DOMINION OF CANADA.

ANNUAL REPORT

OF THE

MINISTER

OF

RAILWAYS AND CANALS

FOR THE

FISCAL YEAR 1ST JULY, 1878, TO 30TH JUNE,

1879.

ON THE WORKS UNDER HIS CONTROL.

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT THIRTY-FIRST VICTORIA, CHAPTER TWELVE, SECTION NINETEEN, AS AMENDED BY THE ACT FORTY-SECOND VICTORIA, CHAPTER SEVEN.

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1880.

CONTENTS OF REPORT.

TABLE OF APPENDICES.

REPORT.

1878—79.

To His Excellency the Right Honourable Sir John Douglas Sutherland Campbell, Marquis of Lorne, one of Her Majesty's Most Honourable Privy Council, Knight of the Most Ancient and Most Noble Order of the Thistle, and Knight Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Governor General of Canada, and Vice-Admiral of the same.

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit the Annual Report of the Department of Railways and Canals, for the fiscal year ended 30th June, 1879.

By Act 42 Vict., cap. 7, it was enacted that the Department of Public Works, then under my charge, should be divided and re-constructed as two administrations under separate Ministers. The one to be designated as Minister of Railways and Canals, the other as Minister of Public Works.

By Order in Council dated 19th March, 1879, published at page 1496 of the *Canada Gazette*, the above Act was fixed to come into force and take effect from the 20th May.

The necessary organization of the two Departments having been made, it is my duty as Minister of Railways and Canals to report to Your Excellency on the proceedings of that Department.

The proceedings of the Public Works, although carried on, under my direction, and for which I am responsible up to the 30th June, 1879, are related in the separate report of the Hon. the Minister of Public Works.

This report of railways and canals sets forth the transactions and general expenditure with the cost of maintenance of the various works under the control of the Department during the fiscal year ended 30th June, 1879.

Appendix No. 1, page 8, shews this expenditure in detail.

The Annual Reports of Superintendents, with general and special Reports from the Departmental Engineers are given in the Appendices.

The works under the control of this Department are as follows:—

I GOVERNMENT RAILWAYS.

II CANALS.

RAILWAYS.

The Railways of the Dominion under the direction of the Department, consist of:—

1. The Canadian Pacific Railway.
2. The Intercolonial Railway.
3. The Prince Edward Island Railway.

CANADIAN PACIFIC RAILWAY.

The Canadian Pacific Railway is projected to commence from a point at or near the south-eastern angle of Lake Nipissing, and to extend towards the upper or western end of Lake Superior, and to be continued to the west to join the line now under construction—which has its starting point on the River Kaministiquia—at such place as may be considered advantageous.

Of this portion of the line general examinations only have been made, and no definite course has been adopted with regard to it.

The remaining portion of the railway, commencing at Fort William—about three miles from the mouth of the Kaministiquia, which discharges into Lake Superior—to the Pacific Ocean, generally has been located. Some few sections are under consideration, but a great part of the distance has been established.

The line may be described on leaving the Kaministiquia, to run north of the Lakes, Des Mille Lacs, Wabigon, and Vermilion, to the River Winnipeg, which it crosses at Rat Portage, Keewatin, the point of discharge of the Lake of the Woods. Thence it proceeds westerly to Selkirk, on the Red River. This portion of the line is definitely established. The location of the crossing of Red River is under consideration. On the west side of Red River the line has been located westward to the south of Lake Manitoba, through Manitoba to the boundary of that Province.

A branch to the City of Winnipeg has also been located.

From the western boundary of Manitoba a line has been located to the valley of Bird Tail Creek, thence a line has been projected north-westerly to the located line west of Livingston; thence running westerly until it reaches the valley of the Athabaska, which it ascends to cross the summit of the Rocky Mountains by the Yellow Head Pass. Following the North Thompson, it descends to Kamloops, and takes the valley of the Thompson to the River Fraser, and by the valley of that river continues to Burrard Inlet, on the Pacific Ocean

So far as present measurements admit the determination of the distance, the total length from the eastern initial point at Lake Nipissing to Fort William, Lake Superior, is estimated at 565 miles, and from thence to Burrard Inlet, at the Pacific Ocean, at 1,966 miles, the total being 2,531 miles.

Pembina Branch.

Extends southward from the main line at Selkirk, on the east of the Red River, passing through St. Boniface, which is immediately opposite to the City of Winnipeg, and continues to Emerson, at the Boundary Line, where it connects with the St. Paul, Minneapolis and Manitoba Railway, in the State of Minnesota, 84½ miles in length.

Georgian Bay Branch.

The contract for the Georgian Bay Branch, extending from South River to Cantin's Bay, French River, has been cancelled.

Canada Central Extension.

The eastern connection of the main line of the Canadian Pacific is a subsidized prolongation to Pembroke, to connect with the systems of railways of Ontario and Quebec.

Starting from the south-eastern angle of Lake Nipissing, the line follows the Mattawan Valley till its junction with the Valley of the Ottawa, running at no great distance from the River Ottawa, till it reaches Pembroke.

The subsidy granted is limited to $1,440,000.

The length of the line is now estimated at 142 miles.

CONSTRUCTION.

From Lake Superior to Selkirk.

The line from Fort William to Selkirk, 410 miles, under contract, is in different stages of completion.

Between Fort William and English River, 113 miles, the permanent way is completed but not fully ballasted.

From English River to Eagle River, 118 miles, and from Eagle River to Keewatin, 67 miles. This work was placed under contract in March, 1879.

From Keewatin to Cross Lake, 36 miles. The work on this section is unusually heavy.

The profile is of such a character that any material reduction of the work by a succession of heavy grades in short lengths is not feasible. The line crosses a series of elevations and depressions of narrow width, in a region difficult of access, which at the commencement of the work, like the greater part of the country, was a wilderness. The transport of the heavy plant, of tools and materials, and the necessary supplies for men and horses has required extraordinary effort. The general level of the country shows but little variation, and the railway grades will be moderate throughout. The country is broken, being marked by rocky prominences and mamelons, occasional lakes and deep depressions. The rock cuttings are far advanced, and can easily be completed in a few months. The main difficulty now lies in the heavy embankments, which call for the employment of locomotives and cars, for the successful and rapid prosecution of the work. The plant can only be brought into use from the west, as each successive embankment is completed to admit of the construction of the track. No engine in the present condition of the work can be taken from the east. The continuous track has been pushed on six miles east of Cross Lake. The embankments, however, are generally more or less advanced, but their progress is complicated by the inability at this period of placing the necessary rolling-stock in the cuttings. The contractor has a good supply of steam shovels and ample rolling-stock, and the effort is being made to obtain a well conducted direction to the appliances at his command.

From Cross Lake to Selkirk, 75 miles. The track has been laid and partially ballasted. Additional ballast is required.

The Engine House at Selkirk, to receive 10 locomotives is nearly completed.

West of Selkirk.

Nearly 100 miles of Railway west of Red River, with a branch to the city of Winnipeg, were placed under contract on the 19th August, 1879. Tenders will be invited at an early day for another 100 miles, from the western boundary of Manitoba to Bird Tail Creek.

PEMBINA BRANCH.

The line between St. Boniface and Emerson, on the Pembina Branch, 63 miles, now in operation under a lease from the Government, still requires some ballasting. Several of the structures are but temporary. Iron superstructure has been ordered for the main opening of Rat River. The remaining distance of 22 miles, from St. Boniface to Selkirk, is completed and well ballasted.

CANADA CENTRAL EXTENSION.

The work of the Canada Central Extension has been commenced at the eastern end. Starting from Pembroke, generally it follows the Ottawa Valley, running at no great distance from the river until it reaches the River Mattawan, at the 94th mile, whence it runs to the proposed eastern terminus at Lake Nipissing. The line is laid and ballasted to the 43rd mile. The bridging and grading has been carried on to the 62nd mile.

The River Mattawan is reached at the 94th mile, and the initial point of the Canadian Pacific, Lake Nipissing, as now ascertained to be 142 miles.

BRITISH COLUMBIA.

Contracts have been entered into for the construction of portions of the line on the Pacific slope, an Order in Council, 4th October, 1879, having been passed adopting the route by Yellow Head Pass and the River Fraser to Burrard Inlet, viz.:—

From Emory's Bar to Boston Bar, 29 miles.
" Boston Bar to Lytton..... 29 "
" Lytton to Junction Flat..... 28½ "
" JunctionFlat to Savonas Ferry.. 40½ "

EXPLORATIONS.

Explorations in the Northern Section of British Columbia were commenced at Port Simpson, and its approaches from the sea to Wark Inlet and up the valley of the River Skeena, to the tract of country where the tributaries of the Skeena and the Peace Rivers have their sources, to the region of the Peace River, and to the Northern passes, of the Peace and Pine Rivers, through the mountains. The information obtained from these examinations was reported by telegraph from Edmonton to Ottawa, at the close of September, 1879. The consideration of the reported results led to the determination of the route by the Yellow Head Pass and the River Fraser to Burrard Inlet.

Several exploratory parties have been despatched through the Prairie Region, from the Eastern Boundary of British Columbia to Lake Winnipeg, specially

instructed to obtain all the information practicable bearing on the country. The localities selected are those hitherto unvisited by men of observation and science, and little that is definite was then known. It is anticipated that the information obtained will be in every way valuable.

A trial location has been made to the north of Lake Nipissing.

Starting at South East Bay, the line takes the direction of the north east side of the lake, and turns into the valley of the Smoke River, whence it passes into the Valley of the River Sturgeon.

Surveys have been made from Dog Lake East to Nipigon and from Nipigon East to Long Lake.

Telegraph.

The telegraph line between Fort William and Edmonton, with the Winnipeg Branch (1,219 miles), is in operation.

The working of the telegraph has not been satisfactory. The subject is now under consideration.

Rails.

Contracts have been entered into for 39,000 tons of Bessemer steel rails with the necessary fish plates, bolts and nuts, and contracts likewise made for the transportation of 15,000 tons.

INTERCOLONIAL RAILWAY.

LENGTH OF LINE.

Ocean Mail Line.

	Miles.
River du Loup to Moncton	374
Moncton to Painsec	8
Painsec to Truro	118
Truro to Halifax	62
	562

Extensions.

Moncton to St. John	89	
Painsec to Shediac	11	
Truro to Pictou	52	
		152

Local Branches.

Rimouski to Wharf	2	
Newcastle, N. B., to Deep Water Wharf	2	
Dorchester to Shipping Wharf	1	
Sackville to Shipping Wharf	0·5	
Stewiacke to Wharf	1	
		6·5
Total		720.5

The total expenditure on capital account on the entire line, up to the 30th June, 1879 is $36,317,705.04, against $36,091,065.85, of fiscal year 1877–78.

The amounts chargeable to capital account for the fiscal year ended 1879, are:

For the extension into Halifax	$21,282 78
Deep water terminus at St. John	45,771 70
Completion of the Intercolonial between River du Loup and Truro (old account)	159,584 71
Total	$226,639 19

The gross earnings of the year have been $1,294,099.69, being a decrease of $84,847.09, as compared with last year's receipts $1,378,946.78.

The cost of working the line with maintenance is $2,010,183.22, including the balance $143,591.88 for renewals chargeable from the expenditure $543,591.88, made in 1876-7 set forth in public accounts 1876-7 Part III, p. 58. In addition to this amount the sum of $22,804.69 for renewals is likewise brought forward from the year 1877-78, making a total of $168.396.03, as set forth in the public accounts 1877–78, Part III, page 76, in addition to which a sum of $42,278.85 was expended in the first half of this year making a total of $210,674.91. The excess of expenditure over revenue is $766,083.53 against $432,326.78 the excess of the previous fiscal year.

The excess in 1876–7 was $507,228.20.

The passenger traffic shews a decrease of $23,363.52. There is, however, an increase of the number carried of 21,144. The freight traffic shews a decrease of 11,849 tons.

The cattle trade from the West is on the increase and is working satisfactorily.

The winter ocean traffic from Halifax was promptly dispatched.

The through traffic has been fairly maintained but local trade more affected by the general depression, showed a serious diminution.

Working expenses show an increase. The amount charged under this heading includes, in addition to the charges for maintenance proper, the balance of the "Renewals suspense account" now closed amounting to $210,674.91. The cost of works rendered compulsory by the amendment to the Railway Act passed last session, viz:—alterations in the height of the snow sheds and of most of the overhead bridges on the line—considerably added to the expenditure.

690 miles of the road are laid with steel rails.

On the remaining, 24 miles—embracing the Pictou Branch 13 miles, and the Shediac Branch 11 miles in length,—the old iron rail is still in use.

Steel fish plates have been substituted for iron on 43 miles of the track.

300,094 new sleepers have been laid, as against 156,742 in the previous year, this increase has been caused by the use of spruce, a wood which requires frequent renewal.

36 miles of track between Halifax and St. John, have been ballasted.

In all nearly 4 miles of additional sidings have been provided.

Fencing where necessary has been renewed with cedar poles. Ditches have been generally cleaned and drainage maintained and improved.

The rolling stock has been maintained and is in good condition.

Three new engines were built at the Railway workshops, Moncton, and instructions given to procure during the current year, three engines by tender and contract.

In several cases the repairs to locomotives were extensive.

Cast iron turntables have been put in at St. John and River du Loup.

Four others have been ordered and are now being placed at Engine Houses along the line.

The total cost of running the train per mile was 95.50 cents as against 83.75 for last year.

The stores purchased 1878-9 amounted to	$415,985 87
As against 1877-8	485,049 69
Decrease in purchases	$69,063 82
The stock on hand 1878-9	$243,758 10
As against stock 1877-8	345,422 53
Decrease of stock on hand	$101,664 43

Early in the year an enquiry was made into the working of each Department. The result proved that the force employed was in excess of the requirements of the service. The whole interior economy of the line has been carefully re-organised.

The changes effected were not completed in sufficient time to affect the cost within the fiscal year.

The number employed in September under the re-organized system is 1,910 as against 2,370 employed in September of the previous year under the old system.

The cost per annum under the re-organized system for staff and employees, based on the Pay Rolls for September, is $852,720.58, against $1,073,567.14, for the previous year, less the net amount paid for labour on three locomotives built in the shops at Moncton, amounting to $17,320.17.

Total reduction in number		460
Reduction in cost	$220,846.83	
Less the net amount paid for labour on 3 locomotives	$17,320.17	
		$203,526.66

The wharves at Richmond, Pictou and Campbellton have been repaired, strengthened and generally improved in accommodation. Storage sheds, cattle pens, platforms, water tanks, coal sheds have been rebuilt as occasions demanded, and all ordinary repairs executed.

A new passenger station and freight shed erected at Ishgonish.

Do do Dwelling at Stewiacke.

Do do do at Rockland.

At Amherst the station grounds and buildings have been entirely re-arranged. Water tanks rebuilt and renewed.

At Enfield 1 new lattice girder bridge of 110 feet span, has been erected in lieu of a 3 span bridge.

Two of the removed girders have been used, one at Teacles, the other at Hall's Creek.

Twelve other wooden bridges have been or are in course of re-construction. Girders built up of old iron rails are used in lieu of wooden structures.

A water and gas supply has been laid down according to the arrangement with the Moncton Gas and Water Company.

Mains have been laid from the boundaries of the departmental property—connecting pipes laid on to the several buildings and yards.

At Newcastle 6,000 feet 6-inch iron pipes have been laid.

Campbellton, 7,100 6-inch pipes laid from engine house to millstream.

Do 1,099 feet of branch pipes, to the hydrants in the buildings and yards.

At Amherst a 12,000 gallon water tank and a Morgan crane has been erected.

At Darling's brook, one of the most important watering stations, an excellent gravitation supply has been obtained. Length of main 975 feet 6-inch pipe.

Several wooden culverts have been replaced by masonry.

Abutments and piers at Enfield, McManus Mill, Hall's Creek, Moncton, Lakeside, Passekeag, Stanley and Garden St., St. John, have been built to carry the bridge superstructure.

Tunnel work in places showing signs of danger from falling masses of decaying rock has been protected by masonry.

The number of casualties were 57. (Appendix 12, page 73.)

The Windsor Branch 32 miles long extending from Windsor junction to Windsor was maintained by the Department, and worked by the Annapolis Railway Company to the 24th September, 1877, when by Order in Council No. 14,181, 25th July, 1877, it was handed over to the Western Counties Railway Company, conditionally on the line of this Company being extended from Annapolis to Yarmouth, a distance of 82 miles.

In the agreement made with the Western Counties Railway, dated 6th September, 1877, this transfer was contingent on the extension of the line to Yarmouth, being completed by the 1st October, 1879, and it was stipulated that if not so completed, the Company would give up peaceable possession of the branch.

Complaints were repeatedly forwarded to the Department that the traffic had been so worked as to derange the business of the Western section of Nova Scotia.

was represented that delay, loss and inconvenience had been entailed on the community by the persistency in working the traffic, as if the Windsor and Annapolis Railway, and the Windsor Branch were two distinct unconnected enterprises, much additional cost being caused by the transfer of passengers and freight from the one system to the other, and that efforts had been made to induce the Companies to do away with these complicated arrangements, but without success.

Accordingly, as the Western Counties Railway had failed to fulfil their engagements with regard to the completion of the line, the section between Digby and Annapolis being unfinished, and according to the report of the engineer, 7th September, 1879, an expenditure at least of $341,649 was necessary to complete the grading only, and the Company in their correspondence plainly admitting their inability to complete the line without pecuniary assistance, it was resolved to demand from the Western Counties Railway Company the retransfer of the Windsor Branch.

Possession accordingly was taken of this branch in December 1879. Arrangements have been made with the Annapolis Railway Company terminable by a month's notice to the effect, that the permanent way and buildings shall be maintained by the Department; the line to be worked by the Annapolis Railway Company, who will receive all monies for the passenger and freight traffic, and who will make all payments excepting for maintenance, which will be met by the Department, to which one-third of the gross receipts will be paid over.

An agreement has been made for the transfer of the Pictou Branch, 52 miles in length to the Halifax and Cape Breton Coal and Railway Company, upon the Company completing the construction of the line from New Glasgow to the Gut of Canso, 82 miles, and likewise establishing a ferry between the main shore and the Island of Cape Breton at the terminus of the Railway. The conditions are further that the Pictou Branch, and the line of the Railway Company from New Glasgow to the Gut of Canso be kept in thorough condition and that daily trains be regularly run.

In default the Railway and Ferry shall become the property of the Nova Scotia Government free from incumbrance, under the like condition of equipping and operating the line on a tariff accepted by the Government of the Dominion. In event of failure on the part of the Nova Scotia Government satisfactorily to work the line, the whole property shall revert to the Dominion Government.

An Act was passed at the last session of Parliament, 42 Vict., cap. 12, amending the original Act 40 Vict., cap. 46, enacting that the transfer of the railway shall be made so soon as the contract for the construction and equipment of the railway shall have been completely performed to the satisfaction of the Nova Scotia Government. The conditions of the transfer moreover exact the continuous operation of the Pictou Branch, Eastern Extension and Ferry, on a tariff approved by the Lieut.-Governor in Council of Nova Scotia. In case of any difference of opinion the point at issue

is to be submitted to the Minister of Railways and Canals, whose decision shall be final.

Arrangements have been made with the Grand Trunk Railway Company for the purchase of that portion of their main line, 124½ miles in length, which extends from Hadlow on the St. Lawrence opposite Quebec, to River du Loup the initial point of the Intercolonial Railway.

The control of this section became indispensable to the successful working of the Intercolonial Railway. The permament way was in bad condition, and it was not possible to maintain the time established for the through Intercolonial Traffic owing to the detentions which were experienced between River du Loup and Quebec. Indeed the interests of the Intercolonial system were throughout affected by this important link in the connection, being under independent management. The necessity for removing these difficulties was early foreseen, and the fact of such a possible transfer did not encourage the Grand Trunk Railway Company to expend more money on maintenance than could be avoided. It was also held to be of primary importance that access should be had to a landing pier on the River St. Lawrence, near Quebec.

Negotiations were accordingly entered into for the purchase of the line between River du Loup and Hadlow, 124½ miles, with running powers to Point Levis, 1¼ miles further east; reciprocal running powers from Hadlow to Chaudière Junction, 6 miles, being granted to the Grand Trunk Railway.

It has been finally agreed that the purchase money shall be $1,500,000. The Company giving a guarantee to maintain the line from Richmond to the Chaudière in the same efficiency as the line to Portland, and that the charges for Passengers and the transport of freight from the West in connection with the Intercolonial Railway shall not exceed the rate per passenger or per ton of freight from the West carried to Portland.

Further it has been stipulated that the purchase money shall be devoted towards obtaining a through and independent Railway connection from Sarnia to Chicago. The course of this line has been specified by the General Manager of the Grand Trunk to run from Port Huron to Flint, and thence to Lansing through the State of Michigan to Valparaiso in Indiana, thence by Ross to Chicago.

This arrangement, while obtaining a railway connection from the River St. Clair, the boundary of the Dominion, to Chicago, entirely under the control of the Grand Trunk Railway, virtually confers the same advantages to the Intercolonial Railway system, owing to its close connection with the Grand Trunk.

This arrangement, having received the sanction of Parliament, was carried out in August, when the Grand Trunk Railway Company gave over to the

Department the line and land with the buildings and appurtenances. The old iron rails on the track remain the property of the Grand Trunk Railway Company and are to be removed and given over to the Company within two years from the date of transfer.

Contracts have been made for this section for 11,000 tons of steel rails, 1,500 tons of which have been already laid, the remainder to be laid during the coming season.

PRINCE EDWARD ISLAND RAILWAY.

LENGTH OF LINE.

	Miles.	
Tignish to Royalty Junction	113½	
Royalty Junction to Mount Stewart	20	
Mount Stewart to Georgetown	21	
		154½

EXTENSIONS.

Royalty Junction to Charlottetown	5	
Mount Stewart to Souris	39	
		44
		198½

The capital account at the close of the year amounted to $3,450,048.75 as against $3,409,919.70 for the year ending 30th June 1878.

The increase of $40,129.05 in the Capital account represents expenditure on extension of the Souris Breakwater.

The working expenses were $223,313.12, an increase of $1,713.63 over the previous year.

The total receipts for the year have been $125,855.91

A decrease as compared with those of 1878 of ..... 10,043·69

The passenger traffic shows a decrease in receipts of $6,542.67, and in the number carried, of 6,382 persons.

Freight, shows a decrease in receipts of $5,301.02, and in tonnage of 255 tons.

The total loss in working the line has been $97,457.21 up to the 30th June 1879. 1034 tons, equivalent to 13 miles, of steel rails have been laid between Charlottetown

and Summerside of which 284 tons were laid during the past fiscal year. The stock of rails on hand, 1,466 tons, is sufficient to maintain the permanent way.

The line has been ballasted where necessary and drainage works executed.

The necessary repairs have been made to stations and the accessory buildings.

The cost of maintenance of way is reported to have been $102,867.57, as against $90,392.87 in the previous year. In accordance with the recommendations of the then General Superintendent of Railways, 1,067½ tons of steel rails and fastenings have been purchased, which are now in store. The cost, delivered on the railway wharf at Charlottetown, is £5,521 18s. 7d. sterling, including inspection and commission.

The casualties were two in number.

The working of the road has been re-organized with a view to the establishment of more efficient and economical management. In the month of May last Mr. McNab was appointed Engineer and Superintendent. The annual saving will be large.

The connection between the Intercolonial Railway system proper and the Railways of Prince Edward Island, although, as a rule accomplished without difficulty in summer, in winter becomes a matter of serious consideration.

In summer the connection is made from Shediac, N.B. and Pictou N.S. The Railway train runs on to the wharf, and the passenger transferred to the steamboat, is landed from Shediac at Summerside and from Pictou at Charlottetown.

The voyage in either case is ordinarily a matter of 4 hours.

As is the case with all tidal ferries through open water of any extent, vessels do not leave port when the weather is unusually threatening. Delay also occasionally takes place from fog and rough weather, but in the main the trip is performed with ease and regularity. The period of open passage varies, but generally it is included between May and December. When winter sets in, serious difficulty is experienced from great floes of northern ice driven by the north east winds. Then the crossing is in part through water studded with masses of floating ice, and floes of ice-fields which make navigation extremely hazardous if not impracticable. These floes move to and fro, sometimes at the rate of 4 miles an hour, especially at the narrow portion of the Strait. This condition is not continuous, at one time the water is entirely open, at another—though rarely—the ice, is jammed and packed sothat for some short period there is no movement.

Hitherto the working of the winter crossing has been undertaken by men who professionally take up the work as the means of livelihood. The boat used is of a peculiar structure sheeted with tin, with a keel and two side runners, the bow has a flattened point, while the stern has the ordinary square form. The crew consists generally of from 6 to 8 men. When the ice is good the boat is pushed over it, but

when there is open water the boat is launched. Should the open space exceed the extent which it is considered prudent to face or when a gale unexpectedly springs up, the passage is not attempted and the boat returns whence it came.

In ordinary weather the boat is propelled through open water spaces, until the floe is reached, it is then once more hauled on the ice, and the passage continued on runners. The passengers on any one trip may be set down as under 12. The men who are passengers, are held to assist in propelling the boat across the ice but in order to prevent accidents, they are fastened to the side of the boat by straps. The females retain their seats, as those who pass over the ice are frequently immersed in water to the depth of one and two feet. These rules are observed on the trips of the ordinary Ferry, but a private boat with a special crew can be obtained by any one who will pay the expense.

The men engaged on the work, are well acquainted with the duties and responsibilities they assume. The risks being great, it is evident that those who undertake to meet them should be marked by firmness, endurance and experience; and above all should have the power of correctly estimating the probabilities of a favourable crossing or otherwise. Though the ordinary passage is from 4 to 6 hours, instances have occurred when the boat has been carried, beyond the point where the landings should be made, and has been drifted up and down for hours and even days, and that loss of life has resulted.

As a rule the crew are careful not to start in bad weather. They can now avail themselves of the telegraph on both sides of the channel, so that much of the risk is lessened. The winter passage is made between the Jourimain Island, near Cape Tourmentine and Cape Traverse Cove, a distance of 9½ miles. Bordage ice of about a mile in extent on either side reduces the ferry to 7½ miles.

Much attention has been given to the solution of the problem, how the emergency can best be met. The construction of the "Northern Light" is a case in point. This vessel, however, being under the control of the Marine and Fisheries Department does not come within the range of this department to discuss. Examinations have been made on the mainland adjoining Cape Tourmentine and Pugwash, likewise at Wallace Bay, also on P. E. Island at Cape Traverse and its vicinity to determine whether any better method of crossing can be suggested.

The impression, based upon the evidence of men with 30 years experience and of many master mariners understanding the difficulties and uncertainty of navigation, is that no steamboat can be constructed to meet the case in the extreme weather which often extends over two months. It is admitted on all sides that the service as it is constituted can be improved, and with those most familiar with the subject, the belief seems general that when a steamboat cannot navigate these waters owing to a jam of pack ice the present mode of crossing is the only one that can be relied

on, and that any effort for improvement should be to make the mode as perfect as possible.

At the same time it is evident that a steamboat, specially constructed to meet the floating ice, has the undoubted merit of prolonging the navigation for some weeks in dangerous waters, and further that it admits of a passage with some comfort at an earlier period than is available at the ordinary close of the winter travel by boat. The improvement of the present system is suggested more particularly to meet the period when the passage by steam is impossible; and when without some such system no communication between the opposite shores can be held.

Cape Tourmentine is 32 miles from Amherst approximately the nearest station of importance, while Cap Traverse on the opposite shore is 11½ miles from the County Line station of the Prince Edward Island Railway.

Both these branches would be easy of construction, and, although in places the work will be moderately heavy, as a whole, it may be described as light.

There is no bridge of importance.

CANALS.

The Canals of the Dominion have been constructed on the following routes of inland navigation:—

1. The River St. Lawrence and Lakes.
2. The River Ottawa.
3. The Rideau Navigation from Ottawa.
4. The Trent Navigation to Kingston.
5. The River Richelieu to Lake Champlain.
6. Rainy River, Fort Frances Canal.
7. St. Peter's Canal, Cape Breton, Nova Scotia.

RIVER ST. LAWRENCE AND LAKES.

The navigation extends from the Straits of Belle Ile, by the River St. Lawrence through Lakes Ontario, Erie, St. Clair and Huron to Duluth, at the head of Lake Superior, a distance of 2,384 statute miles.

Lake Superior is about 600 feet above the highest tidal flow of the at Three Rivers.

The canals on the route are the Lachine, Beauharnois, Cornwall, Farran's Point, Rapid Plat, Galops and Welland. Tneir total length is 73.33 miles; total lockage, 536½ feet; number of locks, 54.

The St. Mary Canal is situated on the United States side of the channel, and was constructed under that Government to avoid the St. Mary Rapid. It connects Lakes Huron and Superior. It is 1.07 miles long, and has 18 feet lockage, with a depth of water on the sills of 12 feet.

A new lock is, however, in course of construction which will have 16 feet on the sills at the lowest range of Lake Superior.

A statement of distances, and sections of navigation, from the Straits of Belle Ile to Duluth, at the head of Lake Superior are appended. (Appendix 2, page 9, table A.)

LACHINE CANAL.

Length of canal	8½	statute miles.
Number of locks	5	
Dimensions of locks	200	feet by 45 feet.
Total rise of lockage	44¾	feet.
Depth of water on sills at two locks	16	"
Depth of water on sills at three locks	9	"
Breadth of canal at bottom	80	"
Breadth of canal at water surface	120	"

This canal extends from the City of Montreal to the Village of Lachine, overcoming the St. Louis Rapids, the first series of rapids which bar the ascent of the River St. Lawrence. They are 986 miles distant from the Straits of Belle-Ile.

This canal was closed on the 5th December, 1878 and opened on the 4th May 1879.

Navigation has been uninterrupted.

All repairs and renewals required for the maintenance of the foot bridges, fender posts, valves and fittings have been executed.

The locks and lock gates are in good order. No. 1 swing bridge at lock No. 2 has been removed and a new bridge constructed.

The St. Gabriel's lock bridge built 13 years ago has been thoroughly repaired and strengthened. The bridges at Cote St. Paul and Lachine with fourteen stationary and four small swing bridges have been refloored with 3in. plank.

The new regulating weir at Lock 2 has been completed and provided with a crossing bridge.

Of the remaining weirs, Nos. 3 and 4 alone require any special repairs.

About 200 additional snubbing posts have been provided at convenient points along the line of the canal and above the Lachine lock.

The wharves and basins Nos. 1 and 2 and at St. Gabriel are in good order.

The five sheds at basin No. 2 are old. The timber uprights are to some extent decayed at the base and require splicing with new timber to make the structure secure.

Of the eight lock bridge-houses, seven have been almost entirely rebuilt. All have been thoroughly painted and are now in good order.

The dwelling houses, 13 in number, furnished to canal men entitled to lodgings have been repaired and are now in fair tenantable condition.

The roads diverted on account of the enlargement works, are completed.

During the work of enlargement a large quantity of water escaped through the inside slope of the bank and flooded the swampy lands below. To clear the land so flooded the course of the River St. Pierre has been straightened and deepened, other new off-take drains made and the old ones deepened.

The result has been satisfactory, but the expense has to a great extent increased the total cost of maintenance and repairs. (Appendix 3, page 11.)

New Works.

The locks on the enlarged canal will be 270 feet between gate quoins and 45 feet wide at bottom.

There are two locks between the Harbour of Montreal and Wellington Bridges; lock one at the harbour entrance, and lock two at the Mill Street crossing, having a depth of 18 feet on the sills. The canal with its basins between those two points will have a depth of 19 feet. The remaining three locks at St. Gabriel, Côte St. Paul, and Lachine will have a depth of 14 feet on the sills. All permanent structures have their foundations so placed that the prism of the canal may be eventually deepened to 15 feet without disturbing them, should the additional two feet in depth be held desirable.

The two lower locks are connected by a basin 540 feet long with an average width of 260 feet. The basin known as No. 2 Basin has been enlarged at its south-west end. Wellington Basin communicates with Basin No. 2 and extends to St. Etienne Street, Point St. Charles. It is 1,210 feet long and 225 feet wide. A second basin is projected of the same length and depth and 240 feet wide, parallel to it.

From below Wellington Bridge to Côte St. Paul Lock, the new canal will have an average width of 200 feet, and from that lock to Lachine the average width will be 150 feet.

The new locks are located adjoining the old locks as independent structures, and hereafter the canal will be navigable through the double range of locks with double entrances at Montreal and at Lachine.

The works under contract including Earthwork, Lock, Bridge and other masonry may be described as generally completed and ready to receive the different superstructures, with the exception of the formation of the new entrance and harbour at Lachine. The length of pier at Lachine constructed during the fiscal year is 1780 feet.

Two new structures were erected: one situated at the head of the old and new No. 2 Lock spanning both of them. The second is situated above the new Wellington Basin, nearly on the line of Wellington Street, the most important on the Canal from the number of vehicles and the great traffic constantly passing over it. These bridges were completed 4th May 1879.

The old bridge at this point was constructed by the Grand Trunk Railway, and accommodated the Railway and Street traffic. But so much delay and inconvenience arose from this arrangement, that it was deemed advisable to construct separate bridges. The railway bridge is placed on the old site, and the street bridge a little to the westward.

The abutments and piers were constructed at the expense of the Department, the superstructure at the cost of the Company.

The railway bridge is wholly of iron.

The entrance on the city side to the passenger bridge was obtained by filling up the old Wood Basin.

These two bridges have provided all the accommodation called for. (Appendix 3, page 15.)

I feel it my duty to notice the loss sustained by the Department in the death of Mr. Sippell, who was nearly 27 years in the service. For much of this time, as Engineer in charge of the Eastern System of Canals, he honourably and efficiently

performed the duties entrusted him. His death took place in Montreal 26th September 1879, at which date he was engaged on the works.

BEAUHARNOIS CANAL.

Length of canal	11¼ statute miles.
Number of locks	9
Dimensions of locks	200 feet by 45 feet.
Total rise of lockage	82½ feet.
Depth of water on sills	9 "
Breadth of canal on bottom	80 "
Breadth of canal at water surface	120 "

This canal commences on the south side of the St. Lawrence, 15¼ miles from the head of the Lachine Canal. It connects Lakes St. Louis and St. Francis, and avoids the three rapids known respectively as the "Cascades," "Cedars," and "Coteau."

This canal closed on the 6th December, 1878, and opened on the 1st May, 1879.

General repairs have been executed on the lower gates of Lock No. 14. The upper gates of Locks 6 and 7, on both gates of Lock 8, and on the foot bridges of Locks 6 and 10.

New chains have been supplied to the lower gates of Lock 9, and a new valve to the lower gate of Lock 12.

The sill of No. 14 Lock has been repaired, bolted and planked. The floor of lower recess Lock 13 renewed, and the walls of all locks pointed with cement.

The bridge at Lock 10 has been renewed, and those at Locks 7, 8, 10, 12, St. Timothy and Valleyfield repaired.

All ferry scows and boats have been put in good order. Extensive repairs and additions have been made to the lockmaster's and lock dwelling houses.

The banks, walls, wharves, ditches, culverts, &c., have been put in good order and leaks in the dam at Isle aux Chats staunched. (Appendix 3, page 19.)

CORNWALL CANAL.

Length of canal	11½ statute miles.
Number of locks	7
Dimensions of locks	200 feet by 55 feet.
Total rise of lockage	48 feet.
Depth of water on sills	9 "
Breadth of canal at bottom	100 "
Breadth of canal at water surface	150 "

From the head of the Beauharnois to the foot of the Cornwall Canal there is a navigable reach through Lake St. Francis of 32¾ miles.

The Cornwall Canal surmounts the Long Sault Rapids.

The canal was closed from the 8th December, 1878, to the 2nd May 1879.

The lower gates of Lock No. 16 and half the swing bridge at Cornwall, broken by the steamer "Adventure," have been rebuilt.

The embankment and slope walls have been raised, and gates, weirs, bridges and houses repaired. (Appendix 5, page 32.)

NEW WORKS.

The work for the new enlargement placed under contract consists of the construction of two locks with regulating weir, and the formation of a new lower entrance. Contractors, Messrs. Gordon, Woodward and Chamberlin.

The entrance channel will be south of the present line, and the centre line of t new locks 300 feet from the present centre line. The water level of the Cornwall reach, between Locks Nos. 17 and 18, will be raised two feet, the descent to the level of the St. Lawrence being by the two locks under construction. Entrance piers will be likewise made.

The works have been satisfactorily carried on.

WILLIAMSBURGH CANALS.

The Farran's Point, Rapid Plat and Galops Canals are collectively known as the Williamsburgh Canals.

FARRAN'S POINT CANAL.

Length of canal	¾ mile.
Number of locks	1 "
Dimensions of lock	200 feet by 45 feet.
Total rise of lockage	4 feet.
Depth of water on sills	9 "
Breadth of canal at bottom	50 "
Breadth of canal at water surface	90 "

From the head of the Cornwall Canal to the foot of Farran's Point Canal, the distance on the St. Lawrence is 5 miles. This canal enables vessels ascending the river to avoid the Farran's Point Rapids. Descending vessels run the rapids with ease and safety.

It was closed 12th December, 1878; opened 28th April, 1879.

No interruption occurred to navigation.

Lock gates were repaired.

The banks are in good condition. (Appendix 6, page 33.)

RAPID PLAT CANAL.

Length of canal	4 miles.
Number of locks	2 "
Dimensions of locks	200 feet by 45 feet.
Total rise of lockage	11½ feet.
Depth of water on sills	9 "
Breadth of canal at bottom	50 "
Breadth of canal at surface of water	90 "

From the head of Farran's Point Canal to the foot of Rapid Plat Canal there is a navigable stretch of 10½ miles. This canal is taken by ascending vessels to avoid the Rapid Plat Rapids. Descending vessels run the rapids safely.

Closed 12th December, 1878; opened 28th April, 1879.

Navigation was uninterrupted.

The gates and banks have been repaired. (Appendix 6, page 33.)

GALOPS CANAL.

Length of canal	7⅝ miles.
Number of locks	3
Dimensions of locks	200 feet by 45 feet.
Total rise of lockage	15¾ feet.
Depth of water on sills	9 "
Breadth of canal at bottom	50 "
Breadth of canal at surface of water	90 "

From the head of Rapid Plat Canal to the foot of the Galops Canal, the St. Lawrence is navigable for 4½ miles. This canal overcomes the rapids at Point aux Iroquois, Point Cardinal, and the Galops.

Closed 12th December, 1878; opened 28th April, 1879.

Traffic was uninterrupted.

The piers, swing-bridges, banks and booms were repaired. (Appendix 6, page 33.)

CHAIN TUG SERVICE.

A chain tug 112 feet long, 27 feet beam and 7½ feet hold, has been constructed for the purpose of examining the rapids of the St. Lawrence, and hereafter to be used for drilling in the work of deepening the channel of the Galops. Likewise with the design of testing a system of submerged chain towing.

It has been given over to Messrs. Davis & Sons, the contractors for deepening the Galops Rapids, in conformity with the conditions of their contract dated 5th August, 1879.

WELLAND CANAL.

This canal connects Lakes Ontario and Erie.

MAIN LINE FROM LAKE ONTARIO TO LAKE ERIE.

Length of canal	27 miles and 1,099 feet
Pairs of guard gates	3
Number of lift locks	27
Dimensions of locks	2 locks of 200 feet by 45 feet. 24 " 150 " 26½ 1 " 230 " 45
Total rise of lockage	330 feet.
Depth of water on sills	10½ "

RIVER WELLAND BRANCHES.

Length of canal—Port Robinson Cut to River Welland	2,622 feet
" From Welland Canal to River Welland, *via* lock at Aqueduct	300 "
" Chippewa Cut to River Niagara	1,020 "
Number of locks—One at Aqueduct and one at Port Robinson	2
Dimensions of locks	150 by 26½ feet.
Total lockage from Welland Canal down to River Welland.	17 feet.
Depth of water on sills	9 feet 10 inches.

GRAND RIVER FEEDER.

Length of canal	21 miles.
Number of locks	2
Dimensions of locks	1 of 150 by 26½ feet. 1 of 200 by 45 "
Total rise of lockage	7 to 8 feet.
Depth of water on sills	10½ feet.

PORT MAITLAND BRANCH

Length of canal	1⅝ miles
Number of locks	1
Dimensions of lock	185 by 35 feet.
Total rise of lockage	8½ feet.
Depth of water on sills	11 "

The canal was closed 14th December, 1878 ; opened 5th May, 1879.

Navigation was interrupted on three occasions. On 11th November 1878 one of the head gates of Lock No. 12 was broken out, and the other was likewise damaged on the 15th of the same month, causing a delay in each case of about 12 hours.

On the 10th September, owing to a flood caused by heavy rain which lasted 3 days, great damage was done to the works in various places.

The waste weir at Port Dalhousie was also carried away, and the large level above Lock No. 1 drained into Lake Ontario. The navigation was interrupted for 10 days while the damage was being repaired.

The gates have been repaired at Locks Nos. 3, 6, 7, 8, 9, 10, 11, 14, 15, 16, 19, 20, 21, 22, 23, 24 and 25, at the Guard Lock, and Port Colborne.

New gates were supplied to Locks 2, 5, 12, 13, 17, 18.

The waste weirs at Locks 24 and 25 were repaired.

Repairs have been executed on the swing-bridge at Port Dalhousie, Lock 2, and Port Colborne, and a new bridge built at Marshville.

The Lock-tender's houses have been repaired, at locks Nos. 10, 11, 15, 20 and 23, also a kitchen built, and a cistern put in at No. 20.

The floats were repaired at Port Dalhousie, Lock No. 4, Hydraulic Race and Port Colborne.

Two new stationary bridges were built over the waste weir on south side of Grand River.

Stationary bridges at Locks Nos. 3, 4, 5, 7 and 15 were repaired.

The old bridges of the Guard Lock and at Port Colborne have been removed.

At the Hydraulic Race, an embankment of 300 feet long, 10 feet wide, and 9 feet high was built below the aqueduct to prevent floods.

The Aqueduct was caulked and repaired.

On the Hydraulic race division, the bottom of the canal and locks generally were cleaned out, and bars removed.

On the Guard Lock division, the levels and locks from 20 to 26 were cleaned out and stones and bars removed.

The banks at Locks 23 and 24 and at the waste weir at Higgins, have been extensively repaired.

The tow path and the embankment below Dunnville, have been repaired.

A new scow has been built, and a ferry established at Port Colborne. The harbour ferry boat has also been repaired.

The number of gates in reserve is sufficient to meet any emergency likely to arise.

The works generally are in a good state of repair.

(Appendix 7, page 34.)

NEW WORKS.

The scheme of the new work is the ultimate establishment of a navigation with locks 270 feet long, 45 feet wide, with 14 feet depth on the sills, the canal having a width of 100 feet at bottom, with a depth of 15 feet, the water supply to be obtained from Lake Erie.

For the present, the depth of the canal between the locks is 13 feet. The locks, which can hereafter be raised with moderate expense, are at present constructed with 12 feet on the sills.

The entrance and other locks not coming within this category are constructed with a depth of 14 feet.

The present line of canal is 27½ miles; the new line of canal will be 26¾ miles.

The present entrance, Port Dalhousie, has been retained as the outlet, that harbour being easy of access, and affording good shelter to vessels, and being unobstructed by reefs and shoals. Moreover, except in extreme weather it is open throughout the winter.

An entirely new line of location has been followed from Port Dalhousie to Allanburgh, a distance of 11⅛ miles. From Allanburgh upwards, the old canal is being widened and deepened.

The difference of level between Lakes Ontario and Erie can only be generally stated, as the influence causing the variation in the height of water is not identical in character and in time on the two lakes. The mean has been determined as 326¾

feet. This height is overcome on the present canal by 25 locks. On the enlarged canal there will be 24 locks.

The new entrance lock at Port Dalhousie is on the eastern bank of the creek.

Lock No. 2 is situated at the mouth of May's Ravine. This and the succeeding Locks Nos. 3, 4 and 5 constitute a group by which the level of the lower plateau is attained. The interval between the locks is about 1,200 feet.

The distance from Lock No. 5 to Lock No. 6 is about 4,000 feet. Locks Nos. 6 and 7 are about 1,000 feet apart.

Locks Nos. 8 and 9 are near the crossing of the Queenstown Road at the St. Catharines' Cemetery.

All the locks up to No. 9 have 14 feet lift.

From Lock No. 4 to Lock No. 11 there is a continuous straight line 4·4 miles in length. Between Locks Nos. 11 and 12 the canal deflects 20 degrees to the west. The succeeding Locks Nos. 12, 13, 14, 15 and 16 are on the same straight line, which is about 4,500 feet in length. After Lock No. 11 the intervals between the locks have been determined so as to admit two of the largest vessels on the route passing with ease.

The rise from Lock No. 11 to Lock No. 25, which takes place in a distance of 14,100 feet, is 196 feet.

The location follows the Niagara escarpment to the ravine behind Thorold, and is taken through the dividing ridge to Beaver-dam valley.

The connection of the new line with the old canal is made at Allanburgh to the north of the present lock and Guard Gates.

Between the locks, where practicable, extensive reserve basins, communicating with each other by weirs, are in course of construction.

The work has been accepted, and final estimates paid on the contracts 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and 13.

The following contracts remain in force:—

Section 1, includes the works for the extension of Port Dalhousie Harbour and for the enlargement of the present waste-weir and the construction of Lock No. 1.

Contractor, Mr. Patrick Larkin.

Section 12, extends 2,115 feet, and includes the channel and basins on the north-western side, the construction of two Locks, Nos 17 and 18, two regulating weirs

and two towing path bridges. It also includes the work for the diversion of the Great Western Railway, including a tunnel under the canal.

Contractors, Messrs. Lobb, Dawson & Murray.

Section 14, 1,775 feet long, includes construction of Locks Nos. 21 and 22, two regulating weirs, and three towing path bridges, and the formation of channels and basins on the north side of canal.

Contractor, Mr. John Brown.*

Section 15, 2,050 feet in length, to the east of the town of Thorold, includes the formation of the canal, cutting a supply race, forming a new water course for the creek, and the excavation necessary to move the track of the Welland Railway to the westward, the construction of two locks, Nos. 23 and 24, two weirs, piers and abutments for a road bridge with retaining walls.

Contractor, Mr. John Brown.*

Section 16, 3,500 feet long, consists chiefly of clay and rock excavation and the construction of a syphon culvert for Ten Mile Creek, with slope and retaining walls.

Contractor, Mr. John Brown.*

Sections 17 *and* 18, 7,265 feet in length, between Thorold and Allanburgh, include the formation of canal, the construction of a lift-lock No. 25, building abutments and piers for two bridges, the pier and abutments for a bridge to carry the line of the Welland Railway, the works connected with a set of guard gates, two arched culverts, a regulating weir and raceway, towing path and bridges.

Contractor, Mr. Robert J. Campbell.

Sections 19 *and* 20, one mile and a quarter in length, between Thorold and Allanburgh, include the enlargement of the canal with the formation of two arched culverts, the construction of abutments and piers for a swing-bridge at the road crossing, building a retaining wall, the extension of the north wings of the guard lock to form the abutments for a swing bridge and the construction of a supply weir.

Contractors, Messrs. Haney, Haney & Parry.

Sections 21 *and* 22, one and nine-tenths miles in length, between Allanburgh and Port Robinson and known as the "Deep Cut." They include lowering of the bottom, to three feet below the level of the mitre sill of Port Colborne Lock and an increase of width chiefly on the west side.

Contractors, 1. Messrs. R. Mitchell & Co.

" 2. Mr. John Brown.*

*Mr. John Brown died 28th June, 1876.

Section 23, about one mile in length, includes deepening and widening canal and placing a set of guard gates near the north end of the section.

Contractor, Mr. John Carroll.

Section 24, one mile in length, consists chiefly in widening and deepening canal.

Contractor, Mr. Charles F. Dunbar.

Section 25, embraces widening and deepening canal, &c., for one mile, the construction of piers and abutments of a new bridge for the Quaker road.

Contractors, Messrs. Ferguson, Mitchell & Symmes.

Section 26, consists principally in widening and deepening the canal for a mile.

Contractor, Mr. John Carroll.

Section 27, about 5,600 feet in length, includes the enlargement of the canal in the Town of Welland, the construction of an aqueduct over the River Welland, repairing the greater part of the present lift-lock, removing the abutments of road bridge.

Contractors, Messrs. Hunter, Murray & Cleveland.

Section, 28, in the aggregate about 4,950 feet in length, embraces the widening and deepening of the canal and the construction of piers and abutments for a swing-bridge, and the removal of the present swing-bridge.

Contractors, Messrs. Ferguson, Mitchell and Symmes.

Sections 29, 30, 31 *and* 32, between the Junction and Ramey's Bend, include three and three quarter miles of widening the canal about fifty feet on the west bank, and lowering the present bottom from two to three feet throughout.

Contractors, Section 29, Messrs. R. Mitchell & Co.

" " 30, " John Ferguson & Co.

" " 31, 32, Mr. John Brown.*

Section 33, includes the widening and the deepening of the channel for a distance of one mile, the building of side walls and works for drainage. The removal of material on the southern part of Section 32, together with the construction of an inverted syphon culvert for the waters of Lyon's Creek.

Contractors, Messrs. Bannermann & Co.

* Mr. John Brown died 28th June, 1876.

Section 34 extends for a distance of nearly one mile, and includes the widening and deepening of the canal, the construction of abutments and piers for a road bridge, building side walls, cutting back ditches and grading towing path.

Contractors, Messrs. F. B. McNamee & Co.

Section 35. About 2,350 feet in length, includes the widening and deepening of the present canal, constructing a new entrance lock with extended wings to form bridge piers and abutments, cutting a raceway and building a weir, constructing road bridges and grading towing path and roads.

Contractors. Messrs. Hunter, Murray & Cleveland.

Section 36 embraces the improvement of Port Colborne Harbour, the Lake Erie entrance, including the extension of the west pier about four hundred feet into the Lake and deepening the entrance channel.

Contractor, Mr. Charles F. Dunbar.

The canal is crossed by the Welland Railway and the Great Western Railway. The Welland Railway will cross the new line of canal by a swing-bridge south of Thorold. A diversion of over a mile of railway has been made to attain this result.

The Great Western Railway will pass under the canal by a tunnel 750 feet in length, situated to the north-east of Thorold, from which it is distant about 1¼ miles, and 1,850 feet to the south of the present crossing. The principle of crossing by a swing-bridge, being considered against the interests of both Canal and Railway, it was decided to pass under the canal by tunnel. The line of railway has been diverted to the extent of 1½ miles, to obtain a fit location.

All the lock and weir walls to Allanburgh are completed. Lock No. 25 and the walls for the guard gates to the south of it are advancing towards completion.

The Lake Erie entrance tidal lock is in progress.

The race ways and weirs at Port Colborne are well under progress.

The waste weir under construction at Port Dalhousie at the first level above Lake Ontario to replace the work carried away by the storm of the 10th September 1878, will be immediately placed under contract.

The excavation of the Canal to Allanburgh is rapidly advancing toward completion.

Owing to the death of Mr. Ambrose Clarke, contractor for Sections 33 and 34 including almost two miles of work to the north of Port Colborne, the work has been somewhat delayed. It includes the widening and deepening of the Canal—th construction of a syphon culvert at Lyons-Creek—the building of side walls and drainage ditches.

The culvert is almost completed, but the excavation is in a backward state. A proposition was made for the Department to resume the work which was accepted. The work has been let by public tender—No. 33 Section to Messrs. Bannermann & Co., No. 34 Section to Messrs. F. B. McNamee & Co., and the contracts signed.

The works of enlargement between Allanburgh and near Welland, and from the Junction to Ramey's Bend are well advanced towards completion.

Navigation is in no way impeded by these works.

The coffer dam for the southern half of the Welland aqueduct has been placed in position and the requisite excavation is being carried on. The wall connecting the old aqueduct has been constructed.

The foundations of the new Lock at Welland have been laid, and the lock walls are now being carried on. The bridge piers and abutments at Welland will shortly be completed.

BURLINGTON BAY CANAL.

Length of canal.....	½ mile.
No locks on this canal.	
Average breadth between piers.....	138 feet.
Narrowest " " "	108 "

This canal is cut through the sand bar which separates Burlington Bay from Lake Ontario, and is navigable for vessels drawing ten feet of water. It gives access to the Port of Hamilton, and to the Town of Dundas, *viâ* the Desjardins Canal.

This canal closed on the 29th December 1878 and opened 16th April 1879.

1100 feet of the superstructure of the north west pier was burned to the water's edge by two fires, one of which occurred on the 20th September, 1878, the second on the 27th May, 1879.

A contract dated 25th September, 1879, has been entered into with Messrs. D. McDermid and John S. Hendrie for rebuilding the superstructure of a portion of the north pier and other general repairs.

Slight repairs have been executed to portions of the works.

The ferry has been supplied with a new small boat. (Appendix 8, page 40.)

FORT FRANCES CANAL.

The design was to construct a canal 800 feet in length and 36½ feet in width at the narrowest part, with a lock 200 feet in length by 36 feet in width, having 7 feet

depth on the sills with entrance guide piers. The ordinary lift of the lock to be 24½ feet.

It is located near the outlet of Rainy Lake, on the north side of the Grand Falls, being 237 miles from Thunder Bay, Lake Superior, and 215 miles east of Winnipeg.

The work was not resumed during the last fiscal year. All outstanding accounts were called in and, generally speaking, settled.

MONTREAL, OTTAWA AND KINGSTON.

This route extends from the Harbour of Montreal to the Port of Kingston, passing through the Lachine Canal, the navigable sections of the Lower River Ottawa and the Ottawa Canals, to the City of Ottawa, thence by the River Rideau and Canal navigation to Kingston on Lake Ontario—a total navigation of 246¼ miles.

After leaving the Lachine Canal, the works constructed to overcome the difficulties of navigation are:—

The St. Anne's Lock;
Carillon Canal;
Chute à Blondeau Canal;
Grenville Canal;
Rideau Navigation;

The total lockage not including the lockage of the Lachine Canal, is 533½ feet—(356½ rise, 177 fall)—and the number of locks 59.

The following table exhibits the intermediate distances from Montreal Harbour:—

Sections of Navigation.	Intermediate distance.	Total distance from Montreal.
The Lachine Canal	8½	.....
From Lachine Canal to St. Anne's Lock	15	23½
St. Anne's Lock and Piers	⅛	23⅝
From St. Anne's Lock to Carillon Canal	27	50⅝
The Carillon Canal	2⅛	52¾
From Carillon Canal to Chute à Blondeau	4	56¾
Chute à Blondeau Canal	⅛	56⅞
From Chute à Blondeau Canal to Grenville Canal	1⅛	58¼
The Grenville Canal	5¾	64
From the Grenville Canal to entrance Rideau Navigation	56	120
Rideau Navigation, ending at Kingston	126¼	246¼

ST. ANNE'S LOCK.

Length of canal	⅛ mile.
Number of locks	1
Dimensions of lock	190 feet by 45 feet.
Total rise of lockage	3 "
Depth of water on sills	6 feet at low water. 7 feet at ordinary high water.

This work, with guide piers above and below, surmounts the St. Anne's Rapids between Ile Perrot and the head of the Island of Montreal, at the outlet of that portion of the River Ottawa which forms the Lake of Two Mountains, 23½ miles from Montreal Harbour.

This lock was closed the 6th December, 1878, and opened the 21st April 1879.

Navigation was uninterrupted.

The wing dam was repaired.

Six booms made and moored between the guide piers above the lock.

The long pier below the lock was repaired.

The lock walls pointed with cement and grouted.

A shed adjoining the lock was purchased for a tool house and workshop. (Appendix 3, page 21.)

NEW WORKS.

The deepening of the channel from the lower end of the new cut to deep water, near Ile Perrot, has been completed by the contractors Messrs. Hickler & Co.

The channel is now 120 feet wide and about 10½ feet deep at low water.

The contract for a new lock and canal adjoining the present lock has been awarded to Messrs. Baskerville, O'Connor and Cassidy. (Appendix 3, page 21.)

THE CARILLON CANAL.

Length of canal	2⅛ miles.
Number of locks	3 (two ascending—one descending.)
Dimensions of locks :—Lift	
Lock, No. 1	128 feet x 32½ feet.
Lift Lock, No. 2	126½ " x 32½ "
Guard Lock, No. 3	126½ " x 32½ "

32

Total lockage.....	34¾ feet.	21¾ upwards. 13 downwards.
Depth of water on sills.....	6 "	
Breadth of canal at bottom.....	30 "	
Breadth of canal at water surface...	50 "	

This canal overcomes the Carillon Rapids.

From St. Anne's Lock to the foot of the Carillon Canal, there is a navigable stretch of twenty-seven miles, through the Lake of Two Mountains and the River Ottawa.

Closed 6th September, 1878; opened 1st May, 1879.

At Locks 1, 2, 3 the gates have been taken down and repaired. The lock walls have been pointed and grouted.

The North River Dam has been rebuilt.

The usual repairs have been made. (Appendix 4, page 28.)

CHUTE A BLONDEAU CANAL.

Length of canal	½ of a mile.
Number of locks.....	1
Dimensions of lock	130⅝ feet x 32⅝ feet at upper end and 36⅓ feet at lower end.
Total rise of lockage	3¾ feet.
Depth of water on sills.....	6 "
Breadth of canal at water surface	30 "
Breadth of canal at bottom	30 "

Between the Carillon and Chute à Blondeau Canals there is a navigable stretch of four miles. The canal is cut through solid rock, and has only one lock. It is only used by vessels going up the river; all down vessels run the rapids.

Closed 6th September, 1878; opened 1st May, 1879.

The entrances of lock 4 were cleaned by diver and hand dredging, and the obstructions which accumulate annually were removed. General repairs were executed. (Appendix 4, page 29.)

NEW WORKS.

The new works consist of a dam across the River Ottawa. ¾ mile above the village of Carillon 1,800 ft. in length with a timber slide, 600 feet long, having

a floored channel of the standard width of 26 feet fitted with stop logs to regulate the water level; also a waste weir and a bulkhead with moveable stop logs.

The canal is ¾ mile long with two locks 200 feet by 45 feet, with 9 feet of water on the sills, the entrance being at Carillon.

The work in question was awarded to Messrs R. P. Cooke & Co., and commenced in the summer of 1873. It was carried on until the spring of 1877, when it was discontinued.

The condition of the work was fully set forth in the Report of 1878.

During the season of 1878, the work was taken possession of by the Department and a settlement made with the contractors.

Tenders for the completion of the work were called for and received in August, 1878.

The lowest tender was that of Messrs. McNamee & Co., of Montreal which was accepted. The Government having subsequently decided not to prosecute the work at that time, notified Messrs. McNamee to that effect, and returned their deposit money. It was afterwards determined to complete the contract and Messrs. McNamee & Co. were communicated with; when, in a letter dated 28th May, 1879, they withdrew their offer in consequence of the Government not having accepted their tender within reasonable time; adding that the works had been considerably damaged since last fall, and could not be completed for the money mentioned in their tender. The consideration of the Department was also called to the claim advanced by Messrs. Cooke & Co., for damages on account of their contract having been cancelled. A definite proposition was likewise made by that firm to be reinstated in their contract. They agreed to withdraw all claim against the Government, and to associate themselves with men of capital and experience who would give ample security for the fulfilment of their engagements. They represented that the lowest tenderers, Messrs. McNamee & Co., had agreed to act with them and that they had arranged to transfer to Messrs. McNamee & Co., the work of the dam and slide, while they themselves would retain the work of the canal and locks.

This proposition was entertained and the contract awarded on the original prices of the contract of 1873; being $2,487 less than the next lowest tender to Messrs. McNamee & Co. for the dam and slide to Messrs. McNamee & Co.; and for the canal and locks to Messrs. R. P. Cooke & Co., the usual security deposit being taken.

The work on both contracts is being steadily and satisfactorily prosecuted.

(Appendix 4, page 29.)

GRENVILLE CANAL.

Length of canal			5¾ miles.
Number of locks			7
Dimensions of locks—Lift Lock No. 5	Combined	130⅜ feet	x 32½ feet.
" No. 6		128⅛ "	x 32½ "
" No. 7	"	128⅛ "	x 31⅝ "
" No. 8		128 "	x 32½ "
Locks Nos. 9 and 10, and Guard Lock No. 11		200 "	x 45 "
Total rise of lockage		45¾ "	
Depth of water on sills		6 "	
Depth of water on sills of Locks Nos. 9, 10 and 11.		9 "	
Breadth of canal at bottom		40 to 50 feet.	
Breadth of canal at surface of water		50 to 80 "	

From the head of the Chute à Blondeau Canal to the foot of the Grenville Canal there is navigable reach of 1⅜ miles.

This canal is situated about 56 miles below the city of Ottawa, and avoids the Long Sault Rapids.

Closed 6th September, 1878; opened 5th May, 1879.

A break in the south bank near the old By-wash section No. 2 was promptly repaired.

The middle sill of Locks 7 and 8, and the upper sill of Lock 8, gave way in August 1878. Damages have been made good. (Appendix 4, page 29.)

NEW WORKS.

The work of improvement was commenced with the design of rebuilding three locks (Nos. 9, 10 and 11) 180 feet by 40 feet in the chamber, with 6 feet on the sills; further to deepen the canal proper to 6 feet.

In July, 1871, this work was altered in conformity with the recommendation of the Canal Commission, 24th February, 1871.

In 1873 the location of new locks, Nos. 9 and 10, which had been made on the site of the old locks, was altered, and the new locks were established 40 feet south of the old locks, so that the navigation should not be interrupted. Of this work, Locks 9, 10, 11 are completed. Nos. 5 and 6 and Nos. 7 and 8 remain to be placed under contract.

The present enlargement of the canal contemplates the construction of locks 200 feet between the gates, and 45 feet between the quoins, with 9 feet of water on the sills, the main channel having a depth of 10 feet, and a mean width at bottom of 40 feet,

varying at the surface from 50 to 80 feet, with crossing basins constructed at approximate intervals of half a mile.

During the winter 1878-9 the excavation was carried on from the entrance at Grenville to Lock 10—between Locks 10 and 9 and at the meeting basins half a mile above Dewars Mills Basin. Some rubble wall was built between Locks 10 and 9 to protect the tow path.

Work was suspended for the summer on the 5th May. (Appendix 4, page 30).

CULBUTE CANAL.

This canal is west of the route between Montreal and Kingston, being 107 miles above the entrance to the Rideau navigation at Ottawa. Above the City of Ottawa the following rapids are met:—The Chaudière, the Duchêne, the Chats, the Chenaux, —popularly called the "Snows"—the Portage du Fort, and the Grand Calumet.

The canal is designed to overcome the Culbute and L'Islet Rapids, and is situated in the north channel of the Ottawa. It consists of two combined locks, each 200 feet in length and 45 feet in width, with six feet of water on the sills, having a total lift of from 18 to 20 feet. The dams have a total length of 520 feet. It opens a navigable reach of 80 miles between Bryson, at the head of Grand Calumet Falls, and the foot of Des Joachims Rapids.

Channel between Bryson and the Lower entrance of the Culbute Canal.

The work of excavation commenced on the 28th August was continued until the 21st September, when a sudden rise of the water compelled its suspension.

The dams at the Grand Calumet and Flat Rapids remain to be completed. (Appendix 4, page 31.)

RIDEAU NAVIGATION.

The Rideau navigation connects the River Ottawa at the City of Ottawa with the eastern end of Lake Ontario at Kingston.

Length of navigation	126¼ miles.
Number of locks going from Ottawa to Kingston	33 ascending. 14 descending.
Total lockage 446¼ feet.	282¼ rise, and 164 fall. at high water.
Dimensions of locks	134 by 33 feet.
Depth of water on sills, 5 feet; navigable depth through the several canals	4½ feet.
Breadth of canals at bottom	60 feet in earth. 54 feet in rock.
" at surface of water	80 feet in earth.

The following table gives the distances of the intermediate stations between the Cities of Ottawa and Kingston :—

No. of Station.	Name of Station.	Distance from Ottawa.	Locks.		Dams.			Length of Artificial Canal at each Station, in miles.
			No.	Lift at Low Water.	No.	Length.	Height.	
		Miles.		Rise Ft. In.		Feet.	Feet.	
1	Ottawa	0	8	82 0	3	230 1,320 1,616	18 33 14	4·00
2	Hartwell's	4¼	2	22 0	.....	100	28	
3	Hogsback	5½	2	13 6	1	320	60	
4	Black Rapids	9½	1	10 0	1	300	12	0·13
5	Long Island	14¾	3	27 0	3	850	68	0·13
6	Burritt's	40¾	1	10 6	1	240	14	1·50
7	Nicholson	43¾	2	15 2	1	500	9	0·50
8	Clowes	44½	1	10 6	1	481	16	0·05
9	Merrickville	46¾	3	25 0	1	150	6	0·33
10	Maitland	55	1	4 9	1	270	8	0·12
11	Edmunds	59½	1	10 10	1	343	8	0·06
12	Old Slys	60½	2	15 6	1	250	20	0·25
13	Smith's Falls	61½	4	33 9	2	600	24	0·13
14	First Rapids or Poonamalie	64	1	7 9	1	260	5	1·25
15	Narrows	83¼	1	4 0	1	600	9	0·06
	Total rise at low water	.....	.....	292 3				
				Fall.				
16	Isthmus	87½	1	4 0	.....	.....	.....	1·25
17	Chaffey's	92	1	13 6	.....	.....	.....	0·13
18	Davis	94¼	1	9 0	1	300	15	0·06
19	Jones' Falls	97½	4	60 0	1	300	60	0·25
20	Brewer's Upper Mills	108¼	2	19 0	1	200	20	1·75
21	do Lower Mills	110	1	14 2	1	200	12	4·25
22	Kingston Mills	120½	4	46 8	1	6,042	14	0·25
23	Kingston	126¼	.....	.....	.....	.....	.....	.....
	Total fall at low water	.....	.....	165 4	.....	.....	.....	.....
	Total	.....	47	.....	24	15,472	.....	16·46

The navigation closed at Kingston Mills 30th November, 1878, and opened 5th May, 1879.

At Ottawa navigation closed the 4th December, 1878, and opened 5th May, 1879.

The summit level of the navigation is at upper Lake Rideau, but several of the descending reaches are also supplied by the waters which have been made tributary to them. The following description gives the sources of supply.

On leaving the summit, the route towards Ottawa passes by the River Rideau and towards Kingston by the River Cataraqui. The whole duty of keeping the navigation to its level is thrown upon the reserves, given in detail below.

They may be divided into three systems, viz:

1. The summit level supplied by Lake Wolf system. 2. The eastern descending level to Ottawa supplied by River Tay system, discharging into Lake Rideau. 3. The south-west descending level to Kingston, supplied by Lake Devil system, discharging into Lake Mud.

Lake Buck system, discharging into Lake Mosquito, and thence into Lakes Mud and Indian.

Lake Rock system, discharging into Lake Openacon.

Lake Loughboro' system, discharging into Lake Openacon.

Round Tail system, discharging into Lake Cranberry.

The following adjacent waters are totally distinct from the Rideau navigation:

The River Mississipi, which discharges into the River Ottawa, in the Township of Fitzroy.

The River Napanee, Mill Haven Creek and Lake Collins, which discharge into Lake Ontario.

Navigation was uninterrupted and the water levels well maintained.

Repairs were made to the fences and Lockmaster's house at Merrickville.

Repairs were made to the gates at Lower Brewers and Whitefish, and three pairs of lock gates re-sheeted at Ottawa.

Repairs were made to swing bridges at Upper Brewers, Oliver's Ferry Bridge, Maitland's, Beckett's and Manotick.

The Long Bridge over the Bywash at Kingston Mills was repaired.

The Dams at Kingston Mills, Whitefish, Jones' Falls, Maitland's, Burritt's, Black Rapids, Hogsback and Hartwell's have received repair.

New gates were put in at Davis, Smith's Falls, Edmunds and Hogsback.

At Lower Brewers, Upper Brewers, Jones' Falls, Chaffey's, Newboro, Smith's Falls, Clowes and Nicholson's, Burritt's, Long Island, Hogsback, Hartwell's and Ottawa, sluices and machinery received repairs.

The locks at Jones' Falls, Narrows, Poonamalie, Old Slys and Ottawa were repaired.

Manholes, chain blocks and bulkheads were put in order at Davis, Chaffey's, Newboro, Poonamalie, Merrickville, Manotick, Long Island, Black Rapids and Hartwell's.

The approaches to swing bridge at Smith's Falls were widened, and the cut above the lock at Edmunds cleaned out. The slips of clay in deep cut at Ottawa have been removed.

The retaining wall on the north side of the basin at Ottawa was rebuilt and sundry repairs to walls round the basin done.

Navigation was interrupted last fall in the channel at Upper Brewers, by the sinking of a barge laden with iron ore. Owing to its non-removal by the owners, the barge and its contents were seized.

The obstruction was removed by a diver.

The ore will be sold by Public Auction towards paying expenses.

(App. 9, page 41.)

TABLE showing the dimensions of the locks on the present canals in the Montreal, Ottawa and Kingston line of navigation; also the size of the largest vessels which may pass through them.

Name of Canal.	Dimensions of Locks.			Dimensions of Vessels.			
	Length.	Breadth.	Depth of water.	Length.	Breadth.	Draught of water when loaded.	Tonnage.
Carillon and Grenville...	128	31½	5½	110	28	5	100
Rideau.....	134	32	5	110	31½	4½	250

RICHELIEU AND LAKE CHAMPLAIN.

This navigation, commencing at Sorel, at the confluence of the Rivers St. Lawrence and Richelieu, forty-six miles below Montreal, and one hundred and fourteen miles above Quebec, continues along the River Richelieu through the St. Ours' Lock to the Basin of Chambly, where it takes the Chambly Canal to St. John's and again follows the River Richelieu to Lake Champlain, of which the Richelieu is an outlet. The distance from Sorel to the Boundary Line is 81 miles.

At Whitehall, the southern end of Lake Champlain, the Champlain Canal is entered, and a connection obtained with the River Hudson, by which the city of New York is directly reached. The distance three hundred and thirty miles is in the territory of the United States.

The following table shows the distances between Sorel and New York:

Sections of Navigation.	Intermediate distance in Miles.	Total distance.
Sorel to St. Ours' Lock		14
St. Ours' Lock to Chambly Canal	32	46
Chambly Canal	12	58
Chambly Canal to Province Line	23	81
Boundary Line to Champlain Canal	111	192
Champlain Canal to Junction with Erie Canal	66	256
Erie Canal from Junction to Albany	7	265
Albany to New York	146	411

ST. OURS' LOCK AND DAM.

Length of canal	⅛ mile.
Number of locks	1
Dimensions of lock	200 feet by 45 feet.
Total rise of lockage	5 feet.
Depth of water on sills	7 feet at low water.
Length of dam in Eastern Channel	300 feet.
" " Western Channel	600 feet.

At St. Ours', fourteen miles from Sorel, the River Richelieu is divided by a small island into two channels The St. Ours' Lock is in the eastern channel.

There is a navigable depth of 7 feet between St. Ours' Lock and Chambly Basin, a distance of thirty-two miles.

Closed 12th December, 1878; opened 23rd April, 1879.

Repairs have been made, to the top of the dam, to the West Anchor Pier and to other piers above and below the lock.

The lock gates, platforms, crabs and working machinery received attention.

The lower gates were raised and adjusted.

A shed was built for the protection of plant and stores.

The Superintendent's house, out buildings and fences were severally repaired. (Appendix 3, page 21.)

RIVER RICHELIEU.

From 1st July 1878 to the close of the navigation, Steam Dredge No. 1 was employed excavating the approaches, from the deep water channel, already completed, to the wharves at St. Antoine and St. Denis.

This work has been resumed. (Appendix 3, page 20.)

PIERS AND BOOMS AT BELŒIL.

The works damaged by ice in 1876 were made good.

The broken booms were replaced, strengthened and supplied with outriggers to prevent canting. (Appendix 3, page 20.)

CHAMBLY CANAL.

Length of canal		12 miles.	
Number of locks		9	
Dimensions of locks—			
Guard Lock, No. 1, at St. John's		122 feet by	23½ feet.
Lift " No. 2,		124 "	23 7/12 "
" " Nos. 3, 4, 5, 6		118 "	23 to 23 7/12 feet
" " Nos. 7, 8, 9 combined		125 "	23½ feet.
Total rise of lockage		74 "	
Depth of water on sills		7 "	
Breadth of canal at bottom		36 "	
" " surface of water		60 "	

Succeeding the thirty-two miles of navigation between St. Ours' Lock and Chambly Basin—a natural reservoir formed by the expansion of the River Richelieu—is the Chambly Canal, which overcomes the rapids between Chambly and St. John's, a distance of 12 miles.

This canal was closed 6th December, 1878, and opened 5th May, 1879.

The navigation was uninterrupted.

The walls of the several locks have been generally repaired.

New fenders were placed to Lock No. 1, new sluice gates to Lock No. 2.

Two pairs of spare gates have been framed.

A shed has been erected at Lock No. 8.

The lock gates, sluice gates, machinery and foot bridges received all necessary repair.

The Lapalme By-wash was renewed and Fryer's By-wash repaired.

The banks, towpaths, roadways, slope walls and fences were repaired where necessary, and ditches and culverts cleaned.

Four miles of bank were raised, with the material excavated by Steam Dredge.

The dwelling houses of lock master, bridge-keeper, and watch house, have been repaired. (Appendix 3, page 80.)

TABLE showing the sizes of the smallest locks on the canals of the Richelieu and Lake Champlain line of navigation to New York, also the dimensions of the largest vessel which may pass through them.

Name of Canal.	Dimensions of Lock in feet.			Dimensions of Vessel in feet.			
	Length.	Breadth.	Depth of water on sills.	Length.	Breadth.	Draught of water when loaded.	Tonnage.
U.S.—Erie Canal.....	110	18	7	108	17½	6	210
U.S.—Champlain Canal.	97	14	4	89	13½	3½	70
Chambly Canal.....	118	23½	7	114	23	6½	230

ST. PETER'S CANAL.

Length of canal, about 2,400 feet.

Breadth of canal at bottom, 26 feet.

One tidal lock, 4 pair of gates.

Dimensions, 26 by 122 feet.

Depth of water on sills, 13 feet at lowest water.

Extreme rise and fall of tide in St. Peter's Bay, about 9 feet.

This work connects St. Peter's Bay, on the southern coast of Cape Breton, Nova Scotia, with the Bras d'Or Lakes. It crosses an isthmus half-a-mile long and gives access to the Atlantic Ocean.

The work of deepening and widening the canal has been carried on.

This canal is to be widened to 48 feet at bottom, with a depth of 18 feet below summer level of the Bras d'Or, with a tidal lock 200 x 48 feet, with wharves and piers. (Appendix 4, page 19.)

RIVER TRENT NAVIGATION.

The Trent navigation extends from Trenton on the Bay of Quinté to Fenelon Falls at the north extremity of Sturgeon Lake in the one direction, and following to the south-west on the opposite route passes by the River Scugog into the Lake of that name and continues to Port Perry at the head of the Lake. The distance between the mouth of the Trent and Lindsay on the River Scugog is 161¼ miles. Of this distance 34¾ miles is not navigable for vessels drawing 5 feet of water. The distance from Lindsay to Port Perry at the head of Lake Scugog is 28 miles.

From the mouth of the Trent to Nine Mile Rapids, a distance of 9 miles, there is no navigation. The dam previously placed there in 1844 is now decayed and useless.

From Nine Mile Rapids to Myersburgh, formerly known as Percy's Landing, there is a distance of 19½ miles with 5 feet of water. A broken navigation for 14¼ miles succeeds to Heeley's Falls. A reach of navigation 5 feet deep follows by th River Trent and Rice Lake ascending the River Otonabee to Peterboro', a distance of 51¾ miles. The navigation is broken from Peterboro' to Lakefield, a distance of 9½ miles. A reach of navigation is obtained through Clear Lake to Burleigh, a distance of 12 miles, where the Burleigh Rapids extending over a distance of 1 mile, are met. An open navigation is then taken to Buckhorn Rapids for 7 miles, at which point the navigation is broken for a mile.

The navigation from this point is open to Lake Buckhorn and Lake Chemong to Bridgenorth: to Lake Buckhorn, Lake Pigeon and Lake Ball to Bobcaygeon, thence by Lake Sturgeon and the River Fenelon to Fenelon Falls, and by the River Scugog to Lindsay, and thence by Lake Scugog to Port Perry.

The following table gives the distances of navigable and unnavigable reaches:

	Navigable.	Unnavigable.
From Trenton, Bay of Quinte, to Nine Mile Rapids..		9
" Nine Mile Rapids to Percy Landing.....	19½	
" Percy Landing to Heeley's Falls Dam.....		14¼
" Heeley's Falls Dam to Peterboro'..... .	51¾	
" Peterboro' to Lakefield.....		9½
" Lakefield to Burleigh.....	12	
" Burleigh Rapids.....		1
" Burleigh Rapids to Buckhorn Rapids.....	7	
" Buckhorn Rapids.....		1
" Buckhorn Dam to Lindsay.....	36¼	
	126½	34¾
" Lindsay to Port Perry at the head of lake Scugog	28¾	
	155¼	34¾
Total distance Bay of Quinte to Port Perry.	190 miles.	
Passing to Fenelon Falls the distance from Buckhorn Dam to Fenelon is.....		31½

The following is a list of the works:—

Chisholm's Rapids.

Distance from Trenton in Miles

The Lock at present is unfit for use, but with moderate expenditure could be placed in operation. Owing to the Lock being in this condition the navigation at this point is interrupted..... 15

Percy Landing.

There is a retaining boom for saw logs now used..... 28½

Campbellford.

The guide booms are in use..... ..... 34¾

Middle Falls.

The works consist of 4 dams and 2 slides which are effective for the passage of timber..... ..... 37½

Crow Bay.

The retaining boom is used for logs..... 38

Heeley's Falls.

	Distance from Trenton in miles.
A dam and 1 slide are in operation here	42¾
Cook's Rapids, Hastings.	
The works which consist of 1 lock 1 dam and slide for timber are effective	34⅝
Whitlaw's Rapids.	
Below Peterboro'. The lock, dam and canal are in operation.	92⅞
Little Lake.	
Three piers and 1 boom which are effective	94
Buckhorn Rapids.	
This dam is important in keeping to a high level the water of the lakes west of it as far as Bobcaygeon, including Lakes Pigeon, Ball, Buckhorn and Chemong. The dam is effective	125
Bobcaygeon.	
There are 2 dams here with canal, lock and slide. The dams keep up the level of Fenelon Falls and to the reach as far as Lindsay Lock	140¾
Fenelon Falls.	
A large slide and booms which are effective	155¾
Lindsay.	
The old lock, owing to dilapidations having become useless, was rebuilt by the Government of the Province of Ontario in 1870. Its dimensions are 134 x 34 feet with 5 feet water on the sills. The navigation is, by this work, extended to Port Perry, Lake Scugog	161⅝

The dimensions of the Dominion locks are 133 feet 6 inches x 33 feet with 5 feet depth of water on the sills.

In 1855 a portion of the above named works were transferred to a committee of gentlemen connected with the lumber trade. The Committee was authorized to collect tolls on timber passing through. The works so transferred, at this date, are the slides and booms at Chisholm's Rapids, the retaining boom at Myersburgh, the guide boom at Campbellford, the dams and slide booms at Middle Falls, the retaining boom at Crow Bay and the slide at Heeley's Falls.

These works are kept in repair by the Committee.

The Lindsay lock was constructed by, and is under the control of the Province of Ontario.

The remaining works consist of two classes, those connected with the passage of timber, and those which form a portion of the navigation. The former, it is proposed to place under the control of the Public Works Department, while the works of navigation will be under the direction of the Department of Railways and Canals.

No sub-division has yet been made, but it is probable that the slides at Middle Falls, Heely's Falls, Burleigh and Fenelon Falls, will be transferred to the charge of the Public Works.

During the past season the following repairs have been executed :—

FENELON FALLS.

The slides and piers have received general repairs.

BOBCAYGEON.

The canal walls have been rebuilt from low water mark to coping, and double sheeted throughout. The bottom, planked where necessary.

BUCKHORN.

The dam has been re-gravelled and kept staunch.

LITTLE LAKE.

Piers and booms have been repaired.
(Appendix 10, page 45.)

Instructions have been given for an examination of these waters, and for a report in detail on each work, and on the character of the navigation as a whole.

RIVER DETROIT TUNNEL AT AMHERSTBURGH.

An application was made in March, 1879, by the Canada Southern Bridge Company for authority to tunnel the River Detroit for the connection of the railway systems east and west; the tunnel projected to be constructed on the "coffer-dam system." This mode of construction consists of the employment of moveable coffer-dams, two of which only would be in use, and of a size not to obstruct navigation seriously. The excavation would be carried on after the water had been pumped out, and the walls laid in open daylight as in any foundation.

As the plan of construction is a departure from the mode usually adopted, and might lead to obstruction of the navigation, and as no evidence was adduced that the Government of the United States would sanction any interference with the interests of navigation, moreover, as but a very short notice of the application had been given by the Bridge Company, it was not considered expedient to recommend the adoption of the plan.

A new plan was subsequently submitted, with the request that the matter be decided before the 28th of April, the limit fixed for commencing the work.

As the new plan was on the "through boring principle," and there could be no impediment to the navigation, an Order in Council was passed on the 21st of April, 1879, approving the plan submitted, and giving authority to commence the work as the Statute describes, subject to the Ordinances in Council which may be imposed for participation in the use of the tunnel by other railways; that the navigation is in no way to be interfered with; that all expropriations of land and other damages should be satisfactorily settled; and that the Government shall be held harmless from all damages.

RAILWAY BRIDGE OVER THE ST. LAWRENCE AT COTEAU LANDING.

At the last Session of Parliament an Act was passed, 42 Vict., cap. 57, amalgamating the Côteau and Province Line Railway and Bridge Co. and the Montreal and City of Ottawa Junction Railway, continuing the powers given by 35 Vict., cap. 83, for the construction of a bridge over the River St. Lawrence and the Beauharnois Canal.

It was provided that no bridge should be constructed over the navigable channel of the St. Lawrence until the Governor in Council, after full examination into the question, shall be satisfied that no objection exists to bridging the channel at the point selected, and that upon the Governor in Council being satisfied, and a proclamation to that effect appearing in the *Canada Gazette*, the company should have power to construct the bridge on the plan approved.

Application having been made for authority to construct the bridge, by Order in Council 22nd June, 1879, an examination was ordered, so that an opinion could be formed upon the effect upon the navigation of the River St. Lawrence, which would result from the construction of piers, and whether the site selected was objectionable, and generally, to obtain all information bearing on the subject.

Application was likewise made to the company for the necessary drawings setting forth the character of the Bridge and the arrangement proposed for the piers and openings. The Engineer to whom the matter was referred reported that no

other but a high-level bridge across the St. Lawrence at that point should be allowed to be built. An Order in Council, 27th January, 1880, was accordingly passed, that the erection of a draw-bridge cannot be permitted, but that sanction will be given to a high-level bridge, the location and plans first being approved by he Governor in Council.

LANDS AND LEASES.

A statement of full detail is given of the water power and other property on the canals, leased by the Department during the fiscal year, and of all property purchased and sold, setting forth the names of parties interested, the price paid, and the circumstances under which each transaction took place; likewise of the property declared to be no longer under the control of the Department.

ARBITRATIONS.

A statement of claims referred to arbitration is set forth in Appendix 15, page 120.

Respectfully submitted,

CHARLES TUPPER,
Minister of Railways and Canals.

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, 2nd February, 1880.

DOMINION OF CANADA.

ANNUAL REPORT

OF THE

MINISTER OF RAILWAYS AND CANALS

FOR THE

FISCAL YEAR JULY 1st, 1878 TO 30th JUNE, 1879.

APPENDICES.

STATEMENT.

Showing the amount Expended by the Department of Railways and Canals, Dominion of Canada, during the Fiscal Year ending 30th June, 1879.

APPENDIX No. 1.

STATEMENT showing the amount Expended by the Department of Railways and Canals, Dominion of Canada, during the Fiscal Year ending 30th June, 1879.

Name of Work.	Construction.	Repairs.	Staff and Maintenance.
CANALS.	$ cts.	$ cts.	$ cts.
Lachine	958,053 30	12,400 78	42,338 84
Beauharnois	.....	10,370 71	15,015 86
Cornwall	143,092 05	4,983 15	13,817 96
Williamsburgh	.....	3,549 71	7,517 20
St. Lawrence	9,265 77	.....	.....
Welland	1,552,697 41	56,755 57	59,942 23
St. Anne's Lock	22,113 02	3,259 70	2,202 03
Burlington Bay	.....	448 46	.....
Carillon and Grenville	218,625 24	7,629 98	11,501 22
Carillon Canal and Dam	24,516 00	.....	.....
Culbute Rapids Lock	20,694 19	.....	.....
Rideau	7,703 88	7,134 55	26,042 52
Trent Navigation	.....	5,984 78	2,238 21
St. Ours Lock	.....	456 07	1,581 55
Chambly	.....	8,809 77	11,301 53
St. Peter's	107,337 75	.....	631 50
Total of Canals	3,064,098 61	121,783 23	194,130 65
RAILWAYS.			
Pacific	1,959,161 55	.....	.....
do Surveys	281,123 92	.....	.....
Intercolonial	226,639 19	.....	2,010,183 22
Prince Edward Island	40,129 05	.....	223,313 12
Total of Railways	2,507,053 71	.....	2,233,496 34
Grand total	5,571,152 32	121,783 23	2,427,626 99

J. BAINE,
Accountant

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, 30th June, 1879.

APPENDIX No. 2.

ST. LAWRENCE NAVIGATION.—TABLE OF DISTANCES.—A.

FROM STRAITS OF BELLE-ILE TO DULUTH, AT HEAD OF LAKE SUPERIOR, BY WATER.

From	To	Sections of Navigation.	Statute Miles. Intermediate.	Statute Miles. Total to Straits of Belle-Ile.
Straits of Belle-Ile	Cape Whittle	Gulf of St. Lawrence	240	240
Cape Whittle	West Light, Anticosti	do do	201	441
West Light, Anticosti	Father Point	River St. Lawrence	202	643
Father Point	Rimouski	do	6	649
Rimouski	Bic	do	12	661
Bic	Isle Verte	do	39	700
Isle Verte (opp. Saguenay)	Quebec	do	126	826
Quebec	Three Rivers	do to Tidewater	74	900
Three Rivers	Montreal	do	86	986
Montreal	Lachine	Lachine Canal	8	994
Lachine	Beauharnois	Lake St. Louis	15	1,009
Beauharnois	St. Cécile	Beauharnois Canal	11	1,021
St. Cécile	Cornwall	Lake St. Francis	32	1,053
Cornwall	Dickinson's Landing	Cornwall Canal	11	1,065
Dickinson's Landing	Farran's Point	River St. Lawrence	5	1,070
Farran's Point	Upper end of Croyle's Island	Farran's Point Canal		1,071
Upper end Croyle's Island	Williamsburgh or Morrisburgh	River St. Lawrence	10	1,081
Williamsburg	Rapid Plat	Rapid Plat Canal	4	1,085
Rapid Plat	Point Iroquois Village	River St. Lawrence	4	1,090
Point Iroquois Village	Upper end Presqu'Ile	Point Iroquois Canal	3	1,093
Presqu'Ile	Point Cardinal, Edwardsburgh	Junction Canal	2	1,095
Point Cardinal	Head of Galops Rapids	Galops Canal	2	1,097
Galops Rapids	Prescott	River St Lawrence	7	1,105
Prescott	Kingston	do	59	1,164
Kingston	Port Dalhousie	Lake Ontario	170	1,334
Port Dalhousie	Port Colborne	Welland Canal	27	1,361
Port Colborne	Amherstburgh	Lake Erie	232	1,593
Amherstburgh	Windsor	River Detroit	18	1,611
Windsor	Foot of St. Mary's Island	Lake St. Clair	25	1,636
Foot of St. Mary's Island	Sarnia	River St. Clair	33	1,669
Sarnia	Foot of St. Joseph's Island	Lake Huron	270	1,939
Foot of St. Joseph's Island	Foot of Sault St. Mary	River St. Mary	47	1,986
Sault St. Mary	Head of Sault St. Mary	Sault St. Mary Canal	1	1,987
Head of Sault St. Mary	Point au Pins	River St. Mary	7	1,994
Point aux Pins	Duluth	Lake Superior	390	2,384

Of the 2,384 miles from the Straits of Belle-Ile to the Head of Lake Superior, 71¾ miles are artificial navigation, and 2,312¼ open navigation.

Straits of Belle-Ile to Liverpool, 1,942 geographical or 2,234 statute miles.

The total fall from Lake Superior to Tide-water is about 600 feet.

APPENDIX No. 2—*Continued.*

TABLE OF DISTANCES.—B.

FROM PRINCE ARTHUR LANDING (LAKE SUPERIOR) TO FORT GARRY (WINNIPEG), BY THE CANADIAN ROUTE, WHEN IN OPERATION.

	Statute Miles.	
	Intermediate.	Total.
Prince Arthur Landing to Lake Shebandowan	45	45
Lake Shebandowan to North-West Angle	312	357
North-West Angle to Fort Garry (Winnipeg)	95	452

The Steamboat voyage from Collingwood to Prince Arthur Landing is 532 miles.

APPENDIX No. 3.

LACHINE, BEAUHARNOIS, CHAMBLY, ST. OURS' AND ST. ANNE'S CANALS.

CANAL OFFICE,
MONTREAL, 22nd October, 1879.

SIR,—As called for by your letter, No. 51,995, dated 16th instant, I have the honor to transmit the following Report for the fiscal year ended 30th June, 1879, on the works now temporarily under my charge, but which have been, for over 26 years past, under the charge of the lamented John G. Sippell who died suddenly on the 26th ultimo:—

No accident of any consequence, nor any detention whatever, have occurred during the fiscal year.

The old works have been maintained in an efficient condition, and the work of enlarging the Lachine Canal is almost completed, except on Section 11, which will require two seasons longer to entirely finish it.

Statements of the amounts collected for fines and damages, &c., with monthly returns of the highest and lowest water on each canal, are appended.

LACHINE CANAL.

From the 1st July, 1878, until the close of navigation, general repairs were made to the mechanical structures, and to the roads, towing paths and banks, ditches, &c. The ditches and off-take drains were thoroughly cleaned, and the weeds cut on all canal property.

The water was drawn off on the 5th December, 1878, and let in again on the 4th of May, 1879.

During the winter months, the carpenters were employed in making snubbing posts, making new gates for the new weir above Lock No. 2, repairing Bridge No. 3, at St. Gabriel Lock, making new foot bridges for lock gates, and new fender posts. The permanent men were employed in assisting the engineers in various ways on the line of canal, and in keeping roads in connection with the different bridges in good order, shovelling snow, &c.

The following is a detailed statement of the principal repairs made during the winter and spring months:—

Lock No. 1, at Lower Entrance.

The lower gates received new foot bridges; and new face binders were placed on the upper gates.

Lock No. 2.

The upper gates received new foot bridges and new mullions; two new fender posts were also placed on this lock.

Lock No. 3, St. Gabriel.

Two new fender posts were placed on this lock, and the upper gates received new foot bridges, new face binders and mullions.

Lock No. 4, Côte St Paul.

This lock received four new fender posts; the face binders on the upper and lower gates were renewed, and new foot bridges placed on the upper gates.

Lock No. 5, Lachine.

Two new fender posts were placed on this lock; two new valves were inserted in the lower gates, and the foot bridges of both pairs of gates were repaired.

Swing Bridge No. 1, at Lock No. 2.

In the early part of the year this bridge was in a very unsafe condition, and in order to make it last until spring, it had to be strengthened. The centre longitudinal stringers were renewed; the side stringers partially renewed by splicing, and it was further strengthened by the insertion of cross-tie rods. This bridge was removed in April to make room for the new bridge, built by contract, which was erected nearly on the site of the old one.

Bridge No. 2, or Wellington Street Bridge.

This bridge was built a few years ago by the Grand Trunk Railway Company. It was owned by that company, and was removed by them to enable two new bridges to be built on its site—one for the railway and one for the street traffic.

Bridge No. 3, at St. Gabriel Lock.

This bridge crosses the canal immediately above the head of the St. Gabriel Lock. It was built 13 years ago, and had to be thoroughly repaired in order to carry the heavy traffic from and to the mills and factories at this place. The centre stringers were renewed and heavy cross-tie rods were placed in the bottom, new working rollers were furnished and the pivot sockets taken out, fitted and replaced. The temporary bridge in connection with this one over the new lock, was removed in order to allow the contractors to build the new bridge abutment on the north side, after this was done it was again re-built.

Bridge No. 4, or Brewster's Bridge.

This bridge was built anew last year, and required no repairs further than replanking.

Bridge No. 5, at Côte St. Paul.

This bridge is but two years old, and required no repairs other than to be replanked.

Bridge No. 6, at Lachine Guard Lock.

Received new planking, and required no other repairs.

Stationary Bridges.

There are fourteen of these bridges, all of which, as well as four small swing bridges (those of one span), were newly floored with three inch deals.

WEIRS.

The new regulating weir above Lock No. 2, which was built in the spring of 1877, received six new lifting gates, new face timbers, and a new set of working gear; a new bridge was also built across this weir.

Waste Weir at head of Basin No. 2.

The walls were thoroughly pointed with cement; it received new slides, and new working screw brasses.

Weir at Lock No. 3.

This weir was only completed last spring and required no repairs. The tailrace of the temporary weir used for the past three years had to be blocked up in order to stop a leak that showed itself under the south wing wall of the old lock, above the upper gates.

Weir at Lock No. 4.

The gates were taken out and repaired, the walls were pointed, holes were bored through the flooring of the recesses above the gates, into which grout was poured to stop a leak which threatened to be serious. The plank sheeting of the tailrace of this weir was partially renewed.

The small weir in the north-east bank above this lock required no repairs, it having been only completed the previous year.

Supply Weirs at Lachine.

The two supply weirs at this point received only trifling repairs in connection with the fastenings, such as head castings, keys, etc.

Piers and Booms at Lachine.

Six of the guide piers between the timber basin and the channel were sheeted with tamarac at the corners; and several of the mooring post boxes were renewed. Four of the old long booms were hauled out on the bank of the old canal to dry. These booms were faced with new six inch timbers, several new treenails, and the cross bolts were newly screwed and the booms thoroughly tightened.

Mooring Posts.

About two hundred snubbing posts were placed at different points on the line of canal, in the wing dam, and guide piers, above the Lachine Lock, in the new bridge piers, and in the new banks at various places.

Wharves and Flour Sheds.

The wharves in connection with Basins Nos. 1 and 2, and the St. Gabriel Basins were maintained in good order. The flooring of the five sheds at Basin No. 2 was renewed from time to time; and the roofs of Nos. 3, 4 and 5 were repaired, and in some places renewed. These sheds are old, and the posts are rotted at their lower ends, which must soon be renewed by splicing with sound timber, as they are at present in danger from the effect of high winds. They are now principally used for "up freight," and might be dispensed with without inconvenience to the trade, as the new St. Gabriel sheds have not yet been properly utilized, and are of sufficient capacity to receive all that part of the flour arriving at this port, which requires temporary shelter, such as they are intended to afford.

Lock and Bridge Watch Houses and Dwelling Houses.

There are eight of these watch houses at the different locks and bridges, seven of which had to be almost entirely built anew. They were all painted, and look

well; are in keeping with the works to which they are attached, and are comfortable for the men.

The dwelling houses belonging to the Department, and which are furnished to 13 men employed on the canal, and entitled to lodgings, have received necessary repairs, and are now in fair tenantable condition.

Roads.

The roads in connection with this canal, which had to be shifted on account of the enlargement, are now completed.

The farmers' road, situated on the south side of the canal, was built by day's work, and extends from Lock No. 4, at Côte St. Paul, nearly to the upper end of Section No. 8. It has been formed of refuse stone taken by scows from Section No. 9. It is about 2½ miles in length, and the portion covered with stone is 13 feet wide by one foot deep, and covered with three inches of course sand, also taken from Section No. 9. It is an excellent road, fully equal to a macadamized one. That part of it on Section No. 8 was built last year, but the remainder, on Sections Nos. 6 and 7, was built this year.

River St. Pierre and Off-take Drains.

Owing to the removal, during the enlargement, of the inside slope of the north bank, a large quantity of water escaped through it and flooded the swampy lands on that side. In order to dispose of this water and to give a better drainage to these low lands, a new and direct channel was made south of the Grand Trunk Railway, from what is known as Mills' Culvert, where the River St. Pierre passes to the north side of the Grand Trunk Railway, to Brodie's Culvert, where it again passes to the south side of that railway,—the direct cut being 8,200 feet in length, while the tortuous route of the St. Pierre is 11,600 feet, in the course of which it passes under the Grand Trunk Railway main line and branches through culverts, at each of which it is more or less obstructed, no less than five times. This cut is part of a scheme for the drainage of this swamp, proposed by Mr Baillairgé in 1870, the lower portion of which, from Brodie's Culvert to the Lachine Canal, was carried out by contract work in 1873-4. The execution of the remainder was deferred at that time owing to the opposition of one of the largest proprietors through whose lands it would pass, but whose consent was freely given on this occasion along with the others. This work and clearing out the old channel was done by the day, under the immediate supervision of Mr. Conway, Superintendent of the Lachine Canal, and at the same time the heaviest of the leaks were cut off by a puddle wall placed in the canal bank by the contractors for Section No. 8.

Although the new cut fully answered the purpose intended, yet it was not available to its full capacity, because the off-take drains leading into it had not been cleaned out, and consequently some portions of these lands were still a little wet this spring To remedy this, all the old water courses leading from the canal to the River St. Pierre were deepened, and several new off-take drains were made, and other old ones cleaned out. A few small leaks through the canal bank, which were not closed by the operations of last year, were staunched this year by the men employed on the repairs of the Lachine Canal. This work was done on Sundays, when the water could be drawn down in the canal without interfering with the navigation. The results are very satisfactory, as this land is now more free from water than it ever was before.

These roads and drainage works cost a large sum of money, and, with the exceptions of the cost of the new cut, is charged to the Lachine Canal repairs, which increased the outlay under that head to a considerable sum more than it otherwise would have been.

Towing Paths and Slope Walls.

But small repairs were required on the towing path this year, merely filling of holes behind the slope walls caused by the water washing through them. A good

deal of work was done, though, in repairs to "rip-rap" side walls, on Sections 6, 7 and 8, where stones had been displaced by rafts and vessels of light draft.

These walls being built of "rip-rap" and of small sized stones from the section, which are easily displaced, will be expensive to keep in repair.

Scows.

The two scows belonging to this canal, and used for repairs, are old and of small size, and are of little use on this enlarged canal. They have been repaired and caulked, and would render good service for some time in connection with the dredge on the Chambly Canal. I would therefore recommend that a scow of proper size be built or purchased for this canal, which could be used for hanging lock gates or laying stones that may be displaced. A scow of the proper dimensions and furnished with efficient lifting machinery would save a great deal of time in replacing lock gates, and could be had for seven hundred dollars.

The navigation on this canal was not interrupted during the fiscal year, and the whole of the works in connection with it are now in good order.

NEW WORKS OF ENLARGEMENT.

SECTION No. 1.

The works on this section embrace the construction of Locks 1 and 2, with a basin surrounded by a dock wall and wharf, bridge abutments connected with Lock No. 2, a waste weir, and tailrace, &c.

Contractors, Messrs James Worthington, & Co.

Lock No. 1.

At the commencement of the fiscal year, 1st July, 1878, this lock was finished, with the exception of the four upper courses of masonry at the lower end, which was completed before the close of the season. During the autumn of 1878, the excavation of the lower entrance to the lock was completed by dredging, and a timber docking with plank covering was formed at the sides and connected with the harbor. In April, after the spring flood of the river, which had risen above the level of the lock walls, had subsided, it was discovered that the greater portion of the coping had been displaced by the ice. Towards the end of May, the contractors began to take up and relay this coping, and to secure the same by iron bolts, the work on which is not completed.

Basin No. 1.

The dock walls of this basin were finished at the end of the last fiscal year.

Before the close of the season the greater portion of the other work on this basin was almost completed, including the wharf on the south side and ends, macadamizing roads at the rear of the same, and between the old and new basins, pitched stone facing to banks, water tables, &c.

Lock No. 2, &c.

This work was nearly completed in the fall of 1878, the bridge masonry remaining to be done being well advanced. Work was stopped during the winter and resumed on the 28th of March. Before the opening of navigation, the pivot-pier for the turn-table was built, and the central portion of the abutments finished to full height; the old bridge removed and a new one constructed to replace it. The parapets and pillars at the ends of the bridge remain to be built, and some coping at upper end of pier, between the old and new locks, to be laid, and the macadam around the lock to be finished.

Swing-bridge.

Tenders were called for the construction of this bridge in January, 1878, and that of Messrs. W. P. Bartley & Co. was accepted. These contractors commenced immediately after, and had the bridge completed in a most satisfactory manner, before the opening of navigation, on the 4th of May.

It is constructed on the "Howe Truss" principal, being 154 feet in length on centre line of roadway, and 18 feet wide between centre lines of side trusses. The lower chords and floor stringers are of wrought iron; the upper chords, posts and braces of wood.

SECTION No. 2.

This Section embraces the enlargement and deepening of Basin No. 2, and the construction of Wellington Basin and works connected with it.

Contractors, Messrs. James Worthington & Co.

Basin No. 2.

Dredging on this basin was continued last year until the 20th of November, and was again resumed soon after the water was let into the canal last spring. This dredging will probably be completed this fall, after which there will remain only a little levelling of bottom to be done, which will be attended to in April next.

Wellington Basin.

Nothing remained to be done at this basin when last reported on but a little of the wharf planking, and to place and secure a few of the cast-iron mooring heads. This work has been done, and the basin is now fully completed and in use.

SECTION No. 3.

This section extends from the head of Basin No. 2 to Station 50, a little above St. Gabriel Lock; length, 4,200 feet. The work consists in the enlargement of the channel; building piers and abutments for Wellington Street Bridge; the construction of a new lock; regulating weir, raceway, and bridge abutments in connection with it; taking down and rebuilding the greater portion of the old lock; building dock walls, &c.

Contractors, McNamee, Gaherty and Frechette.

During the period, from 1st July, 1878, to the close of navigation, the wall at the upper end of lock, to form the north abutment for the swing-bridge, and the retaining wall, at the foot of the lock, to connect with the raceway masonry, were both extended and nearly completed. The segment plates were placed in the lock bottom, second course of flooring laid in lock and raceway, and the gates and machinery for weir put in place. At the foot of the lock, a piece of stone pavement, grouted with cement, two feet in depth, and 30 feet in length, by 60 feet wide, was put in. Above the lock concrete was placed at the upper side of the breast wall and at the foot of the side walls, above the same. A pitched stone wall was built on the north side of the upper entrance, extending nearly to the upper end of the section, a portion of the old bank being left intact to keep out the canal water. It having been decided to build separate bridges for the Grand Trunk Railway and for the ordinary traffic at the Wellington Street crossing, the contractors began at once to prepare and deliver materials for both bridges. As soon as the water was drawn off, at the close of navigation, two temporary bridges were erected, one being for the railway and the other for the street traffic, after which the old bridge was removed with its piers and abutments. The excavation was also commenced, and foundations of timber and plank put in. During the winter and spring, before the water was let into the canal, the masonry in piers and abutments was completed; the cribwork in

connection with the same constructed to a height of two feet over water surface, and the greater part of the protection piles put in position. At the same time, the superstructure of the Grand Trunk Railway bridge was built by the Grand Trunk Railway Company, and the superstructure of the street bridge was built by the Department, under a separate contract with Mr. John McDougall. Since the opening of navigation, the remainder of the protection piles have been placed, waling pieces put on, and the cribwork almost completed.

During the winter, the headrace on the north side of the canal, above the weir, which supplies the mills and factories at this point, was enlarged, and a pitched stone wall built on both sides. It is now 70 feet wide on bottom at the lower end, splaying to 95 feet wide at the upper end, with a depth of 13 feet below water surface. It is connected with the main channel of the canal by a new cut around the west end of the island, which is also protected by a pitched stone wall. New side walls of cement masonry were built at the entrance of the headrace leading to Ogilvy's Mills and the Caledonia Iron Works. The bridge over the same was also rebuilt

The masonry of the centre pier of the new swing bridge, and in the continuation of the lock walls connecting the old and new locks at the upper end, has been completed, and a protecting crib filled with stone built above the same, which is further protected by clusters of oak piles.

The raceway below the weir has been completed, the breast wall at its lower end built, and the south wing connected with the retaining wall below the new lock. Clusters of piles have also been driven for the protection of the walls at the lower end of the raceway.

On the south side of the canal, above Wellington Bridge, a piece of road has been graded and macadamized, and a towing path formed, to replace similar work destroyed by the enlargement. The road, of which this is a continuation, and which had been seriously damaged during the progress of the works, has also been thoroughly repaired. The same remarks apply to the adjoining towing path.

The contractors are now constructing a new road to connect with the north end of Wellington Bridge, finishing the cribwork at that bridge, and preparing stone to complete the masonry connected with the bridge abutments, &c., of the St. Gabriel Locks. This latter work cannot be undertaken until after the close of navigation, when the traffic can be diverted on to a temporary bridge.

Section No. 4.

This section was completed at the date of last report. During the winter the final estimate was prepared, and forwarded to the Department in May last.

Section No. 5.

Length, 4,200 feet. The work on it being the widening and deepening the prism of canal, building of pitched stone side walls, and the construction of a stone culvert of three arches for the passage of the River St. Pierre under the canal.

Contractor—Mr. Alphonse Charlebois.

The work in connection with the culvert was finished in August last, and the dredging in the prism on the 11th of November. In the course of the winter and spring the balance of the earth and rock excavation was taken out, the bottom levelled off, and the entire section completed in May last.

Sections Nos. 6 and 7.

The length of these two sections is 10,000 feet. They are let in one contract, and Messrs. William Davis and Son's are the contractors. The work upon them embraces enlargement of the channel, building a new lift lock, taking down and rebuilding with new stone the defective portion of the old lock, protecting foundations of same with concrete, building an arched culvert, a by-wash, piers and abutments for a swing bridge, and facing the inside slopes with pitched stone, &c.

During the months of July and August, the masonry of the new lock, and of the random coursed walls at both ends of it, were completed. A covered off-take drain, on the south side of the canal, and a macadamized road and paved drain, on the north side, below Côte St. Paul Bridge, were constructed during the season.

Four dredges were employed in the prism of the canal, and the work of dredging was finally closed on the 26th of November. After the water was drawn off, in December, a large force was put on to finish the bottom of canal and side walls. A crib filled with stone was constructed at the upper end of the pier, between the two locks, and a cluster of piles placed a little above it. The work was continued during the winter, with a short intermission, and soon after the water was let into the canal last spring, the banks were finished, and the whole work was completed.

The final estimates are now being prepared.

Section No. 8.

The work on this section consisted in deepening and widening prism of canal forming a berme bank and road on the south-east side, and lining the inside slopes with pitched stone and rip-rap walls, &c.

Contractors.—Messrs. O'Brien, Sullivan & Co.

Operations were resumed in the bottom on 7th December, 1878, and all the work in the prism, below water line, was finished before the water was let into the canal, on the 4th May, 1879. During the remainder of that month, all grading, ditching, trimming and walling above water line was completed, and the section entirely finished on the 31st of May, 1879.

Section No. 9.

Extends from upper end of Section No. 8, nearly to the Guard Lock. Length 6,000 feet. The work being principally excavation of solid rock in widening and deepening the canal, making towing path and berme bank, side and cross drains, slope walls, &c.

The original contractors were Messrs. John Lyons and Co., who abandoned the work in March, 1878. Tenders were invited for the completion of the section, that of Messrs. Williamson, Rodgers and Farrell being accepted, who signed the contract on 25th November, 1878, and commenced work immediately after. A small amount of earth excavation above water level was done before the canal was emptied, and extensive preparations were made by the delivery of plant and machinery for the prosecution of the work during the winter. Immediately after the water was let out of the canal work was begun in the bottom, and was continued with as large a force as the contractors thought could be worked to advantage until the water was again let into the canal, on the 4th of May, by which time all excavation and slope walls below water line had been completed. The month of May was occupied in finishing side walls above water, grading and trimming towing path and berme bank, and finishing up, generally, all of which was done, and the section satisfactorily completed on the 31st of May.

Section No. 10.

This section lies to the south of the guard lock and weir at Lachine. It is 1,400 feet in length, and the work on it consists in the formation of a new channel the length of the section; construction of a new guard lock, with abutments, and turn-table for a swing-bridge, retaining walls, &c.

Contractors, Messrs. Rodgers, Kelly & Co.

Masonry of lock walls was commenced on 8th of August, 1878, and was carried on until the 17th of November, when work for the season was stopped. The whole of the lock masonry has since been completed, a small amount of bridge masonry alone remaining to be done. During the year, all rock and earth excavation has been finished; towing path and berme bank graded, and ditches formed.

SECTION No. 11.

The work on this section consists in the construction of a new entrance channel and harbor at Lachine, on the south-east side of the present entrance. It is to be formed by a line of pier-work about 6,200 feet in length, with a stone superstructure faced with a wall of rubble masonry, and protected by an ice-breaker of timber at the upper end.

Contractors, Messrs. William Davis & Sons.

During the summer of 1878, work was carried on upon the double cribwork, the thirty feet cribwork, detached cribs on north side of channel, and ice-breaker, which latter was commenced in July. Sheet piling of the puddle chamber of the double cribwork was also continued, and puddling began in August. The superstructure of the ice-breaker was commenced on 19th October, and the working season closed on 15th November, from which date, until the 20th of May, 1879, no work was done, with the exception of placing stone on top of cribs. The first cribs this season were sunk on June 30th, and work has since been steadily continued upon the pier cribs, as well as upon those of two cross dams, and the sheet piling of puddle chamber outside of present pier has been pushed on rapidly. From July to October, 1878, inclusive, and this season, from May 21st to the present time, the sub-marine excavation has been carried on with but little interruption.

The length of cribwork placed in pier during the fiscal year is 1,780 feet, and in cross dams, 530 feet, involving, in all, the sinking of 100 cribs. In placing many of these cribs great difficulty was experienced, owing to the strength of the current and the nature of the bottom.

BEAUHARNOIS CANAL.

Navigation closed on the 6th December, 1878, and opened on the 1st of May, 1879, being open during the fiscal year 220 days, no accident nor any interruption to the trade having occurred.

Three pairs of old lock gates were hauled out and taken apart, of which two pairs were rebuilt, a large proportion of new timber being used. One pair of these were inserted at the lower end of Lock No. 14, and the other pair have been placed under cover a short distance above the same lock, as a reserve in case of accident. The upper gates of this lock were also replaced by a pair which had been rebuilt for that purpose during the preceding year. The upper gates of Locks 6 and 7, and both pairs of Lock No. 8, were raised and adjusted, and the foot bridges at Locks 6 and 10 repaired. Twelve new cribs were supplied and the others repaired. New chains were placed on the lower gates of Lock No 9, and one valve was renewed in a lower gate of Lock No. 12.

When the water was drawn off in April, it was found that the point of the lower mitre sill of Lock No 14 had raised about six inches. It was properly repaired, well bolted down, and the planking about it renewed. A portion of the floor of lower recess of Lock No. 13 had been washed away, and was also renewed. The walls of all the locks were pointed with cement, and one wing wall of Lock No. 10 was rebuilt. A new bumping post was placed at each of the Locks 6, 10 and 11, two at No. 13, and all the old ones pointed.

The swing bridge at Lock 10 was renewed, and those at Locks 7, 8, 10, 12, St. Timothy and Valleyfield, repaired. A new bridge was built over the waste weir at Lock No. 7, and the bridge over the weir at Lock 10 was replanked. The ditch on south side, near Lock 14 was bridged over. Three new farm bridges were built and many others repaired. Foot paths were placed on the bridge at Lock No. 14, and near the woollen factory.

A new scow was built for Ferry No. 2, and a frame house 24x24 was erected for the ferryman. All the other ferry scows and boats were repaired. Extensive repairs were made to the houses of the Lock masters at Locks 7 and 8, and to those of the lock at Locks 6, 9 and 10. At Lock 13, a wooden wing 24x18 was added to the Lock men master's house, and the old building repaired.

The south bank of canal, between Locks 6 and 8, was raised, and all the banks, towing paths, slope walls, wharves, and fences were properly repaired, and side ditches, off-take drains and culverts thoroughly cleaned. A number of new snubbing posts have been placed on the banks, and many others taken up and reset.

Leaks were staunched in the dam at the "Isle aux Chats," and the dyke at Hungry Bay was raised in parts with stone and gravel.

The weeds were cut, as usual, over the whole of the canal property.

Chambly Canal.

Was closed on the 6th of December, 1878, and opened on 5th of May, 1879. There was no interruption to the trade during the open season. The walls of all the locks were repaired, more or less, by taking up and relaying portions, trimming face stones and grouting and pointing with cement. Many of these lock walls are in a dilapidated condition and require extensive repairs. They are all braced with timber as soon as the navigation closes, and remain so till the spring. New fenders were placed at upper entrance of Lock No. 1, a new sluice gate to the lower gate of Lock No. 2, on the berme side, and new lamp posts at each lock. Two pairs of spare lock gates were built—one pair being for Lock No. 1, at St. John's, and the other pair at Chambly, where there are now two pairs of spare gates under cover.

Ordinary repairs were made to the sluice gates, machinery and foot bridges of the lock gates.

The swing-bridges were all repaired, some of them being replanked. At Bridge No. 7, which leads to the railway station, the crossing over side ditches was improved by stone walling. Five small bridges of wood over ditches crossing towing path were renewed; four of them being on Ste. Thérése Island.

Lapalme's By-wash was rebuilt, and Fryer's By-wash repaired.

The banks, towing paths, roadways, slope-walls and fences were repaired where necessary, and ditches and culverts cleaned. About four miles of bank on both sides were raised with material excavated by the dredge, and four large slides of berme slope removed.

The dwelling houses of Lockmasters and Bridge-keepers, and all the watch houses at locks and bridges were repaired; and a shed was built near Lock No. 8 for protection of spare lock gates.

Richelieu River Improvements.

Steam Dredge No. 1.

This dredge was employed from the 1st of July, 1878, until the close of navigation, on the Richelieu River, at the villages of St. Antoine and St. Denis, excavating approaches from the deep water channel, already completed, to the wharves at those villages. Late in November she was towed to the Chambly Canal, where she wintered.

In the spring her hull and machinery were thoroughly repaired. Two flat mud scows were purchased for her, each of them being 60 feet long by 16 feet wide, and 3½ feet deep; and the two old dumping scows were rebuilt. She remained in the Chambly Canal, deepening the bottom at points where it was urgently required, until the 3rd of July, when she was sent to St. Antoine to complete the approaches to the wharves. On the 15th July she was removed to the L'Assomption River, where she is now at work deepening the channel.

Piers and Booms at Belœil.

These works consist of supporting piers and guide booms, and are situated on the upper side of the swing-bridge of the Grand Trunk Railway, to which they form an approach. Several of the piers were damaged by ice during the high water in

the spring of 1876. These were repaired in February and March last. The booms were repaired in June and July, and one of them, which was broken was entirely rebuilt. They were at the same time strengthened by braces placed on top, and supplied with outriggers to prevent canting, which they were liable to do when touched by a vessel, owing to the strong current.

St. Ours' Lock and Dam.

The lock was closed for the winter on the 12th December, 1878, and reopened on 23rd April, 1879. There was no interruption to the trade during the fiscal year.

During low water, last autumn, the top of the dam was repaired by covering it with a course of 1¼-inch sheeting, arranged so as to break joints with the old sheeting on which it was laid.

Ten toises of stone were used in repairing the west anchor pier above the dam, which had been damaged by the spring flood, and twenty toises have been provided for future use. The piers above and below the lock were repaired, and the landing stage at the upper pier was removed as usual in November, and replaced in July. The ice was removed in the spring by sawing it from piers and gates at both ends of lock.

Ordinary repairs were made to the lock gates, platforms, crabs and working machinery, generally, and the lower gates were raised and adjusted. A shed was built for the protection of plant and materials not in use. The Superintendent's house, outbuildings and fences received necessary repairs.

St. Anne's Lock and Dam.

Navigation closed at this lock on the 6th of December, 1878, and the lock was re-opened on the 21st of April, 1879. No interruption to the trade occurred during the open period.

The wing dam was thoroughly repaired in July, 1878, and six booms were built and moored between the guide piers above the lock. The long pier below the lock was also repaired.

The lock walls throughout were pointed with cement mortar and grouted, and the gates were raised and adjusted.

The building which serves as collector's residence and office was repaired, and a fence built round it. A shed adjoining the lock was purchased and fitted up as a tool house and work shop.

New Works.

The work under contract with Mr. Becker, for the new channel through the shoal below the lock, was completed in the fall of 1877, and a final estimate for it given on 21st November, 1878.

The deepening of the channel from the lower end of the new cut to deep water, near Ile Perrot, was undertaken by Messrs. Hickler & Co., after the failure of the dredge "Queen of Canada" to complete it.

Messrs. Hickler & Co. began work with one of their powerful dredges in September, and in the beginning of November had the channel completed to deep water, on the Ile Perrot side. This channel is now 120 feet wide and 10½ feet deep at low water.

New Lock, &c.

Plans were prepared, and up to 1st November, tenders invited for the construction of a new lock and canal adjoining the present lock. The contract, however, was not awarded at that time.

Fresh tenders for the same have been again called for and received up to the 10th of October, and are now under consideration.

STEAM DREDGE "QUEEN OF CANADA."

This dredge was employed on the St. Anne's works during the months of July and August, but was not sufficiently powerful for the unusually hard material at that place. She was therefore sent to the Beauharnois Canal, where she continued to work until the close of navigation. She wintered in that canal, and, after being fitted up in the spring, was taken down to Lachine, where she did some dredging in front of the wood wharf. After which she was sent down to Section No. 3. and employed to deepen the bottom of the old canal, in front of Cantin's Dry Dock, until the 1st of July, when she was removed to the town of Beauharnois, where she worked ten days, and was then sent to St. Placide, on the Ottawa River, to deepen the approach to the wharf at that place.

The *Carillon Canal, Chute à Blondeau Canal, Culbute Canal* and *other works* on the *Upper Ottawa River*, were transferred from the jurisdiction of Mr. John G. Sippell, Superintending Engineer, last year, and placed under the control of Mr. E. H. Parent, Resident Engineer at Grenville. All books, plans, papers, &c., in connection with these works were handed over to Mr. Parent, and that gentleman will report upon those works, now under his charge.

I have the honor to be, Sir,

Your most obedient servant,

T. W. HARRINGTON,

Acting Superintendent Engineer.

Secretary, Public Works Department.

LACHINE CANAL.

STATEMENT showing the depth of river water on the mitre sills of Lock No. 1, at lower entrance, and Lock No. 5, at upper entrance, during the Fiscal Year ended 30th June, 1879. (From Lockmaster's Returns.)

Months.	Lock No. 1—Lower Sill.				Lock No. 5—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
July	18	9	18	0	11	6	11	0
August	18	8	18	0	11	5	10	9
September	18	3	17	7	11	3	10	7
October	20	0	17	9	12	3	10	9
November	20	3	18	11	12	9	11	5
December	21	10	19	5	13	3	11	10
1879.								
January	33	4	19	0	13	0	11	7
February	33	2	28	3	12	6	10	7
March	30	0	28	3	11	2	10	5
April	34	3	22	4	13	6	11	2
May	25	7	22	6	15	4	13	9
June	22	5	19	7	14	0	12	1

Beauharnois Canal.

Statement showing the depth of river water on the mitre sills of Lock No. 6, at lower entrance, and Lock No. 14, at upper entrance, during the Fiscal Year ended 30th June, 1879. (From Lockmaster's Returns.)

Months.	Lock No. 6—Lower Sill.				Lock No. 14—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In
July	11	1	10	8	12	5	12	0
August	10	8	10	5	12	6	12	0
September	11	0	10	5	12	10	12	0
October	11	10	11	0	12	11	11	11
November	12	5	11	10	12	4	11	10
December	12	10	12	5	13	3	12	3
1879.								
January	14	6	12	0	13	6	12	9
February	18	0	14	0	13	7	12	5
March	17	4	12	1	12	9	11	10
April	13	0	11	1	12	9	12	4
May	14	9	13	2	12	11	12	3
June	13	7	11	8	12	5	12	1

Chambly Canal.

Statement showing the depth of river water on the mitre sills of Lock No. 9, at lower entrance, and Lock No. 1, at upper entrance, during the Fiscal Year ended 30th June, 1879. (From Lockmaster's Returns.)

Months.	Lock No. 9—Lower Sill.				Lock No. 2—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
July	10	0	9	1	8	7	7	10
August	11	4	10	0	9	3	8	6
September	11	4	10	1	9	5	8	3
October	10	11	9	0	9	1	7	4
November	12	3	8	7	9	3	7	7
December	16	9	11	3	10	4	9	1
1879.								
January	17	11	13	6	10	1	9	1
February	18	8	16	9	9	2	9	0
March	18	3	17	4	9	6	9	0
April	18	8	16	0	11	7	9	5
May	17	1	14	4	12	3	10	7
June	14	0	10	10	10	6	9	1

St. Ours' Lock.

STATEMENT showing the depth of river water on the mitre sills of the St. Ours' Lock, during the Fiscal Year ended 30th June, 1879. (From Superintendent's Returns.)

Months.	Upper Sill.				Lower Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
July	9	9	8	8	8	10½	8	0
August	10	3	9	5	9	2	8	5
September	10	1	8	7	9	2	8	1
October	11	0	8	5	8	9½	7	11
November	12	0	9	10	10	5	8	2
December	16	6	10	10	12	9	9	9
1879.								
January	15	11	14	1	12	0	9	7
February	15	11	13	8	10	7	9	3
March	16	4	14	2	11	11	9	7
April	20	3	16	5	16	0	12	1
May	17	11	15	2	14	1	11	8
June	14	10	11	3	11	5	9	7

Ste. Anne's Lock.

STATEMENT showing the depth of river water on the mitre sills of the Ste. Anne's Lock, during the Fiscal Year ended 30th June, 1879. (From Superintendent's Returns.)

Months.	Lower Sill.				Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
July	8	9	8	3	9	0	7	11
August	8	8	8	2	8	3	7	9
September	8	5	7	11	7	11	7	2
October	9	3	8	2	10	10	8	5
November	10	11	8	3	11	2	10	1
December	10	10	9	4	11	4	10	2
1879.								
January	10	6	9	0	10	7	8	10
February	9	9	8	9	8	11	8	3
March	8	10	8	2	8	9	7	9
April	11	0	8	8	11	11	8	0
May	13	5	11	2	15	11	12	6
June	11	8	9	4	13	7	10	0

Lachine Canal.

Statement of amounts collected for Fines and Damages, during the Fiscal Year ended 30th June, 1879.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1878.			$ cts.	$ cts.	$ cts.
Sept. 26	Barge Buel	Chauron	4 00		
Oct. 28	Steamer Plover	L. St. Denis	20 00		
Nov. 5	Barge H. L. Johnston	Seymour & Co	10 00	30 00	
" 6	Propellor Ocean	S. Neelon	10 00		
" 25	Barge H. L. Johnston	Seymour & Co	5 00	10 00	
" 28	Barge Toupin	Montreal & Ottawa Forwarding Company		7 50	
1879.					
May 27	Tug Tim Doyle	Lariviére	4 00		
"	Tug Leslie	Murray & Co	4 00		
			$57 00	$47 50	$104 50

M. CONWAY,
Superintendent.

Lachine Canal Office,
Montreal, July, 1879.

Lachine Canal.

Statement of amounts collected for Wood, Rent and Wintering Vessels during the Fiscal Year ended 30th June, 1879.

Date.	Items.	Number.	Rate.	Amount.
1878-79.		Cords.	$ cts.	$ cts.
	Firewood	28,418	00 04	1,136 72
	Wintering Vessels			641 00
	Total			1,777 72

JOHN O'NEIL,
Collector Canal Tolls.

Collector's Office,
Montreal, July, 1879.

Lachine Canal.

Statement of Basin, Firewood, Fines and Bank Dues collected at Lachine, for the Fiscal Year ended 30th June, 1879.

Date.	Items.	Amount.
1878-79.		$ cts.
	Basin dues	344 68
	Firewood dues	64 02
	Bank "	44 00
	Fine	8 00
	Total	460 70

JOHN DYDE,
Collector.

Collector's Office,
Lachine, July, 1879.

Beauharnois Canal.

Statement of amounts collected for Fines and Damages during the Fiscal Year ended the 30th June, 1879.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1878.			$ cts.	$ cts.	$ cts.
Aug. 27	Schr. Walter	Elizabeth Peters		10 00	
" 24	Barge Star	Holcome Stewart	10 00		
" 24	" Onondaga	Demers	10 00		
Oct. 17	Str. Corsican	Sinclair		11 00	
Nov. 6	Barge Toledo	Hénault		10 00	
" 20	" Ontario	McLennan	10 00	20 00	
" ...	Prop. Columbia	Zealand		15 00	
" 24	Barge St. Cyprien	Desmarais		4 00	
			30 00	70 00	100 00

J. F. BÉIQUE,
Superintendent.

Beauharnois Canal Office,
Melocheville, July, 1879.

CHAMBLY CANAL.

STATEMENT of amounts collected for Fines and Damages, for the Fiscal Year ended 30th June, 1879.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1878.			$ cts.	$ cts.	$ cts.
Oct. 23	Barge E B. Eddy	A. A. Cook		2 00	
Nov. 15	" Wild Goose	T. Chasse		8 00	
" 19	" Victoria	Napoleon Fountaine		1 25	
" 29	Steamer Caroline	F. O'Keefe		5 00	
1879.					
June 18	Scow Henry	Joseph Lemay	2 00		
" 28	" P. L	X. Laviolette		1 25	
			2 00	$17 50	$19 50

CHAMBLY CANAL OFFICE,
CHAMBLY, July, 1879.

CORNELIUS ULRIC,
Superintendent.

CHAMBLY CANAL.

STATEMENT of amounts collected for Wharfage and Hydraulic Rent, for Fiscal Year ended 30th June, 1879.

Date.	Name of Owner.	Name of Vessel.	Amount.	Total.
1878.			$ cts.	$ cts.
July 12	Boat L. E. Bourou	E. B. McElroy	1 75	
" 19	" H. Doolittle	L. Lafontaine	2 75	
" 23	Scow Loup	C. O. Gervais	1 50	
" 26	Barge	Chas. O'Reilly	2 55	
Aug. 7	"	G. A. Clark	1 00	
Sept. 9	Schooner St. Catharine	O. Dupont	1 00	
Oct. 10	Canal Boat	John Hachette	1 40	
Nov. 19	Barge	Chas. O'Reilly	3 35	
1879.				
June 14	Barge Queen	Henry Sexton	3 00	
" 19	Barge	Chas. O'Reilly	2 00	
			$ 20 30	
June 20	Hydraulic Rent, A. S. T. Willett		150 00	
				$170 30

COLLECTOR'S OFFICE,
CHAMBLY, July, 1879

A. P. JODOIN,
Collector.

APPENDIX No. 4.

CARILLON, CHUTE A BLONDEAU, GRENVILLE AND CULBUTE CANALS.

OTTAWA RIVER CANALS OFFICE,
GRENVILLE, 1st October, 1879.

SIR,—I have the honor to transmit to you, herewith, my Report on the works under my charge for the fiscal year ending 30th June, 1879.

No accident of any importance has occured on these works during last year, and navigation has met with no interruption. A break in the Grenville Canal bank promptly repaired, and the undermining of the apron of l'Islet Dam at Culbute Locks, are the only accidents which have taken place,

The new works at Carillon have remained untouched for the last year, but work is fast being resumed under two separate contracts, one for the canal and new locks, granted to Messrs. R. P. Cooke & Co., the former contractors. The second for the dam and slide, to F. B McNamee & Co.

It was expected that the Grenville Canal works, under contract with Mr. James Goodwin, would have been completed during the present year, but there still remain some portions not finished.

The condition of the old locks at the lower end of the Grenville Canal is very precarious, and to keep them in working order involves considerable expense every year. As stated in previous reports, it is most desirable to have them rebuilt without delay.

CARILLON AND GRENVILLE CANALS.—MAINTENANCE AND REPAIRS.

These canals were closed on the 6th September, 1878, and re-opened, the Carillon on the 1st, and the Grenville on the 5th of May. There has been no detention of any importance on these canals during the past year.

Locks Nos. 1 and 2.

Two new swing beams on lower gates have been required, one sluice gate, three castings and two crabs repaired. During low water last autumn, it was found necessary to remove the *debris* accumulated in Lock No. 1, which had to be done by diver and hand dredging. The lower gate on north side Lock No. 1 was taken down and repaired, the upper pair of Lock No. 2 were lifted and cupped; lock walls were pointed and grouted; gates and iron work painted before opening of navigation.

Lock No. 3.

Entrance cleaned by diver and hand dredging last autumn; lock gates and sluices repaired and painted; walls pointed and grouted; buildings and fences repaired.

Carillon Canal Prism.

More than ordinary expense was incurred cleaning this canal in spring, owing to the increased size of vessels now navigating it. The fences and tow-path have been repaired, and banks riprapped; the public road has been kept in good order.

North River Dams and Feeder.

These being built of loose stones had, as usual, to be rebuilt in spring. The bridge over feeder on main road was recovered, and fences on line of feeder repaired; one new casting on bulkhead, one new sluice gate and platform put in.

Chûte à Blondeau or Lock No. 4.

Clay and stone deposits were removed by diver and hand dredging at upper and lower entrance of this lock. These obstructions, which accumulate every year, cause much trouble to vessels during low water. Gates, sluices and machinery were repaired, as well as fences and buildings.

Locks Nos. 5, 6, 7 and 8.

These combined locks are in a very dilapidated condition and are kept in working order with much expense. For several years past their reconstruction has been recommended.

Besides ordinary repairs to gates, walls, sluices and mechanical structures, the middle sill of Locks 7 and 8, and the upper sill of Lock No. 8, which gave way in August, 1878, were replaced without interrupting navigation. The middle pier of Locks 7 and 8, south side, was strapped with iron to keep it together; one sluice casting and two balance beams on upper gates, No. 8, and crabs were renewed.

Locks Nos. 9, 10, 11, and Bridges Nos. 9 and 11.

These being new works required no important repairs beyond painting the gates and iron works.

Grenville Canal Prism.

A break occurred in south bank of this canal on the 17th August, 1878, near the old by-wash, Section No. 2. It was repaired promptly, no serious consequences arising therefrom. The banks have been rip-rapped, farmer's road widened and graded, towing paths levelled, fencing along line of canal and canal property at Grenville, constructed or repaired. Public road at same place widened by removing boulders; bridges over culverts renewed and snubbing posts put in where found necessary; a new pair of spare gates for Lock No. 11 were, for the most part, made during the year, and would have been completed had the iron for these been delivered in due time.

MAINTENANCE AND REPAIRS.—CULBUTE LOCKS.

The Culbute Locks and Dams completed for the last three years have not yet been used for navigation. (See new works at Culbute). No repairs of any importance were required on these works up to last spring, when it was discovered that in high water the strong eddy formed at the foot of l'Islet dam had excavated, below the apron, a large hole undermining the apron itself. This portion of the works is at present in a precarious condition and requires immediate attention. The necessary repairs are estimated at about $1,500. A Lock Master was appointed on 1st May last.

The building occupied by the Lock Master has undergone some necessary repairs to make it suitable.

NEW WORKS—CARILLON CANAL AND DAM.

No contract work was done during the year. Messrs. R. P. Cook & Co. had suspended operations in May, 1877, and had not again resumed work.

On the 10th July, 1878, the works were taken possession of by the Department. Immediately thereafter the necessary plans, preliminary estimates, quantities, &c., were prepared for reletting the works. Tenders were advertised for and received on the 15th August, but no action was taken on them then. In June last, the works were divided into two contracts; one, comprising the dam and slide was awarded to Messrs. F. B. McNamee and Co., of Montreal, and the other, comprising the canal and locks, to Messrs. R. P. Cooke & Co., of Brockville. At the close of the present fiscal year both firms were making preparations to begin work.

Shortly after the works were taken possession of by the Department, in summer, 1878, a settlement in full was made with the late contractors. By it a quantity of plant and buildings were purchased from them, which, together with all the materials provided for the works, but not then put in, were placed in charge of the Resident Engineer. These materials consisted principally of stone, iron and timber; about half of the stone was cut for the new locks, two-thirds of the iron manufactured into bolts, &c., and a small portion of the timber framed. The plant was gathered up and housed, the buildings properly secured, new booms put around the timber floating in the water, and, generally, all was done that was necessary to prevent loss or damage to property. These materials have since been disposed of to the new contractors.

The past year would not have been a favorable one for the prosecution of this undertaking, there having been almost no low water last fall, which was followed by a very severe winter.

The crib-work for foundation of dam which had been placed in the north side of the Sickle Channel, was carried away last spring. With that exception, as far as could be ascertained, the works in place in the river have sustained no more damage than was to be expected, considering their exposed and unfinished condition.

Grenville Canal.

No work was done on Section No. 1 during the season of navigation in the present fiscal year, what remained to be done being all excavation below the surface of the water. The contractor commenced operations on the 13th December on Section No. 1, and on the 17th on Sections Nos. 2 and 3.

On Section No. 1, extending from entrance at Grenville to Lock No. 10, the excavation consisted in 1,600 cubic yards of earth, and 5,200 cubic yards of rock.

On Section No. 2, between Lock No. 10 and Lock No. 9, 23,000 cubic yards of earth, and 16,000 cubic yards of rock were excavated, including two new meeting basins.

On Section No. 3, between Lock No. 9 and Lock No. 8, 900 cubic yards of earth, and 4,900 cubic yards of rock were excavated.

On Section No. 2, at the new basins, 915 cubic yards of dry rubble wall was built to protect the tow-path. The stone was procured in the excavation of the basins.

The excavation of the two new meeting basins, above referred to, was decided upon in February last. They were located on Section No. 2, one, half a mile above Dewar's Mills Basin, the second half a mile below the same. These two basins were commenced in the latter end of February, and completed before the opening of navigation last spring. At present there are meeting basins 80 feet wide and 400 feet long every half mile between the entrance at Grenville and Lock No. 9. There is no meeting basin on Section No. 3, which is about $\frac{3}{4}$ of a mile long.

There has been an average force of 240 men employed on these works during the last working season.

Work in the prism of the canal was suspended on the 5th May last, by opening of navigation. There is little work to be done which the contractor could execute in summer; he is at present going on with a small force finishing the tow-paths, giving them the proper width, making ditches, repairing dry rubble walls, etc.

The work remaining to be done all over the canal is not considerable in quantities but will require about 200 men all next winter. It consists mostly in terming and finishing work in the three sections of the canal.

STATEMENT of Fines and Damages collected during the Year ending 30th June, 1878.

Date.	Name of Vessel.	Master or Owner.	Amount.	Remarks.
1879.			$ cts.	
May 17	Minnie	Harris	10 00	Damages, Lock No. 3.
do 19	Francis	Clark	10 00	do Gates, Lock No. 1.
June 1	Manitoba	Little	2 09	Violating regulations.
		Total	22 00	

WM. B. FORBES,
Superintendent.

CULBUTE AND GRENVILLE CANAL OFFICE,
CARILLON, 14th July, 1879.

CULBUTE LOCKS.

These locks have been completed for the last three years, but no vessel has yet passed through them, and they will continue to remain useless until the proposed works to be executed between these locks and Bryson Village are carried out. These consist in building two small dams at Grand Calumet and Flat Rapids, removing gravel shoals at several points between the locks and the Chapeau Bridge and the conversion of a portion of the Chapeau Bridge into a draw-bridge. In July, 1878, a contract was signed with Mr. John Harvey for the excavation of the shoals and the building of the dams above mentioned. The contractor commenced the excavation of the shoals during last autumn and made some preparation for the construction of the dams.

About 1,400 cubic yards were removed from the shoals below the locks. Probably the same quantity remains to be taken out at this spot; 500 cubic yards were excavated on shoal at mouth of McDonald's Channel leaving about 5,000 cubic yards more to be removed. The shoal at the Chapeau Bridge is untouched; the quantity to be excavated here is estimated at 550 cubic yards.

The excavation of these shoals, commenced on the 28th August, was suspended on the 21st September following on account of the sudden rise of water and was not resumed since, the water not having fallen sufficiently to allow dredging with carts. According to present agreements this dredging has to be completed before the dams are built at the Grand Calumet and Flat Rapids.

The building of the draw-bridge into the Chapeau Bridge is about to be given out by contract.

I have the honor to be, Sir,
Your obedient servant,
E. H. PARENT,
Superintending Engineer, O.R.C.

Secretary, Department of Public Works,
Ottawa.

APPENDIX No. 5.

CORNWALL CANAL.

CORNWALL, 2nd July, 1879.

SIR,—I have the honor to submit my Annual Report on the Cornwall Canal, for the fiscal year ending 30th June, 1879.

The canal was kept in good working order, from 1st July, 1878, to 8th December, when it was closed for the winter months.

It opened again on the 2nd of May, 1879, and was kept in good order to the 30th of June.

The works in progress during the past year may be classed under the head of ordinary repairs, except in the rebuilding of the lower gates of Lock No. 16, and one half of the swing-bridge at Cornwall, broken by the steamer "Adventure," on the 11th October last.

Raising embankment, protecting canal by raising slope walls, repairing lock-gates, supply weirs, bridges over sluices, making ten new sheaves, four new knees, four new lock-gate bridges, repairs to lock masters', lock labourers' and collector's house.

I have the honor to be, Sir,

Your obedient servant,

D. A. McDONELL,

Superintendent.

Secretary, Public Works Department,
Ottawa.

APPENDIX No. 6.

WILLIAMSBURGH CANALS.

MORRISBURGH, 1st September, 1879,

SIR,—I have the honor to submit my Report, on the working and condition of the Williamsburgh Canals, for the fiscal year ending 30th June, 1879.

These canals embrace the Farran's Point, the Rapid Plat, and Point Iroquois Junction and Gallops Canals; these canals were closed for the winter season, on the 12th December, 1878, and were opened for traffic on the 28th April, 1879, and during the season of navigation no interruption occurred.

Farran's Point Canal.

Some repairs were made to the gates; the banks are well stoned and in good condition; the upper gates at this lock will require to be taken out and repaired during the winter; the pier at the entrance requires to be rebuilt, and some snubbing posts placed.

Rapid Plat Canal.

The repairs to this canal have been confined to the gates and banks. This canal requires dredging in several places, the gates at Lock No. 24 should be taken up and repaired during the winter, the repair of the dock of the slip, on the inside of the wharf at the entrance of this canal, and dredging the slip so that boats could load and unload in the slip, would be of much convenience both to shippers and parties in charge of vessels.

Iroquois Junction and Gallops Canals.

The repairs on these canals consisted in work to the piers, repairs to the swing bridges and booms, and in the protection of the banks.

The swing bridge at Lock 25 at Iroquois was replanked, this bridge as well as the bridge at Lock 26, Edwardsburgh, have been repaired.

The gates at Lock 27, Gallops, should be taken up and repaired during the coming winter.

The buoys in the St. Lawrence, between Johnstown and Dickenson's Landing, under my charge, were replaced this spring.

I have the honor to be, Sir,

Your most obedient servant,

A. G. MACDONELL,

Superintendent, Williamsburgh Canals.

Secretary, Public Works Department,
Ottawa.

APPENDIX No. 7.

WELLAND CANAL.

SUPERINTENDENT'S OFFICE,
ST. CATHARINES, 1st July, 1879.

SIR,—I have the honor to submit my Annual Report of the condition and working of the Welland Canal, for the year ended on the 30th day of June, A.D., 1879.

The canal was closed on the 14th day of December last, and opened on the 5th day of May last. The delay in opening the canal until so late a period in the season was occasioned by the condition of the works of enlargement at and near Port Colborne.

During the winter, to facilitate operations in connection with the works of enlargement, a portion of the canal on the summit level was unwatered and remained so until the 1st of May. The water in that part of the summit level not unwatered including the deep cuts, however, was kept at the level of Lake Erie, and that in the feeder at a uniform level of three feet above the level of Lake Erie.

Navigation has been interrupted by breaks on the canal on three occasions during the year. The headgates of Lock No. 12 were successively broken out, the one on the 11th day of November and the other on the 15th day of November last, as reported on the 5th day of December last, causing an interruption of navigation at each time of about 12 hours.

On the 10th day of September last, a rain storm set in and continued without interruption for nearly 3 days, producing a very extraordinary flood for the time of year all along the line of the Welland Canal and feeder. Great damage was done to the works in various places, 100 feet of the bank at the old wooden waste weir, on the Haldimand side of the Grand River at Dunnville, was swept out; one of the stone piers of the new waste weir at that place was carried off the breast wall, and the flood gates split. Two breaks also occurred immediately above the upper stone waste weir. Along the line of the main canal, the water broke over the banks in several places, washing away portions of them. The swing-bridge over the slip at Lock 2 was struck by a scow that broke from her moorings at the Axe Factory, and was thrown out of its place, the stringers were broken and the wooden abutments seriously damaged.

The waste weir at Port Dalhousie was carried away and the large level above Lock No. 1, drained into Lake Ontario. It took 10 days to make the repairs necessary for the resumption of navigation, which was interrupted during that time.

The supply of water through the feeder from the Grand River has been sufficient during the year for navigation and manufacturing purposes. The traffic through the canal up to this date has been less, since the opening of navigation last spring, by thirty per cent., than it was for the corresponding period of last year.

The East pier at Port Maitland is still in the same condition as reported last year. The superstructure should be at once rebuilt.

The repairs made during the year are as follows:—

No. 1 DIVISION.

At Port Dalhousie.

Flood gates put in lock gates and mill flumes to increase facilities for wasting water in time of freshets. Dam built around old waste weir after break, and macada-

mized on top for public travel. New float-bridges built and floats repaired. Swing-bridges painted.

Lock No. 2.

Two new gates put in complete; new fender work for swing-bridge on tow path side constructed, and bridge painted; swing-bridge and abutments at slip into Axe Factory extensively repaired, after damage by flood of September last.

Lock No. 3.

St. Paul St. bridge replanked; lock gates repaired.

Lock No. 4.

Floats repaired and bridge repaired and painted.

Lock No. 5.

One new balance beam put in, two new gates put in, and bridge repaired and painted.

Lock No. 6.

Gates repaired.

Lock No. 7.

Gates repaired and bridge repaired and painted.

Lock No. 8.

Gates repaired.

Lock No. 9.

Two new balance beams put on.

Lock No. 10.

Gates and mitre sills repaired. Lock-tender's house repaired.

Lock No. 11.

Gates and mitre sills repaired. Lock-tender's house repaired and painted.

Lock No. 12.

Two new gates put in and mitre sills repaired.

Lock No. 13.

One new gate put in.

Lock No. 14.

Gates and mitre sills repaired.

Lock No. 15.

Gates and mitre sills repaired, and bridge repaired and painted, and Lock-tender's house repaired and painted.

Lock No. 16.

Gates and mitre sills repaired.

Lock No. 17.

One new gate put in.

Lock No. 18.

One new gate put in.

Lock No. 19.

Gates and mitre sills repaired.

Hydraulic Race.

Three hundred feet of embankment 10 feet wide and 6 feet high, built below aqueduct to prevent flooding of adjacent lands; aqueduct caulked and repaired.

On this division thirty-two scow loads of stone, gravel and clay have been used in repairing tow path and facing and repairing banks. The bottom of the canal and all the locks, except one and two, were thoroughly cleaned out, and bars removed in the spring before the opening of navigation. All the floats and float bridges have been more or less repaired.

Gate Yard.

Eleven new gates have been built, 50 snubbing posts have been made, and forty of them put in at various points where they were required; 7 old gates have been dismantled and cut up.

No. 2 Division.

Lock No. 20.

Gates and mitre sills repaired; kitchen to lock-tender's house built and cistern put in—repairs to keep water from cellar made.

Lock No. 21.

Gates and mitre sills repaired.

Lock No. 22.

Gates and mitre sills repaired.

Lock No. 23.

Gates and mitre sills repaired; bank whole length of lock raised on the tow path side; lock-tender's house repaired, having been damaged by fire in January last.

Lock No. 24.

Bank on heel path raised whole length of lock; gates and mitre sills repaired; waste weir repaired and pointed, and wall built to hold the bank; also, retaining on the outside.

Lock No. 25.

40x26 feet of new bottom put in, the old ones having risen, as reported, on the 1st day of July last; gates and mitre sills repaired; retaining wall from waste weir bridge to guard lock, built on heel path side of canal.

Guard Lock.

New signal post erected; lock bottom replanked and gates and mitre sills repaired; levels and locks on this division, from 20 to 26 thoroughly cleaned out, and stones and bars removed in spring. The berm bank above waste weir at Higgin's, for a distance of 3,000 feet, and the opposite bank for 1,080 feet, have been materially strengthened, 1,292 yards in length of this bank on this level having been worn too low, and cut on the inner side in places by the action of the water, have been raised and repaired with clay and faced with stone, and 500 yards additional faced with stone, to protect it from wash by the action of the water.

The back ditches on this level have also been cleaned out and culverts repaired and lengthened.

On the summit level, the water from the old dry dock at Port Robinson, has been shut off, as directed by your letter of the 11th day of September last, by a sufficient earth embankment which has been macadamized on the top for a public road. The old bridge removed; the back ditch at deep cut has been cleaned out thoroughly and the works generally repaired where repairs were essential.

No. 3 Division.

Port Colborne.

Lock cleaned and gates repaired; swing bridges replanked; the house purchased by the Department from John Cross, in connection with the works of enlargement, raised and properly placed upon new foundation; the floats in the rock cut removed down the canal to a place of safety for the winter, out of the way of contractors upon the enlargement, and replaced again in the spring of 1879. Considerable portions of them were rebuilt and the balance repaired. Two watch houses removed out of the way of contractors. A new scow built and ferry established at stone bridge, over the canal, the old bridge having been removed by contractors. The ferry boat at the harbor also repaired. The back ditches on this division cleaned out and the banks repaired, and a number of new snubbing posts put in where required.

No. 4 Division.

Dunnville.

Two new stationary bridges built over stone waste weir on south side of Grand River; 20 white oak piles driven in front of toll bridge to protect the piers from ice and drifts; one new gate built and put into guard lock. New swing-bridge built across the feeder, at Marshville; 10,400 cubic yards of earth removed from back ditches west of stone culvert on north side of feeder, and between Stromness and Grand Trunk Railway Bridge. Towpath below Dunnville extensively repaired, embankment repaired and faced with gravel. Repair scow caulked and painted, 22 cords of stone used in facing bank in front of old wooden waste weir, and 80 rods of fence on grounds around Government house renewed.

The Canada thistles and noxious weeds on all the property of the Department, connected with both the old and new canal, were cut at the proper season.

The whole work is at present in as good a state of repair as it has been for some years past. The canal is working satisfactorily. There are a sufficient number of gates in reserve under water to meet requirements in any emergency that is likely to arise. Extensive renewals of, and repairs to portions of the work will be

required during the current year, of which estimates and details will be forwarded in due course.

I have collected during the year from masters and owners of vessels, the sum of $64.50 in fines for violation of Canal Regulations, and for damage to works. Which amount I have handed H. H. Collier, Collector at this Port.

I append a statement of fines and damages, marked "A." I also append a statement marked "B" showing the greatest and least depth of water on mitre sills at Port Colborne and Port Dalhousie locks in each month during the year; also, a comparative statement of the average depth for the months of June, 1878 and 1879, which shows that the water has been lower this year for June by four and one-half inches ($4\frac{1}{2}$) at Port Dalhousie, and by six and one-half inches ($6\frac{1}{2}$) at Port Colborne than for the same month in the year 1878.

I have the honor to be, Sir,

Your obedient servant,

E. V. BODWELL,

Superintendent.

Secretary, Public Works Department,
Ottawa.

WELLAND CANAL.—A.

STATEMENT of Fines and Damages collected from Vessels contravening the Canal Regulations, for Fiscal Year ended 30th June, 1879.

Date.	Name of Vessel.	Fines.	Damages.	Total.
1878.		$ cts.	$ cts.	$ cts.
Aug. 5	Raft.....	.....	4 50	
Sept. 7.....	Propeller "Lake Michigan".....	20 00		
do 21.....	do "Africa".....	20 00		
1879.				
June 12.....	Schooner "Edward Blake".....	20 00		
		60 00	4 50	*64 50

*Handed to H. H. Collier, Collector, St. Catharines.

WELLAND CANAL.—B.

STATEMENT showing the Depth of Water on the Lower Sill of Lock No. 1, Welland Canal, for the Fiscal Year ended 30th June, 1879.

Months.	Lower Sill.				Months.	Lower Sill.			
	Highest.		Lowest.			Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	1879.	Ft.	In.	Ft.	In.
July	13	11	13	4	January	14	0	13	2
August	13	10	13	3	February	13	11	12	5
September	14	0	13	4	March	13	5	12	10
October	13	6	12	9	April	13	9	13	0
November	13	3	12	5	May	13	9	13	1
December	14	0	13	0	June	13	10	13	5

	ft.	in.
Average depth, June, 1878	13	9
" " " 1879	13	4½

STATEMENT showing the Depth of Water on the Upper Sill of Lock No. 27, Welland Canal, for the Fiscal Year ended 30th June, 1879.

Months.	Upper Sill.				Months.	Upper Sill.			
	Highest.		Lowest.			Highest.		Lowest.	
1878.	Ft.	In.	Ft.	In.	1879.	Ft.	In.	Ft.	In.
July	13	9	12	5	January	14	7	11	2
August	14	2	12	5	February	12	5	11	6
September	15	1	11	8	March	13	2	11	4
October	13	11	11	10	April	12	10	11	11
November	14	10	11	1	May	12	9	11	6
December	17	1	12	1	June	12	11	12	0

	ft.	in.
Average depth, June, 1878	12	11
" " " 1879	12	4½

APPENDIX No. 8.

BURLINGTON BAY CANAL.

ST. CATHARINES, 20th October, 1879.

SIR,—I have the honor herewith to transmit my Report of the working and condition of the Burlington Bay Canal, for the year ended 30th June, A.D. 1879.

The canal was closed on the 20th day of December, 1878, and opened on the 16th day of April, 1879.

On the 20th day of September, 1878, 150 yards of the superstructure of the north-west pier, near the railway bridge, was burned to the waters' edge, and on the 27th day of May, 1879, the remainder of said pier, on the bay side of the beach, was burned, making a total length of about 1,100 feet of pier burned.

The balance of the piers are somewhat decayed, and the covering, especially, considerably broken.

I have made but slight repairs to any portion of the works during the past year. The whole superstructure of the piers requires to be renewed soon.

I think it would be well to rebuild the burned portions this year, and the southern end of the east pier during the summer of 1880, and the balance in the two following years.

In the meantime, some slight repairs will be required to the waling and covering. Some of the filling has been washed out by the action of the water and will require to be replaced.

I have supplied a new small boat for the ferry, the old one having given out.

I have the honor to be, Sir,

Your obedient servant,

E. V. BODWELL,

Superintendent.

Secretary, Public Works Department,
Ottawa.

APPENDIX No. 9.

RIDEAU NAVIGATION.

RIDEAU CANAL OFFICE,
OTTAWA, 28th October, 1879.

SIR,—I have the honor to submit my Annual Report on the works under my charge during the fiscal year ended 30th June, 1879.

Navigation closed at Kingston Mills on the 30th November, and at Ottawa on the 4th December, 1878. Opened at Ottawa and Kingston Mills on the 5th May, 1879.

The water levels on the several reaches, both ascending and descending, were well maintained, and navigation continued through the year uninterrupted.

The principal repairs executed at the different stations were as follows:—

Kingston Mills.

Repairs to long bridge over by-wash, and facing dam with stone.

Lower Brewer's.

Repairs to sluices and machinery, and new swing beams on upper and lower gates.

Upper Brewer's.

Repairs to sluice and machinery; also, to swing bridge.

A barge loaded with iron ore belonging to the estate of the late John Chaffey, sunk just clear of the channel leading into Brewer's Upper Mills, although several attempts were made by the owners to move it, they finally abandoned the task.

Last fall the hull gradually drifted into the channel and impeded navigation. An unsuccessful demand was again made on the owners for its removal. The barge and its contents were seized, and after removing the ore by a diver (some 90 tons), we were enabled to tow it off and clear the channel.

As provided for in the canal regulations, the ore will be offered for sale by public auction, to recoup a portion of the expenses incurred in clearing the channel.

Whitefish.

Gravel on dam and repairs to sluice gates.

Jones' Falls.

Four new sluice frames; repairs to machinery, wing walls and filling settlements in the high dam.

Davis.

Framing and putting in one pair of gates to lower lock; masonry of man holes repaired.

Chaffeys.

Sundry repairs to man holes and machinery.

Newboro'.

Chain blocks renewed, and sluices below water strengthened and repaired.

Narrows.

Repairs done to masonry, and putting in a log to prevent gravel washing into lock.

Poonamalie.

Repairs to bulk head and repairs to masonry of hollow quoins.

Oliver's Ferry Bridge.

Repairs to swing pier of bridge.

Smith's Falls, Combined.

Framing and putting in new gates to centre lock, widening approaches to swing-bridge; small repairs to machinery.

Old Slys.

Repairs to sill of upper lock.

Edmonds.

Framing and putting in new gates at lower lock; cleaning cut above lock.

Maitlands.

Repairing dam at break ground; replanking swing-bridge.

Merrickville.

Man hole gratings renewed; filling in settlement in embankment; repairs to fences and Lock master's house.

Clowes and Nicholsons.

Sundry repairs to machinery.

Burritts.

Small repairs to dam and machinery of locks.

Becketts.

Repairs to swing-bridge and timbers delivered for new one.

Wellington Bridge.

The Wellington Bridge, built by the County of Carleton, to which the Department contributed 47 per cent. of its cost, was completed and opened for traffic in the fall of 1878, the total cost of the bridge was $9,394. It consists of 4 spans of 75 feet clear, a swing-bridge opening and two land openings, altogether some 450 feet in length.

Its construction has given great satisfaction to the counties on either side of the river, and supplies a crossing much needed, half way between the bridges at Manotick and Beckett's Landing, a distance of some 27 miles.

Manotick.

Repairs to bulk-head and swing-bridge

Long Island.

Repairs to masonry of man holes, and sundry repairs to sluices and machinery.

Black Rapids.

Clay and gravel placed on flat dam, repairs to bulk-head.

Hogsback.

New gates to lower lock; repairs to apron, and sundry repairs to machinery.

Hartwells.

Chain blocks renewed; repairs to machinery; embankments raised with gravel and stone facing to dam at Dow's swamp.

Ottawa.

Three pairs of lock gates resheeted and hollow quoin repaired; 4 new sluice frames, and sundry repairs to machinery, handrails, &c.

Slips of clay into the deep cut cleaned out, and retaining wall on the north side of the basin rebuilt; sundry repairs to the wharves round the basin.

The entrance to the combined locks at Ottawa is gradually filling up with mill refuse, and although some $500 was spent in 1873 in dredging a channel through it, the next year it was again filled up; the services of a dredge will be needed next year to thoroughly clean out the entrance, and, until the mills are prevented throwing the refuse in the river, the services of a dredge will be periodically required.

For the purpose of supplementing the supply of water to the canal during the periods of low water, three dams were rebuilt by the Government to retain the spring freshets until such times as water was required in the fall of the year. They were as follows:—

1. Bob's Lake Dam.
2. Chaffey's Dominion Dam.
3. Hart Lake Dam.

The first retains a large area of water shed, supplying the eastern descending level to Ottawa, discharging through the River Tay into the lower Rideau Lake. This dam is still in good order, and in charge of a paid officer.

The second retains the watershed of some seventy-five square miles of rocky country, supplying the south-west descending level to Kingston, discharging through the Devil Lake into the Rideau Canal at Mud Lake. This dam was torn down by some evil disposed persons in August, 1877, and has never been rebuilt. Its destruction deprived the canal of this large reserve, and if the efficiency of the navigation is to be maintained at all seasons, I would recommend its reconstruction. On account of the rocky nature of the country, and from my own personal observation of the lands drowned by this dam, the claims for damages that have been set up are greatly exaggerated, and could not be sustained on an investigation. A comparatively small appropriation to meet any just claims would secure this reserve to the canal.

The third holds back a reserve for the 2nd level, descending south-west also. This dam is under the charge of an officer. It requires some repairs; the timber slide should be renewed, and a small fee charged on traverses and logs passing through it.

The works, generally, along the whole line of the canal are in good working order, and this year promises a considerable increase of through business, both in lumber and coal traffic.

I have the honor to be, Sir,

Your obedient servant,

FRED. A. WISE,

Engineer and Superintendent.

Secretary, Department Railways and Canals,
Ottawa.

APPENDIX No. 10.

RIVER TRENT AND NEWCASTLE DISTRICT.

TRENT CANAL WORKS,
ENGINEER'S OFFICE,
PETERBOROUGH, 27th December, 1879.

SIR,—I have the honour to submit my annual report on the works under my charge for the fiscal year ended 30th June, 1879.

From the 1st July to the close of navigation, on the 25th November, the water on the lower reaches registered a fair average summer level, but on the upper levels it registered 12 inches below. The number of lockages made at any single lock during the season was 1,002, composed of 590 for barges and 411 for steamers. The total number of lockages was 1,862. The entire amount of tonnage which was carried during the season amounted to 32,280, which consisted of products of the forest, products of animals, agricultural products, and merchandize.

Comparing the season of 1878-79 with that of 1877-78, it shows an increased tonnage divided among the different classes. No break occurred in any of the works, and navigation continued uninterruptedly.

The following is a statement of the repairs executed at the several stations in the district, and also the required repairs.

Fenelon Falls.

The slide and booms received general repairs. The repairs to the slide consisted in renewing a number of the floor timbers, which were damaged to such an extent as to make it unsafe to run timber. The steamboat owners and lumbermen desire a slight alteration in the location of the booms, which will necessitate the construction of three piers.

Bobcaygeon.

The canal walls at this station were rebuilt from low water mark to cap, and double sheeted their entire length; the bottom was partially planked and the whole canal made as water tight as possible. The dams, 1,262 feet in length, were repaired and partially gravelled. This was necessary in order to maintain a five foot navigation on the upper reach. The south upper gate of the lock requires to be raised and the pivots renewed; indeed, it is desirable that new gates should be supplied, as the present ones are getting too heavy to be worked with any degree of satisfaction. A dwelling for the Lockmaster is also essential at this station, as he has to perform a good deal of night work; a plot of land has been laid out adjoining the canal for that purpose. The piers of the slide require to be renewed and a fish-pass constructed.

Buckhorn.

This dam is of great importance as retaining a large area of water and regulating the depth of the water on the lower mitre sill of Bobcaygeon Lock. It requires

to be gravelled and kept staunch. The boom piers require renewal from low water mark to top, and a new guide boom supplied.

Burleigh.

The works at this station were erected exclusively for the descent of timber. The piers and gallows frame of the slide in the "Big Chute" require renewal. It is also advisable to reduce the breadth of the Big Chute to 20 feet.

Lakefield.

Applications have been made to place the dam here under the control of the Department, as it controls the navigation up to Young's Lock.

Peterboro'.

I would direct the attention of the Department to the fact, that the channel leading to the town wharf is rapidly becoming filled up, and it is necessary that a dredge should be set to work as soon as possible.

Little Lake.

The piers and booms have received a general overhauling. Owing to the deposit of saw-dust and slabs from the various saw mills situate on the River Otonabee, above the Town of Peterboro', the channel leading to the Ashburnham wharf is so choked up as to give scarcely five feet of water, and during the season of low water the steamboats have great difficulty in getting to the wharf. Serious complaints have been made on this subject by the residents of Ashburnham.

Whitlas Rapids.

An additional sluice is required in the dam, the present escape being insufficient to carry off the surplus water. This would also have the effect of being an auxiliary to the dredge in cleaning the river, as the water in the "Little Lake" could be lowered to such a level as to facilitate the operation of the dredge.

Otonabee River.

The obstructions to navigation in this river are known as follows:—

1. Yankee Bonnet.
2. Dangerfield.
3. Robinson's Island.

The "Yankee Bonnet" is a shoal composed of boulders on which there is only 3 feet 10 inches of water at low water. A channel could be made with 5 feet of water at a small expenditure.

"Dangerfield" is composed of a sand bar, formed by the deposit brought down by a creek flowing into the river. This bar should be dredged, and the direction of the creek changed.

"Robinson's Island" consists of boulders, and is somewhat similar to the "Yankee Bonnett."

Hastings.

The dam leaks, and it is absolutely necessary for the navigation that it be made staunch, as it is impossible to keep the water at the required level in its present condition. A channel should be cut through the "flat rock" so that at least there may be five feet of water. As the Marmora Iron Mines are about to be worked next

year, and the Grand Junction Railway to be completed to Campbellford, it is expected the traffic on this portion of the navigation will be considerable. The piers require to be renewed from low water mark and the slide planked and gravelled.

Heely's Falls.

The dam has been repaired, and the throat of the slide renewed. This dam is of great importance in maintaining the water to a navigable height, and giving the required depth of water on the lower mitre sill of Hastings Lock.

Middle Falls.

A flat dam should be constructed across the main stream, so as to direct a sufficient volume of water into the slide and thereby facilitate the passage of the timber.

Chisholm's Rapids.

The works here consist of a canal, locks, slide and dam. The dam is a substantial structure, 715 feet long and six feet high, and maintains the water at a navigable height up to Percy Landing, a distance of thirteen miles. The canal is about half a mile long, cut through solid lime stone rock. The lock is a substantial structure, 134 feet long by 33 feet wide, and built of ashlar masonry, but requires new gates.

Applications have been made for water privileges, which, if granted, would undoubtedly benefit the surrounding locality.

I have the honour to be, Sir,

Your obedient servant,

THOMAS D. BELCHER,

Superintending Engineer.

F. Braun, Esq., Secretary,
Department of Railways and Canals,
Ottawa.

APPENDIX No. 11.

PRINCE EDWARD ISLAND RAILWAY.

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, 1st October, 1879.

SIR,—I have the honor to submit my Annual Report on the working of the Prince Edward Island Railway for the year ending 30th June, 1879.

During the month of April last, the operations of each department of the railway were closely scrutinized with a view of ascertaining whether or not it was feasible to operate the road as efficiently in the future as in the past at a less cost.

The result of these investigations led to the belief that by inaugurating a system of strict economy, a considerable saving in the cost of working the road might be effected. Authority was accordingly given to reorganize the road on an efficient and economical basis, which was acted upon in the early part of the month of May, when Mr. McNab was appointed superintendent and engineer, other reforms at once followed, but the general effect of these changes was not materially felt until after the close of the fiscal year; it is confidently hoped and believed, however, that the practice of close supervision and economy, now in force, will result in a material saving in the cost of operating the road in the future.

I beg to transmit herewith the accounts for operating the railway for the fiscal year ending 30th June, 1879, comprising 12 Returns:—

No. 1. Capital Account.
" 2. Revenue Account.
" 3. Locomotive Power (Abstract No. 1.)
" 4. Car Expenses (" 2.)
" 5. Maintenance of Way and Works (" 3.)
" 6. Station Expenses (" 4.)
" 7. General Charges (" 5.)
" 8. Monthly Statement of Expenses.
" 9. " " Receipts.
" 10. Statement of General Store Account.
" 11. General Balance.
" 12. Comparative Statement of Averages.

Accompanying which will be found the reports of the Superintendent and Engineer, and the Mechanical Superintendent and Storekeeper.

CAPITAL ACCOUNT.

The total cost of the railway at the close of the year ending 30th June, 1878, was $3,409,919.70, and there has been expended during the last year on the extension to Souris Breakwater, the sum of $40,129.05, making a total cost up to 30th June, 1879, $3,450,048.75.

The "Souris Extension" is a line about 8,500 feet in length, diverging from the main line of railway about half a mile out of the town of Souris, and extending to deep water in the Souris Harbor, under cover of the Souris Breakwater. This work, including the wharf and building, it is believed, will be completed and ready for service about the end of December next. In addition to the amount charged in the accounts, it is estimated that a further expenditure of $22,000 will have to be incurred to pay unsettled land claims, balances due contractors, and for rails.

The machine shops are working satisfactorily, and the rolling stock is in a fair condition, with the exception of one engine, which received such damage by being thrown from the track last winter as to render it unworthy of being repaired.

The permanent way, road-bed, fencing and other works, have received the necessary attention and repairs during the year, and are in good condition.

Before the traffic can be worked with regularity during the winter months, it is necessary that many of the snow fences should be set further back from the track.

REVENUE ACCOUNT.

The gross receipts were	$125,855 91
Against, in the previous year	135,899 60
Showing a decrease of	$10,043 69

The passenger receipts, as compared with the previous year, show a decrease of $6,542.67, with a decrease of 6,382 in the number carried.

The freight traffic shows a decrease of $5,301.02, with a decrease of tonnage of 255 tons carried.

The depression of business throughout the Island has continued in a more intensified form than during the previous year, and, in consequence, the traffic has steadily declined.

WORKING EXPENSES.

The cost for operating for the year was	$223,313 12
Against the previous year	221,599 49
Showing an increase of	$1,713 63

The loss for the four years during which the railway has been in operation was as follows:—

The year ending 30th June, 1876	$96,869 47
" " 1877	97,930 33
" " 1878	85,699 89
" " 1879	97,457 21

Up to the end of the year 1,034 tons of steel rails had been laid in the track between Charlottetown and Summerside, and there remains in stock 1,466 tons for use as required, from time to time, to efficiently maintain the permanent way.

The locomotive expenses show a reduction in cost for the year over the previous year of $9,947.63, which is very satisfactory. The cost per engine-mile run was 18·08 cents, as against 19·34 cents for the previous year.

The car expenses also bear favourable comparison with those of the previous year. The cost per car-mile run was 10·23 cents, as against 11·01 for the year previous.

The number of sleepers put in the track during the year was 50,596, but being of a very inferior class of timber for the purpose they cannot be expected to wear many years before they will require to be renewed.

The necessary ballasting and drainage of the line has been executed.

The maintenance of the bridges and other structures have received due attention and they are now in good repair.

The stores in stock on the 30th June, 1879, amounted to :—

Ordinary stores	$20,935 03
Coal	22,874 83
Rails and fastenings	2,605 73
Total	$46,415 59
As against, for the previous year	$51,845 57

The total engine-miles run during the year was.....	286,886
Against the previous year.....	267,233
Showing an increase of.....	19,653

The cost of which, per mile run, was as follows:—

Working expenses.....	77·84 cts.
Against the previous year.....	82·92 "
Showing a reduction per train run of.....	5·08 cts.

In order to maintain the engine stock it is intended during the present year to procure two "Mason-Fairlie-Bogie" engines, which will be charged to maintenance. With such machines, it is believed, the freight traffic will be worked at a reduced cost.

The traffic during the current year, so far, exhibits a decrease, attributable to the causes already referred to, but it is hoped that a revival of trade may set in ere long, which would, no doubt, result in an improvement in the traffic.

In closing my report, I repeat that it is confidently expected that in future, under the new organization, the traffic will be worked at a considerable saving of expense without diminishing the accommodation afforded. In order that some idea may be formed of the savings that are being effected, I give a statement showing the number of officers and men employed on the railway in the month of July, 1878, and for the corresponding month in 1879, with the rates of their salaries and wages carried out for twelve months, which alone exhibits an annual saving of $19,753.92.

STATEMENT.

	1878.		1879.		Saving.	
	No.	Amount.	No.	Amount.	No.	Amount.
		$ cts.		$ cts.		$ cts.
Offices of superintendent, engineer, mechanical superintendent, storekeeper and accountant.....	26	21,230 00	16	13,600 00	10	7,630 00
Station masters, freight clerks and porters, wharfingers, telegraph operators, yardmen, switchmen and policemen...	37	17,011 44	33	14,797 00	4	2,214 44
Conductors, baggagemen and brakesmen..	25	11,670 40	22	10,465 35	3	1,205 05
Section foremen and sectionmen.....	104	40,455 25	95	36,542 75	9	3,912 50
Engine-drivers, firemen, cleaners, machinists, blacksmiths, carpenters, painters and coal men, etc..	102	42,226 73	92	37,434 80	10	4,791 92
Total.....	294	$132,593 82	258	$112,839 90	36	$19,753 92

I have the honor to be, Sir,

Your obedient servant,

COLLINGWOOD SCHREIBER,

Chief Engineer of Government Railways in Operation.

F. BRAUN, Esq., Secretary,
Department of Railways and Canals,
Ottawa.

PRINCE EDWARD ISLAND RAILWAY.

OFFICE OF THE SUPERINTENDENT AND ENGINEER,
CHARLOTTETOWN, 15th July, 1879.

SIR,—I have the honor to submit the following report upon the working of the Prince Edward Island Railway, for the year ended 30th June, 1879.

Having been transferred from the position of Engineer of the Intercolonial Railway to that of Superintendent and Engineer of this railway on the 1st May 1879, my connection with the latter covers but two months of the fiscal year just ended.

I beg to append the following statements to this report:—

No. 1. Capital Account.
" 2. Revenue Account.
" 3. Locomotive Power (Abstract No. 1.)
" 4. Car Expenses (" 2.)
" 5. Maintenance of Way and Works (" 3)
" 6. Station expenses (" 4.)
" 7. General Charges (" 5.)
" 8. Monthly Statement of Expenses.
" 9. Monthly Statement of Receipts.
" 10. Statement of General Store Account.
" 11. General Balance.
" 12. Comparative Statement of Averages.

I enclose also the report of the Mechanical Superintendent, whose position was amalgamated with that of Storekeeper on the 1st May, 1879.

The positions of Accountant and Auditor were amalgamated at the same time, as well as those of Paymaster and Station Auditor, and the engineering staff was abolished, these changes being made with a view to a more economical working of the railway.

CAPITAL ACCOUNT.

The total outlay on capital account for the year ended 30th June, 1879, was $3,450,048.75, of which $40,129.05 were expended on the Souris Extension during the year, under a Parliamentary appropriation made in the session of 1877.

The length of the extension is 8,440 feet; of this distance one-half has been in use since December last, including the station building, freight house and engine shed; in the remaining distance is included the shipping wharf and freight shed thereon, both of which will be ready for the fall traffic.

The wharf will be 1,000 feet long and 75 feet wide at the outer end, and it will have a depth of 16 feet at low water. Ordinary tides rise two feet and spring tides four feet.

The buildings above named are all of wood.

REVENUE ACCOUNT.

The gross earnings for the year amounted to.....	$125,855 91
Against, for the previous year.....	135,899 60
Or a decrease of.....	10,043 69

The decrease in the passenger traffic for the year was $6,542.67, and in the freight $5,301.02. In the item of mails and sundries there was an increase of $1,800, caused chiefly by the payment of $50 per mile of railway by the Post Office Department for the mail service, against $40 per mile for the previous year.

The number of passengers carried during the year was 105,046, or a decrease of 6,382, as compared with 1878.

The freight tonnage in 1877-78 was 38,923, and 38,668 in 1878-79, the decrease being principally in oats, flour and general merchandise.

A descriptive statement of freight earnings is hereto appended.

WORKING EXPENSES.

The cost of operating the railway for the year was....	$223,313 12
For the year 1877-78 the expenditure was.....	221,599 49
Showing an increase in 1878-79 of.....	1,713 63

The expenses of the Mechanical Department are less than those of the previous year by the sum of $9,947.63.

The cost per engine mile run was $18.08½ cents as against $19.34 for 1878, notwithstanding the increase of 19,653, or about nine per cent. in engine mileage during the year just ended.

The engine mileage in 1878-79 was.....	286,886
And for 1877-78.....	267,233

There are on hand six light tank engines, four heavy tank engines and eight tender engines. One of the light tank engines was damaged past repair by being thrown from the track last winter, when opening the road after a snow storm.

The hauling capacity of the light tank engines is about three passenger cars, and the heavy tank engines about five passenger cars, and even with these light loads they labour heavily and are frequently under repair. One of these engines has been recently furnished with a new fire-box, and four others are in need of them; three of the engines also require boiler tubes.

The tender engines are in good condition and will haul ten loaded freight cars, or 140 tons, provided the rail is dry, but in wet weather about nine cars, or 126 tons, is the limit.

There is no doubt that the possession of two engines capable of hauling a train of sixteen cars, or 225 tons, over the heaviest grades would effect a reduction in the working expenses, for not only would the repairs be less, but both engine and car mileage would be reduced and time economised.

The latter is an important point in connection with the fall traffic on this railway, as large quantities of produce have to be conveyed to Charlottetown, Georgetown and Souris, for shipment by water, and the delay of even a day may cause vessels to be frozen in for the winter.

The following is a statement of the stock of freight cars:—

41	8-ton	box cars, with	24-inch	wheels.
77	8	do	33	do
32	10	do	33	do

Total..... 150 box cars, of which 118 have horizontal boarding and the balance vertical.

43	8-ton	platform cars, with	24-inch	wheels.
57	10	do	33	do

Total..... 100 platform cars.

With the exception of a few cars, the foregoing stock may be said to be in serviceable condition.

It is probable that ten box and fifteen platform cars will need renewal during the present year, and this number will increase yearly, until the whole of the old stock is renewed.

With the exception of slight repairs required to two of the fourteen first-class cars, all are in good order.

There are twelve second-class cars on hand, of which three were changed from postal cars during the past year, eight were refloored, and ten trucks were altered to receive 33-inch wheels.

Originally there were five postal cars, but this number is reduced to two, as above stated, and these have been furnished with monitor roofs for light and ventilation.

A van has been converted into a car for the Paymaster.

We need about twenty additional box cars for the fall traffic. Instead of building new cars at a cost of about $400 each, I would recommend that bodies be built and placed on platform cars, which would answer every purpose, as they could be removed at pleasure, and would cost only about $50 each.

Maintenance of Way.

During the year additions have been made to the siding accommodation, making a total of 11·44 miles now provided throughout the line, exclusive of ballast pit tracks.

There are in all 107 sidings; fourteen were lengthened during the year, and five new sidings were laid on the Souris Extension.

For the repairs of track and extension of sidings, 177½ tons of iron rails, 18 tons of fish-plates, 2½ tons of bolts and nuts and 12 tons of spikes were used.

50,596 sleepers were put in track to replace those worn out.

Ballasting was carried on at various points during the summer of 1878.

The expenditure on bridges, culverts and cattle guards was $3,175.40 as against $3,445.94 the year previous. Eight bridges of an aggregate length of 350 feet received repairs, and one three-fourths of a mile west of Richmond was filled in, a culvert three by four feet being built in lieu of it.

In the repairs of wharves there was an outlay of $8,232.32, of which $8,165.23 were expended on Summerside wharf. Owing to a serious settlement an addition of 20 feet wide and 638 feet long, was built during the winter and spring on the western side of the wharf, in a depth of water ranging from 22 to 15 feet, the new work being intended to act as a support to the old structure.

All necessary repairs have been done to the fencing and gates, and a considerable quantity of new fence has been erected.

Dwellings have been provided for the station agents at Tignish, O'Leary, Port Hill, Kensington, and Mount Stewart.

In removing snow and ice there was expended the large sum of $7,072.95, as against $2,571.35 for the previous year. The winter was more severe than that of 1877-78, but I have no doubt that much of the outlay would have been avoided had the snow fence been erected from 25 to 30 feet farther from the track. There is much of it in need of removal, and this should be carried out at certain points before next winter.

The expense in repairs of snow ploughs and flangers was $1775.27, there being nine of the former and six of the latter.

The flangers are furnished with wings, which are worked from the inside of the car, and can be run out a distance of two feet from each side, making a clear opening of 12 feet.

284 tons of steel rails, weighing 50 pounds per yard and costing $10,107.08, were put in track during the year; a credit of $15 per ton was, however, allowed on the old iron rail removed, which reduced the actual value of the steel rails to $8,320.03.

The total weight of steel rail laid in track to the 30th June, 1879, is 1,034 tons, equivalent to 13 miles. These rails are laid between Charlottetown and Royalty Junction, and between Hunter River and Elliott's.

Stores.

The purchases during the year amounted to $63,071.04, in which sum is included 530 tons of steel rail and fastenings, 430 tons being still in stock.

The value of stores on hand at 30th June, 1879, was as follows:—

General stores	$20,935 03
Rails and fastenings	22,874 83
Coal	2,605 73
Total	$46,415 59

The value of the stock at the end of the previous fiscal year was $51,845.57.

The cost per engine mile run was for working expenses 69·47 cents, and 8·37 cents for renewals, making a total of 77.84 cents, against 82.92 cents for the previous year, including 14·14 cents for renewals. The cost per train mile including renewals was 91·72, as against 99·95 cents for the year 1877-78.

Casualties.

At 6·06 p.m. on the 20th November, 1878, Joseph Steele was run over and killed at County Line Station by the mixed train from Charlottetown, on which he was a passenger, while attempting to get on the train in motion. The verdict of the Coroner's jury relieved the Railway Department of all blame.

On the 13th May last, John Terlizzick, news agent, had one of his hands injured while attempting to couple an engine and box car at Bradalbane. He had been previously ordered by the train hands not to interfere but persisted with the result stated.

Accompanying this report is a comparative return showing the staff and the number of workmen employed on the railway in the months of July 1878 and 1879.

I have the honor to be, Sir,

Your obedient servant,

ALEX. MACNAB,

Superintendent and Engineer, P.E.I. Railway.

Collingwood Schreiber, Esq.,
Chief Engineer of Government Railways in operation,
Ottawa.

PRINCE EDWARD ISLAND RAILWAY.

DESCRIPTIVE STATEMENT of Freight Earnings for the Year ended 30th June, 1879.

		Quantities.		Tons.		Amount.	
		1878.	1879.	1878.	1879.	1878.	1879.
						$ cts.	$ cts.
Oats	Bush.	571,420	403,741	9,719	7,156	13,291 90	9,385 45
Wheat and other grain	"	3,759	9,808	110	265	216 76	390 86
Potatoes and roots	"	60,302	202,461	1,676	6,074	2,061 81	7,889 34
Flour	Brls.	36,298	28,364	3,630	2,836	5,884 37	4,219 79
Mackerel	"	5,898	11,988	885	1,799	1,296 83	2,494 07
Herring	"	3,462	2,932	528	448	825 84	575 96
Cod and other fish	"			234	223	483 98	449 21
Oysters	"	3,032	2,761	303	263	500 49	430 17
Fish barrels	No.	11,959	11,753	174	172	595 27	608 33
Timber, hewn or unhewn	C. feet	226,373	196,884	6,353	5 674	6,470 79	5,739 90
Lumber, sawn	S. feet	1,015,097	1,553,940	1,355	2,012	1,161 55	2,097 87
Shingles	No.	6,768	2,352	570	355	642 07	415 65
Cordwood and tanbark	Cords	1,245	951	1,849	1,752	1,524 81	948 90
Coal	Cars.	74	62	582	529	342 84	323 80
Lime	Brls.	781	860	232	85	213 06	88 45
Limestone	Cars.	56	53	487	466	245 12	248 28
Brick and building stone	"	57	14	503	139	347 30	91 92
Mussel mud	"	82	53	755	480	328 53	198 60
Salt	"			575	875	576 15	858 15
Live stock, all kinds	No.	1,979	1,776	575	421	1,363 96	1,015 66
Pressed hay				167	2	164 90	4 76
Fresh beef				36	29	103 20	76 49
Pork, in carcass				162	47	361 05	135 55
Pork, in barrels	Brls.	662	292	108	48	270 40	105 20
Butter				21	20	82 11	81 84
Eggs	Pkgs.	8,631	10,321	316	375	763 48	862 53
Merchandise				7,018	6,123	20,850 95	16,281 96
Wharfage, storage, etc.						1,191 17	840 98
Total				38,923	38,668	62,160 69	56,859 67

STATEMENT OF PASSENGER TRAFFIC.

	1878.	1879.
Total number carried	111,428	105,016
Receipts	$65,010 45	$58,467 78
Receipts for each passenger	58·34	55·66

No. 1.—PRINCE EDWARD ISLAND RAILWAY.

DR. CAPITAL ACCOUNT. CR.

1878.		$ cts.	1878.		$ cts.
June 30.....	To Cost of Road and Equipment to date.....	3,409,919 70	June 30.....	By Dominion of Canada.....	3,409,919 70
1879.			1879.		
June 30.....	To Expenditure, year ended 30th June, 1879, on Extension of Railway at Souris Wharf, Station Buildings, &c..	40,129 05	June 30.....	By Dominion of Canada.....	40,129 05
	Total.....	3,450,048 75		Total.....	3,450,048 75

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1879.

No. 2.—PRINCE EDWARD ISLAND RAILWAY.

REVENUE ACCOUNT for Year ended 30th June, 1879.

Previous Year.	Expenditure.		Year ended 30th June, 1879.	Previous Year.	Receipts.	Year ended 30th June, 1879.
$ cts.			$ cts.	$ cts.		$ cts
51,877 89	Locomotive Power,	per Abstract 1.....	51,858 52	65,010 45	Passenger Traffic	58,467 78
39,750 29	Car Expenses	do 2.....	29,358 92	62,160 69	Freight Traffic	56,819 67
90,392 87	Maintenance Way and Works	do 3.....	102,867 57	8,728 46	Mails and Sundries.....	10,528 46
23,675 85	Station Expenses	do 4.....	22,967 99	135,899 60	Total Receipts	125,855 91
16,103 09	General Charges	do 5.....	16,260 12			
				85,699 89	Balance	97,457 21
221,599 49	Totals.....		223,313 12	221,599 49	Totals.....	223,313 12

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1879.

No. 3.—PRINCE EDWARD ISLAND RAILWAY.

LOCOMOTIVE POWER.—(Abstract No. 1.)

Previous year.	Details.	Year ended 30th June, 1879.
$ cts.		$ cts.
2,568 12	Mechanical Superintendent's salary, Clerks, office and travelling expenses	2,281 81
12,432 47	Wages of Drivers, Firemen and Cleaners	13,204 63
13,517 85	Fuel	13,060 49
2,433 54	Oil, tallow, waste and small stores	2,174 42
13,779 94	Repairs to engines, tenders and engine tools	15,029 01
5,348 44	Water, including pump and tank repairs	4,772 14
1,597 53	Miscellaneous	1,336 02
51,677 89	Total	51,858 52

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I.,
30th June, 1879.

No. 4.—PRINCE EDWARD ISLAND RAILWAY.

CAR EXPENSES.—(Abstract No. 2.)

Previous year.	Details.	Year ending 30th June, 1879.
$ cts.		$ cts.
8,586 22	Repairs to passenger cars	7,430 59
396 47	do postal and baggage cars	645 89
17,324 90	do freight cars and vans	8,094 19
2,137 67	Wages of Conductors, Train Baggagemen and Brakesmen	10,248 49
1,040 31	Oil and waste for packing	1,048 97
2,866 32	Small stores and fuel	1,467 13
398 46	Miscellaneous	423 66
29,750 29	Total	29,358 92

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I.,
30th June, 1879.

No. 5.—PRINCE EDWARD ISLAND RAILWAY.

MAINTENANCE OF WAY AND WORKS—(Abstract No. 3).

Previous year.	Details.	Year ended 30th June, 1879.
$ cts.		$ cts.
3,871 06	Engineer's salary, Clerks, office and travelling expenses	3,393 79
40,921 61	Wages, and repairing roadway, fences and semaphores	35,546 07
18,710 73	Rails, chairs and spikes	10,264 14
2,979 95	Sleepers	5,890 14
14,367 87	Timber and lumber for repairs bridges, cattle guards, fences, &c...	22,474 31
854 29	Repairs to Wharves	8,232 32
3,709 58	do Buildings	7,054 77
2,398 43	do Snow-ploughs, flangers and tools	2,939 08
2,571 35	Clearing ice and snow	7,072 95
90,392 87	Totals	102,867 57

E. & O. E.

THOS. WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P. E. I.,
30th June, 1879.

No. 6.—PRINCE EDWARD ISLAND RAILWAY.

STATION EXPENSES—(Abstract No. 4).

Previous year.	Details.	Year ended 30th June, 1879.
$ cts.		$ cts.
16,931 14	Salaries and wages of Station-Masters, Agents, Clerks, Telegraph Operators, Station Baggage-Masters, Yardmasters, Switchmen, Watchmen and Laborers	17,604 81
6,744 21	Fuel, oil, light, stationery, tickets and other incidental expenses	5,363 18
0 00	Miscellaneous	0 00
23,675 35	Totals	22,967 99

E. & O. E.

THOS. WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P. E. I.,
30th June, 1879.

No. 7.—PRINCE EDWARD ISLAND RAILWAY.

GENERAL CHARGES—(Abstract No. 5).

Previous Year.	Details.	Year ended 30th June, 1879.
$ cts.		$ cts.
6,502 35	Superintendent's and Train Despatcher's salaries, Clerks, office, and travelling expenses	6,949 38
4,788 19	Accountant and Auditor's salary, Clerks, office, and travelling expenses	4,337 41
3,064 57	Paymaster and Cashier's salary, Clerks, office, and travelling expenses	1,976 26
99 40	Advertising	927 75
1,591 21	Damages to men, animals and goods	1,046 14
203 23	Telegraph expenses (not including pay to Operators)	311 92
254 11	Miscellaneous	711 26
16,103 09	Totals	16,260 12

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I.,
30th June, 1879.

No. 8.—PRINCE EDWARD ISLAND RAILWAY.

MONTHLY STATEMENT OF EXPENSES.

Months.	Locomotive Power.	Car Expenses.	Maintenance Way and Works.	Station Expenses.	General Charges.	Total Expenses.
1878.	$ cts.	$ cts.	$ cts.	cts.	$ cts.	$ cts.
July	3,624 32	2,620 22	18,932 27	1,840 33	1,213 41	28,730 55
August	3,791 03	2,611 30	13,895 96	1,929 99	1,186 50	23,414 78
September	3,984 04	2,539 94	8,717 75	1,945 19	1,246 41	18,433 32
October	4,551 65	2,937 23	11,732 49	2,153 20	1,366 95	22,741 52
November	4,435 13	2,340 06	6,484 20	2,160 60	1,318 24	16,738 23
December	4,622 05	2,619 99	6,946 80	2,144 43	1,469 14	17,802 41
1879.						
January	5,375 84	2,843 11	5,477 29	2,063 11	1,265 72	17,025 07
February	4,563 87	2,210 82	6,664 88	1,931 06	1,182 65	16,553 30
March	5,240 07	1,591 86	6,065 92	1,708 06	848 12	15,454 03
April	4,151 43	1,969 43	6,501 12	1,818 15	1,243 62	15,683 75
May	4,023 84	2,567 88	6,078 74	1,592 48	2,530 36	16,793 32
June	3,495 26	2,507 08	5,870 15	1,681 37	1,388 98	14,442 84
	51,858 52	29,358 92	102,867 57	22,967 99	16,260 12	223,313 12

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I.,
30th June, 1879.

No. 9.—PRINCE EDWARD ISLAND RAILWAY.

MONTHLY STATEMENT OF RECEIPTS.

Months.	Passenger Traffic.	Freight Traffic.	Mails and Sundries.	Totals.
1878.	$ cts.	$ cts.	$ cts.	$ cts.
July	8,185 99	4,009 64	718 33	12,913 96
August	6,799 15	5,239 32	617 33	12,655 80
September	5,295 55	3,039 38	717 33	9,052 26
October	7,462 89	10,334 81	1,382 83	19,180 53
November	5,508 60	9,450 91	882 33	15,841 84
December	5,230 76	4,046 00	882 83	10,159 59
1879.				
January	2,985 85	1,656 76	883 33	5,525 94
February	2,103 08	1,659 97	878 33	4,641 38
March	2,352 39	3,357 95	880 33	6,590 67
April	4,231 10	3,681 44	883 83	8,796 37
May	4,036 79	6,861 77	878 33	11,776 89
June	4,275 63	3,521 72	923 33	8,720 68
Totals	58,467 78	56,859 67	10,528 46	125,855 91

E. & O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P. E. I.,
30th June, 1879.

No. 10.—PRINCE EDWARD ISLAND RAILWAY.

STATEMENT of General Store Account, Year ending 30th June, 1879.

1878.		$ cts.	$ cts.
June 30	To Balance		51,845 57
1879.			
June 30	To Purchases during the year, including rails	55,124 70	
	Charges from other Departments	4,559 39	
	Pay-rolls	3,386 95	
			63,071 04
1879.	CR.		114,916 61
	By Issues during the year		68,501 02
	Balance... Ordinary stores $20,935 03		
	Fuel 2,605 73		
	Rails and fastenings on hand 22,874 83		46,415 59

E. & O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P. E. I.
30th June, 1879.

No. 11.—PRINCE EDWARD ISLAND RAILWAY.

Dr. General Balance. Cr.

	$ cts.		$ cts.
General stores	46,415 59	Dominion Account	51,731 55
Cash	538 44	Accident Insurance	1,106 23
Post Office Department	4,032 00		
Stations	1,390 64		
Militia Department	0 39		
Post Office, Charlottetown	168 75		
SS. "Northern Light"	26 90		
Suspense Account	265 07		
Total.	52,837 78	Total.	52,837 78

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

Charlottetown, P.E.I.,
30th June, 1879.

No. 12.—PRINCE EDWARD ISLAND RAILWAY.

COMPARATIVE Statement of Averages, for the Year ended 30th June, 1879.

Details.	1879.	1878.
Mileage of railway open	198½	198½
Engine mileage	286,886	267,233
Train do	243,464	221,702
Car do	1,037,540	994,511
Receipts per engine mile ..... Cents	44·92	50·85
do per mile of railway ..... $	649·15	693·38
Percentage of passenger earnings to gross receipts ..... Cents	46·45	47·84
do freight do do	45·18	45·74
do other do do	8·37	6 42
Expenses per engine mile :—		
Drivers', Firemen's and Cleaners' wages	4·60	4·65
Fuel	4·55	5·06
Oil, tallow, waste and small stores	0·76	0·91
Repairs to engines	5·24	5·16
Water and tank repairs	1·66	2·00
Miscellaneous	0 47	0·60
Total	17·28	18 38
Mechanical Superintendent's salary, office and travelling expenses	0·80	0 96
	18 08	19·34
Locomotive power per engine mile	18·08	19·34
Car expenses do	10 23	14·87
Maintenance of way and works	35·86	33·83
Station expenses	8·00	8·86
General charges	5 67	6 02
Total	77·84	82·92
Locomotive power per train mile	21·30	23·31
Car expenses do	12·06	17·93
Maintenance of way and works	42·25	40·77
Station expenses	9·43	10 68
General charges	6·68	7·26
Total	91·72	99·95
Working expenses per mile of railway ..... $	1,125 00	1,130 61

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I.,
30th June, 1879.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT,
CHARLOTTETOWN, 1st July, 1879.

SIR,—I beg to submit a report of the working of the Mechanical Department for the year ended 30th June, 1879.

Appended are the following Statements:—

A. Statement of performance and cost of Locomotives for the year.
B. Monthly Statement of cost of Locomotive Power for the year.
C. Monthly Abstract from Locomotive Returns for the year.
D. Monthly Statement of Car Mileage for the year.
E. Statement showing number of Locomotives and Cars.
F. Comparative Statement of the expenses of the Mechanical Department for the years 1878 and 1879.

The locomotives from No. 1 to 6, inclusive, are light tank-engines. No. 1 is condemned, having left the track in snow-ploughing, the engines following damaging her past repair. Nos. 2, 3, 4 and 5 are in fair order. No. 6 will need a new fire-box and a set of boiler tubes.

Nos. 7 to 10, inclusive, are heavy tank-engines. No. 7 is in the shop getting a new fire-box and a set of tubes. No. 8 is in poor condition, needing a new fire-box, a set of tubes and a driving axle. She relieves No. 10 shunting. No. 10 needs a new fire-box and a set of tubes. There is very little encouragement for the repairs put on the foregoing engines. No. 9 lately got a new fire-box and a set of tubes, and is doing very well on a light train. If the former engines take more than three cars, and the latter more than five, they are not sure of getting to their destination without a mishap. In consideration of these difficulties, I beg to recommend the purchase of two or three new tender-locomotives, which would be of greater service than the whole of the tank-engines.

Nos. 11 to 18, inclusive, are tender-engines, and are our best. They are in very good order.

The first-class cars are in good order, except the old windows in two of the "monitor" roofs; they will require to be made new as they cannot otherwise be made water-tight.

The second-class cars are in very good order, eight having been newly floored, and ten trucks altered to receive larger wheels.

The postal-cars, originally five in number, have been reduced to two. These two have been fitted up with "monitor" tops, to give better light and ventilation. The others have been converted into second-class for summer accommodation.

The van mentioned in my last report has been converted into a pay-car.

The four large and the five small snow-ploughs are all in a good state of repair, excepting some slight repairs needed to the trucks of three of the larger ones.

The following cars, &c., have been rebuilt, viz.: Four box-cars, ten platform-cars, one snow-plough, and four water-tanks.

As the well water is impregnated with salt, and injurious to the stationary engine boiler, a large tank has been built under the shop floor, and the rain water collected from the shop roofs into it. When this fails a tank placed on wheels brings water from the nearest watering station. The water at the shop well is never used by the locomotives if it can be avoided, as it sets them "priming."

The locomotives and passenger-cars are kept neatly painted. They have required more attention in this respect than during the past years. During the summer quite a number of the box and platform-cars will need painting.

The total reduction in the expenses of this Department, as compared with last year, is $9,947.63.

I have the honor to be, Sir,

Your obedient servant,

ALEX. STRONACH,

Mechanical Superintendent.

A. MACNAB, Esquire,

Superintendent and Engineer, P. E. I. Railway,

Charlottetown.

PRINCE EDWARD

MECHANICAL

A.—STATEMENT of the performance and cost of

No. of Engine.	Builders.	In Shop the whole of	Hours in steam.	Train Mileage.				Miles run by Engines.			
				Passenger.	Freight and Mixed.	Ballasting.	Piloting.	With Train.	Light.	Shunting.	Total.
1	Hunslet Engine Co'y., Leeds, Eng.	.....	457	3,595	6	6	219	3,826	103	175	4,104
2		Nov. and April	1,404	7,518	336	.....	1,936	9,790	223	477	10,490
3		....	1,932	8,093	343	1,178	3,064	12,678	975	726	14,379
4		....	1,566	12,304	131	.....	98	12,533	219	1,367	14,119
5		Nov. and May.	1,265	8,749	.....	.....	2,298	11,047	147	306	11,500
6		April.....	976	9,854	214	.....	469	10,537	49	460	11,046
7	Black, Hawthorn & Co., Gateshead on Tyne.	May and June.	1,773	71	5,000	120	1,918	7,109	261	3,986	11,356
8		June.....	1,633	.....	2,182	162	32	2,376	269	6,093	8,738
9		Nov. to Feb.....	1,177	1,656	4,654	108	.....	6,418	47	1,785	8,250
10		Dec. and April	2,552	.....	.....	.....	67	67	.....	12,340	12,407
11	Baldwin Locomotive Works, Philadelphia.	....	3,473	962	25,496	3,034	478	29,970	100	1,598	31,668
12		.....	3,745	222	25,466	.....	649	26,337	49	3,650	29,036
13		Sept.....	2,841	6,029	14,613	918	598	22,158	61	1,194	23,413
14		....	3,790	61	22,906	48	.....	23,015	285	2,458	25,758
15	Canadian Engine & Machinery Co'y., Kingston, Ont.	....	3,031	569	18,844	2,175	968	22,556	403	1,747	24,706
16		April and May	2,338	1,948	15,911	3,357	176	21,392	537	1,020	22,949
17		....	3,054	3,073	20,579	.....	76	23,728	.....	2,357	26,085
18		....	2,820	931	7,285	10,993	817	19,926	351	2,065	22,342
		Total.....	39,827	65,635	163,966	21,999	13,863	265,463	4,079	42,804	312,346

ISLAND RAILWAY.

Department.

Locomotives, for the Year ended 30th June, 1879.

Total Mileage of		*Average of cars per mile run with train.	Cost of					Average per 100 miles run by Engines.				
Cars.	Snow Ploughs.		Enginemen's Wages.	Fuel.	Oil, Tallow, Waste, &c.	Repairs.	Total.	Enginemen.	Fuel.	Oil, Tallow, &c	Repairs.	Total.
			$ cts	$ cts.	$ cts.	$ cts.	$ cts.	cts.	cts.	cts.	cts.	cts.
6,823	369	1·89	226 55	149 52	32 78	401 86	810 71	5·52	3·64	0·80	9·79	19·75
15,964	1,857	2·03	612 34	337 19	78 47	289 73	1,317 73	5·84	3·21	0·75	2·76	12·56
23,939	3,168	2·49	701 15	473 97	101 64	421 47	1,698 23	4 88	3·30	0·70	2·93	11·81
25,708	.....	2 06	616 77	477 00	127 57	401 50	1,622 84	4·36	3·38	0·89	2·85	11·48
20,053	2,347	2·29	495 43	362 59	89 30	545 31	1,492 63	4·30	3·15	0·78	4·74	12·97
23,652	469	2·35	447 26	390 85	72 76	695 86	1,606 73	4·04	3 54	0 66	6·30	14·54
15,236	1,918	2 93	644 62	504 63	88 50	516 34	1,754 09	5·68	4·44	0·78	4·54	15·44.
7,956	.....	3·39	498 76	279 83	63 23	436 28	1,278 10	5·70	3·20	0·73	4·99	14·62
20,016	.....	3 11	388 28	307 76	63 77	1,418 57	2,178 38	4·70	3·73	0·78	17·19	26·40
.....	67	.....	696 87	340 66	82 77	380 87	1,501 17	5·61	2·74	0 67	3·07	12·09
167,930	217	5·69	1,272 92	1,776 28	267 56	1,240 47	4,557 23	4·01	5 60	0·84	3·94	14·39
135,608	234	5·27	1,310 64	1,547 42	199 13	983 26	4,040 45	4·52	5·32	0·69	3 38	13·91
108,110	511	5·01	1,111 97	1,389 66	228 53	1,511 33	4,241 49	4·75	5·93	0·98	6·45	18·11
117,469	143	5·10	1,268 84	1,253 28	215 06	1,121 95	3,859 13	4 93	4 87	0·84	4·34	14·98
140,319	248	6·56	930 14	1,424 28	199 89	821 66	3,375 97	3·77	5·77	0·80	3·32	13·66
139,324	425	6·56	906 25	1,277 44	184 21	2,429 93	4,797 83	3·95	5·56	0·81	10·58	20·90
126,325	186	5·34	1,172 92	1,263 01	195 30	444 63	3,075 86	4·49	4·85	0·75	1·70	11·79
134,475	876	7·03	859 11	1,123 95	170 81	1,333 67	3,487 54	3 84	5·03	0 76	5·97	15·60
1,228,907	13,035	4·88	14,160 82	14,679 32	2,461 28	15,394 69	46,696 11	4·54	4·70	0·79	4·92	14·95

*Deduct piloting from train mileage in making these averages.

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

B.—STATEMENT of the Cost of Locomotive Power for the year ended 30th June, 1879.

Months.	Miles run by Engines, less ballasting.	Cost of							Average per Mile run.						
		Enginemen's wages.	Fuel.	Oil, tallow, waste, &c.	Repairs.	Water, including pump and tank repairs.	Miscellaneous, including expenses of Office & Engine Houses.	Total.	Enginemen.	Fuel.	Oil, tallow, &c	Repairs.	Water.	Miscellaneous.	Total.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
1878—July	28,998	1,210 68	979 10	208 79	560 11	414 65	250 99	3,624 32	4·10	3·38	0·72	1·98	1·44	0·87	12·49
August	29,122	1,206 04	1,141 63	207 20	673 99	308 19	253 98	3,791 03	4·14	3·92	0·71	2·32	1·05	0·87	13·01
September	26,215	1,122 53	1,002 12	209 93	1,118 87	287 68	242 90	3,984 03	4·28	3 82	0·81	4·27	1·09	0 92	15·19
October	31,031	1,287 68	1,482 72	248 9	905 68	344 53	282 86	4,551 65	4·14	4·78	0 80	2 92	1·11	0 91	14·66
November	22,836	1,072 94	1,153 63	184 82	1,168 98	601 63	253 13	4,435 13	4·70	5 05	0·82	5·12	2·63	1·10	19 42
December	19 136	984 56	1,100 11	169 16	1,396 47	550 69	420 86	4,622 05	5·15	5·75	0·89	7·30	2·87	2·19	24·15
1879—January	24,673	1,284 94	1,467 20	189 90	1,407 66	509 25	516 89	5,375 84	5 21	5·95	0·77	5·70	2 06	2·09	21·78
February	18,671	1,134 17	1,068 89	171 38	1,458 61	365 33	335 49	4,563 87	6·08	5·73	0·92	7 97	1·95	1·79	24·44
March	19,897	1,101 44	1,004 93	159 23	2,158 84	470 02	345 61	5,240 07	5·53	5·05	0 80	10 85	2·36	1·74	26 33
April	17,597	793 26	786 00	122 25	1,776 13	332 30	341 49	4,151 43	4·52	4·49	0·70	10·13	1 89	1·95	23 68
May	22,112	971 20	989 88	148 15	1,443 48	269 54	201 59	4,023 84	4 39	4·47	0 67	6·53	1·22	0·91	18 19
June	26,668	1,034 89	884 28	155 52	930 19	318 34	172 04	3,495 26	3 88	3·31	0·58	3·49	1·19	0 65	13·10
Totals	286,886	13,204 63	13,060 49	2,174 42	15,029 01	4,772 14	3,617 83	51,858 52	4 60	4 55	0·76	5·24	1·66	1·26	18·07

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

C.—Monthly Abstract from Locomotive Returns, for the Year ended 30th June, 1879.

Months.	Hours in steam.	Mileage of			Consumption.				Average Mileage.		Consumption per 100 Miles run by Engines.			
		Locomotives.	Cars.	Snow Plows.	Bushels of coal.	Pints of oil.	Pounds of tallow.	Pounds of waste.	Miles run to one hour in steam.	Of cars to one engine.	Bushels of coal.	Pints of oil.	Pounds of tallow.	Pounds of waste.
1878—July	3,828	33,228	142,615	.....	9,163	1,278	719	391	8 68	4 29	27 57	3 84	2 16	1 17
August	3,921	33,436	135,882	.....	10,457	1,312	779	404	8 52	4 06	31·27	3 92	2·32	1·20
September	3,404	30,348	131,673	.....	8,502	1,201	687	367	8 91	4·33	28 01	3 96	2 26	1 20
October	3,887	32,942	138,576	.....	11,612	1,3 6	770	408	8 47	4 20	35·25	3 99	2·33	1 23
November	3,313	24,5 6	107,791	.....	9,516	972	536	372	7 39	4·39	38 83	3 95	2 18	1 51
December	2,505	19,564	75,285	175	8,134	872	509	313	7 81	3 84	41 57	4·45	2·60	1 60
1879—January	3,673	24,673	5?,875	5,853	10,480	1,127	589	28 ½	6·71	2 14	42·47	4·57	2·38	1·15
February	3,340	19,229	47,049	4,702	8,549	1,106	567	25?½	5 7	2·44	44·45	5·75	2 94	1·33
March	3,065	21,202	76,636	2,1 3	8,2?7	986	543	271	6 91	3 61	38 75	4 65	2 56	1 27
April	2,399	16.933	78,866	152	6,612	735	440	247	7 89	4·16	39 02	3·88	2·32	1 25
May	3,178	25,735	121,217	.....	8,790	912	546	3?½	8·09	4·82	34 15	3·51	2 27	1·23
June	3,314	28,550	97,442	.....	8 096	900	628	315	8·61	3·41	28·35	3·15	2 20	1 10
Total	39,827	312,346	1,228,907	13,035	108,128	12,720	7,353	3,938½	7·84	3 93	34 61	4·07	2·35	1·26

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

Mechanical Department.

D.—Monthly Statement of Car Mileage for the Year ended 30th June, 1879.

Months.	1st Class.	2nd Class.	Postal, Baggage & Express.	Box, Stock and Hay.	Platform and Coal.	Total.
1878—July	29,380	29,735	2,708	32,285	48,507	142,615
August	28,740	29,479	2,621	46,470	48,572	155,882
September	23,689	23,752	2,499	29,795	51,938	131,673
October	26,985	26,364	2,548	63,019	19,660	138,576
November	16,719	17,848	4,371	53,837	15,016	107,791
December	16,090	16,327	4,509	27,825	10,534	75,285
1879—January	14,260	13,954	2,589	18,603	3,469	52,875
February	10,484	10,417	2,202	14,301	9,645	47,049
March	13,711	14,677	2,394	17,528	28,326	76,636
April	14,129	17,247	2,788	19,408	25,294	78,866
May	18,216	23,683	2,903	36,657	42,758	124,217
June	23,592	22,162	5,026	25,999	20,663	97,442
Totals	235,995	245,645	37,158	385,727	324,382	1,228,907
Less Ballasting	.....	14,826	395	39	176,107	191,367
Balance	235,995	230,819	36,763	385,688	148,275	1,037,540

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

Mechanical Department.

E.—Statement showing the Number of Locomotives and various classes of Cars on hand, 1st July, 1878 and 1879.

Particulars.	Locomotives.	Classification.							
		First Class	Second Class.	Postal, Baggage & Express.	Box and Stock.	Platform.	Vans.	Pay Car.	Total.
On hand, 1st July, 1878	18	14	9	5	150	100	4	.....	282
Destroyed	1	.....	.....	.....	.....	.....	.....	.....	.....
	17	14	9	5	150	100	4	.....	282
Changed from postal to second-class	.....	.....	3	3	.....	.....	.....	.....	.....
	17	14	12	2	150	100	4	.....	282
Changed from van to pay-car	.....	.....	.....	.....	.....	.....	1	1	.....
Total stock on hand, 1st July, 1879	17	14	12	2	150	100	3	1	282

A. STRONACH,
Mechanical Superintendent ana Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

F.—COMPARATIVE STATEMENT of the Expenses of the Mechanical Department, Year ended 30th June, 1878 and 1879.

	1879	1878
The miles run by trains were	243,464	221,636
do engines were	286.886	257,233
do cars were	1,037,540	994,511
do snow ploughs were	13,035	12 959
	$ cts.	$ cts.
The cost of locomotive power was	51.858 52	51,677 89
do repairs to cars	16,170 67	26,307 59
do labor, oil and waste for packing	1,018 97	1 010 31
do repairs to passenger cars	7,430 59	8,586 22
do do postal, express and baggage	645 89	396 47
do do freight cars and vans	8,094 19	17,324 90
The cost of locomotive power per 100 miles run by trains was	21 30	23 31
do do do engines	18 07	19 33
do do do cars	4 99	5 19
The cost of repairs to cars per 100 miles run by trains was	6 64	11 86
do do do engines	5 63	9 84
do do do cars	1 55	2 64
The cost of labor, oil and waste for packing per 100 miles run by trains was	0 43	0 46
do do do do engines	0 36	0 38
do do do do cars	0 10	0 10
Repairs to passenger cars per 100 miles run by trains	3 06	3 87
do postal, express and baggage cars	0 26	0 18
do freight cars and vans	3 32	7 81

A. STRONACH,
Mechanical Superintendent and Storekeeper.

APPENDIX No. 12.

INTERCOLONIAL RALWAY.

DEPARTMENT OF RAILWAYS AND CANALS,
GOVERNMENT RAILWAYS IN OPERATION,
CHIEF ENGINEER'S OFFICE,
OTTAWA, November, 1879.

SIR,—I have the honor to submit my annual report on the operations of the Intercolonial Railway for the year ending 30th June, 1879, and beg to transmit herewith the accounts for the year comprising 10 returns.

No. 1. Capital Account.
" 2. Revenue Account.
" 3. Locomotive Power (Abstract No. 1.)
" 4. Car Expenses (" 2.)
" 5. Maintenance of Way and Works (" 3.)
" 6. Station Expenses (" 4.)
" 7. General Charges (" 5.)
" 8. General Stores Accounts.
" 9. General Balance.
" 10. Comparative Statement of Averages.

Accompanying which will be found the reports of the Chief Superintendent, the Engineer and the Mechanical Superintendent.

CAPITAL ACCOUNT.

The total cost of the railway on the 30th June, 1878, was...		$36,091,065 85
And there has been expended during the year—		
On the Halifax extension.....	$ 21,282 78	
" St. John deep water terminus.....	45,771 70	
" completion of Intercolonial Railway....	159,584 71	
		226,639 19
Making a total cost up to 30th June, 1879, of.....		$36,317,705 04

As a further charge on the Halifax extension (to North Street) there remains to be paid a balance due contractor for freight house and cattle sheds, and also a sum due the contractors for rebuilding and fitting the car shop at Richmond, which was torn down in the re-arranging the tracks in the Richmond yard.

The works at the St. John deep water terminus have progressed satisfactorily during the year, and it is believed the wharf will be completed about the end of December next. There then remains to be done to complete the present design, some earth filling, the laying of a number of switches and sidings, the erection of a fence, and the necessary freight and other buildings.

All fresh work undertaken on the line between Rivière du Loup and Truro is charged to working expenses. The only charges made against the completion of the line between these points is for the payment of unsettled claims for work done on construction in previous years.

Revenue.

The general depression in trade throughout the country has continued and has been specially severely felt in the Province of New Brunswick. This, combined with the shutting down of the blast furnace at the Londonderry Iron Works, and the fact of the Acadia Coal Company of Pictou having during the last season transported their summer shipment of coal over the Nova Scotia Coal Company Railway to the Pictou Harbour, instead of as formerly, over the Intercolonial Railway, has had a very depressing influence on the traffic, and caused the revenue to decline.

The gross receipts were	$1,294,099 69
Against the previous year	1,378,946 78
Showing a decrease of	84,847 09

The passenger receipts as compared with last year shew a decrease of $23,363.52, with an increase of 21,144 in the number carried, as follows:—

Total carried in 1877-78	618,957
" " 1878-79	640,101
Shewing an increase of	21,144

The freight traffic compared with last year shews a decrease of $48,214.04, with a decrease of tonnage of 11,849 tons carried, as follows:—

Total carried in 1877-78	522,710
" " 1878-79	510,861
Shewing a decrease of	11,849

The following is a comparative statement of the chief articles of freight carried:—

	1877-78.	1878-79.	Increase.	Decrease.
Barrels of flour, No.	637,778	630,329	.....	7,449
Bushels of grain, No.	331,170	302,921	.....	28,249
Live stock, No	46,498	47,584	1,086	.....
Lumber, feet	56,626,547	55,626,096	.....	980,458
All other goods, tons	375,025	366,657	.....	8,368

The volume of traffic to and from the west has been fairly maintained.

The cattle traffic from the west for shipment at Halifax shews an increase. The business was conducted with great care and regularity, the shippers expressing themselves well pleased with the arrangements.

The traffic from the ocean *via* Halifax during last winter, compared favourably with that of the previous year, and was despatched promptly to destination.

The local traffic was the most prejudicially affected by the general depression, and showed a very heavy falling off.

The Londonderry Iron Works, I am glad to be able to report, are again in full blast, and trade generally throughout the country gives evidence of a revival. It is therefore confidently believed that an improvement will shortly be visible in the traffic.

Working Expenses.

The cost of working the railway the past year has been heavy, due to the following causes, among others:—In order to comply with the amendment, made last Session of Parliament, in the law respecting road bridges and other structures spanning the railway track, it became necessary to incur considerable expense to raise all the snow sheds, and most of the overhead bridges. The sleeper renewals during the year were nearly double those of the previous year, there having been inserted in the track during the year 300,094, against, in the previous year, 156,742, being an increase of 143,352.

A large amount of new works and other improvements were made at a cost of $214,908. The closing of the so-called "renewals suspense account" made an apparent increase in cost for the year, it having been customary the past few years to carry forward in suspense each year a considerable expenditure for the renewals of fencing, bridging, &c., but this year the account having been closed, it all entered into the working expenses, and therefore assisted to swell them.

The working expenses of the year were	$2,010,183 22
Against the previous year	1,811,273 56
Increase	198,909 66

The rolling stock is in good running condition, and has been well maintained.

Three new engines were built in the railway shops at Moncton during the year, and charged to the working expenses, but as it was found they cost very much more than the amount paid manufacturers for similar machines, it has been determined to procure the three engines required during the current year to maintain the stock by tender and contract.

Each year as the engines become older the repairs are likely to increase. Several of the engines during the last year received very extensive repairs at considerable cost.

A number of cars of various descriptions have been rebuilt during the year to maintain the stock in an efficient condition, and considerable alterations have been made in passenger, postal, baggage and express cars, to better adapt them for the service.

The following is a comparative statement of mileage of engines, trains and cars:—

Mileage.	1877-78.	1878-79.	Increase.	Decrease.
Engine mileage	2,499,088	2,531,791	32,703	.....
Train do	2,160,080	2,111,426	.....	48,666
Car do	22,164,816	21,855,441	.....	309,375

The total cost of running the train per mile per train was 95.20 cents, against 83.85 cents the year previous.

The English mail service has been conducted as heretofore, both *viâ* Halifax in winter and Rimouski in summer.

The purchase of stores during the last two years compares as follows:

1877-78	$485,049 69
1878-79	415,985 87
Decrease	69,063 82

The stock of stores compares as follows:

	1877-78	1878-79
General stores, including fuel	$135,561 35	$106,000 76
Steel and iron rails	173,227 82	100,041 34
Old materials	36,633 36	37,716 00
Total	345,422 53	243,758 10

In the early part of February, an investigation into the working of the railway was ordered, with the object of ascertaining if it was practicable to work the railway as efficiently in the future as in the past at a reduced cost. A thorough and careful examination was made into the operations of each department of the railway, and the opinion founded was, that the force employed was largely in excess of the actual requirements of the service, and it was recommended that a thorough reorganization of the road should be made upon a more economical and equally efficient basis, it being represented that by the exercise of close supervision, and with frugal management, a large annual saving in the working expenses would result.

A programme for future operations was submitted, which received approval, and shortly afterwards instructions were issued to give it effect.

The first step was the appointment of Mr. David Pottinger as Chief Superintendent, with head quarters at Moncton. Upon his accession to office, the general outline of the proposed new organization was placed in his hands, with instructions to carry it out. He at once set zealously to work, and he has most assiduously and faithfully devoted his energies to giving effect to the directions he received from time to time to bring about the desired reduction of expenses, without impairing the efficiency of the service, a work which required careful and continuous handling to ensure satisfactory results. The consequence was, it took several months to reorganize; the effect of the reduction was, therefore, not appreciably felt until the current year was entered upon.

I am pleased to be able to report the operations of the first three months of the current year as very satisfactory and reassuring, which leads to the belief that the good results anticipated from a reorganization on an economical and efficient basis will be fully realized.

I am instructed by the Honourable Minister of Railways and Canals to give a comparative statement, showing the number of officers and men employed on the railway in the month of September, 1878, and for the corresponding month, 1879, with the rates of their salaries and wages carried out for twelve months, as follows:

COMPARATIVE STATEMENT Based on the Pay Rolls for September.

GENERAL OFFICES.	1878-79.		1879-80.		Saving.	
	No.	Salaries.	No.	Salaries.	No.	Amount.
		$ cts.		$ cts.		cts.
Chief Engineer's, General Superintendent's, Superintendent's, Assistant Superintendent's, General Passenger and Freight Agent's, Engineer's, Accountant's, Audit Paymaster's, Cashier's, Mechanical Superintendent's, General Storekeeper's, City Agencie's	119	102,154 25	104	77,024 00	15	25,130 25
Station Masters, Telegraph Operators, Freight Clerks and Checkers, Freight Porters and Baggage Masters	368	143,490 70	313	122,593 40	55	20,897 30
Engine Drivers, Firemen, Cleaners, Conductors, Brakesmen and Baggagemen	539	260,678 47	451	225,525 64	88	35,152 83
Road Masters, Section Foremen, Section Men and Labourers	624	231,319 09	449	159,683 90	175	71,635 19
Machinists, Carpenters, Painters, Labourers, Crews of Steamers, Car Repairers, &c.	720	335,924 90	593	267,893 64	127	68,031 26
Total	2,370	1,073,567 41	1,910	852,720 58	460	220,846 83

I have the honor to be, Sir,

Your obedient servant,

COLLINGWOOD SCHREIBER,

Chief Engineer of Government Railways in Operation.

F. BRAUN, Esq., Secretary,

Department of Railways and Canals.

No. 1.—INTERCOLONIAL RAILWAY.

DR. CAPITAL ACCOUNT, Year ending 30th June, 1879. CR.

1878.		$ cts	$ cts.	$ cts.	1878.		$ cts.
June 30...	To Cost of Road and Equipment.....	....	....	36,091,065 85	June 30...	By Dominion of Canada..	36,091,065 85
1879.							
June 30...	To Outlay on Halifax Extension.....	21,282 78					
	do Deep Water Terminus, St. John.....	45,771 70					
			67,054 48				
	Expenditure on completion of Intercolonial Railway between Rivière du Loup and Truro, works, permanent way, buildings, right of way, &c.....	....	159,584 71		1879.		
				226,639 19	June 30...	By Dominion of Canada..	226,639 19
				36,317,705 04			36,317,705 04

E. & O. E.

THOMAS FOOT,
Accountant.

MONCTON, N.B., 30th June, 1879.

No. 2.—INTERCOLONIAL RAILWAY.

DR. REVENUE ACCOUNT, Year ending 30th June, 1879. CR.

Previous Year.	Expenditure.	Year ending 30th June, 1879.	Previous Year.	Receipts.	Year ending 30th June, 1879.
$ cts.		$ cts.	$ cts.		$ cts.
537,815 04	Locomotive power per Abstract No. 1...	558,344 19	475,256 82	Passenger traffic	451,893 29
325,356 16	Car expenses do 2...	363,006 32	801,704 89	Freight do	753,490 85
641,114 39	Maintenance way and works do 3...	778,526 60	101,985 07	Mails and sundries	88,715 55
185,628 54	Station expenses do 4...	190,525 92			
136,153 35	General charges do 5...	141,680 86	1,378,946 78		1,294,099 69
1,826,067 48		2,032,083 89			
14,793 92	Less car mileage	21,900 67	432,326 78	Balance	716,083 53
1,811,273 56	Total Expenditure	2,010,183 22	1,811,273 56		2,010,183 22

E. and O. E.

THOMAS FOOT,
Accountant.

MONCTON, N.B., 30th June, 1879.

No. 3.—INTERCOLONIAL RAILWAY.

Locomotive Power.—(Abstract No. 1.)

Previous Year.		Year ending 30th June, 1879.
$ cts.		$ cts.
7,460 82	Mechanical Superintendent's salary, Clerks office and travelling expenses	6,820 89
118,503 67	Wages of Drivers, Firemen and Cleaners	117,986 43
157,362 96	Fuel	154,269 32
23,424 82	Oil, tallow, waste and small stores	27,462 22
180,439 02	Repairs to engines, tenders and engine tools	192,452 88
37,111 68	Water, including pump and tank repairs	46,806 24
13,512 07	Miscellaneous	12,544 96
537,815 04		558,344 19

E. and O. E.

THOMAS FOOT,
Accountant.

Moncton, N.B.,
30th June, 1879

No. 4.—INTERCOLONIAL RAILWAY.

Car Expenses.—(Abstract No. 2.)

Previous Year.		Year ending 30th June, 1879.
$ cts.		$ cts.
64,950 23	Repairs to passenger cars	70,957 85
19,901 24	Repairs to postal, express and baggage cars	26,946 04
88,044 95	Repairs to freight cars and vans	107,553 32
99,878 83	Wages of Conductors, Train Baggage Masters and Brakesmen	102,218 79
10,785 84	Oil and waste for packing	13,945 50
26,151 83	Small stores and fuel	26,986 57
15,643 24	Miscellaneous	14,398 25
325,356 16		363,006 32

E. and O. E.

THOMAS FOOT,
Accountant.

Moncton, N.B.,
30th June 1879.

No. 5.—INTERCOLONIAL RAILWAY.

Maintenance Way and Works—(Abstract No. 3.)

Previous Year.		Year ending 30th June, 1879.
$ cts.		$ cts.
10,066 83	Engineer's salary, Clerks, office and dwelling expenses	9,838 91
288,459 36	Wages in repairing roadway, fences and semaphores, including new sidings laid in	346,929 17
192,778 60	Rails and fastenings, including new sidings laid in	186,831 56
31,056 43	Sleepers	49,437 93
37,752 60	Timber, lumber, &c., for repairs to bridges, cattle guards, crossings, snow sheds, fences, &c	72,231 67
3,318 20	Repairs to wharves	2,549 51
47,549 27	Repairs to buildings and platforms, including extensions of and additions to same	65,583 46
15,328 34	Repairs to snow ploughs, flangers and tools	18,571 02
12,659 78	Clearing ice and snow	23,225 69
2,144 98	Miscellaneous	3,327 68
641,114 39		778,526 60

E. and O. E.

THOMAS FOOT,
Accountant.

Moncton, N.B.,
30th June, 1879.

No. 6.—INTERCOLONIAL RAILWAY.

Station Expenses—(Abstract No. 4.)

Previous Year.		Year ending 20th June, 1879.
$ cts.		$ cts.
141,631 06	Salaries and wages of Station Masters, Agents, Clerks, Telegraph Operators, Station Baggage Masters, Yard Masters, Switchmen Watchmen and Labourers	149,660 13
43,997 48	Fuel, oil, light, stationery, tickets and other incidental exepnses	40,865 79
	Miscellaneous	
185,628 54		190,525 92

E. and O. E.

THOS. FOOT,
Accountant.

Moncton, N.B.,
30th June, 1879.

No. 7.—INTERCOLONIAL RAILWAY.

General Charges—(Abstract No. 5.)

Previous Year.		Year ending 30th June, 1879.
$ cts.		$ cts.
52,203 62	General Superintendent and Superintendent and Assistants' salaries, Train Despatchers, Clerks, &c., Passenger and Baggage Agents and Assistant General Freight Agent, and office and travelling expenses	55,217 30
31,476 44	Accounting Department, salaries of Accountant, Auditor, Paymasters and Cashiers, Clerks, office and travelling expenses	25,181 98
7,822 75	Damages to men, animals and goods	8,460 67
14,496 42	Ferry service	17,722 26
2,188 62	Telegraph expenses (not including pay to Operators)	2,536 15
19,702 09	Miscellaneous, printing, advertising, &c	22,622 31
8,263 41	Agency expenses	9,940 19
136,153 35		141,680 86

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B.,
30th June, 1879.

No. 8.—INTERCOLONIAL RAILWAY.

DR. GENERAL STORES ACCOUNT, Year ending 30th June, 1879. CR

1878.		$ cts.	$ cts.	1879.		$ cts.	$ cts.
June 30...	To Balance		345,422 53	June 30...	By Issues during year	674,799 27	
					Old material sold	46,252 93	
							721,052 20
1879.					Balance—		
June 30...	To Purchases during year	415,985 87			Ordinary stores	106,000 76	
	Charges from other Departments	190,901 82			Old rails	100,041 34	
	Pay-rolls	12,500 08			Old material for sale	37,716 00	
			619,387 77				243,758 10
			964,810 30				964,810 30

E. and O. E.

THOMAS FOOT,
Accountant.

MONCTON, N.B., 30th June, 1879

No. 9.—INTERCOLONIAL RAILWAY.

DR. GENERAL BALANCE, 30th June, 1879. DR

	$ cts.	$ cts.		$ cts.	$ cts.
Cash		5,732 30	Dominion Account		388,476 75
General stores :—			Accident Insurance		8,216 18
Ordinary stores	106,000 76		Chatham Branch Railway		490 67
Old rails	100,041 34		Grand Trunk Railway, General Account	5,116 22	
Old material	37,716 00		do do Traffic do	5,682 99	
		243,758 10			10,799 21
Stations		33,952 41			
Windsor & Annapolis Railway	7,546 50				
do Punchard, Clarke & Co	7,652 34				
		15,198 84			
Spring Hill & Parrsboro' Railway		3,388 44			
Prince Edward Island Railway		7 44			
St. Martins & Upham Railway		3,810 52			
Western Counties Railway, General Account	13,922 61				
do do Traffic do	2,055 54				
		15,978 15			
Elgin Branch Railway		726 10			
Albert Railway		612 40			
Cape Breton Railway Co		2,090 06			
Vale Coal Co		2,402 28			
Spring Hill Coal Co.		19 08			
Acadia Coal Co		5,684 01			
Intercolonial Coal Co		276 00			
Post Office Department		21,089 42			
Intercolonial Express Co		1,567 43			
Rent Account		1,946 45			
Bills receivable		3,400 00			
Suspense account		1,921 46			
Steel Company of Canada		7,440 34			
Dominion Telegraph Co		145 31			
Montreal Telegraph Co.		9 00			
P. E. I. Steam Navigation Co		9 95			
Militia Department		613 73			
Pullman Car Co		865 88			
Department of Agriculture		17,921 85			
Coldbrook Rolling Mills		2,191 17			
Department of Marine and Fisheries		50 64			
Moncton Gas and Water Co		0 20			
Nova Scotia Forge Co		146 78			

Steamer City of St. John		820 01			
Halifax Rolling Mills		44 65			
Individual Accounts		14,162 41			
		407,982 81			407,982 81

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N. B., 30th June, 1879

No. 10.—INTERCOLONIAL RAILWAY.

COMPARATIVE STATEMENT of Averages, Year ending 30th June, 1879.

	1879.	1878.
Mileage of Railway open	714	714
Engine mileage	2,531,791	2,499,088
Train do	2,111,426	2,160,080
Car do	21,855,441	22,164,816
Receipts per engine mile	Cts. 51·11	Cts. 55·18
do per mile of Railway	$1,812·46	$1,931·29
	Cents.	Cents.
Percentage of passenger earnings to gross receipts	34·92	34·47
do freight do do	58·22	58·14
do other do do	6·86	7·39
Expenses per engine mile—		
Drivers' Firemen's and Cleaners' wages	4·66	4·74
Fuel	6·09	6·29
Oil, tallow, waste and small stores	1·08	0·94
Repairs to engines	7·60	7·22
Water and tank repairs	1·85	1·49
Miscellaneous	0·50	0·54
Total	21·78	21·22
Mechanical Superintendent's salary, office and travelling expenses	0·27	0·30
	22·05	21·52
Locomotive power, per engine mile	22·05	21·52
Car expenses do	14·34	13·02
Maintenance way and works do	30·75	25·65
Station expenses do	7·53	7·43
General charges do	5·59	5·45
	80·26	73·07
Car mileage	0·86	0·59
Total per engine mile	79·40	72·48
Locomotive power, per train mile	26·44	24·90
Car expenses do	17·19	15·06
Maintenance way and works do	36·88	29·68
Station expenses do	9·02	8·60
General charges do	6·71	6·30
	96·24	84·54
Car mileage	1·04	0·69
	95·20	83·85
Working expenses per mile of Railway	$2,815·38	$2,536·80

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B.,
30th June, 187

INTERCOLONIAL RAILWAY.

OFFICE OF THE CHIEF SUPERINTENDENT,
MONCTON, N.B., 7th November, 1879.

COLLINGWOOD SCHREIBER, Esq.,
Chief Engineer,
Government Railways in Operation,
Ottawa.

SIR,—I have the honour to submit the following report upon the working of the Intercolonial Railway for the fiscal year ending June 30th, 1879.

I enclose the reports of the resident Engineer and the Mechanical Superintendent, and also the following statements prepared by the Accountant.

No. 1. Capital Account.
2. Revenue Account.
3. Locomotive Power, (Abstract No. 1.)
4. Car Expenses, (" 2.)
5. Maintenance of Ways and Works (" 3.)
6. Station Expenses, (" 4.)
7. General Charges, (" 5.)
8. General Stores Account.
9. General Balance.
10. Comparative Statement of Averages.

Although this report covers the operations of the whole year, yet I only had the direction of affairs for about four months ; having been appointed to the superintendence on the 20th February, 1879.

The length of the railway worked during the year was the same as in the previous year, 714 miles

CAPITAL ACCOUNT.

The total cost of the road and equipment was, on 30th June, 1878, **$36,091,065.85.**
The additions during the year were as follows:—

For the Halifax Extension.....	$21,282 78	
" the Deep-water Terminus at St. John.....	45,771 70	
" the completion of the Intercolonial.....	159,584 71	
		226,639 19
Making the total cost, to June 30th, 1879.....		$36,317,705 04

The payments on account of the Halifax Extension are for rock excavation and the construction of buildings.

Work on the Deep-water Terminus, St. John, was continued during the year, and a portion of the wharf was so far completed this summer as to allow of *a few* shipments being made from it.

During the current year the work will be continued, tracks will be laid and some of the necessary buildings erected.

The amount for completion of the Intercolonial consists of balances paid on account of work done in previous years, in building the road between Rivière du Loup and Truro.

REVENUE ACCOUNT.

Receipts.

The prevailing depression in all kinds of business so far affected the traffic of the road as to cause a considerable decrease in the gross earnings, as compared with the previous year.

The Steel Company of Canada, which has for some years operated large iron works at Londonderry, in Nova Scotia, stopped its blast furnace during the year and it was not again started, I regret to say, until October of the current year.

The following is a comparative statement of a few of the chief articles of freight showing the quantity carried in this and in the previous year.

Articles.	1877-78.	1878-79.	Decrease.
Barrels of flour	637,778	630,329	7,449
Bushels of grain	331,170	302,921	28,249
Lumber, in feet	56,606,547	55,626,096	980,451
			Increase.
Head of live stock	46,498	47,584	1,086
			Decrease.
All other goods, in tons	375,025	366,657	8,368

The increase in head of live stock carried is due to the transport of cattle from the upper Provinces to Halifax during last winter, for shipment to England.

This traffic formerly went by the Grand Trunk Railway to Portland, and thence to England.

The weekly mail steamers from England landed the mails and passengers, and also such goods as they had for the upper Provinces, at Halifax, last winter, and it is gratifying to record that all this traffic was carried with regularity and despatch.

Expenditure.

A very large expenditure was made during the year for new works and improvements, all of which is included in the working expenses. A considerable portion of this expenditure was for rebuilding the masonry of bridges and culverts and providing iron bridges to take the place of decayed wooden ones.

In order to comply with the amendment made at last Session of Parliament in the law respecting road bridges and other structures extending over the railway track, it became necessary to raise all the snow sheds and most of the over-head bridges. This work was commenced as soon as spring opened, and continued until the close of the working season. A large part of the work has been done, and it is expected that it will be completed next season.

A large amount of ballasting was done during the year on the track between St. John and Halifax, and the safety and durability of the permament way has thereby been much enhanced.

Iron fish-plates and scabbards have been removed from a considerable portion of the track, and steel fish-plates of the standard pattern have been substituted as fastenings.

The number of new sleepers put into the track during the year was	300,094
Against, in the previous year	156,742
Being an increase of	143,352

A large extent of fencing was also built during the year.

The new sleepers and fences were chiefly of more durable wood than had been used formerly, and it is the intention to continue the use of this improved material, because in a few years it will reduce the cost of repairs.

About four miles of new sidings were laid at different places along the road for the convenience of the public.

Many of the station houses and freight houses were enlarged, and a number of new buildings of various kinds were erected.

The engine houses at Truro, Moncton and Campbellton, having been found for some time too small to accommodate all the locomotives at these places, were enlarged at a heavy expense.

New iron turntables of an improved pattern were substituted at St. John and Rivière du Loup, for the wooden ones previously in use. These iron ones were found to work so well that four more of the same kind were ordered from a Canadian manufacturer, and they are now being placed in engine houses along the line.

Extensive and costly improvements were made in the water supply at Campbellton, Newcastle, Moncton and other places. A contract was made with the Moncton Gas-light and Water Company for the supply of water and gas at Moncton for ten years. The expense incurred by the railway in providing and laying pipes to convey this water to the different parts of the property, and in erecting hydrants for protection against fire, was about six thousand dollars. The cost of providing and fitting gas-pipes at Moncton was over eleven thousand dollars.

The following is a summary of the chief items referred to, the whole of the expenditure on account of which is included in the cost of working the road.

Ballasting	$54,841
Additional sidings	29,949
Additional buildings	32,114
Rebuilding bridges, culverts, etc	60,695
Improved water supply	21,308
Gas-pipes and fittings, Moncton	11,504
New turn-tables and semaphores	4,497
Total	$214,908

The account called "renewals suspense," to which was charged during the last few years the cost of relaying the track with steel rails, also the rebuilding of fences and of several large bridges, has been closed.

The balance at the debit of this account on 30th June, 1878, was	$168,396 03
There was added during 1878-79	42,278 88
Total	$210,674 91

The total amount, including the balance brought forward from the previous year, was charged to the working expenses of the year ending 30th June, 1879.

The locomotives, cars and the machinery generally have been kept in good repair, and are in a state of efficiency.

The cost of repairing locomotives was exceptionally heavy during the year, a large number having received extensive repairs. In order to maintain the stock, three new ones were built in the railway workshops at Moncton, the whole cost being charged to engine repairs. The large expenditure made in improving the water supply has also materially increased the cost of "locomotive power," as it was charged to that account.

In addition to the usual repairs to cars of all classes, considerable alterations were made in passenger, postal, baggage and express cars, the better to fit them for use, and twice as many cars were entirely rebuilt as in the previous year.

Stores Account.

The stores account compares very favourably with last year.

The purchase of stores in 1877-78 were	$435,049 69
In 1878-79 they were	415,985 87
Showing a decrease of	69,063 82

The stock of stores on hand has been considerably reduced, as compared with the previous year. The following is a comparative statement:—

	1878.	1879.
Ordinary stores	$135,561 35	$106,000 76
Old rails	173,227 82	100,041 34
Old material	36,633 36	37,716 00
	345,422 53	243,758 10

The weather during the year was in general favourable to the working of the railway. Last winter was mild, like that of the previous year, and the trains ran regularly without any serious interruption from snow.

It gives me pleasure to state that the officers and employés of all ranks performed their duties faithfully and well during the year.

In the last few months of the fiscal year ending 30th June, 1879, certain changes in the staff of officers and employés, and in the management, were commenced, the object in view being the lessening of the expenses without impairing the efficiency of the service.

It was necessary to make these changes cautiously, and only after full enquiry; therefore, although they were commenced in the year ending 30th June, 1879, yet their effect in reducing the expenditure did not appear until the current year.

All parts of the service are being dealt with, and a very large annual saving will be effected.

The accounts for the first three months of the current year have been prepared, and they show a very satisfactory result indeed. The deficiency of receipts, as compared with working expenses, being less than half what it was for the same period last year.

I have the honour to be, Sir,

Your obedient servant,

D. POTTINGER,

Chief Superintendent.

RETURN of Accidents, &c., Intercolonial Railway, from 1st July, 1878, to 30th June, 1879.

Date.	Place.	Person Injured.	Passenger or Employé.	Particulars.
1878.				
July 12...	5 miles north of Bic.....	Clara Côté, child.....	Neither..	In attempting to cross the track in front of an engine; was run over and killed; verdict—"accidental death."
do 18 ..	Campbell's Siding.....	....	....	Train left track and engine thrown down embankment; cause—open switch.
Aug. 1...	Haverly Siding..	T Nevill.....	Employé	While standing near track was struck by a box car of a passing train and severly injured.
do 8...	Gilbert's Crossing, St. John..	A. Keatly, child	Neither.....	Ran on track in front of train; was knocked down and expired almost immediately; verdict—"accidental death."
do 14...	About ¼ mile n'h of Rimouski....	Ed. Dion..	do	Run over by train while walking on track; fatal; verdict—"accidental death."
do 14...	2 miles west of Thomson.....	T. Urquhart	do	Lying on track and run over by train; fatal; verdict—"accidental death."
do 26...	Tartague.....	F. Levasseur..	Employé.....	When getting on engine slipped underneath and had both legs badly smashed.
do 30...	Moncton.....	R. Currie.....	do	In coupling cars had finger jammed.
Sept. 8...	3 miles south of Berry's Mill. ...	....	....	Ran into a hand-car smashing it all to pieces.
do 11...	Athol	T. Gilfoy.....	Employé.....	Fell from top of a box car; lost three fingers of left hand, also sustained serious bodily injury.
do 12...	Near Albion Coal Shoot.....	H Smith and J. H. Sproul.....	Employés....	Locomotive left track and fell on its side; driver and fireman both more or less bruised.
do 12...	Moncton.....	H. Wortman...	Employé	In coupling cars had hand injured.
do 13...	Windsor Junction.....	T. McAlpine.....	do	While shunting fell, and had four cars run over his body; fatal; verdict—"accidental death"
do 14...	Gilbert's Crossing, St. John..	T. Farley.....	Neither.....	Was found lying on track with upper part of skull torn off, and brains scattered about; fatal; verdict—"accidental death."
do 20...	Bathurst..	A. Gifford.....	Employé.....	In getting on van, slipped and got jammed between platform and van; hip bone broken and one rib dislocated.
do 20...	Amherst.	L. Cuttle.....	do	In coupling car had two fingers injured.
do 24...	St. John.....	S. A. Pyne	Employé, not on duty....	In stepping from platform of first-class car to van, fell and wheels of first-class car passed over his hips; fatal; verdict—"accidental death."
Sept. 27.....	One mile north of Memramcook	....	....	Train came in contact with a horse; engine thrown from track; tender smashed.
do 30.....	Halifax	Bernard Gorman.....	Neither	Was run over by shunting engine; fatal; verdict—"accidental death."
Oct. 12.....	Petitcodiac.....	C. Atkinson.....	Employé	In coupling car had thumb crushed.

RETURN of Accidents, &c., Intercolonial Railway, from 1st July, 1878, to 30th June, 1879—*Continued.*

Date.	Place.	Person Injured.	Passenger or Employé.	Particulars.
1878.				
Oct. 14.....	St. John	Frank Kimball	do (not on duty)...	Fell from platform in front of incoming train, and was run over; fatal; verdict—"accidental death."
do 19.....	Albion Siding....	J. Nairn	Employé.....	In coupling cars had hand injured.
do 19.....	4½ miles north of Tartague.	Theo. St. Laurent....	do	Run into by train while proceeding along line on a hand-car; fatal; verdict—"accidental death"
do 19.....	do ...	Alex. Brilliant.	do	Run into by train while proceeding along line on a hand-car; bruised and cut about face and head.
do 16.....	Amherst	Otho White.....	do	Hand caught in drawbar, in coupling cars; three fingers taken off.
do 19.....	Painsec.....	J. W. Nairn.....	do	Finger caught in link motion of engine and the top crushed off
Dec. 3.....	St. Ursène	L. Bellemare.....	do	On stepping from train while in motion, slipped and fell; postal and first-class cars passed over him and cut off his head; fatal; verdict—"accidental death."
do 3.....	New Glasgow....	Catharine Gordon....	Neither...	Was overtaken by train while crossing a railway bridge, and knocked down; fatal; verdict—"accidental death."
do 7.....	Spring Hill.... ...	D. McInnes.....	Employé	In coupling cars had collar-bone broken and ribs parted from breast-bone.
do 10.....	Moncton..... ...	Robert Currie.....	do	While uncoupling cars, foot caught in points, and cars knocked him down, passing over his body; fatal; verdict—"accidental death."
do 11.....	Amherst.	— McDonald	Neither.....	While walking on track was struck by train; fatal; verdict—"accidental death."
do 17.....	Moncton.....	James Elliott.....	Employé.....	In coupling cars had hand injured.
do 18.....	do	E. Collins	do	do do
1879.				
Jan. 16.....	Moncton.....	Wm. Ryan.....	Employé.....	Run over by cars that were being shunted; arm broken.
do 10.....	One mile east of West River	D. Ferguson.....	do	Walking on track was struck by train; leg broken and hip injured
do 11.....	Brookfield	Chas. Graham	Neither.....	Was standing on car of lumber that was being shunted, when his head came in contact with signal-post; skin torn off the top of head and cords of neck injured.
Jan. 14...	Truro	Robt. Ross	Neither.....	Attempted to cross track with team in front of train; fatal; verdict—"accidental death"
Feb. 5...	Moncton.....	Thos. Haslam.....	Employé.....	Scalded on face and hands; caused by two engines colliding in Moncton Yard.
do 3...	2½ miles east of Glengarry	....	....	Seven coal cars left track; all more or less damaged; cause—unknown.
do 21...	1 mile south of Riv. du Loup..	J. B. Saindon.	Neither.....	Lying on track was run over; fatal; verdict—"accidental death."

RETURN of Accidents, &c., Intercolonial Railway, from 1st July, 1878, to 30th June, 1879—*Continued.*

Date.	Place.	Person Injured.	Passenger or Employé.	Particulars.
1879.				
Feb. 22...	2 miles south of Londonderry..	.....	.....	Snow plow thrown from track by "drift;" plow and engines Nos. 76 and 101 all more or less damaged.
March 6...	1 mile south of Springhill.....	Samuel McLeod.....	Employé.....	Express train and special train collided; fatal; verdict—"accidental death."
do 6...	do ...	J. Edwards	do	Express train and special train collided; chest and ribs injured.
do 6...	do ...	J. Cameron.....	do	Express train and special train collided; ribs fractured and spine injured.
do 1...	Petite Roche.....	.....	.....	Ran into a hand-car smashing it all to pieces.
do 24...	Between Debent and Ishgonish.	.....	.....	Ran into a hand-car smashing it all to pieces, and slightly damaging engine No. 10.
April 2...	Moncton.....	Daniel Mouton	Employé.....	Slipped off foot-board of shunting engine; foot injured.
do 25..	Nash's Creek.....	Hugh Salter.....	Neither.	Fell in attempting to get on train while in motion; leg broken.
do 29...	Grand Lake	Peter Grant.....	Passenger....	In attempting to jump off train while in motion fell and was seriously injured.
May 22...	St. John.....	—— Perkins.....	Employé.....	In coupling engine to a car had hand severely injured.
do 27...	Richmond.....	Peter Kelly.....	do	In coupling cars had hand badly crushed.
do 31...	Campbellton.....	R. Irvine, jun.....	Neither.....	Walking on track, was run over; fatal; verdict—"accidental death."
June 7...	Near Petite Roche...	Jerome Commeau.....	Employé.	Fell from and was run over by a hand-car; ribs fractured and face cut.
do 12...	3 miles south of Bic.....	Fabien Fournier.....	Neither.....	While walking on track was run over by train, fatal; verdict—"accidental death.
do 19...	Pointe du Chêne	J. White.....	Employé.....	In coupling cars was thrown down and hip dislocated .....
do 26...	Meadow Brook...	.....	.....	Ran into a hand-car loaded with rails; smashed hand-car all to pieces and disabled engine No. 10.
do 27...	2 miles south of Hopewell.....	.....	.....	Ran into a hand-car and smashed it all to pieces.

ENGINEER'S OFFICE,
MONCTON, N.B., 15th August, 1879.

SIR,—I have the honour to submit my report of the working of the Engineering Department for the year ending 30th June, 1879.

Track.

Of the 714 miles of track on main line and branches, 690 are laid with steel rails, 13 miles of iron still remaining on the Pictou branch, and 11 on the Shediac branch.

On the latter, one mile of the worst old U rails were replaced by the best old T rails in stock.

On the main line and St. John branch, 43 miles of steel rails were connected with iron fish-plates, and the combined fish-plate and scabbard joint.

Standard steel fish-plates have been imported, and the work of replacing the iron plates and scabbards has been in hand for some time, and is now nearly completed.

Sleepers.

309,094 sleepers were renewed against 156,742 the previous year. The greater part of the track was originally laid on spruce sleepers, the average life of which is about five years. In awarding tenders last year, spruce was rated very low, relatively to princes-pine, tamarack and cedar, so that of the 300,000 purchased, only 3,000 were spruce.

By adopting a better quality of wood the renewals will not be nearly so heavy.

Ballasting.

Thirty-six miles of the old portion of the line between Halifax and St. John, have been ballasted at an expenditure of $54,841.75, so that now the old line is fully equal to any of the new part north of Moncton.

Sidings.

During the past year additional siding accommodation has been provided to the extent of 20,079 feet, or nearly four miles; of these the most important are:—

	Feet.
One at Halifax	526
Two at Young Street Halifax	1,309
One at Truro Round House	660
One between Truro and Valley Stations	605
One at Smelt Brook, Pictou Branch	824
One at Londonderry	988
Extension No. 3 Siding, Londonderry	976
Four at Amherst	4,908
One at Fort Lawrence	900

Fencing.

All fencing in cleared parts of the line is now, where necessary, being renewed with cedar poles.

The immediate outlay is somewhat greater, but in the end the cedar will undoubtedly prove the more economical. The repairs to snow sheds and fences have been very heavy for the past year, and will be for the next few years.

A large expenditure is being incurred in raising and repairing snow sheds between Truro and Amherst, to meet the requirements of clause passed last Session amending the Railway Act.

A large expenditure has been made in ditching and cleaning out clay and rock cuttings throughout the line. A train and gang of from 25 to 40 men were engaged from one to three months on each division. Many of the cuttings are still very bad, and this work will have to continue for some years.

Turn-tables.

Wood-tables at St. John and Rivière du Loup were replaced by Seller's cast-iron tables. Four of the same kind of tables are now being manufactured by Wm. Hazlehurst, of St. John, to replace wood tables at Truro, Newcastle, Campbellton and Ste. Flavie.

Wharves.

A large quantity of stone ballast was deposited around the cribs of deep water wharf at Richmond, and divers were engaged from July to November in levelling and packing it about cribs. The cost of this was $3,752.70.

Old wharf at Pictou Landing received extensive repairs, and will require to be thoroughly overhauled next year.

At Campbellton a pontoon was built for the accommodation of the S.S. Margaretta Stevenson last season, and extensive repairs have been put upon wharf lately to accommodate S.S. City of St. John.

A storm last autumn, and another a few months ago, damaged tracks and buildings on Rimouski Pier. These have been made good at a large outlay. The wharf is too low.

Buildings.

A brick flour shed, 250 ft. x 40 ft., was erected at Halifax, about 4,000 cubic yards of rock were excavated to make room for this building, at a cost of $5,462.71. The cost of this building was $6,000.00. A brick store, 80 ft. x 30 ft., two stories high, with slate roof, was erected at Richmond, at a cost of $9,029.21.

A shed, 50 ft. x 30 ft., was erected at the north end of Richmond wharf, to be used as an eating house by men engaged in unloading steamers in winter.

A contract has been let to extend the present freight shed on Richmond wharf, 235 ft., to provide accommodation for the shipment of cattle.

The old cattle pens at Richmond were found insufficient, and a new pen 200 ft. long and 25 ft. wide, with yards and platform in front, is now being built, and will shortly be completed. The contract price is $3,390.00.

A new combined passenger station and dwelling was erected at Stewiacke, and old station converted into a freight shed, at a cost of $1,493.16.

On the Pictou Branch, platform was renewed at Gurdon's Summit.

At Glengarry, tank was renewed and coal shed shingled.

A platform, 60 feet long and 12 feet wide, was built at Grant's Crossing, between Hopewell and Stellarton.

At Stellarton, engine house, turn-table and station received necessary repairs.

At Pictou Landing, the roof of engine-house and turn-table were repaired.

Tank-house, including tank and pumping-engine, at Polly Bog, were destroyed by fire on the morning of the 27th of June, and a temporary tank has been erected at Brookfield.

At Truro, a coal shed, 200 feet x 30 feet, with trestle approach, is under contract. This building is designed to run a train of coal cars on roof, and dump the coal through hatches upon floor, which is ten feet above rail level. When completed, a large reduction will be made in the cost of supplying engines with coal. The contract price is $1,790.00.

At Ishgonish, a combined passenger station and freight house was erected at a cost of $1,936.30.

At Folly Lake, a dwelling was erected for section foreman, and station overhauled and thoroughly repaired.

At Oxford, old freight shed was fitted up and converted into an office and ladies' waiting room.

At Maccan, old station and dwelling received some slight repairs, and is now being thoroughly overhauled, and a new freight shed is under contract.

At Amherst, the station ground and buildings were entirely rearranged, at a cost of $17,002.50. About 15,000 cubic yards of grading was filled in, to level ground on each side of the station. The freight shed was moved from the west to the east side of the track, and an addition of 100 x 30 feet built on to it. The old tank was torn down and replaced by one of double the capacity. The refreshment room, which had been closed for some time, was torn down, and the lumber used in the addition to freight shed. A new building to replace it is now under contract. The contract price is $2,590.00. New covered cattle pens and yards were also provided at this place.

At Aulac, slight repairs were made to station building last autumn, and it is now being thoroughly overhauled.

At Rockland, a combined passenger and freight station has been erected about two miles north of Dorchester, to accommodate the large section of country on west side of the Memramcook River, which was formerly accommodated by Memramcook Station, but since the completion of the new bridge over the Memramcook River this station is now about five miles nearer.

Platforms at Painsec and Humphreys' Mills siding have been renewed.

At Moncton, the old coal shed was moved across the track and converted into a shed for storing snow-plows and flangers. A new coal shed, similar to the one referred to at Truro, is being built. The brick engine-house is being enlarged to provide 11 additional stalls. The work is under contract to Mr. Geo. Lang. The contract price is $6,750.00.

At Penobsquis a new freight shed, 40 x 25 feet, was built and the old one converted into dwelling apartments for the Agent. The station building was thoroughly overhauled, painted and shingled. The cost of these improvements was $1,585.34.

At Sussex a bay window was built for office, exterior walls of building painted and platform renewed.

At Norton the old freight shed was converted into dwelling apartments for Agent, and a new shed, 75 x 30 feet, erected. Station building was thoroughly overhauled and painted inside and out. Cattle pens at this station were also enlarged and renewed. The cost of these improvements was $1,915-04.

At Bloomfield a new freight shed, 30 x 20 feet was built, and the old one converted into a kitchen for the Station Agent.

At Hampton a new freight shed, 80 x 25 feet, was erected.

At Rothesay the roof of station building is being raised to improve the living apartment of Station Agent, and the building is being thoroughly overhauled.

At St. John a new cattle pen, 150 x 50 feet, was built.

The following is a list of buildings and platforms erected on line north of Moncton.

At Berry's Mills a freight platform, 100 x 20 feet, a dwelling for Station Agent, 28 x 20 feet, 1½ stories.

At Coal Branch a freight platform 50 x 12 feet.

At Weldford a freight platform 100 x 20 feet. Interior of station repaired.

At Carleton and Ferris stations some alterations in interior arrangements for convenience of Agents.

At Newcastle a part of restaurant converted into a dwelling for mechanical foreman.

A tank house north of Bartibogue.

A tank house south of Red Pine.

A flag station at Nash's Creek.

A flag station at Black Point.
Dwelling for Agent at New Mills, half story, 28 x 19 feet.
A snow plough shed at Campbellton, 300 x 14.
A track store at Campbellton, 28 x 21 feet.
A freight house at Campbellton Wharf, 50 x 20 feet.
Building one reservoir at Campbellton, 18 x 18 feet.
Alterations in Superintendent's Office at Campbellton.
Addition of 12 feet and alterations and repairs to Cedar Hall Station.
Repairs to Sayabec Station—New engine shed at Sayabec 65 feet in diameter.
Addition to St. Octave Station and general repairs.
Converted part of St. Fabie Station into dwelling for locomotive foreman. Built snow plough shed, 300 x 14 feet.
Converted part of St. Luce Station into dwelling for section foreman.
Painted Rimouski Station.
Converted part of St. Fabien into dwelling for Station Agent.
At Rivière du Loup, put in double windows, double floors, and fitted up buildings for convenience of train dispatchers.

Bridges.

Three iron spans of 49 feet each at Enfield were replaced by a single span of 110 feet, at a cost of $15,067.07 (including abutments.)

The new span is a lattice girder, and was built by the Star Manufacturing Company of Halifax. Two of the old girders have since been used—one at Teakles Mill, the other at Hall's Creek.

At North Rawdon River three wood spans of 25 feet each were replaced with girders built of old rails.

Between Truro and Stewiacke six wood spans, varying from 16 to 23 feet, have been renewed with girders built of old rails. Some of these spans have been in use for eight months and are giving good satisfaction.

They are a little more expensive than wood, and if kept painted may be considered permanent structures.

An overhead bridge at Moncton has been replaced by an iron structure built of old rails.

Two others of the same kind are being built at Passekeag and Lake Side; two spans of 100 feet each, to replace the wooden trestle-bridge at Garden and Stanley Streets, in St. John yard, built of old rails, are under contract by Messrs. Geo Fleming & Son's, at St. John. One of them was opened for traffic on the 6th inst. The contract price is $5,490.

It was necessary to renew four of the above-named over-head bridges this year to give the clear headway required by the clause amending general Railway Act passed last Session. Under ordinary circumstances, the renewal of these might have been spread over three years. The old wood bridges were too much decayed to admit of their being raised.

Water Supplies.

A contract was entered into with the Moncton Gaslight and Water Company, by which they were to deliver water and gas to the Department at the boundary of the railway property.

An expenditure of $5,787.10 was made in laying water pipes and providing hydrants to the different buildings in Moncton yard, and $11,504.44 for gas pipes.

At Newcastle 6,000 feet of 10-inch clay pipes were replaced by 6,000 feet of 6-inch iron pipes, at a cost of $5,064.58. The trench in which pipes were laid was from 6 to 14 feet deep, and the work proved very expensive.

At Amherst a tank of 12,000 gallons capacity, and one of Morgan's cranes, was erected. The crane stands close to the main line. It is worked by the train hands,

and the tankman's services are dispensed with. A similar contrivance is now in use at Moncton, and one is being made for Truro.

Throughout the line there are 80 watering stations, of which 37 are supplied by gravitation, 9 by steam, 7 by windmill, and 27 by hand pumps.

At Campbellton a main of 7,100 feet of 6-inch pipes was laid from the engine house to Millstream, and 1,099 feet of branch pipes to the hydrants and buildings throughout the yard. The amount expended for the service was $9,095.91.

At Darling's Brook, near Hampton, one of the most important watering stations on the road, an excellent gravitation supply was obtained by laying 985 feet of 6-inch pipe, at an expense of $1,063.

Masonry.

A retaining wall 90 feet long and 7 feet high was built near Young Street, Halifax, to make approach to new coal trestles. Entirely new abutments, containing 750 cubic yards of ashlar masonry, were built at Enfield for the new clear span of 119 feet, which substitutes three spans of 49 feet each.

An 8-feet beam culvert was built at Malcolm's Brick Yard, to substitute a wooden one washed out.

A cattle guard and culvert at Enfield Station was rebuilt.

Three wood spans of 30 feet each were replaced by a 12-feet arch culvert 88 feet long.

Three piers and abutments of this bridge were built of lime stone, and were utterly worthless.

Three 4 feet by 2½ feet box culverts were rebuilt near Milford, each containing upwards of 100 yards of masonry.

About 6 cubic yards of new masonry were built for each of the wood spans replaced by iron (above referred to under bridges).

The old masonry of these structures was also pointed.

Two 4 x 2½ feet box culverts were renewed near Brook Field.

A 3 x 5 feet box culvert 60 feet long was renewed at Doggett's Brook, near Truro.

At Ishgonish a 10 feet beam culvert was lengthened 15 feet to admit of siding being extended.

At Greenville two box culverts, one 7 feet long and the other 24 feet long, were rebuilt.

A 2 x 2½ feet box culvert 184 feet was built under the new tracks and road at Amherst Station grounds.

At McManus Mill, near Memramcook, abutments of ashlar masonry were built upon pile foundations, to substitute decayed wood trestle-work.

At Hall's Creek two heavy abutments and one pier have been built upon pile foundations for 50 and 12 feet spans of iron, to replace a decayed timber bridge.

Two light abutments and piers have been built for old rail-iron overhead bridge, near Moncton.

Light abutments and piers were also built for overhead bridges at Lakeside and Passekeag, near Hampton.

A dry masonry bridge of 33 feet span was renewed with first-class ashlar masonry at Rothesay.

New bridge seats for iron span of 27 feet were provided at Parryburn.

Abutments have been commenced for two iron spans of 100 feet each to carry Stanley and Garden Streets across the railway, in St. John Station grounds. One of them is to be built of granite obtained from the parapets of a bridge near Nauwigewauk. A 4 feet arch was turned in tunnel near Tartague—one hundred and forty feet (140) long, at a cost of about $1,500. This is necessary on account of rock decaying and portion of tunnel caving in.

Several other tunnels in the same locality will have to be lined within the next two or three years for the same cause.

The track throughout the whole line is in good running order.

I have the honour to be, Sir,

Your obedient servant,

P. S. ARCHIBALD,

Engineer.

D. POTTINGER, Esq.,
Chief Superintendent,
Intercolonial Railway, Moncton.

INTERCOLONIAL RAILWAY.

MECHANICAL SUPERINTENDENT'S OFFICE,
MONCTON, 20th August, 1879.

SIR,—I beg to submit, for your information, the following statements showing the operations of the Mechanical Department for the year ending 30th June, 1879.

A. Statement showing the number of locomotives and the various classes of cars, and the condition in which they are at present.

B. Statement showing the locomotive and car mileage, and the averages of passenger and freight cars hauled per mile run by engines.

C. Abstract of Locomotive Returns.

D. Statement of the cost of locomotive power for each month during the year.

E. General Statement of the expenses of the Mechanical Department.

During the year three new engines were built in the Moncton shops and charged to working expenses.

An expenditure of twenty thousand dollars was made in the improvement and extension of water supply.

The rolling stock is in good condition.

I am, Sir,

Your obedient servant,

H. G. WHITNEY,

Mechanical Superintendent.

D. POTTINGER, Esq.,
Chief Superintendent,
Intercolonial Railway.

A.—INTERCOLONIAL RAILWAY.

STATEMENT shewing the Number of Locomotives and the various classes of Cars on the 1st July, 1878, and 30th June, 1879.

Particulars.	Locomotives.	The Various Classes of Cars.										
		First Class Passenger.	Second Class Passenger.	Postal and Smoking.	Baggage and Express.	Vans.	Box Freight.	Cattle.	Hay.	Platform.	Coal Hoppers.	Total.
On hand, 1st July, 1878, serviceable	105	45	34	17	17	35	1,060	64	32	1,018	898	3,220
do do condemned	.....	1	.....	.....	.....	.....	2	2	2	10	2	19
Total Stock, 1st July, 1878.....	105	46	34	17	17	35	1,062	66	34	1,028	900	3,239
Built at the Moncton Works and charged locomotive power.	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Changed from postal to baggage	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....
Changed from baggage to vans.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
Total Stock, 1st July, 1879.....	108	46	34	15	18	36	1,062	66	34	1,028	900	3,239
Condemned cars, 1st July, 1878	.....	1	.....	.....	.....	.....	2	2	2	10	2	19
Condemned during year 1878 and '79	.....	.....	.....	.....	.....	.....	13	1	3	21	12	50
	.....	1	.....	.....	.....	.....	15	3	5	31	14	69
Less—Rebuilt during year.....	.....	1	.....	.....	.....	.....	12	3	5	25	.....	46
Condemned, 1st July, 1879	.....	.....	.....	.....	.....	.....	3	.....	.....	6	14	23
Add serviceable and repairing...	.....	46	34	15	18	36	1,059	66	34	1,022	836	3,216
Total Stock, 1st July, 1879.....	108	46	34	15	18	36	1,062	66	34	1,028	900	3,239

B.—INTERCOLONIAL RAILWAY.

STATEMENT of Locomotive and Car Mileage for the Year ending 30th June, 1879.

Months.	Locomotive Mileage.		Car Mileage.							Average.	
	Passenger.	Freight.	1st Class Passenger.	2nd Class Passenger.	Express, Postal and Baggage.	Box Stock and Hay.	Platform.	Hoppers.	Total.	Passenger.	Freight.
1878—July	65,771	105,890	175,310	105,815	99,298	1,137,455	285,160	144,218	1,947,256	5·78	15·65
August	68,743	110,576	183,805	109,879	97,703	1,174,860	318,508	178,567	2,063,322	5 68	15·12
September	61,676	105,267	154,751	102,911	94,666	1,152,106	283,720	161,621	1,949,775	5·76	15·20
October	64,139	122,632	161,505	109,395	102,848	1,376,048	323,110	176,382	2,249,288	5 82	15·25
November	68,516	129,164	161,977	106,248	106,141	1,335,854	305,274	229,395	2,244,869	5·47	14·50
December	64,881	121,914	139,266	102,561	100,913	1,076,169	270,372	223,197	1,912,478	5·25	12 87
1879—January	63,119	111,651	124,547	97,015	94,445	1,002,529	138,982	135,686	1,593,204	5·01	11·44
February	54,798	103,105	107,932	75,116	87,303	840,435	178,156	131,554	1,420,496	4·94	11·15
March	60,690	98,872	121,868	83,459	93,646	939,747	204,004	162,881	1,605,605	4·92	13·32
April	60,413	96,920	124,662	98,490	100,468	1,075,837	165,305	162,530	1,727,292	5·35	14·48
May	61,725	84,125	124,695	95,381	97,033	910,243	187,850	125,520	1,540,722	5·13	14·55
June	57,176	85,416	126,659	88,820	97,334	939,024	244,631	104,666	1,601,134	5·46	15·20
Totals	751,647	1,275,532	1,706,977	1,175,090	1,171,798	12,960,287	2,905,072	1,936,217	21,855,441	5·39	13·95

C.—INTERCOLONIAL RAILWAY.

Abstract of Locomotive Returns—Year ending 30th June, 1879.

Months.	Hours in Steam.	Locomotive Mileage.	Consumption.				Average Consumption per 100 Miles.				
			Tons of Coal.	Pints of Oil.	Lbs. of Tallow.	Lbs. of Waste.	Miles to hour in Steam.	Lbs. of Coal.	Pints of Oil.	Lbs. of Waste.	Lbs. of Tallow.
1878—July	20,970	212,014	5,222	8,634	6,702½	3,566	10 11	49·26	4·07	1·68	3 16
August	21,614	220,341	5,342	8,723	7,052½	3,481	10·18	48·48	3·95	1·57	3.20
September	20,218	206,510	5,231	8,474	6,985½	3,433	10·21	50·66	4·10	1·66	3·38
October	22,477	230,227	6,065	9,062	7,364	3,624	10·24	52·68	3 93	1·57	3·19
November	23,650	242,290	6,414	10,117	7,389½	3,599½	10·24	52 94	4·17	1 48	3·04
December	22,767	229,648	5,941	9,173	6,763½	3,518	9·50	51.74	3 99	1·53	2·94
1879—January	23,279	221,347	6,338	9,147	6,569	3,291	9 44	57·26	4·13	1·48	2·94
February	21,288	201,031	5,560	8,427	5,937½	3,043	9·39	55·31	4·14	1·51	2·95
March	21,229	200,483	5,340	8,007	5,915½	3,358	9 44	53·27	3·99	1 67	2·96
April	20,621	197,643	4,670	7,879	6,125	3,630	10·08	42·19	3·98	1·86	3·09
May	19,446	188,680	4,238	7,892	6,121	3,226	9·70	44·39	4 18	1 70	3·24
June	18,667	181,577	3,890	8,787	5,506	2,971	9·72	42·84	4·83	1·63	3.03
Total	256,226	2,531,791	64,251	101,322	78,461½	40,740½	9·88	50·75	4·11	1·61	3·09

D.—INTERCOLONIAL RAILWAY.

STATEMENT of the cost of Locomotive power for each month, from 1st July, 1878, to 30th June, 1879.

Months.	Miles run by Engines.	Enginemen's Wages.	Fuel.	Oil, Tallow, Waste.	Repairs to Engines and Tenders.	Water.	Miscellaneous, Engine House, Mechanical Staff.	Total.	Average cost per 100 Miles.						
									Wages.	Fuel.	Oil.	Repairs.	Water.	Miscellaneous.	Total.
		$ cts.	$ cts.	$ cts.	$ cts	$ cts.	$ cts.	$ cts.	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts.
1878—July	212,014	9,480 61	11,535 41	2,113 48	13,860 58	2,273 95	1,134 89	40,398 92	4 50	5 43	0 99	6 53	1 07	0 53	19 05
August	220,311	9,911 13	12,017 74	2,304 06	14,369 14	1,280 41	1,041 80	40,924 28	4 49	5 45	1 05	6 52	0 59	0 48	18 58
September	206,510	9,271 19	11,709 45	2,169 10	13,996 73	3,857 36	1,165 40	42,169 23	4 49	5 67	1 04	6 78	1 88	0 56	20 42
October	230,227	9,981 64	13,913 75	2,366 17	15,622 41	5,794 56	1,252 88	48,931 41	4 33	6 09	1 03	6 74	2 52	0 54	21 25
November	242,290	10,488 72	15,076 24	2,508 48	10,890 39	4,286 21	1,497 76	44,747 80	4 32	6 23	1 04	4 49	1 76	0 62	18 46
December	229,648	10,210 49	14,287 53	2,349 40	13,932 82	17,091 83	1,462 55	59,334 62	4 44	6 22	1 02	6 06	7 47	0 65	25 86
1879—January	221,347	11,236 02	16,550 32	2,488 48	19,486 83	2,816 96	1,861 48	54,440 09	5 07	7 47	1 13	8 80	1 27	0 85	24 59
February	201,031	10,267 42	14,521 61	2,123 20	17,635 81	2,862 45	2,108 78	49,519 27	5 10	7 22	1 06	8 77	1 43	1 05	24 63
March	200,483	10,443 06	14,082 49	2,162 61	20,438 44	639 06	2,428 92	50,194 58	5 21	7 03	1 07	10 19	0 32	1 21	25 03
April	197,643	9,856 50	11,552 61	2,366 46	18,616 61	2,448 82	2,066 46	46,907 46	4 98	5 84	1 19	9 46	1 22	1 04	23 73
May	188,680	8,918 04	10,062 65	2,245 53	16,945 32	1,309 01	1,511 88	40,992 43	4 72	5 34	1 19	8 98	0 69	0 80	21 72
June	181,577	7,921 66	8,960 02	2,265 25	16,657 80	2,146 32	1,833 05	39,784 10	4 36	4 94	1 24	9 17	1 20	1 01	21 91
Totals	2,531,791	117,986 48	154,269 82	227,462 22	192,452 88	46,806 94	19,365 85	558,344 19	4 67	6 09	1 09	7 59	1 84	0 77	22 05

E.—INTERCOLONIAL RAILWAY.

GENERAL STATEMENT of the Expenses of the Mechanical Department, Year ending 30th June, 1879.

The miles run by train were	2,027,179
do engine were	2,531,791
do cars were	21,855,441
	$ cts.
The cost of locomotive power	558,344 19
do repairs to cars	219,947 46
Oil and waste for packing	13,945 50
Repairs to passenger cars	70,957 85
do postal, express and baggage cars	26,946 04
do freight cars and vans	107,553 32
The cost of locomotive power per 100 miles by train was	27 54
do do do engines	22 05
do do do cars	2 55
The cost of repairs to cars per 100 miles by train was	10 84
do do do engines	8 68
do do do cars	1 00
The cost of oil and waste for packing per 100 miles by train was	0 63
do do do engines	0 51
do do do cars	0 06
The repairs to passenger cars per 100 miles run by them	2 46
do postal, express and baggage do	2 26
do freight cars and vans do	0 64

APPENDIX No. 13.

CANADIAN PACIFIC RAILWAY.

OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 6th January, 1880.

SIR,—I have the honor to present my report on the progress made within the year 1879, in establishing the Pacific Railway.

EXPLORATIONS IN THE MOUNTAIN REGION.

Early in the season explorations were commenced in the northern section of British Columbia, to obtain information considered necessary to enable the Government to finally determine the route of the railway across the Mountain Region to the Pacific Coast. The attention of the explorers was specially directed to Port Simpson and its approaches from the open sea, to Wark Inlet, to the Valley of the River Skeena, to the wide tract of wilderness country where the tributaries of the Skeena and the Peace take their rise, to the Peace River district, and to the several northern passes through the mountains.

Arrangements had been made to have reports of these explorations forwarded from time to time, and before the end of September the parties who had crossed over the country from the Pacific Coast reached Edmonton, and from that point transmitted to me by telegraph the general results of the season's operations.

I immediately reported for the information of the Government, and on the 4th October an Order in Council was passed finally adopting the route by Yellow-Head Pass and the River Fraser, to Burrard Inlet.

EXPLORATION AND SURVEYS IN THE PRAIRIE REGION.

In order to gain a general knowledge respecting large areas in the Prairie Region which had never been visited by scientific travellers, a number of exploring parties were sent out, each with special instructions as to their duties. These parties have returned with much valuable information which, when arranged in proper form, will be embraced in a special report.

The Government having determined upon changing the location of the railway west of Red River so as to run south of Lake Manitoba, surveys were commenced early in the summer. Starting from the western end of Contract No. 14, at Selkirk, the line was run in a south-westerly direction until it reached the fourth base line, near to the Penitentiary; thence west along the fourth base line to the western boundary of the Province. Another line starting from the same point at Selkirk, but running more directly west, crossing the Oak Hummock marsh, at its narrowest point, and taking advantage of a slightly elevated ridge, followed west on the blind line four and a half miles north of the fourth base line, to the westerly line of the fifth range of townships,

west of the principal meridian; thence in a south-westerly direction to the fourth base line, at a point west of Long Lake. Several branch lines were also surveyed connecting the above described lines with the City of Winnipeg.

To the west of the Province of Manitoba, a line was surveyed westerly to the neighborhood of Fort Ellice, another north-westerly to Bird Tail Creek, in the direction of Livingstone. These latter surveys are incomplete.

Surveys in the Woodland Region.

Early last winter a survey, with soundings, was instituted on Lake Nipissing, to determine the most suitable point for connecting the subsidized portion of the Canada Central Extension with the navigable waters of the Lake.

During the past summer a trial location survey has been made to the north of Lake Nipissing. The line surveyed commences at South-east Bay, a point which had been suggested as the western terminus of the Canada Central Extension, and follows generally the north-eastern shore of the lake to the 24th mile; thence, leaving the vicinity of the lake, the line follows for a short distance the valley of Smoke River, reaching the valley of Sturgeon River at the 37th mile. The line continues closely along the left bank of that river. The party ceased operations for the season at the 63rd mile from the starting point.

Another party is at present engaged in exploring the country intervening between Sturgeon River and Spanish River, the object being to find a short practicable route to Sault Ste. Marie, utilizing as great a distance as possible of the ultimate main line from Lake Nipissing to the Thunder Bay section.

Trial location surveys have been carried on during the summer from Section 25, *viâ* Dog Lake, to Nepigon; from Nepigon to the northerly end of Long Lake, and thence easterly. Only partial returns of these surveys have as yet been received.

Telegraph Lines.

No new work has been executed on the Pacific Telegraph Line within the year. Since the last annual report the contract with Mr. F. J. Barnard, for the section between Edmonton and a point in British Columbia, has been cancelled.

The telegraph line for the whole distance between Fort William and Edmonton, with the Winnipeg Branch, in all 1,219 miles, has been operated during the past summer. Some sections of it are not, however, maintained with such care as to render the line as serviceable as it might otherwise be.

Construction from Lake Superior to Manitoba.

Fort William to English River, 113 *Miles, Contract* 25.

The grading and bridging remaining unfinished at the date of my last report on this section contract 25, were completed early in the present year, and the track has been laid for the whole distance.

The ballasting has been fairly done for about half the distance, but the remainder has only had one lift.

Before this section can be considered in a satisfactory condition for traffic, an additional lift of ballast will be necessary. The line has been used during the past summer for the transport of rails and contractors' supplies.

English River to Eagle River, 118 *Miles, Contract* 41.

Tenders for the work on this section were received on the 17th of January last, and the contract was signed on the 7th of March. The contract (No. 41) requires the grading to be done and the track laid for the passage of through trains by the 1st July, 1882, and the section fully completed by the 1st July, 1883. The contract also provides for an increase to the prices of various classes of work on condition that the track be laid and the work completed one year earlier than the dates given above. The work has made rapid progress during the past season, and the track has now been laid to the 136th mile from Fort William. A large quantity of supplies were delivered at Fort William before the close of navigation, and are now being distributed over the remainder of the section.

From the progress making, and the vigour displayed by the contractors, there is a fair prospect that the work will be completed by the early period.

Eagle River to Keewatin, 67 *Miles, Contract* 42.

Tenders for the work on this section were received on the 17th January last, and the contract was signed on the 20th March. The contract (No. 42) requires the grading to be done and the track laid ready for the passage of through trains by the 1st of July, 1882, and the whole contract completed by the 1st of July, 1883. The most convenient means of access to this contract is by the western end, *viâ* Winnipeg, but in consequence of the track not being laid between Cross Lake and Keewatin, considerable difficulty is met with, and the transport of supplies has to be made by canoes or boats, with frequent portages, during summer, and by teams during the winter months. The works have not, so far, been prosecuted with such energy as to warrant me in expressing the opinion that they can be finished within the time named in the contract.

Keewatin to Cross Lake, 36 *Miles, Contract* 15.

The cuttings on this section (No. 15), which are mostly of rock, are well advanced, and might be completed within a few months. The heavy portion of the work still to be done consists of a number of embankments to be made from earth, which, in some instances, has to be hauled for a considerable distance. The contractor has a number of steam shovels and ample rolling stock, and if well applied the work might be pushed rapidly to completion.

Cross Lake to Selkirk, 76 *Miles, Contract* 14.

The grading and bridging on this section (No. 14) is completed; the track has been laid over the whole distance, and a large quantity of ballast has been put on the line. A further quantity is still required, which will be supplied next summer. The line was used during the past summer for the transport of contractors' supplies.

Engine House at Selkirk.

This building has been in course of erection during the past summer. It will have accommodation for ten locomotives and turntable under the same roof. It is at this date nearly completed.

PEMBINA BRANCH, 85 MILES.

That portion of the branch line between Selkirk and St. Boniface was completed at the date of my last report. The work upon the section between St. Boniface and

Emerson has for the most part been confined to ballasting, about one-third of the required quantity having been put on the line. An iron superstructure has been ordered for the main opening at Rat River station houses, and platforms being erected at the several stations between Selkirk and Emerson are well advanced, and temporary arrangements for water supply during the winter have been provided.

The line between St. Boniface and Emerson is being operated by Messrs. Upper & Co., under lease with the Government.

Subsidized Lines.

The subsidized portion of the Canada Central Railway, according to the Order in Council, extends from Pembroke to such point as may be selected by the Government as the eastern terminus of the Canadian Pacific Railway, at or near the crossing of the Nipissing Road, at the south-east corner of Lake Nipissing. The surveys are now sufficiently advanced to establish the length of the adopted line between these points, which is found to be about 142 miles. The total subsidy is limited to $1,440,000; Starting from Pembroke, the line follows a north westerly course, and at no great distance from the Ottawa River, to the valley of the Mattawan River, at the 94th mile; then westerly to the proposed terminus. The grading and bridging has extended as far as the 62nd mile, and the track is laid and ballasted to the 43rd mile. In addition to the rails laid, there is a sufficient quantity on the ground for about 42 miles more track.

Georgian Bay Branch, 50 Miles.

The work on this contract proceeded very slowly during the early part of the season, and up to the end of July last the work done by the contractors was almost exclusively confined to clearing portions of the line. The contract was cancelled by the Government on the 14th August last. A certificate for the total quantity of work performed under the contract has been issued.

Extension Westerly from Red River.

Tenders were received on the 1st August, for the construction of 100 miles of railway west from Winnipeg, and the contract (No. 48) was signed on the 19th of the same month. By the terms of the contract, 50 miles of the line are to be completed by the end of April, and the whole distance by the 19th August next. The grading over this section will be very light, and the work will, for the most part, consist of tracklaying and ballasting.

Work of Construction in British Columbia.

Tenders were received on the 17th of December last, for the grading, bridging, tracklaying, ballasting, &c., between Emory's Bar, on the Fraser River, 5 miles below Yale, to Savona's Ferry, on the North Thompson River, a distance in all of 127 miles. The work is divided into four sections, to be completed as follows:—

Emory's Bar to Boston Bar, 29 miles, by 31st December, 1883.
Boston Bar to Lytton, 27 miles, by 30th June, 1884.
Lytton to Junction Flat, 28½ miles, by 31st December, 1884.
Junction Flat to Savona's Ferry, 40½ miles, by 30th June, 1885.

Rails.

During the summer contracts have been entered into with manufacturers in England, for the supply of fifty thousand tons of Bessemer steel rails, with the pro-

portionate quantity of fish plates and bolts and nuts. Eighteen thousand tons in all were delivered at Montreal previous to the close of navigation. The transportation of the rails required for the first 100 miles west of Red River, is embraced in the contract (No. 48) for construction. The rails are now in transit. A contract has been made for the transporation of 4,000 tons from Montreal to Fort William; twenty-five hundred tons were delivered before the close of navigation on Lake Superior.

EXPENDITURE DURING THE FISCAL YEAR.

A statement of contract expenditure within the fiscal year ending 30th June, 1879, is appended.

I have the honour to be, Sir,

Your obedient servant,

SANDFORD FLEMING,

Engineer in Chief.

F. BRAUN, Esq., Secretary,
Railways and Canals,
Ottawa.

CANADIAN PACIFIC RAILWAY.

SCHEDULE OF CONTRACTS, with Statement of Expenditure upon the same, during the Fiscal Year ended 30th June, 1879.

Contract No.	Character of Works.	Date of Contract.	Name of Contractor.	Amount expended during Fiscal Year ended 30th June, 1879.
				$ cts.
1	Construction of Telegraph Line, Fort Garry to Livingstone	Oct. 17, 1874	Sifton, Glass & Co	4,679 76
2	do do Livingstone to Edmonton	Oct. 30, 1874	R. Fuller	16,150 60
3	do do Edmonton to British Columbia	Nov. 10, 1874	F. J. Barnard	7,700 00
4	do do Lake Superior to Fort Garry	Feb. 19, 1875	Oliver, Davidson & Co	34,190 00
5a	Pembina Branch—Extension St. Boniface to Selkirk, grading, bridging and tracklaying	Aug 31,1874	Joseph Whitehead	40,200 00
13	Fort William to Sunshine Creek, grading and bridging	April 3, 1875	Sifton & Ward	15,400 87
	do do completion grading, etc	Aug, 29,1877	Purcell & Ryan	5,078 64
14	Red River to Cross Lake, grading and bridging	April 3, 1875	Sifton & Ward	138,780 00
	do do completion grading, etc	Sept. 13,1878	Joseph Whitehead	18,500 00
15	Cross Lake to Rat Portage, grading and bridging Red River to Rat Portage, tracklaying and ballasting	June 9, 1877	Sutton, Thompson & Whitehead	877,700 00
16	Extension of the Canada Central R'y (subsidized), Pembroke to Eastern Terminus	April 18, 1878	Canada Central Railway Co	250,479 00
25	Sunshine Creek to English River, grading and bridging Fort William to English River, tracklaying and ballasting	June 6, 1876	Purcell & Ryan	303,300 00
33	Pembina Branch—St. Boniface to Emerson, grading, bridging and tracklaying	June 21,1878	Kavanagh, Murphy & Upper	62,500 00
34	Transportation of rails, Kingston and Fort William to St. Boniface	May 29, 1878	Northwest Transportation Co	60,676 92
35	Spikes, 480 tons delivered at Fort William or Duluth	June 3, 1878	Cooper, Fairman & Co	23,880 00
36	Railway ties, 165,000 for Pembina Branch	Feb. 23, 1878	Wm. Robinson	42,490 80
37	Georgian Bay Branch—South River to Contin's Bay	Aug. 2, 1878	Heney, Charlebois & Flood	10,050 00
38	Completion Neebing Hotel (for offices)	July 26, 1878	Edmond Ingalls	3,456 85
41	English River to Eagle River, grading, bridging and tracklaying	Mar. 7, 1879	Purcell & Co	22,600 00

* $68,000 of this amount appeared in the Public Accounts of 1876 as paid to A. B. Foster.

APPENDIX No. 14.

GENERAL STATEMENT SHOWING

1st. Water Power and other Public Property leased on Canals and Railways, during the Fiscal Year ending 30th June, 1879

2nd. Property purchased by the Department of Public Works (now Department of Railways and Canals) for the Dominion Railways and Canals, and Property sold by the same Department, as not being required for said Railways and Canals, during the Fiscal Year ending 30th June, 1879.

3rd. Public Property declared to be no longer under the control of the Department, &c., during the Fiscal Year ending 30th June, 1879.

GENERAL STATE

1st.—Water Power and other Public Property leased on Canals

Date of Signature.	Term of Lease.	Lessees, &c.	Property Leased.	For what purpose used.
Aug. 31, 1878	Pleasure of Government.	J. G. White	Part of lot K, Con. C., Nepean, near sub-lots 37, 38, 39, Rideau Canal.	Ornamental grounds.
Jan. 29, 1879	do	Wm. Little	Lot on Maria St, Ottawa, east of Rideau Canal.	Dwelling.
" 1, "	21 years, renewable.	John Rourk	Lot 38 in 4th Con., Kingston, at Kingston Mills, Rideau Canal.	Stone, grist and flour mill.
Oct. 5, 1874	40 years	The Secretary of State to Chas. Magee.	Strip of land, Ottawa, near Sappers' Bridge, S. W. of Rideau Canal.	Buildings
Feb. 1, 1879	Pleasure of Government.	John Neville	Part of lot E, Con. D, Nepean, at Deep Cut, Rideau Canal.	Gardening
Jan. 24, "	do	Albert C. White	Part W½ 27, in 1st Con., Marlborough, Carleton, Rideau Canal.	Farming
May 1, "	do	James Mark	Part I, Con. B, Nepean, Rideau Canal.	Gardening
" 10, "	do	J. W. McRae & Co	Lot No. 1, S. E. of Basin, Rideau Canal.	Storing coal
" 8, "	do	Geo. Harris	Lot No. 2, S. E. of Basin, Rideau Canal.	Storing coal
April 4, "	1 trip	S. B. Fowler	Bond in $1,000 to return to Government at same places and in same condition as when received, certain tugs, barges, boats, wagons, &c., on Dawson Road, for one trip, to transport an engine and boiler from Fort Savan to Fort Francis, Manitoba.	
June 2, "	1 year	H. Bourlier & R. Arnold to Intercolonial R'y	A desk room, on King & George Streets, Toronto.	Intercolonial Railway office.
Dec. 26, 1873		Harbor Commissioners Montreal, & Lessees on Mill Street.	Fixing rear line of Hydraulic lots 1 to 18, Mill St., Montreal.	Lachine Canal
June 25, 1879	21 years, renewable.	Montreal Transportation Co	Island No. 5, between old and new Lachine Canal, above St. Gabriel Lock, near Brewster's Bridge.	Ship yard and supply station.
Dec. 23, 1878	Pleasure of Government.	J. & C. H. Wood	Mill lot No. 1, north of Lock No. 20, being part of lot No. W½ 23, in 1st Con., Cornwall, Cornwall Canal.	Flour mill
May 2, 1879	21 years, renewable.	A. F. Gault	Mill lot No. 6, by McDonald's plan, No. 5, by Baillairge's plan, Town of Cornwall, Cornwall Canal.	Cotton factory
Apr. 19, "	do	Andrew Hodge	Mill lots 3 & 4, Baillairge's plan, Town of Cornwall, Cornwall Canal.	Grist, woollen and planing mills, &c.
June 9, "	do	P. E. Adams	Mill lots No. 7, McDonald's plan, No. 6, Baillairge's plan, Town of Cornwall, Cornwall Canal.	Cotton factory
Oct. 17, 1878	Pleasure of Government.	John Reid	Part of lots 5 & 6, in 1st Con., Edwardsburg, Galops Canal.	Farming, &c.
Mar. 8, 1879	do	Geo. P. Anderson	Wharf near north bank, Galops Canal.	Wharf

MENT SHOWING:

and Railways, during the Fiscal Year ending 30th June, 1879.

Amount of water power leased.	Date from which Lease is reckoned.	Area of property leased.	Annual Rental.	Amount of each Instalment.	When payable each year.	When first instalment was due.	Remarks.
....	Aug. 1, 1878	1 $\frac{20}{100}$ a...	$2 00	$2 00	August 1.....	On delivery of lease.	
.....	April 1, 1875	0 $\frac{8}{100}$ a...	25 00	25 00	April 1.....	do	3 first years payable on delivery of lease.
Surplus water from Pond.	Jan. 1, 1879	7 acres ..	105 00	52 50	Jan. 1, July 1..	July 1, 1879.	Ed. Smith's lease is hereby cancelled.
.....	June 17, 1874	.....	1 00	1 00	June 1.....	June 17, 1875	
.....	Jan. 1, 1879	$\frac{3}{4}$ acre...	2 00	2 00	January 1	Jan. 1, 1879.	
.....	" "	7 acres ..	5 00	5 00	"	"	
.....	Jan. 1, 1877	6 acres ..	9 00	9 00	"	Jan. 1, 1877.	
.....	April 1, 1879	66x99 ft.	60 00	60 00	April 1.....	April 1, 1879	
.....	" "	66x99 ft.	60 00	60 00	"	"	
.....	.....	.....	100 00	For the trip when performed.	.....	.....	
.....	June 1, 1879	.....	200 00	50 00	Sept. 1, Dec. 1 Mar. 1, June 1	Sept. 1, 1879.	
.....	.....	.....	Acquiesced in by Government, 8th October, 1878.				
.....	June 1, 1879	.....	200 00	200 00	June 1.....	June 1, 1880.	Cancels lease to J. B. Auger & Co., No. 3,277.
3 runs...	Oct. 1, 1878	A. R. P. 0 0 34	90 00	45 00	Jan. 1, July 1..	$22 only. Jan. 1, 1879.	Cancels lease No. 3,154.
5 runs...	Jan. 1, 1870	0 2 25	150 00	75 00	" " ..	July 1, 1879.	Formerly J. Harvie.....
8 runs...	July 1, 1871	1 1 8 $\frac{2}{10}$	240 00	120 00	" " ..	Jan. 1, 1872.	Cancels No. 1,992 a.
4 runs...	.....	2 2 31 $\frac{64}{100}$	120 00	60 00	" " ..	"	Cancels No. 1,992 d.
.....	Aug. 1, 1878	0 $\frac{1}{10}$ a.....	5 00	5 00	August 1.....	On delivery of lease.	
.....	Jan. 1, 1879	.....	8 00	8 00	January 1.....	do	

1st.—Water Power and other Public Property

Date of Signature.	Term of Lease.	Lessees, &c.	Property Leased.	For what purpose used.
Aug. 19, 1878	Pleasure of Government.	Albert Railway Co...	Loan to them of 302 tons iron rails for their branch, at Salisbury, N. B	Intercolonial Railway, old rails.
Sept. 23, "	do ..	St. Martin & Upham Railway Co.....	Loan to them of 2,246 tons iron rails for their branch, at Hampton, N. B.	do do ..
Oct. 5, "	do ..	Elgin & Petitcodiac Railway Co.....	Loan to them of 1,395 tons iron rails for their branch. at Petitcodiac, N. B.	do do ..
Aug. 15, 1879	do ..	Richibucto R'y Co...	Loan to them of 650 tons iron rails for their branch at, Richibucto, N. B.	do do ..

leased on Canals and Railways, &c.—*Continued.*

	May be resumed by Government on 6 months' notice, without compensation.

2nd.—Property purchased by the Department of Public Works (now Department of Railways and Canals) for the Dominion Railways and Canals, and Property sold by the same Department, as not being required for said Railways and Canals, during the Fiscal Year ending 30th June, 1879.

Date of Signature.	Vendors.	Purchasers.	Property Purchased or Sold, &c.	For what purpose used.	Area of Land.	Price of Sale.	Remarks.
						$ cts.	
April 9, 1879.	Geo. Dowker.....	Her Majesty....	Bond as Paymaster Dept. Public Works at Montreal in $4,000; Sureties—T. W. Ritchie in $2,000, A. Force in $2,000.				
Oct. 21, 1878.	Henry Cutler *et al.*	"	Part of E. ½ of lot 27 in 1st Con, Cornwall	Cornwall Canal....	6a. 2r. 28p...	2,734 22	
Nov. 1, 1878.	G. S. Cutler.....	"	" " (Release of damages)	"	6a 2r. 28p...	2,734 22	
Jan. 27, 1879.	Mrs. D. W. Macdonell.....	"	Receipt for an advance on price of lots 3 and 4, Potash Point, Cornwall.....	"	....	1,500 00	
June 13, 1879.	Estate L. Cushing.	"	Release of damages, and for any land taken for the Canals.....	Carillon & Grenville Canals.....	....	394 57½	
May 21, 1879.	Her Majesty.	Wm. Moir.	Bill of sale of steamer "Mayflower," now at Pictou Harbor, N.S.....	Intercolonial R'y..	....	1,500 00	
July 17, 1878.	G. T. R. Co'y. of Canada.....	Her Majesty....	The Riv. du Loup Line, from Point Lévis to Riv. du Loup.....	" ..	....	1,500,000 00	
May —, 1879.	McGee and others..	"	Receipted pay-list for damages to land at River St. Pierre by leakage from canal.....	Lachine Canal.....	....	3,229 83	
July 8, 1878.	Jos. McGovern.....	"	Release, damages to lot No. 1, south of Chippewa Street, Cayuga town.....	Welland Canal damages.....	....	25 00	
" 4, 1878.	Jonathan Neff *et ux*	"	Deed of pt. lot 28 in 2nd Con., Humberstone.....	Welland Canal enlargement	1 acre.....	175 00	
June 24, 1878.	Elihu Neff *et ux*.....	"	" " 28 " "	" ...	5¾ "	1,078 75	
July 10, 1878.	B. Anderson *et ux*..	"	" " 119, Thorold, or 4, 5, Vil. Allanburg	" ..	0 8/100 "	500 00	
" 6, 1878.	M. B. Collins *et ux*	"	" " 119 " or 2, 3, "	" ...	0 13/100 "	300 00	
" 11, 1878.	Corporation of Humberstone	"	Road allowance between lots 26 and 27 in 3rd Con, Humberstone.....	" ...	2 6/100 "	206 00	
" 29, 1878.	P. Gibbons.....	"	Deed of pt. lot 27 in 1st Con., Humberstone, at Port Colborne.....	" ...	0 1/100 "	3,000 00	
Aug. 1, 1878.	P. A. Upper *et ux*..	"	Deed of pt. lot 119, Thorold, or 32, Vil. Allanburg	" ...	0 2/100 "	500 00	
" 1, 1878.	T. McKenny.....	"	" " 119 " or 25 "	" ...	0 17/100 "	1,200 00	
" 3, 1878.	M. Cook *et ux*.....	"	" " 9 in 7th Con., Grantham..	" ...	0 15/100 "	125 00	

"	7,	1878.	T. Nihan	"	....	" "	17 in 4th "	"	...	3 $\frac{86}{100}$ "	3,500 00	
July	5,	1878.	Jas. Upper *et ux*	"	....	" "	96, Thorold, or 7, Vil. Allanburg	"	...	0 $\frac{33}{100}$ "	200 00	
Aug.	6,	1878.	P. Gibbons	"	....	Release, damages to cellar, East Street, Port Colborne, removal of buildings, &c		"	...		3,000 00	
"	1,	1878.	J. & W. Upper *et ux*	"	....	Deed of pt. lot 96, Thorold, and of road allowance		"	...	44 $\frac{57}{100}$ acres	5,500 00	
"	1,	1878.	D. O'Leary *et ux*	"	....	" "	119 " or 26, Vil. Allanburg	"	...	0 $\frac{14}{100}$ "	1,400 00	
"	12,	1878.	A. O'Connor *et ux*	"	....	" "	247 " or 15 to 23, 28 to 40, 62 to 66, Vil. of Welland	"	...		2,272 00	
"	3,	1878.	Eliza J. Kelly	"	....	" "	48 " " " "	"	...	2 acres	300 00	
"	8,	1878.	J. Bradley	"	....	" "	247 " or 13, 14, Town of	"	...	2 × 1½ chs	200 00	
"	1,	1878.	Sarah Uppper *et vir*	"	....	" "	119 " or 20, 21, Allanburg	"	...	0 $\frac{24}{100}$ acre	1,500 00	
"	15,	1878.	O. Upper *et ux*	"	....	" "	119 " or 4, Allanburg	"	...	0 $\frac{14}{100}$ "	350 00	
Oct.	19,	1878.	Wm. Murphy *et ux*	"	....	" "	247 " or 4 "	"	...	1 $\frac{25}{100}$ "	500 00	
Oct.	21,	1878.	N. Higgins	"	....	" "	27 in 1st Con., Humberstone, or J. at Port Colborne	"	...	0 $\frac{3}{100}$ "	875 00	
"	17,	1878.	R. Smith *et ux*	"	....	" "	74, Thorold	"	...	2 $\frac{1}{2}$ "	312 50	
"	17,	1878.	"	"	....	" "	51 "	"	...	0 $\frac{28}{100}$ "	100 00	
Dec.	31,	1878.	H. Broderick *et vir*	"	....	" "	17 in 4th Con, Grantham	"	...	1 $\frac{12}{100}$ "	252 00	
Nov.	15,	1878.	Estate John Brown	"	....	" "	119, Thorold, or 37, 38, 39, Thorold	"	...	0 $\frac{44}{100}$ "	800 00	
Jan.	14,	1879.	Emmeline Britt and her children, infants of David Skinner—J. Hoskin, guardian	"	....	Order of Court of Chancery, Toronto, vesting in Her Majesty, part of lot No. 119, Thorold, or 2 and 3, Allanburg		"	...	0 $\frac{13}{100}$ "	1,442 06	$22.25 refunded to Govt. out of interest.
Mar.	11,	1879.	Public S. Trustees, Sec. No. 2, Thorold	"	....	Order of Court of Chancery, Toronto, vesting in Her Majesty, part of lots 49, 50, Thorold, or 2 and 3, Allanburg		"	...	0 $\frac{19}{100}$ "	1,361 75	
Jan.	23,	1879.	B. Arr *et ux*	"	....	Deed of pt. lot 203, Thorold, or 17, 18, 19, 21, Port Robinson		"	...	1 $\frac{11}{100}$ "	350 00	
Feb.	5,	1879.	W. Toyne	"	...	" "	27 in 6th Con., Crowland	"	...	0 $\frac{13}{100}$ "	1,350 00	
"	8,	1879.	P. Powers	"	....	" "	27 " "	"	...	0 $\frac{66}{100}$ "	80 00	
"	19,	1879.	R. Offspring	"	....	" "	203, Thorold, or 21, Port Robinson	"	...	0 $\frac{80}{100}$ "	700 00	
"	4,	1879.	W. Cooke *et ux*	"	....	" "	9 in 7th Con., Grantham	"	...	0 $\frac{68}{100}$ "	326 40	
Jan.	20,	1879.	P. McCarthy *et al*	"	....	" "	9 " (Quit claim deed)	"	...	0 $\frac{03}{100}$ "	1 00	
April	12,	1879.	W. Upper *et ux*	"	....	" "	96, Thorold, or 4, Allanburg, north of Holland Road	"	...	0 $\frac{63}{100}$ "	600 00	
"	16,	1879.	J. S. Upper *et ux*	"	....	" "	96 " or 8, Allanburg, south of North Street	"	...	0 $\frac{17}{100}$ "	700 00	
May	5,	1879.	H. J. England *et vir*	"	....	" "	96 " or 6, Allanburg, north of Holland Road	"	...	0 $\frac{17}{100}$ "	200 00	
"	5,	1879.	P. Fraser *et vir*	"	....	" "	96 " or 3, Allanburg, between Holland Road and North Street	"	...	0 $\frac{33}{100}$ "	550 00	
May	27,	1875.	R. McPherson	"	....	" "	15 " or Thorold Vil., lots 10 to 15, Wellington St., East, or Thorold Vil. and 3, north of Albert Street.	"	...	1 $\frac{40}{100}$ "	1,575 00	

2nd.—Property Purchased or Sold, &c.—*Concluded.*

Date of Signature.	Vendors.	Purchasers.	Property Purchased or Sold, &c.	For what purpose used.	Area of Land.	Price of Sale.	Remarks.
						$ cts.	
July 4, 1879.	J. McDouggle *et ux*	Her Majesty....	Deed of pt. lot 49 Thorold.....	Welland Canal enlargement	$0\frac{13}{100}$ "	150 00	
" 7, 1879.	Corporation of St. Catharines.....	"	" " 9 in 7th Con., Grantham, and road allowance between 7th & 8th Con., Grantham	" ...	$0\frac{3}{10}$ "	500 00	Cemetery.
May 7, 1879.	T. McLean *et ux*....	"	" " 50 and 73, Thorold, and road allowance, (Quit claim by N. F. Hazel *et ux*: $7.00)	" ...	$96\frac{66}{100}$ "	8,526 00	

3rd.—PUBLIC Property declared to be no longer under the control of the Department, &c., during the Fiscal Year ending 30th June, 1879.

Date of Order in Council.	Published in the *Canada Gazette.*		Property.	To whom Transferred.	Remarks.
	Page.	Year.			
Oct. 8, 1878.	.....	.....	The Trent Works—(Transferred unconditionally)	Ontario Government.....	
June 13, 1879.	.....	.....	" " (Order in Council cancelling the Order in Council of Oct. 8, 1878.	Dominion Government.....	

H. A. FISSIAULT.

OTTAWA, 21st October, 1879.

APPENDIX No. 15.

DEPARTMENT OF CANALS AND RAILWAYS,

OTTAWA, 30th June, 1879.

SIR,—I beg to transmit herewith a Statement of the Claims referred to and arbitrated upon by the Official Arbitrators, during the fiscal year ending the 30th June, 1879.

I have the honor to be, Sir,

Your obedient servant,

F. H. ENNIS,

Secretary,

Department of Railways and Canals,

Ottawa.

STATEMENT of claims referred to and arbitrated upon by the Official Arbitrators, in connection with the Department of Railways and Canals, during the Fiscal Year ended 30th June, 1879.

Claimant.	Nature of Claim.	Date of reference to Arbitration.	Amount claimed.	Amount awarded.	Date of award.	Remarks.
			$ cts.	$ cts.		
Mrs. D. W. MacDonell	Cornwall Canal—land taken for enlargement	June 14, 1878..	(*amt. offered.*) 1,201 35	3,000 00	Nov. 15, 1878..	Referred to two of the Arbitrators for enquiry and award under Act 31 Vic., c. 12.
T. S. Higginson	Grenville Canal—valuation of land...	Sept. 30, 1878.	(*amt claimed*) 1,500 00	300 00	.....	Referred to two of the Arbitrators for enquiry and award under Act 31 Vic., c. 12.
Joseph Hamilton	Intercolonial Railway—contract for building wharf at Pictou Landing...	Oct. 10, 1878..	8,000 00	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
J. B. Chamberlain	Intercolonial R'y—land taken.....	Nov. 5, 1878..	1,000 00	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
O. & C. Oullette	do damage by water..	do ..	300 00	.....	.....	do do
C. Martin	do water cut off, etc..	do ..	not stated...	.....	.....	do do
Geo. Duncan	do land taken, etc.....	do ..	3,925 10	.....	.....	do do
A. Campbell, jun	do land damage.....	do ..	200 00	.....	.....	do do
J. B. McNutt	do building flooded...	do ..	800 00	.....	.....	do do
P. Dumont	do land damage.....	do ..	100 00	.....	.....	do do
Jean Rousseau	do damage by water..	do ..	150 00	.....	.....	do do
Jules Tessier	do water cut off mill..	do ..	150 00	.....	.....	do do
Alex. St. Laurent	do damage by water..	do ..	400 00	.....	.....	do do
G. W. Bartholomew	do land damage.....	do ..	400 00	.....	.....	do do
Donald Smith	do do	do ..	500 00	.....	.....	do do
T. Beaulieu	do land taken, etc....	do ..	68 00	.....	.....	do do
Pierre Cotté	do do	do ..	150 00	.....	.....	do do

APPENDIX No 15.—STATEMENT of Claims referred to and arbitrated upon by the Official Arbitrators, &c.—*Con.*

Claimant.	Subject of Claim.	Date of reference to Arbitration.	Amount claimed.	Amount awarded.	Date of award.	Remarks.
			$ cts.	$ cts.		
Alex. Forbes	Intercolonial R'y, erecting of fencing	Jan. 13, 1879..	4,172 48	657 95	Feb. 28, 1879..	This claim was referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8. The Arbitrator reported on the 28th February, 1879, recommending the payment of $657.95 to claimant in full settlement. The amount was offered to Mr. Forbes, who refused to accept it in full settlement. The case was then referred to the whole Board for enquiry and award under Act 31 Vic., c. 12.
J. & T. Williston	do loss of fish	Feb. 7, 1879...	184 93	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
Thomas Nihan	Welland Canal—land taken for enlargement	Feb. 8, 1879...	1,539 00	.....	.....	Referred to whole Board for enquiry and award under Act 31 Vic., c. 12.
Arr Brownson	do do	do ..	350 00	.....	.....	do do
T. De Toughe	do do	do ..	100 00	.....	.....	do do
John Bradley	do do	do ..	1,184 00	.....	.....	do do
Conlon Bros	do do	do ..	240 00	.....	.....	do do
Henry Clark	Intercolonial R'y—loss of property	April 15, 1879..	150 00	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
J. B. Dumont	do damage by accumulation of snow	dō ..	not stated...	.....	.....	do do
Joseph Lavoie	do damage by water	April 19, 1879..	do ...	.....	.....	do do
Sylvain Lavoie	do do ..	do ..	do ...	.....	.....	do do
Bruno D'Anjou	do do ..	do ..	do ...	.....	.....	do do
Alex. Marquis	do further claim for land expropriated	Mar. 28, 1879..	.....	.....	.....	This claim withdrawn from Arbitration.

Estate Geo. Moffatt..	do receiving & transporting rails.....	April 16, 1879.	5,634 27	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
Andrew Johnson & Co.....	do contract for engine house, Truro....	May 10, 1879..	.....	.....	.....	do do
D. McPherson.....	do damage by extension of Railway from Richmond Depot to North St., Halifax.....	May 30, 1879..	6,000 00 (also $1,200 per year.)	.....	.....	Referred to whole Board for examination and award under Act 31 Vic., c. 12.
F. J. Barnard.....	Canada Pacific R'y—contract for construction of Telegraph line.....	June 7, 1879..	.....	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
E. Wilgress.....	Lachine Canal—land expropriated.....	June 11, 1879..	.....	.....	.....	This claim has already been enquired into and awarded on by the Arbitrators. It is referred again for the purpose of having the award already made reconsidered on the evidence adduced at first hearing.
P. Jackson..	do do	do ..	.....	.....	.....	do do
F. X. Jarry..	do do	do ..	.....	.....	.....	do do
J. S. Brookfield.....	Intercolonial R'y—land taken at Salisbury, N.B	June 23, 1879.	200 00	.....	.....	Referred to whole Board for enquiry and award under Act 31 Vic., c. 12.
Mrs. Matilda Bilton.....	Burlington Canal—loss of a span of horses.....	do ..	300 00	.....	.....	Referred to one Arbitrator for enquiry and report under Act 41 Vic., c. 8.
W. S. Hamilton.....	Dismissal as Station Master at Brookfield	do ..	460 46	.....	.....	do do
L. McCallum...	Welland Canal—damage to Schooner "Upper"	June 27, 1879..	.....	.....	.....	do do
The Anchor Marine Ins. Co'y	do damage to cargoes of Vessels "Jenny Graham" and "St. Andrews".....	June 28, 1879..	.....	.....	.....	do do

123

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, 30th June, 1879.

F. H. ENNIS,
Secretary, O. A.

APPENDIX No. 16.

REPORT ON THE TRAFFIC RESULTS OF THE INTERCOLONIAL RAILWAY UP TO 31ST DECEMBER, 1879, AND ON THE CONDITION OF THE PERMANENT WAY AND ROLLING STOCK UP TO 2ND FEBRUARY, 1880.

DEPARTMENT OF RAILWAYS AND CANALS,
GOVERNMENT RAILWAYS IN OPERATION,
OTTAWA, 2nd February, 1880.

SIR,—In order that the Minister may be fully informed up to the latest date of the results of the operation of the Intercolonial Railway, and the condition of the road and rolling stock,

I beg leave to report that the working expenses and receipts for the six months ending 31st December last, being the latest returns to hand, are as follows, viz.:—

Working expenses, including general repairs.....	$753,469 13
Receipts.....	721,277 42
Excess of expenditure over receipts.....	$32,191 71

The additional mileage placed under the Intercolonial management early in the year, has increased the miles run by the trains 78,614 miles over the number for the corresponding period of the previous year.

The engines and passenger coaches are being run up to their full capacity, and the freight cars have been kept pretty constantly rolling; the traffic has been conducted with great regularity, and the casualties, I am pleased to say, have been very few, and of a trivial character. On one or two occasions delays have arisen from broken tyres and wheels, but it could scarcely be expected that we should be free from such breakages, especially during the cold season, the old iron rails on the River du Loup branch being very severe upon the rolling stock. These broken tyres and wheels have been very promptly replaced, and great care has been exercised to maintain efficiently the rolling stock, which is in good running order. Slight delays only have been caused to the trains by obstruction from snow on the track. A number of severe snow storms have, however, been experienced, but by the judicious use of the snow-plough the trains have, as a rule, worked through satisfactorily, and I trust we may be equally fortunate and successful during the balance of the season.

Of the condition of the road I may say that, east of River du Loup, it was never better; the structures have been carefully watched, and the necessary repairs put upon them; the rail is in a good state, the ballasting has been improved, and large renewals have been made to the sleepers. West of River du Loup, on the newly-acquired road, I cannot speak of so favourably. Seventeen miles of track has, however, been laid with steel rails, over which the trains pass smoothly; but the old iron rail track is very rough, difficult to uphold, and very trying to the rolling stock; it is hoped that the steel rails for this section of road will arrive early in the spring, when the old rails will be speedily removed and replaced by steel rails.

I purpose shortly to have reports from the Mechanical Superintendent and Inspector of Locomotives on the condition of the rolling stock, and from the Resident Engineer upon the state of the road; all of which will be duly reported and submitted for the information of the Minister.

I have the honor to be,
Your obedient servant,
COLLINGWOOD SCHREIBER.

F. BRAUN, Esq.,
Secretary Dept. Railways and Canals.
Ottawa.

APPENDIX No. 17.

CANADIAN PACIFIC RAILWAY.

SUPPLEMENTARY REPORT.

OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 31st January, 1880.

SIR,—I have the honour to supplement the report made up to the 31st October last, on the various services of the Canadian Pacific Railway.

Second 100-mile Section west of Red River.

Since the close of the year I have received and submitted to you the result of the surveys which have been made for the purpose of extending the railway west of the Province of Manitoba. An Order in Council has been passed (22nd January), adopting the line surveyed from the termination of the western end of the first 100-mile section now under contract (Contract 48), and running in a north-westerly direction to a point in the neighbourhood of Bird Tail Creek. This completes the adoption of the line of railway for a distance of two hundred miles west of Red River. The plans and other documents are being prepared, so that tenders may at once be received for the construction of this portion of the line.

Steps have been taken for the delivery of 100,000 ties, for the second 100-mile section, during the present winter, while the snow is on the ground and the rivers frozen.

Lake Superior to Manitoba.

When I reported on the work at the close of last year, doubts were entertained, based on the progress made during the previous summer, as to the line being finished within the time named in the contract. Later examinations have shown, that the cause of complaint is now being removed. Mr. Schreiber, who has recently returned from a tour of inspection, reports that the work is now carried on with more system, that the contractors are displaying great energy in carrying forward large quantities of supplies for men and horses, that there is every prospect of the progress being satisfactory, and that the ground for anxiety which I felt, and which I considered it my duty to lay before you, is now being removed. There is now sufficient reason to anticipate, that the work on Section 42 will be completed within the contract time, and that the other sections will be completed before that date.

Purchase of Rails.

In my report I omitted to state that, of the 50,000 tons of steel rails secured last year, in England, 11,000 tons were purchased for the Intercolonial Railway, to be laid on the section between River du Loup and Quebec. This deduction leaves 39,000 tons available for the use of the Canadian Pacific Railway.

I have the honour to be, Sir,
Your obedient servant,
SANDFORD FLEMING,
Engineer-in-Chief.

F. BRAUN, Esq.,
Secretary, Railways and Canals,
Ottawa.

APPENDIX No. 18.

TABLE shewing the dates of the closing of Canals and Harbours in the Autumn of 1878, and the opening in the Spring of 1879.

Canals or Harbours.	Closing.	Opening.
Lachine Canal	December 5th, 1878.	May 4th, 1879.
Beauharnois Canal	do 6th	do 1st
Cornwall Canal	do 8th	do 2nd
Williamsburgh Canals	do 12th	April 28th
Welland Canal	do 14th	May 5th
Burlington Bay Canal	do 20th	April 16th
St. Anne's Lock and Dam	do 6th	do 21st
Carillon Canal	September 6th	May 1st
Grenville Canal	do 6th	do 5th
Chûte à Blondeau Canal	do 6th	do 5th
Rideau { Kingston Mills	November 30th	do 5th
Rideau { Ottawa	December 4th	do 5th
St. Ours' Lock	do 12th	April 23rd
Chambly Canal	do 6th	May 5th
Erie Canal (New York)	do 7th	do 8th
St. Peter's Canal (Cape Breton)	Closed since June, 1876.	.....
Quebec Harbour, River St. Lawrence	November 25th, 1878.	April 9th, 1879.
Montreal do do	December 23rd	do 24th
Toronto Harbour, Lake Ontario	do 24th	do 14th
Kingston do do	January 2nd, 1879.	do 21st
Belleville Harbour, Bay of Quinté	December 15th, 1878.	do 17th
Port Stanley Harbour, Lake Erie	do 10th	do 1st
Kingsville do do	do 10th	do 1st
Windsor Harbour, River Detroit	do 16th	do 15th
Sarnia Harbour, Lake Huron	do 24th	March 20th
Goderich do do	do 20th	April 6th
Kincardine Harbour do	do 15th	do 25th
Owen Sound do Georgian Bay	November 17th	do 21st
Collingwood do do	December 1st	do 29th
Midland Harbours do	do 5th	do 29th
River St. Mary do	November 28th	May 1st
River Kaministiquia, Lake Superior	do 19th	April 27th
Prince Arthur's Landing do	January 2nd, 1879.	do 27th
Winnipeg Harbour, Red River	October 30th, 1878.	do 15th