           |
| 88          | " " " "                                    | Spar .. | Red .... | Wood           |
| 89          | White Buoy to No. 2 Curve,                 | "       | Black .. | "              |
| 89a         | " " " "                                    | "       | Red .... | "              |
| 90          | " " " "                                    | "       | Black .. | "              |
| 91          | " " " "                                    | "       | " " " "  | "              |
| 92          | " " " "                                    | "       | Red .... | "              |
| 93          | " " " "                                    | "       | Black .. | "              |
| 94          | " " " "                                    | "       | " " " "  | "              |
| 94a         | " " " "                                    | "       | Red .... | "              |
| 95          | " " " "                                    | "       | Black .. | "              |
| 96          | " " " "                                    | "       | " " " "  | "              |
| 97          | " " " "                                    | "       | Red .... | "              |
| 98          | " " " "                                    | "       | Black .. | "              |
| 99          | " " " "                                    | "       | " " " "  | "              |
| 99a         | " " " "                                    | "       | Red .... | "              |
| 100         | " " " "                                    | "       | Black .. | "              |
| 101         | No. 2 Curve,                               | Taper   | " " " "  | Steel          |
| 101a        | " " " "                                    | Spar .. | Red .... | Wood           |
| 102         | " " " "                                    | "       | Black .. | "              |
| 103         | " " " "                                    | "       | " " " "  | "              |
| 103a        | " " " "                                    | "       | Red .... | "              |
| 104         | " " " "                                    | Taper   | Black .. | Steel          |
| 105         | Lightship No. 2 to No. 1 Curve,            | Spar .. | " " " "  | Wood           |
| 106         | " " " "                                    | "       | " " " "  | "              |
| 107         | " " " "                                    | "       | Red .... | "              |
| 108         | " " " "                                    | "       | Black .. | "              |
| 109         | " " " "                                    | "       | " " " "  | "              |
| 109a        | " " " "                                    | "       | Red .... | "              |
| 110         | " " " "                                    | "       | Black .. | "              |
| 111         | No. 1 Curve,                               | Taper   | " " " "  | Steel          |

TABLE OF SHIP CHANNEL BUOYS FOR 1897.—Continued.

| No. of Buoy | LOCALITY.                              | Shape.     | Color. | Wood or Metal |
|-------------|--|------------|--------|---------------|
| 111a        | Lightship No. 1 Curve, Lake St. Peter. | Spar       | Red    | Wood.         |
| 112         | " " "                                  | "          | Black  | "             |
| 113         | " " "                                  | "          | "      | "             |
| 114         | " " "                                  | Taper      | "      | Steel.        |
| 115         | Ile aux Raisins Traverse,              | Spar       | "      | Wood.         |
| 116         | " " "                                  | "          | Red    | "             |
| 117         | " " "                                  | "          | Black  | "             |
| 118         | " " "                                  | "          | "      | "             |
| 119         | " " "                                  | "          | Red    | "             |
| 120         | " " "                                  | Irregular. | Black  | Iron.         |
| 120a        | Ile aux Raisins,                       | Spar       | "      | Wood.         |
| 120b        | " " "                                  | "          | "      | "             |
| 120c        | Pointe aux Soldats,                    | "          | "      | "             |
| 121         | Ile de Grace                           | "          | Red    | "             |
| 122         | " " "                                  | "          | Black  | "             |
| 122a        | " " "                                  | "          | Red    | "             |
| 122b        | " " "                                  | "          | "      | "             |
| 122c        | St. Ann's of Sorel.                    | "          | Black  | "             |
| 123         | " " "                                  | "          | "      | "             |
| 124         | Contrecoeur Channel, St.Ours Traverse  | Cylinder.  | "      | Steel.        |
| 125         | " " "                                  | Spar       | "      | Wood.         |
| 126         | " " "                                  | "          | Red    | "             |
| 127         | " " "                                  | "          | Black  | "             |
| 128         | " " "                                  | "          | Red    | "             |
| 129         | " " "                                  | "          | Black  | "             |
| 130         | " " "                                  | "          | Red    | "             |
| 131         | " " "                                  | "          | "      | "             |
| 132         | Bellmouth Curve, Contrecoeur Chan'l.   | Bottle     | "      | Iron.         |
| 133         | " " "                                  | Spar       | "      | Wood.         |
| 134         | " " "                                  | "          | Black  | "             |
| 135         | " " "                                  | "          | Red    | "             |
| 136         | " " "                                  | "          | "      | "             |
| 137         | " " "                                  | "          | "      | "             |
| 138         | " " "                                  | "          | Black  | "             |
| 139         | " " "                                  | Bottle     | Red    | Iron.         |
| 140         | Bellmouth Curve to Bend.               | Spar       | "      | Wood.         |
| 141         | " " "                                  | "          | Black  | "             |
| 142         | " " "                                  | "          | Red    | "             |
| 143         | " " "                                  | "          | Black  | "             |
| 144         | " " "                                  | "          | Red    | "             |
| 145         | " " "                                  | "          | "      | "             |
| 146         | Contrecoeur Bend.                      | Cylinder.  | Black. | Steel.        |
| 147         | " " "                                  | Spar       | Red    | Wood.         |
| 148         | Contrecoeur Bend to Junction.          | "          | Black  | "             |
| 149         | " " "                                  | "          | Red    | "             |
| 150         | " " "                                  | "          | Black  | "             |
| 151         | " " "                                  | "          | "      | "             |
| 152         | " " "                                  | "          | "      | "             |

TAB

No. of Buoy

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171a

171b

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179a

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182a

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TABLE OF SHIP CHANNEL BUOYS FOR 1897.—*Continued.*

| No. of Buoy | LOCALITY.                         | Shape.     | Color.      | Wood or Metal. |
|-------------|-----------------------------------|------------|-------------|----------------|
| 197         | Pointe aux Trembles en haut ..... | Spar ..... | Red .....   | Wood.          |
| 197a        | “ “ “ .....                       | “ .....    | Black ..... | “              |
| 197b        | Longue Pointe .....               | “ .....    | “ .....     | “              |
| 198         | “ “ “ .....                       | “ .....    | Red .....   | “              |
| 199         | Pouillier a Gagnon .....          | “ .....    | Black ..... | “              |
| 200         | Longueuil .....                   | Cylinder.. | “ .....     | Steel.         |
| 200a        | “ “ “ .....                       | “ .....    | “ .....     | “              |
| 200b        | Maisonneuve Wharf. ....           | Spar ..... | Red .....   | Wood.          |
| 200c        | “ “ “ .....                       | “ .....    | Black ..... | “              |
| 201         | Hochelaga Wharf. ....             | “ .....    | Red .....   | “              |
| 201a        | Ile Ronde .....                   | Cylinder.. | Black ..... | Steel.         |
| 202         | Montreal Harbour .....            | Spar ..... | “ .....     | Wood.          |
| 203         | “ “ “ .....                       | “ .....    | “ .....     | “              |
| 205         | “ “ “ .....                       | “ .....    | “ .....     | “              |
| 205a        | “ “ “ .....                       | “ .....    | “ .....     | “              |
| 206         | “ “ “ .....                       | “ .....    | “ .....     | “              |

TABLE  
mark

St. Anto

Platon

Richelie

Cap Cha

Grondine

Grondine

St. Pierre

Champla

Cap Mad

Nicolet T

Ste. Anne

Contreco

Contreco

Ile St. Ou

Ile de Lo

Ile à l'Aig

\*Hochelag

Total

\* Mainta

TABLE showing the number and locality of Beacons for marking the Ship Channel at close of navigation, 1897.

| LOCALITY.                 | No. | Description.             | REMARKS.   |
|---------------------------|-----|--------------------------|--|
| St. Antoine .....         | 1   | Square ....              | Left in position all winter.                       |
| Platon .....              | 2   | Square ....              | " " "  |
| Richelieu Rapids .....    |     | Bushes.....              | { Maintained during sea-<br>son of navigation..... |
| Cap Charles .....         | 1   | Diamond ..               | Left in position all winter.                       |
| Grondines Point.....      | 2   | Blind lights             | { Low blind beacon re-<br>moved every fall.        |
| Grondines .....           | 2   | Square ....              | Left in position all winter.                       |
| St. Pierre les Becquets.. | 1   | Square ....              | " " "  |
| Champlain .....           | 2   | Square ....              | " " "  |
| Cap Madeleine.....        | 2   | Square ....              | " " "  |
| Nicolet Traverse .....    | 2   | Square ....              | " " "  |
| Ste. Anne de Sorel .....  | 1   | Diamond ..               | Removed every fall.                                |
| Contrecœur, lower range   | 2   | Square ....              | Left in position all winter.                       |
| Contrecœur, upper range   | 2   | Diamond ..               | " " "  |
| Ile St. Ours traverse.... | 2   | Diamond ..               | " " "  |
| Ile de Lorier .....       | 2   | Diamond ..               | " " "  |
| Ile à l'Aigle .....       | 2   | Diamond ..               | Removed every fall.                                |
| *Hochelega .....          | 2   | { 1 Square,<br>1 Diamond | { Low diamond beacon re-<br>moved every fall.      |
| Total number.....         | 28  |                          |  |

\* Maintained by Harbour Commissioners of Montreal.

REPORT AND STATEMENTS  
OF THE  
MONTREAL DECAYED PILOTS' FUND  
FOR THE YEAR 1897.

HARBOUR COMMISSIONERS OF MONTREAL,  
SECRETARY'S OFFICE,

MONTREAL, January 31st, 1898.

F. GOURDEAU, Esquire,

*Deputy Minister of Marine and Fisheries,*

OTTAWA.

SIR,—

I have the honor, by direction of the Harbour Commissioners of Montreal, to transmit herewith, for the information of the Honorable the Minister of Marine and Fisheries, the usual Statements of (1) Receipts and Disbursements of the Montreal Decayed Pilots' Fund for the year ending 31st December, 1897, and (2) Assets of the Fund at 31st December, 1897.

The following is an abstract of the former :

| RECEIPTS.  |  |            |
|--|--|------------|
| 5 c. of pilotage dues, collected at Montreal.....  |  | \$3,478 13 |
| " " " " Three Rivers and Batiscan .....  |  | 94 39      |
| " " " " Sorel .....  |  | 26 66      |
| From sundry percentages of pilotage dues on war vessels, etc.  |  | 16 61      |
| From Messrs. R. Reford & Co., for violation of By-Law 109 by Pilot Wilfrid Raymond with SS. "Fremona" in 1896..... |  | 48 83      |
|  |  | \$3,664 62 |
| From interest on investments and on cash in bank.....  |  | 2,305 10   |
| Total.....   |  | \$5,969 72 |

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## DISBURSEMENTS.

|  |            |
|--|------------|
| Pensions to old pilots and widows of pilots.....                                     | \$5,589 84 |
| Messrs. Riddell & Common, for audit of Fund for 1896.....                            | 25 00      |
| Postage stamps, stationery, etc.....   | 15 80      |
| Refund of percentages overpaid during the time of the pilots'<br>strike in June..... | 139 02     |
| Total.....   | \$5,769 66 |

Showing a gain for the year of \$200.06.

In explanation of the considerable amount of percentages refunded to different shipping firms, it should be explained that during the time of the pilots' strike at the end of June, some 30 vessels were piloted by others than licensed pilots, and although protests were made by the different shipping firms against the collection of the usual 5 per cent. of the pilotage dues, it was only during the autumn that, on an opinion from their legal advisers, the Commissioners found that the percentage should not have been collected under the circumstances, and had to repay the total amount of \$137.22, which sum was accordingly lost to the Fund through the refusal of the pilots to take duty for about ten days.

The following deaths and superannuations took place during the year:—

On the 8th February Widow Edouard Boudreau, of Three Rivers, died; on the 10th of the same month, Widow Isaie Beaudry, of Sorel, died; on the 6th March Old Pilot Alexis Gauthier, of Deschambault, died; and on the 31st July Old Pilot Joseph Leveillé, of Montreal, died. In each of these cases, excepting the first mentioned, the full pension for the current quarter in which death occurred was paid to the heirs.

Widow Alexis Gauthier was placed on the list of pensioners as from 1st May, at the rate of \$32 a quarter. Widow Joseph Leveillé was placed on the list of pensioners at the rate of \$37.33 quarterly from 1st August. In view of an oculist's certificate submitted by Pilot Francois Desjordy, of Lavaltrie, to the effect that his eyesight was considerably impaired and it would not be safe for him to continue his duties, he was placed on the pension list for one year from 1st May at the rate paid to all old pilots, namely, \$90 per quarter.

There were on the list of pensioners at the close of the year 9 old pilots, all receiving \$90 per quarter, and 15 widows, of whom 11 receive \$37.33 quarterly, 3 receive \$32 quarterly, and one \$29.33 quarterly.

I have the honor to be, Sir,  
Your obedient servant,

ALEXANDER ROBERTSON, *Secretary.*

Dr. ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

|         |   |                    |
|---------|---|--------------------|
| 1897.   |   |                    |
| Jan. 1  | To balance from December, 1896.....   | \$ 1,678 37        |
| 9       | To City of Montreal, 6 months' interest to 1st January, on \$5,000 of 5 per cent. City Stock..... | 125 00             |
| Feb. 4  | To Harbor of Montreal Coupons, due 5th January:   |                    |
|         | Series R, 20 and 102 = 2 × \$15 00 = \$ 30 00   |                    |
|         | “ R, 42 and 117-119 = 4 × 30 00 = 120 00  |                    |
|         | “ R, 84 = 1 × 60 00 = 60 00   |                    |
|         | “ D, 21 and 45-49 = 6 × 25 00 = 150 00  |                    |
|         | “ F, 164-172 = 9 × 20 00 = 180 00   |                    |
|         | “ G, 289-290 = 2 × 20 00 = 40 00  |                    |
|         | “ H, 64-65 & 139-142 = 6 × 20 00 = 120 00   |                    |
|         | “ J, 231-246 = 16 × 20 00 = 320 00  | 1,020 00           |
| May 31  | To Collector of Customs, Montreal, Trinity Dues collected in May .....                            | 356 35             |
| June 30 | To Collector of Customs, Montreal, Trinity Dues collected in June.....                            | 505 56             |
|         |   | <u>\$ 3,685 28</u> |



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## WITH THE MONTREAL DECAYED PILOTS' FUND. Cr.

| 1897.                |   |   |            |
|----------------------|---|---|------------|
|                      |   | By Pensions paid to the following for three months ending 1st February :—         |            |
| Feb.                 | 4 | Widow Isaïe Beaudry, Sorel.....   | 37 33      |
| "                    | " | Sevère Bellisle, Quebec.....  | 37 33      |
| "                    | " | Edouard Boudreau, Three Rivers.....   | 37 33      |
| "                    | " | L. David Bouille, Deschambault.....   | 29 33      |
| "                    | " | Jos. Leandre Dessureau, Sorel.....  | 37 33      |
| "                    | " | Placide Gaillardet, St. Gregoire le Grand.....                                    | 37 33      |
| "                    | " | J. Octave Hamelin, Deschambault.....  | 37 33      |
| "                    | " | Hubert Lemay, Montreal.....   | 37 33      |
| "                    | " | Adolphe Lisé, Montreal.....   | 37 33      |
| "                    | " | David Mathieu, Grondines.....   | 32 00      |
| "                    | " | Zéphirin Mayrand, Contrecoeur.....  | 37 33      |
| "                    | " | Edouard Naud, Sorel.....  | 32 00      |
| "                    | " | Joseph Toupin, Champlain.....   | 37 33      |
| "                    | " | Athanase Dufresne, Deschambault.....  | 37 33      |
| "                    | " | Victor Gagnon, Champlain.....   | 37 33      |
| "                    | " | Old Pilot Cyrille Bellisle, Deschambault.....                                     | 90 00      |
| "                    | " | Damase Cayen, Portneuf.....   | 90 00      |
| "                    | " | J. B. Dorval, Cap de la Madeleine.....  | 90 00      |
| "                    | " | Pierre Gagnon, Three Rivers.....  | 90 00      |
| "                    | " | Joseph Léveillè, Montreal.....  | 90 00      |
| "                    | " | Augustin Naud, Montreal.....  | 90 00      |
| "                    | " | George Raymond, St. Casimir.....  | 90 00      |
| "                    | " | Trefflé Toupin, Roberval.....   | 90 00      |
| "                    | " | Alexis Gauthier, Deschambault.....  | 90 00      |
| "                    | " | David Perreault, Deschambault.....  | 90 00      |
| May                  | 3 | "Le Cultivateur," for printing pension receipts, etc....                          | 5 00       |
| "                    | 4 | Riddell & Common, audit of this Fund for the year ending 31st December, 1896..... | 25 00      |
| Carried forward..... |   |   | \$1,471 29 |

Dr. ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

|         |   |             |
|---------|---|-------------|
| 1897.   | Brought forward.....  | \$ 3,685 28 |
| July 30 | To City of Montreal, six months' interest to 1st July<br>on \$5,000 of 5 per cent. City Stock.....                                  | 125 00      |
| " 31    | To Collector of Customs, Montreal, Trinity Dues<br>collected in July.....   | 554 25      |
| Aug. 5  | To Pilot Sévérè Perron, 5 per cent. of the pilotage<br>dues of H.M.S. "Talbot," from Quebec to Mont-<br>real and back, in June..... | 5 75        |
| " 7     | To Harbor of Montreal Coupons, due 5th July :   |             |
|         | Series R, No. 20 and 102 = 2 × \$15 00 = \$ 30 00   |             |
| "       | R, 42 and 117-119 = 4 × 30 00 = 120 00  |             |
| "       | R, 84 = 1 × 60 00 = 60 00   |             |
| "       | D, 21 and 45-49 = 6 × 25 00 = 150 00  |             |
| "       | F, 164-172 = 9 × 20 00 = 180 00   |             |
| "       | G, 289-290 = 2 × 20 00 = 40 00  |             |
| "       | H, 64-65 & 139-142 = 6 × 20 00 = 120 00   |             |
| "       | J, 231-246 = 16 × 20 00 = 320 00  | 1,020 00    |
|         |   | \$ 5,390 28 |

Carried forward.....\$ 5,390 28

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## WITH THE MONT. DECAYED PILOTS' FUND. (Continued.) Cr.

|        |       |  |            |
|--------|-------|--|------------|
| 685 28 | 1897. | Brought forward .....                              | \$1,471 29 |
| 125 00 |       | By pensions paid to the following for three months |            |
| 554 25 |       | ending 1st May :—                                  |            |
|        | May 4 | Widow Isaie Beaudry, heirs of .....                | 37 33      |
| 5 75   | "     | " Sévère Bellisle .....                            | 37 33      |
|        | "     | " L. David Bouille .....                           | 29 33      |
|        | "     | " Jos. Leandre Dessureau .....                     | 37 33      |
|        | "     | " Placide Gaillardet .....                         | 37 33      |
|        | "     | " J. Octave Hamelin .....                          | 37 33      |
|        | "     | " Hubert Lemay .....                               | 37 33      |
|        | "     | " Adolphe Lisé .....                               | 37 33      |
|        | "     | " David Mathieu .....                              | 32 00      |
|        | "     | " Zéphirin Maynard .....                           | 37 33      |
| 020 00 | "     | " Edouard Naud .....                               | 32 00      |
| 390 28 | "     | " Joseph Toupin .....                              | 37 33      |
|        | "     | " Victor Gagnon .....                              | 37 33      |
|        | "     | Old Pilot Cyrille Bellisle .....                   | 90 00      |
|        | "     | " Damase Cayen .....                               | 90 00      |
|        | "     | " J. B. Dorval .....                               | 90 00      |
|        | "     | " Pierre Gagnon .....                              | 90 00      |
|        | "     | " Joseph Lèveillé .....                            | 90 00      |
|        | "     | " Augustin Naud .....                              | 90 00      |
|        | "     | " George Raymond .....                             | 90 00      |
|        | "     | " Treffe Toupin .....                              | 90 00      |
|        | "     | " David Perreault .....                            | 90 00      |
|        | "     | Widow Alexis Gauthier, amount which would have     |            |
|        |       | been due her husband, he having died on 6th        |            |
|        |       | March .....  | 90 00      |
|        |       | Carried forward .....                              | \$2,875 25 |

Dr. ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

|         |   |             |
|---------|---|-------------|
| 1897.   | Brought forward.....  | \$ 5,390 28 |
| Aug. 12 | To Pilot Napoleon Dussault, 5 per cent. of the inwards pilotage dues on schooner "Helen M. Atwood," paid him on 5th July by Messrs. Goodhue & Co., and kept in an envelope by Secretary-Treasurer until it should be asked for when the said vessel was clearing (see contra for repayment) ..... | 1 80        |
| " 31    | To Collector of Customs, Montreal, Trinity Dues collected in August .....   | 575 13      |
| Sept. 4 | To Pilot J. S. Labranche (per Joseph Thibaudeau, Montreal Pilot Agent, Quebec), 5 per cent. of his pilotage dues on bark "Sigurd," from Three Rivers to Quebec, in tow, with draft of 16 feet 9 inches.....   | 1 25        |
| " 30    | To Collector of Customs, Montreal, Trinity Dues collected in September.....   | 596 84      |
| Oct. 11 | To Pilot Ulric Groleau, 5 per cent. of his pilotage dues of SS. "Starlight," from Quebec to Three Rivers, on 5th September, with draft of 12 feet 6 inches.....   | 1 09        |
| " 27    | To Pilot N. C. Dufresne, 5 per cent. of his pilotage dues on brig. "R. L. T.," from Montreal to Three Rivers, draft 12 feet.....  | \$0 90      |
|         | Do. do. SS. "Eskdale," to Batiscan, draft 13 feet.....  | 1 14        |
|         | Do. from Batiscan to Quebec, 15 feet.....   | 1 30        |
|         |   | 3 34        |
| " 30    | To Collector of Customs, Montreal, Trinity Dues collected in October .....  | 421 54      |
|         |   | \$ 6,991 27 |
|         | Carried forward.....  | \$ 6,991 27 |

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WITH THE MONT. DECAYED PILOTS' FUND. (*Continued.*) Cr.

|        |   |            |
|--------|---|------------|
| 1897.  | Brought forward .....   | \$2,875 25 |
|        | By pensions paid to the following persons for three months ending 1st August :—   |            |
| Aug. 7 | Widow Séverè Bellisle .....   | 37 33      |
| "      | " L. David Bouille .....  | 29 33      |
| "      | " J. Leandre Dessureau.....   | 37 33      |
| "      | " Placide Gaillardet.....   | 37 33      |
| "      | " J. Octave Hamelin .....   | 37 33      |
| "      | " Hubert Lemay.....   | 37 33      |
| "      | " Adolphe Lisé.....   | 37 33      |
| "      | " David Mathieu .....   | 32 00      |
| "      | " Zephirin Mayrand.....   | 37 33      |
| "      | " Edouard Naud .....  | 32 00      |
| "      | " Joseph Toupin .....   | 37 33      |
| "      | " Athanase Dufresne .....   | 37 33      |
| "      | " Victor Gagnon .....   | 37 33      |
| "      | " Alexis Gauthier .....   | 32 00      |
| "      | Old Pilot Cyrille Bellisle.....   | 90 00      |
| "      | " Damase Cayen .....  | 90 00      |
| "      | " J. B. Dorval.....   | 90 00      |
| "      | " Pierre Gagnon .....   | 90 00      |
| "      | " Augustin Naud.....  | 90 00      |
| "      | " George Raymond.....   | 90 00      |
| "      | " Trefflé Toupin.....   | 90 00      |
| "      | " David Perreault.....  | 90 00      |
| "      | " Francois Desjordy.....  | 90 00      |
| "      | C. A. Léveillé, executor of the late old pilot Joseph Léveillé, who died on 31st July, the amount of pension payable to the latter on 1st August..... | 90 00      |
|        | Carried forward.....  | \$4,273 88 |

Dr. ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

|        |   |             |
|--------|---|-------------|
| 1897.  | Brought forward.....  | \$ 6,991 27 |
| Nov. 3 | To Pilot Séverè Perron, 5 per cent. of the pilotage dues on U. S. "Yantic," from Quebec to Montreal, with 13 feet draft .....                           | 1 63        |
| " 13   | To Pilot Celestin Brunet, 5 per cent. of his pilotage dues on American tug "R. W. Wilmont," from Montreal to Quebec, with 14 feet draft .....           | 1 75        |
| " 23   | To P. B. Vanasse, Collector of Customs, Three Rivers, Trinity Dues collected by him there and at Batis-can during 1897, as per detailed statement ..... | 94 39       |
| " 30   | To Collector of Customs, Montreal, Trinity Dues collected in November .....   | 410 61      |
|        |   | \$ 7,499 65 |

Carried forward.....\$ 7,499 65

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WITH THE MONT. DECAYED PILOTS' FUND. (*Continued.*) CR.

|    |         |   |            |
|----|---------|---|------------|
| 27 | 1897.   | Brought forward .....   | \$4,273 88 |
| 63 | Aug. 12 | By Anderson, McKenzie & Co., 5 per cent. of the pilotage dues inwards on the schooner "Helen M. Atwood," received as per contra from Pilot Napoleon Dussault..... | 1 80       |
| 75 | " 16    | By cost of Post Office order to remit Dame Edouard Naud's pension to Suncook, N.H.....  | 0 40       |
| 39 | Sep. 30 | By McLean, Kennedy & Co., Trinity dues received on five steamships during the pilots' strike, now refunded .....  | 12 74      |
|    |         | By pensions paid to the following for three months ending 1st November.   |            |
| 61 | Nov. 6  | Widow Séverè Bellisle .....   | 37 33      |
| 65 | " "     | " L. David Bouille .....  | 29 33      |
|    | " "     | " Jos. Leandre Dessureau .....  | 37 33      |
|    | " "     | " Placide Gaillardet .....  | 37 33      |
|    | " "     | " J. Octave Hamelin .....   | 37 33      |
|    | " "     | " Hubert Lemay .....  | 37 33      |
|    | " "     | " Adolphe Lisé .....  | 37 33      |
|    | " "     | " David Mathieu .....   | 32 00      |
|    | " "     | " Zephirin Mayrand .....  | 37 33      |
|    | " "     | " Edouard Naud .....  | 32 00      |
|    | " "     | " Joseph Toupin .....   | 37 33      |
|    | " "     | " Athanase Dufresne .....   | 37 33      |
|    | " "     | " Victor Gagnon .....   | 37 33      |
|    | " "     | " Alexis Gauthier .....   | 32 00      |
|    | " "     | " Joseph Leveillé .....   | 37 33      |
|    | " "     | Old Pilot Cyrille Bellisle.....   | 90 00      |
|    | " "     | " Damase Cayen .....  | 90 00      |
|    | " "     | " J. B. Dorval .....  | 90 00      |
|    | " "     | " Pierre Gagnon .....   | 90 00      |
|    | " "     | " Augustin Naud .....   | 90 00      |
|    | " "     | " George Raymond .....  | 90 00      |
|    | " "     | " Trifflé Toupin .....  | 90 00      |
|    | " "     | " David Perreault .....   | 90 00      |
|    | " "     | " Francois Desjordy .....   | 90 00      |
|    | " "     | By cost of Post Office order to remit Dame Edouard Naud's pension to Suncook, N.H. ....   | 40 .       |
|    |         | Carried forward .....   | \$5,635 18 |

Dr. ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

|         |  |             |
|---------|--|-------------|
| 1897.   | Brought forward.....   | \$ 7,499 65 |
| Dec. 11 | To Joseph Mathieu, Collector of Customs, Sorel,<br>Trinity Dues collected by him during 1897, as per<br>detailed statement .....   | 26 66       |
| " 30    | To Collector of Customs, Montreal, balance of Trinity<br>Dues for November, as per statement of 9th<br>December .....  | 57 85       |
| " 31    | To Montreal City & District Savings Bank, interest<br>at rate of 3 per cent. per annum on money at<br>deposit during 1897.....   | 15 10       |
| " "     | To Robert Reford & Co., pilotage dues of SS. "Fre-<br>mona," from Quebec to Montreal on 1st Novem-<br>ber, 1896, said vessel having been piloted by<br>Wilfrid Raymond in violation of Montreal Har-<br>bor Commissioners' By-law No. 109 (see page 28<br>of Report of the Montreal Pilotage District for<br>the year 1896)..... | 48 83       |

\$7,648 09

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## WITH THE MONT. DECAYED PILOTS' FUND. (Continued.) Cr.

|         |  |                   |
|---------|--|-------------------|
|         | Brought forward.....   | \$5,635 18        |
| Dec. 30 | By Kingman, Brown & Co., refund of Trinity dues collected from vessels in June during the pilots' strike, which were not piloted by licensed pilots and should not therefore have been collected, as per account of 1st October..... | \$35 25           |
| "       | " Wm. Johnston & Co., Ltd.....   | 8 30              |
| "       | " Henry Dobell & Co.....   | 3 05              |
| "       | " Hamburg-American Packet Co.....  | 2 25              |
| "       | " Dobell, Beckett & Co.....  | 2 43              |
| "       | " J. G. Brock.....   | 1 40              |
| " 31    | " Carbray, Routh & Co.....   | 5 40              |
| "       | " Intercolonial Coal Mining Co.....  | 3 45              |
| "       | " Munderloh & Co.....  | 2 93              |
| "       | " Elder, Dempster & Co.....  | 13 60             |
| "       | " David Torrance & Co.....   | 5 27              |
| "       | " H. & A. Allan.....   | 19 17             |
| "       | " The Beaver Line of Steamships.....   | 3 00              |
| "       | " The Robert Reford Co., Ltd.....  | 18 98             |
|         |  | 124 48            |
| "       | " Stationery and postage on pensions remitted by registered letter during 1897.....  | 10 00             |
|         | By Balance to January, 1898.....   | 1,878 43          |
|         |  | <u>\$7,648 09</u> |

## ALEXANDER ROBERTSON, TREASURER, IN ACCOUNT

WITH THE

## STATEMENT OF THE FUND.

## MONTREAL HARBOR DEBENTURES.

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

## CITY OF MONTREAL CONSOLIDATED FUND.

|     |   |                    |
|-----|---|--------------------|
| 165 | Due 1st July, 1910, interest 5 p.c.=50 × \$100. | 5,000 00           |
|     | Cash in Montreal City and District Savings      |                    |
|     | Bank at 3 p.c.....                              | 1,829 60           |
|     | Cash in Commissioners' hands.....               | 48 83              |
|     | Total.....                                      | <u>\$52,878 43</u> |

ALEXANDER ROBERTSON,  
*Treasurer.*

MONTREAL, 31st December, 1897.

We her  
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have four  
Debentur  
described  
for our in

MONTR

WITH THE MONTREAL DECAYED PILOTS' FUND.

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We hereby certify that we have examined the Entries for the year 1897, as recorded on sheets hereunto annexed, and have found them to agree with vouchers on file; also that Debentures and Certificates to the amount of \$52,878.43, as described in above statement, have this day been submitted for our inspection.

RIDDELL & COMMON,

*Auditors.*

MONTREAL, 31st January, 1898.

# HARBOUR

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*Harbour*

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REPORT  
OF THE  
HARBOUR MASTER OF THE PORT OF MONTREAL  
For the Year 1897.

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HARBOUR MASTER'S OFFICE,

MONTREAL, January 11th, 1898.

ALEXANDER ROBERTSON, Esq.,

*Secretary,*

*Harbour Commissioners of Montreal.*

DEAR SIR,—

For the information of the Board of Harbour Commissioners, I beg to submit the following as my Annual Report for the year ended December 31st, 1897, with four comparative statements showing for the past ten years the number, tonnage, classification, greatest number in port at one time of vessels, seagoing and inland, dates of the opening and closing of navigation, and two statements showing the nationality, number and tonnage of seagoing vessels consigned to the different shipping firms during the year 1897.

Seven hundred and ninety-six (796) seagoing vessels arrived in port during the season, of the aggregate tonnage of 1,379,002 tons, showing an increase in ocean tonnage of 162,534 tons over the previous year. Of these vessels seven hundred and fifty (750) were built of iron or steel, of an aggregate tonnage of 1,368,948 tons, and forty-six (46) of wood, of an aggregate tonnage of 10,054 tons. Of inland vessels there arrived in port six thousand three hundred and eighty-four (6,384), of an aggregate tonnage of 1,134,346, showing an increase in inland tonnage of 130,229 tons, and making a total of seven thousand one hundred and eighty (7,180) vessels of all classes and 2,513,348 tons, and an increase in tonnage of vessels of all classes of 292,763 tons.

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

#### EXPORTS.

*Lumber.*—There were shipped during the season of lumber, square and wane timber, to the United Kingdom and Continental ports, 320,802,733 feet board measure, showing an increase over 1896 of 101,770,555 feet, and to the River Plate 417,505 feet, a decrease of 7,372,661 feet from the previous year.

*Grain.*—There were shipped during the season:

|           |                   |
|-----------|-------------------|
| 9,899,368 | bushels of wheat, |
| 9,210,222 | “ corn,           |
| 1,779,777 | “ peas,           |
| 5,122,074 | “ oats,           |
| 179,044   | “ barley,         |
| 855,135   | “ rye,            |

making a grand total of 27,045,560 bushels, and an increase of 8,143,513 bushels as compared with 1896.

*Flour.*—There were shipped 585,813 barrels, a decrease of 186,313 barrels from the previous year.

*Meal.*—There were shipped during the season 37,350 barrels, a decrease of 2,671 barrels in 1897.

*Eggs.*—Exportation of eggs is still increasing. There were shipped 167,120 cases, an increase of 25,267 cases over the previous year.

*Cheese.*—This year cheese shows a large increase; there were shipped 2,078,719 boxes, an increase of 356,668 boxes.

*Butter.*—There were shipped 222,923 packages, being an increase of 65,281 packages as compared with 1896.

*Apples.*—There was a large falling off in shipments of apples; there were shipped 170,784 barrels, being a decrease of 554,232 barrels in 1897.

*Cattle.*—There were shipped from Montreal 117,247 head of cattle, showing an increase of 20,799 head over 1896.

*Sheep.*—There were shipped from Montreal 60,638 sheep, a decrease of 15,882 as compared with 1896.

*Horses.*—There were shipped from Montreal 10,051 horses, showing a decrease of 370 as compared with 1896.

*Hay.*—  
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*Coal.*—W  
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*Cement.*—  
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*Scrap I*  
183,099 ton

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*Hay*.—There were shipped during the season 36,325 tons, showing an increase of 23,818 tons over 1896.

#### IMPORTS.

*Coal*.—We received from Great Britain 48,754 tons, showing an increase of 6,156 tons; from the United States 277,256 tons, showing an increase of 71,277 tons; from the Maritime Provinces 698,740 tons, showing an increase of 29,354 tons; and a total increase of 106,787 tons during 1897.

Of this coal 737,610 tons were discharged in the harbour and 287,140 tons in the canal.

*Cement*.—We had, from all sources, 302,204 barrels, an increase of 148,813 barrels.

*Scrap Iron*.—We had 14,191 tons, showing a decrease of 183,099 tons as compared with 1896.

#### REMARKS.

Last season was the first on record during which there were no full rigged ships in port. H. M. S. "Talbot," a second class cruiser, visited the harbour last summer, arriving on June 17th, to take part in the Queen's Diamond Jubilee celebrations, Captain E. Gamble being in command.

The Government steamer "Druid" arrived on August 30th from Quebec, with the Premier, the Right Hon. Sir Wilfrid Laurier, on board.

The American frigate "Yantic" arrived on October 30th, Captain Moore commanding, and, after a short stay, went on to Detroit.

Tracks for both the Grand Trunk and Canadian Pacific Railways were laid early in the summer on the new pier at Hochelaga and connected with the main lines, and were found a great convenience, especially by the lumber merchants.

A new siding was also laid at Windmill Point for the use of the Grand Trunk Railway.

Part of the harbour dredging fleet is being wintered afloat in the lower basin of the Lachine Canal, and part opposite the Harbour Building.

The wharves and roads were kept in good repair throughout the season.

Yours respectfully,

THOMAS HOWARD,

*Harbour Master.*

## WEATHER REPORT FOR 1897.

| DATE.  | TIME.  | TEMP.     | WIND.       | REMARKS.                        |
|--------|--------|-----------|-------------|---------------------------------|
| Jan. 1 | 8 a.m. | 10 above. | West.       | Snow all gone.                  |
| " 2    | "      | 30 "      | "           | Fine morning.                   |
| " 3    | "      | 36 "      | "           | { Temp. at noon 56, very        |
| " 4    | "      | 40 "      | "           | { mild.                         |
| " 5    | "      | 40 "      | "           | Fine day.                       |
| " 6    | "      | 22 "      | "           | "                               |
| " 7    | "      | 12 "      | "           | Fine morning.                   |
| " 8    | "      | 10 "      | South West  | Fine; no snow.                  |
| " 9    | "      | 8 "       | "           | Fine day.                       |
| " 10   | "      | 15 "      | West.       | { Fine day. Men crossing        |
| " 11   | "      | 15 "      | North West. | { ice on foot to Longueuil.     |
| " 12   | "      | 9 "       | "           | { Snow last night; fine         |
| " 13   | "      | 4 below.  | "           | { morning; sleighs out.         |
| " 14   | "      | 5 "       | North.      | { Fine morning; sleighing       |
| " 15   | "      | zero.     | "           | { bad.                          |
| " 16   | "      | 10 above. | North East. | { 10 p.m., zero; fine and cold. |
| " 17   | "      | 30 "      | South West. | { Fine morning.                 |
| " 18   | "      | 35 "      | North West. | { Men opening ramps at St.      |
| " 19   | "      | 18 below. | "           | { Sulpice st. and Jacques       |
| " 20   | "      | zero.     | North.      | { Cartier Square.               |
| " 21   | "      | 18 above. | "           | { Sleighs crossing to Lon-      |
| " 22   | "      | 20 "      | South West. | { gueuil.                       |
| " 23   | "      | 20 "      | "           | { Dark morning.                 |
| " 24   | "      | zero.     | North West. | { 3 p.m. great wind and         |
| " 25   | "      | 20 below. | "           | { rain storm; 10 p.m.,          |
| " 26   | "      | 10 above. | North East. | { tem. 40.                      |
| " 27   | "      | 18 "      | East.       | { 6 p.m., 4 above zero; 9       |
| " 28   | "      | 18 "      | "           | { p.m., zero; 10 p.m., 5        |
| " 29   | "      | 1 "       | North.      | { below; 11 p.m., 8 below.      |
| " 30   | "      | 8 "       | "           | { No appearance of snow;        |
| " 31   | "      | zero.     | No t.       | { 10 p.m., 4 below.             |
| Feb. 1 | "      | 10 above. | West.       | { 10 p.m., 17 above zero;       |
| " 2    | "      | 10 "      | "           | { ice good; snowing.            |
|        |        |           |             | { Snow storm all night and      |
|        |        |           |             | { all day.                      |
|        |        |           |             | { Fine day; good sleighing.     |
|        |        |           |             | { Fine day.                     |
|        |        |           |             | { Blowing hard.                 |
|        |        |           |             | { Very high wind; outside       |
|        |        |           |             | { city 28 and 30 below          |
|        |        |           |             | { zero; 8 p.m., milder; 6       |
|        |        |           |             | { above zero.                   |
|        |        |           |             | { Stormy all day.               |
|        |        |           |             | { Fine day.                     |
|        |        |           |             | { Blowing fresh; 11 p.m.,       |
|        |        |           |             | { 22 above zero.                |
|        |        |           |             | { Fine day.                     |
|        |        |           |             | { Fine day; 10 a.m., 14         |
|        |        |           |             | { above zero.                   |
|        |        |           |             | { White frost; fine day.        |
|        |        |           |             | { Fine day at 10 p.m.;          |
|        |        |           |             | { tem. 24.                      |

| DATE.  | TIME.  | TEMP. | WIND. | REMARKS. |
|--------|--------|-------|-------|----------|
| Feb. 3 | 8 a.m. |       |       |          |
| " 4    | "      |       |       |          |
| " 5    | "      |       |       |          |
| " 6    | "      |       |       |          |
| " 7    | "      |       |       |          |
| " 8    | "      |       |       |          |
| " 9    | "      |       |       |          |
| " 10   | "      |       |       |          |
| " 11   | "      |       |       |          |
| " 12   | "      |       |       |          |
| " 13   | "      |       |       |          |
| " 14   | "      |       |       |          |
| " 15   | "      |       |       |          |
| " 16   | "      |       |       |          |
| " 17   | "      |       |       |          |
| " 18   | "      |       |       |          |
| " 19   | "      |       |       |          |
| " 20   | "      |       |       |          |
| " 21   | "      |       |       |          |
| " 22   | "      |       |       |          |
| " 23   | "      |       |       |          |
| " 24   | "      |       |       |          |
| " 25   | "      |       |       |          |
| " 26   | "      |       |       |          |
| " 27   | "      |       |       |          |
| " 28   | "      |       |       |          |
| Mar. 1 | "      |       |       |          |
| " 2    | "      |       |       |          |
| " 3    | "      |       |       |          |
| " 4    | "      |       |       |          |
| " 5    | "      |       |       |          |
| " 6    | "      |       |       |          |
| " 7    | "      |       |       |          |
| " 8    | "      |       |       |          |
| " 9    | "      |       |       |          |
| " 10   | "      |       |       |          |
| " 11   | "      |       |       |          |
| " 12   | "      |       |       |          |
| " 13   | "      |       |       |          |
| " 14   | "      |       |       |          |
| " 15   | "      |       |       |          |
| " 16   | "      |       |       |          |
| " 17   | "      |       |       |          |
| " 18   | "      |       |       |          |
| " 19   | "      |       |       |          |
| " 20   | "      |       |       |          |
| " 21   | "      |       |       |          |
| " 22   | "      |       |       |          |
| " 23   | "      |       |       |          |
| " 24   | "      |       |       |          |
| " 25   | "      |       |       |          |

## WEATHER REPORT (Continued.)

| DATE.  | TIME.  | TEMP.     | WIND.       | REMARKS.  |
|--------|--------|-----------|-------------|---|
| Feb. 3 | 8 a.m. | 20 above. | West.       | Fine day.                                       |
| " 4    | "      | 10 "      | "           | "   |
| " 5    | "      | zero.     | East.       | "   |
| " 6    | "      | 32 above. | "           | "   |
| " 7    | "      | 40 "      | North West. | Raining.  |
| " 8    | "      | 35 "      | South West. | Bad sleighing.                                  |
| " 9    | "      | 26 "      | West.       | Fine day.                                       |
| " 10   | "      | 6 "       | "           | Fine morning.                                   |
| " 11   | "      | zero.     | "           | Fine weather.                                   |
| " 12   | "      | 4 below.  | "           | Cold day.                                       |
| " 13   | "      | 14 above. | South West. | Fine day.                                       |
| " 14   | "      | 27 "      | West.       | "   |
| " 15   | "      | 29 "      | "           | Fine weather.                                   |
| " 16   | "      | 32 "      | "           | "   |
| " 17   | "      | 30 "      | North West. | Fine day.                                       |
| " 18   | "      | 26 "      | West.       | Snowing.  |
| " 19   | "      | 11 "      | "           | Fine day.                                       |
| " 20   | "      | 20 "      | "           | "   |
| " 21   | "      | 30 "      | "           | "   |
| " 22   | "      | 8 "       | North East. | Snow storm.                                     |
| " 23   | "      | 20 "      | North.      | Good sleighing.                                 |
| " 24   | "      | 20 "      | "           | Fine day.                                       |
| " 25   | "      | 17 "      | West.       | "   |
| " 26   | "      | 22 "      | North West. | "   |
| " 27   | "      | 23 "      | North.      | Snow.   |
| " 28   | "      | 22 "      | "           | Fine day.                                       |
| Mar. 1 | "      | 6 above.  | North.      | Stormy day.                                     |
| " 2    | "      | 20 below. | "           | Big snow storm.                                 |
| " 3    | "      | 30 above. | South East. | Snow and sleet.                                 |
| " 4    | "      | 22 "      | North West. | Fine day.                                       |
| " 5    | "      | 32 "      | East.       | Dull day.                                       |
| " 6    | "      | 25 "      | West.       | Fine day.                                       |
| " 7    | "      | 12 "      | North East. | "   |
| " 8    | "      | 14 "      | "           | Mild day; snowing.                              |
| " 9    | "      | 34 "      | "           | Dull morning                                    |
| " 10   | "      | 39 "      | South West. | Dull day; rain.                                 |
| " 11   | "      | 39 "      | West.       | Fine day.                                       |
| " 12   | "      | 30 "      | "           | Snowing.  |
| " 13   | "      | 80 "      | "           | Fine day.                                       |
| " 14   | "      | 26 "      | North East. | Snow all day.                                   |
| " 15   | "      | 14 "      | West.       | Cold morning.                                   |
| " 16   | "      | 12 "      | "           | Fine day.                                       |
| " 17   | "      | 24 "      | "           | "   |
| " 18   | "      | 25 "      | "           | "   |
| " 19   | "      | 23 "      | "           | "   |
| " 20   | "      | 27 "      | East.       | Rain all day.                                   |
| " 21   | "      | 26 "      | North East. | Overcast.                                       |
| " 22   | "      | 38 "      | South.      | Mild day.                                       |
| " 23   | "      | 41 "      | North East. | { Dull day; earthquake at<br>6 p.m.; big shock. |
| " 24   | "      | 34 "      | "           | Dirty day; snow.                                |
| " 25   | "      | 40 "      | North.      | Fine day.                                       |

## WEATHER REPORT (Continued.)

| DATE.   | TIME.  | TEMP.     | WIND.       | REMARKS.   |
|---------|--------|-----------|-------------|--|
| Mar. 26 | 8 a.m. | 32 above. | West.       | { Fine day; earthquake at<br>12.4 a.m.   |
| " 27    | "      | 38 "      | North West. | Overcast.  |
| " 28    | "      | 35 "      | West Wind.  | Fine day.  |
| " 29    | "      | 40 "      | East.       | Last crossing opposite city.   |
| " 30    | "      | 42 "      | West.       | Fine weather.  |
| " 31    | "      | 40 "      | "           | Fine day.  |
| April 1 | "      | 40 "      | West.       | Fine Weather.  |
| " 2     | "      | 44 "      | "           | Fine day.  |
| " 3     | "      | 20 "      | North East. | { Cold wind; ice shoved<br>at 12 p.m.  |
| " 4     | "      | 50 "      | West.       | Fine day.  |
| " 5     | "      | 42 "      | South.      | Dull day.  |
| " 6     | "      | 38 "      | West.       | { Dull day; ice shoved at<br>8 p.m.  |
| " 7     | "      | 30 "      | "           | Fine day.  |
| " 8     | "      | 32 "      | North East. | Fine weather.  |
| " 9     | "      | 32 "      | "           | Rain.  |
| " 10    | "      | 28 "      | East.       | { Gale last night with snow<br>to-day; snow and sleet.   |
| " 11    | "      | 30 "      | North East. | { Fine day; channel op-<br>posite city clear.  |
| " 12    | "      | 32 "      | "           | Fine day.  |
| " 13    | "      | 49 "      | South.      | Dull day.  |
| " 14    | "      | 51 "      | South West. | Cloudy with rain.  |
| " 15    | "      | 44 "      | "           | Rain in afternoon.   |
| " 16    | "      | 54 "      | "           | Beautiful warm day.  |
| " 17    | "      | 40 "      | "           | { Rain; Str. Longueuil and<br>Str. Hochelaga arrived<br>at 9.30 a.m. opening of<br>navigation. |
| " 18    | "      | 50 "      | West.       | Fine day.  |
| " 19    | "      | 47 "      | South West. | { Blowing a gale; men<br>putting up sheds.   |
| " 20    | "      | 20 "      | West.       | { Clear and cold; great<br>drop in temp. at 4 p.m.   |
| " 21    | "      | 41 "      | "           | Fine morning.  |
| " 22    | "      | 48 "      | "           | "  |
| " 23    | "      | 60 "      | "           | "  |
| " 24    | "      | 70 "      | North.      | Rain last night.   |
| " 25    | "      | 70 "      | West.       | Fine morning.  |
| " 26    | "      | 50 "      | East.       | Rain all afternoon.  |
| " 27    | "      | 38 "      | North.      | { Heavy snow flurry this<br>morning.   |
| " 28    | "      | 47 "      | West.       | Dark.  |
| " 29    | "      | 48 "      | North East. | "  |
| " 30    | "      | 49 "      | "           | { S.S. Montezuma arrived<br>from sea.  |
| May 1   | "      | 49 "      | North East. | Canal opened.  |
| " 2     | "      | 50 "      | East.       | Rain in p.m.   |
| " 3     | "      | 52 "      | North East. | Rain this a.m.   |
| " 4     | "      | 50 "      | "           | Showery weather.   |

| DATE.  | TIME.  | TEMP. | WIND. | REMARKS. |
|--------|--------|-------|-------|----------|
| May 5  | 8 a.m. |       |       |          |
| " 6    | "      |       |       |          |
| " 7    | "      |       |       |          |
| " 8    | "      |       |       |          |
| " 9    | "      |       |       |          |
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| " 24   | "      |       |       |          |
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| " 27   | "      |       |       |          |
| " 28   | "      |       |       |          |
| " 29   | "      |       |       |          |
| " 30   | "      |       |       |          |
| " 31   | "      |       |       |          |
| June 1 | "      |       |       |          |
| " 2    | "      |       |       |          |
| " 3    | "      |       |       |          |
| " 4    | "      |       |       |          |
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| " 16   | "      |       |       |          |
| " 17   | "      |       |       |          |
| " 18   | "      |       |       |          |
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| " 21   | "      |       |       |          |
| " 22   | "      |       |       |          |
| " 23   | "      |       |       |          |
| " 24   | "      |       |       |          |
| " 25   | "      |       |       |          |

## WEATHER REPORT (Continued.)

| DATE.  | TIME.  | TEMP.     | WIND.       | REMARKS.                |
|--------|--------|-----------|-------------|-------------------------|
| May 5  | 8 a.m. | 58 above. | South East. | Fine morning.           |
| " 6    | "      | 54 "      | "           | "                       |
| " 7    | "      | 45 "      | East.       | "                       |
| " 8    | "      | 46 "      | West.       | Fine weather.           |
| " 9    | "      | 60 "      | East.       | Rain all afternoon.     |
| " 10   | "      | 54 "      | West.       | Fine.                   |
| " 11   | "      | 64 "      | "           | Fine morning.           |
| " 12   | "      | 60 "      | "           | Rain.                   |
| " 13   | "      | 60 "      | "           | Fine morning.           |
| " 14   | "      | 60 "      | "           | "                       |
| " 15   | "      | 57 "      | South West. | Cold morning.           |
| " 16   | "      | 65 "      | West.       | Fine day.               |
| " 17   | "      | 65 "      | South West. | "                       |
| " 18   | "      | 65 "      | West.       | "                       |
| " 19   | "      | 55 "      | North West. | "                       |
| " 20   | "      | 52 "      | "           | Rain.                   |
| " 21   | "      | 57 "      | West.       | "                       |
| " 22   | "      | 55 "      | "           | Fine morning.           |
| " 23   | "      | 57 "      | "           | Rain all day.           |
| " 24   | "      | 65 "      | "           | "                       |
| " 25   | "      | 48 "      | North East. | "                       |
| " 26   | "      | 55 "      | South West. | Fine morning.           |
| " 27   | "      | 54 "      | East.       | 10.15 p.m., earthquake. |
| " 28   | "      | 55 "      | South West. | Rain.                   |
| " 29   | "      | 50 "      | North West. | Cold.                   |
| " 30   | "      | 60 "      | West.       | Fine day.               |
| " 31   | "      | 60 "      | "           | "                       |
| June 1 | "      | 54 "      | West.       | Fine but cold.          |
| " 2    | "      | 50 "      | "           | Fine morning.           |
| " 3    | "      | 50 "      | "           | Rain.                   |
| " 4    | "      | 50 "      | "           | Fine morning.           |
| " 5    | "      | 66 "      | South West. | Overcast.               |
| " 6    | "      | 70 "      | West.       | Fine and warm.          |
| " 7    | "      | 65 "      | "           | "                       |
| " 8    | "      | 60 "      | South.      | "                       |
| " 9    | "      | 60 "      | South East. | Dark morning.           |
| " 10   | "      | 55 "      | North.      | Rain last night.        |
| " 11   | "      | 70 "      | West.       | Fine.                   |
| " 12   | "      | 60 "      | "           | Fine morning.           |
| " 13   | "      | 65 "      | "           | Rain.                   |
| " 14   | "      | 60 "      | East.       | Fine.                   |
| " 15   | "      | 70 "      | North West. | Dark day.               |
| " 16   | "      | 65 "      | "           | Fine day.               |
| " 17   | "      | 70 "      | West.       | Fine.                   |
| " 18   | "      | 65 "      | East.       | "                       |
| " 19   | "      | 70 "      | West.       | "                       |
| " 20   | "      | 70 "      | "           | Fine day.               |
| " 21   | "      | 60 "      | North East. | Cold.                   |
| " 22   | "      | 58 "      | West.       | Fine but cold.          |
| " 23   | "      | 70 "      | "           | "                       |
| " 24   | "      | 75 "      | North East. | 8 a.m. thunder storm.   |
| " 25   | "      | 75 "      | North West. | Fine.                   |

## WEATHER REPORT (Continued.)

| DATE.   | TIME.  | TEMP.     | WIND.       | REMARKS.                     |
|---------|--------|-----------|-------------|------------------------------|
| June 26 | 8 a.m. | 60 above. | North West. | Fine morning.                |
| " 27    | "      | 60 "      | West.       | Fine day.                    |
| " 28    | "      | 60 "      | "           | "                            |
| " 29    | "      | 65 "      | "           | "                            |
| " 30    | "      | 60 "      | North.      | Rain.                        |
| July 1  | "      | 70 "      | North.      | Fine day.                    |
| " 2     | "      | 73 "      | North East. | "                            |
| " 3     | "      | 78 "      | East.       | "                            |
| " 4     | "      | 82 "      | West.       | Very warm                    |
| " 5     | "      | 86 "      | "           | At 2 p.m. temp. 92.          |
| " 6     | "      | 80 "      | "           | At 4 p.m. temp. 90 in shade. |
| " 7     | "      | 80 "      | "           | At 2 p.m. temp. 86.          |
| " 8     | "      | 85 "      | "           | At 2 p.m. temp. 92.          |
| " 9     | "      | 90 "      | "           | "                            |
| " 10    | "      | 70 "      | "           | Fine morning.                |
| " 11    | "      | 70 "      | "           | At 4 p.m. rainstorm.         |
| " 12    | "      | 65 "      | East.       | Rain.                        |
| " 13    | "      | 65 "      | North East. | Dull day.                    |
| " 14    | "      | 65 "      | West.       | Rain this a.m.               |
| " 15    | "      | 72 "      | "           | "                            |
| " 16    | "      | 75 "      | "           | Fine day.                    |
| " 17    | "      | 65 "      | North East  | Fine morning.                |
| " 18    | "      | 75 "      | West.       | Fine day.                    |
| " 19    | "      | 75 "      | North East  | "                            |
| " 20    | "      | 75 "      | West.       | 2 p.m., temp. 92.            |
| " 21    | "      | 80 "      | South West  | "                            |
| " 22    | "      | 82 "      | "           | Rain in p.m.                 |
| " 23    | "      | 75 "      | West.       | "                            |
| " 24    | "      | 70 "      | East.       | Rain storm last night.       |
| " 25    | "      | 65 "      | North East. | Fine day.                    |
| " 26    | "      | 65 "      | "           | "                            |
| " 27    | "      | 65 "      | South West  | "                            |
| " 28    | "      | 65 "      | "           | "                            |
| " 29    | "      | 64 "      | South East  | Rain to-day.                 |
| " 30    | "      | 70 "      | North.      | Cold.                        |
| " 31    | "      | 70 "      | West.       | Rain.                        |
| Aug. 1  | "      | 70 "      | West.       | Fine.                        |
| " 2     | "      | 75 "      | South East. | "                            |
| " 3     | "      | 75 "      | South West. | "                            |
| " 4     | "      | 62 "      | North East. | Rain last night.             |
| " 5     | "      | 60 "      | East.       | Fine morning.                |
| " 6     | "      | 70 "      | North East. | "                            |
| " 7     | "      | 65 "      | West.       | "                            |
| " 8     | "      | 80 "      | "           | Fine.                        |
| " 9     | "      | 70 "      | North East. | Fine day.                    |
| " 10    | "      | 68 "      | East.       | Fine morning.                |
| " 11    | "      | 70 "      | South.      | Rain last night.             |
| " 12    | "      | 70 "      | North West. | Rain.                        |
| " 13    | "      | 60 "      | North.      | Fine.                        |
| " 14    | "      | 65 "      | North West  | Fine day.                    |
| " 15    | "      | 80 "      | West.       | "                            |
| " 16    | "      | 80 "      | South West. | Rain.                        |

| DATE.   | TIME.  |
|---------|--------|
| Aug. 17 | 8 a.m. |
| " 18    | "      |
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## WEATHER REPORT (Continued.)

| DATE.   | TIME.  | TEMP.     | WIND.       | REMARKS.           |
|---------|--------|-----------|-------------|--------------------|
| Aug. 17 | 8 a.m. | 65 above. | South West. | Rain.              |
| " 18    | "      | 62 "      | North.      | Fine.              |
| " 19    | "      | 62 "      | West.       | Rain.              |
| " 20    | "      | 59 "      | North West. | Fine morning.      |
| " 21    | "      | 60 "      | "           | "                  |
| " 22    | "      | 67 "      | West.       | Fine and warm.     |
| " 23    | "      | 50 "      | "           | Frost last night.  |
| " 24    | "      | 52 "      | North East. | Cold.              |
| " 25    | "      | 50 "      | West.       | Rain.              |
| " 26    | "      | 60 "      | "           | Fine morning.      |
| " 27    | "      | 60 "      | South West  | "                  |
| " 28    | "      | 65 "      | "           | "                  |
| " 29    | "      | 75 "      | West.       | Fine day.          |
| " 30    | "      | 70 "      | South West. | Fine.              |
| " 31    | "      | 60 "      | West.       | "                  |
| Sept. 1 | "      | 65 "      | West.       | Fine Weather.      |
| " 2     | "      | 60 "      | South West. | Fine morning.      |
| " 3     | "      | 60 "      | East.       | "                  |
| " 4     | "      | 50 "      | West.       | "                  |
| " 5     | "      | 75 "      | "           | Fine day.          |
| " 6     | "      | 75 "      | "           | Fine morning.      |
| " 7     | "      | 60 "      | East.       | Fine day, cold.    |
| " 8     | "      | 70 "      | West.       | Fine morning.      |
| " 9     | "      | 75 "      | "           | "                  |
| " 10    | "      | 70 "      | "           | "                  |
| " 11    | "      | 60 "      | East.       | 9 a.m., rain.      |
| " 12    | "      | 75 "      | West.       | Fine day.          |
| " 13    | "      | 70 "      | "           | Rain this morning. |
| " 14    | "      | 60 "      | North East. | Fine morning.      |
| " 15    | "      | 58 "      | "           | "                  |
| " 16    | "      | 60 "      | South West. | "                  |
| " 17    | "      | 60 "      | North.      | "                  |
| " 18    | "      | 46 "      | South West. | Frost last night.  |
| " 19    | "      | 60 "      | West.       | Rain.              |
| " 20    | "      | 48 "      | East.       | Rain.              |
| " 21    | "      | 45 "      | North.      | Fine day.          |
| " 22    | "      | 55 "      | South.      | "                  |
| " 23    | "      | 56 "      | East.       | "                  |
| " 24    | "      | 60 "      | "           | "                  |
| " 25    | "      | 60 "      | West.       | "                  |
| " 26    | "      | 60 "      | "           | At noon rain.      |
| " 27    | "      | 42 "      | "           | Cold.              |
| " 28    | "      | 40 "      | "           | Frost last night.  |
| " 29    | "      | 55 "      | "           | Fine morning.      |
| " 30    | "      | 55 "      | "           | "                  |
| Oct. 1  | "      | 60 "      | East.       | Fine morning.      |
| " 2     | "      | 55 "      | North East. | Fine day.          |
| " 3     | "      | 65 "      | West.       | Fine.              |
| " 4     | "      | 50 "      | "           | "                  |
| " 5     | "      | 60 "      | "           | "                  |
| " 6     | "      | 55 "      | South West. | Fine morning.      |
| " 7     | "      | 55 "      | North East. | "                  |

## WEATHER REPORT (Continued.)

| DATE.  | TIME.  | TEMP.     | WIND.       | REMARKS.                   |
|--------|--------|-----------|-------------|----------------------------|
| Oct. 8 | 8 a.m. | 45 above. | South West. | Fine morning.              |
| " 9    | "      | 48 "      | West.       | "                          |
| " 10   | "      | 40 "      | North West. | Fair.                      |
| " 11   | "      | 50 "      | East.       | "                          |
| " 12   | "      | 60 "      | South.      | Rain this morning.         |
| " 13   | "      | 50 "      | North West. | Fine morning.              |
| " 14   | "      | 60 "      | West.       | Fine.                      |
| " 15   | "      | 80 "      | "           | "                          |
| " 16   | "      | 70 "      | "           | Rain this morning.         |
| " 17   | "      | 46 "      | "           | Cold.                      |
| " 18   | "      | 45 "      | "           | Fine.                      |
| " 19   | "      | 55 "      | "           | "                          |
| " 20   | "      | 43 "      | North.      | Fine but cold.             |
| " 21   | "      | 45 "      | East.       | Fine morning.              |
| " 22   | "      | 40 "      | "           | "                          |
| " 23   | "      | 42 "      | "           | "                          |
| " 24   | "      | 55 "      | "           | "                          |
| " 25   | "      | 50 "      | "           | Fine weather.              |
| " 26   | "      | 46 "      | "           | Fine morning.              |
| " 27   | "      | 48 "      | South West. | Smoky.                     |
| " 28   | "      | 50 "      | "           | Fine morning.              |
| " 29   | "      | 45 "      | North.      | "                          |
| " 30   | "      | 36 "      | South East. | "                          |
| " 31   | "      | 38 "      | "           | "                          |
| Nov. 1 | "      | 48 "      | South East. | Smoke and foggy, rain.     |
| " 2    | "      | 40 "      | North East. | Rain.                      |
| " 3    | "      | 30 "      | "           | Fine.                      |
| " 4    | "      | 40 "      | "           | "                          |
| " 5    | "      | 40 "      | East.       | "                          |
| " 6    | "      | 41 "      | West.       | "                          |
| " 7    | "      | 40 "      | "           | Fine day.                  |
| " 8    | "      | 36 "      | East.       | Cold day.                  |
| " 9    | "      | 34 "      | North East. | Rain and snow.             |
| " 10   | "      | 34 "      | West.       | Dull day.                  |
| " 11   | "      | 36 "      | North East. | "                          |
| " 12   | "      | 30 "      | North.      | Snowing.                   |
| " 13   | "      | 30 "      | "           | Fine.                      |
| " 14   | "      | 35 "      | West.       | Fine day.                  |
| " 15   | "      | 33 "      | "           | "                          |
| " 16   | "      | 42 "      | South.      | Rain.                      |
| " 17   | "      | 25 "      | West.       | Fine.                      |
| " 18   | "      | 23 "      | North West. | Dull day.                  |
| " 19   | "      | 12 "      | North.      | Fine day.                  |
| " 20   | "      | 12 "      | East.       | Dull day.                  |
| " 21   | "      | 35 "      | West.       | Fine day.                  |
| " 22   | "      | 20 "      | North East. | Fine morning.              |
| " 23   | "      | 12 "      | "           | Fine day.                  |
| " 24   | "      | 23 "      | South East. | S.S. Acadian left for sea. |
| " 25   | "      | 32 "      | South.      | "                          |
| " 26   | "      | 44 "      | "           | Dull day.                  |
| " 27   | "      | 20 "      | North West. | Snow and sleet.            |
| " 28   | "      | 26 "      | West.       | Fine day.                  |

| DATE.   | TIME.  |
|---------|--------|
| Nov. 29 | 8 a.m. |
| " 30    | "      |
| Dec. 1  | "      |
| " 2     | "      |
| " 3     | "      |
| " 4     | "      |
| " 5     | "      |
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| " 24    | "      |
| " 25    | "      |
| " 26    | "      |
| " 27    | "      |
| " 28    | "      |
| " 29    | "      |
| " 30    | "      |
| " 31    | "      |

WEATHER REPORT (*Continued.*)

| DATE.   | TIME.  | TEMP.     | WIND.       | REMARKS.   |
|---------|--------|-----------|-------------|--|
| Nov. 29 | 8 a.m. | 30 above. | South.      | Snow.  |
| " 30    | "      | 30 "      | West.       | Fine day.  |
| Dec. 1  | "      | 20 "      | South West. | Snowing.   |
| " 2     | "      | 8 "       | West.       | Fine.  |
| " 3     | "      | 20 "      | South West. | Overcast.  |
| " 4     | "      | 12 "      | West.       | Foggy.   |
| " 5     | "      | 20 "      | "           | Dirty day.   |
| " 6     | "      | 10 "      | "           | Fine.  |
| " 7     | "      | 18 "      | East.       | Snowing.   |
| " 8     | "      | 30 "      | "           | Dull day.  |
| " 9     | "      | 35 "      | "           | Fine day.  |
| " 10    | "      | 43 "      | "           | Dull day.  |
| " 11    | "      | 42 "      | "           | Rain.  |
| " 12    | "      | 30 "      | West.       | Snowing.   |
| " 13    | "      | 35 "      | East.       | Fine day.  |
| " 14    | "      | 32 "      | East.       | "  |
| " 15    | "      | 35 "      | "           | Dull day.  |
| " 16    | "      | 33 "      | "           | Fine.  |
| " 17    | "      | 33 "      | "           | Overcast.  |
| " 18    | "      | 12 "      | West.       | Fine.  |
| " 19    | "      | 15 "      | "           | { Str. Longueuil gone to<br>Winter quarters; close<br>of navigation. |
| " 20    | "      | 3 "       | "           | Fine morning,  |
| " 21    | "      | 14 "      | North East. | Fine day.  |
| " 22    | "      | 3 above.  | West.       | "  |
| " 23    | "      | zero.     | West.       | Cold morning.  |
| " 24    | "      | 3 above.  | "           | Fine day.  |
| " 25    | "      | 12 "      | "           | "  |
| " 26    | "      | 5 "       | "           | "  |
| " 27    | "      | 5 "       | "           | "  |
| " 28    | "      | 3 "       | "           | "  |
| " 29    | "      | 8 "       | East.       | Dull day.  |
| " 30    | "      | 34 "      | South West. | Sleet.   |
| " 31    | "      | 28 "      | South.      | Dull day.  |

THOMAS HOWARD,

*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.

| YEARS | Steamships. | Tonnage.  | Ships. | Tonnage. | Barques. | Tonnage. | Brigs. | Tonnage. | Brigantines. | Tonnage. | Schooners. | Tonnage. | Total No. of Vessels. | Total Tonnage. | Number in Port. |
|-------|-------------|-----------|--------|----------|----------|----------|--------|----------|--------------|----------|------------|----------|-----------------------|----------------|-----------------|
| 1888  | 532         | 742,276   | 7      | 9,634    | 32       | 20,208   | .....  | .....    | 10           | 2,631    | 74         | 7,714    | 655                   | 782,473        | 31 June 27      |
| 1889  | 522         | 763,783   | 8      | 11,293   | 49       | 33,982   | 4      | 1,239    | 11           | 2,356    | 101        | 9,882    | 635                   | 823,165        | 19 Aug. 14      |
| 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       | 11,074   | 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            | 869      | 43         | 4,243    | 735                   | 1,036,707      | 39 July 12      |
| 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      | 4,324    | 14       | 9,669    | .....  | .....    | 5            | 901      | 28         | 2,762    | 734                   | 1,096,969      | 32 May 23       |
| 1895  | 592         | 1,055,611 | 1      | 1,545    | 9        | 7,714    | .....  | .....    | 7            | 1,639    | 31         | 2,827    | 640                   | 1,069,386      | 25 June 18      |
| 1896  | 669         | 1,200,543 | 5      | 7,350    | 6        | 4,003    | .....  | .....    | 9            | 2,152    | 20         | 2,520    | 769                   | 1,216,468      | 37 July 29      |
| 1897  | 752         | 1,368,395 | .....  | .....    | 8        | 3,358    | .....  | .....    | 7            | 1,745    | 29         | 4,104    | 796                   | 1,379,002      | 40 July 28      |

THOMAS HOWARD, 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.

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. |
|-------|-------------|----------|--------|----------|----------|----------|--------|----------|--------------|----------|------------|----------|-----------------------|----------------|
| 1888  | 213         | 195,598  | 1      | 1,199    | 4        | 3,079    | .....  | .....    | 3            | 701      | 35         | 3,375    | 256                   | 503,952        |
| 1889  | 184         | 174,076  | .....  | .....    | 1        | 998      | .....  | .....    | 3            | 441      | 52         | 4,668    | 240                   | 179,183        |
| 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         | 292,880  | .....  | .....    | 1        | 178      | .....  | .....    | 4            | 734      | 15         | 1,188    | 272                   | 294,981        |
| 1897  | 298         | 364,936  | .....  | .....    | .....    | .....    | .....  | .....    | 2            | 376      | 31         | 1,051    | 311                   | 366,363        |

THOMAS HOWARD, Harbour Master.

## 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. |
|-----------|--------------------|-----------|--------------------------------------|
| 1888..... | 5,500              | 803,014   | 163.....Aug. 14.                     |
| 1889..... | 5,847              | 1,069,709 | 187.....Aug. 15.                     |
| 1890..... | 5,162              | 966,959   | 167.....Oct. 20.                     |
| 1891..... | 5,268              | 1,119,484 | 151.....Sept. 7.                     |
| 1892..... | 5,200              | 1,049,600 | 159.....Aug. 6.                      |
| 1893..... | 5,244              | 1,153,600 | 158.....July 25.                     |
| 1894..... | 4,666              | 979,809   | 172.....May 20.                      |
| 1895..... | 4,498              | 943,717   | 165.....July 20.                     |
| 1896..... | 4,832              | 1,004,117 | 160.....June 11.                     |
| 1897..... | 6,384              | 1,134,346 | 200.....July 30.                     |

THOMAS HOWARD,

*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<br>OF<br>NAVIGATION. | CLOSING<br>OF<br>NAVIGATION. | FIRST ARRIVAL<br>FROM SEA. | LAST<br>DEPARTURE<br>FOR SEA. |
|-----------|------------------------------|------------------------------|----------------------------|-------------------------------|
| 1888..... | April 29                     | Dec. 14                      | May 4                      | Nov. 22                       |
| 1889..... | " 14                         | " 29                         | April 27                   | " 23                          |
| 1890..... | " 14                         | " 3                          | " 30                       | " 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                          |

THOMAS HOWARD,  
*Harbour Master.*

## PORT OF MONTREAL.

STATEMENT showing the Nationality and Tonnage of Sea-going Vessels that arrived in Port during the Season of 1897, that were navigated by 27,610 Seamen.

| Nationality.     | Number<br>of<br>Vessels. | Tonnage.  |
|------------------|--------------------------|-----------|
| British. ....    | 739                      | 1,288,958 |
| Norwegian.. .... | 39                       | 48,705    |
| German.....      | 10                       | 33,631    |
| Danish ..... ..  | 2                        | 4,484     |
| American.....    | 6                        | 3,224     |
| Total.....       | 796                      | 1,379,002 |

THOMAS HOWARD,  
*Harbour Master.*

PORT OF MONTREAL.  
Statement showing the Nationality and Tonnage of Sea-going Vessels that were navigated by 27,610 Seamen.

## PORT OF MONTREAL.

*Number and Tonnage of Sea-going Vessels that were consigned to the following merchants during the season of 1897.*

| No. | Names of Firms.          | Steam. | Tonnage.  | Sail. | Tonnage. | Total Vessels. | Total Tonnage. |
|-----|--------------------------|--------|-----------|-------|----------|----------------|----------------|
| 1   | Kingman, Brown & Co.     | 192    | 235,983   | ..... | .....    | 192            | 235,983        |
| 2   | H. & A. Allan            | 95     | 234,717   | ..... | .....    | 95             | 234,717        |
| 3   | R. Reford & Co.          | 94     | 190,246   | ..... | .....    | 94             | 190,246        |
| 4   | Elder, Dempster & Co.    | 59     | 152,819   | 1     | 285      | 60             | 153,104        |
| 5   | McLean, Kennedy & Co.    | 65     | 125,880   | 2     | 911      | 67             | 126,791        |
| 6   | D. Torrance & Co.        | 43     | 110,789   | ..... | .....    | 43             | 110,789        |
| 7   | Wm. Johnston & Co.       | 26     | 67,769    | ..... | .....    | 26             | 67,769         |
| 8   | D. W. Campbell.          | 25     | 64,510    | 1     | 491      | 26             | 65,001         |
| 9   | Carbray, Routh & Co      | 31     | 36,507    | ..... | .....    | 31             | 36,507         |
| 10  | James Thom               | 10     | 33,631    | 1     | 163      | 11             | 33,794         |
| 11  | Hy. Dobell & Co.         | 36     | 26,508    | ..... | .....    | 36             | 26,508         |
| 12  | J. G. Brock              | 17     | 19,431    | 7     | 536      | 24             | 19,967         |
| 13  | Munderloh & Co           | 7      | 15,629    | ..... | .....    | 7              | 15,629         |
| 14  | Intercolonial Coal Co.   | 16     | 15,298    | ..... | .....    | 16             | 15,298         |
| 15  | Peterson, Tate Co.       | 10     | 14,936    | ..... | .....    | 10             | 14,936         |
| 16  | Dobell, Becket Co.       | 6      | 10,008    | ..... | .....    | 6              | 10,008         |
| 17  | Anderson, McKenzie & Co. | 1      | 1,904     | 17    | 5,759    | 18             | 7,663          |
| 18  | Imperial Government      | 1      | 5,600     | ..... | .....    | 1              | 5,600          |
| 19  | J. Hope & Co.            | 2      | 3,362     | ..... | .....    | 2              | 3,362          |
| 20  | Four others              | 16     | 2,868     | 15    | 2,462    | 31             | 5,330          |
|     | Total                    | 752    | 1,368,395 | 44    | 10,697   | 796            | 1,379,092      |

THOMAS HOWARD, Harbour Master.

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REPORT  
ON THE  
WORKS FOR THE IMPROVEMENT AND MAINTENANCE  
OF THE  
HARBOUR OF MONTREAL  
FOR THE YEAR 1897.

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

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

MONTREAL, February 19th, 1898.

ALEXANDER ROBERTSON, 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, 1897 :

NEW WORKS.

The principal new works of the year are :—The rebuilding and enlarging of the western wharf at Longue Pointe; the making of embankment along shore at Maisonneuve in such way as to form part of future wharves; the extension of the harbour railway tracks to the outer end of the new pier, section 43, Hochelaga; the dredging away of shoals at various places between the wharves and the ship channel from Maisonneuve

to the entrance of the Lachine Canal; the enlargement of the Island wharf, section 15; the deepening of the Wind Mill Point basin and the completion of the new wharf across its upper end and 800 feet in length down its south east side; the further making of embankment down the same side of the basin to the lower end, so as to form part of projected wharves; the extension of the Guard Pier to within 300 ft. of the Victoria Bridge and the widening of the ship channel through the harbour between Victoria Pier and the Lachine Canal.

The principal details are as follows:—

Section 5 to 10, Windmill Point: The deepening and enlarging of the basin and the building of a wharf round its upper end, which were in progress up to the close of November in 1896, were resumed in the spring 1897. Dredging in the basin was commenced on the 21st of April; drilling and blasting on the 24th; widening and grading of the embankment of the new wharf on May 1st and building of cribwork on May 26th. Dredging was continued with varying strength of plant until the close of the working season, and was directed toward securing a clear depth of 25 feet at low water, of 13 feet on the old lock sill (or say 28 feet at the old reckoning of 16 feet 4 inches on the sill), throughout the whole breadth of the basin in 1,000 feet of its length at the upper end, and throughout 150 feet in breadth (or half the width of the basin) in the remainder of the length. By the close of the season this had been accomplished, with exception of loose stones and a few spots of no great size, yet remaining to be cleared away, and a narrow margin along the front of the wharf on the north-west side left to sustain the cribwork which is founded at a higher level than that of the bottom of the basin as now being made.

The cribwork of the new wharves at the upper end of the basin was finished in August, and the grading and macadamizing of sufficient of the embankment in rear of the wharf on the southeast side to give a ship's berth of 300 feet in length was also finished and made ready for use on the 23rd of August. Early in October the remainder of the 800 feet of embankment was also finished and made ready for use, except

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small corners at the upper and lower ends of the rear side, which were left for the reception of earth from city excavations and were nearly filled up by the close of the year. A railway embankment was made along the rear edge or southeast side of the main embankment and raised two feet above it, ready to receive a track when requisite. The outer slope of the embankment which is exposed to the current over the Point St. Charles Flats is nearly all protected by broken shale and boulders in rip-rap.

The wharfage thus practically completed in 1897 was commenced in 1895; it comprises the extension of the wharf of the northwest side to the head of the basin, a length of 290 feet, the wharf across the head of the basin 246 feet, and the wharf down the southeast side 817 feet, making in all 1,351 lineal feet of new wharf. The breadth of wharf on the southeast side of the basin is 300 feet over all, which gives about 275 feet clear breadth between the front edge and the railway bank. The height of the front edge of the new extension of the wharf on the northwest side is the same as that of the adjoining old wharf, and is 106.50 feet above datum, or  $12\frac{1}{2}$  feet above low water of 13 feet on the sill; the front edge of the new part across the head of the basin rises from the above height of  $12\frac{1}{2}$  feet at the northwest side to  $16\frac{1}{4}$  feet above low water on the southeast side. The 800 feet of new wharf on the southeast side is made  $16\frac{1}{4}$  feet above low water at its front edge, and rises to  $20\frac{1}{2}$  feet above low water at its rear side, and is raised to this height in order to provide a place for the storing of coal above ordinary winter water level. The railway bank is prepared for a height of 22 feet 10 inches feet from low water to the top of the rails, in order to afford access to the coal at all times except during floods.

In consequence of the small extent of wharf construction in progress in 1897 there was a large surplus of material from the harbour dredging to be deposited in spoil. As much of such surplus as could be deposited by the floating derricks, without hand work, was in 1897 utilized in constructing and enlarging the embankment made in 1895-6 along the

southeast side of the Windmill Point Basin on the line of proposed wharf between the part just finished and the lower end of the basin. Besides having served as a convenient spoil-bank for a considerable quantity of surplus dredgings, it protects the basin from the shoving of the ice from the Point St. Charles Flats, and is in position to form part of the proposed wharf extension to the lower end.

Its height averages 30 feet above low water; its total content is about 100,000 cubic yards and the cost of the part of it made by the Commissioners' plant is about \$10,993.

The total quantity of wharf filling and embankment made at all parts of the Windmill Point Basin in 1897, and the sources of supply are as follows:—

|  | CUBIC YARDS. |
|--|--------------|
| From Section 5 to 10, Windmill Point.....    | 62,324       |
| “ “ 15 to 17, Dominion Basin.....            | 15,622       |
| “ “ 19, Bonsecours Basin.....                | 2,913        |
| “ “ 25, Ship's Berths.....                   | 212          |
| “ “ 27, Molson's Shoal.....                  | 4,604        |
| “ “ 27 to 32, Shallow Wharves.....           | 3,881        |
| “ “ 40 to 44, Hochelaga (road blinding)..... | 450          |
| “ Ship Channel in Harbour.....               | 77,003       |
| “ Elgin Basin, and Wharf Platform.....       | 4,528        |
| Total.....                                   | 171,537      |

A siding of 2,000 feet in length was, at the request of the Grand Trunk Railway Company, laid alongside the existing railway track on the wharf in Sections 6 to 10, in the latter half of June, and was handed over to the Railway Company for use under the general lease. The new siding is all planked with four-inch hemlock, and the laying of it involved changing the position of the existing track and much of the macadamizing and planking connected with it.

The cost of the various new works of the Windmill Point Basin in 1897 are :

|  |             |
|--|-------------|
| Dredging and blasting in the basin.....  | \$28,657 09 |
| Crib work, wharf and raceways.....   | 18,883 17   |
| Filling and back filling (or embankment) of wharves, railway embankment for new wharves and spoil bank on southeast side of basin..... | 41,618 42   |
| New railway siding and alteration of existing track for same.....  | 5,993 82    |
| Total.....   | \$95,152 50 |

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There was also expended on dredging and depositing chargeable to other works where the material was deposited, \$10,673.33.

*Section 11*—The approach to the Windmill Point Basin was deepened and widened on the southeastern side at several points. Cost \$332.37. Half cost of dredging and depositing chargeable to other works, where the material was used, \$332.38.

*Section 15*—In order to fit the outer, or southeastern side of the Island wharf for the temporary accommodation of large ships it was lengthened 132 feet with pile work, making it 442 feet frontage length.

The enlargement has a strong timber flooring supported on piles and covered with four-inch plank suitable for carrying heavy cargo; is triangular in shape, of 8,255 square feet area, 132 feet frontage length on the outer and 119 feet on the lower face. Construction was commenced on April 19th and finished May 26th. Cost \$4,763.60.

*Sections 16 and 17*—Several places between the Dominion Steamship Line berths and the ship channel were dredged to ship channel depth. Cost \$1,679.31. Part cost of dredging and depositing, chargeable to the works where the material was used, \$1,663.18.

*Section 19*—The down stream side of the basin, and chiefly at its inner end, was deepened by dredging. Cost \$343.15. Cost of dredging and depositing, chargeable to other works where the material was used, \$343.14.

*Section 25*—Some small shoal spots between the ships' berths and the ship channel were deepened. Cost \$69.89. Part cost of dredging and depositing, chargeable to other works where the material was used, \$19.20.

*Sections 25 and 26*—Part of the railway track used by the Canadian Pacific Railway Company was altered, and 707 feet of new track laid in June last, making an increase of 1042 ft. of available standing room for cars. Cost \$2,115.37.

*Section 27*—The deep water was extended down stream to 150 feet below the corner of the deep water wharf, and

also widened by dredging in the early part of summer. Cost \$1,474.83. Part cost of dredging and depositing, chargeable to other works where the material was used, \$877.29.

*Sections 27 to 32.*—The dredging of the shoal in front of the 10-foot water wharves was resumed on April 27th and continued until August 12th, when the dredge was withdrawn to be sent to the Dominion Government Department of Public Works. Expenditure in 1897, \$4,375.29. Part cost of dredging and depositing, chargeable to other works where the material was used, \$1,084.55.

*Sections 34 and 35.*—Late in the autumn some dredging was done toward the removal of the shoals between the wharf and the ship channel. Expenditure \$849.57. Part cost of dredging and depositing chargeable to other works where the material was used, \$193.92.

*Sections 36 to 40.*—Nearly all the shoal places between the deep water wharves and the ship channel were dredged down to ship channel depth, but are not yet tested to ascertain if they are clear for navigation. Expenditure \$4,835.17. Part cost of dredging and depositing, chargeable to other works where the material was deposited, \$315.61.

*Sections 42 and 43.*—Early in the summer two railway tracks were laid from the main tracks on the shore wharf to the outer end of the new pier. Both were planked throughout with 4-inch hemlock, and the planking also continues some distance down the shore tracks. The tracks on the pier were tied down with two  $\frac{7}{8}$  in. bolts to anchor blocks placed  $3\frac{1}{2}$  feet underground, at 30 feet apart, in order to prevent their being moved by the winter current and ice. The track on the upstream side of the pier was handed over to the use of the Grand Trunk Railway Co., and that on the downstream side to the Canadian Pacific Railway Co., under the terms of the general leases. Total length of new tracks, 2,839 ft., or 0.537 mile. Cost, including alterations and work on main tracks, \$5,954.89.

*Sections 43 and 44.*—The space between the railway tracks and the boundary of the Commissioners' property was filled

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up to wharf level, chiefly with shale rock dredgings, and the surface of that and of the roadways between the tracks and on the opposite side has been macadamized. Expenditure \$1,982.71.

*Sections 40 to 45.*—Some shoal spots between the wharves and the ship channel were dredged out, and the basin on the downstream side of the pier was deepened and enlarged. Expenditure \$7,264.11. Part cost of dredging and depositing, chargeable to other works where material was used, \$392 84.

*Sections 48 to 51.*—Maisonneuve.—Such surplus dredgings as could not be disposed of at the different places already mentioned were deposited alongshore at Maisonneuve by floating derricks in suitable position for forming part of future shore wharves. Quantity deposited 69,802 c. yards. No charge for the dredged material has been made to these sections.

*Longue-Pointe*—The upper or western wharf opposite lot cadastral number 337, Longue Pointe, recently purchased from la Communauté des Sœurs de Charité de la Providence, was at the close of the working season in process of being rebuilt and enlarged. The old wharf was of cribwork, 80 feet in frontage length, and at low water of 13 feet on the lock sill had only about three feet depth in front. The top was seven feet high above low water, and was therefore usually submerged from the opening of navigation until about the middle of June.

The wharf as rebuilt has a new cribwork front of 100 ft. in top length with 13 ft. depth below and 12 ft. height above low water level, and it has a slip 18 ft. in width cut down to within 6 ft. of low water so that it may be conveniently used by river craft at all stages of the river. A new road of 20 ft. width and of easy grade will connect the wharf with the nearest public street, which is 300 ft. distant. Reconstruction was commenced October 20th and was stopped by bad weather on November 26th. At the stoppage the timber work was finished, the greater part of the filling, back filling and roadway were made up to full height and breadth, and about

enough rock and earth delivered to complete the whole. The wharf is already fit for use, but the completing, trimming and macadamizing of the filling and roadway yet remain to be done. Expenditure, not including purchase of old wharf, \$5,502.10.

*Ship Channel*—The ship channel through the Harbour was widened by dredging off the side of the Island shoal opposite sections 12 to 17, so as to give a breadth of 370 feet opposite the Island wharf and thus leave a fair breadth of clear channel when the wharf is occupied by large vessels and their lighters. Expenditure \$7,599.38. Half cost of dredging and depositing, chargeable to other works where the material was used, \$7,599.37.

One of the ship channel dredges belonging to the Dominion Department of Public Works, which was placed under the direction of the Harbour Commissioners, was employed throughout the summer in deepening the channel through the harbour, from section 17 to section 23, and section 32 to section 34, to compensate for the extreme lowering of the water of recent years.

*Guard Pier*—The Guard Pier was in August and September lengthened so as to reduce the opening between its upper end and the Victoria Bridge to 300 feet width at high water, after which the end of the embankment was roughly but strongly paved with trap rock selected from that dredged out of the Windmill Point Basin, as a temporary protection from the action of the ice. Expenditure, including the erection and taking down of the trestle work and the fitting out and laying up of the working plant, \$8,336.88.

|  |              |
|--|--------------|
| The expenditure upon the Guard Pier up to the end of 1896 was..... | \$297,708 80 |
| The expenditure in 1897 was.....                                   | 8,336 88     |
| Total to the end of 1897 .....                                     | \$306,045 68 |
| Less:—   |              |
| Portion payable by the city up to end of 1896.....                 | \$ 68,874 10 |
| Portion payable for 1897.....                                      | 1,609 34     |
| Total payable by the city to 1897 ...                              | \$ 70,483 44 |
| Net expenditure on the part of the Harbour Commissioners .....     | \$235,562 24 |

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The quantities and kinds of stuff placed in the pier during 1897 are as follows:—

|  | CUBIC YARDS. |
|--|--------------|
| Dredged from Windmill Point Basin, Section 5 to 10, shale and trap rock and hard pan.....                | 16,456       |
| Dredged from approach to Windmill Point Basin Section 11, shale and trap rock and hard pan.....          | 2,020        |
| Dredged from Ship channel in Harbour, hard pan and gravel.....   | 12,808       |
| Dredged from ship's berths and lumps below Victoria Pier, Sections 20 to 25, silt, gravel and stones.... | 1,094        |
| Total cubic yards, scow and box measurement.....   | 32,378       |

#### NEW LATRINES.

*Section 6, Windmill Point.*—A new latrine and drinking fountain were furnished and placed on the wharf and connected with an 8-inch water-pipe laid on Ogilvie street, which belongs to the Commissioners, from Mill street to the wharf.

*Section 27.*—A new latrine, drinking-tap and crane for supplying watering-carts were furnished and placed on the wharf, and connected with a water-pipe laid from Papineau avenue to the wharf.

*Section 29.*—A new latrine, drinking tap and water-crane for supplying watering-carts were made and placed on the wharf, and connected with 8-inch water-pipes laid down on the ramp at the jail for supplying a hydrant at the foot of the ramp.

*Section 44.*—A new latrine, drinking-tap and crane for filling watering-carts were made and placed on the wharf, and connected with the 8-inch water-pipe laid on Nicolet street from Notre Dame street to the wharf.

The 8-inch water-pipes necessary to connect the latrines with the city water mains at the several places were furnished by the Water Works Department of the City, but the expense of laying them was borne by the Harbour Commissioners.

Cost of making, fitting and connecting new latrines, drinking-taps and water-cranes, including one new latrine-house yet on hand for future use, \$2,371.95.

## REPAIRS.

The total cost of maintenance and repairs in 1897 was \$46,258.63, the lowest since 1885, as will be seen by the following table:—

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

The breaking of the winter ice commenced with a movement in the Laprairie Basin on the 1st of April. On the 2nd, shoves occurred in the main channel near the Victoria Bridge, and a large opening formed below the bridge. On the 3rd, shoving continued in the main channel between the Victoria Bridge and St. Helen's Island, and large piles were thrown up on Ile Verte and Victoria Pier. A slight shove occurred on the St. Lambert side on the 4th, and on the 5th the opening in the main channel below the Victoria Bridge increased to about a mile in length. In the night between the 5th and 6th the field ice on the Point St. Charles Flats shoved, from the force of water coming through the opening at the head of the Guard Pier, and forced its way into the Windmill Point Basin, filling it up, and at the same time shoves took place between the St. Helen's Island and the Guard Pier, and piles of ice lodged on the head of the Island. The Point St. Charles Flats were all clear of ice during the 6th, until the afternoon, when large quantities came down from Laprairie Basin, first filling the main channel and then turning in through the gap at the head of the Guard Pier, filled the Point St. Charles Flats. About 8 p.m. the ice which had packed on the Flats broke loose and forced its way into the field ice between the entrance of the canal and Victoria Pier, splitting the field in several places, and shoving one side

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against the Guard Pier and the other over against the wharves. Appearances were at first supposed to indicate that the lower part of the field had moved somewhat upward but more careful examination showed that all parts had moved downward as well as sidewise. The Harbour Dredging Fleet was, by the shove of the 6th, moved about 350 feet toward the wharves of the Allan Line berths, and some of the vessels were considerably displaced with respect to each other. Two scows and the boom of a derrick were damaged, but not seriously. Up to this time the water had fluctuated between 26 and 29 feet over the lock sill, but just after 11 p.m. it suddenly rose to 33 feet 8 ins., the highest point of the year, after which it fluctuated with lowering average, and by the 13th the wharves were dry.

About 9 o'clock on the morning of the 8th a slight shove occurred both inside and outside of the Guard Pier.

Pieces of ice from Laprairie Basin and broken ice, apparently from Lake St. Louis, continued to come down on the 9th, 10th and 11th, sometimes temporarily filling the opening in the channel between the Victoria Bridge and St. Mary's current, but producing no considerable rise in the river level. By the afternoon of Sunday, the 11th, the greater part of the Laprairie Basin was clear and the main channel was open to Hochelaga, the water had fallen to 27½ feet on the sill and all risk of a flood or another considerable shove was past.

On the 16th the basin inside the Guard Pier was sufficiently clear to allow the starting out of the Commissioners tug which had wintered in the basin, and by the next day, the 17th of April, the river was sufficiently clear to allow the ferry steamers Hochelaga and Longueuil to leave their winter quarters at Boucherville and enter the harbour.

Very large quantities of shoved ice were left lodged upon all the wharves of the Harbour from Victoria Pier downward, and from the pier upward there were areas of sheet ice and small shoves. The following are rough measurements of quantities at the different places:—

*Sections 12 and 13.*—Allan Line wharves. Two hundred

feet by 25 feet by 1 foot to 6 feet, average 3 feet in thickness; 550 cubic yards.

*Sections 15 to 17.*—On the shore wharf 1,400 feet length by 120 feet by 1 foot to 6 feet, average 3 feet thickness; on the pier 120 feet by 200 feet by 2½ feet, or 20,900 cubic yards in all.

*Section 18.*—Fifty feet by 50 feet by 5 feet and 300 feet by 90 feet by 3½ feet, and 160 feet by 50 feet by 3 feet; in all 14,700 cubic yards.

*Section 19.*—Whole surface of pier, 300 feet by 100 feet by 3 feet; 3,300 cubic yards.

*Section 20.*—Victoria Pier. The downstream extension of the pier was covered with from 2 feet to 10 feet thickness, average 6 feet by 900 feet by 150 feet; 30,000 cubic yards.

*Section 20 to 23.*—Shore wharves; 1,900 feet by 180 feet by 2 feet to 6 feet, average 4 feet thickness; 47,300 cubic yards.

*Sections 23 to 26.*—The whole length of 1,900 feet by 180 feet by 2 feet to 6 feet, average 4 feet thickness; 47,300 cubic yards.

*Sections 24 to 26.*—1,800 feet by 130 feet by 2 feet to 10 feet, average 6 feet thickness; 48,000 cubic yards.

*Sections 27 to 29.*—1,600 feet by 110 feet by 2 feet to 8 feet, average thickness 5 feet; 32,600 cubic yards.

*Sections 30 to 33.*—1,900 feet by 35 feet by 4 feet to 6 feet average 5 feet thickness; 12,300 cubic yards.

*Sections 34 to 37.*—2,150 feet by 35 feet by 2 feet to 4 feet average 3 feet thickness; 8,400 cubic yards.

*Sections 38 to 43.*—Shore wharves: 2,900 feet by 60 feet by 4 feet to 8 feet, average thickness 6 feet; 38,500 cubic yards. The whole upstream side of the pier was covered with a pile 4 feet to 20 feet by 60 feet in width, and the remainder of the pier with sheet ice of three feet thickness; 860 feet by

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60 feet by 12 feet and 860 feet by 120 feet by 3 feet ; 34,000 cubic yards in all.

*Section 46.*—850 feet by 40 feet by 2 feet; 7,500 cubic yards.

Total quantities lodged on all wharves as above, 345,350 cubic yards.

The clearing of the wharves of ice at the sites of freight sheds and where otherwise urgently needed was commenced by the Commissioners' men on the 13th April, and was finished as far as necessary on the 27th. Cost, including 5 days' work of floating derrick, \$2,674.32.

On the clearing away of the ice it was found that the earth filling of the wharf at the coal towers, section 37, had run out to a depth of about 15 feet by a length of 135 feet and breadth of 50 feet. A considerable length of the top timbers and planking of the wharf in section 40 were damaged by being chafed away by the moving ice, and some of the front timbers of the upstream side of the pier, section 46, were crushed in by ice shoves.

The bottom part of the temporary trestle work in the opening through the guard pier was also considerably damaged by shoves, but the working plant, which was wintered at the usual place upon the pier itself, was not touched.

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

*Section 6.*—A new plank footpath was laid on Ogilvie Street, from Mill Street to the wharf.

*Sections 13 and 14.*—The coping and top and face planking of the cribwork were largely renewed.

The deposit from the large sewer which discharges into the Elgin Basin had been accumulating since 1895, and it was, by arrangement with the City and at the City's expense, dredged out soon after the clearing away of the ice and before the arrival of ships. Expenditure, \$737.50; repaid by the City.

*Section 15.*—Early in the summer a considerable slip occurred in the earth work of the Island wharf at the upper inshore end, in rear of the pile work and under the Hamburg-

American Packet Company's shed. Repairs were made by changing the front row of open piling into a close row, and by tying back the heads of the piles by long anchor bolts, so as to withstand the pressure of the foot of the earth slope, and by making good the slip with shale rock filling, after which the timber covering was rebuilt.

At the upper end of the basin, the timber covering of about 35 feet in length of pile wharf was renewed in the early part of summer. An adjoining part of the pile wharf, almost 20 years old, had become much decayed, and about 115 feet of its length was, after the close of navigation, renewed down to low water level. Cost of both, \$2,360.51.

A portion of the cribwork of the outer face of the Island wharf, which settled forward out of line in the latter part of summer, was, on the removal of the freight shed, after the close of navigation, strengthened by putting in eleven tie bolts,  $1\frac{1}{2}$  inches diameter, placed  $8\frac{1}{2}$  feet apart, and extending to anchor blocks 50 to 60 feet back. Cost, \$354.66.

*Sections 15 to 17.*—A number of shallow places in the ships' berths, caused largely by ashes and rubbish, were dredged out. Cost, \$315.04. Half cost of dredging and depositing, chargeable to other works where the material was used, \$315.04.

*Section 16.*—The wooden water trough was replaced by an iron one with new concrete foundation and piping. Cost, \$211.91.

*Section 20.*—The large platform for dumping earth from carts into scows was erected and maintained as usual, but it was reserved exclusively for receiving wharf scrapings.

The cribwork of the down stream face of the triangular projection of the Victoria Pier had become undermined and sunken out of line to such extent as to be in danger of falling out. Repairs were made by tying back the cribs with long anchor bolts and driving sixteen piles in front and by rebuilding and raising the top timber work to proper line and level. Cost, \$2,239.38.

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Another part of the cribwork of the outer face of the Victoria Pier, near the lower end, settled forward and was, after the close of navigation, tied back with long anchor bolts. Cost, \$454.65.

*Sections 22 and 23.*—Some shoal places near the wharf, caused by accumulations of sand, gravel and rubbish, were dredged out. Cost \$80.40. Half cost of dredging and depositing chargeable to other works where the material was used, \$80.40.

*Section 25.*—Part of the crib filling of the wharf was found to have run out at the junctions of the old cribwork and the new, at the ends of the former basin. The opening at the lower end was stopped and the cribwork strengthened by driving 35 piles in front, and that at the upper end by driving 15 piles, after which a considerable part of the coping and top planking of the wharf was renewed. Cost, \$1,750.46.

*Section 34.*—About 200 lineal feet of the cribwork of the wharf, which had settled down and outward, was strengthened by seventeen tie-bolts  $1\frac{1}{2}$  inches in diameter and about 50 feet long, after which the top of the wharf was renewed and raised to proper level. Cost, \$1,726.40.

*Section 36.*—During winter a portion of the cribwork of the wharf at the Coal Towers became undermined, and the earth filling and back filling of the cribwork ran out to a depth of 15 feet, by a length of 135 feet and a breadth of 50 feet. Repairs were made by driving a row of fifty-six piles in front of the cribwork, and tying it back by thirteen anchor bolts  $1\frac{1}{2}$  inches diameter by 60 to 65 feet long, and by making good the subsidence with rock filling. Cost, \$2,569.23.

*Section 40.*—The top of the wharf was damaged by the winter ice, and repairs were made by renewing a considerable part of the top beams, planking and coping. Cost, \$983.61.

*Section 46.*—At several places in the upstream side of the pier, of an aggregate length of about 60 feet, and at about two feet clear below the top, one or two courses of the front timbers were crushed in by ice shoves. The filling of the reibwork on the upstream side had subsided in several places,

and the top planking of the cribwork in general, though completed only in 1891, had become much decayed. All defects were repaired and the pier put in good order. Cost \$846.50.

*Longue-Pointe*—The eastern wharf, built by the Commissioners in 1878, was thoroughly repaired. An average of two courses of the timber of the cribwork were renewed, the slip almost all renewed, all the planking and coping renewed, the wooden mooring posts replaced by countersunk iron posts, and the top of the wharf and approach road largely macadamized anew. Cost, \$417.40.

*General Repairs*.—Ordinary general repairs have been made throughout the wharves wherever needed, and both wood work and roadways kept in good condition. The fastenings of the older bolted-down mooring posts throughout the harbour were examined, and the bolts and anchorages were renewed wherever found defective.

Macadamizing stone to the extent of 393 $\frac{1}{4}$  toises was used in the maintenance of the roadways and was distributed as follows:—

|                                 | TOISES.           |
|---------------------------------|-------------------|
| Sections 5 to 10.....           | 62 $\frac{1}{2}$  |
| Sections 12 to 20.....          | 116 $\frac{1}{4}$ |
| Sections 21 to 30.....          | 170 $\frac{1}{4}$ |
| Sections 31 to 40.....          | 41 $\frac{1}{2}$  |
| Sections 41 and 42.....         | $\frac{1}{4}$     |
| Longue Pointe wharf repair..... | 2 $\frac{1}{2}$   |
| Total.....                      | 393 $\frac{1}{4}$ |

The usual taking up of the mooring posts where not protected by the Guard Pier, the moving of drinking troughs and latrines and the storing away of materials for the winter were done between the 25th and 30th of November.

#### DREDGING PLANT AND DREDGING.

The Dredging Plant used in 1897 belongs to the Harbour Commissioners, and was composed of six dipper dredges, five floating derricks, one double land derrick, one drilling and blasting boat, three tugs, twenty-five flat deck scows and a floating shop, as detailed in the annexed table.

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Derrick No. 3 was wintered in the Government Dry Dock, Lachine Canal, during the winter of 1896-7 to allow of repairs being made. All the other vessels of the dredging fleet were wintered in the harbour, near the entrance of the canal, in order to avoid the delay and expense, as also the risk of damage by grounding, incident to wintering in the canal. The vessels which wintered in the harbour were considerably moved as a whole, and displaced with regard to each other, by the shoving of the ice from the Point St. Charles Flats, as already described.

Derrick No. 4, which fouled with the drill boat, had her boom stays and turntable somewhat damaged, and two of the oldest scows were also damaged in the movement, but no other injury was sustained.

The winter repairs to the hulls and machinery of the dredging fleet were made by the Commissioners' own men, with exception of foundry work and some heavy machine work and forging, which were done by neighboring shops.

The following are the chief items of repairs:—

*Dredge No. 1.*—One new main spur wheel and intermediate spur wheel, new pinion on crank shaft of main engine; throttle valve of swinging engine altered to work with independent lever; legs of boiler furnace renewed; new tubes to heater; foundation plate put on bow for receiving hawse pipe of backing chain; larger steam cylinder put on friction box of bucket handle. Dredge docked in summer; about half the outside planking and about 40 side frames, chiefly in the after end of the hull, which were much decayed, were renewed; about one-fourth of the deck plank renewed; spud-keepers re-riveted, and new rubbing plates put on spud slides; one forward spud renewed.

*Dredge No. 2.*—New intermediate spur wheel; cast iron spur wheel of after spud drum replaced by a steel one; new supports for rock shaft of brakes of hoisting drums; new bush in backing drum; throttle valve of swinging engine altered to work with independent lever; foundation plate put

on bow to carry hawse pipe of backing chain; new bucket door of a single steel casting, with Canan valve; new stays for spud slides; new hinge strap for lower spud keeper; new davits for small boat.

*Dredge No. 3.*—New intermediate spur wheel; steel spur wheel of after spud drum substituted for cast iron one; new supports for rock shaft of brakes of hoisting drum; new friction bands for spud drums; foundation plate put on bow for hawse pipe of backing chain; new sheave at upper end of boom; new sheave on top of forward spud; friction box of bucket handle renewed in steel; new bucket door of a single steel casting, with Canan valve; new after spud and one new forward spud; new davits for small boat.

*Dredge No. 4.*—Boom rebuilt with entirely new woodwork; new ratchet wheel on main drum; new spur wheel on backing drum; crank shaft of steam pump renewed; forward spud repaired and rebolted.

*Dredge No. 6.*—Boom rebuilt with new woodwork and with ironwork strengthened in several places; new ratchet wheel on hoisting drum; two new sheaves for hoisting chain; malleable-iron elbows put in steam pipes instead of those of cast iron. In the sinking and raising of the dredge, which occurred in October, many of the more exposed and lighter parts were damaged or destroyed. Repairs were fully made, amongst which were:—Caulking of hull in dry dock; renewal of the upper deck and nearly half the housing; **A** frame and stays repaired; new forward spud; new turntable; steam pipes partly renewed; engine and machinery generally overhauled.

*Dredge No. 7.*—New ratchet wheel on hoisting drum; new sprocket sheave at head of mast; heavy repairs to both long and short bucket handles; new stern spud and repairs to

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other spuds ; renewed deck planking of after end and deck caulked all over.

*Derrick No. 3.*—Wintered in dry dock, and hull caulked ; forward spud repaired.

*Derrick No. 4.*—Two new bevel wheels for spud gear ; new segment put in turntable ; stay rods of boom repaired ; planking of stern partly renewed ; deck caulked all fore and aft.

*Derrick No. 5.*—New deck plate for steam capstan ; deck caulked all fore and aft.

*Derrick No. 6.*—Deck caulked all fore and aft ; new stern spud.

*Derricks Nos. 4, 5 and 6, in common.*—Two clam shells fitted with new lips ; a spare spud made for each derrick.

*Tug St. Peter.*—Old wooden rudder replaced by a new single-plate steel rudder ; deck caulked all fore and aft ; docked during summer, and planking all caulked and iron sheathing renewed.

*Tug St. Louis.*—Heavy repairs to steam pump ; deck caulked all over.

*Tug Aberdeen.*—Valve motion of steering engine remodelled ; set of patent New England roller grate bars put in place of ordinary bars ; new set of propeller blades to replace a set broken by accident in working ; cabin and fore-castle fitted with hot water heating coils.

*Drill Boat.*—One steam drill almost entirely renewed ; new piston rings, rifle ratchets and general repairs to three drills ; new telescope steam pipe to each of the three drills ; new three-way valve for hydraulic ram for traversing the drill frames ; suction pipes of water pumps altered and made independent ; boilers repaired.

*New Testing-Boat.*—The scow fitted with a bar beneath it, which has been used for many years for testing the clear depth of water for navigation in the harbour, had become so much decayed and otherwise worn out as to be inefficient. A new testing-boat was therefore built at the Commissioners' shops, having two scows of 73 ft. 3 ins. long, 14 ft. wide and 3 ft. 1 in. deep over all, placed at 16 ft. apart and decked over all. Athwart beneath each scow is a bar 30 ft. long, supported and stayed fore and aft by wire ropes, worked by steam winch barrels in such a way that each bar may be set at any required depth, hoisted aboard, or lowered, at pleasure. The two bars, when in use for testing, are held end to end at the required depth, and they therefore test a breadth of bottom of 60 ft. at each trip. A steering and chart room, 11 ft. by 7 ft. 9 in., is placed with its floor 14 ft. 3 in. above deck, so as to give a clear view for observations, and in it are four indexes showing the height of any rise of the bars on striking an obstruction. The testing-boat is propelled and steered by a tug, the bow of which is firmly held in a recess in the after end of the space between the scows. Steam for working the winch barrels is taken from the tug boiler by hose. Cost, \$3,621.71.

The boiler of the tug "Emma Munson," built in 1873, had become so much deteriorated as to be unfit for use after 1896. The engine was in good order, but old in type and of small power. The wooden hull was much decayed and expensive to maintain. It was therefore decided that the boat be sold as she was, which was done by public auction on August 20, and she was bought by the Sincennes-McNaughton Line for \$1,335.00.

The dredging fleet was served throughout the summer by the tugs St. Peter, St. Louis and Aberdeen.

Dredge No. 3 commenced work on April 21st; No. 1 commenced on the 22nd, No. 2 on the 23rd, No. 4 on the 24th, and Nos. 6 and 7 on the 27th.

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Dredge No. 6 was accidentally sunk in the Current St. Mary, opposite Section 37, on September 16th, and before she was ready for work again the stoppage of the three small dredges for the season was authorized by the Board. Dredge No. 6 therefore stopped her season's work on September 16th. No. 4 was stopped on September 22nd, and No. 7, which was required for work at Longue Pointe, was stopped on October 30th. The three large dredges, Nos. 1, 2 and 3, were stopped on November 24th. The three large derricks were employed throughout the summer, but the two small derricks were used only part of the season.

At the close of navigation the small dredges Nos. 4, 6 and 7, the small derricks Nos. 2 and 3, the drill-boat, pile-driver and six scows, all of which are of light draft, were laid up for the winter of 1897-98 in the larger basin of the Lachine Canal, below Black's Bridge, and the remainder of the fleet, consisting of the large dredges Nos. 1, 2 and 3, large derricks Nos. 4, 5 and 6, tugs St. Peter, St. Louis and Aberdeen, the testing-boat, floating shop, and twenty scows were laid up in the harbour near the canal entrance.

The aggregate number of days during which the dredges were on duty, reckoning every day except Sundays, from their commencing in spring, was:—

|                   | Montreal<br>Harbour work<br>Days. | Other work.<br>Days. | Total days. |
|-------------------|-----------------------------------|----------------------|-------------|
| Dredge No. 1..... | 142                               | 42                   | 184         |
| Do. No. 2.....    | 183                               | .....                | 183         |
| Do. No. 3.....    | 184                               | .....                | 184         |
| Do. No. 4.....    | 125                               | 15½                  | 140½        |
| Do. No. 6.....    | 119½                              | 1½                   | 121         |
| Do. No. 7.....    | 100                               | 50                   | 150         |
| Totals.....       | 853½                              | 109                  | 962½        |

The Drill Boat commenced work on 24th April, was stopped on August 11th, and laid up until August 27th, and worked

again from the latter date until November 25th. Of the working time, including all except Sundays, there were 153 days spent on the harbour works and  $15\frac{1}{2}$  days under charter elsewhere, making in all  $168\frac{1}{2}$  days' service of 11 hours per day.

The dredges worked by day only, on a nominal working time of ten hours per day. This, for the 509 days aggregate of the three large dredges on harbour duty, gives them a total of 5,098 hours nominal service; but the actual working time after deducting that lost for repairs, changing positions detention by vessels, waiting for scows, and from all other causes, was reduced to  $4,125\frac{1}{4}$  hours, or an average of 81.05 per cent. of the nominal hours of service. Included in the 509 days of the larger dredges' time of duty are  $3\frac{3}{4}$  days of No. 2 Dredge and  $3\frac{3}{4}$  of No. 3 Dredge, while engaged lifting sunken Dredge No. 6, the cost of which is included in the year's expenses of the latter dredge. The three smaller dredges had  $344\frac{1}{2}$  days aggregate harbour service, and their aggregate nominal time was 3,445 hours. Their actual working time was 2,834 hours, or an average of 82.27 per cent. of the nominal time of service.

The total outlay for working the whole fleet, except the drill boat, was \$68,210.95, and this, as usual, represents the entire cost of working the plant and machinery, including repairs, outfit, fuel, wages, salaries, management charges, insurances, and all other outlays except interest on capital and depreciation of plant.

The cost of maintaining and working the three large dredges, with their portion of maintaining and working the tugs and scows, was \$32,185.38, or an average of \$64.18 per day each, and the like cost for the smaller dredges was \$18,925.61, or an average of \$54.93 per day each.

The cost of maintaining and working the six floating derricks was \$17,099.56.

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| YEARS.  | D |
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| 1875... |   |
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The following are the comparative costs and quantities of dredging for 1897, and for previous years:—

| YEARS.  | CUBIC<br>YARDS<br>DREDGED. | TOTAL<br>COST,<br>DOLLARS. | COST PER<br>CUBIC YD.<br>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 $\frac{10}{100}$             |  |
| 1881... | 170,764                    | 54,128                     | 31 $\frac{69}{100}$             |  |
| 1882    | 187,339                    | 53,598                     | 28 $\frac{60}{100}$             | Spoon dredges & stone-lifters.                                 |
|         | 9,429                      | 13,254                     | \$1.40 $\frac{69}{100}$         | Elevator dredges.  |
|         | 196,768                    | 66,852                     | 33 $\frac{96}{100}$             | Totals and average.  |
| 1883    | 36,358                     | 17,956                     | 49 $\frac{38}{100}$             | Spoon dredges & stone-lifters                                  |
|         | 6,990                      | 19,385                     | \$2.77 $\frac{39}{100}$         | Elevator dredges-lifting rock<br>and boulders and clearing up. |
|         | 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 $\frac{16}{100}$             | " " "  |
|         | 2,077                      | 1,333                      | 64 $\frac{18}{100}$             | Elevator dredges.  |
|         | 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.                                |
|         | 9,420                      | 2,996                      | 31 $\frac{89}{100}$             | Elevator dredge.   |
|         | 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    | 259,367                    | 49,571                     | 19 $\frac{12}{100}$             | Spoon dredges.   |
|         | 43,290                     | 14,232                     | 32 $\frac{87}{100}$             | Elevator dredge.   |
|         | 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 $\frac{54}{100}$             | " "  |
| 1895... | 496,528                    | 99,400                     | 20 $\frac{2}{100}$              | " "  |
| 1896... | 401,938                    | 103,317                    | 25 $\frac{70}{100}$             | " "  |
| 1897... | 284,844                    | 68,211                     | 23 $\frac{95}{100}$             | " "  |

The general results of the dredging in 1897 are good. The total quantity dredged was smaller than usual, because the plant in use was less than usual, and because the material was largely rock; much of the dredging was on small shoals, where the cut was shallow and moving frequent; a considerable part was the cleaning up of former dredging. The expenses were, however, correspondingly small, and the average cost of the year's dredging per yard, as will be seen by the foregoing table, compares favourably with previous years.

The cost and character of the dredging in different parts of the harbour in 1897 are given below. All the quantities are either scow measurements from the tallied number of flat deck scow loads of measured average capacity, or box measurements from the tallied number of boxes placed on scows, and containing four cubic yards per box. The cost of dredging includes the cost of tug and scow service, but not the cost of unloading scows by derricks, which is separately given.

*Sections 5 to 10 (Windmill Point Basin).—*The dredging consisted mainly of compact Utica shale, holding trap in veins and beds, and of compact Utica shale alone. Another, and considerable portion, consisted of loose rock left from the dredging of former years, which required to be cleaned out in order to finish the basin and give the required clear depth for navigation. The remainder, comparatively insignificant in quantity, was of hard-pan sewage deposit and rubbish mixed with the loose rock. Where the trap and shale occurred together, the indications are that the trap was mainly the outcrop of beds lying at low angles in the shale, and of various thicknesses up to 3 or 4 feet. Beds less than 3 feet thick, and in favorable positions, can be dredged directly with the large dredges, but where unfavorably situated as to depth or dip, and of 3 feet thickness or over, they are more economically taken out by being blasted first.

The whole quantity blasted in 1897 was 18,146 cubic yards, measured in the solid, out of a total quantity dredged of

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105,291 cubic yards, measured in the loose by tally of the dredge boxes, or, say 52,695 yards solid measurement; or, in other words, 34 per cent. of all the rock taken out was blasted before being dredged. No distinction could be made in the unblasted rock, between that which was taken directly out of the solid by the dredges, and that which had been more or less loosened before and was merely cleaned up in 1897.

The total quantity of rock of all sorts thus dredged was 105,291 cubic yards, box measurement, all by large dredges, in depths of water of 34 to 28 feet to bottom of cut, at an average cost of  $17\frac{1}{10}$  cents per yard, exclusive of blasting and of unloading the scows by derricks. The quantity unloaded by floating derricks at Windmill Point, part of which was from the dredging of the basin and part from elsewhere, cost  $5\frac{7}{8}$  cents per cubic yard, scow and box measurement.

*Section 11* (Approach to Windmill Point Basin).—Deepening the channel 32 to 28 feet deep to bottom of cut; shale rock, not blasted, boulders and hard pan; by a large dredge; 2,020 cubic yards; cost, 27 cents per cubic yard, box measurement. Unloading by floating derricks,  $5\frac{7}{8}$  cents per cubic yard.

*Sections 15 to 17.*—Clearing out ships' berths at different times; 28 to 34 feet depth; sand, stones, ashes, mud, etc.; 947 cubic yards, by large dredges, cost,  $35\frac{1}{10}$  cents per yard; 652 cubic yards by small dredges, cost,  $30\frac{1}{10}$  cents per yard; all box and scow measurement. Unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 16 and 17.*—Dredging off small shoal spots in the basin, between the ship channel and the ships' berths; 32 to 35 feet depth; 6,416 cubic yards; sand, by a large dredge, cost  $8\frac{1}{10}$  cents per yard; 7,675 cubic yards sand and hard-pan, by a small dredge; cost  $25\frac{1}{2}$  cents per yard all box and scow measurement. Unloading by floating derrick,  $5\frac{7}{8}$  cents per yard.

*Section 19.*—Deepening the basin in several places; sand gravel and mud; 30 to 34 feet depth; 2,396 cubic yards, by a large dredge, cost  $15\frac{1}{10}$  cents per yard; 517 cubic yards, by a small dredge, cost 27 cents per yard; all box and scow

measurement. Unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 22 and 23.*—Cleaning out ships' berths; gravel and sand, 30 to 34 feet depth; by a large dredge; 944 cubic yards; scow measurement; cost  $11\frac{7}{16}$  cents per yard. Unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Section 25.*—Deepening ships' berths; sand and stones; 30 to 34 feet depth; by a large dredge; 492 cubic yards; scow measurement; cost  $12\frac{1}{4}$  cents per yard. Unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Section 27.*—Dredging away part of upper end of Molson Shoal, 30 to 33 feet deep; gravel and stones; by a small dredge; 6,172 cubic yards, cost  $32\frac{1}{4}$  cents per yard. Unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 27 to 32.*—Deepening the shoals between the 10 foot water wharves and the ship channel, 12 to 15 feet depth; strong current and much delay and difficulty in moving the dredge and scows, gravel, sand and boulders; by a small dredge; 12,062 cubic yards, scow measurement; cost,  $39\frac{1}{2}$  cents per yard; unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 34 and 35.*—Deepening small isolated shoals between the ships' berths and the ship channel; 32 to 34 feet depth; hard pan, gravel and stones; by a large dredge; 3,530 cubic yards, box and scow measurement; cost  $23\frac{7}{16}$  cents per yard; unloading by floating derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 37 to 40.*—Deepening isolated shoals between the ships' berths and the ship channel; 32 to 35 feet depth; gravel, sand and stones; 21,438 cubic yards, by a large dredge; cost 15 cents per yard; 1,200 cubic yards, by a small dredge; cost  $49\frac{3}{4}$  cents per yard; all box and scow measurement; unloading by derricks,  $5\frac{7}{8}$  cents per yard.

*Sections 40 to 44.*—Deepening shoal spots about the pier; 32 to 35 feet depth; gravel, sand and stones; by a large

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dredge; 7,517 cubic yards; cost 28  $\frac{1}{8}$  cents per yard; unloading by derrick, 5  $\frac{7}{8}$  cents per yard.

*Section 43.*—Deepening and enlarging the basin at the pier 30 to 33 feet depth; sand and stones; by a small dredge; 9,922 cubic yards, box and scow measurement; cost, 36 cents per yard; unloading by derrick, 5  $\frac{7}{8}$  cents per yard.

*Sections 44 and 45.*—Deepening and enlarging the basin; 30 to 34 feet depth; sand and stones; by a large dredge; 5,167 cubic yards, scow measurement; cost, 11  $\frac{1}{2}$  cents per yard; unloading by derrick, 5  $\frac{7}{8}$  cents per yard.

*Ship Channel through the Harbour*—Widening and deepening the channel 30 to 35 feet depth; 52,488 cubic yards hard pan and stones, by large dredges, cost 8  $\frac{1}{2}$  cents per yard; 37,323 cubic yards, hard and soft silt and sand, by small dredges, cost 14  $\frac{1}{2}$  cents per yard; all box and scow measurement; unloading by derricks, 5  $\frac{7}{8}$  cents per yard.

*Rock Blasting* (Windmill Point Basin.)—By drill boat; about one-third shale and two-thirds trap rock, seamy and difficult to drill; grade line of finished bottom, 34 feet to 27 feet below water surface:

|  |                          |
|--|--------------------------|
| Working days, April 24th to August 11th.....   | 92 days                  |
| “ “ August 27th to November 6th.....   | 61 days                  |
| Total.....   | 153 days                 |
| Working time per day.....  | 11 hours                 |
| Number of holes drilled and blasted.....   | 5,074 holes              |
| Average depth of each hole, in rock.....   | 5.63 feet                |
| Average depth of each hole from surface of water...  | 29 $\frac{1}{2}$ feet    |
| Total quantity of rock drilled and efficiently<br>blasted, measured in solid to 6 inches below<br>finished bottom..... | 18,146 cubic yds.        |
| Cost per cubic yard, measured in solid.....  | 78 $\frac{1}{10}$ cents. |

Appended are tables giving additional particulars regarding the dredging and dredging plant in 1897.

Yours respectfully,

JOHN KENNEDY,  
*Chief Engineer.*

HARBOUR DREDGING.—Abstract of work done by each Dredge for the Harbour of Montreal in 1897.

| VESSELS.     | PLACES AT WHICH DREDGING WAS DONE.      | TIME OF SERVICE. |        | QUANTITIES DREDGED. |              | CHARACTER OF SOIL.  |
|--------------|---|------------------|--------|---------------------|--------------|---|
|              |   | Days.            | Total. | Cubic Yards.        | Total Yards. |   |
| Dredge No. 1 | Sections 5 to 10, Windmill Point.       | 14               |        | 2,812               |              | Trap rock and shale.<br>Rock, hardpan and stones.<br>Hardpan and stones.<br>Sand and stones.<br>Gravel and sand.<br>Hardpan, gravel and stones.<br>Gravel, sand and stones.<br>Gravel, sand and stones.<br>Sand and stones. |
|              | Section 11, approach to Windmill Point. | 8                |        | 2,629               |              |   |
|              | Section 14, Ship Channel in Harbour     | 94               |        | 7,008               |              |   |
|              | Sections 15 and 16, cleaning berths.    | 44               |        | 797                 |              |   |
|              | Section 19, Bonseours Basin             | 53               |        | 2,396               |              |   |
|              | Sections 31 and 35, shoal spots         | 12               |        | 3,330               |              |   |
|              | Sections 37 to 40, shoal spots          | 47               |        | 21,438              |              |   |
|              | Sections 40 to 44, shoal spots          | 34               |        | 7,317               |              |   |
|              | Sections 44 and 45, deepening           | 81               | 142    | 5,167               | 52,065       |   |
|              |   |                  |        |                     |              |   |
| Dredge No. 2 | Sections 5 to 10, Windmill Point.       | 167              |        | 64,621              |              | Trap rock and shale.<br>Sand.<br>Gravel and sand.<br>Sand and stones.   |
|              | Section 16, deepening Basin.            | 9                |        | 6,416               |              |   |
|              | Sections 22 and 23, cleaning berths     | 13               |        | 944                 |              |   |
|              | Section 25, shoal spots                 | 3                |        | 492                 |              |   |
|              | Raising Dredge No. 6.                   | 31               | 183    |                     | 72,473       |   |
|              |   |                  |        |                     |              |   |
| Dredge No. 3 | Sections 5 to 10, Windmill Point.       | 119              |        | 37,858              |              | Trap rock and shale<br>Sand.<br>Hardpan, gravel and stones.   |
|              | Section 17, cleaning berths.            | 3                |        | 130                 |              |   |
|              | Ship Channel in Harbour.                | 69               |        | 45,480              |              |   |
|              | Raising Dredge No. 6                    | 31               | 184    |                     | 83,488       |   |
|              | Carried forward                         |                  | 569    |                     | 208,646      |   |

HARBOUR DREDGING.—Abstract of work done by each dredge, &c.—Continued.

| VESSELS.     | PLACES AT WHICH DREDGING WAS DONE. | TIME OF SERVICE. |        | QUANTITIES DREDGED. |              | CHARACTER OF SOIL.         |
|--------------|------------------------------------|------------------|--------|---------------------|--------------|----------------------------|
|              |                                    | Days.            | Total. | Cubic Yards.        | Total Yards. |                            |
| Dredge No. 4 | Brought forward.....               | .....            | 500    | .....               | 208,646      |                            |
|              | Section 16, cleaning berths.....   | 2                |        | 450                 |              | Sand and mud.              |
|              | Section 17, deepening berths.....  | 42               |        | 7,675               |              | Hardpan and sand.          |
|              | Section 19, Bonsecours Basin.....  | 3                |        | 517                 |              | Gravel and mud.            |
| Dredge No. 6 | Ship Channel in Harbour.....       | 78               | 125    | 29,374              | 38,616       | Hard and soft sand.        |
|              | Section 27, Molson shoal.....      | 30               |        | 6,172               |              | Gravel and stones.         |
|              | Section 37, shoal spots.....       | 9                |        | 1,200               |              | Gravel, stones and sand.   |
|              | Section 43, deepening.....         | 54               |        | 9,922               |              | Sand and stones.           |
| Dredge No. 7 | Ship Channel in Harbour.....       | 20½              | 119½   | 7,349               | 24,643       | Hard silt and sand.        |
|              | Section 17, cleaning berths.....   | 2                |        | 902                 |              | Ashes and deposit.         |
|              | Sections 27 to 32, deepening.....  | 92               | 100    | 12,662              | 12,939       | Gravel, sand and boulders. |
|              | Longue Pointe Wharf.....           | 6                |        | 675                 |              | Quicksand.                 |
|              | TOTALS.....                        | .....            | 853½   | .....               | 284,844      |                            |



HARBOUR DREDGING.—Statement of quantities dredged at each place in 1897.—Continued.

| PLACES WHERE DREDGES WORKED.                 | VESSEL.              | TIME OF SERVICE. |        | QUANTITIES DREDGED. |              | CHARACTER OF SOIL.          |
|--|----------------------|------------------|--------|---------------------|--------------|-----------------------------|
|  |                      | Days.            | Totals | Cubic Yards.        | Total Yards. |                             |
|  | Brought forward..... |                  | 441½   |                     | 133,522      |                             |
| Sections 27 to 32, deepening Shallow Berths. | Dredge No. 7 .....   | 92               | 29     | 12,062              | 12,062       | Gravel, sand and boulders.  |
| Sections 34 and 35, deepening Shoal Spots.   | Dredge No. 1 .....   | 12½              | 12½    | 3,530               | 3,530        | Hardpan, gravel and stones. |
| Sections 37 to 40, deepening Shoal Spots     | Dredge No. 1 .....   | 47½              | 56½    | 21,438              | 22,638       | Gravel, sand and stones.    |
|  | No. 6 .....          | 9                | 31½    | 1,200               | 7,517        | do. do.                     |
| Sections 40 to 44, deepening Shoal Spots     | Dredge No. 1 .....   | 31½              | 31½    | 9,922               | 9,922        | Gravel, sand and stones.    |
| ection 43, deepening Basin.....              | Dredge No. 6. ....   | 54               | 54     | 5,167               | 5,167        | Sand and stones.            |
| Sections 44 and 45, deepening Basin .....    | Dredge No. 1 .....   | 8½               | 8½     | 7,098               | 7,098        | Sand and stones.            |
| Ship Channel through Montreal Harbour        | Dredge No. 1 .....   | 9½               |        | 45,480              |              | Hardpan and stones.         |
| "  | No. 3 .....          | 60               |        | 29,974              |              | Hard and soft sand.         |
| "  | No. 4 .....          | 78               |        | 7,349               |              | Hard silt and sand.         |
| "  | No. 6 .....          | 26½              | 174    | 675                 | 89,811       | Quick sand.                 |
| Longue Pointe, Upper Wharf.....              | Dredge No. 7. ....   | 6                | 6      |                     | 675          |                             |
| Raising Dredge No. 6 .....                   | Dredge No. 2 .....   | 3½               |        |                     |              |                             |
|  | No. 3 .....          | 5                | 7½     |                     |              |                             |
| Totals.....                                  | Totals.....          |                  | 853½   |                     | 284,844      |                             |

HARBOUR DREDGING.—Statement showing particulars of Cost of working the different Vessels employed in Harbour Dredging in 1897.

| VESSELS.                    | Repairs, Maintenance and Stores. |    | FUEL.    |       | WAGES.   |       | Proportion of Salaries of Staff. |       | GRAND TOTALS. |       | Service. |          | Cost PER DAY. |
|-----------------------------|----------------------------------|----|----------|-------|----------|-------|----------------------------------|-------|---------------|-------|----------|----------|---------------|
|                             | Cost.                            |    | Cost.    |       | Cost.    |       | Cost.                            |       | Cost.         |       | Days.    |          |               |
| Spoon Dredge No. 1.....     | \$ 3,228                         | 29 | \$ 1,013 | 39    | \$ 2,110 | 72    | \$ 469                           | 99    | \$ 6,831      | 30    | 142      | \$ 48 11 |               |
| " " No. 2.....              | 2,621                            | 92 | 1,586    | 45    | 2,813    | 22    | 504                              | 60    | 7,834         | 19    | 183      | 40 08    |               |
| " " No. 3.....              | 3,441                            | 38 | 1,393    | 30    | 2,814    | 05    | 565                              | 21    | 8,215         | 94    | 184      | 44 64    |               |
| " " No. 4.....              | 618                              | 28 | 465      | 57    | 1,996    | 19    | 227                              | 69    | 3,307         | 64    | 125      | 26 46    |               |
| " " No. 6.....              | 2,124                            | 92 | 414      | 22    | 2,160    | 17    | 347                              | 67    | 5,046         | 98    | 119½     | 42 25    |               |
| " " No. 7.....              | 827                              | 03 | 318      | 37    | 1,785    | 64    | 216                              | 51    | 3,147         | 55    | 100      | 31 48    |               |
| Dredges—totals.....         | 12,869                           | 82 | 4,991    | 21    | 13,688   | 99    | 2,331                            | 58    | \$33,881      | 60    | 853½     | 39 62    |               |
| Floating Derrick No. 2..... | 167                              | 60 | 369      | 80    | 1,599    | 97    | 153                              | 44    | 2,230         | 21    | 152      | 14 67    |               |
| " " No. 3.....              | 394                              | 38 | 123      | 24    | 723      | 23    | 85                               | 01    | 1,235         | 86    | 125      | 22 47    |               |
| " " No. 4.....              | 562                              | 69 | 647      | 09    | 2,372    | 29    | 279                              | 48    | 4,061         | 46    | 179      | 52 69    |               |
| " " No. 5.....              | 696                              | 75 | 684      | 67    | 3,328    | 12    | 347                              | 99    | 5,057         | 53    | 190      | 52 62    |               |
| " " No. 6.....              | 753                              | 24 | 571      | 70    | 2,879    | 31    | 310                              | 65    | 4,514         | 90    | 140      | 32 25    |               |
| Derricks—totals.....        | 2,484                            | 06 | 2,336    | 41    | 11,102   | 92    | 1,176                            | 57    | 17,099        | 96    | 716      | 23 88    |               |
| Tug Aberdeen.....           | 1,030                            | 42 | 1,588    | 15    | 1,012    | 64    | 334                              | 83    | 4,865         | 04    | 106      | 24 83    |               |
| " St. Peter.....            | 662                              | 47 | 1,570    | 64    | 1,927    | 19    | 397                              | 41    | 4,467         | 71    | 198      | 23 57    |               |
| " St. Louis.....            | 308                              | 94 | 886      | 83    | 1,662    | 38    | 211                              | 21    | 3,069         | 36    | 188      | 16 33    |               |
| Tugs—totals.....            | 2,001                            | 83 | 4,045    | 62    | 5,502    | 21    | 853                              | 45    | 12,403        | 11    | 582      | 21 31    |               |
| Scows and Boxes—totals..... | 4,826                            | 28 | .....    | ..... | .....    | ..... | .....                            | ..... | .....         | ..... | .....    | .....    |               |
| GRAND TOTALS.....           | \$22,181                         | 99 | \$11,373 | 24    | \$30,294 | 12    | \$4,361                          | 60    | \$68,210      | 95    | .....    | .....    |               |

HARBOUR DREDGING.—Statement showing Cost of Harbour Commissioners' Dredging by the different Dredges with their proportion of Tug and Scow Service, for 1897.

HARBOUR DREDGING.—Statement showing Cost of Harbour Commissioners' Dredging by the different Dredges with their proportion of Tug and Scow Service, for 1897.

| VESSELS.   | Dredge Service. |                     | Tug Service. |                     | Scow and Box Service. |                     | Dredge with Tug and Scow Service added. |        | Time of Service. | Cost per working Day of Dredge. | Quantity Dredged. | Average Cost Per Cubic Yard. | Additional Cost for unloading by Dredgers. | Proportions of Materials Dredged. |       |
|--|-----------------|---------------------|--------------|---------------------|-----------------------|---------------------|---|--------|------------------|---------------------------------|-------------------|------------------------------|--|-----------------------------------|-------|
|  | Cost.           | Proportion of Cost. | Cost.        | Proportion of Cost. | Cost.                 | Proportion of Cost. | Days.                                   | Earth. |                  |                                 |                   |                              |  | Rock.                             |       |
| Spoon Dredge No. 1.                              | \$ 6,821        | 30                  | \$ 2,063     | 55                  | \$ 802                | 98                  | \$ 9,687                                | 83     | 142              | \$68 29½                        | 52,685            | .1847                        | 5½   | 90½                               | p. c. |
| " " No. 2.                                       | 7,534           | 19                  | 2,659        | 37                  | 1,034                 | 80                  | 11,028                                  | 36     | 183              | 60 20½                          | 72,473            | .1491                        | 5½   | 11                                | 89    |
| " " No. 3.                                       | 8,213           | 44                  | 2,673        | 30                  | 1,040                 | 45                  | 11,928                                  | 29     | 184              | 64 82½                          | 83,488            | .1400                        | 5½   | 54½                               | 45½   |
| Totals.....                                      | 22,579          | 43                  | 7,396        | 82                  | 2,878                 | 23                  | 32,654                                  | 48     | 509              |                                 |                   |                              |  |                                   |       |
| Less work of Nos. 2 and 3, raising No. 6 Dredge. | 469             | 10                  |              |                     |                       |                     | 469                                     | 10     | 7½               |                                 |                   |                              |  |                                   |       |
| Totals and Averages                              | 21,910          | 33                  | 7,396        | 82                  | 2,878                 | 23                  | 32,185                                  | 38     | 501½             | 64 18                           | 208,646           | .1543                        | 5½   | 48½                               | 51½   |
| Spoon Dredge No. 4                               | 3,397           | 64                  | 1,816        | 51                  | 706                   | 84                  | 5,830                                   | 99     | 125              | 46 64½                          | 38,616            | .1510                        | 5½   | 100                               | ..... |
| " " No. 6  | 5,046           | 98                  |              |                     |                       |                     | 7,459                                   | 30     |                  |                                 |                   |                              |  |                                   |       |
| Add cost of Nos. 2 and 3, raising No. 6 Dredge.  | 469             | 10                  |              |                     |                       |                     | 469                                     | 10     |                  |                                 |                   |                              |  |                                   |       |
| Total cost No. 6 Dredge.                         | 5,516           | 98                  | 1,736        | 58                  | 675                   | 74                  | 7,928                                   | 40     | 119½             | 66 34½                          | 24,643            | .3216                        | 5½   | 100                               | ..... |
| Spoon Dredge No. 7.                              | 3,147           | 55                  | 1,453        | 20                  | 565                   | 47                  | 5,166                                   | 22     | 109              | 51 06½                          | 12,939            | .3993                        | 5½   | 100                               | ..... |
| Totals and Averages                              | 11,971          | 27                  | 5,006        | 29                  | 1,948                 | 65                  | 18,925                                  | 61     | 344½             | 54 94                           | 76,198            | .2484                        | 5½   | 100                               | ..... |
| GRAND TOTALS                                     | \$33,881        | 60                  | \$12,403     | 11                  | \$ 4,826              | 28                  | \$51,110                                | 99     | 833½             | \$59 87                         | 284,844           | .1794                        | 5½   | 62½                               | 37½   |

For full description of materials dredged at the different places by the various dredges see detailed statements and Engineer's Report for 1897.

HARBOUR COMMISSIONERS' DREDGING PLANT EMPLOYED IN THE HARBOUR OF MONTREAL IN 1897.

| 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. |                   |               |  |
|                                    |         |          |        |             |                             |                   |                    |                   |          |                    | Ft. in. over all. | Ft. in. Beam. | Ft. in. over all.                        |
| <b>DREDGES.</b>                    |         |          |        |             |                             |                   |                    |                   |          |                    |                   |               |  |
| Boom Suction Dredge, No. 1         | 90.0    | 36.0     | 9.6    | 1890-1      | Horizontal.                 | 2                 | 16                 | 18                | 110      | 40                 | 40                | 40            | Wooden hull.                             |
| " " " " " " " " " " " "            | 90.0    | 36.0     | 10.3   | 1892        | " " " " " " " " " " " "     | 2                 | 16                 | 18                | 128      | 41                 | 40                | 40            | " " " " " " " " " " " "                  |
| " " " " " " " " " " " "            | 90.0    | 36.0     | 10.3   | 1894        | non-condensing.             | 2                 | 16                 | 18                | 120      | 41                 | 40                | 40            | Rebuilt & altered, '90.                  |
| " " " " " " " " " " " "            | 77.3    | 27.9     | 6.6    | 1872        | " " " " " " " " " " " "     | 1                 | 14                 | 16                | 85       | 23                 | 33                | 33            | Rebuilt in 1889.                         |
| " " " " " " " " " " " "            | 77.0    | 27.0     | 7.6    | 1874        | " " " " " " " " " " " "     | 1                 | 14                 | 16                | 85       | 24                 | 35                | 35            | " " " " " " " " " " " "                  |
| " " " " " " " " " " " "            | 77.3    | 27.0     | 7.0    | 1874        | " " " " " " " " " " " "     | 1                 | 14                 | 16                | 85       | 24                 | 35                | 35            | " " " " " " " " " " " "                  |
| <b>CRANE DERRICKS.</b>             |         |          |        |             |                             |                   |                    |                   |          |                    |                   |               |  |
| Clam Shell Derrick, No. 2          | 57.0    | 23.6     | 5.9    | 1872        | Horizontal.                 | 2                 | 7                  | 12                | 85       | ..                 | ..                | ..            | Wooden hull.                             |
| " " " " " " " " " " " "            | 61.3    | 24.0     | 5.9    | 1872        | " " " " " " " " " " " "     | 1                 | 10                 | 12                | 110      | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| " " " " " " " " " " " "            | 75.0    | 24.10    | 7.6    | 1892        | non-condensing.             | 2                 | 12                 | 14                | 110      | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| " " " " " " " " " " " "            | 75.0    | 25.10    | 7.6    | 1892        | " " " " " " " " " " " "     | 2                 | 12                 | 14                | 110      | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| " " " " " " " " " " " "            | 75.0    | 25.10    | 7.6    | 1892        | " " " " " " " " " " " "     | 2                 | 12                 | 14                | 110      | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| Pair of Land Derricks.....         | 42.0    | 40.0     | ..     | 1892-3      | " " " " " " " " " " " "     | 2                 | 12                 | 14                | 110      | ..                 | ..                | ..            | Wooden framing.                          |
| <b>DRILLING AND BLASTING BOAT.</b> | 80.0    | 27.0     | 5.6    | 1895        | " " " " " " " " " " " "     | ..                | ..                 | ..                | 90       | ..                 | ..                | ..            | Three 5 in. steam drills.                |
| <b>TUG BOATS.</b>                  |         |          |        |             |                             |                   |                    |                   |          |                    |                   |               |  |
| Tug St. Louis.....                 | 67.0    | 15.0     | 8.7    | 1875        | Vertical.                   | 1                 | 16                 | 20                | 85       | ..                 | ..                | ..            | Wooden hull } rebuilt                    |
| " " St. Peter.....                 | 71.6    | 16.6     | 8.6    | 1875        | non-condensing.             | 1                 | 20                 | 22                | 85       | ..                 | ..                | ..            | " " " " " " " " " " " }                  |
| " " M. P. Davis.....               | 40.5    | 10.7     | 5.3    | 1879        | Vertical                    | 1                 | 10                 | 12                | ..       | ..                 | ..                | ..            | Wooden hull.                             |
| " " Aberdeen.....                  | 79.3    | 18.3     | 9.0    | 1895        | condensing                  | 1                 | 16                 | 16                | 125      | ..                 | ..                | ..            | Steel hull.                              |
| <b>TESTING BOAT.....</b>           | 73.3    | 14.0     | 3.1    | 1897        | " " " " " " " " " " " "     | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | Two wooden scows, } braced 16 ft. apart. |
| <b>FLOATING SHOP.....</b>          | 135.0   | 29.0     | 10.0   | ..          | " " " " " " " " " " " "     | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | Wooden hull.                             |
| <b>SCOWS.</b>                      |         |          |        |             |                             |                   |                    |                   |          |                    |                   |               |  |
| 1 Sounding Scow, No. 2             | 70.5    | 18.0     | 5.0    | ..          | Capacity:                   | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | All wood.                                |
| 1 Flat deck Scow, No. 6            | 70.5    | 18.0     | 5.0    | 1873        | 45 cubic yds.               | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 70.0    | 18.3     | 2.1    | 1874        | 45 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 69.5    | 18.4     | 2.0    | 1875        | 45 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 70.4    | 18.2     | 2.0    | 1875        | 45 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 70.4    | 18.3     | 2.0    | 1875        | 45 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 73.0    | 20.2     | 6.2    | 1876        | 62 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 73.4    | 20.4     | 6.2    | 1876        | 62 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 73.6    | 20.3     | 6.3    | 1878        | 62 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 83.0    | 21.3     | 7.2    | 1878        | 67 " " " " " " " " " " " "  | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 1 " " " " " " " " " " " "          | 85.0    | 21.3     | 6.9    | 1891        | 150 " " " " " " " " " " " " | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 2 " " " " " " " " " " " "          | 85.0    | 25.0     | 6.9    | 1892        | 150 " " " " " " " " " " " " | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 2 " " " " " " " " " " " "          | 85.0    | 25.0     | 6.9    | 1892        | 150 " " " " " " " " " " " " | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |
| 5 " " " " " " " " " " " "          | 85.0    | 25.0     | 6.9    | 1893        | 150 " " " " " " " " " " " " | ..                | ..                 | ..                | ..       | ..                 | ..                | ..            | " " " " " " " " " " " "                  |

\* The tug M. P. Davis was used by the Government throughout the summer of 1897.