DOMINION OF CANADA

ANNUAL REPORT

OF THE

MINISTER

OF

RAILWAYS AND CANALS

FOR THE

FISCAL YEAR 1ST JULY, 1879, TO 30TH JUNE,

1880.

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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1881.

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REPORT.

1879—80

To His Excellency the Marquis of Lorne, K.T., K.C.M.G., Governor General of Canada &c., &c., &c.

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, 1880.

This Report is submitted in accordance with the provisions of the Act 31 Vict. Cap. 12, (1867) as amended by the Act 42 Vict. Cap. 7, Sections 4 and 5 (1879) whereby the Department of Public Works was divided into the Department of Public Works and the Department of Railways and Canals.

The annual reports of the Chief Engineers, together with general and special reports from Superintendents both of Railways and Canals, and from other Officers of the Department, are given in appendices.

RAILWAYS.

The railways owned by the Dominion Government are:—

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

THE CANADIAN PACIFIC.

This line as projected, commences at the terminal point of the Canada Central Railway near the eastern end of Lake Nipissing, and traversing the country north of Lake Superior crosses the River Nipigon near its mouth, thence passing through Prince Arthur's Landing to Fort William.

This section of country, about 650 miles in length, has been surveyed and measured for its entire distance.

Between Prince Arthur's Landing and Fort William, a distance of about 6 miles, communication has been obtained by the purchase of a line owned by a private company.

Leaving Fort William, the line extends westwards, crossing Lac des Mille Lacs, at Port Savanne, also Lakes Wabigoon and Vermilion to the outlet of the Lake of the Woods at Keewatin (Rat Portage), a distance of 294 miles.

Of this distance the rails are laid for 171 miles from Thunder Bay.

From Keewatin the line continues westward to Selkirk on Red River, a distance of 112 miles, upon the whole of which the rails are laid.

For a distance of 16 miles over and beyond Red River, up to Victoria Junction, no line has been constructed. (Connection is, however, obtained *vid* Winnipeg by the Pembina Branch on the east of the Red River and by the Winnipeg Branch on the west side.)

From Winnipeg westwards, the line extends past Portage la Prairie on the Assiniboine, to the Western Boundary of the Province of Manitoba. The road is now in operation to Portage la Prairie, a point 70 miles west of Winnipeg, and the rails are laid to within a few miles of the western boundary of Manitoba.

From the Boundary, the line, as projected, takes a north-westerly course to the Little Saskatchewan, from whence there is a choice of two lines: the one crossing the Assiniboine at the mouth of Shell River, the other crossing the same river near the mouth of the Qu'Appelle; thence, in either case, taking a north-westerly course to a common point near the South Saskatchewan; thence to "The Elbow" of the North Saskatchewan and following the valley of the same, to Battleford; thence, between Battle River and the North Saskatchewan, it crosses the latter, north east, of Fort Edmonton, thence by Lake St. Anne and across the Pembina and the McLeod, reaching the valley of the Athabasca at the foot of the Rocky Mountains.

Ascending this valley and the valley of the Miette, it reaches the Yellow Head Pass, and from that point follows the River Fraser to Tête Jaune Cache; thence it descends the valley of the Albreda, and following the western bank of the North Thompson passes Kamloops, and crosses the River Thompson at Savona, at the foot of Kamloops Lake. Running thence to Lytton, at the Junction of the Thompson and Fraser, it crosses the Fraser a few miles below this point and follows the right

bank of that river until it finally reaches the waters of the Pacific at Port Moody, Burrard Inlet.

The total distance from Lake Nipissing to Port Moody may be approximately stated at 2,627 miles. This estimate, like that given in last year's report, must however, be considered as open to revision, it being liable to be reduced or augmented in the construction of the line.

Pembina Branch.

This branch, now in full operation, leaves the main line at Selkirk, running southwards on the east side of Red River. Passing through St. Boniface (opposite Winnipeg,) it extends as far as Emerson at the International Boundary line, a distance of 85 miles. At this point it makes connection with the St. Paul, Minneapolis, and Manitoba Railway in the United States.

Winnipeg Branch.

This branch extends in a north westerly direction from the City of Winnipeg to Victoria Junction, on the main line, a distance of 18 miles.

A temporary railway bridge over the Red River gives communication between this branch and the Pembina branch at St. Boniface. A permanent bridge is now under construction by the Municipality.

Canada Central Railway.

A subsidized extension of this Railway, from Lake Nipissing eastwards to Pembroke on the River Ottawa, will furnish a connecting link between the terminus of the Canadian Pacific Railway and the railway systems of Ontario and Quebec; the Intercolonial Railway completes the proposed railway communication between the Atlantic and Pacific Oceans.

CONSTRUCTION.

Lake Superior to Red River

The line between Lake Superior and Red River, a distance of about 410 miles has been let under six separate contracts.

The works are in various stages of advancement.

Starting from Lake Superior, the contracts come in the following order:—

1. Contract No. 13, for grading of roadway between Fort William and Sunshine Creek, a distance of 32½ miles, was placed under contract in April 1875, Messrs. Sifton and Ward being the contractors. The works were moderate in character, and were completed in 1876.

2. Contract No. 25, embraced the grading between Sunshine Creek and English River, a distance of 80 miles, as well as the track-laying and partial ballasting between English River and Fort William, at the western end of the section, a distance of 113 miles. The contract was entered into in 1876. Messrs. Purcell & Ryan being the contractors. The work has been nearly completed.

3. Contract No. 41, extending from English River to Eagle River, a distance originally of 118 miles but now reduced by four miles, was entered into with Messrs. Purcell & Co., and commenced in March 1878: it embraces all the works necessary for a completed track. The contractors have made considerable progress, construction trains now running to a point 170 miles distant from Fort William.

4. Contract No. 42, extends from Eagle River to Keewatin, 67 miles. The work was entered upon in March 1878 Messrs. Manning, McDonald, McLaren & Co., are the contractors. The works are of some magnitude, and considerable progress has been made.

5. Contract No. 15, was entered upon in January 1877, and embraced the grading of the roadway between Keewatin and Cross Lake, 36½ miles, as well as the track-laying on this section and over Contract No. 14, extending to Selkirk on Red River, a distance of 112 miles. The work of grading was very heavy. The contract was carried on by Mr. Joseph Whitehead up to the month of March last, when it was taken out of the contractor's hands and has since been prosecuted under the immediate direction of the Department. The road is now ready for the passage of trains, with the exception of half a mile at the eastern end.

6. Contract No. 14, was for the grading only of the roadway between Cross Lake and Selkirk, a distance of 76 miles. The work was put under contract in April 1875, the contractors being Messrs. Sifton and Ward. The work has been completed from Selkirk. A track has been laid to connect the road with the Red River.

Notwithstanding the rough and heavy character of the section of country between Thunder Bay and Cross Lake, low gradients and easy curves have been maintained throughout.

Pembina Branch.

The construction of this section of the line was performed under three contracts.

1. The grading of the roadbed between Emerson and St. Boniface, a distance of 63 miles. This work was performed by Mr. Joseph Whitehead under a contract dated April 1874.

2. The bridging, track-laying and ballasting over the same distance was let to Messrs. Kavanagh, Murphy and Upper, in June 1878, to be completed in December, 1879. The contractors having failed to perform the work, it has been completed by the Department.

3. The construction of the section of the branch between St. Boniface and the Main Line at Selkirk was entered upon, in May, 1877, by Mr. Joseph Whitehead and was completed by him.

Under special contracts, eleven station buildings have been erected on this branch, also transfer sheds at Emerson.

West of Red River.

The first 100 miles section west of Red River, was let to Mr. John Ryan in August 1879, and should have been completed in August 1880.

The contractor having failed to carry out his contract, it was taken out of his hands and is being completed by the Department. The road is in operation to Portage La Prairie, a distance of 70 miles.

The second 100 miles section west of Red River was let on 3rd May, 1880, to Messrs. Bowie and McNaughton and was required to be completed in December 1882. The whole of the summer has been allowed to pass without any effort on the part of the contractors to make a decided start upon the work. The contract has been cancelled.

British Columbia.

The work under contract in this Province consists of four sections.

Contract	60.	Emory's Bar to Boston Bar.....	29	miles.
"	61.	Boston Bar to Lytton.....	29	"
"	62.	Lytton to Junction Flat.....	28½	"
"	63.	Junction Flat to Savona's Ferry.....	40½	"
			127	

These four sections are in the hands of a syndicate represented by Mr. D. O. Mills.

Work was commenced early in spring and has been steadily prosecuted.

Operations, comprising tunnelling and other rock excavation, are being pushed forward on the first 19 miles of section 60, and the roadbed from Emory's Bar to Yale (5 miles) is ready to receive the rails.

Works are also being proceeded with at the upper end of section 62, and the lower end of section 63.

Telegraph Line.

A line of Telegraph has been constructed from Winnipeg to Selkirk along the line of the Pembina Branch.

Water Supply.

On about 140 miles west of Fort William, the Haggas system of underground tanks has been adopted, and the tanks are now ready for use. On the remain

ing portions of the line and its branches in operation the supply of water is afforded by means of elevated frost-proof tanks.

Wire Fencing.

Contracts have been given out for wire fencing on about 200 miles of the road.

Bridging.

A temporary bridge over the Red River at Winnipeg has been constructed under contract.

Contracts have been entered into for the furnishing and erection of iron superstructures in place of the existing temporary bridges over the River Seine, River Rosseau, Joe Creek and Rat River, all in connection with the Pembina Branch. Iron superstructures over the two outlets of the Lake of the Woods are also under contract.

Rails.

No further purchase of rails has been made, beyond the 39,000 tons referred to in the report of last year as having been secured for the Pacific Railway.

Contracts have been entered into for the supply of spikes.

Contracts have also been made for the transportation of rails and fastenings from Montreal to Emerson and Fort William, while those stored on Vancouver Island are being conveyed to Yale in readiness for the road now under contract. In addition, 6000 tons. the balance still remaining in England from the quantity purchased in 1879, will be shipped to British Columbia.

Iron turntables and switch gearing have been provided.

Canada Central Extension.

Grading and bridging are in progress as far as the 74th mile from Pembroke. Track-laying and ballasting have been completed up to the 61st mile.

Station buildings and sidings have been provided as far as Bissetts, 60 miles from Pembroke, and the line is open to that point for both passengers and freight.

Rails for the entire length of the subsidized line are on the ground.* (App. 3, page 10.)

CANADIAN PACIFIC RAILWAY IN OPERATION.

Length of Line.

	Miles.
Emerson to Winnipeg and St. Boniface	63
St. Boniface to Selkirk	22
Selkirk to Cross Lake	76
	161

* Since the above was reported by the Engineer, the track has been laid to the 71st mile, and the work of grading is now being carried on as far as the 93rd mile.

Owing to the unsatisfactory working of the Pembina Branch by the lessees, Messrs. Upper & Co., the agreement under which they operated the line, was, by Order in Council of the 26th January 1880, terminated, and the Government, from the 10th February last, undertook the operation of the road.

At the same time the sections connecting St. Boniface with Selkirk and Cross Lake, though not fully completed, were also opened for traffic, and an uninterrupted communication was thereby established between Emerson and Cross Lake.

In addition to the difficulties ordinarily experienced in the operation of every new road there were, in this case, exceptional hindrances created by the unusual severity of the season.

The locomotive power, thus severely taxed, was at first unequal to the heavy work imposed upon it. This, and the absence of proper appliances for the removal of snow drifts, rendered the traffic somewhat irregular. The arrival, however, of 4 locomotives purchased from the Intercolonial, placed matters in a more satisfactory condition.

The train accommodation between St. Boniface and Cross Lake is at present limited to a bi-weekly service. It is well supported both as regards passengers and freight.

The engine and freight car stock has been kept in good working condition.

Steel rails, with fish-plate fastenings have been laid throughout the entire track.

Revenue.

The gross earnings for the 4 months and 18 days of operation, ending the 30th June, were.....	$104,975.69
The working expenses were.....	78,892.01
Excess of earnings over expenditure.....	26,083.68

The total number of passengers carried was 17,640, and the amount of freight 24,214 tons.

The line of Telegraph running from Fort William to Edmonton, 1197 miles, continues to be operated, but the working still remains unsatisfactory.

The two contracts under which the line is maintained and operated from Red River to Edmonton lapse in the course of next summer, when other and more satisfactory arrangements may be made.

Rolling Stock.

During the year contracts have been entered into for the supply of such rolling stock as was necessary for the maintenance of the traffic, consisting of Passenger,

Postal, and Freight cars, besides a sufficient number of Ploughs for the removal of snow obstruction from the line.

A portion of the Rolling Stock has been obtained by transfer, under valuation, from the lessess, Messrs. Upper & Co., in accordance with their contract.

(App. 4, page 23.)

INTERCOLONIAL RAILWAY.

LENGTH OF LINE.

Ocean Mail Line.

	Miles.	
Point-Levis to Rivière du Loup	126	
Rivière du Loup to Moncton	374	
Moncton to Painsec	8	
Painsec to Truro	118	
Truro to Halifax	62	
		688

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	846.5	

The purchase of the portion of the main line of the Grand Trunk Railway extending from Hadlow, (on the St. Lawrence, opposite Quebec,) to Rivière du Loup, a distance of 124½ miles, was effected on the 1st Aug. 1879, on the terms and conditions stated in last year's annual Report.

The purchase money—$1,500,000—has been paid to the Grand Trunk Railway Company, and by them has been applied, in accordance with the conditions of the

purchase, towards the establishment of a through and independent Railway connection from Sarnia to Chicago.

Works of repair and improvement were commenced on the Rivière-du-Loup section as soon as its transfer from the Grand Trunk took place.

The expenditure for these repairs and improvements, up to the 30th June last, amounted to $389,575.43.

The improvements effected on this section comprise the ballasting and relaying of the line with steel rails, also the erection of snow-sheds and fences. At Chaudière Junction all necessary station buildings, including accommodation for immigrants, have been constructed. Seven new stations have also been erected ; the sidings have been increased, and the water service has been improved.

Between Rivière-du-Loup and Halifax various improvements have been made, comprising new snow sheds, additional sidings, the substitution of iron for wooden turn-tables, and the construction of iron in place of wooden bridge superstructures at several points.

Additions have been made to various wharves, and the deep water wharf at St John is now completed.

New coal sheds have been erected at Truro and Moncton.

Numerous, and in some cases extensive, repairs have been executed, affecting the station houses, freight sheds, engine houses, and the masonry of bridges and culverts.

The station house, and other buildings at Rimouski, destroyed by fire in November 1879, have been rebuilt, as also the dining room at Amherst.

The arrangements made both along the line and at Halifax for shipping live stock to Great Britain have proved satisfactory to shippers.

A low rate has been quoted for the carriage of grain on the railway as an inducement to the development of grain traffic with Europe *viâ* the port of Halifax, but so far the effort has not met with success.

A large increase has taken place in the coal traffic from the mines in Nova Scotia.

The transport of the English Mail *viâ* Halifax in winter, and Rimouski in summer, has been continued.

Notwithstanding the pressure caused by a large increase in traffic the efficiency of the rolling stock has been well maintained.

The track itself has been maintained in a thorough state of repair.

The capital account at the close of the fiscal year 1878-79, amounted to..... $36,317,705.04

At the close of the fiscal year 1879-80..... 38,365,719.64

The expenditure on capital account, during the fiscal year ended the 30th June last, was :

Halifax extension	$	7,164.02
St. John Deep Water Terminus		94,545.65
Construction of Railway, old accounts		23,931.67
Purchase of Rivière-du-Loup Branch		1,500,000.00
Repairs and improvements on do		369,799.96
Rolling stock do		19,795.47
Nut locks		32,797.83
		$2,048,014.60

With the exception of the " Halifax Extension " and the " St. John Deep Water Terminus " all the works executed within the last fiscal year on the whole line east of Rivière-du-Loup, with its branches, have been charged to Working Expenses.

Payments of old claims for work done during the construction of the line under the Commissioners are charged to Capital account.

The gross earnings for the year have been $1,506,298.48, being an increase of $212,198.79 as compared with last year's receipts, which were $1,294,099.69.

The receipts from passenger traffic show an increase of $48,445.57 over those of last year.

The returns of the freight traffic show an increase in the receipts of $161,995.65 over those of last year, and an increase of 51,063 tons in the amount carried.

The working expenses and receipts for the year ended the 30th June last, are :—

Total cost of working	$1,603,429 71	
Total receipts	1,506,298 48	
Loss on the year's operations	$ 97,131 23	

The engine mileage compared with last year, was :—

1879–80	3,076,342	miles
1878–79	2,531,791	"
Increase	544,551	"

The car mileage compared with last year, was :—

1879–80	28,254,065	miles.
1878–79	21,855,441	"
Increase	6,398,624	"

The working expenses per mile of railway, were:—

1878–79	$2,815 38
1879–80	1,943 55
Decrease	$ 871 83

The working expenses per train mile, were:—

	Cents.
1878–79	95·20
1879–80	63·23
Decrease	31·97

The cost of working the railway during the fiscal year 1879–80, inclusive of the Rivière du Loup Branch from the 13th Aug. 1879, making in all 840 miles, was	$ 1,603,429 71
In 1878–79, the cost of working the 714 miles then in operation was ($2,010,183.22, less $163,396.03, the balance at debit of steel rails renewals suspense account 1878)	$1,841,787 19
Showing a difference in favour of working the longer line in 1879–80, over cost of working the shorter line in 1878–79, of	$ 238,357 48

The earnings of the first three months of the current fiscal year show an increase of eighty thousand dollars as compared with the earnings for the corresponding period last year. (App. 4, page 18.)

Pictou Branch.

By the Statute of Canada 42 Vict. Cap. 12, amending the original Act 40 Vict. Cap. 46, it is enacted that the transfer of the Pictou Branch line of the Intercolonial shall be made to the Halifax and Cape Breton Coal and Railway Company so soon as the 82 miles of Railway extending from New Glasgow to the Gut of Canso have been constructed and equipped to the satisfaction of the Nova Scotia Government, and a ferry has been established between the main shore and the Island of Cape Breton at the terminus of the Railway.

The Halifax and Cape Breton Coal and Railway Company's line is in operation, but the transfer of the Pictou Branch line to the Company has not yet taken place.

Windsor Branch.

As already stated in last year's annual report, in view of the failure of the Western Counties Railway Company to carry out the stipulations of the agreement of the 6th November 1877, by which a transfer was made to that company of the Windsor Branch, extending from Windsor Junction to Windsor, a distance of 32

miles; and further, in view of the Company's admission that they were unable without pecuniary assistance to complete the extension of the line from Annapolis to Yarmouth, as required by the agreement; in consideration also of complaints and representations repeatedly made to the Department that loss, delay and inconvenience were entailed by the workings of the traffic as if the Windsor and Annapolis Railway and the Windsor Branch were disconnected enterprises, it was resolved to demand from the Western Counties Railway Company the retransfer of the Windsor Branch.

In pursuance of this determination the Government in December 1879 took possession of the Windsor Branch.

For temporary purposes a special and specific agreement for the working of the line was thereupon made with the Windsor and Annapolis Railway Co., terminable by either party giving a month's notice.

Under the arrangements so made, the Company are permitted to operate the line, paying all charges in connection with its working; two thirds of the gross receipts are allowed to them for this purpose, the Government taking the remaining one third, and assuming all cost of maintenance. The arrangement has so far proved satisfactory.

The track has been maintained in an efficient condition, and the bridges and other structures have been repaired.

The cost of maintenance up to the 30th June last year was $4,526.99.

The gross receipts up to the same date amounted to $42,035.11, of which the Government received one third, namely $14,011.97.

Payment of the Government share of the receipts has been promptly made by the Company at the end of each month. (App. 4, page 25.)

UNSETTLED CLAIMS.

Several claims brought against the Government by contractors in connection with the construction of the Intercolonial Railway being unsettled, an Order in Council was passed, on the 23rd June last, appointing Mr. Frank Shanly Chief Engineer of the Intercolonial Railway, with the special charge of investigating these claims. (App. 5, page 90.)

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
		19½

The Souris Extension has been completed and is now in operation ; the work done on it during the year comprises the construction of 840 feet of track and the building of a shipping wharf 1,000 feet in length, with warehouse and station, &c.

To maintain the efficiency of the line and to obviate the inconvenience arising from the present limited number of locomotives and their want of power, two "Mason Fairlie" engines have been ordered.

A number of box and platform cars have been rebuilt during the year.

The track has been maintained, and the rolling stock is in good order.

Several bridges received extensive repairs.

The wharves at Georgetown, Summerside and Alberton, damaged by a gale, were repaired.

The capital account at the close of the fiscal year amounted to $3,466,588.57 as against $3,450,048.75 for the preceding fiscal year.

The increase of $16,539.82 represents the expenditure on the Souris Extension.

The gross earnings for the year amounted to $113,851.11, being a decrease of $12,004.80 as compared with last year's receipts of $125,855 91.

The passenger traffic returns show a decrease in receipts of $6,787.92, and the returns of the freight traffic show a decrease in receipts of $3,216.48.

The cost of working the line for the year was $164,640.55 as against $223,313.12 for the preceeding year, showing a decrease of $58,672.57.

The working expenses and receipts for the year ended the 30th June last, were :

Total cost of working	$164,640.55
Total receipts	113,851.11
Loss on the years operations	$50,789.44

The Engine mileage compared with last year was :

1879-80	295,190 miles.
1878-79	286,886 "
Increase	8,304 "

The car mileage compared with last year was :

1878-79	1,037,540 "
1879-80	1,010,483 "
Decrease	27,057 "

The working expenses per mile of railway were :

1878-79	$1,125.00
1879-80	829.42
Decrease	$295.44

The cost of running the trains per mile, was :—

1878-79	cts. 91.72
1879-80	67.28
Decrease	cts. 24.44

(App. 4, page 21.)

CANALS.

The canal systems of the Dominion, under Government control, are as follows :—

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. St. Peter's Canal, Cape Breton, Nova Scotia.

RIVER ST. LAWRENCE AND LAKES.

By means of the canals on this system, navigation is practicable 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 St. Lawrence at Three Rivers.

The works of the Dominion Government are comprised in the distance between Montreal and Lake Erie, 375 miles.

The canals on the route are the Lachine, Beauharnois, Cornwall, Farran's Point, Rapide Plat, Galops and Welland. Their total length is 70½ miles ; total lockage (or height directly overcome by locks,) is, 533¼ feet ; number of locks, 53.

Communication is obtained with Lake Superior by means of the Sault St. Marie Canal, situated on the United States side of the Channel and constructed by an American Company with the aid of the United States Congress. It connects Lakes Huron and Superior.

This canal is a little over a mile long and has 18 feet lockage, with a depth of water on the sills of 12 feet.

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

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

LACHINE CANAL.

Length of canal	8½ statute miles.
Number of locks	5
Dimensions of locks	200 feet by 45 feet.
Total rise, or 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 bars the ascent of the River St. Lawrence. They are 986 miles distant from the Straits of Belle-Ile.

This canal was closed on the 4th December 1879, and opened on the 25th April 1880.

On the 29th June navigation was interrupted by an accident which involved the displacement of all the gates at Lock No. 2 and damage to the lower gates of No. 1.

The ordinary works of repair and renewal have been carefully executed, from time to time, as needed.

Buoys.

The course to be followed by vessels through Lakes St. Francis and St. Louis on the St. Lawrence, has been carefully buoyed, to the great assistance of navigation.

Canal Enlargement.

The works of excavation and masonry for the new canal are now completed, with the exception of the entrance channel and harbour of Lachine.

The new locks, of which there will be five between Montreal and Lachine, will be 270 feet long and 45 feet wide at bottom.

The two lower locks, between the harbour of Montreal and Wellington Bridge have a depth of 18 feet on the sills, the canal between those points having a depth of 19 feet. The remaining three locks, those at St. Gabriel, Côte St. Paul, and Lachine have a depth of 14 feet on the sills, the canal between these points having a depth of 13 feet.

Throughout the new works all permanent structures have their foundations so placed that the canal may eventually be deepened to 15 feet without disturbing them.

The two lower locks are connected by a basin known as No. 1 540 feet long, with an average width of 260 feet. The next basin, No. 2, has been enlarged at its south-west end. Wellington Basin, off Basin No. 2, is 1,210 feet long and 225 feet wide. A second basin is projected, of the same length and depth, and of 240 feet width, 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 as independent structures adjoining the old locks, and hereafter the canal will be navigable through the double range of locks with double entrances at Montreal and at Lachine.

The construction of the new lock-gates required is now under contract.

For the five locks, ten pairs of gates, varying in height from 31½ feet to 22½ feet will be furnished, three spare sets being also prepared.

The mode of hanging the gates, the formation of the valves and the manner of working them, will be in accordance with what is known as "Townsend's Improved System."

(App. 9, page 129.)

BEAUHARNOIS CANAL.

Length of canal	11¼ statute miles.
Number of locks	9
Dimensions of locks	200 feet by 45 feet.
Total, rise or 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, the Cedars, and the Coteau.

Navigation was closed on the 2nd December 1879, and re-opened on the 20th April 1880.

Traffic was interrupted for 36 hours, on the 23rd November, by the sinking of the steam barge "Saxon."

The ordinary repairs on the canal have been carefully executed throughout the year: no exceptional works have been called for.
(App. 9, page 137.)

CORNWALL CANAL.

Length of canal	11½ statute miles.
Number of locks	7
Dimensions of locks	200 feet by 55 feet.
Total rise, or 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.

This Canal was closed from the 9th December, 1879, to the 26th April, 1880.

Navigation was uninterrupted during the seasons of the fiscal year 1879-80.

Ordinary repairs have been made to lock gates, bridges and sluices &c., and the embankments and slope walls have been raised.

New Works.

The works of enlargement comprise the construction of two locks with a regulating weir, affording a descent to the level of the St. Lawrence; the level of the canal being raised two feet.

These works are now approaching completion. The Contractors are Messrs. Gordon, Woodward and Chamberlin. (App. 9, page 151.)

WILLIAMSBURGH CANALS.

The Farran's Point, Rapide 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, or lockage	4 "
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 latter canal enables vessels ascending the river to avoid the Farran's Point Rapids. Descending vessels run the rapids with ease and safety.

The canal was closed on the 9th December 1879, and re-opened on the 20th April 1880.

The works of repair and maintenance have been ordinary in character. The canal has been kept in good condition.

Owing to the low state of the water in the St. Lawrence during the fall of 1879 one vessel was detained half a day at lock No. 22. Otherwise, navigation was uninterrupted during the seasons of the fiscal year 1879–80. (App. 9, page 152.)

RAPIDE PLAT CANAL.

Length of canal	4 miles.
Number of locks	2 "
Dimensions of locks	200 feet by 45 feet.
Total rise, or 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 Rapide Plat Canal there is a navigable stretch of 10½ milles. This canal is taken, by ascending vessels, to avoid the Rapide Plat Rapids. Descending vessels run the rapids safely.

The Canal was closed on the 9th December 1879, and re-opened on the 20th April 1880.

The stage of the water in the St. Lawrence during the fall of 1879 was low, and the water was consequently low in the Willliamsburg Canals. Vessels drawing over 8 feet of water experienced difficulty in passing through them. It was in the Rapide Plat Canal that the difficulty arising from that cause was greatest. Six vessels were detained from 6 to 12 hours, and three vessels 24 hours at locks Nos 23 and 24 of this Canal, where the depth of water on the mitre sills in November was only 7 feet 6 inches. Otherwise navigation was uninterrupted on the Canal during the seasons of the fiscal year 1879–80.

The ordinary repairs have been duly executed. (App. 9, page 152.)

GALOPS CANAL.

Length of canal	7⅝ miles.
Number of locks	3
Dimensions of locks	200 feet by 45 feet.
Total rise, or 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 Rapide Plat Canal to the foot of the Galops Canal, the St. Lawrence is navigable for 4½ miles. This canal overcomes the rapids at Pointe aux Iroquois, Pointe Cardinal, and the Galops.

The canal was closed on the 9th December 1879 and re-opened on the 30th June 1880.

The piers at the entrance of Lock No. 26, Edwardsburgh, and the pier at the entrance of Lock No. 27, Galops, have been rebuilt.

Owing to the low state of the water in the St. Lawrence during the fall of 1879, already mentioned, one vessel was delayed at Lock No. 27 of the Galops Canal, and a portion of her cargo had to be unloaded to enable her to pass the lock. Otherwise, navigation was uninterrupted on the Canal during the seasons of the fiscal year 1879-80.

The Canal has been maintained in a state of efficiency. (App. 9, page 153.)

IMPROVEMENT OF CHANNEL THROUGH THE GALOPS RAPIDS.

This work has for its object the clearance and levelling of the channel of the Galops Rapids, so affording to vessels, at low stages of the water, the quick passage they obtain at ordinary stages.

It comprises the excavation of a channel, by sub-marine blasting, through six detached rocky bars and shoals, which rise from one to seven feet above the contemplated bottom. The proposed channel will be about five-eighths of a mile in length, the aggregate work being equal to about half that distance. It will be 200 feet in width, the depth being such that at seasons when there is a depth of 9 feet of water on the sills of the guard lock of the canal there may be a depth of 16 feet in the channel through the rapids. (In two places, where the water is most rapid and turbulent, this depth will be increased to 17 feet).

The mode of working is as follows:

A vessel, built in the most substantial manner, and fitted with powerful engines, is made to work up or down the channel upon a chain laid along the bed of the rapids.

In order to obtain the necessary stability, this vessel is provided with massive oak beams, working up and down external grooves at its sides. The locality for operations being reached, these beams are lowered till they touch the bottom of the channel, and further power being applied, the whole vessel is raised upwards till it rests upon its supports, unaffected by the rush of the water.

Machinery of the most improved type for drilling and excavating purposes is fitted at the stern, and has been found to work satisfactorily. Since operations began a large number of holes have been drilled and blasted, and some excavation has been done.

This work has been placed, under contract, in the hands of Messrs. Wm. Davis & Son, who are allowed the use of the vessel and machinery referred to.

WELLAND CANAL.

This canal connects Lakes Ontario and Erie.

MAIN LINE FROM LAKE ONTARIO TO LAKE ERIE.

Length of canal	27⅓ miles.
Pairs of guard gates	3
Number of lift locks	26
Dimensions of locks	2 locks of 200 feet by 45 feet. 24 " 150 " 26½ 1 " 230 " 45
Total rise, or lockage	326¾ 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, *vid* lock at Aqueduct	300 "
" Chippawa 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, or lockage	7 to 8 feet.
Depth of water on sills	10½ feet.

PORT MAITLAND BRANCH.

Length of canal	1¾ 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 on the 5th December 1879, and re-opened from Port Dalhousie to Port Maitland *vid* the Feeder on the 16th April 1880. Owing to the condition of the new works at and near Port Colborne, the other portion of the main canal from the Junction at Welland to Port Colborne was opened only on the 1st May 1880. There was no great difficulty found in using the Feeder for the passage of vessels and propellers of a draught of water not exceeding 7 feet 6 inches. By using the Feeder for navigation purposes, over 80 vessels and propellers were enabled to pass safely out into Lake Erie three weeks earlier than they otherwise would have been able to do.

Navigation was interrupted on two occasions. The first interruption was caused by the jamming of two vessels in the guard lock at Allanburg and lasted four hours; the other was caused by the sinking of a schooner near the guard lock at Thorold and lasted eleven hours.

The supply of water from the Grand River through the Feeder was sufficient during the year for both navigation and manufacturing purposes.

The traffic through the canal has considerably exceeded that of last and previous year.

The canal is in a satisfactory working condition.

Maintenance.

The maintenance of the canal throughout the year has been efficient, the details of repairs executed showing them to have been both numerous and important.

Repairs, alterations and additions have been made to the houses of various lock-masters, also to the houses of the Harbour Master and the Collector of Customs, at Port Dalhousie and to the Collector's office at Port Robinson.

Some 37 bridges have been subjected to repairs, these repairs, in certain cases being extensive, and involving the rebuilding of the bridge and the construction of new or improved approaches.

The masonry repair work executed was heavy, comprising, in addition to minor matters, the taking down and the rebuilding, in two instances, of wing walls, and the construction of stone retaining walls in several places,

Of these latter some were works of considerable magnitude: three of the longest walls measuring 858 feet, 548 feet, and 330 feet respectively.

A number of new lock gates have been put in, and other gates have received repairs.

Attention has been given to the clearing of back ditches, and the work done in this direction has been of considerable extent.

The description of the works. embraced in the enlargement of the canal, here following, is taken from the report presented last year, as furnishing a concise view of the scheme.

New Works.

The scheme of the new work is the ultimate establishment of a system of navigation with locks 270 feet long, and 45 feet wide, with 14 feet depth on the sills, the canal having a width of 100 feet at bottom, and 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. Those of the locks which admit of being hereafter raised at moderate expense, are at present constructed with 12 feet of water on the sills.

The entrance and such other locks as do not come within this category are constructed so as to have a depth of 14 feet of water on the sills.

The present line of canal is 27$\frac{1}{8}$ miles long; the new line of canal will be 26$\frac{7}{8}$ miles.

The present entrance, Port Dalhousie, has been retained, that harbour being easy of access, 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 Allanburg, a distance of 11⅔ miles. From Allanburg 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 influences causing the variation in the height of water are not identical either in character or in the time of occurrence on the two lakes. The mean difference in level has been approximately determined as 326¾ feet. Under the existing system the summit level is overcome by 26 locks; in the new system the same level is reached by 25 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 reached. 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. 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 so arranged as to admit two of the largest vessels on the route passing each other with ease.

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

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

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

The scheme comprises the construction of extensive reserve basins, communicating with each other by weirs.

The new works are divided into 36 sections :—

Sections 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 21, 22, 24, 26, 29, 31 and 32 have been completed, the work has been taken off the hands of the contractors and final estimates have been prepared.

Sections 12, 17 and 18, 19 and 20, 23, 25, 28, 30, 35, 36, are practically completed.

The contracts, the principal part of the work under which still remains to be done, are the following :—

The contract for Section 27. This section is about 5,600 feet in length, the works include the enlargement of the canal in the town of Welland, the construction of an aqueduct over the Chippawa River, the removal of present lift lock, and the construction of another lift lock for communication between the canal and Chippawa River. The contractors for this section, Messrs. Hunter, Murray & Cleveland, have made little progress with the difficult work of constructing coffer-dams and unwatering for the foundations of the aqueduct, and the contract has now been relinquished to the Government.

The contract for Section 33. This contract 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. The Contractors are Messrs. Bannermann & Co.

The contract for Section 34. This section extends for a distance of nearly one mile. The contract 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. The Contractors are Messrs. F. B. McNamee & Co.

A contract for the superstructure of road bridges. 19 bridges are to be constructed at various places upon the line. The Contractors are Messrs. O'Brien, Gorden & Bergin.

The contract for lock gates and their equipment,—under this contract, fifty-six pairs of gates are to be built, equipped and erected, six pairs of spare gates being also furnished. The Contractor is Thos. D. Townsend.

A contract for the construction of two iron or steel superstructures for carrying the Welland Railway over the canal near St. Catharines and at Marlatt's Pond. The Contractors are the Toronto Bridge Co. (App. 9, page, 154.)

BURLINGTON BAY CANAL.

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

The canal was closed on the 16th December, 1879, and re-opened on the 1st April, 1880.

All necessary repairs have been executed.

The works placed under contract for the reconstruction of the north-west pier destroyed by fire, and for rebuilding a portion of the pier on the opposite side, are progressing in a satisfactory manner. (App. 9, page, 163.)

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 the Rideau Canal, to Kingston on Lake Ontario—a total distance 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 Canal ;

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	1⅜	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 locks	190 feet by 45 feet.
Total rise, or 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 to navigation on the 3rd December 1879, and opened on the 24th April, 1880.

The ordinary repairs were executed as required

New Works.

A contract has been entered into with Messrs. Baskerville, O'Connor and Cassidy for the construction of the new lock and canal.

Up to the close of the financial year the contractors have been engaged in quarrying stone for the pier of the G. T. R. bridge, providing timber, and organizing their staff.

These works embrace the construction of a lock, 200 feet long between the gates, 45 feet wide at bottom, with a depth of 9 feet on the sills; also the formation of a channel of approach, 100 feet in width at the bottom, increasing to 150 feet at the entrance, and of such depth as to give 10 feet of water at the lowest known level of the river. (App. 9, page, 147.)

THE CARILLON CANAL.

Length of canal	2⅓ 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 32¼ "
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, though the Lake of Two Mountains and the River Ottawa.

The Canal was closed on the 24th November 1879, and opened on the 29th April, 1880. General works of repair and maintenance have been executed.

New Works.

The new works consist of a dam across the River Ottawa ¾ of a mile above the village of Carillon, also a canal of ¾ of a mile long with two locks 200 feet by 45 feet, with 9 feet of water on the sills.

As stated in last year's report, this work, having been commenced in 1873 under one contract with Messrs. R. P. Cooke & Co., was assumed by the Government in 1878. Subsequently, in 1879, contracts for the completion of the work were awarded, as follows:—the contract for the canal and locks to Messrs. Cooke & Co.; that for the dam and slide to Messrs. McNamee & Co.

The dam, 1800 feet in length, is under construction across the rapids at Carillon, its object being the creation, through the holding back of the waters of the Ottawa, of a stretch of smooth water between Carillon and Greece's Point, at the foot of the Grenville Canal, a distance of 5¾ miles.

At ordinary stages of the river, the difference between the level at the head of the Carillon Canal and the foot of the Grenville Canal, at Greece's Point, is about 12½ feet.

At present, intermediate rapids between Carillon and Grenville form an obstacle to navigation. On the completion of the new works the lock at Chute à Blondeau by which these rapids are surmounted will be no longer required.

Owing to the great volume of water to be contended with, the works at the dam can only be carried on at low stages of the river.

The contract calls for the completion of the work by the end of 1881: 1400 feet are already built.

The works embrace the construction of a timber slide 300 feet from the shore, 640 feet long and 26 feet wide, having stop logs to regulate the water level in the slide.

Canal and Lock.

The embankment, forming an approach to the canal from the river, has been built, for its full length, up to the level of ordinary high water, and the walls of the upper lock have been carried up to within 12 feet of their proper level. The other works are in progress. (App. 9, page, 147)

CHUTE A BLONDEAU CANAL.

Length of canal	$\frac{1}{8}$ of a mile.
Number of locks	1
Dimensions of lock	$130\frac{5}{6}$ feet x $32\frac{5}{8}$ feet at upper end and $36\frac{1}{3}$ feet at lower end.
Total rise, or lockage	$3\frac{3}{4}$ 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 Canal 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 on the 24th November, 1879, opened on the 29th April, 1880.

All necessary repairs have been executed. (App. 9, page, 147-)

GRENVILLE CANAL.

Length of canal			$5\frac{3}{4}$ miles.
Number of locks			7
Dimensions of locks—Lift Lock No. 5	Combined	$130\frac{3}{8}$ feet	x $32\frac{1}{6}$ feet.
" 6		$128\frac{1}{3}$ "	x $32\frac{1}{3}$ "
" 7	"	$128\frac{1}{3}$ "	x $31\frac{5}{6}$ "
" 8	"	128 "	x $32\frac{1}{6}$ "
Locks Nos. 9 and 10, and Guard Lock No. 11		200 "	x 45 "
Total rise, or lockage		$45\frac{3}{4}$ "	
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 a navigable reach of $1\frac{3}{8}$ miles.

This canal is situated about 56 miles below the City of Ottawa; the Long Sault Rapids being thereby avoided.

The canal was closed 24th November 1879, and opened on the 24th April 1880,

No special repairs have been called for, and those of ordinary character have been duly executed.

NEW WORKS.

The works for the enlargement of the canal, commenced in 1871, comprise the construction of locks 200 feet long and 45 feet wide, 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 crosssing basins constructed at approximate intervals of half a mile.

The works on the eastern end of the canal at Greece's Point comprising the construction of two locks about a quarter of a mile apart are under contract to Messrs. Heney, Nicholson, Stewart, and Strachan. Work on the lower lock has been commenced, and a small portion of the intervening reach has been excavated.
(App. 9, page 147.)

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 they will admit.

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

CULBUTE LOCKS AND DAMS.

Number of Locks..... 2
Dimension of Locks..... .... 200 × 45
" " .... 240 × 45
Total rise, or lockage..... 18 to 20 feet.
Depth of water on sills..... 6 feet.
Aggregate length of dams..... .... 625 feet.

From the Grenville canal, up the River Ottawa to the city of Ottawa, a distance of about 58 miles there is a smooth course of navigation. Beyond the city for a distance of 107 miles, to L'Islet or Culbute, continuous navigation is rendered impracticable owing to the presence of the following rapids:—The Chaudière; the Duchêne; the Chats; the Chenaux (or "the Snows"); the Portage du Fort; and the Grand Calumet.

The Culbute works, situated at L'Islet, surmount the Culbute and L'Islet rapids on the north channel of the Ottawa.

These works comprise two locks and three continuous dams, all built of wood. The dams reduce the rapids to smooth water, enabling the river to be navigated from the head of the locks to Des Joachim, a distance of 37 miles above.

Navigation was stopped on the 20th November, 1879; and recommenced on the 15th April, 1880.

Damage to the bed of the river below the Flat Dam occasioned by the high water of last year, has been made good, and all necessary repairs have been duly executed.

NEW WORKS.

In order to render the river navigable below the locks, as far as Bryson, it it necessary to remove part of three shoals and to build two submerged dams.

Of the shoals, the first, 1000 feet below the locks, is 160 feet in length and composed of gravel; the second, one mile lower down, is 450 feet long and composed of mud and sand; the third, just above Chapeau Bridge, six miles below the Locks, is 50 feet in length and formed of gravel. An average depth of 2½ feet has to be removed from these shoals.

The dams are to be built, one on the Flat rapids in the Rocher Fendu or main channel, 24 miles below the locks, and the other at a reef above Grand Calumet Falls, 43 miles below the locks. These dams have an aggregate length of 470 feet and an average height of five feet.

When the shoals are lowered and the dams built, a navigable reach of 50 miles, with a minimum depth of 7 feet at extreme low water, will be opened between Bryson and Des Joachim.

A contract for building the dams and lowering the shoals was given to W. J, Harvey, in 1878. But owing to the unsatisfactory progress made, the contract was taken out of his hands last July.

A contract given to W. J. Burns in 1879, for the construction of a drawbridge was satisfactorily completed in the March 1880.

(App. 9, page 148.)

RIDEAU CANAL.

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

Length of navigable waters	126¼ miles
Number of locks going from Ottawa to Kingston	33 ascending. 14 descending.
Total lockage ... 446¼	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.

For table of distances of Stations between Ottawa and Kingston see (App. page .)

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

From the summit, the route towards Ottawa follows the River Rideau and that towards Kingston follows the River Cataraqui. The whole duty of keeping the water 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 the Mud Lake system, discharging into Lake Openacon.

(This last was formerly known as the Devil Lake system, from a lake of that name emptying into Mud Lake. The dam at the outlet of Devil Lake having, however, been removed, and the canal from the height of land entering Mud Lake direct, the present name has been adopted.)

Lake Openacon receives the waters of Buck Lake and Rock Lake.

All these waters on the descending level, supplemented by those of Lake Loughboro, flow into Cranberry Lake, which discharging through Round Tail outlet, forms the River Cataraqui ; this river, rendered navigable by dams at various points, affords a course of navigation to Kingston.

The navigation stopped at Kingston Mills on 21st November 1879, and recommenced on the 27th April 1880.

At Ottawa navigation stopped the 23rd November 1879, and recommenced on the 27th April 1880.

The water levels were fully maintained and navigation was uninterrupted during the seasons of the fiscal year 1879–80.

General repairs were made to the various works on this system, their efficiency being fully maintained.

Some needed improvements to the basin at Ottawa have been carried out and business has been thereby facilitated.

The iron mines in the district of Hull on the north shore of the Ottawa river are being developed, and it is expected that the increasing trade in iron ore will considerably add to the traffic of the Canal. (App. 9, page 164.)

RICHELIEU AND LAKE CHAMPLAIN.

This system, commencing at Sorel, at the confluence of the Rivers St. Lawrence and Richelieu, 46 miles below Montreal, extends along the River Richelieu through the St. Ours' Lock to the Basin of Chambly, thence by the Chambly Canal to St.

John's and the River Richelieu to Lake Champlain. 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 is obtained with the River Hudson, by which the City of New York is directly reached. From the Boundary Line to New York the distance is 330 miles.

The following table shows the distance 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 Boundary Line	23	81
Boundary Line to Champlain Canal	111	192
Champlain Canal to Junction with Erie Canal	66	258
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, or 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.

This lock was closed on the 24th November, 1879, and opened on the 7th April 1880.

All necessary repairs have been satisfactorily executed.

(App. 9, page 140.)

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	$23\frac{1}{2}$ feet.
Lift " " 2,		124 "	$23\frac{7}{12}$ "
" " " 3, 4, 5, 6		118 "	23 to $23\frac{7}{12}$ feet.
" " " 7, 8, 9 combined		125 "	$23\frac{1}{2}$ feet.
Total rise, or lockage		74 "	
Depth of water on sills		7 "	
Breadth of canal at bottom		36 "	
" " surface of water		60 "	

Succeeding the thirty-two miles of navigable water 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 to navigation on the 6th December 1879, and opened on the 20th April 1880.

Traffic has been uninterrupted.

The several works have been maintained in a serviceable condition.

The Report of the Engineer, however, shows that in order to maintain the canal in efficiency, it will be necessary that repairs of more than ordinary extent should be executed during the coming year. (App. 9, page, 139.)

ST. PETER'S CANAL.

Length of canal	about, 2,400 feet.
Breadth at water line	55 feet.
Lock	One tidal lock, 4 pair of gates.
Dimensions	48 by 200 feet.
Depth on sills	18 feet at lowest water.
Depth through canal	19 feet.
Extreme rise and fall of tide in St. Peter's Bay	4 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 in width, and gives access from the Atlantic.

In October last the works were sufficiently forward to admit of their being opened for traffic. (App. 9, page, 170.)

TRENT RIVER NAVIGATION.

The term, "Trent River Navigation" is applied to a series of water stretches, which do not, however, form a connected system of navigation, and which, in their present condition, are efficient only for local use.

This series is composed of a chain of lakes and rivers extending from Trenton at the mouth of the Trent on the Bay of Quinté, the utilization of which for the effecting of communication between Lake Ontario and Lake Huron was proposed prior to the Union.

The course in contemplation was as follows:—

Through the River Trent, Rice Lake, the River Otonabee and Lakes Clear, Buckhorn, Chemong, Pigeon, Sturgeon and Cameron to Lake Balsam, the summit water, about 166 miles from Trenton. From Lake Balsam by a canal and the River Talbot to Lake Simcoe; thence, by the River Severn to Georgian Bay, Lake Huron, the total distance being about 235 miles.

The execution of this scheme, commenced in 1837, was subsequently deferred. By certain works, however, below specified, sections of these waters were made practicable for navigation and for the passage of timber. A branch of the main course, extending from Sturgeon Lake south, affords communication with the town of Lindsay, and, through Lake Scugog to Port Perry, a distance of 190 miles from Trenton. Of this distance, 155 miles are navigable for vessels of light draught.

The following table givens 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 works here consist of a canal and lock, a dam and slide...	15½

Percy Landing.

A retaining boom for saw logs here.....	28½

Campbellford.

Guide booms	34¾

Middle Falls.

The works consist of 4 dams and 2 slides.....	37¾

Crow Bay.

A retaining boom....	38

Heeley's Fall.

	Distance from Trenton in miles.
A dam and 1 slide are in operation here.....	42¾

Crook's Rapids, Hastings.

The works consist of 1 lock 1 dam and slide for timber.....	34⅝

Whitlas's Rapids.

These works situated below Peterboro consist of a lock, dam and canal.....	92⅞

Little Lake.

These works consist of three piers and 1 boom.....	94

Burleigh.

Timber slides	

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 two 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.....	155¼

Lindsay.

The old lock, 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 161⅞

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 portions 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 are Myersburgh, the guide boom and Campbellford, the dams and slide booms at Middle Falls, the retaining booms 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.

Navigation stopped on the 8th December 1879 and recommenced on the 7th April 1880.

The water levels were fairly maintained up to the 5th November.

All necessary repairs have been executed throughout the line (App. 9, page, 166.)

Respectfully submitted,

CHARLES TUPPER,
Minister of Railways and Canals.

DEPARTMENT OF RAILWAYS AND CANALS.
OTTAWA, 10th January, 1881.

DOMINION OF CANADA.

ANNUAL REPORT.

OF THE

MINISTER OF RAILWAYS AND CANALS.

FOR THE

FISCAL YEAR 1st, JULY 1879, TO 30th JUNE, 1880.

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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, 1880.

Name of Work.	Construction.	Repairs.	Staff and Maintenance.
CANALS.	$ cts.	$ cts.	$ cts.
Lachine	369,566 74	10,223 62	38,950 90
Beauharnois	.....	8,997 34	15,362 61
Cornwall	109,454 95	9,735 76	14 440 33
Williamsburgh	.....	3,999 77	7,590 15
St. Lawrence	9,214 56	.....	.....
Welland	1,252,924 75	76.535 25	63,198 10
St. Anne's	3,054 68	1,704 71	2,152 57
Burlington Bay	.....	3,519 80	.....
Grenville	78,297 58	7,625 54	11,959 14
Carillon	203.216 69		
Culbute	16,688 20	.....	202 50
Rideau	355 05	11,434 05	26,463 88
Trent	.....	2,939 04	1,188 92
St. Ours	.....	705 54	1,614 01
Chambly	.....	12,377 74	11,516 22
St. Peter's	80,120 54	.....	400 00
Miscellaneous	827 65	323 16	.....
" Surveys	1,733 90	.....	.....
Total on Canals	2,125,455 29	150,121 32	195,039 33
RAILWAYS.			
Pacific	3,893,598 54	.....	78,892 01
" Surveys	150,973 68	.....	.....
Intercolonial	2,048,014 60	.....	1,603 429 71
Prince Edward Island	16,539 82	.....	164,640 55
Windsor Branch	.....	.....	4,526 99
Total on Railways	6,109,126 64	.....	1,851,489 26
Grand Total	8,234,581 93	150,121 32	2,046,528 59
$10,421,231 84			

J. BAINE,
Accountant

DEPARTMENT OF RAILWAYS AND CANALS,
OTTAWA, 20th December, 1880.

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.	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	15¼	1,009¼
Beauharnois	Ste. Cécile	Beauharnois Canal	11¾	1,021
Ste. Cécile	Cornwall	Lake St Francis	32¾	1,053¾
Cornwall	Dickinson's Landing	Cornwall Canal	11½	1,065¼
Dickinson's Landing	Farran's Point	River St. Lawrence	5	1,070¼
Farran's Point	Upper end of Croyle's Island.	Farran's Point Canal	¾	1,071
Upper end Croyle's Island.	Williamsburgh or Morrisburgh	River St Lawrence	10½	1,081¼
Williamsburg	Rapid Plat	Rapid Plat Canal	4	1,085¼
Rapid Plat	Point Iroquois Village	River St. Lawrence	4½	1,090
Point Iroquois Village	Upper end Presqu'Ile	Point Iroquois Canal	3	1,093
Presqu'Ile	Point Cardinal, Edwardsburgh	Junction Canal	2⅝	1,095⅝
Point Cardinal	Head of Galops Rapids	Galops Canal	2	1,097⅝
Galops Rapids	Prescott	River St. Lawrence	7⅜	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	Pointe aux Pins	River St. Mary	7	1,994
Pointe aux Pins	Duluth	Lake Superior	390	2,384
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

Of the 2,384 miles from the Straits of Belle-Ile to the Head of Lake Superior, 71 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 eet.

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

APPENDIX No. 3.

THE CANADIAN PACIFIC RAILWAY.

OFFICE OF THE ENGINEER IN CHIEF,
OTTAWA, 25th October 1880.

SIR,—Having in the month of June last entered upon the duties of Engineer in Chief of the Canadian Pacific Railway, it devolves upon me to submit to you a report upon the progress made with the works of construction and with the surveys, during the fiscal year ended the 30th June 1880 and up to date. Shortly after assuming those duties, I made a tour of inspection of the works in course of construction, in order, by personal examination, to inform myself more fully of their condition, and to become familiar with the country traversed by the Railway.

WORKS OF CONSTRUCTION.

Fort William to English River, 113 *miles. Contract No.* 25. *Messrs. Purcell & Ryan, Contractors.*

The only work remaining to be done under this contract at the date of last year's report was ballasting, surface drainage, making up settlements in embankments, and clearing out the "slurry" from the cuttings, which had run in from the slopes. A considerable quantity of ballasting has been done during the season, but before the road can be considered in a satisfactory condition it will be necessary to give another lift to some portions of the line, especially where embankments have settled near approaches to bridges. The "slurry" has been cleared out of many of the cuttings during the summer, and the surface drainage improved. It will, however, be necessary to expend more labor on this class of work.

Value of work done during the year ending 30th June, 1880, and also up to 30th September, 1880.

June 30th, 1879, to June 30th, 1880	$57,061 54
June 30th, 1880, to September 30th, 1880	5,773 21
	$62,834 75

Contract No. 74. *W. Gooderham, Jr., Contractor.*

The Haggas system of water service having been very highly spoken of, both for cheapness of construction and economy in operation, by the managers of those Railways upon which it had been introduced, it was considered important in the interest of the traffic that a trial should be given to that system. Authority was accordingly given to introduce it upon the first 140 miles west of Fort William, and a contract was entered into with Mr. Gooderham, who has during the past few weeks had a force of men employed in putting it in operation. It is, however, not yet fully completed and accordingly, no certificate has issued.

English River to Eagle River, 118 *miles. Contract No.* 41. *Messrs. Purcell & Co., Contractors.*

The terms of this contract require that the grading and track-laying be completed and in safe condition for the passage of trains by the 1st July, 1882, and that the

section be fully completed by the 1st July 1883. But if the track is laid and the work completed a year earlier than the above dates, the contract provides for an addition to the rates in the schedule of prices attached. I am pleased to be able to state that creditable progress appears to have been made with the work of this section, the track having reached a point about 166 miles west of Fort William, being laid for a distance of some 39 miles on contract 41; and it is very probable, judging from the present condition of the grading and from the efforts put forth, that the track will be laid a further distance of, say, 15 miles, before the end of December next. Upon the balance of this contract a large quantity of earth work has been executed. Many bridges and culverts have been built, all of which, as on Contracts No. 13 and 25, are of wood. If the same energy is displayed by the contractors in future as appears to have been exercised in the past, I see no reason why the road throughout the entire length of this section, making a total distance from Fort William of 231 miles, should not be in a condition for the safe passage of trains by this time next year.

Value of work done during the year ended the 30th June 1880, and also up to 30th September 1880.

30th June 1879 to 30th June 1880	$586,750.91
30th June 1880 to 30th Sept 1880	290,201.29
	$876,952.20

Eagle River to Keewatin, 67 miles. Contract No. 42. Messrs Manning, McDonald, McLaren Co., Contractors.

According to the terms of this contract, the track is to be laid throughout for the safe passage of trains by the 1st of July 1882, and the whole work completed by the 1st July 1883. But unless the work be prosecuted with much greater energy in the future than has been exercised in the past, the track will not be laid throughout the section in the time specified. The contractors, however, promised to go more vigorously to work, and they are taking the very wise precaution of stripping the earth from the rock cuttings preparatory to the winter operations, which indicates a certain earnestness of purpose, and I trust that the next month will show greater progress. A very considerable quantity of rock excavation and masonry in culverts has been executed, but little progress made with the crossing of bays of lakes &c., with embankments or bridges. The masonry of the Winnipeg River Bridge at Rat Portage is in progress, and, it is hoped, will shortly be ready to receive the iron superstructure now on the way from the manufactory, the erection of which will be proceeded with so soon as the piers and abutments are in a condition sufficiently advanced, and should this shortly be the case, I see no reason why the track should not be laid eastward 8 or 9 miles over section 42 to a point about 120 miles distant from Selkirk, as it is already laid from Selkirk eastward to the west end of this section. When this is accomplished, the work of provisioning and supplying the section will be much simplified, and the cost of doing so very greatly reduced, which should stimulate the contractors to increased activity. The masonry culverts appear to be built substantially, and, being of stone are of a durable character. It is intended that all the bridges be of wood, except the iron structure over the Winnipeg River. Those crossing the Bays of Lakes &c. will as a rule be of trestle work resting on piles, but a few will rest upon a rock foundation, while others again will be pile structures.

Value of work done during the year ending 30th June 1880, also up to 30th September 1889.

30th June 1879 to 30th June 1880	$532,079 11
30th June 1880 to 30th September 1880	244,515 26
	$776,594 37

Keewatin to Cross Lake, 36 miles. Contract No. 15. Joseph Whitehead, Contractor.

The work upon this section was carried on by the contractor until March last, when, owing probably to financial embarrassment, a large number of his men were unpaid for some months and clamoured for their back wages, being frequently on strike. Hence the works progressed very unsatisfactorily, and it became necessary for the Government to assume control and complete it at the contractor's expense, according to the terms of the contract. The Government, therefore, assumed control in the early part of March, and the supplies necessary for some months operations were at once sent forward, as this could be done at a reasonable cost, only during the sleighing season. As soon as the frost and snow left the ground work was commenced with great vigor, and has since been prosecuted energetically and successfully. The Cross Lake embankment, of which so much has been said, was brought up to grade level early in July last, since which time many of the heavy embankments to the east of that point have been filled up by train, and the track is laid eastward to Keewatin, and trains can be safely operated over the entire length of the section. The section, however, is by no means complete, much remaining to be done in filling up gorges now crossed upon temporary trestle work, in ballasting, and in cleaning up many of the cuttings.

The ballasting of section 14, as well as that of section 15, was covered by Contract No. 15. Previous to the assumption of these sections by the Government in March last, the Contractor had laid down about half the ballast required upon section 14, but none on section 15, and until quite recently no ballasting has been done on these sections by the Government. At the present time ballast is being run from the Bird's Hill ballast pit to Section 14, and from Deception to Section 15, and it is expected that before the season closes the entire length of these sections will be in fair order for traffic operations.

Value of work done during the year ending the 30th June 1880, and also up to 30th September 1880.

30th June 1879 to 30th June 1880	$469,620 21
30th June 1880 to 30th September 1880	167,445 08
	$637,065 29

Selkirk to Cross Lake, 76 miles. Completion of Contract No. 14. Joseph Whitehead, Contractor.

It is stated in last year's report that the grading and bridging on this section were completed; but owing to slides and settlements in the embankments over the bays of Cross Lake, it required additional earth filling some 20,000 cubic yards which is now being supplied. The traffic service has been in operation on this section since February last.

Value of work done for the year ending 30th June 1880, and also up to September 30th 1880:

30th June 1879 to 30th June 1880	$68,517 85
30th June 1880 to 30th September 1880	Nil.
	$68,517 85

Upon the last two sections of road referred to, between Selkirk and Keewatin, a water service on the elevated system is being provided, which is expected to be in operation before winter, so as to afford to the traffic trains the necessary supply.

At Selkirk a spur track has been laid down to navigable water on Red River, to accommodate the business arising from the arrival and departure of steamers and other vessels plying on that River and Lake Winnipeg.

St. Boniface to Emerson, 64 miles. Contract No. 33. Messrs. Kavanagh, Murphy & Upper.

As the contractors were not displaying the diligence and energy, in prosecuting their work, necessary to ensure its completion within a reasonable time, it was taken out of their hands to be completed at their expense by the Government. Under this arrangement a force was organized early in the spring since which time the ballasting and other works have been prosecuted with vigor, and it is believed it will be completed before the severe weather sets in, with the exception of the permanent bridges and the wire fencing, for which contracts are now let. A large number of beam culverts, and cattle guards have been built; off-take ditches have been dug, the ballasting and track-laying have been carried on, and the temporary trestle bridges are being replaced by permanent ones, the water-ways being spanned by iron superstructures supplied and erected in place by the Government, but which will rest on wooden piers built under the contract of Messrs. Kavanagh, Murphy & Upper.

Value of work done during the year ending the 30th June 1880, and also up to the 30th September 1880.

30th June 1879 to 30th June 1880	44,133 86
30th June 1880 to 30th Sept. 1880	44,345 69
	88,479 55

The wire fencing on this branch is under contract No. 77, with Messrs. Stubbs & Co., and contract No. 78 with Messrs. Skead and Haycock. No work has yet been done and therefore no certificate has issued.

Transfer freight sheds are being erected at Emerson, additional freight shed accommodation, has been provided at St. Boniface spur, and the engine houses at Emerson and St. Boniface have been completed, as well as a turntable at the former place

Winnipeg to Western Boundary of Manitoba, 100 miles. Contract No. 48. John Ryan, Contractor.

The terms of this contract require that 50 miles of track should be laid and ready for traffic on the 19th April 1880, and the remaining 50 miles on the 19th August 1880. For various reasons delays have arisen in prosecuting the work, and on the 30th June last only 18 miles of track were laid and on the 30th Sept. 45¼ miles, and as the work was not being prosecuted with such vigor as to ensure the laying of the track throughout the section to the western boundary of Manitoba before the end of December 1880, the Government on the 1st October assumed control of the work, and are completing it by day labor. Additional engine power and 35 new cars have been provided with a view of pressing forward the work. The grading, ballasting, track-laying, drainage, and the erection of station buildings, are in progress.

Value of work done during the year ending the 30th June 1880, and also up to Sept. 30th 1880.

30th June 1879 to 30th June 1880	$164,754.27
30th June 1880 to 30th Sept. 1880	52,728.78
	$217,475.05

Contract No. 77, Messrs. Stubbs Co, Contractors and Contract No. 78. Messrs. Skead & Haycock, contractors, Wire fencing.

When traffic trains commence running it will be necessary that portions of the line be fenced, and a wire fence has been adopted, the contracts for which have been awarded to Messrs. Stubbs & Co., and Messrs. Skead and Haycock but no work has yet been performed.

Contract No. 64, Messrs. Ryan, Whitehead & Ruttan, Temporary Bridge at Winnipeg.

With a view of facilitating the works of construction, west of Winnipeg, and also of giving greater and cheaper despatch to the traffic with that city, authority was given to erect a temporary bridge over the Red River there. A contract was entered into for its construction, at $7,350 which was completed, and the bridge has now been in use for some time, proving of great service.

Value of work done during the year ending 30th June 1880, and also up to 30th September 1880.

Year ending 30th June, 1880	$3,000
30th June to 30th September, 1880	4,350
	$7,350

Water Service.

An elevated water service, intended to be in operation before the winter sets in, is now being established along the first 100 miles of the westward section, to be in readiness to serve the traffic trains which it is proposed to have running at an early day as far as Portage la Prairie.

Western Boundary of Manitoba to Birdtail Creek 100 miles. Contract No. 66. Messrs Bowie and McNaughton.

The contract for this work was entered into in May last, but no work was done until the end of July, when the contractors appeared on the ground with a small gang of men and a few horses, since which time some 20 or 30 men, and 10 or 11 horses have been employed, but no substantial progress has been made. It therefore became necessary to take steps to cancel the contract.

The amount of work done is so very insignificant that no certificate has issued.

Emory's Bar to Savona's Ferry, 127 miles. Contracts 60, 61, 62, 63. D. O. Mills, Contractor.

This work was commenced early in summer. The Contractor has concentrated his force chiefly on the first 19 miles of Contract No. 60 ; and the roadbed from Emory's Bar to Yale is ready or nearly so to receive the rails. The work in the tunnels on the first twelve miles above Yale is progressing rapidly, and satisfactory progress is being made with the heavy rock excavation. Many of the retaining walls are being built and timber prepared for the bridges, and the prospects are that next spring, the rails will be laid for some miles eastward from Yale.

On Contract No. 62, a force is engaged in the work of grading, and as the winter is said to be mild in that district, it is intended to largely increase the force, in which case satisfactory progress may be looked for by the opening of spring.

Value of work done during the year ending the 30th June 1880 and also up to September 30th, 1880.

30th June 1879 to 30th June 1880	$ 35,210 00
30th June 1880 to 30th September 1880	214,584 80
	$249,794 80

Upon these sections, buildings adapted for use as Station-houses, and Section Men's dwellings are being erected in suitable localities. These will be occupied by the Engineering Staff during construction.

Steel Rails.

A large portion of the 39,000 tons of steel rails purchased last season have been received at Montreal and are being transported to Fort William and Winnipeg.

Rolling Stock.

The following rolling stock has been provided wherewith to operate those sections of the road under traffic:

10 Locomotives,
4 1st Class Passenger Cars,
4 Postal and baggage do
14 Box Freight do
88 Flat do do

Contracts are also made for the following additional stock:

50 Box Freight Cars,
47 Flat do

6 snow ploughs, 6 wing ploughs and 6 flangers.

SUBSIDIZED LINES.

The Canada Central Railway Extension from the town of Pembroke to the vicinity of Lake Nipissing, 130 miles.

The works of grading and bridging on this line are in progress as far as the 74th mile from Pembroke, and the track is laid and the ballasting nearly completed to the 61st mile.

Station buildings have been erected and sidings laid where required, as far as Bissetts,—a station 60 miles west of Pembroke. The water service necessary for this portion of the line has also been provided.

The rails for the entire length of line subsidized have been delivered on the ground, and the work of construction is being energetically prosecuted.

Passenger and freight trains now run regularly over the first 60 miles.

Amount of subsidy earned:—

From 30th June 1879 to 30th June 1880.....	$629,494 00
" 30th June 1880 to 30th September 1889....	145,065 00
	$774,559 00

SURVEYS.

Surveys were undertaken in the year 1879–80 for the purpose of ascertaining the most advantageous route for that portion of the Canadian Pacific Railway between the east end of Lake Nipissing and the Thunder Bay Section, and also the feasibility and best location for a railway to connect the main line of the Pacific Railway with Sault Ste. Marie and Goulais Bay at the east end of Lake Superior.

The following surveys are completed or in progress:

1. A trial location commencing at South East Bay of Lake Nipissing and running in a north-easterly direction for 63 miles to a crossing of the Sturgeon River. This was completed in the autumn of 1879, and is described in Mr. Fleming's report for 1880. Appendix 18.

2. An exploratory compass and chain survey from Moose River along the height of land to the north end of Long Lake, a distance of 166 miles, made during the winter of 1879–80.

3. A trial location made during the summer and autumn of 1879, from the north end of Long Lake to Red Rock at the head of Nipigon Bay, 126 miles.

4. An exploratory instrumental survey during the summer of 1879, from Red Rock to Linkoping, a station on the Thunder Bay Section 60 miles west of Fort William, 104 miles.

5. An exploratory instrumental survey during the winter of 1879, 80 miles from Red Rock to Prince Arthur's Landing, 66 miles.

6. An exploratory compass and chain survey is in progress and probably now completed between Sturgeon and Moose Rivers, to connect the above mentioned surveys of last season. Its length will be about 230 miles.

Description from the several Engineer's Reports:

Commencing at South East Bay of Lake Nipissing and following the general course of the Sturgeon River along the north side of that Lake and in north-westerly direction, the country for the first 63 miles surveyed is broken and rocky, with some level stretches of sandy loam and swamp with boulders. A fair alignment and easy gradients may be obtained by moderate work except for four or five miles, where steeper gradients will be necessary, involving somewhat heavy cuttings generally in rock.

From the 63rd to about the 280th mile, at the crossing of Moose River, the exploratory surveys are now in progress, but no reports have so far been received.

From the 280th to the 360th mile the ground in the immediate vicinity of Moose River is broken, but it is reported that this rough stretch might be avoided by carrying the line some three or four miles north of that surveyed. Through the remainder of this section the country is said to be generally flat or slightly rolling with swamps and low sand ridges. Fertile land and good timber were found along the river valleys.

350th to 400th mile.—Slightly rolling, with some rock ridges which would probably be avoided on location.

400th to 450th mile.—It is said that by keeping the line about 10 miles further north, the height of land near Shallow Lake could be avoided, and that, crossing near the outlet of this lake, a nearly level country would be traversed.

450th to 500th mile.—A generally level country, with gravel and sandy loam predominating.

500th to 550th mile.—Broken and rocky country, soil a barren mixture of sand and white clay, involving medium to heavy work with steep undulating gradients.

550th to 580th mile, to the crossing of Nipigon River near Red Rock.—This section is very broken, with high rock bluffs and deep ravines. The gradients would be steep, especially for a distance of two miles, with a high percentage of curvature. The work would in some places be excessively heavy.

580th to 598th mile.—The line surveyed here runs along the margin of Nipigon River and Bay for a distance of 5 miles, affording an opportunity of connection with navigation, as the deep water of Nipigon Bay approaches close to the shore. This section of 18 miles is composed of loam and sand and the gradients and work will be light, except for some two miles in which a certain amount of rock cutting will be required.

The 598th mile, at the head of Black Bay, is a common point from which two routes were surveyed, one to Prince Arthur's Landing and the other to Linkoping, a station on the railway, 60 miles west of Fort William.

In the direction of Prince Arthur's Landing, the line from the 598th to the 620th mile passes for the first six miles over a level and easy country, which then becomes more uneven, but fair alignment and gradients can be obtained by moderate work.

At the 620th mile the summit of the neck of the promontory of Thunder Cape is crossed, the elevation being reported to be 465 feet above Lake Superior. From this point to Prince Arthur's Landing, the 650th mile from Lake Nipissing, a good line without excessive gradients can be constructed at moderate cost, with the exception of some heavy rock cutting at the summit.

The line surveyed from the common point above mentioned (598th mile) to Linkoping, the 684th mile, is reported to pass over a country for the most past rough and rocky, requiring a great deal of moderately steep gradient with a considerable percentage of curvature. The work would be heavy, and principally in rock, as very little available earth was found along this line; but from side explorations made, such information was gained as to lead to the belief that a better line might be found for

the last 40 miles by keeping further north. This it is supposed would avoid the rise and fall at Dog Lake and shorten the distance by about 4 miles.

The distances given above from the east end of Lake Nipissing are only approximate, as the actual length of the section now under survey is of course unknown.

Sault Ste. Marie Line.

(7.) During last winter a general examination was made of the character of the country between Sturgeon and Spanish Rivers, to ascertain whether it is practicable to construct a railway through that district to Sault Ste. Marie, from the main line of the Pacific Railway. A report of this work appears in appendix page 297. Mr. Fleming's Reports for 1880.

An exploratory instrumental survey was made last summer, from the Sturgeon River in the direction of Sault Ste. Marie, connecting with a line run eastward from the latter place in 1871, at a place distant from it about 100 miles. The distance from the Sturgeon River to Sault Ste. Marie is found to be about 231 miles, and from Lake Nipissing to Sault Ste. Marie about 294 miles. The report of this Survey has not yet been received.

Exploratory Surveys.

During the summer of 1879, the following exploratory surveys, details of which appear in Appendices 1, 2, 3, 4 and 5 of Mr. Fleming's report, for 1880 were made in British Columbia and the Rocky Mountains.

(1.) By H. J. Cambie, to determine whether a northern route could be found for the Railway by Peace River, the River Skeena and their tributaries to Port Simpson on the Pacific Coast:

(2.) By Mr. Henry A. F. Macleod, an exploration of the country between Port Simpson and Battleford, *viâ* Peace River Valley.

(3.) By Capt. J. C. Brundige, of the Northern portions of the Coast of British Columbia.

(4.) By Mr. George A. Keefer, trial location survey from head of Wark Inlet up the Skeena River.

(5.) By Mr. Charles Horetzky through the northern portion of British Columbia.

Location.

The surveys made in 1879, to establish the route from the western boundary of Manitoba northwesterly towards the Saskatchewan were fully reported on by Mr. Fleming under date of 8th April last. During the past season a revision has been made of this location, with a view to improvement at some of the difficult points, such as the crossings of the Little Saskatchewan, Birdtail Creek, and other places. The location is also being continued to an intersection with the line formerly located and telegraph line, about 60 miles west of Livingstone and some 350 miles west of Red River, and it is expected that the whole of this service will be thoroughly completed during the present autumn.

Attached hereto will be found a list of the contracts entered into up to date.

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

COLLINGWOOD SCHREIBER,
Engineer in Chief.

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

APPENDIX No. 4.

DEPARTMENT OF RAILWAYS AND CANALS,
OFFICE OF THE CHIEF ENGINEER OF
GOVERNMENT RAILWAYS IN OPERATION,
OTTAWA, 6th Oct., 1880.

SIR,—I have the honor to submit to you my annual report for the year ending the 30th June, 1880, on the working of the Government Railways in operation, comprising the Intercolonial, Prince Edward Island, and Canadian Pacific Railways. The Government also providing for the maintenance of way and works of the Windsor Branch Railway as will appear hereafter.

I also transmit to you the reports of the Superintendents, Mechanical Superintendents and Engineers of those lines, accompanied by returns of accounts for their operations during the year.

INTERCOLONIAL RAILWAY.

Prior to the 13th August, 1879, the length of this line was 714 miles. At that date the road between Rivière-du-Loup and Hadlow, was purchased from the Grand Trunk Railway Company together with running powers over the line between the latter place and Point Levis, giving to the Intercolonial an additional length of 126 miles and making the entire mileage operated, 840 miles.

Capital Account.

The total cost of the construction and equipment of the road including the Windsor Branch Railway, was, up to the 30th June, 1879 ... $36,317,705 04
and during the year 1879-80, the expenditure was:

Halifax Extension	7,164 02
St. John, deep water terminus	94,545 15
Construction of Railway, old accounts	23,931 67
Purchase of the Rivière-du-Loup Branch	1,500,000 00
Repairs and Improvements to date	369,779 94
Rolling Stock to date	19,795 47
Nut Locks	32,797 83
	$2,048,014 60
Making the total cost up to 30th June, 1880, of....	$38,365,719 64

The increasing ocean traffic *vid* Halifax necessitated the extension of the wharf accommodation at Richmond, and authority was accordingly given to build a new wharf,—now under construction—and to extend the old one.

It is expected that these wharves will be ready for use before the winter season sets in, and that they will afford the additional space so essential to the satisfactory despatch of the ocean traffic. The car shop and other works in progress at the date of my last report are completed.

The deep water wharf at St. John is finished and a number of switches and sidings have been laid which will accommodate a large lumber traffic.

On the line between Rivière-du-Loup, Halifax, St. John, Shediac and Pictou all fresh works undertaken, except the "Halifax Extension" and the "St. John Deep Water Terminus" continue to be charged to working expenses. The only charges against the construction of the line between these points are for payment of unsettled claims for work done under the Commissioners in former years.

The repairs and improvements on the line between Rivière-du-Loup and Hadlow commenced immediately after its transfer from the Grand Trunk (13th August 1879) and such work was done during the remainder of the season as could be accomplished.

Upon the opening of spring the work of replacing the old iron track with steel rails was continued with vigor, and the ballasting for which a contract had been entered into with Mr. M. J. Hogan was also energetically prosecuted.

All other necessary repairs and improvements were continuously carried on, and it is believed that the work in progress will be completed during the current year. Contracts were also made for rolling stock, according to which the engines should have been delivered in spring and the passenger and freight cars at specified dates during the summer season; but up to the end of September only three of the engines were delivered and two cars of the passenger train stock.

Revenue.

The earnings show an improvement as compared with those of the previous year, and it is expected that the general revival of trade which has set in will have the effect of further increasing them during the current year.

The gross earnings were.....	$1,506,298 48
do 1878-9	1,294,099 69
Increase.....	$212,198 79

The passenger receipts show an increase over those of last year of $48.445.37, while the number of passengers carried was less by 58,618 showing a greater revenue from through traffic, and at the same time a decrease in the number of passengers making short journeys.

The freight traffic returns show an increase of receipts over those of last year of $161,995 65, and in weight handled of 51,063 tons.

The following is a comparative statement of the chief articles of freight carried during the two years.

	1878-9.	1879-1880.	Increase.	Decrease.
Barrels of flour.....	630,329	525,148		105,181
Bushels of grain.....	302,921	324,021	21,100	
Live Stock.....	47,584	70,990	23,406	
Lumber (feet).....	55,626,096	55,462,654		163,442
Other goods (tons).	366,657	422,256	55,599	

The traffic has been well maintained, and an increased volume of business is confidently looked for during the current year. With a view of encouraging shipments of live stock to Great Britain, special attention was given last winter to this branch of traffic, and the owners of the cattle express themselves well pleased with the arrangements made both along the line and at Halifax. An effort was made to induce a grain traffic with Europe through the port of Halifax by quoting a very low rate of freight, but so far without satisfactory result.

The coal traffic between the Nova Scotia mines and the Western Provinces increased largely during the year as well as the shipments of coal to Halifax for the use of Ocean steamers, the latter traffic being developed by the improved facilities for coaling large vessels at the Richmond wharves.

Working Expenses.

The cost of working the railway has been considerably reduced during the past year and the nett results may be considered satisfactory.

The number of sleepers renewed on the line east of Rivière-du-Loup was 220,286, and west of that point 154,861.

The working expenses and earnings compare as follows :

Working expenses	$1,603,429 71
Earnings	1,506,298 48
Excess of expenses over earnings	97,131 23

The permanent way, roadbed, buildings, wharves, fences and structures generally have been well maintained; all necessary improvements have been made, and the road was never before in a state of more thorough efficiency. In consequence of the increased length of road, the rolling stock has been worked to its full capacity, the engine power especially having been subjected to a severe strain owing to the rough state of the old iron track between Rivière-du-Loup and the Chaudière, and also to the fact that the additional engines and cars required for the Rivière-du-Loup branch have not been delivered. Nevertheless the rolling stock is reported by the Mechanical Superintendent to have been kept in good repair, and to be in a state of efficiency. Three new engines have been purchased at the cost of working expenses, and it will be necessary with the increased length of road, to increase the number of engines to be provided each year, to four at least.

As the volume of traffic increased from year to year it was found that the old type of engine was not sufficiently powerful to work the through traffic economically.

Accordingly four of the 16 x 22 inch cylinder engines were sold to the Canadian Pacific Railway and were replaced by new and more powerful ones. The difference between the cost of the new and more powerful engines, and the amount realized by the sale of the smaller ones is included in working expenses. A number of passenger and freight cars have been rebuilt during the year to maintain the efficiency of the stock. The following is a comparative statement of mileage of engines, trains and cars :

	1878-79.	1879-80.	Increase.	Decrease.
Engine mileage.	2,531,791	3,076,342	544,551	
Train "	2,111,426	2,535,654	424,228	
Car "	21,855,441	28,254,065	6,398,624	

The total cost of running the trains was 63.23 cents per mile per train, against 95.20 cents the year before.

The total cost of working per mile of railway was—$1,943.55 against $2,815.38 during the previous year.

The expense of operating the 840 miles for the year was—$1,603,429.71, and for the 714 miles operated during the previous year it was $2,010,183.22, from which should be deducted $168,396.03 the amount of balance at debit of "Steel Rails Renewals Suspense Account" in 1878, leaving $1,841,787.19 as the nett operating expenses of 1878-79.

The English Mail Service *via* Halifax in winter and Rimouski in summer has been continued and extended westward to Quebec, for which service no consideration has been received.

The purchases of stores during the last two years were as follows :

1879-80	$472,302.50
1878-79	415,985.87
Increase	56,316.63

The Stock of Stores compares thus :—

	1878-79.	1879-80.
General Stores including fuel	$106,000.76	$106,821.12
Steel and iron rails, etc	100,041,34	48,528.41
Old material	37.716,00	8,539.50
	243,758.10	163,889.03

The old iron rail track on the line between Rivière-du-Loup and Chaudière Junction was very rough during last winter, and owing to the bad condition of the rails, it was difficult to uphold and very trying to the rolling stock. This in connection with the frequent and sudden changes of temperature caused the breaking of many wheels, axles and tyres, resulting of course in delay of trains. It is, however, confidently expected that when that section of the road is steeled and ballasted, and when the new rolling stock now being provided is received and put in motion, the despatch of trains will be prompt and regular. The inconvenience caused by the delay in the delivery of the engines in course of construction at St. John has been severely felt.

The earnings of the first three months of the current year show a considerable increase over those of the corresponding period of last year ; and it is expected that the results of the operations of this and future years will be still more satisfactory than those of the fiscal year last closed.

In order to avoid mistakes as to time which might otherwise occur upon a line covering so many degrees of longitude it was determimed, by the Minister of Railways and Canals to adopt an arbitrary standard time over the whole road. Trains are accordingly run by "Intercolonial Standand time" 15 minutes faster than Quebec, 15 minutes slower than Halifax and 5 minutes slower than St. John time. This is, as it were, a compromise between the longitudes of the terminal points, and the arrangement has been found to work with perfect success.

Prince Edward Island Railway.

The length of the line is the same as previously reported, 198.5 miles. Both road and rolling stock have been well maintained and are in a good state of efficiency The accounts in connection with the operation of the line during the fiscal year 1879-80, transmitted herewith, make a very satisfactory exhibit of the next results of the year's operations.

Capital Account.

The total cost of the railway at the close of the year ended the 30th June, 1879, was $3,450,048.75, and an expenditure of $16,539.82 was incurred during the past fiscal year, making the total cost on the 30th June, 1880, $3,466,588.57.

The above sum of $16,539.82, was expended on the Souris Extension, which embraces a length of main line of track of 8,440 feet, a shipping wharf in 16 feet of water at low tide, 1000 feet long and 75 feet wide at the outer end, with a warehouse thereon, 100 feet long and 45 feet wide, a passenger station, freight shed and engine house, the whole of which are completed and in use.

Revenue Account.

The gross earnings were :

1879-80	$113,851 11
1878-9	125,855 91
Showing a decrease of	$ 12,004 80

The passenger traffic as compared with that of last year shows a decrease of $6,787.92 in receipts and in the number carried of 14,513.

The freight traffic shows a decrease of $3,216.48 in receipts, and 1,460 tons in quantity carried.

This falling of in the traffic is attributed to the abundant wheat harvest in the Island, which causes a decrease in the demand for imported flour; to the partial failure of the fisheries, to the low price of potatoes, in which the traffic has fallen off by four-fifths, and to a continued stagnation in trade throughout the Island.

The increased traffic in grain, live stock, and miscellaneous articles, however, rather indicated an increased demand and inspires hopes of an improvement during the current year.

Working Expenses.

The cost of operating for the year was.....	$164,640 55
Against that of the previous year.....	223,313 12
Showing a decrease of.....	$58,672 57

The loss for the five years during which the railway has been in operation has been as follows:

For the year ended 30th June,		1876.....	$96,869 47
do	do	1877.....	97,930 33
do	do	1878.....	85,699 89
do	do	1879	97,457 21
do	do	1880.....	50,789 44

The following is a comparative statement of the mileage of engines, trains and cars:

	1878-9.	1879-80.	Increase.	Decrease.
Engine mileage.....	286,886	295,190	8,304	
Train do	243,464	244,691	1,227	
Car do	1,037,540	1,010,483		27,057

The total working expense for running the trains per mile was 67.28 cents against 91.72 cents during the preceding year.

The total working expense per mile of railway during the year were $829.42 against $1125.00 the year before. The working expenses $164,640.55 against $223,313.12 for 1878-9.

The machine shops are equipped with all the necessary tools and machinery, all of which are in good working order. The engine stock has been maintained in good condition. The eight large tender engines, however, have to be depended upon for the movement of freight and other heavy trains as the nine small tank engines from their limited capacity cannot be relied on and are only suitable for running light trains for short distances. To maintain the efficiency of the stock two "Mason Fairlie" engines were ordered during the autumn of 1879 for delivery during the past summer, but they have not yet been received, and the delay causes great inconvenience, increased engine power being much needed. The cost of these engines ($16,351.63) forms a charge in the working expenses of the year. The passenger car stock is in good order. The freight cars have been kept in good repair and seven flat cars have deen rebuilt during the year; and as the stock of box and flat cars was found to be insufficient for the spring and fall traffic, fourteen flat cars have been fitted with moveable tops which have proved of great service. The permanent way, roadbed, fencing and other work have received the necessary repairs during the year and are in good condition. The old iron rails which have now been in use about six years show signs of wear, and it may be necessary to replace them to some extent during the current year by steel rails. Several new sidings have been laid and one has been extended in length; 33694 sleepers have been renewed. The timber in many of the bridges and cattle guards has received extensive repairs and the masony

has been pointed with cement. Important repairs were made in the wharves at Georgetown, Summerside and Alberton to make good the damage done to these structures by the heavy gale in October 1879, and owing to the ravages of the sea worms a large outlay will be required upon the Summerside wharf during the current year.

The station buildings have been maintained in good condition. Some new pole fencing was erected and a large extent of the old fencing was repaired. 16,080 lineal feet of snow fence was removed from 25 to 30 feet further from the track which proved of such immense advantage during the winter that it is proposed to continue this work during the current year. It is also intended to erect some new fences in the more exposed places. The drainage of the roadbed, an important element in the maintenance of a railway in efficient running condition, has received due condition.

The value of stores on hand on the 30th June 1880, amounted to:

The purchase of stores during the last two years was as follows:—

1879–80	$66,633 19
1878–79	63,071 04
Increase	$3,562 15

The value of stores on hand on the 30th June 1880 as compared with the previous year is as follows:—

	1879-80	1878-79
Ordinary stores	$22,450 66	$20,935 03
Coal	992 33	2,605 73
Rails and fastenings	47,175 00	22,874 83
	70,617 99	46,415 59

In order to keep the engine stock up to an efficient standard it will be necessary to purchase an engine during the current year.

Canadian Pacific Railway.

Although the construction of the section between Emerson and Cross Lake, 160 miles in length, was not completed, the road was considered to be in a sufficiently advanced condition to be operated with safety, and instructions were received to organize a staff and to despatch the first train on the 10th February last. Arrangements to that effect were accordingly made and the first train under the charge of Government officials left St. Boniface on the morning of that day. It should, however, be mentioned that the 85 miles of the road between Emerson and Selkirk had been worked under lease by Messrs. Upper & Co. for some months, up to the date upon which the Government officials took charge. This report will therefore cover only that portion of the fiscal year which began on the 10th February and ended on the 30th June, a period of four months and twenty days.

The works of construction on the Canadian Pacific Railway being conducted by a separate and distinct staff, the capital account will not appear in this report. On the 10th of February last as we have seen, arrangements were sufficiently advanced, and the traffic staff so far organized as to enable Mr. Lynskey who had been appointed Superintendent to commence operations on that day, although it must be admitted that he entered upon his duties under very unfavorable and trying circumstances. The weather was unusually severe, the track in many places encumbered with snow which from the constant passage of trains had become solidly packed in the flanges rendering the movement of trains a work of heavy labor, requiring much patience. The engine power at command was quite unequal to the task of working through the snow-drifts, and carrying on the traffic with any degree of regularity, while the inadequate water service increased the difficulties. There were of course great delays.

The weakness in engine power was somewhat relieved by the arrival from Moncton of the four locomotives purchased from the Intercolonial Railway. Had these not been received at that precise time, traffic would probably have been temporarily closed, as the engines then on the road had suffered severely in the snow-drifts and required to go into the shop for repairs.

The traffic has been very considerable both in passengers and freight, chiefly to Emerson and Winnipeg, and at the same time the trains making trips twice a week between St. Boniface and Cross Lake have been well loaded.

Revenue.

The gross earnings were	$104,975 69
The number of passengers carried were	17,640
The tons of freight carried	24,214

The following is a statement of the chief articles of freight carried :

Barrels of flour and meal	(No.)	11,375
Bushels of grain	do	66,501
Live Stock	do	5,635
Steel Rails	tons	7,890
Lumber	feet	288,180
Other goods	tons	10,464

Working Expenses.

The working expenses and earnings compare as follows :

Working expenses	$78,892 01
Earnings	104,975 69
Excess of earnings over expenses	$26,083 68

The road is being ballasted by the Construction Department and this work it is believed will be completed during the current year. When this is done the cost of maintenance of way will be much reduced, and the permanent way and roadbed will be in a good state of efficiency.

The engine and freight car stock has been kept in good working condition considering the limited supply at command and the limited facilities for repairing it. The passenger car stock has been inadequate to the service and being kept constantly rolling, there has been no opportunity of having it painted, for which reason it presents a very shabby appearance. Quite recently two first class coaches and two postal and baggage cars have been received, and so soon as the box and flat cars, snow ploughs and flangers now under contract are delivered this section of the road will be fairly equipped.

The following is a statement of the mileage of engines, trains and cars :—

Engine mileage	86,814
Train do	69,164
Car do	692,485

The cost of running the trains was $1.14 per mile per train.
The cost of working per mile of railway was $493.07.

The stores on hand are :—

General stores including fuel	$11,028 06
The earnings of the first two months of the current year were	45,246 36

WINDSOR BRANCH RAILWAY.

The Government resumed possession of this Railway on the 1st December 1879, dispossessing the Western Counties Railway Company which had operated it for some years prior to that date, and at the same time entered into an agreement for the operation of the road with the Windsor and Annapolis Railway Company terminable upon one month's notice from either party. The Company are allowed to retain two-thirds of the gross earnings for the operation of the road, the Government undertaking the maintenance of way and works. The track has been maintained in an efficient condition and the bridges and other structures have received the necessary repairs. Considerable labor has been expended upon the station buildings which, under the Western Counties Railway Co., were allowed to fall into bad condition and will still require a good deal of attention to put them in a satisfactory state. This will be done during the current year, and the new station building at Windsor commenced some time ago will also be finished within the same period at the charge of maintenance account.

For the better assurance of correctness in the accounts, the Accountant, visits the company's offices monthly to check the receipts, returns, etc.

The gross receipts as per returns were $42,035.91, of which the Government received one third $14,011,97, which was promptly paid by the company at the end of each month.

The maintenance of way has amounted to $4,526 99.

The resident Engineer of the Intercolonial Railway has the supervision of this work and directs the repairs, but the duties of the road masters and other employees are confined exclusively to this road.

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

COLLINGWOOD SCHREIBER,
Chief Engineer of Government Railways in Operation.

INTERCOLONIAL RAILWAY.

OFFICE OF THE CHIEF SUPERINTENDENT,
MONCTON, N. B., 1st Oct. 1880.

COLLINGWOOD SCHREIBER Esq.,
Chief Engineer,
Government Railways in operation, Ottawa.

SIR,—I have the honor to submit the following report upon the working of the Intercolonial Railway for the fiscal year which ended June 30th 1880.

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 Way and Works (Abstract No. 3.)
" 6. Station Expenses (" " 4.)
" 7. General Charges (" " 5.)
" 8. General Stores Account.
" 9. General Balance.
" 10. Comparative Statement of Averages.

Until August 13th 1879, the length of Railway worked was the same as in the previous year, 714 miles.

On the above date the line extending from Rivière-du-Loup to Hadlow, which had been purchased by the Government from the Grand Trunk Railway Company, was transferred to the Department of Railways and Canals, and became part of the Intercolonial system.

In connection with this purchase was acquired the right of running trains between Hadlow and Point Levis, about one mile, and of using the stations of the Grand Trunk Railway, at Point Levis and at Quebec. The Intercolonial Railway was thus extended to Quebec on the 13th of August 1879, the length of Railway worked being increased to 840 miles.

Capital Account.

The total cost of the road and equipment was, on 30th June 1879.$36,317,705.04
The additions during the year were as follows :—

For the Halifax Extension		$	7,164 02
" the Deep Water Terminus, St. John			94,545 65
" the completion of the Intercolonial			23,931 67
" applying Nut Locks to the track			32,797 83
" the purchase of the Rivière-du-Loup Line			1,500,000 00
" Repairs and Improvements	do		369,779 96
" Rolling Stock	do		19,795 47
			2,048,014 60
Making the total cost to June 30th 1880		$	38,365,719 64

The Rivière-du-Loup line having become a part of the Intercolonial Railway a large expenditure was necessary to put it in good working order, for this purpose work was at once commenced and vigorously prosecuted.

The track is being entirely relaid with steel rails, this work alone having cost to June 30th, $308,000.00.

One hundred and fifty-four thousand eight hundred and sixty one (154.861) new sleeper have been put into the track.

Sheds and fences have been erected, at the most exposed places to protect the track from accumulations of snow.

At Chaudiere Junction, where the connection is made with the trains of the Grand Trunk Railway, a large building has been erected for a station house and refreshment room. A refreshment room for immigrants has also been erected at the same place.

As the exchange of freight between the two railways takes place here a large freight shed containing the necessary offices was erected, and one and a half miles of sidings were laid.

At Rivière-du-Loup, the engine house has been enlarged, as it was found to be too small to accommodate the additional engines required to work the Rivière-du-Loup line. The machinery for the repair of engines has been removed from this building into the one which was used by the Grand Trunk as an engine house, which latter building has been converted into a machine shop.

On the other parts of the Rivière-du-Loup line extensive repairs and improvements were made to buildings, and five new station houses of the first class, and two of the second class, were erected. The sidings in many places were lengthened, and new ones laid. A considerable sum has also been expended in improving the supply of water for locomotives. The masonry of bridges and culverts has been repaired,

the iron work painted, and all decayed timbers replaced with sound ones. The whole track is being thoroughly ballasted. This work is about half completed, it is being carried forward with energy by the contractor, and will, it is hoped, be finished this season.

The work of applying the patent nut lock to the track between Rivière-du-Loup and Halifax and St. John has been completed by the Contractors on a considerable portion of the line, it has been in use about a year, and the Resident Engineer reports that its utility is established.

A large amount of work was done at the Deep Water Terminus St. John. The Contractor for the wharves, Mr. Kennedy, completed his contract in a very satisfactory manner. A considerable portion of the sidings required have been laid, and there are now ample facilities for doing a large lumber shipping business.

At Halifax a car shop has been erected to take the place of the one torn down at the time of the extension of the railway into Halifax.

The amount for completion of the Intercolonial consists of payments for work done under the Commissioners in previous years.

Revenue Account.

In my last annual report I had to record a decrease in the gross earnings of the road, chiefly due to the great depression then prevailing in business. During the past year, however, there has been a general and continued revival of business, and the gross earnings of the railway have in consequence increased.

The gross earnings were.....	$1,506,298 48
The gross earnings for the previous year were.....	1,294,099 69
Shewing a difference of.....	212,198 79

The earnings per mile of railway compare with the previous year as follows:—

Earnings per mile of railway 1879-80.....	$1,825 81
da do do 1878-79.....	1,812 46
Shewing an increase per mile of.....	13 35

The following is a comparative statement of a few of the chief articles of freight, shewing the quantity carried in this, and in the previous year:—

	1878-79	1879-80	Increase.	Decrease.
Barrels of flour.....	630,329	525,248	.....	105,181
Bushels of grain.....	302,921	524,021	21,100	.....
Lumber in feet.....	55,626,096	55,462,654	.....	163,442
Head of live stock.....	47,584	70,990	23,406	.....
All other good in tons.....	366,657	422,256	55,599	.....

The transport of cattle from the Upper Provinces to Halifax for shipment to Great Britain was continued last winter, and the owners of the cattle all expressed their satisfaction with the manner in which the work was conducted, and with the arrangements made along the line and at Halifax for the feeding, watering, and resting of the animals.

This through cattle traffic has had the effect of directing the attention of farmers in the Maritime Provinces to the raising and feeding of cattle for export. Already a considerable number of cattle, chiefly from the neighbourhood of Amherst and Sackville have been shipped at Quebec and Halifax for England; and as stock raising is a business for which the Maritime Provinces are well adapted, the export of cattle

will doubtless soon become an important branch of trade. The number of cattle and sheep transported by the Railway and shipped at Halifax from December 29th 1879 to May 11th 1880 was as follows :—

	Cattle.	Sheep.
From the Upper Provinces	3,625	3,195
From Nova Scotia and New Brunswick	1,253	99
Total	4,878	3,294

The improvement in the price of lumber has produced a revival in that industry which has been beneficially felt by the Railway.

The low rates of freight granted for coal, to the Upper Provinces, have had the effect of inducing the transport of considerable quantities to Quebec, Montreal and other cities by rail from the Spring Hill, and the Pictou mines. A considerable traffic has been developed in the transport of coal to Halifax for Ocean steamers, facilities having been provided on our wharves there, for coaling vessels of the largest size.

The prospects of a continued increase in traffic are good, the receipts for July, August and September of the current year being over $80,000.00 in excess of the same period last year.

Expenditure.

The changes referred to in my report of last year, as then being made for the purpose of reducing the expenses, were completed soon after, and the result expected was attained; the expenditure being greatly reduced without the efficiency of the service being in the least impaired.

The working expenses and receipts compare as follows :

The total cost of working was	$1,603,429 71
" receipts were	1,506,298 48
The total loss on the year's operation was	97,131 23
The Engine mileage, compared with last year was	
1879-80	3,076,342 miles.
1878-79	2,531,791 "
Increase	544,551 miles.
The car mileage as compared with last year was:	
1879-80	28,254,065 miles.
1878-79	21,855,441 "
Increase	6,398,624 miles.
The working expenses per mile of railway were, in 1878-79	$2,815 38
And in 1879-80	1,943 52
Showing a decrease per mile of	871 83
The working expenses per train mile were in 1878-79	95.20 cents.
And in 1879-80	63.23 "

There were two hundred and twenty thousand two hundred and eighty six (220,286) new sleepers put into the track during the year.

During the working season a considerable amount of ballasting was done on various parts of the line.

Upwards of $20,000.00 were expended in building and repairing fences, the whole of which was charged to the working expenses.

A considerable portion of the new fence was erected on a part of the line which had not previously been fenced, because at the time the railway was built, it was not deemed necessary or expedient to erect fences, when the line passed through forests at a distance from settlements. This is now to some extent changed by the progress made in clearing and settling the lands so that fences have become necessary.

Many of the snow sheds and fences, having been built for some years required and received heavy repairs. A number of new snow fences were also erected.

A large number of new sidings were laid to accommodate the traffic.

New iron turn-tables were placed at Truro, Moncton, Newcastle, Campbelltown, and Ste. Flavie, instead of the wooden ones, previously in use at those places.

The masonry of bridges and culverts has received large repairs and some of these structures have been entirely rebuilt.

The wooden superstructure of a number of bridges and culverts and overhead bridges has been removed and iron substituted.

The necessary repairs and additions were made to the wharves at different places. At Pointe du Chêne these were unusually costly, as a severe storm in November, 1879, destroyed a large portion of the railway wharves at that place.

The buildings on all parts of the line received repairs, some of them very extensive. Additions were also made to several of the station houses, freight sheds and engine houses. New and improved coal sheds with trestle approaches were completed at Truro and Moncton. The dining room at Amherst, which was torn down some years ago, was rebuilt, thus supplying a want felt by travellers. The station house, and all other railway buildings at Rimouski, which had been erected a few years ago, at a cost of $9,600.00, and which were in good repair, were burned on the 27th November, 1879. A substantial and commodious building for a passenger and freight station, containing dwelling apartments for the Station Master has been erected. The coal shed, and turn-table have also been rebuilt. The tank-house and tank at Polly Bog, which was also destroyed by fire, has been rebuilt and fitted with a steam pump.

Great care has been exercised to keep the track, the bridges, buildings and other structures in a thorough state of repair and efficiency, and they were never in better condition than at the present time.

The rolling stock was subjected during the year to a more than ordinary strain in consequence of the increased length of the road, the additional engines and cars required for the Rivière-du-Loup line not having been received. The rolling stock has, however, been kept in good repair, and is in a state of efficiency. Three new locomotives were purchased during the year to maintain the stock, and the cost was included in the working expenses. The experience of the last few years having established the fact that a number of the locomotives in use on the road were not powerful enough to work economically the through freight traffic, four of these engines were sold to the Canadian Pacific Railway, and in their stead four new and more powerful freight engines were purchased. The difference between the amount received for those sold, and the cost of the new ones, about ten thousand dollars, is also included in the working expenses. The cars of all kinds received the necessary repairs, and a number of passenger cars, and of freight cars were rebuilt during the year.

Stores Account.

The stores account compares as follows with the previous year:

The value of stores purchased in 1879-80 was.....	$472,302 50
do do do 1878-79 was.....	415,985 87
Difference.....	$56,316 63

The stock of stores on hand compare as follows with the previous year.

	1878-79	1879-80
Ordinary stores	$106,000 76	$106,821 12
Steel and iron rails &c	100,911 34	48,528 41
Old materials	37,716 00	8,539 50
	$243,758 10	$163,889 03

The weather last winter was not so favorable to the working of the railway as that of the previous winter.

There were several severe snow storms during which a number of engines, and snow ploughs were considerably damaged in clearing the track.

The changes of temperature were frequent, sudden, and extreme, and were therefore very trying to wheels, axles and tyres. The old iron track of the Rivière-du-Loup line was also very trying to the rolling stock, and many wheels, axles and tyres broke in consequence.

I have pleasure in stating, that, in general, the officers and employees performed their duties during the year in a satisfactory manner.

It is hoped that the result of the year's operations here presented will be considered satisfactory, and it is confidently believed that the operations of the current year and of future years will be even more favorable financially.

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

D. POTTINGER,
Chief Superintendent.

No. 1.—INTERCOLONIAL RAILWAY.

DR. CAPITAL ACCOUNT, 30th June, 1880. CR.

1879.		$ cts.	$ cts.	$ cts.	1879.		$ cts.
June 30,...	To Cost of Road and Equipment.....	.....	.....	36,317,705 04	June 30....	By Dominion of Canada..	36,317,705 04
1880.							
June 30....	To Outlay on Halifax Extension.....	7,164 02					
	do Deep Water Terminus, St. John....	94,545 65					
			101,709 67				
	Purchase of the Rivière-du-Loup Branch.....	.....	1,500,000 00				
	Outlay on the Rivière-du-Loup Branch.....	.....	389,575 43				
	do Nut Locks.....	.....	32,797 83				
	Expenditure on completion of Intercolonial Railway between Rivière-du-Loup and Truro, works, permanent way, buildings, right of way, &c.....	.....	23,931 67		1880.		
				2,048,014 60	June 30....	By Dominion of Canada..	2,048,014 60
				38,365,719 64			38,365,719 64

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.-B., 30th June, 1880.

No. 2.—INTERCOLONIAL RAILWAY.

DR. REVENUE ACCOUNT, Year ending 30th June, 1880. CR.

Previous Year.	Expenditure.			Year ending 30th June, 1880.	Previous Year.	Receipts.	Year ending 30th June, 1880.
$ cts.				$ cts.	$ cts.		$ cts.
558,344 19	Locomotive power	Abstract No.	1.....	550,574 41	451,893 29	Passenger traffic	490,338 66
363,006 32	Car expenses	do	2.....	359,304 68	753,490 85	Freight do	915,486 50
778,526 60	Maintenance way and works	do	3.....	385,556 57	88,715 55	Mails and sundries	100,473 32
190,525 92	Station Expenses	do	4.....	192,036 98			
141,680 86	General charges	do	5.....	117,946 71			1,506,298 48
2,032,083 89				1,605,419 35	1,294,099 69		
21,900 67	Less car mileage.....			1,989 64	716,083 53	Balance.....	97,131 23
2,010,183 22				1,603,429 71	2,010,183 22		1,603,429 71

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B., 30th June, 1880.

No. 3.—INTERCOLONIAL RAILWAY.

LOCOMOTIVE POWER.—(Abstract No. 1.)

Previous Year.		Year ending 30th June, 1880.
$ cts.		$ cts.
6,820 89	Mechanical Superintendent's salary, Clerks office and travelling expenses	5,318 73
117,986 48	Wages, Drivers, Firemen and Cleaners	122.152 83
154,269 82	Fuel	177,728 49
27,462 22	Oil, tallow, waste and small stores	28,026 44
192,452 88	Repairs to engines, tenders and engine tools	170,132 76
46,806 94	Water, including pump and tank repairs	23,538 14
12,544 96	Miscellaneous	23,677 02
558,344 19		550,574 41

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B., 30th June, 1880.

No. 4.—INTERCOLONIAL RAILWAY.

Car Expenses.—(Abstract No. 2.)

Year ending 30th June, 1880.		Previous Year.
$ cts.		$ cts.
70,957 85	Repairs to passenger cars	55,276 58
26,946 04	Repairs to postal, express and baggage cars	16,412 21
107,553 32	Repairs to freight cars and vans	127,681 45
102,218 79	Wages of Conductors, Train Baggage Masters and Brakesmen	113,984 22
13,945 50	Oil and Waste for packing	10,043 79
26,986 57	Small stores and fuel	26,371 02
14,398 25	Miscellaneous	9,535 41
363,006 32		359,304 68

E. and O. E.

THOS. FOOT,
Accountant.

Moncton, N.B., 30th June, 1880.

No. 5.—INTERCOLONIAL RAILWAY.

MAINTENANCE OF WAY AND WORKS.—(Abstract No. 3.)

Previous Year.		Year ending 30th June, 1880.
$ cts.		$ cts.
9,838 91	Engineer's salary, clerks, office and travelling expenses	6,628 40
346,929 17	Wages in repairing roadway, fences and semaphores, including new sidings laid in	230,124 44
186,831 56	Rails and fastenings, including new sidings laid in	7,962 92
49,437 93	Sleepers	18,695 59
72,231 67	Timber, lumber, etc., for repairs to bridges, cattle guards, crossings, snow sheds, fences, etc.	27,367 75
2,549 51	Repairs to wharves	8,265 54
65,583 46	Repairs to buildings and platforms, including extension of and additions to same	45,652 08
18,571 02	Repairs to snow ploughs, flangers and tools	16,249 21
23,225 69	Clearing ice and snow	22,161 47
3,327 68	Miscellaneous	2,449 17
778,526 60		385,556 57

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B., 30th June, 1880.

No. 6.—INTERCOLONIAL RAILWAY.

STATION EXPENSES.—(Abstract (No. 4.)

Previous Year.	——	Year ending 30th June, 1880.
$ cts.		$ cts.
149,660 13	Salaries and wages of Station Masters, Agents, Clerks, Telegraph Operators, Station Baggage Masters, Yard Masters, Switchmen, Watchmen and Laborers	148,761 05
40,865 79	Fuel, oil, light, stationery, tickets and other incidental expenses	43,275 93
	Miscellaneous	
190,525 92		192,036 98

E. and O. E.

THOS. FOOT,
Accountant

MONCTON, N.B.. 30th June, 1880.

No. 7.—INTERCOLONIAL RAILWAY.

General Charges.—(Abstract No. 5.)

Previous Year.	——	Year ending 30th June, 1880.
$ cts.		$ cts.
55,217 30	Chief Superintendent, District Superintendents, Train Despatchers, and the General Freight and Passenger Agent, Clerks, office and travelling expenses	39,366 89
25,181 98	Accounting Department, salaries of the Accountant, Traffic, Auditor, Paymaster and Cashier, Clerks, office and travelling expenses	21,017 58
8,460 67	Damages to men, animals and goods	3,075 45
17,722 26	Ferry service	24,251 39
2,536 15	Telegraph expenses (not including pay to operators)	2,448 01
22,623 31	Miscellaneous, printing, advertising, etc.	20,026 00
9,940 19	Agency expenses	7,761 39
141,680 86		117,946 71

E. and O. E.

THOS FOOT,
Accountant.

Moncton, N.B., 30th June, 1880.

No. 8.—INTERCOLONIAL RAILWAY.

DR. GENERAL STORES ACCOUNT, Year ending 30th June, 1880. CR.

1879.		$ cts.		1880.		$ cts.	$ cts.
June 30....	To Balance	.....	243,758 10	June 30....	By Issues during year.....	685,718 77	
					Old material sold	97,618 70	783,367 47
1880.							
June 30....	Purchase during year.....	472,302 50			Balance—		
	Charges from other Departments...	220,434 64			Ordinary stores, including fuel..	106,821 12	
	Pay Rolls.....	10,761 26			Iron and steel rails, &c.....	48,528 41	
					Old material for sale.....	8,539 50	
			703,498 40				163,889 03
			$947,256 50				$947,256 50

E. and O. E.

(Signed,) THOS. FOOT,
Accountant.

MONCTON, N. B., 30th June, 1880.

No. 9.—INTERCOLONIAL RAILWAY.

DR. GENERAL BALANCE, 30th June 1880. CR.

	$ cts.	$ cts.
Cash		18,068 83
General Stores		
Ordinary Stores, including Fuel		
Old Rails		
Old Material		163,889 03
Stations		42,829 01
Spring Hill and Parrsboro Railway		3,566 76
Western Counties Railway, General Account	17,653 25	
do Traffic Account	903 15	
		18,561 40
Cape Breton Railway		2,203 43
Windsor Branch Railway		553 43
Windsor and Annapolis Railway	7,413 80	
do Punchard, Clarke & Co	7,652 34	
		15,066 14
St. Martins and Upham Railway		4,107 39
Elgin Branch Railway		726 10
Kent Northern Railway		57 00
Canada Pacific Railway		845 37
Great Western Railway		23 00
Windsor and Annapolis Railway (new account)		1,274 76
Vale Coal Company		17,067 19
Spring Hill Coal Co		2,194 41
Acadia Coal Co		5,956 52
Intercolonial Coal Co		60 00
Albion Mines Coal Co		200 00
Post Office Department		24,214 41
Intercolonial Express Co		1,738 33
Rents account		3,103 09
Suspense Account		4,738 83
Steel Company of Canada		24,717 41
Militia Department		1,492 15
Pullman Car Co		895 88
Department of Agriculture		9,134 63
Bills receivable		3,400 00
Colbrook Mills		1,967 41
Department of Marine and Fisheries		50 64
Carried forward		374,390 05

	$ cts.	$ cts.
Dominion Account		342,992 14
Accident Insurance		9,461 74
Chatham Branch Railway		1,211 47
Grand Trunk Railway, General Account	4,063 58	
do Traffic Account	14,877 49	
		18,941 07
Albert Railway		374 91
Prince Edward Island Railway		7 56
Prince Edward Island Steam Navigation Co		53 63
Unpaid Account		11,374 00
Carried forward		384,416 52

No. 9.—INTERCOLONIAL RAILWAY.

DR. GENERAL BALANCE, 30th June, 1880.—*Concluded.* CR.

	$ cts.	$ cts.		$ cts.	$ cts.
Brought forward		374,390 05	Brought forward		384,416 52
Nova Scotia Forge Co		439 69			
Steamer City of St. John		1,277 76			
Halifax Rolling Mills		17 86			
Dorchester Penitentiary		129 54			
Western Union Telegraph Co		1,398 00			
Individual Accounts		8,481 07			
		$384,416 52			$384,416 52

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.-B., 30th June, 1880.

No. 10.—INTERCOLONIAL RAILWAY.

COMPARATIVE STATEMENT of Averages, Year ending 30th June, 1880.

	1880.	1879.
Mileage of Railway open	825	714
Engine Mileage	3,076,342	2,531,791
Train do	2,535,654	2,111,426
Car do	28,254,065	21,855,441
	$ Cts.	$ Cts.
Receipts per Engine mile	48 96	51 11
do mile of Railway	1,825 81	1 812 46
	Cents.	Cents.
Percentage of passenger earnings to gross receipts	32·55	34·92
do freight do do	60·78	58·22
do other do do	6·67	6·86
Expenses per engine mile—		
Drivers', Firemen's and Cleaners' wages	3·97	4·66
Fuel	5·78	6·09
Oil, tallow, waste and small stores	91	1·08
Repairs to Engines	5·53	7·60
Water and tank repairs	77	1·85
Miscellaneous	77	50
Total	17·73	21·78
Mechanical Superintendent's salary, office and travelling expenses	17	27
	17·90	22·05
Locomotive power per engine mile	17·90	22 05
Car expenses do	11·68	14·34
Maintenance of way and works do	12·52	30·75
Station expenses do	6·24	7·53
General charges do	3 83	5·59
	52·18	80·26
Car mileage	06	86
Total per engine mile	52·12	79·40
Locomotive power, per train mile	21·71	26·44
Car expenses do	14·17	17·19
Maintenance of way and works do	15·21	36·88
Station expenses do	7·57	9·02
General charges do	4 65	6·71
	63·31	96·24
Car mileage	08	1·04
Total per train mile	63·39	95·20
Working expenses per mile of railway	$1,943 55	$2,815·38

E. and O. E.

THOS. FOOT,
Accountant.

MONCTON, N.B., 30th June, 1880.

INTERCOLONIAL RAILWAY.

RETURN of Accidents, &c., from 1st July, 1879, to 30th June, 1880.

Date.	Place.	Persons injured.	Passengers or employés.	Particulars.
1879.				
July, 3...	Miller Siding.....	W. Lawrence	Employé.....	Coupling cars; badly crushed.
do 4...	Two miles east of Hampton	....	.....	Ran into and smashed a hand car.
do 8...	Petite Roche.....	Alex. Taylor	Employé.....	Fell from top of first class car; collar bone broken and head cut.
do 12...	Moncton,.....	Crossman (child).....	....	Attempted to cross track and was run over. Leg crushed and was afterwards amputated.
do 14...	One mile east of Hampton	Hugh Doherty	Neither.....	Backing on track and run over by train; fatal; verdict—accidental death.
Aug. 14...	Folly Mountain.....	S. Copeland..... ...	Employé.....	Was working in snow shed on ladder which was knocked down by train; badly hurt.
do 20...	St John	Stephen Brown.....	Neither.....	Fell in attempting to jump on train in motion; leg run over and afterwards amputated.
do 27...	Sayabec	A. Sicotte.....	Employé.....	In coupling engine to train got crushed. Hurt internally.
do 30...	Pictou Landing....	Wm. Rogers.	do	Fell in attempting to step on pilot of Engine and was run over; fatal; verdict—accidental death.
Sept. 13...	St. John	James Daley.....	do	Missed coupling engine to cars and was crushed; collar bone broken.
do 16...	Sussex	R. Forest..... ...	do	Hand caught in coupling cars; one finger badly crushed
do 29...	Prince's Lodge.....	Weir (child)..... ...	Neither.....	Sitting on track; struck by train; not serious.
Oct. 20...	One mile east of Polly Bog.....	....	....	Ran into and smashed a hand car.
do 31...	St. John.....	Jno. Kerr	Employé.....	Fell from top of a box car; leg and foot hurt.
Nov. 14...	Riversdale..... ...	Philip Leeper.....	do	In coupling cars had arm crushed.
Dec. 2...	New Glasgow.....	J. Clarke.....	do	In assisting to place tender on track, had two fingers smashed.
do 17...	Londonderry	W. Lawrence.....	do	Fell between two flat cars. Back hurt.
do 18...	Stellarton..... ...	D. McIntosh.....	do	In coupling cars got caught; not serious.
do 25...	Truro	Jno. Blanchard	do	Hand caught in coupling cars; thumb crushed.
do 30...	Shediac	M. Wilcox	do	In coupling cars got caught; privates hurt.
1880.				
Jan. 7...	St. Alexandre	G. Durmot.....	do	Found on track with head severely hurt; fatal; verdict—accidental.
do 13...	Windsor Junction.	O. McGinnis..... ...	do	Caught between engine and car while coupling and got bruised.
do 14...	L'Islet	....	....	Struck engine No. 161 which was standing front of main line; engines Nos. 161 and 13 both more or less damaged.
do 16...	Halifax.....	Alex. McLean	Employé.....	While on top of a box car head came in contact with a bridge; face bruised.
do 21...	Stellarton..... ...	Ed. Hurley.....	do	In coupling cars got his arm crushed.
do 21...	Apohaqui	H, Burgess...	Neither.	Walking on track was struck by train; hand and foot injured.

INTERCOLONIAL RAILWAY.

RETURN of Accidents, &c., from 1st July, '79, to 30th June, '80.—*Continued.*

Date.	Place.	Persons injured.	Passengers or employés.	Particulars.
1880.				
Jan. 22...	Shubenacadie.....	A. Loasty.....	Employé.....	In coupling cars got his arm bruised.
do 27...	Truro Yard	R. J. Williams.....	do	In coupling car got his chest and ribs crushed.
do 30..	Chaudière.....	Alex. Gordon.....	do	Fell from tank house staging; fa no inquest.
Feb. 2...	Stellarton	L. Cuttle.....	do	In coupling cars got his finger crushed.
do 8...	1½ miles west of Apohaqui.....	Jno. Ahern.....	Neither.....	Driving in sleigh on track, was run into by train; fatal; verdict—accidental; deceased being under the influence of liquor.
do 10...	Smelt Brook.....	Jno. Cameron	Employé.....	Engine left track and went down embankment; fatal; verdict—accidental.
do 11...	Bathurst	W. C. Johnston.....	do	In coupling cars got his finger cut off.
do 24...	Moncton.....	Jas. Scott	do	In coupling cars had ends of two fingers crushed off.
March 1...	Tartague.....	.....	.....	Stuck in snow and was run into by No. 3 train and mail spec. Six cars and Eng. Nos. 108 and 16 damaged.
do 6...	Truro	Philip Haley.....	Employé.....	In coupling cars had his finger crushed.
do 10...	Drummond Siding.	Jno. Akins	do	In coupling cars had his breast crushed.
do 15...	Quispansis.....	S. D. Allington.....	do	While on top of box cars was struck by a bridge; fatal; verdict—accidental.
do 29...	Richmond	J. Cronan	do	In coupling cars had his wrist hurt.
do 31...	DeBert	.....	.....	Engine No. 58 left track in snow storm on Debert Bridge, which was badly damaged.
April 1...	½ mile west of Memramcook.	.....	.....	Snow plough left track causing engines to leave also; both engines Nos 29 and 75 and snow plough considerably damaged,
do 11...	West River	F. D. Archibald	Employé.....	In coupling engine to car had his hand badly crushed.
do 12...	3 miles south of Bathurst.	Jno. Miller.....	Neither.....	Lying on track and run over by train; fatal: verdict—accidental.
do 17...	Richmond.....	Jno. Gilfoy	Employé.....	Fell from top of box car; wrist sprained and two fingers hurt.
do 21...	2 miles east of St. Roch.....	C. Fournier	Neither.....	Walking on track and was struck by train; had his hand bruised.
do 29...	5 miles north of Sayabec	— Michaud.....	Employé.....	Fell off flat car while train was in motion; jaw bone broken and several teeth knocked out.
May 1...	Springhill	P. Collins	do	In coupling engine to cars got his hips hurt.
do 1...	½ mile south of Enfield.....	.....	.....	17 Hopper cars left track; 14 hoppers more or less damaged, also track damaged.
do 3...	New Glasgow.....	F. Mackay	Employé.....	In coupling cars had his finger crushed.

INTERCOLONIAL RAILWAY.

RETURN of Accidents, &c., from 1st July, '79, to 30th June, '80.—*Concluded.*

Date.	Place.	Person injured.	Passengers or employés.	Particulars.
1880.				
May 7...	Painsec	C. Porter	Employé	In coupling engine to cars had his leg cut.
do 5...	Bathurst			When backing into south end of siding was run into by No. 29 train; engines Nos. 68 and 109 slightly damaged.
do 8...	St. Denis	P. Walsh	Employé	In shunting cars had his finger jammed.
do 17...	Aulac	E. Payne	do	In jumping from car to ground sprained his foot.
do 20...	Sussex	J. Purrell	do	In shunting fell between cars and was run over; fatal; verdict—accidental.
do 31...	Moncton	C. Angus	do	In coupling engine to cars got his arm struck.
June 8...	1 mile west of Hadlow	Duesmelt (child)	Neither	While walking on track was struck by train, but only slightly injured.
do 12...	New Castle	Jno. Condon	Employé	In shunting got jammed between box cars; fatal; verdict—accidental.
do 15...	Nappan			Train left track; cause, broken rail; a number of cars more or less damaged.
do 15...	Moncton	C. Angus	Employé	In coupling cars got his thumb and finger jammed.
do 15...	St. Thomas			Ran into 2 cars that had been left on main line by No. 34 train. Cars slightly injured; engine has buffer beam broken.
do 19...	Newcastle	J. McBeam	Employé	In coupling cars got caught between the buffer of a hopper car and had his leg injured.
do 23...	New Glasgow	Jos. Oscar	Neither	In attempting to cross the iron bridge at New Glasgow, was struck by the engine; fatal; verdict—accidental.

INTERCOLONIAL RAILWAY.

MECHANICAL SUPERINTENDENT'S OFFICE,
MONCTON, N. B. Sept. 15th, 1880.

DEAR SIR,—I beg to submit for your information the following statements shewing the operations of the Mechanical Department for the year ending June 30th 1880.

A. Statement shewing the number of Locomotives and the various classes of cars and the condition which they are in at present.

B. Statement showing the locomotive and car mileage and the average number 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 purchased from the Danforth Locomotive Works at a cost of twenty-eight thousand five hundred and fifty-three $\frac{43}{100}$ dollars.

Four engines were sold to the Canadian Pacific Railway for twenty-eight thousand dollars.

Four new engines were purchased from the Hinckley Locomotive Works at a cost of thirty-seven thousand eight hundred and seventy $\frac{87}{100}$ dollars, the difference between these two amounts being charged to working expenses $37,870 $\frac{87}{100}$ dollars.

Thirty-six coal-hoppers were broken up and taken off the register and were replaced by eighteen flat cars.

Two postal and smoking cars were also broken up and two second class and baggage cars were built instead.

Two postal and smoking cars were purchased from James Crossen on account of the River du Loup branch to which were given the numbers of the cars broken up.

The rolling stock generally is in good condition.

I am, Sir,
Your obedient servant,

H. A. WHITNEY,
Mechanical Superintendent.

D. POTTINGER, Esquire,
Chief Superintendent I. C. Railway,

A.—INTERCOLONIAL RAILWAY.

STATEMENT shewing the number of Locomotives and the various classes of Cars on the 1st of July, 1879, and on the 30th June, 1880.

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.	Hoppers.	Total.
On hand, 1st July, 1879, serviceable.	108	46	34	15	18	36	1,059	66	34	1,022	886	3,216
do de condemned.	.....	.....	.....	.....	.....	.....	3	.....	.....	6	14	23
Total Stock, 1st July, 1879. ...	108	46	34	15	18	36	1,062	66	34	1,028	900	3,239
Sold to the Canada Pacific Railway.	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Condemned 2 postal and smoking...	.....	.....	.....	*2	.....	.....	.....	.....	.....	.....	.....	.....
Built two 2nd class instead at the cost of working expenses.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Built by Jas. Crossen at the cost of capital	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
Condemned 36 Hoppers, and	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*36	.....
Built, at the cost of working expenses 18 flats replace them.	.....	.....	.....	.....	.....	... ..	.....	.....	.....	18	.....	.....
Purchased from Hinckley Locomotive Works charged to revenue.	4	.....	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purchased from Danforth Locomotive Works charged to revenue.	3	... .	.....	.....	.....	.....	.....	.....	.....	... .	....	.....
Total Stock, 30th June, 1880..	111	46	36	15	18	36	1,062	66	34	1,046	864	3,223
Condemned cars in hand, 1st July, 1879.	.....	.....	.....	.....	.....	.....	3	.....	.....	6	14	23
Condemned during the year.....	...	.....	.....	.....	.....	1	11	2	3	19	22	58
	.....	...	.....	.....	.....	1	14	2	3	25	36	81
Rebuilt during the year	.....	.....	....	.....	.....	.....	2	.... .	2	21	Replaced by 18flats	61
Condemned, 30th June, 1880.....	.....	.....	.....	.....	.....	1	12	2	1	4	.....	20
Add serviceable and repairing...	.....	46	36	15	18	35	1,050	64	33	1,042	864	3,203
Total Stock, 1st July, 1879.....	.....	46	36	15	18	36	1,062	66	34	1,046	864	3,223

* " Deduct."

B.—INTERCOLONIAL RAILWAY.

STATEMENT of Locomotive and Car Mileage for Year ending 30th June, 1880.

Months.	Locomotive Mileage.		Car Mileage.							Average.		Snow Ploughs and Flangers.
	Passenger.	Freight.	1st Class.	2nd Class.	Express Postal and Baggage.	Box, Stock and Hay.	Platform.	Hoppers.	Total.	Passenger.	Freight.	
1879—July	61,095	98,257	154,050	100,276	102,213	1,020,331	266,451	154,809	1,798,130	5·83	14·67	.....
August	65,165	102,802	181,819	108,059	107,569	1,207,480	269,105	72,910	1,946,942	6·09	15·08	160
September	64,528	125,992	187,412	111,098	125,794	1,325,324	382,805	186,090	2,318,523	6·58	15·03	.....
October	66,711	146,257	181,691	117,263	126,259	1,599,244	559,034	123,909	2,707,400	6·37	15·60	87
November	64,443	131,506	166,496	118,172	121,504	1,297,899	417,942	136,179	2,258,192	6·32	14·08	1,424
December	63,920	147,416	162,171	110,115	123,130	1,321,564	332,903	247,135	2,297,018	6·19	12·90	6,077
1880—January	65,834	154,514	156,833	95,696	118,170	1,449,415	283,360	217,784	2,321,258	5·61	12·62	13,603
February	58,636	141,025	142,589	81,354	107,698	1,275,910	301,681	169,751	2,078,983	5·81	12·40	11,100
March	67,871	163,776	163,674	97,595	123,345	1,730,652	317,048	167,972	2,600,286	5·80	13·53	12,762
April	64,947	173,168	161,718	115,136	116,524	1,915,889	359,466	256,652	2,925,385	6·05	14·62	3,108
May	63,127	150,233	159,112	116,746	114,684	1,590,842	434,013	205,253	2,620,650	6·18	14·91	512
June	66,985	131,727	192,244	119,331	121,075	1,412,498	364,694	171,456	2,381,298	6·61	14·80	....
Totals	773,262	1,666,673	2,009,809	1,290,841	1,407,965	17,147,048	4,288,502	2,109,900	28,254 065	6·08	14·73	48,833

C.—INTERCOLONIAL RAILWAY.

ABSTRACT of Locomotive Returns for Year ending 30th June, 1880.

Months.	Hours in Steam.	Locomotive Mileage.	Consumption.				Average Consumption per 100 Miles.				
			Tons of Coal.	Pints of Oil.	Lbs. of Waste.	Lbs. of Tallow.	Miles to hour in Steam.	Lbs. of Coal.	Pints of Oil.	Lbs. of Waste.	Lbs. of Tallow.
1879—July	19,814	199,030	4,099	9,226	2,898	5,849	10·04	4,633	4 64	1·45	2·93
August	20,333	212,468	4,075	9,855	2,996	6,215	10.45	4,297	4 63	1·41	2·92
September	21,953	230,600	5,242	11,281	3,218	6,076	10·50	5,091	4·89	1·39	2·63
October	25,812	261,926	6,032	12,824	3,584	6,985	10·14	5,157	4·89	1·36	2·66
November	24,656	247,743	5,948	12,215	3,283	6,347	10·04	5,377	4·93	1·32	2·56
December	26,751	267,427	6,845	13,097	3,306	7,044	9·99	5,733	4·89	1·23	2·63
1880—January	28,628	285,097	7,715	14,954	3,209	7,270	9·95	6,096	5·24	1·12	2·55
February	25,894	253,198	6,699	13,283	3,033	7,329	9 77	5,926	5·24	1·19	2·89
March	30,303	292,479	7,570	14,761	3,448	8,359	9·65	5,797	5 04	1·17	2·85
April	30,720	303,989	6,119	14 756	3,401	8,487	9 89	5,098	4·85	1·11	2 79
May	26,656	271,188	6,247	14,521	3,744	8,578	10 17	5,159	5·35	1·38	3·16
June	24,752	251,197	5,907	15,493	3,827	7,658	10 14	5,267	6·16	1·52	3·04
Total	306,272	3,076,342	73,298	156,276	39,947	86,197	10 04	5,337	5·07	1·29	2·80

D.—INTERCOLONIAL RAILWAY.

STATEMENT of the cost of Locomotive power for each month, from 1st July, 1879, to 30th June, 1880.

Months.	Miles run by Engines.	Drivers and Firemen's Wages.	Fuel.	Oil, Tallow and Waste.	Repairs to Engines, Tenders and Tools.	Water.	Miscellaneous, Engineer houses, Mechanical Staff.	Total.	Average cost per 100 Miles.						
									Wages.	Fuel.	Oil, Tallow and Waste.	Repairs.	Water.	Miscellaneous.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts.
1879—July	199,030	8,114 54	9,221 66	2,015 78	15,790 91	1,522 84	1,164 38	37,830 11	4 07	4 63	1 01	7 92	0 76	0 58	18 97
August	212,468	9,190 81	10,181 23	1,953 99	15,608 06	2,042 89	1,600 22	40,777 20	4 32	4 89	0 91	7 38	0 96	0 73	19 19
September	230,600	9,266 53	12,296 05	1,942 99	12,264 97	1,392 36	2,217 86	39,380 76	4 01	5 33	0 84	5 33	0 61	0 95	17 07
October	261,926	10,120 83	15,053 83	2,253 62	13,293 94	2,636 45	3,180 01	46,538 68	3 86	5 74	0 87	5 08	1 00	1 21	17 76
November	247,427	9,747 83	15,116 78	2,110 44	12,188 10	964 71	2,991 94	43,119 80	3 90	6 10	0 86	4 90	0 41	1 24	17 41
December	267,743	10,740 64	18,089 58	2,349 60	13,254 11	2,314 10	1,794 77	48,542 80	4 01	6 76	0 88	4 95	0 88	0 68	18 16
1880—January	285,097	11,612 73	20,847 58	2,762 52	15,596 10	2,435 79	2,691 93	55,916 65	4 07	7 31	0 97	5 47	0 86	0 94	19 62
February	253,198	10,569 05	18,041 60	2,482 09	16,534 97	2,140 75	3,931 21	53,699 67	4 17	7 12	0 98	6 53	0 84	1 56	21 20
March	292,479	12,033 24	20,376 54	2,883 84	19,311 22	2,635 92	2,792 57	60,033 33	4 12	6 96	0 99	6 60	0 90	0 95	20 52
April	303,989	12,013 75	16,393 83	2,824 42	15,565 55	1,750 84	2,799 61	51,348 00	3 95	5 39	0 91	5 12	0 59	0 96	16 89
May	271,188	10,455 96	13,710 67	2,723 28	15,132 50	1,265 76	2,405 84	45,694 01	3 86	5 06	1 00	5 59	0 46	0 88	16 85
June	251,197	8,286 92	8,199 14	1,723 87	5,592 33	2,435 73	1,425 41	27,663 40	3 29	3 25	0 69	2 23	0 97	0 57	11 00
Total	3,076,342	122,152 83	177,728 49	28,026 44	170,132 76	23,538 14	28,995 75	550,574 41	3 98	5 77	0 91	5 53	0 76	0 94	17 89

E.—INTERCOLONIAL RAILWAY.

General Expenses of the Mechanical Department, for the year ending 30th June, 1880.

The miles run by trains were	2,535,654
do engines were	3,076,342
do cars were	28,254,065
do snow ploughs were	48,833
	$ cts.
The cost of locomotive power	550,574 41
do repairs to cars	209,907 78
Oil and waste for packing	10,043 79
Repairs to passenger cars	55,276 58
" postal, express and baggage cars	16,412 21
" freight cars and vans	127,681 45
The cost of locomotive power per 100 miles run by train was	21 71
do do do engines	17 89
do do do cars	1 94
The cost of repairs to cars per 100 miles by train	8 27
do do do engines	6 82
do do do cars	0 74
The cost of oil and waste for packing per 100 miles by train	0 39
do do do engines	0 32
do do do cars	0 03
The cost of repairs to passenger cars per 100 miles run by them	1 67
do postal, express and baggage do	1 16
do freight cars and vans do	0 54

ENGINEER'S OFFICE,
MONCTON, N. B. August 1st, 1880.

SIR,—I have the honor to submit my report of the working of the Engineering Department for the year ending 30th June, 1880.

TRACK.

That portion of the Grand Trunk Railway between Hadlow and Rivière-du-Loup (125 miles) was transferred to the Department of Railways and Canals, on the 13th of August 1879, increasing the length of main line and branches from 714 to 839 miles.

This piece of road between Chaudière and Rivière-du-Loup will be referred to hereafter in my report as the Rivière-du-Loup Branch.

The track of it with the exception of 3 miles was laid with very badly worn iron rails of various sections.

Sixteen miles were relaid with steel rails last November, and the balance during the last two months, so that now of the 839 miles of main line and branches 815 are laid with steel rails, 13 miles of iron still remaining on the Pictou and 11 on the Shediac. It is proposed to relay 5 miles of the latter with steel, in the current year.

The work of replacing the iron fish plates and scabbards, referred to in my report of last year, have been completed. The joints and fastenings are now uniform throughout the whole line.

The nut locks have been applied on the main line between Rivière-du-Loup and Halifax and St. John. They are also being applied to the new track of the Rivière-du-Loup Branch. These locks have now been in use about a year and their utility is established beyond question.

SLEEPERS.

Exclusive of the Rivière-du-Loup Branch 220,286 sleepers were renewed against 309,094 last year and 156,742 the year previous.

154,861 were renewed on the Rivière-du-Loup Branch.

The greater portion of sleepers used the past two years have been Princess pine, tamarac, and cedar.

BALLASTING.

A contract was let for the ballasting of the Rivière-du-Loup Branch on the 19th of April last to M. J. Hogan, Esq., of Quebec. The work has been vigorously pushed forward, already about one half is completed. When the ballasting is completed the Rivière-du-Loup Branch will be equal to any part of the line between Halifax and Rivière-du-Loup. Ballasting is being done on old parts of the line.

During the year trains have been working on Eastern, Western and Northen Division No. 1.

SIDINGS.

Additional siding accommodation has been provided to the extent of 36,082 feet. On account of the large increase in traffic, the siding accommodation will have to be very considerably increased at many points of the line in the current year.

The work of laying about a mile is now in hand at Richmond.

FENCING AND SNOW SHEDS.

Exclusive of the Rivière-du-Loup Branch $22,181 has been expended in the renewal of fences ; a large amount has been expended in the repairs of fences on the Rivière-du-Loup Branch.

About a mile of the snow-sheds requiring renewal on the Folly Mountain near Londonderry have been torn down and a high board fence erected to protect the cuttings which they covered.

Additional land was purchased and fences placed 100 feet from the track. This plan was tried last year to a limited extent and proved a success.

1,500 feet of new snow shed and 3½ miles of snow fences were erected on Rivière-du-Loup Branch.

Turntables.

Wood turntables at Truro, Moncton, Newcastle, Campbellton, Ste. Flavie and Hadlow have been replaced by cast iron tables manufactured by William Hazlehurst, of St. John.

A wooden turntable has been erected at Rimouski to replace one destroyed by fire.

2 iron tables suitable for turning cars have been provided for the Deep Water Wharf at St. John.

Wharves.

A new pile wharf to accommodate two large steamers is in course of erection at Halifax.

An improved coal drop to facilitate the coaling of large steamers was erected on Richmond wharf last winter.

The old wharf at Pictou Landing received a thorough overhauling.

The wharf at Dorchester has received extensive repairs.

In November 1879 a heavy storm swept away a large portion of the top of Point du Chêne wharf.

Necessary repairs have been made at a large outlay.

The wharf at Campbellton has received extensive repairs.

At Rimouski, wharf dock was repaired, and a new light-house erected.

Buildings and Platforms.

Shed on Richmond wharf was extended 200 feet by 34 feet, to provide accommodation for cattle intended for export, and new cattle pens 200 feet long, with yards and platform in front completed.

Iron ventilators and smoke stacks of Engine House Richmond replaced by new ones.

Car shop 75 feet by 45 feet erected at Richmond.

Tank house at Polly Bog destroyed by fire, rebuilt and furnished with steam pump, etc.

Roof of Brookfield station reshingled.

At Truro, freight shed extended 75 feet by 30 feet. Brick engine house at Truro enlarged to accommodate 10 additional engines, and wing built on for boiler of heating apparatus.

A brick building 50 feet by 20 feet was erected and is used as mechanical store, offices, and oil house.

High level coal shed with trestle approach referred to in report of last year, completed. With this new style of shed the cost of handling has been largely reduced.

Building formerly used as a coal shed moved and converted into a snow-plough shed.

New iron smoke stacks provided for engine houses at Stellarton and at Pictou Landing.

At Belmont a loading platform and new cattle pens provided.

At Wentworth, station, and agent's dwelling apartments repaired.

At West Chester, a freight house 30 x 25 was erected.

At Maccan, station enlarged and thoroughly overhauled. Old freight shed converted into an office for the agent, and a new one 30 x 25 feet erected.

At Amherst a dining saloon erected at a cost of about $3,000.

At Aulac, station enlarged and thoroughly overhauled, double boarded, clapboarded and painted.

At Sackville, station overhauled and painted.

At Moncton, freight house platform, extended 100 feet. Brick engine house enlarged to provide 10 additional stalls.

High level coal shed 200 feet by 30 feet with trestle approach similar to the one at Truro, completed.

At Salisbury, boarding platform for lumber 184 by 27 feet rebuilt.

At Petitcodiac, tank house moved and repaired. Freight house moved across the track to same side as station and put in through repair, old platform removed and new one built.

At Anagance, platform repaired and extended.

At Sussex, a shed 55 feet by 55 feet for storage of manganese was erected.

At Apohaqui, platform removed.

At Rothesay, station enlarged, thorougly overhauled, repaired and painted, platform removed and extended.

At St. John, station platforms repaired, roof of freight house repaired at a cost of $500.00

At Berry's Mills, station repaired and painted.

At Birch Ridge, lumber platform erected.

At Barnaby River, interior of station re-arranged, re-plastered and thoroughly overhauled.

At Newcastle, floor of engine house removed, interior of station painted and roof repaired.

At Bartibogue, station repaired.

At Red Pine, station repaired.

At Bathurst, station repaired.

At Petite Roche, station repaired.

At Jacquet River, station repaired.

At Campbellton, brick engine house enlarged to accommodate 5 more engines at an expense of $6,000.00. Erected freight shed 40 x 35 on Campbellton wharf.

At Metapedia, station thorougly overhauled, inside and out and painted, platform lengthened.

At Millstream, built sitting room out of part of freight shed, and painted inside of station.

At Assametquagan, rearranged interior of station, fitted up additional rooms for station agent.

At Causapscal, repaired station and painted inside.

At Cedar Hill, built new freight house.

At Sayabec, repaired station.

At St. Octave, put up new doors and painted station building and lengthened platform.

At Ste. Flavie, put new floor in station, agent's office, and lengthened platform.

At Rimouski, on the 27th November last, the station building, tank house, wood shed, turntable and engine house were destroyed by fire. The station has been replaced by a solid timber brick cased structure which is much better adapted for the business than the old one. A new platform and coal shed have also been erected. The water supply having been found insufficient for the requirements of the traffic, a gravitation supply, with a water crane was put in, west of the station at a place where water was abundant.

This has rendered the tank house unnecessary.

At Bic, station was repaired and painted.

At Trois Pistoles, platform was repaired, and some slight alterations were made in agent's apartments. Some painting and whitewashing was done to station.

At Isle Verte, built a kitchen and bedroom for agent's use over freight house, and repaired station building.

At Ste. Arsène, fitted up kitchen and bedroms in upper flat of freight room for agent.

At Ste. Eloi, built a small third class station.

At Cacouna, the interior of station painted, two coats.

At Riviere du Loup. Since the acquisition of the Riviere-du-Loup branch the engine house has been enlarged to provide ten additional stalls, and the machinery in it, used in the repairs of locomotives and cars has been removed to the building formerly occupied by the Grand Trunk Railway as an engine house.

This building has been entirely rearranged and fitted up as a repair shop, with three pits and a transfer table. The building used as a wood-shed by the Grand Trunk Railway has been fitted up for a coal and iron store.

A new brick building 70 feet by 34 feet has been erected as a blacksmith shop, for the Mechanical Department.

A part of the building used as a freight shed by the Department was removed to make room for the enlargement of engine house and fitted up as an office, store and blacksmith's shop for the use of Track Department.

The building used as a station by the Department was removed to a site near the repair shop and fitted up as a store and dwelling for store keepers.

A high level coal-shed 300 feet by 30 feet, with trestle approach, is under contract and well advanced.

New stations are under contrac and being erected at :—

Lake Road, 2nd Class.
Ste. Helene, 2nd "
Ste. Denis, 1st Class.
Ste. Pierre, 1st "
Ste. Françoise, 1st Class.
St. Charles, 1st "
Ste. Henri, 1st "

At St. Thomas another storey has been added to the station to provide suitable dwelling apartments for the agent.

Extensive repairs are being made to nearly all old stations and platforms on the Rivière-du-Loup Branch.

At Chaudière. Upon the transfer of the Rivière-du-Loup Branch, this became the Junction station of the Intercolonial and Grand Trunk Railways, and one and a half miles of sidings had to be laid almost immediately. To do this, a large amount of grading had to be done. This work was carried out by contract, by Messrs. Riten and Vetterlain.

A two story combined passenger station and dining saloon has been erected.

A freight shed 300 feet by 30 feet, an immigrant shed of two stories 80 feet by 20 feet, an engine house 60 feet by 25 feet, and an ice house 20 feet by 35 feet have also been erected.

The old Grand Trunk Railway Station was moved across the track and fitted up for two dwellings, which are rented to employees.

At Hadlow, engine house was thoroughly overhauled and roof strengthened, and the old wood-shed was converted into a coal-shed.

Masonry.

On Bedford grade an open drain or culvert of dry masonry was replaced by a wrought iron pipe 15 inches diameter and 2,000 long set in concrete at a cost of $3,000.00. For the past ten years this has been a most expensive structure to maintain.

Three broken down box culverts near Milford have been replaced by 1st class masonry structures. Several more of the same kind are in hand now.

Between Halifax and Truro the seats of 12 beam bridges have been rebuilt to suit them for iron spans, which have replaced wood ones.

A stone foundation was put in for a new track scale at Londonderry.

At Hampton, abutments and piers were built for an iron overhead bridge.
At Quispansis, abutments and piers were built for an overhead bridge.
At Lawlor's Lake, abutments were raised 7 feet to receive an iron span.
At St. John, foundation of track scale was entirely rebuilt.
The abutments were completed for two iron spans of 100 feet each to carry Stanley and Garden Streets across the railway in St. John station grounds.
Restigouche, bridge abutments and piers were thoroughly overhauled and repainted.
A beam culvert near Rimouski washed out was rebuilt.
Many of the structures on all the Divisions have received repairs.
Extensive repairs are in hand on the Rivière-du-Loup Branch.

Iron Bridges.

Between Halifax and Truro 12 spans varying from 17 feet to 24 feet have replaced wooden structures of similar spans.
Two iron overhead bridges of 5 spans each have been erected in place of old wood structures at Hampton and Quispansis.
At Lawlor's Lake, near Coldbrook, an iron span of 66 feet in the clear built of old rails has been erected in place of an old wood structure.
At St. John, two overhead spans of 100 feet each built of old rails with double roadways and sidewalks on either side have been erected to replace two old wood trestle bridges of 30 feet span. These over bridges have all been raised to give the clear headway required by the clause amending the General Railway Act passed in the session of 1879.
Many of the lattice and plate girders bridges have an open floor system; these are gradually being replaced with a close floor system with guard rails on either side. This will obviate the danger of a train going through the bridge in case of a run off.
The new floor system necessitates the raising of girders and building up bridge seats.
All bridges are being carefully looked after and kept well painted.

Water Supplies.

A new water supply has been provided at Elmsdale. The old supply was from a well fed by a swamp near the station, and in dry seasons the water was very bad.
Gravitation supplies have been provided at Sacre Cœur, St. Alexandre, St. Paschal and St. Charles. The supply pipes at these points are 6 inches in diameter connecting with a water crane which stands 5 feet from the main line. By using the large supply pipes and crane tank house, tub and attendant are disposed with and a large saving effected.
At important watering stations where it is not possible to get water by gravitation, steam pnmps are being provided.

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

P. S. ARCHIBALD,
Engineer.

D. Pottinger, Esquire,
Chief Superintendent I. C. Railway,
Moncton.

PRINCE EDWARD ISLAND RAILWAY.

OFFICE OF THE SUPERINTENDENT AND ENGINEER,
CHARLOTTETOWN, 10th July, 1880.

SIR,—I have the honor to submit the following report on the operations of the Prince Edward Island Railway for the year ended 30th June 1880 together with the annual accounts.

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.

The report of the Mechanical Superitendent and Store-keeper is also enclosed.

CAPITAL ACCOUNT.

The total expenditure on Capital Account to 30th June 1880, is $3,466,588.52; the outlay for the fiscal year is $16,539.82 the whole of which has been expended in the completion of the Souris Extension.

This extension has a total length of 8440 feet, and it is provided with a shipping wharf one thousand feet long and seventy-five feet wide at the outer end. A station building, freight shed and engine shed have also been provided, and a warehouse one hundred feet long and forty feet wide has been erected on the end of the wharf, where there is a depth of sixteen feet at low tide.

REVENUE ACCOUNT.

The gross earnings for the year amounted to.....	$113,851 11
And for the previous year.....	125,855 91
Shewing a decrease of.....	$ 12,004 80

In the passenger traffic the decrease was $6,787.22, and in the freight traffic $3,216.48. In mail and sundries there is a decrease of $2000.40 in consequence of a reduction in the grant of the previous year by the Post Office Department for the carriage of the mails.

There were 14,513 fewer passengers carried, the number being 90,533 as against 105,046 in the previous year.

During the year 57,208 tons of freight were conveyed over the road, or 1460 tons less than in the previous year. The low price paid for potatoes and the partial failure of the fisheries account for the falling off in the freight receipts; there is, however, an increase in oats, cordwood, live stock and also in mussel mud as will be seen from the descriptive statement of freight earnings hereto appended.

WORKING EXPENSES.

The cost of operating the railway for the year was.....	$164,640 55
And for the previous year.....	223,313 12
Or a decrease of.....	$ 58,672 57

The working expenses per engine mile run were 55.77 cents as against 77.84 cents for the previous year.

In 1879-80 the engine mileage was	295,190
And in 1878-79	286,886
Or an increase in 1879-80 of	8,304 miles.

The two "Mason-Fairlie" engines ordered in the fall of 1879 have not yet been received although the contract time expired in May last; the delay has caused inconvenience as additional steam power is much needed.

Their cost ($16,351.63) has been charged to working expenses for the year, which increase the outlay on locomotive power by $5,722.06 as compared with the previous year.

Upon the eight tender engines Nos. 11 to 18 inclusive, we have to rely, they being in good condition and capable of hauling a train of from nine to ten loaded freight cars over the heaviest grades.

The nine tank engines are a source of much annoyance as they are frequently under repair and are not reliable even with a light train.

There are fourteen first-class cars, all of which are in good repair; these cars have 33 inch wheels.

The twelve second class cars are in fair order, four of them have 33-inch wheels and the 24-inch wheels on the remaining eight are being replaced with the larger ones as fast as required.

The two postal cars, the paymaster's car and the conductors' vans are in good condition, with the exception of some outside painting required to the latter, which work will soon be carried out.

There are 150 box cars and 100 platform cars; of the former 118 are of eight tons capacity and the balance ten tons, and of the latter forty-three are eight tons and fifty-seven are ten tons capacity.

Five box cars and seven platform cars have been rebuilt during the year, and fourteen platform cars have been furnished with moveable bodies, as the stock of box cars is insufficient for the spring and fall traffic.

These bodies were supplied at an average cost of $55 each and have proved of great service; so soon as the busy season is at an end the bodies are removed.

Maintenance of Way.

Three new sidings were laid during the year and one was lengthened; there are now 110 sidings throughout the line, exclusive of ballast pit tracks, with a total length of 11.70 miles.

During the year 33,634 sleepers were renewed.

The timber work of a number of bridges and cattle guards received extensive repairs, and the masonry of several was pointed with cement.

A considerable sum was expended in repairing the wharves, the chief portion of it being required in consequence of the damage done to the wharves at Georgetown, Summerside and Alberton by a heavy gale in October last.

A large outlay will be required during the coming winter to the wharf at Summerside owing to the ravages of the sea worm.

Necessary repairs have been made to the station buildings throughout the line.

A large amount of fencing has been repaired and new pole fence has been erected in various localities, 16,080 lineal feet of snow fence has been moved from 25 to 30 feet further from the track for the better protection of the road from snow, and the work has proved highly successful in every case.

It is proposed to carry this out to a greater extent this year and to erect some new snow fences in exposed places.

Due attention has been paid to the drainage of the roadbed.

In the removal of snow and ice there was expended the sum of $4,932.69, a large portion of this outlay was incurred in clearing the road after a storm of unusual severity in April last.

In the repairs of snow ploughs and flangers the sum of $1,526.39 was expended thereon.

There are in stock 1,473 tons of steel rails; it may be necessary to draw from this stock for the renewal of some portions of the track where the old iron rails begin to show signs of wear.

Stores.

$60,401.90 were expended in the purchase of supplies during the year, in which sum is included 1,066 tons of steel rails and fastenings.

The following is a statement of the stores on hand at 30th June, 1880:

General stores	$22,450 66
Coal	992 33
Rails and fastenings	47,175 00
Total	$70,617 99
The stock at 30th June, 1879 amounted in value to	$46,415 59

Casualities.

On the 25th October 1879, B. C. Perry, baggageman, was injured while coupling passenger cars, and was off duty for eighteen days.

On the 24th November 1879, D. McKenna, brakesman had his skull injured while coupling flat cars and was laid up for seventeen days, and on the 3rd May 1880 James McDonald, baggageman, had his hand caught between the buffers while coupling and was unable to attend to his duties for three weeks.

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

(Signed) ALEX. MACNAB,
Superintendent and Engineer.

C. Schreiber, Esq.,
Chief Engineer, Government Railways in operation,
Ottawa.

PRINCE EDWARD ISLAND RAILWAY.

DESCRIPTIVE STATEMENT of Freight Earnings for the year ended 30th June, 1880.

Description of Freight.	Quantities.		Tons.		Amount.	
	1879.	1880.	1879.	1880.	1879.	1880.
					$ cts.	$ cts.
Oats..... Bush.	403,741	575,441	7,156	9,787	9,385 45	12,422 64
Wheat and other grain..... "	9,808	5,082	265	132	390 86	197 10
Potatoes and roots..... "	202,461	34,699	6,074	1,038	7,889 34	1,294 98
Flour..... Brls.	28,364	15,963	2,836	1,597	4,219 79	2,419 97
Mackerel..... "	11,988	9,183	1,799	1,378	2,494 07	1,584 45
Herring..... "	2,932	685	448	103	575 96	185 79
Cod and other fish..... "	.....	.....	223	526	449 21	920 56
Oysters..... "	2,761	1,977	263	198	430 17	253 82
Fish barrels..... No.	11,753	10,999	172	227	608 33	532 68
Timber, hewn or unhewn ...C. feet	196,884	222,469	5,674	5,241	5,739 90	4,931 37
Lumber, sawn.....L feet	1,553,940	1,589,444	2,012	2,010	2,097 87	1,992 13
Shingles..... M.	2,353	4,253	355	639	415 65	863 49
Cordwood and tan bark..... Cords.	951	1,498	1,752	2,444	948 90	1,663 82
Coal..... Cars.	62	54	529	489	323 80	337 11
Lime..... Brls.	860	1,023	85	106	88 45	103 75
Limestone..... Cars.	53	46	466	407	248 28	226 26
Brick and building stone..... "	14	22	139	188	91 92	117 62
Mussel mud..... "	53	238	480	2,174	198 60	648 64
Salt..... "	.....	.....	875	1,629	858 15	1,070 40
Live stock, all kinds..... No.	1,776	4,488	421	748	1,015 66	1,636 91
Pressed Hay.....	.....	.....	2	16	4 76	18 56
Fresh Beef.....	.....	.....	29	77	76 49	222 81
Pork in carcass.....	.....	.....	47	166	135 55	515 60
Pork in barrels..... Brls.	292	377	48	57	105 20	108 00
Butter.....	.....	.....	20	42	81 84	155 62
Eggs..... Pkgs.	10,321	11,253	375	415	861 53	970 02
Merchandise.....	.....	.....	6,123	5,974	16,281 96	17,316 86
Wharfage, storage, etc.....	.....	.....	.....	.....	840 98	932 22
Total.....	.....	.....	38,668	37,208	56,859 67	53,643 19

STATEMENT OF PASSENGER TRAFFIC.

	1879.	1880.
Total number carried.....	105,046	90,532
Receipts.....	$58,467 78	$51,679 86
Receipt for each passenger.....	55·66	57·08

No. 1.—PRINCE EDWARD ISLAND RAILWAY.

DR. CAPITAL ACCOUNT. CR

1879.		$ cts.	1879.		$ cts.
June 30...	To cost of road and equipment to date.....	3,450,048 75	June 30...	By Dominion of Canada.....	
1880.			1880.		
June 30...	To expenditures, year ended 30th June, 1880, on extension of railway at Souris, wharf, buildings, etc.....	16,539 82	June 30...	By Dominion of Canada.....	16,539 82
	Total	3,466,588 57		Total.....	3,466,588 57

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN P.E.I., 30th June, 1880.

No. 2.—PRINCE EDWARD ISLAND RAILWAY.

REVENUE ACCOUNT for year ended 30th June, 1880.

Previous Year.	Expenditure.		Year ended 30th June, 1880.	Previous Year.	Receipts.	Year ended 30th June, 1880.
$ cts.			$ cts.	$ cts.		$ cts.
51,858 52	Locomotive Power,	per Abstract 1.....	57,580 58	58,467 78	Passenger Traffic.....	51,679 86
29,358 93	Car Expenses	do 2.....	26,200 14	56,859 67	Freight Traffic	53,643 19
102,867 57	Maintenance Way and Works	do 3.....	50,858 87	10,528 46	Mails and Sundries.....	8,528 06
22,967 99	Station Expenses	do 4.....	19,197 01			
16,260 12	General Charges	do 5.....	10,803 95	125,855 91	Total Receipts.....	113,851 11
				97,457 21	Balance	50,789 44
223,313 12	Totals.....		164,640 55	223,313 12	Totals	164,640 55

E. and O. E.

THOMAS WILLIAMS,
Acountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 3.—PRINCE EDWARD ISLAND RAILWAY.

LOCOMOTIVE POWER. (Abstract No. 1.)

Previous Year.	Details.	Year ended 30th June, 1880.
$ cts.		$ cts.
2,281 81	Mechanical Superintendent's salary, Clerks, office and travelling expenses	1,583 77
13,204 63	Wages of Drivers, Firemen and Cleaners	11,252 71
13,060 49	Fuel	11,223 41
2,174 42	Oil, tallow, waste and small stores	1,136 84
15,029 01	Repairs to engines, tenders, and engine tools	28,275 50
4,772 14	Water, including pump and tank repairs	2,875 29
1,336 02	Miscellaneous	1,233 06
51,858 52	Totals	57,580 58

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 4.—PRINCE EDWARD ISLAND RAILWAY

CAR EXPENSES. (Abstract No. 2.)

Previous Year.	—	Year ended 30th June, 1880.
$ cts.		$ cts.
7,430 59	Repairs to passenger cars	6,076 66
645 89	do postal and baggage cars	137 50
6,094 19	do freight cars and vans	7,381 56
10,248 49	Wages of Conductors, Train Baggagemen and Brakesmen	9,642 64
1,648 97	Oil and waste for packing	718 15
1,467 13	Small stores and fuel	1,859 82
423 66	Miscellaneous	383 81
29,358 92	Totals	26,200 14

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 5.—PRINCE EDWARD ISLAND RAILWAY.

MAINTENANCE OF WAY AND WORKS.—(Abstract No. 5.)

Previous Year.	Details.	Year ended 30th June, 1880.
$ cts.		$ cts.
3,393 79	Engineer's salary, clerks, office, and travelling expenses	1,379 85
35,546 07	Wages in repairing road way, fences and semaphores	29,625 95
10,264 14	Rails, chairs and spikes	2,553 74
5,890 14	Sleepers	3,356 97
22,474 31	Timber and lumber for repairs to bridge, cattle guards, fences, etc.	3,570 71
8,232 32	Repairs to wharves	1,300 70
7,054 77	do buildings	1,672 26
2,939 08	do snow-ploughs, flangers and tools	2,466 00
7,072 95	Clearing ice and snow	4,932 69
102,867 57	Totals	50,858 87

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 6.—PRINCE EDWARD ISLAND RAILWAY.

STATION EXPENSES.—(Abstract No. 4.)

Previous Year.	Details.	Year ended 30th June, 1880.
$ cts.		$ cts.
17,604 81	Salaries and wages of Station Masters, Agents, Clerks, Telegraph Operators, Station Baggagemen, Yardmasters, Switchmen, Watchmen and Laborers	14,756 51
5,363 18	Fuel, oil, light, stationery, tickets and other incidental expenses	4,440 50
	Miscellaneous	
22,967 99	Totals	19,197 01

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 7.—PRINCE EDWARD ISLAND RAILWAY.

GENERAL CHARGES.—(Abstract No. 5.)

Previous Year.	Details.	Year ended 30th June, 1880.
$ cts.		$ cts.
6,949 38	Superintendent's and Train Despatcher's salaries, Clerks, office and travelling expenses	4,250 06
6,313 67	Accountant and Auditors, Paymasters, and Cashiers salaries, Clerks, office and travelling expenses	4,860 97
927 75	Advertising	675 23
1,046 14	Damages to men, animals and goods	249 74
311 92	Telegraph expenses (not including pay to Operators)	179 62
711 26	Miscellaneous	588 33
16,260 12	Totals	10,003 95

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

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.
1879.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
July	3,660 71	2,922 83	4,650 23	1,551 76	810 33	13,595 86
August	3,243 49	2,213 95	4,548 35	1,510 72	1,064 41	12,580 92
September	3,491 01	2,231 69	4,113 27	1,487 76	867 71	12,191 44
October	5,407 59	2,383 06	4,515 83	1,796 47	784 28	14,887 23
November	5,710 24	1,921 03	4,024 73	1,731 90	784 85	14,172 75
December	5,729 37	1,942 04	3,671 93	1,681 93	980 70	14,005 37
1880.						
January	5,365 48	2,509 71	3,468 22	1,645 05	1,047 58	14,036 04
February	4,997 82	1,800 36	2,897 32	1,494 15	772 87	11,962 52
March	5,617 14	2,181 96	3,161 97	1,636 47	710 91	13,308 45
April	5,129 99	1,853 65	5,668 69	1,558 86	889 00	15,100 19
May	5,100 60	2,236 30	5,186 14	1,487 71	799 49	14,810 24
June	4,127 14	2,003 56	4,952 79	1,614 23	1,291 82	13,989 54
Totals	57,580 58	26,200 14	50,858 87	19,197 01	10,803 95	164,649 55

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 9.—PRINCE EDWARD ISLAND RAILWAY.

MONTHLY STATEMENT of Receipts.

Months.	Passenger Traffic.	Freight Traffic.	Mails and Sundries.	Total Receipts.
1879.	$ cts.	$ cts.	$ cts.	$ cts.
July	6,325 60	3,670 41	721 33	10,717 34
August	6,192 21	3,495 43	715 33	10,402 97
September	4,706 47	3,902 49	712 00	9,320 96
October	5,358 35	4,951 94	709 40	11,019 69
November	4,729 71	11,214 11	715 00	16,658 82
December	4,485 20	4,257 50	704 00	9,446 70
1880.				
January	2,980 38	2,062 43	706 60	5,748 81
February	1,991 99	1,949 38	702 00	4,643 37
March	2,512 93	3,067 12	714 00	6,294 05
April	3,828 43	3,516 31	703 00	8,047 74
May	4,406 91	6,947 81	707 00	12,061 72
June	4,161 68	4,608 26	719 00	9,488 94
Totals	51,679 86	53,643 19	8,528 06	113,851 11

E. and O. E,

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 10.—PRINCE EDWARD ISLAND RAILWAY.

STATEMENT of General Store Account, year ended 30th June, 1880.

1879.	Dr.	$ cts.	$ cts.
June 30.....	To balance brought forward.....	.....	46,415 59
1880.			
June 30.....	To Purchases during the year including rails.....	60,401 90	
	Charges from other Departments.....	3,770 25	
	Pay-rolls	2,461 64	
			66,633 19
1880.	Cr.		113,048 78
June 30.....	By Issues during the year.....	.....	42,430 79
	Balance.. Ordinary Stores..... $22,450 66		
	Balance.. Fuel 992 33	.....	70,617 99
	Balance.. Rails and fastenings on hand... 47,175 00		

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

DR. No. 11.—PRINCE EDWARD ISLAND RAILWAY. CR.

GENERAL BALANCE.

	$ cts.		$ cts.
General Stores	76,617 99	Dominion Account	56,585 81
Cash	820 37	Accident Insurance	1,943 40
Stations	1,244 52	New Locomotives Suspense Account	16,300 00
Militia Department	3 82		
Intercolonial Railway	24 56		
Post Office Department	2,016 00		
Suspense Account	101 95		
Total	74,829 21	Total	74,829 21

E. and O. E.

THOMAS WILLIAMS
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

No. 12.—PRINCE EDWARD ISLAND RAILWAY.

COMPARATIVE STATEMENT of Averages, for Year ended 30th June, 1880.

Details.	1880.	1879.
Mileage of railway open	198½	198½
Engine mileage	295,190	286,886
Train do	244,691	243,464
Car do	1,010,483	1,037,540
Receipts per engine mile ..... Cents	38·57	44·92
do per mile of railway ..... $	573·56	649 15
Percentage of passenger earnings to gross receipts	45·39	46·45
do freight do do	47·12	45·18
do other do do	7·49	8 37
Expenses per engine mile :—		
Drivers, Firemen's and Cleaners' wages	3·81	4·60
Fuel	3.80	4·55
Oil, tallow, waste and small stores	·39	·76
Repairs to engines	9·58	5·24
Water and tank repairs	·97	1·66
Miscellaneous	·42	·47
Total	18 97	17·28
Mechanical Superintendent's salary, office and travelling expenses	·53	·80
Cents	19·50	18·08
Locomotive power per engine mile	19·50	18·08
Car expenses do	8·88	10·23
Maintenance way and works do	17·23	35·86
Station expenses do	6·50	8·00
General charges do	3·66	5·67
Total ..... Cents	55·77	77 84
Locomotive power per train mile	23·53	21·39
Car expenses do	10·71	12·06
Maintenance way and works do	20·78	42·25
Station expenses do	7 85	9·43
General charges do	4·41	6·68
Total ..... Cents	67·28	91·72
Working expenses per mile of railway ..... $	829 42	1,125 00

E. and O. E.

THOMAS WILLIAMS,
Accountant and Auditor.

CHARLOTTETOWN, P.E.I., 30th June, 1880.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT,
CHARLOTTETOWN, 1st July 1880.

SIR,—I beg to submit a report of the working of the Mechanical Department of the Prince Edward Island Railway for the year ended 30th June 1880.

Appended are the following Statements:

A. Statement of performance and cost of Locomotives.
B. Monthly Statement of cost of Locomotive Power.
C. Monthly Abstract from Locomotive Returns.
D. Monthly Statement of Car mileage.
E. Statement showing number of Locomotives and Cars.
F. Comparative Statement of the expense of the Mechanical Department for the years 1879 and 1880.

The Locomotives from 2 to 6, inclusive, are light tank-engines. They are poor stock, but we are doing the best we can to keep them in service.

Nos. 7 to 9 are heavy tank-engines but they are no better than the former. These tank-engines are so poorly proportioned that they are a source of trouble and expense, and at their best are unreliable.

Nos. 11 to 18, inclusive, are tender-engines. It is upon these engines we have to depend most. They are in good condition.

The two heavy "Mason Fairlie" engines, ordered last fall, were to have been delivered to the road in May last, but they have not yet been received and possibly will not be until the coming autumn. Their cost, $16,351.63, has been charged to working expenses for the year ended 30th June last, which makes Locomotive Power $5,722.06 in excess of last year; otherwise it would have shown a reduction of $10,629.57 as compared with the previous year. When we get these new engines it will be quite a relief, as we will then be able to let some of the tank-engines drop out.

The first-class cars are in good order.

The second-class cars are in very fair condition, four out of the twelve having 33 inches wheels like the first-class cars. The small wheels in the other eight are fast wearing out.

The Postal cars and Pay car are in good condition. We still supply them with the small wheels, taken from other cars, in order to wear them out.

The Conductor's Van are in good repair, with the exception of outside painting which will be attended to shortly.

The Box and Platform cars are kept well up in repairs, but the old stock suffers much in long trains, as the lumber is soft and the draw-car fastenings light.

They are being strengthened at every opportunity. The repairs will be in proportion to the service.

During the year ended 30th June, five (5) box cars and seven (7) platform cars have been rebuilt; also, fourteen (14) platform cars have been fitted with moveable boxes to supplement the box cars in the shipment of produce spring and fall.

The reduction in car expenses compared with last year is $2,905.77.

As our water supply at this station is very poor, I would recommend that a supply be brought in pipes from a never-failing spring in Prince street, which could be attached to our steam pump. This would give us a good supply for all purposes at a trifling cost.

I have the honor to be, Sir,
Your obedient servant,
(Signed) A. STRONACH,
Mechanical Supt., and Store-keeper.

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.			
				Passengers.	Freight and Mixed.	Ballasting.	Piloting.	With train.	Light.	Shunting.	Total.
2	Humslet Engine Co'y., Leeds, Eng.	.....	1,759	7,957	296	.....	2,615	10,868	59	3,197	14,124
3		.....	1,766	12,668	61	.....	756	13,485	.....	1,505	14,990
4		June to May...	1,613	12,740	86	.....	22	12,848	88	100	13,036
5		December	1,251	9,322	.....	.....	1,790	11,112	110	1,030	12,252
6		Dec. to April.	1,243	8,813	1,348	.....	.....	10,161	.....	1,142	11,303
7	Black, Hawthorn & Co., Gateshead on Tyne.	Jul., Aug., Spt. Oct. and Jan.	469	1,818	1,160	.....	441	3,419	77	363	3,859
8		Sept., Oct., Dec. & Feb..	1,324	44	.....	.....	.....	44	.....	6,545	6,589
9		June	2,277	5,964	5,830	275	2,117	14,186	79	1,990	16,255
10		April	2,916	10	.....	.....	.....	10	.....	14,565	14,575
11	Baldwin Locomotive Works, Philadelphia.	.....	2,342	1,158	16,488	570	196	18,412	22	2,119	20,553
12		.....	4,189	166	28,554	.....	166	28,886	54	3,024	31,964
13		.....	2,856	.....	26,952	.....	120	27,072	.....	2,180	29,252
14		June	2,764	4,182	12,296	30	206	16,714	92	2,513	19,319
15	Canadian Engine Co'y., Kingston, Ontario.	.....	2,019	2,012	13,739	.....	388	16,139	.....	2,158	18,297
16		.....	3,332	.....	30,958	.....	49	31,007	77	3,139	34,223
17		.....	1,765	3,588	9,874	160	287	14,469	118	1,681	16,268
18		.....	2,469	6,512	9,512	1,185	870	18,079	283	2,455	20,817
		Totals.....	36,351	76,954	157,154	2,220	10,583	246,911	1,059	49,706	297,676

ISLAND RAILWAY.

DEPARTMENT.

Locomotives for the year ended 30th June, 1880.

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, etc.	Repairs.	Total.	Enginemen.	Fuel.	Oil, tallow, &c.	Repairs.	Total.
			$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	cts.	cts.	cts.	cts.
20,247	2,306	2·45	430 78	331 68	48 05	434 08	1,244 59	3·05	2·35	0·34	3·07	8·81
29,395	756	2·30	531 43	395 88	50 82	546 42	1,524 55	3·55	2·64	0·34	3 64	10·17
25,379	.....	1·98	490 08	384 60	50 97	571 76	1,497 41	3·76	2·95	0·38	4·39	11·48
22,274	1,790	2·39	409 94	332 16	46 18	733 16	1,521 44	3·34	2·71	0·38	5 98	12·41
24,216	.....	2·38	398 84	312 84	36 62	461 96	1,210 26	3·53	2·76	0·32	4 09	10·70
9,024	.....	3·03	141 25	142 44	16 51	1,122 93	1,423 13	3·66	3·69	0·43	29·10	36·88
95	.....	2·16	268 24	123 36	16 66	85 80	494 06	4·07	1·88	0·25	1·30	7.50
34,840	2,166	2·88	754 86	591 72	76 38	272 75	1,695 71	4·64	3·64	0·47	1·68	10·43
30	.....	3·00	609 65	295 20	48 59	194 18	1,147 62	4·19	2·02	0·33	1·33	7·87
97,613	1,588	5·35	761 46	907 92	86 34	724 92	2,480 64	3·70	4·41	0·42	3 53	12·06
132,677	1,522	4·62	1,417 01	1,324 20	132 45	500 42	3,374 08	4·43	4·14	0·41	1·57	10·55
154,765	2,316	5·74	1,101 60	1,567 92	131 85	999 67	3,801 04	3·76	5·36	0·45	3·42	12·99
63,375	2,995	3·84	882 74	789 24	72 53	614 25	2,349 76	4·57	4 04	0·37	3·18	12·16
82,667	2,274	5·24	696 28	943 80	90 91	1,228 40	2,959 39	3·80	5·16	0·50	6·71	16·17
181,246	2,658	5·85	1,314 46	1,573 80	156 29	1,268 26	4,312 81	3·84	4·59	0·46	3·71	12·69
67,638	685	4·96	555 02	731 88	77 96	783 00	2,147 86	3 41	4·50	0·48	4·81	·20
80,746	1,112	4·69	748 29	929 40	75 46	920 01	2,673 16	3·59	4·46	0·37	4·42	12·80
1,026,227	22,168	4·34	11,511 93	11,669 04	1,214 57	11,461 97	35,857 51	3·86	3·92	0·41	3·85	12·04

* Deduct Piloting on 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, 1880.

Months.	Miles run by Engines, less ballasting.	Cost of							Average per Mile run.						
		Engineers wages	Fuel.	Oil, tallow, waste, etc.	Repairs.	Water, including tank and pump repairs.	Miscellaneous, including expenses of office and engine-houses.	Total.	Enginemen.	Fuel.	Oil, tallow, etc.	Repairs.	Water.	Miscellaneous.	Total.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
1879—July	29,319	1,053 28	858 80	129 25	1,042 09	405 86	171 43	3,660 71	3·59	2·93	0·44	3·55	1 38	0·59	12·48
August	28,528	979 54	893 36	119 91	915 18	127 81	205 69	3,243 49	3 43	3·14	0·42	3·21	0 44	0·72	11 36
September	29,029	971 30	878 00	109 96	1,029 82	272 81	229 12	3,491 01	3·37	3 02	0·37	3 54	0·94	0·78	12·02
October	29,826	1,037 21	968 76	105 38	2,877 35	205 69	213 21	5,407 59	3·47	3·25	0·35	9·65	0 69	0·72	18·13
November	27,726	928 20	1,273 11	107 54	2,933 45	240 50	227 44	5,710 24	3·35	4·59	0 39	10·58	0·87	0 81	20·59
December	21,119	892 08	912 63	95 35	3,118 13	324 61	386 57	5,729 37	4 23	4·32	0·45	14·76	1·53	1·83	27·12
1880—January	21,597	945 70	998 96	91 83	2,770 52	226 05	332 42	5,365 48	4·38	4·62	0·43	12·83	1·04	1·54	24·84
February	17,576	768 29	815 96	76 90	2,790 30	255 80	290 57	4,997 82	4·37	4·64	0 43	15 88	1·45	1 66	28·43
March	20,303	920 14	1,018 80	88 61	3,062 90	297 72	228 97	5,617 14	4 53	5·02	0·44	15 08	1·46	1·13	27·66
April	18,263	869 13	801 72	73 96	2,977 26	190 95	216 97	5,129 99	4·76	4·39	0 40	16·30	1·04	1·19	28·08
May	22,589	871 48	852 42	73 19	2,944 22	200 75	153 51	5,100 60	3·86	3 78	0·32	13·04	0·90	0·69	22·59
June	29,315	1,016 36	948 89	64 96	1,814 28	126 75	155 90	4,127 14	3·46	3·24	0·22	6·19	0·43	0 53	14·07
Totals	295,190	11,252 71	11,223 41	1,136 84	*28,275 50	2,875 29	2,816 83	57,580 58	3·81	3·80	0·39	9·57	0·97	0·96	19·50

* Repairs include $16,351·63, for two new Locomotives under construction at Kingston, Ontario.

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

C.—MONTHLY Abstract from Locomotive returns for the Year ended 30th June, 1880.

Months.	Hours in steam.	Mileage of			Consumption.				Average Mileage.		Consumption per 100 Miles run by Engine.			
		Locomotives.	Cars.	Snow Ploughs.	Bushels of coal.	Pints of oil.	Pounds of tallow.	Pounds of waste.	Miles to one hour in steam.	Of cars to one of engine.	Bushels of coal.	Pints of oil.	Pounds of tallow.	Pounds of waste.
1879—July	3,484	29,437	98.146	.....	7,775	929	610	256	8·44	3·33	26·41	3 15	2·07	0·86
August	3,3 8	28.528	101,395	.....	7,886	920	589	209	8 54	3·55	27 64	3·22	2·03	0·76
September	3,415	29,573	102,742	.....	7 977	946	550	263	8·65	3·47	26 97	3·19	1 86	0·88
October	3,517	30 277	102,379	.....	8 346	756	492	210	8 69	3 38	27 56	2·49	1·62	0·69
November	3,241	27,926	117,211	98	10,9.5	783	531	193	8·61	4·19	39·05	2 82	1 90	0·69
December	2,762	21,119	72.212	813	7,721	690	408	172	7 64	3·42	36·55	3·26	1·93	0 81
1880—January	2,941	21,597	55 251	7,438	8 334	640	410	148	7·34	2 55	38·59	2·96	1·90	0·68
February	2,235	17,576	52,464	7,000	6,796	516	382	118½	7·86	2 98	38 66	2·93	2·17	0 67
March	2,658	20,303	66,557	5 727	8,490	614	429½	149	7 63	3.27	41·32	3·02	2·06	0 73
April	2,670	18,263	63.544	1,092	6,912	520	349	141	6·84	3·47	37·84	2·84	1·91	0·77
May	2,8:8	23,762	99,976	.....	7,8:8	668	438	185	8 40	4 20	32·94	2 81	1·84	0·78
June	3,265	29,315	94,350	.....	8,272	670	497	218	8·98	3·14	28 21	2·28	1 69	0 74
Totals	36,354	297,676	1,026,227	22,168	97,242	8,657	5,676½	2,262½	8·18	3 45	32 66	2·90	1·90	0·76

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

Mechanical Department.

D.—Monthly Statement of Car Mileage for the year ended 30th June, 1880.

Months.	First class.	Second class.	Postal, Baggage & Express.	Box, Stock and Hay.	Platform and Coal.	Total.
1879—July	26,083	22,315	6,025	28,489	15,234	98,146
August	25,965	22,654	6,066	27,967	18,743	101,395
September	26,380	23,154	6,024	30,617	16,567	102,742
October	26,929	22,701	5,419	36,488	10,842	102,279
November	23,215	29,620	4,901	58,573	9,902	117,211
December	16,666	18,953	1,664	28,468	6,461	72,212
1880—January	14,893	15,595	1,959	16,296	6,508	55,251
February	12,282	13,171	1,763	13,783	11.465	52,464
March	13,056	14,392	1,672	16,241	21,196	66,557
April	12,154	13,701	3,739	19,965	13,985	63,544
May	17,914	16,646	7,032	38.229	20,155	99,976
June	23,727	19,108	7,370	29,210	14,935	94,350
Totals	239,264	223,010	53,634	344,326	165,993	1,026.227
Less Ballasting	.....	2,519	.....	102	13,123	15,744
Balance	239,264	220,491	53,634	344,224	152,870	1,010,483

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

Mechanical Department.

E.—Statement showing the number of Locomotives and the various classes of Cars on hand, 1st July, 1879 and 1880.

Particulars.	Locomotives.	Classification.							
		1st Class.	2nd Class.	Postal, Baggage & Express.	Box and Stock.	Platform.	Vans.	Pay Car.	Total.
On hand, 1st July, 1879	17	14	12	2	150	100	3	1	282
Condemned during the year	.....	.....	.....	.....	5	7	.....	.....	12
Serviceable	17	14	12	2	145	93	3	1	270
Rebuilt during the year	.....	.....	.....	.....	5	7	.....	.....	12
Total Stock, 1st July, 1880	17	14	12	2	150	100	3	1	282

A. STRONACH,
Mechanical Superintendent and Storekeeper.

PRINCE EDWARD ISLAND RAILWAY.

MECHANICAL DEPARTMENT.

F.—COMPARATIVE STATEMENT of the Expenses of the Mechanical Department, Year ended 30th June, 1880 and 1879.

	1880.	1879.
The miles run by trains were	244,691	243,464
do engines were	295,190	286,886
do cars were	1,010,483	1,037,540
do snow ploughs were	22,168	13,035
	$ cts.	$ cts.
The cost of locomotive power was	57,580 58	51,858 52
do repairs to cars	13,595 72	16,170 67
do labor, oil and waste for packing	718 15	1,048 97
do repairs to passenger cars	6,076 66	7,430 59
do do postal, express and baggage	137 50	645 89
do do freight and vans	7,381 56	8,094 19
The cost of locomotive power per 100 miles run by trains was	23 53	21 30
do do do engines was	19 50	18 07
do do do cars was	5 69	4 99
The cost of repairs to cars per 100 miles run by trains was	5 55	6 64
do do do engines was	4 60	5 63
do do do cars was	1 34	1 55
The cost of labor, oil and waste for packing per 100 miles run by trains was	29	43
do do do do engines was	24	36
do do do do cars was	07	10
Repairs to passenger cars per 100 miles run by trains	2 48	3 06
do postal, express and baggage cars	05	26
do freight cars and vans	3 01	3 32

A. STRONACH,
Mechanical Superintendent and Storekeeper.

CANADA PACIFIC RAILWAY.

OFFICE OF THE SUPERINTENDENT,
WINNIPEG, MAN., Oct. 1880.

Sir,—I have the honor to submit the following report upon the working of the Canadian Pacific Railway in operation which extends from Emerson north to Winnipeg thence east to Cross Lake. Total Mileage 160 miles.

I enclose the reparts of the Trackmaster, and Mechanical Superintendent, and also the following statements prepared by the Accountant.

No. 1. Revenue account.
" 2. Locomotive Power. (Abstract No. 1.)
" 3. Car Expenses. (" 2.)
" 4. Maintenance of Way and Works. (" 3.)
" 5. Station Expenses. (" 4.)
" 6. General Charges. (" 5.)
" 7. General Stores accounts.
" 8. General Balance.
" 9. Comparative statement of averages.

REVENUE ACCOUNTS.

Receipts.

The receipts from both freight and passenger traffic show a steady increase.

The traffic from Emerson to Winnipeg and Selkirk consists almost entirely of inward through freight, the return and local traffic being as yet comparatively small, the country between these points being but thinly settled. There is a promise of considerable returns freight in the shape of grain which must pass to market over this road.

From Winnipeg to Cross Lake the traffic is conducted by train service, the outward freight consisting chiefly of articles for settlers, consumption between the two points, and contractors supplies for sections beyond Cross Lake now in course of construction. Considerable freight is offering in the shape of lumber, lime, stone and brick from Selkirk, and within a few weeks a large amount of lumber will be shipped from Keewatin to all points on this Railway.

I herewith submit a descriptive statement shewing amount of some of the chief articles of freight:

Lumber, 288,160 feet; Live stock, 5,635; Iron and steel, 15,779,619 lbs.; Flour and Meal, 11,375 lbs.; Hides and Skins, &c., 25,360; Oats, 34,660 bush.; Wheat, 31,841 bush.; Potatoes, 3,775 bush.; Butter and cheese, 9,528 lbs.; Meat, 1,290,263; Groceries and general merchandize, 19,600,668 lbs.

The shewing of the accounts for the first three months of the current fiscal year are very satisfactory.

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

(Signed) T. J. LYNSKEY,
Superintendent.

COLLINGWOOD SCHREIBER, Esq., Chief Engineer,
Government Railways in Operation,
Ottawa.

CANADIAN PACIFIC RAILWAY.

DR. No. 1.—REVENUE ACCOUNTS 5 Months ending 30th June, 1880. CR.

Previous Year.	Expenditure.	5 months ending 30th June, 1880.	Previous Year.	Receipts.	5 months ending 30th June, 1880.
$ cts.		$ cts.	$ cts.		$ cts.
.....	Locomotive Power, per Abstract 1.....	30,035 75	.....	Passenger Traffic.....	32,530 50
.....	Car Expenses do 2.....	10,504 23	.....	Freight Traffic.....	64,271 66
.....	Maintenance Way and Works do 3.....	16,449 83	.....	Mails and Sundries.....	8,173 53
.....	Station Expenses do 4.....	10,501 83			
.....	General Charges do 5.....	9,052 51			
		76,544 15			
.....	Car Mileage	2,347 86			
		78,892 01			
.....	Balance	26,083 68			
.....	Totals.....	104,975 69	.....	Totals.....	104,975 69

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

CANADIAN PACIFIC RAILWAY.

No. 2.—Locomotive Power.—(Abstract No. 1.)

Previous Year.		Five months ending 30th June, 1880.
$ cts.		$ cts.
	Mechanical Superintendent's salary, Clerks, office and travelling expenses	956 86
	Wages of Drivers, Firemen and Cleaners	7,754 33
	Fuel	15,717 00
	Oil, tallow, waste and small stores	521 75
	Repairs to engines, tenders and engine tools	5,006 46
	Miscellaneous	79 35
	Water, including pump and tank repairs	
	Total	30,035 75

E. and O. E.

GEO. P. BLACK
Accountant, C.P.R.

Winnipeg, 30th June, 1880.

CANADIAN PACIFIC RAILWAY.

No. 3.—Car Expenses.—(Abstract No. 2.)

Previous Year.		Five months ending 30th June, 1880.
$ cts.		$ cts.
	Repairs to passenger cars	485 00
	Repairs to postal, express and baggage cars	225 00
	Repairs to freight cars and vans	3,341 42
	Wages of Conductors, Train Baggage Masters and Brakesmen	4,940 67
	Oil and waste for packing	343 86
	Small store and fuel	1,000 78
	Miscellaneous	167 50
	Total	10,504 23

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

Winnipeg, 30th June, 1880.

CANADIAN PACIFIC RAILWAY.

No. 4.—MAINTENANCE WAY AND WORKS.—(Abstract No. 3.)

Previous Year.	—	Five months ending 30th June, 1880.
$ cts.		$ cts.
	Engineer's salary, Clerks, office and travelling expenses	139 50
	Wages in repairing roadway, fences and semaphores, including new sidings laid in	12,094 62
	Rails and fastenings, including new sidings laid in	
	Sleepers	
	Timber, lumber, etc., for repairs to bridges, cattle guards, crossings, fences, etc	
	Repairs to wharves	
	Repairs to buildings and platforms, including extensions, etc	
	Repairs to snow ploughs, flangers and tools	
	Clearing ice and snow	4,215 71
	Total	16,449 83

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

CANADIAN PACIFIC RAILWAY.

No. 5.—STATION EXPENSES.—(Abstract No. 4.)

Previous Year.	—	Five months ending 30th June, 1880.
$ cts.		$ cts.
	Salary and wages of Station-Masters, Agents, Clerks, Telegraph Operators, Station Baggage Masters, Yard Masters, Switchmen, Watchmen and Laborers	8,073 86
	Fuel, oil, light, stationery, tickets and other incidental expenses	2,386 11
	Miscellaneous	41 86
	Total	10,501 83

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

No. 6.—CANADIAN PACIFIC RAILWAY.

GENERAL CHARGES. (Abstract No. 5)

Previous Year.	——	5 Months ending 30th June, 1880.
		$ cts.
.....	General Superintendent and Superintendent and Assistants' salaries, Train Despatchers, Clerks, and Passenger and Baggage Agents and Assistant General Freight Agents, office and travelling expenses....	2,903 81
.....	Accounting Department, salaries of Accountant, Auditor, Paymaster and Cashiers, Clerks, office et travelling expenses.....	4,641 73
.....	Damages to men, animals and goods.....	10 00
.....	Ferry Service.....	.....
.....	Telegraph Expenses (not including pay to Operators).....	244 17
.....	Miscellaneous, printing, advertising, etc.....	1,252 80
.....	Agency Expenses.....	.....
	Total	9,052 51

E. and O. E.

GEO: P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

No. 7.—CANADIAN PACIFIC RAILWAY.

DR. GENERAL STORES ACCOUNT, Five Months ending 30th June, 1880. CR.

1880.		$ cts.	1880.		$ cts.
June 30....	To Purchases during 5 months	25,457 13	June 30....	By Issues during 5 months	30,042 27
	Charges from other Departments	1,916 82			
	Pay-rolls	5,217 77		Balance—	
	Stock taken from Upper & Co	8,478 61		Ordinary stores	11,028 06
	Total	41,070 33		Total	41,070 33

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

No. 8.—CANADIAN PACIFIC RAILWAY.

DR. GENERAL BALANCE, 5 months ending 30th June, 1880. CR.

	$ cts.		$ cts.
Cash	2,221 00	Dominion Account	40,174 18
General Stores		Intercolonial Railway	50 00
Ordinary Stores	11,028 06	Jos. Upper & Co.	8,478 61
Stations	36,007 20	Jos. Whitehead	1,693 24
Post Office Department	588 64		
American Express Company	86 91		
Rent Account	62 50		
Suspense Account	2,099 87		
Individual Accounts	500 64		
Total	50,396 03	Total	50,396 03

E. and O. E.

GEO. P. BLACK,
Accountant, C P.R.

WINNIPEG, 30th June, 1880.

No. 9.—CANADIAN PACIFIC RAILWAY.

COMPARATIVE STATEMENT of Averages, Five months ending 30th June, 1880.

	1879.	1880.
Mileage of railway open		160
Engine mileage		86,814
Train do		69,164
Car do		692,485
Receipts per engine mile		1·21
do mile of railway		656·09·80
		Cents.
Percentage of passenger earnings to gross receipts		30·99
do freight do do		61·23
do other do do		7·78
Expenses per engine mile—		
Drivers', Firemen's and Cleaners' wages		8 93
Fuel		18·10
Oil, tallow, waste and small stores		0·60
Repairs to engines		5·77
Water and bank repairs		
Miscellaneous		0·09
Total		33·49
Mechanical Superintendent's salary, office and travelling expenses		1·10
		34·59
Locomotive power, per engine mille		34·59
Car expenses do		12·10
Maintenence way and works do		18·95
Station expenses do		12·10
General charges do		10·43
		88·17
Car mileage		2 70
Total per engine mile		90·87
Locomotive power, per train mile		43·43
Car expenses do		15·18
Maintenance way and works do		23·78
Station expenses do		15·18
General charges do		13·09
		1·10·66
Car mileage		3·40
Total per train mile		1·14·06
Working expenses per mile of Railway		493·07·51

E. and O. E.

GEO. P. BLACK,
Accountant, C.P.R.

WINNIPEG, 30th June, 1880.

RETURN of Accidents, etc., Canadian Pacific Railway, from 10th February to 30th June, 1880.

Date.	Place.	Person injured.	Passenger or Employé.	Particulars.
March 5...	St. Vincent.....	M. F. Hawkins.....	Brakeman ...	Coupling car; hand sligthly injured.
do 9...	Cross Lake.....	.....	.....	Broken axle; caused several hours delay.
do 15...	do ...	.....	.....	Car of hay took fire. 54 bales burnt..
April 1...	West Cross Lake	.....	.....	Car ditched; slight damage; cause, bad track.
do 1...	Northcott	.....	.....	Engine and car ran off track; cause, bad track.
May 8...	St. Norbert.....	.....	.....	Car off track; truck broken; cause, bad track.
do 12...	Otterburne.....	.....	.....	2 cars off track; trucks badly damaged; cause, bad track.
do 15...	Armand	.....	.....	Car off track; axle boxes broken; cause, bad track.
do 15...	Birds-Hill Gravel Pit.....	.....	.....	Car off track; axle boxes broken; cause, bad track.
do 12...	South of Otterburne	.....	.....	Car off track; truck badly damaged; cause, bad track.
do 25...	Otterburne.....	.....	.....	Car off track; trucks damaged; cause, bad track.
do 27...	St. Boniface	McDougall..,.....	Neither.....	Run over; one leg severed; injured fatally; verdict, accidental death...
do 31...	South of Otterburne.....	.....	.....	Car off track; truck damaged; cause, bad track.
June 2...	do ...	.....	.....	Car off track; brake beam broken; cause bad track.
do 5...	Dom. City.....	C. Spencer	Conductor...	Collar bone broken in getting on train.
do 7...	Ballast Lines Dom. City	H. Clarey.....	Brakhman....	10 cars off track; brakeman Cleary had hip slightly bruised; cause unknown.
do 9...	North of Dom. City	.....	.....	Car off track; truck badly damaged; cause bad track.
do 10...	Emerson.....	.....	.....	Car off track; truck damaged; cause, bad track.
do 14...	South of Otterburne.....	.....	.....	Car off track; truck damaged; cause, bad track.
do 16...	do ...	Jean-Baptiste Amyot	Neither...	Lying on track; run over; fatal; verdict, accidental death.
do 25...	do ...	.....	.....	Car off track; truck slightly damaged; cause, bad track.
do 29...	South of Armand	.....	.....	Struck car laying by side of track; slight damage.
do 30...	South of Emerson	.....	.....	Engine and car left track; truck of car damaged; cause, bad track.

TRACK MASTER'S OFFICE.

ST. BONIFACE, Sept. 27th 1880.

SIR,—I have the honor to submit my report on the working of the road department, for the five months ending June 30th, 1880.

Track.

Steel rails with fish plate fastenings are laid on the entire track now under operation between Emerson and Cross Lake.

Road Bed.

At the time the road was taken over from the Lessees there was only 26 miles roughly ballasted, the balance of the track being laid on the formation, since there has been 12 additional miles ballasted.

Between St. Boniface and Cross Lake the track is in good condition, about 46 miles ballasted, the balance being laid on the formation.

Fences.

There are only 32 miles fencing on the line, the remaining portion to be fenced as soon as possible.

Turn-tables.

A Cast iron turn-table has been placed in engine house at Selkirk and a wrought iron turn-table put in station yard at Emerson.

Bridges.

One iron span of 60 feet has been put in at Rat River, the remaining bridges between St. Boniface and Emerson are temporary structures and should be renewed with permanent at as early a date as possible.

The bridges between St. Boniface and Cross Lake are in good condition.

Water supplies.

Three permanent tanks of 50,000 gallons each have been erected, one at St. Boniface, one at Otterburne and the other at Emerson.

I am, Sir,
Your obedient servant,

(Signed), J. M. ROSS,
Track-master.

T. J. LYNSKEY, Esq., Superintendent.
Canadian Pacific Railway.

MECHANICAL SUPERINTENDENT'S OFFICE,

WINNIPEG, 30th June, 1880.

SIR,—I beg to submit for your information the following statements, showing the operations of the Mechanical Department for the five months ending 30th June, 1880.

A. Statement shewing the number of locomotives and the various classes of cars and the condition which they are in at present.

B. Statement shewing the locomotive and car mileage and the average of cars hauled per mile.

C. Abstract of locomotive returns.

D. Statement of the cost of locomotive power for each month.

E. General statement of the expenses of the Mechanical Department.

I am, Sir,
Your obedient servant,

(Signed) H. TANDY,
Mechanical Superintendent.

T. J. LYNSKEY, Esq.,
Superintendent.

A.—CANADIAN PACIFIC RAILWAY.

STATEMENT shewing the number of Locomotives and the various classes of cars on the 30th June, 1880.

Particulars.	Locomotives.	First class Passenger.	2nd class Passenger.	Baggage and Smoking.	Baggage.	Box.	Platform.	Total.
On hand.....	7	2	.....	1	1	6	40	50

B.—CANADIAN PACIFIC RAILWAY.

STATEMENT of Locomotive and Car Mileage for the five months ending 30th June, 1880.

	Locomotive Mileage.	Car Mileage.						
	Freight and Passenger.	First class Passenger.	2nd class Passenger.	Express and Baggage.	Box.	Platform.	Total.	Average, Passenger and Freight.
February	3,404	2,264	.....	2,264	14,284	1,534	20,346	5·97
March.....	12,272	6,883	.....	4,873	92,944	17,279	121,979	9·94
April.....	11,210	13,287	457	8,669	53,464	72,112	147,989	13·20
May.....	16,105	12,424	436	7,949	59,914	104,029	184,752	11·47
June.....	18,074	10,393	21	8,393	45,310	140,795	204,912	11·33
Total	61,065	45,251	914	32,148	265,916	335,749	679,978	11·13

C.—CANADIAN PACIFIC RAILWAY.

ABSTRACT of Locomotive returns for the five months ending 30th June, 1880.

Months.	Consumption.						Average Consumption per 100 miles.				
	Hours in steam.	Locomotive Mileage.	Cords of Wood.	Pints of Oil.	Pounds of Tallow.	Pounds of waste.	Miles to hours in steam.	Cords of wood.	Pints of Oil.	Pounds of Tallow.	Pounds of waste.
February	430	3,714	200	180	74	37	8·63	5 38	4·84	1·99	0·09
March	1,800	15,296	642	690	308	152	8 49	4·19	4·51	2·01	0·99
April	1,820	15,579	720	698	310	158	8·55	4·62	4·48	1·98	1·01
May	2,600	21,060	860	945	420	210	8·10	4·08	4·48	1·99	0·99
June	2,615	22,615	700	1,017	453	223	8·64	3 09	4·49	2·00	0·98
Total	9,265	78,264	3,122	3,530	1,565	780	8 63	3·98	4·51	1·99	0·99

D.—CANADIAN PACIFIC RAILWAY.

STATEMENT of the cost of Locomotive Power for each month, from February to 30th June, 1880.

Months.	Miles run by engines.	Engineers' Wages.	Fuel.	Oil, tallow and waste.	Repairs to Engines, Tenders and Tools.	Miscellaneous, Engine-house, Mechanical Staff.	Total.	Average cost per 100 miles.					
								Wages.	Fuel.	Oil, tallow and waste.	Repairs.	Miscellaneous.	Total.
		$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts	$ cts	$ cts	$ cts	$ cts	$ cts.
February	3,714	815 95	2,388 00	26 62	239 59	97 84	3,568 00	21 96	64 29	0 72	6 45	2 63	96 06
March	15,296	1,631 90	4,776 00	53 25	479 20	195 70	7,136 05	10 66	31 22	0 34	3 13	1 28	46 65
April	15,579	1,843 09	3,199 00	136 50	1,212 05	283 23	6,673 87	11 18	20 53	0 87	7 77	1 81	42 83
May	21,060	1,715 66	3,200 00	50 00	1,247 28	223 98	6,436 92	8 15	15 19	0 23	5 92	1 06	30 56
June	22,615	1,747 73	2,154 00	255 38	1,828 34	235 46	6,220 91	7 72	9 52	1 12	8 84	1 03	27 50
Total	78,264	7,754 33	15,717 00	521 75	5,006 46	1,036 21	30,035 75	9 90	20 08	0 66	6 39	1 32	38 37

CANADIAN PACIFIC RAILWAY.

GENERAL EXPENSES of the Mechanical Department for the five months ending 30th June, 1880.

The miles run by trains were	61,065
do engines were	78,264
do cars were	679,978
	$ cts.
The cost of locomotive power	30,035 75
do repairs to cars	4,051 42
Oil and waste for packing	343 86
Repairs to passenger cars	485 00
do postal, express and baggage	225 00
do freight cars, etc	3,341 42
The cost of locomotive power per 100 miles by train was	4 91
do do do engines	3 83
do do do cars	4 41
The cost of repairs to cars per 100 miles by train	6 63
do do do engines	5 17
do do do cars	0 59
The cost of oil and waste for packing per 100 miles by train	0 56
do do do engines	0 43
do do do cars	0 04
Repairs to passenger cars per 100 miles run by them	1 05
do express and baggage do	0 69
do freight cars and vans do	0 55

WINDSOR BRANCH RAILWAY.

RAILWAY OFFICE,
MONCTON, N.B., 1st October, 1880.

SIR,—I have the honor to transmit the following accounts showing the working of the Windsor Branch Railway during the seven months which ended 30th June, 1880.

REVENUE ACCOUNT.

Statement of maintenance of way and works;

STATEMENT OF MONTHLY EARNINGS.

General Balance Sheet.

I also send you the Engineer's report on the condition of the permanent way and works.

This line of railway extends from Windsor Junction to Windsor, forming the connection between the Intercolonial and the Windsor and Annapolis Railways, and is thirty-two miles in length.

It was constructed as a part of the Government Railways of Nova Scotia, and the cost of its construction is included in the capital account of the Intercolonial Railway; it does not, however, form part of the Intercolonial system, but is treated as a distinct railway, and the accounts are kept entirely separate from those of the Intercolonial.

For some years it was maintained and operated as a part of the Nova Scotia Railway, but after the completion of the line from Windsor to Annapolis an arrangement was made with the Windsor and Annapolis Railway Company to work the Windsor Branch.

For the service they were allowed to retain two-thirds of the gross earnings, the balance, one-third, they were to pay over to the Government, the latter maintaining the line as heretofore.

On the 24th September 1877, this privilege was taken away from the Windsor and Annapolis Railway Company, and the Windsor Branch was handed over to the Western Counties Railway Company to be maintained and operated by the latter Company.

On December 1st 1879, the Government resumed possession of the Windsor Branch and employed the Windsor and Annapolis Railway Company again to operate it under an agreement similar to the former one, the Company being allowed to retain two-thirds of the gross earnings, the balance, one-third, being paid to the Government, the latter maintaining the line.

Since the possession of the line was resumed by the Government it was found necessary to put heavy repairs upon the track, the bridges and buildings. A new passenger station and a freight shed are now about completed at Windsor, and other improvements are in progress.

The cost of these repairs and improvements is in part included in the expenditure for the seven months which ended June 30th 1880, and in part in the current year.

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

D. POTTINGER.

C. SCHREIBER, Esq.,
Chief Engineer, Government Railways in operation,
Ottawa.

ENGINEER'S OFFICE,
MONCTON, N. B., Sept. 30th, 1880.

SIR,—The Windsor Branch was taken possession of by the Department on the 1st December, 1879, and since that date it has been maintained by the Department, and operated by the Windsor Annapolis Railways.

This branch (from Windsor Junction to Windsor) is 32 miles long.

The track was laid with new T iron rails in 1875 and 76, ballasted, and sleepers renewed throughout almost its entire length.

On the 24th September, 1877, it was transferred to the Western Counties Railway Company, and operated and maintained by that Company up to the time it was taken possession of by the Department, on the 1st December last.

Scarcely any thing in the way of renewals or repairs were made while in the hands of the Western Counties Railway Company, and consequently the renewals for the past fiscal and current year have been heavier than if it had been properly maintained.

Previous to the 30th of June last, 2,000 feet of badly worn T rails on a sharp curve near Windsor, were replaced with the best T rails in stock on main line.

6,564 sleepers were renewed and a large portion of track full spiked.

Station buildings at Beaver Bank, Ellershouse, Mount Uniacke and Newport, all received necessary repairs.

At Ellershouse 75 feet of platforms of station was renewed and balance repaired.

Platforms at Beaver Bank, Mount Uniacke and Newport have received large repairs.

A new station and freight shed at Windsor are under contract and will shortly be completed. The tracks in Windsor yard are being re-arranged so as to enable the shunting to be done further south instead of on the main street as at present.

A gang of masons are at work repairing and overhauling bridges and culverts, also another gang of carpenters renewing the stringers and cross ties of many of these structures.

About 10,000 new sleepers are now on hand and will be put in track before the close of the season.

The track is in good running order.

I have the honor to be, Sir,
Your obedt. servant,

P. S. ARCHIBALD,
Engineer.

D. POTTINGER, Esq,.
Chief Superintendent,
Intercolonial Railway.

WINDSOR BRANCH RAILWAY.

REVENUE ACCOUNT, year ending 30th June, 1880.

Expenditure.	Amount.	Receipts & earnings.	Amount.
	$ cts.		
Maintenance, Way and Works—		Passenger Traffic	4,847 08
Abstract 1	4,526 99	Freight Traffic	8,603 69
Balance	9,484 98	Mails and Sundries	561 20
	14,011 97		14,011 97

E. and O. E.

R. B. BOGGS,
Accountant. W.B.R.Y.

MONCTON, N.B., 30th June, 1880.

WINDSOR BRANCH RAILWAY.

Maintenance Way and Works. (Abstract No. 1)

Particulars.	Amount.
	$ cts.
Accountants office and expenses	656 82
Repairs of track	2,569 00
Rails and fastenings	686 01
Sleepers	869 55
Switch Locks	19 68
Bridges, Wood	42 00
Signals	4 50
Culverts and Cattle Guards	1 50
Buildings and platforms	188 32
Fencing	118 40
Hand Cars and Trollies	67 42
Tools and repairs of same	99 88
Removing snow and ice	351 80
Miscellaneous	433 71
Total	6,108 59
Less for sale of old rails	1,581 60
	4,526 99

E. and O. E.

R. B. BOGGS,
Accountant, W.B.R.

MONCTON, N.B., 30th June, 1880.

WINDSOR BRANCH RAILWAY.

General Balance.

1880.		$ cts.	1880.		$ cts.
June 30.	Windsor and Annapolis Railway	2,435 25	June 30.	Dominion account	2,765 00
	Intercolonial Railway	329 75			
	Total	2,765 00		Total	2,765 00

E. and O. E.

R. B. BOGGS,
Accountant, W.B.Ry.

Moncton, N.B., 30th June, 1880.

WINDSOR BRANCH RAILWAY.

Monthly Statement of Receipts & Earnings.

Months.	Passengers.	Freight.	Mails, &c.	Total.
	$ cts.	$ cts.	$ cts.	$ cts.
1879—December	817 45	1,148 89	82 80	2,049 14
1880—January	547 95	890 55	79 74	1,518 24
February	451 86	859 68	79 73	1,391 27
March	599 46	1,264 36	79 73	1,943 55
April	683 91	1,755 94	79 74	2,519 59
May	731 59	1,214 97	79 73	2,026 29
June	1,014 86	1,469 30	79 73	2,563 89
Total	4,847 08	8,603 69	561 20	14,011 97

E. and O. E.

R. B. BOGGS,
Accountant, W.B.Ry.

Moncton, N.B., 30th June, 1880.

APPENDIX No. 5

UNSETTLED CLAIMS.

INTERCOLONIAL RAILWAY.

CHIEF ENGINEER'S OFFICE,
OTTAWA, 27th November, 1880.

SIR,—Having on the 23rd of June last, been appointed Chief Engineer of the Intercolonial Railway, principally for the purpose of enquiring into, and investigating such claims of contractors and others, arising out of construction as might from time to time be referred to me for report, I entered upon my duties at once, and since that time, have been constantly engaged in the investigation, and the taking of evidence on the several claims as were laid before me, which, up to this date are as follows:

On the general contract for grading etc.,

1.	R. H. McGreevy,	Section 18.
2.	John Ross, (Bertrand & Co.),	" 9 and 15.
3.	Starr & DeWolf, (Sutherland, Grant & Co.),	" 11 " 23.
4.	Sumner & Somers,	" 12.
5.	Duncan McDonald,	" 8 and 10.
6.	W. E. McDonald,	" 13.
7.	Alexander McGaw,	" 14.
8.	Smith & Pitblado,	" 4.
9.	A. E. Jones, (Simpson & Co.),	" 7.
10.	S. P. Tuck,	" 17.
11.	James J. Fraser,	" 4.
12.	Donald Fraser, tracklaying, etc.,	" 4, 7 and 12.
13.	Duncan McDonald, do	" 10, 16 " 20.

Particulars of all which will be found in *Appendix "A"*.

In addition to the foregoing, claims of a minor character have also been submitted to me, namely:—

14. H. B. Higginson (Fairbairn & Co.), Iron Bridges.
15. G. A. Girouard. Ties.
16. T. B. Smith, fencing on Section 12.
17. George Moffat, freightage etc., on Rails.
18. Martin Murphy, Section 19 and Restigouche Bridge.
19. Michael Cowhig, Section 16.
20. J. M. Blakie, foundations, DeBert Station.
21. Andrew Johnson, Engine-house, Truro.
22. Thompson R. Coats, damage to dykes.
23. Alphonse Matte, wood sheds &c., at Rimouski.
24. Mrs. A. Barbarie, Registering plans.
25. Henry Clarke, damage by moving house.
26. John Russell, land damage.
27. J. C. Nolan, rent of building.
28. Government of New Brunswick. Claim arising out of the construction of the "Eastern Extension" "European and North American" Railway, from Painsec Junction to the Nova Scotia boundary. All of which will be found in *Appendix B.*

Of the foregoing claims, there have been already taken up, and either wholly or partially investigated, the following, namely: No. 1, 2, 3, 4, 14, 15 and 16, the three last named being concluded and reported upon to the Department; the others (1, 2, 3, 4) are now in hand and being proceeded with, and will be closed with as little delay as possible. Whilst the remainder on the lists above, and in *Appendices* "*A* and *B*" respectively, will be disposed of in their turn. Better progress would have been made, so far, in these investigations, but that frequent adjournments were found necessary, in order that the several claimants should be allowed time to put their respective claims into intelligible, and detailed forms. This is now being done, in most cases, and I hope in future to be enabled to proceed with greater speed.

Appendices "*A* and *B*" respectively, contain the amounts, so far claimed, over and above, original contracts, and on account of work done, and material delivered under special agreements, verbal or otherwise, and in some cases, as far as I can learn, under no agreements at all.

The amounts given in the Appendices are as nearly correct as the data at my command admits of, but they are sufficiently so for all practical purposes.

To meet the expenses of the current year in connection with this Department, a sum of $12,000 was granted by an Order in Council No. 1,430 dated 27th August 1880, to be expended as follows:

Salary of Chief Engineer.....	$6,500
Salaries of Assistants, travelling and office expenses.....	5,500
	$12,000

No expenditure on Construction Account other than those reported as above referred to, have been so far recommended by me, or have come within my control since assuming office.

I have the honor to be, Sir,

Your obedient servant,

F. SHANLEY,

Chief Engineer, I. C. Ry.

F. BRAUN, Esq.,

Secretary, Department Railways and Canals.

INTERCOLONIAL RAILWAY.

APPENDIX A.—Unsettled claims under original contracts for grading, masonry, etc.

Section. Letter.	Section. Number.	Names of Contractors.	Contract Dates. Executed.	Contract Dates. Time of completion.	Amounts. Tender and contracts.	Amounts. Claimed over contracts.	Remarks.
					$	$	
A	1	G. & J. Worthington	March 4, 1869	July 1, 1871	189,700	Nil.	Settled.
B	2	do	" "	" "	299,000	Nil.	do
C	5	Alex. McDonell & Co.		" "	533,000	40,226	
D	8	Duncan Macdonald.	Nov. 1, 1869		100,000	53,749	Petition of right.
E	13	W. E. Macdonald & Co	May 25, 1870	" "	934,933	141,746	Claim submitted January 1880.
F	14	Wilson & McGaw	May 25, "	" 1872	245,475	7,500	do March 1880.
G	17	S. Parker Tuck	June 15, "	" "	440,000	200,000	do Novemb. 1880.
H	18	R. H McGreevy	July ", "	" "	648,600	841,798	Petition of right.
I	19	Thomas Boggs & Co	Aug. 2, 1871	" "	395,733	79,900	Settled by arbitration, 1879.
K	3	F. X. Berlinguet & Co.			462,444	684,597	Decision against the contractors in the Exchequer Court.
L	6	do			456,946		
M	9	J. B. Bertrand & Co.	Oct. 26, 1869	" "	354,897	576,904	Petition of right.
N	15	do	June 15, 1870	" "	363,520		
O	16	King and Gough	May 25, "	" "	206,000	Nil.	
P	10	Duncan Macdonald	Dec. 1, "	" "	400,000	304,991	do
Q	20	Brown, Brooks & Ryan	Sept. 24, "	" "	642,854	Nil.	
R	21	Patk. Purcell	Dec. 1, "	" "	483,195	Nil.	
S	22	Chas. Cummings & Co	Dec. 1, "	" "	331,000	Nil.	
T	23	Sutherland, Grant & Co.	Dec. 1, "	" "	276,750	20,577	
U	4	Smith & Pitblado	May 25, "	" 1871	438,325	76,875	do
V	11	Davis, Grant & Sutherland	Nov. 1, 1869	" 1870	61,713	62,874	do
W	7	James Simpson & Co.	May 25, 1870	" 1871	557,750	124,663	do
X	12	Sumner & Somers	Nov. 1, 1869	" "	597,600	254,251	do
	4	Jas. G. Fraser				1,598	Grading.
	4, 7, 12	Donald Fraser & Co.				10,175	Track-laying and ballasting.
	10,16,20	Duncan Macdonald				88,535	do do

CHIEF ENGINEER'S OFFICE, Intercolonial Railway,
27th November, 1880.

INTERCOLONIAL RAILWAY.

APPENDIX B.—Abstract of Sundry and special claims submitted.

	Name of Claimant.	Nature of Claim.	When submitted.	Amount.	Remarks.
				$ cts.	
14	Higginson, H. B.	For extra work on iron bridges	April 28, 1880	20,128 36	Investigated and Reported.
27	Nolan, J. C	For rent of building at St. Octave	May 20, "	132 00	Case for Dominion Arbitrators.
17	Moffat, late Geo	Receiving rails at Dalhousie and delivery at Campbellton	June 21, "	6,168 54	
22	Coates, R. Thompson.	Damage to his dykes, the channel of River being thawed	July 7, "		Reported as a case for Dominion Arbitrators.
23	Matte, Alphonse	Wood sheds and tanks at Rimouski, Ste. Flavie, etc	July 14, "	1,985 19	
20	Blakie, J. M	For timber and foundation walls of De Bert Station	July 20, "	1,799 53	
24	Barbarie, Mr. A	Filing plans as Registrar for Co. Restigouche	Sept. 8, "	244 00	Right of way account. Dominion Arbitrators.
18	Murphy, Martin	Work done on Restigouche Bridge	Sept. 3, "	26,857 00	
19	Cowling, Michael	For completing work unfinished by Gough, section 16	Sept. 9, "	1,600 00	
21	Johnston, Andrew	Construction of engine-house at Truro, N.B	Oct. 2, "	2,575 48	
25	Clarke, Henry	Damage to house and furniture at Truro. N.B	Oct. 20, "	450 00	Case for Dominion Arbitrators.
26	Russell, John	For loss of land taken for G. C. Railway purposes	Oct. 29, "		do do
15	Girouard, G. A	For loss of 8,000 Railway ties in Bay of Chaleurs		2,640 00	Investigated and Reported.
16	Smith, J. B	For fencing done on Section 12		1,899 90	do do
	Special.				
28	The Government of New-Brunswick on account Eastern Extension, E. & N. A. Railway			150,000 00	

CHIEF ENGINEER'S OFFICE,
INTERCOLONIAL RAILWAY,
27th November, 1880.

APPENDIX No. 6.

REPORT ON SURVEY FROM RED ROCK WESTWARD *via* DOG LAKE TO LINKOPING.

CANADIAN PACIFIC RAILWAY,
OTTAWA, 19th May, 1880.

DEAR SIR,—Pursuant to your instructions dated 22nd May, 1879, respecting a survey from Nipigon Bay, Lake Superior, by Dog Lake to connect with the Thunder Bay Branch at or near Linkoping Station, or such other point east of that as would afford the best ground for a railway line, I beg to report as follows:—

Early on the 12th of June, we proceeded from Prince Arthur Landing by tug "Neff" to the head of Black Bay, and by day light on the morning of the 13th had the men and supplies landed at the mouth of a stream known as Wolfe River, about two miles from that portion of the bay indicated on your sketch map as point A.

After getting the party organized and started, from the head of Black Bay (eastwardly) towards Nipigon Bay, in the direction indicated on your sketch map, I directed my attention to endeavoring to find an opening through the mountains bordering on Black Bay to the north and west of it; in order to determine the direction to be taken in going westwardly, as soon as the party should get through to Nipigon Bay.

Spending some days with two Indians,—one of them being on his own hunting grounds,—ascending every high peak that seemed to afford a good view of the country, I could discern no means of getting through that range of mountains except by the valley of Wolfe River, and following its sinuosities, gain the summit or height of land, which I estimated would be 1,000 feet higher than Lake Superior, the surface of which I assumed for our levels at 600 feet above the sea.

The course of said valley being in a fair direction for Linkoping, I yielded to the prospect it afforded.

Having made up my mind as to the best course to pursue, I rejoined the party, whom I found by this time near Nipigon Bay, reaching it on the 28th of June. Thence I ran a short traverse over a spur of rocks to ascertain how a line could be continued eastwards, and making some examinations of the depth of water, which I found shallow for some considerable distance out from shore and unsuited for a shipping point, I returned with my party to Black Bay and resumed our operations from point A westwards towards Linkoping.

In leaving this point I skirted the foot hills in order to obtain an ascending grade of 52·8 feet per mile; then turning sharply around the foot of a mountain at three miles from point A, I got into the valley of Wolfe River on its eastern slope. Following up that valley for 3½ miles it was found necessary to cross to the west side of the river, where the waters shoot between perpendicular rocks highly favorable for bridging, thence going off nearly at right angles with the stream for a short distance to get higher ground to support an ascending grade as quickly as possible; thence turning on a course nearly parallel with a long and narrow lake or enlargement of the stream, on a bare rocky region to the 25th mile where a point of mountain jutting across our course had to be crossed, necessitating a tunnel 775 feet long and falling then into a cross valley 1,200 feet wide and 83 feet below grade level. Having by a sharp angle then reached ground to support our grade, I followed along the serrated edge of a piece of somewhat flat ground, thus

working up from one level to another, continued to ascend to the 28th mile, where we crossed the south branch of Wolfe River and got on easier ground rising gently for a few miles, and where the forest is nearly all burnt off; continuing with undulating grades to the 32nd mile with comparatively easy work; then encountering more broken ground, we reach 47½ miles where a small lake is crossed, being one of the tributaries of Black Sturgeon River and flowing northwardly.

Between the 48th and 49th mile a muskeg half a mile wide is crossed varying from 6 to 10 feet deep; after leaving which, broken ground is again encountered, and with a rising grade of 1 per 100 the 52nd mile is reached, thence with a descending grade; at the 53rd mile the highest ground is passed.

From the 56th to the 60th mile the grades are undulating and the work heavy, and from the 60th to the 63rd mile the work will be moderate, with easy gradients. From the 63rd to the 71st mile, the line, by a descending grade of 26·4 feet per mile, gets down to nearly the level of Dog Lake, continuing by the shore of the same to ...¼ miles, where a bay of the lake is crossed having a width of 1,700 feet and 46 feet at its greatest depth, over what seems to be a sand and clay bottom, the elevation of which is 1,370 feet, or 770 feet above Lake Superior and 230 to 250 feet below the elevation of the ordinary watershed.

From this point a rising grade of 52 8 feet per mile is used to overcome a point of high ground, making out between Dog River and the bay just crossed, continuing it to the 75th mile, whence a descent is made of 26·4 feet per mile to the crossing of Dog River at 78½ miles, then following the valley of Dog River on its west side with undulating grades to the 86th mile. From this point a trial line was run connecting with the main line, with a view to ascertain levels and distances that a suitable junction might be made, but owing to instructions received at this time from you to attend to other duties, the field operations were discontinued on this line after reaching the railway in the manner alluded to above, the distance to the proposed junction being about 98 1/10 miles, and 1½ miles east of Linkoping Siding.

Had other duties not interfered I had arranged to make a trial location from Linkoping to near the 60th mile (see plan), by which I confidently expected to be able to make a fair alignment with easy gradients and moderate work, avoiding the rise and fall on the other line in descending to and ascending from Dog Lake, as well as reducing the distance by at least four miles. I had made a good deal of explorations with that view, which leads me to be pretty well assured of accomplishing the same, which route is approximately indicated on the plan.

To give a further detailed description of this line, I now submit the following, viz:—

From Nipigon Bay to the 15th mile, work would be light over sandy and clay soil, thickly wooded, with easy alignment, and but one high fill in crossing Black Sturgeon River, where it is 195 feet wide, and 35 feet deep; with sand bottom, banks 52 feet high and 725 feet apart at top, requiring one span of 100 feet, and two spans of 75 feet.

15th to 17th mile.—With the exception of a tunnel of 400 feet through Trap Rock, the work is light; material sand, clay and boulders.

17th to 20½ mile.—The line is on side hill, admitting of light grades, but heavy work; cuttings chiefly loose and solid rock, with some gravelly material on top.

20½ to 22nd mile.—Moderate work in rock cuttings, and a bridge of 60 feet span over Wolfe River.

22nd to 26th mile.—Very heavy cuttings, exclusively rock, and varying from 20 to 40 feet in depth, including a tunnel 775 feet long, through crystaline rock, and a viaduct 1,100 feet long, averaging 75 feet in height.

26th to 29½ mile.—More moderate, but with rock only for borrowing purposes.

29½ to 32½ mile.—Comparatively easy, with some sand and rock.

32½ to 40th mile.—Heavy, with rock cuttings, varying from 20 to 25 feet deep, with no other material for borrowing.

40th to 45th mile.—Light in quantities, all the cuttings rock, and undulating grades.

45th to 48th mile.—Very heavy rock cuttings, including a bridge of 100 feet span at Sucker Lake (47½ miles), then followed by a mile of quite light work with half of it through muskeg from 6 to 10 feet deep.

49th to 71st mile.—Undulating grades, alternating from heavy to very heavy work; cuttings nearly all solid rock, with some little sand on surface.

71st to 73rd mile.—Along shore of Dog Lake, with light grades but sharp curvature; moderate work with cuttings all rock.

73rd to 79th mile.—After crossing the bay of Dog Lake, chiefly heavy side hill work, nearly all rock, with ascending and descending grades.

79th to 86th mile.—Moderate work along Dog River, material sand, gravel and clay.

86th to 98 1/10 mile.—At railway, ground can be had for a moderate line, material chiefly sand and clay, with a small portion of rock apparently.

CURVATURE.

From Nipigon Bay to near the 17th mile, about seven-eighths of the distance will be straight lines, and the remainder will vary from 1 to 3 degree curves, and at the 17th mile a 4 degree curve to get around the mountain.

Between the 28th and 29th mile one curve of three degrees will be required, and from the 53rd to the 71st mile it will be found necessary to use four curves as sharp as 4 degrees, one of which is required in getting across the Bay of Dog Lake, which is very objectionable for that place. The line generally, to the 73rd mile, will involve a great deal of curvature, owing to the rugged character of the country. The portion thence to the Thunder Bay Branch will admit of a much greater percentage of straight line and easier curves.

In conclusion, I may add that a peculiar characteristic of the country traversed by this line is that there is very little material for borrowing, other than loose or solid rock (trap), as well as that the most of the forest, that never had been of much economic value, is mostly destroyed by wind falls or fires.

The approximate distance from Red Rock, by this line, to junction with existing line near Linkoping station, is 98·60 miles.

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

R. McLENNAN,
Engineer in charge.

SANDFORD FLEMING, Esq., C.M.G.,
Engineer-in-Chief.

REPORT ON SURVEY FROM RED ROCK WESTWARD TO PRINCE ARTHUR'S LANDING.

CANADIAN PACIFIC RAILWAY SURVEY.

OTTAWA, 22nd May, 1880.

DEAR SIR.—Having, while on the survey from Nipigon Bay to Linkoping (on the 2nd of Nov. 1879) received a telegram from you, from Selkirk, dated October 24th, 1879, containing the following instructions, viz: "Make as cursory a survey as possible this fall from Red Rock to Prince Arthur's Landing, ascertain if a practicable line for a railway can be had there," on the receipt of which, I at once arranged to change my previous plan of returning for a revision of the region between Linkoping and a point northeast of Dog Lake. As soon as the party reached the railway near Linkoping I brought them down by train to Fort William.

Having discharged some men who wished to leave, procured two months supplies, and adapted our tents to winter service, with additional blankets and small tin stoves, I engaged the tug "Neff" to take us to the head of Black Bay.

The weather at the time was very stormy, and the tug could not venture out until the 20th November. Ice was then forming rapidly along the shores of Lake Superior and prevented us reaching the desired point. However, we made our way as near shore as possible and took our provisions over the ice to land.

From a general examination of the country I judged that the high grounds back and north-east of Thunder Cape constituted the key to this line, and decided to test the most difficult points first.

Beginning then at point A, 14 miles west from Nipigon Bay, I ran a straight line for 6½ miles over loam, sand and clay soil, with a very fair surface heavily timbered with spruce, tamarac and birch, crossing Wolfe River at 2 miles from place of beginning. This river is 65 feet wide and 2½ feet deep, with a gravel bottom, requiring a bridge of 100 feet span. A mile beyond the line crosses another stream 48 feet wide and 3 feet deep, also gravelly bottom, necessitating a bridge of 80 feet span.

Then from the 20th mile with grades, rising and level, alternately; between the 24th and 25th mile we crossed two round and rocky hills, (like islands) which, on examinination, we found could be avoided altogether and a line put on continuously flat ground, continuing then forward with a line involving but moderate work, except 1 mile, and very little rock from what could be seen at that stage of the winter, thence with level and ascending grades passing by Snow Lake till the summit or neck of the promontory of Thunder Cape is reached, near the 36th mile, with the elevation for grades there 1065 feet, or 465 feet above Lake Superior, making this ascent in 22 miles, giving an average rise of 21 feet per mile.. At this point, or summit, a lake forming the source of the east branch of McKenzie River is passed, and following the valley of the same touching some rocky points, descending with a grade of 26·4 feet per mile for 4 miles, requiring but moderate work with fair alignment, except the first mile at summit, necessitating rather heavy rock cuttings and sharp curvature.

The grades then become easy and the work light over sand and clay soil for five miles (to the 45th) but the next three miles, embracing the crossing of the Mackenzie River, a little below where a branch coming from the north, and another from the south-east unite with the east branch. The stream there at low water, is 90 feet wide and two feet deep, running over a solid rock bottom, will require a bridge having one span of 100 feet and two spans of 75 feet, on a grade of 0·50 per 100; and 85 feet above the water, with rock cuttings at approaches and reverse curves. While this part of the line was being run out, I examined the valley of the south-west branch, which though not admitting of a continuous descent yet offered a highly favorable means of avoiding the high bridging and heavy approaches involved in the line we were continuing. I therefore returned and ran a line on the high level and incomparably better ground, from the 45th to the 48th mile, passing to the north of a rocky ridge lying between the valley of the said south-west branch and the former line, until I got through an opening or gate in the ridge to the south and on to the same slope with the other line, but at a greater elevation (see profile of same), thereby demonstrating the practicability of avoiding the former ground with its high bridge altogether. The continuation of this line would involve a gradient of 24 feet per mile for about 12 miles, while the high bridge line would be at least six feet less, with distances nearly equal.

Returning then to our original line, we continued it with descending grades on of ground sloping down to Thunder Bay, taking cross-sections where high points were encountered, to guide us subsequently in making a trial location if necessary. At 59½ miles, a stream called Current River is crossed, 50 feet in width, and three feet deep, with rocky bottom, where a bridge of 80 feet span will be required, and one and a half miles beyond this, McVicar's Creek is reached, being the eastern limit of Prince Arthur's Landing. This stream is 26 feet wide and two feet deep, with a gravel and boulder bottom, and at 61¾ miles from B, or 47⅞ miles from A,

connected with the east end of the Kaministiquia and Prince Arthur's Landing Railway, near the water's edge.

Having found the whole of this distance highly favorable for the construction of a line of railway, with the exception of about three or four miles of rather heavy work, I returned with the party to the head of Black Bay to try a line more to the northward than that explored the previous summer to Nipigon Bay. By my accumulated explorations I could get a very good surface to and over Black Sturgeon River by pressing nearer to the foot hills of the mountains, where the depth of the river would be less than lower down the stream without changing the relative difference between the water and the top of the banks.

I returned to and started again from the Common Point A eastwardly towards Red Rock to test my theory of these grounds, and succeeded in running a straight line for eight miles, crossing that river at 7 miles, with a fall of 50 feet from surface of water, only nine feet deep (in place of 35 as before), requiring a bridge of one span of 100 feet, and two spans of 75 feet with about 50 feet of trestle work approaches on each side, the banks being 450 feet apart at top, the general surface requiring on most of it but very little filling to bring it to an easy grade line, and continuing a few miles further over similar grounds as shown by profile.

Then it was found necessary to turn with the valley of Trout Creek and reach Nipigon Bay by the same (see plan and profile), then following the waters edge around the base of a high mountain, we passed from station 755 to 765 by deep water and by soundings taken at station 755, at 50 feet out, 4½ feet deep; at 100 feet out, 27 feet deep; at station 760, 50 feet out 26 feet deep; 100 feet out, 44 feet deep; at station 765, 50 feet out, 15 feet deep; 100 feet, 18 feet deep. This is the only place that will admit of a siding being made to deep water in Nipigon Bay.

Passing on from that point for three miles along the margin of the shore, the mouth of the Nipigon River is reached. Continuing near the river for one mile to Red Rock the river is crossed, and connection made with Mr. Gamsby's line, with a chainage of 951x20, and at station 521x19 of his line, a total distance of 65.84 miles from Prince Arthur's Landing.

In reviewing the line it may be classed as follows: from Red Rock for a distance of 25 miles the ground is suitable for an easy alignment and very light work over a loam and sandy soil, except for two miles where the line leaves Nipigon Bay, at which place some three degrees of curvature will be necessary where the work is not heavy, the material is chiefly rock. From the 25th to the 41st mile the alignment will be more serpentine, but work is not heavy, and material chiefly earth, and where grades compensating for curvature can be easily maintained. One mile at summit is rather heavy. From the 41st to the 49th mile, the work is light and curvature moderate.

49th to 52nd mile.—Somewhat heavy, with high bridge 85 feet above water, 250 feet long, with a good deal of rock work; reverse curves, one on each side; see alternate line on plan and profile.

52nd to 63rd mile.—On ground sloping to Thunder Bay, where a line can be placed on nearly any desired ground, with light work generally; material, sand, clay and boulders, with one point exclusively solid rock, 25 feet at greatest depth, 1,000 feet long. with, perhaps, some solid rock in bottom of some cuttings; curvature will be moderate.

63rd to 65.84 miles.—Light work, material sand and clay. Near the end of this section there are fine facilities for supplying any reasonable quantity of water by gravitation.

TIMBER.

One half of this line has a good deal of timber, suitable for trestles, culverts and piles, with smaller timbers abundant for about 20 miles east of Prince Arthur's Landing.

CHARACTER OF THE SOIL.

In the Township of Dawson there are about 18,000 acres of arable land, sand and clay loams, two-thirds of which is well suited to the culture of the coarser grains,

hay and all kinds of vegetables, the remainder, being swampy, would require a good deal of drainage.

In an unsurveyed piece of land at the head of Black Bay, lying between Dawson and Dorion Townships, there are at least 6,000 acres of very fair land, requiring only drainage to make it highly productive.

On the east side of the Township of Dorion there are about 8,000 acres of good land, adjacent to Black Bay, having a good deal of natural drainage through it, with clear and pure water, besides about 12,000 acres interspersed with rocky ridges, and islands of trap rock covering from one-third to one-half of this area; the remainder, being good land, heavily timbered with cedar, spruce, tamarac and pines, suitable for bridging, and a good deal of large sized birches and poplars.

Wherever solid rock occurs on this line it will be found to be chiefly of trap.

COMPARATIVE DISTANCES FROM RED ROCK *via* DOG LAKE TO JUNCTION WITH MAIN LINE.

	Miles.
From Red Rock to Point A, on plan	18.01
" Point A *via* Dog Lake, to junction with railway near Linkoping station	84.59
	102.60
Less possible reduction on revision	4.00
Total distance	98.60

FROM RED ROCK TO PRINCE ARTHUR'S LANDING.

	Miles.
From Red Rock to Point A, as above	18.01
" Point A to Prince Arthur's Landing	47.83
" Prince Arthur's Landing to Fort William	6.00
" Fort William to junction near Linkoping	56.93
Total distance	128.77

Very respectively yours,

R. M. McLENNAN,
Engineer-in-Charge.

SANDFORD FLEMING, Esq., C. M. G.
Engineer-in-Chief.

REPORT ON SURVEY FROM RED ROCK EASTWARD TO LONG LAKE.

CANADIAN PACIFIC RAILWAY

PRINCE ARTHUR LANDING, 21ST OCTOBER, 1879.

SIR,—In accordance of instructions received from you, dated May 23rd, I landed with a party at the Hudson's Bay Company's post at Red Rock—the mouth of Nipigon River, Lake Superior—about the 10th June following. Having made the necessary arrangements for the transportation of our supplies, we proceeded to our initial point at the head of Lake Helen.

Here we commenced and continued a trial location survey in a general north-westerly direction to the north end of Long Lake, a distance of 117 miles, also from the same initial point a survey in a south-westerly direction along the east shore of Lake Helen to a crossing of Nipigon River, then along the eastern shore of Nipigon Bay, forming a junction with a line of Mr. McLennan's from Black Bay, at a point marked B. on the tracing of a plan which accompanied our instructions, a distance of 19 miles. Subsequently Mr. McLennan changed his line and formed a junction with ours at the crossing of the Nipigon River, at Red Rock, about 580 miles from Lake Nipissing.

My description will commence at the above crossing, and follow the line surveyed in a general north-easterly direction, noting the mileage of prominent points from Nipissing.

From the crossing, the line runs along the steep side hill of the river bank, rising with a gradient of 79·20 feet per mile for a distance of 40 chains, to the plateau, thence along the plateau, descending by easy grades and reaching the shore of Lake Helen at the Roman Catholic Mission, a distance of some 2½ miles. The alignment is good. The heavy cuttings on the first portion are sand and gravel, and will furnish a large quantity of ballast; the remaining cuttings are clay mixed with sand; work medium.

The line, as located, is probably the best that can be obtained. Excessively sharp curves would lessen the quantities in some places but increase the length of the line.

From the Mission, the line follows the sinuosities of the shores of Lake Helen for a distance of about 5 miles, crossing some high points, and necessitating some rather heavy rock cuttings. The alignment is fair, the grades are easy and undulating with one exception of a short grade of 1.33 feet per 100 feet, or 70.22 feet per mile. Work will be medium to heavy.

The use of a sharper class of curves would very materially reduce the rock cuttings and improve the gradients on this portion of the line.

Leaving Lake Helen the line follows the vicinity of a small stream for a distance of about 7¾ miles, crossing some ravines and hills. Some heavy clay and sand cuttings are met with on this portion. The alignment is fair; gradients rising, but not exceeding one foot per 100 feet. Work would rank as heavy; no rock; heavier gradients would reduce the quantities in cuttings.

From this point the line crosses a sandy plain to the outlet of the first lake, a distance of about three miles. The alignment is good; gradients mostly level, and work light.

From the outlet of the first lake the line follows the shores of the first and second lake to the summit, which divides the waters flowing into Lake Helen from those flowing into Lake Nepigon, a distance of 3¼ miles. The country is broken in the vicinity of these lakes; several ridges of rock are crossed, and the larger portion of the cuttings will be solid rock. The alignment is fair; gradients mostly level, excepting one of 73·39 feet per mile for a distance of 36 chains, which was introduced to pass the summit mentioned above. The work may be classed as heavy, and mostly of rock.

From the summit, the line follows the shore of the third lake, along the outlet of the third lake to South Bay of Lake Nipigon, and along South Bay to Station 1120, a distance of 10 miles.

The country over which this portion of the line passes is rough and broken, high ridges of sand and boulders crossing the line at short intervals throughout its entire length. The alignment is fair; the gradients undulating, but none exceeding one foot per 100 feet or 52·80 feet per mile. The work will rank as heavy, with probably rock in some of the cuttings. A large reduction in the quantities on this portion of the line would be effected by the use of sharper curves.

From this point (about the 549th mile from Lake Nipissing) the line follows South Bay to the mouth of the Kahpistagon River (at Station 1240).

From the junction of this river with Lake Nipigon, two lines were run, one through a pass striking the last named at Station 1430, the other following the windings of the river and joining the first line at the same point.

The entire distance covered by the river line, which was adopted, is about 7 miles. The country is very rough, high rock ridges alternating with deep ravines. The alignment is inferior, curves as sharp as 5° having been used; gradients objectionable, the maximum gradient reaching 1·80 feet per 100 feet, or 95 feet per mile, for a distance of 1½ miles. Work will be excessively heavy; rock cuttings, with probably some tunnelling through the highest ridges.

From the 542nd mile to the 536th, the line follows the valley of the Kahpistagon River and Lake. The country is somewhat broken and undulating. The alignment is fair; the gradients medium and undulating, the maximum being 70·22 feet per mile for about half a mile. The work about equally divided between rock, sand and boulders; may be classed as heavy to medium.

As the line laid down for our examination, following the South Bay of Lake Nipigon and the Kahpistagon River, kept us fully occupied, we could only make a superficial examination of other possible divergences.

The great difficulty to be overcome is a difference in elevation between Nipigon Lake and the plateau at Kahpistagon Lake of 360 to 380 feet. A range of hills from 500 to 800 feet in height, running nearly north and south, extends from Lake Superior to the head of Lake Nipigon; several streams break through this range forming depressions or ravines, along which a possible line may be carried. The largest of those streams is the Kahpistagon River, the locality of the surveyed line. Two small streams pass through the range, the first falling into South Bay at Station 772 of the surveyed line, the second at Station 1084. A line along the first stream in a general south-east direction, passing the head of Kahpistagon Lake and joining the surveyed line at or near the 536th mile, would shorten the present line by some ten or twelve miles.

A line along the second stream would be nearly due east in direction, pass the head of the same lake, and making a junction at the same point of the surveyed line, would shorten the present line by six to seven miles.

The difficulty to be overcome in both those possible divergences, is to obtain a sufficient distance to surmount the difference in elevation between the two points by practicable gradients.

The south western slope of the hills, along which the line must run to make rising grade, is in many places vertical rock; to carry a line along this would require partial tunnelling; the economy and practicability of this kind of work can only be determined by careful surveys.

From the 536th to the 520th mile, a distance of 16 miles the line follows the general valley of the water course to the divide between the Kahpistagon and Poplar Rivers. The country is lightly undulating and some low ridges of rock are crossed. The alignment is good, the gradients being medium and undulating. The work would be classedas medium to light. By increasing the curvature, many of the rock cuttings could be thrown out, reducing the work to light, without injuring the gradients.

From the 520th to the 510th mile a distance of 10 miles; the line follows the general water course of the Poplar River. The country is broken and undulating, and some heavy rock cuttings occur. The alignment is fair, but the gradients are heavy undulating. The work may be classed as heavy. Sharper curves would reduce the quantities. A careful revision of this portion of the line would probably give satisfactory results.

From the 510th to the 505th mile, at the crossing of the Sturgeon River, a distance of five miles, the country is lightly undulating, mostly sand and gravel. By diverging the line at Station 3060, and running nearly due east, a good line may be obtained with easy gradients and light work.

From the 505th to the 499th mile, a distance of six miles, the country is heavy rolling with high sand and gravel ridges. The alignment is fair, but the gradients are heavy undulating. The work may be classed as heavy to very heavy, with some rock. A slight divergence to the south, with sharper curves will reduce the work and ease the gradients on this portion of the line.

From the 499th to the 484th mile, a distance of 15 miles, the country is lightly undulating and sandy. The alignment is good, and gradients easy. The work may be classed as light.

From the 484th to 478th mile, a distance of 6 miles; the country is heavy undulating, mostly sand, with some boulders. Alignment fair, gradients heavy undulating, work medium to heavy, very little rock.

By placing the line along the river, both work, and gradients would be lightened, but the curvature would be considerably increased.

From the 478th to the 459th mile, a distance of 19 miles, the country is highly undulating, sandy ridges, alternating with swamps. The alignment is good, gradients easy. The work may be classed as light.

From the 459th to the 453rd mile, a distance of 6 miles; the country is considerably broken, and some rock is met with. The alignment is fair, a portion of the gradients are heavy and undulating. The work would be classed as heavy to medium, with some rock.

The various classes of work may be summarized as follows, viz:—

2	miles of	light work.
18	do	" light to medium.
33	do	" medium to heavy.
21	do	" heavy.
13	do	" excessively heavy.
127	Total length of surveyed line.	

A careful revision, with the introduction of sharper and a greater number of curves, would shorten the line, and materially reduce the quantity of heavy work. Under these circumstances the country passed over, may safely be estimated to give say 60 per cent. of light work, about 10 per cent. of medium, 21 per cent. of heavy and 9 per cent. excessively heavy.

Bridging and water accommodation would be light to medium. Only three streams being crossed, which would require spans of 100 feet. The streams being crossed at or near their sources, are mostly narrow and shallow. The muskegs being of limited extent, no heavy drainage would be required.

Timber in small quantities is found in the vicinity, on some of the lakes and swamps. It is chiefly tamarac, spruce and cedar, with some jack or pitch pine of fair size. About the 80th mile from the crossing of Nipigon River some land fit for cultivation is found west of Lake Helen, and the Nipigon River—also between Lake Helen, and first lake along the river in the vicinity of the surveyed line. The soil is a clay loam, similar to that of the Hudson Bay Company's farm at Red Rock, where fair crops of hay, coarse grain and roots, are annually grown. A considerable tract of similiar land is found in the vicinity of Little Long Lake, and around Long Lake, which has also been found to be fertile by cultivation.

Specimens of magnetic iron were found in the vicinity of Long Lake. Indians shewed fine specimens of galena, from the shores of lakes farther to the north. As these were only surface indications, it is reasonable to hope that a closer examination of the country would disclose valuable mineral deposits. The lakes in this region are teaming with the finest lake trout and white fish, especially Nipigon, Long, McKay, and White Fish Lakes, and doubtless there are many others which did not come within my knowledge.

These point to the establishment of fisheries, with all their attendant industries, only requiring speedy communication with the populous portions of the country to

become a source of wealth. The same may be said of the mineral wealth, it is awaiting the speedy construction of the Canadian Pacific Railway.

I have the honor to be, Sir,
Your most obedient Servant,

C. H. GAMSBY,
Engineer-in-Charge.

SANDFORD FLEMING, Esq., C.M.C.
Engineer-in-Chief,
Canadian Pacific Railway.

REPORT ON SURVEY FROM LONG LAKE EASTWARDS TO MOOSE RIVER.

CANADIAN PACIFIC RAILWAY,

OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 19th May, 1880.

SIR,—In accordance with your instructions, dated Oct. 15th, 1879,—forwarded by steamer to Red Rock—directing me to remain in the country during the winter, and continue my explorations eastwards from Long Lake, I proceeded at once to re-organize my party and procure supplies for the work indicated. These supplies were landed at Jack Fish Bay, Lake Superior, and thence carried to our initial point at the outlet of Long Lake.

On reaching our initial point, we arranged our season's operations as follows :—One assistant with a small party to survey and sound a portion of Long Lake with a view to ascertain the practicability of taking the line across the Lake, and thus avoid the long detour by the northern end. Two other assistants to carry on the exploration eastward. I fixed my headquarters at the Hudson Bay Co's post, near the outlet of Long Lake, from where I could visit both parties, and give particular attention to the proper distribution of the supplies. This arrangement was found to work satisfactorily, and was continued to the completion of our work.

The exploring party commenced work about the 13th January, running compass line and chaining distances. The country for the first ten miles was found to be slightly undulating, with low gravelly hills. From this point the ground rises gradually to the summit, between McKay's and Shallow Current Lakes, terminating at a gravelly ridge 70 or 80 feet in height. About one-half mile south of line a lower pass exists, with an easier ascent and ground more undulating.

From the 19th to the 27th mile the country is undulating and gravelly, and the work would be classed as medium to light.

From the 27th to the 34th mile, in the vicinity of Cross Lake, the ground is broken and rocky, particularly near the lake. A fair location may be obtained around the north shore of the lake by crossing a bay at the north-east end of about 250 feet in width. The southern shore is hemmed in by high rock bluffs, and appears impracticable.

From the 34th to the 39th mile the country rises about one foot per 100 feet to a summit where a pass about 500 feet wide is found, a level spruce swamp.

At the 39th mile a deep gorge is met about 300 feet deep and 40 chains in width. A detour of about one-half mile to the southward was made with the exploratory line, where a practicable crossing was found. I think a more uniform country would be found from five to six miles to the northward of the line explored.

From the 39th to the 60th mile the country is chiefly swamp. Some streams are crossed, the largest about 100 feet wide; the banks are timbered with spruce, tamarac and cedar.

From the 60th to the 73rd mile the exploration passes over a burnt country with patches of green timber, undulating, with gravelly ridges and light swamps.

From the 73rd to the 102nd mile the country is generally undulating, with some low ridges of rock, some large timber—spruce, tamarac, cedar, and occasional plantations of birch. From this point to the 108th mile we cross a burnt country, with small clumps of timber scattered through it The soil for the most part is gravelly, and the ground undulating. From this point to Moose River the ground is rolling, being composed of alternate gravel ridges and swamps; timber, mostly small, pitch, pine and poplar.

A fair line for railway construction can be located in the immediate vicinity of the line explored, but I am of opinion that a better line can be obtained by keeping to the westward of Sucker Lake, thence northward, crossing English River from one to three miles north of Long Lake, thence eastward and crossing at the outlet of Shallow Current Lake, thence in a direct line to a branch of the Albany River. From near this river Indians report a gravel ridge running the whole distance to New Brunswick House on the Moose River.

In reference to the extent of arable land met with between the north end of Long Lake and Moose River along the line of exploration, I am of opinion that the belt in which good land is found does not extend much more than 60 miles northward from the height of land; but Dr. Bell, in his Geological Report of 1877-8, says, "after passing the 'swampy grounds' north of Missinabi Lake, the traveller cannot fail to be struck by the abundance and general fertility of the soil exposed on the banks of the Missinabi and Moose Rivers, *all the way to Moose Factory.* I examined the country for a mile or two back of the river in several places, for the special purpose of ascertaining the nature of the soil, and found it excellent in all cases, but tending to become more swampy in receding from the river in the region below the Long Portage."

From this it would appear that the fertile soil in the vicinity of the rivers is not confined to the 60 mile belt north of the heights of land. In a report made of a survey from the Missinabi and Moose Rivers eastward, during the summer of 1871, I called your attention to the extent and general fertility of soil met with.

This examination and survey was made at a season when the vegetation is at its best, it was its luxuriance, together with the size and abundance of the timber, which first called our attention to the soil, It was for the general similarity of the country passed over, during the exploratory survey of last winter to the above region, that led us to infer the fertility of the soil.

A considerable extent of it is found around Long Lake, on both the eastern and western shores.

From the eastern shore of the lake along the line of exploration, the fertile soil, gravel ridges, and swampy ground appears to be about equally divided for the first forty miles.

From the 40th mile to the 60th, from the 70th to the 95th and from the 120th, fertile soil appears to predominate. It is in these belts that the rivers are found, in the vicinity of which the soil is good.

Owing to the peculiar circumstances in which we were placed, our examination of the country only extended from 5 to 10 miles on either side of the explored line. Comparing the country along those rivers with that along the Missinabi Moose River, from their similarity I would infer that the soil would be the same in character and extent.

Considerable tracts of clay land were met with, similar to that at the Hudson Bay Company's post on Long Lake, where vegetables, coarse grain and timothy are successfully grown. On the river bottom, spruce, tamarac and cedar timber abounds, the largest ranging from 1 to 3½ feet in diameter.

A considerable area of burnt country was passed through. In the winter we had no means of judging of the soil, excepting from the fact of its having been burnt over

would lead to the the conclusion that it was dry, probably a sandy loam. As I have observed, that soil predominates in burnt districts, and although not to be classed with the clay soils, it produces leguminous plants and the clovers in abundance when brought under proper cultivation.

In conclusion, I heartily agree with Dr. Bell, who says in his report to above, "I have no doubt that at some future time this territory will support a large population."

Respectfully submitted.

I have the honor to be, Sir,
Your most obedient and humble servant,

C. H. GAMSBY.

SANFORD FLEMING, Esq., C.M.G.,
Engineer-in-Chief, Canadian Pacific Railway.

REPORT ON SURVEY FROM MOOSE RIVER RUNNING EASTWARD TO LAKE MATAGAMA.

OTTAWA, December 13th, 1880.

SIR,—I have the honor to report that—in conformity with your instructions of July 3rd, requesting me to proceed to Moose River, the eastern end of my exploration of last winter, and continue a compass line eastward to a junction line with Mr. Austin, who was proceeding west from Sturgeon River,—I left Collingwood on the 8th July, and after experiencing some difficulty in procuring means of transport up the Michipicoten River, we reached our initial point, on the 27th of the same month, and commenced operations in accordance with those instructions by running a compass line from the point above referred to, in a general south east course, carefully noting the courses and chaining the distances, and obtaining such other information as the limited time at our disposal permitted. We reached the 116th mile of the exploration on the 9th October ult. Having arranged with Mr. Austin to make the connection between our lines and otherwise complete the exploration, I started on my return, following and traversing the canoe route between the Matagama and Flying Post. This route is at some considerable distance south of the explored line, and its traverse enables us to lay down a number of lakes in our plan, the position of which will very materially affect the projected location of a railway line.

It will facilitate the description of the soil, timber, and general character of the country explored, to divide it into several sections as naturally divided by the larger streams flowing through it.

Section 1—Lies between the Moose and Kapaskaski Rivers, and covers a distance of 32 miles along the line of exploration.

Section 2—Lies between the Kapaskaski and Nestodjiastono Rivers, a distance of 22 miles.

Section 3—Lies between the Nestodjiastono and Ground Hog Rivers, a distance of some 16 miles.

Section 4—Lies between Ground Hog and Matagama Rivers, a distance of 44 miles.

In each of these sections the soil and general characteristics are different; the surface of the ground varying from lightly undulating to high ridges and broken, the soil varying from the clay. and clay loam of the first section, to the light sand of the fourth.

Section 1.—This section of 32 miles in length, and probably from 30 to 60 miles in width, from north to south, is lightly undulating, with gradual rise eastward. The soil is clayey loam or grayish mud mixed with vegetable mould. It is

identical with the soil in the vicinity of the Hudson Bay Post, called New Brunswick House, where the agent informed me that fine crops of coarse grains and roots were grown during the past season. Fully 70 per cent. of the soil of this section may be classed as very good. The remaining 30 per cent. is composed of inferior lands, gravel ridges and muskeg.

Timber, (birch, poplar, cedar, spruce and tamarac) is found in great abundance, and in many localities of large size; the cedars are particularly fine. The other varieties will furnish large quantities of fuel when required.

Section 2.—This section of 22 miles in length, is apparently of less width than Section 1. Broken, and high ridges occur on which granite rock crops out. The clay and marl soil occurs only in belts, and is replaced by sandy loam, mixed with boulders. Probably 50 per cent. of the soil of this section would rank as good. The remaining portion, although not worthless, would be classed as inferior.

A large portion of this section has been burned over; timber will be found only in the swamps on these portions. In the unburned portions a moderate quantity of white pine of fair size is found mixed, with the varieties prevailing on section 1. No muskeg of any size occurs in this section.

Section 3.—This section of about 16 miles has a fair proportion of clay soil, extending from the Nestoljiastono River, about four miles in a south-easterly direction to the Pishganagamee River. From the latter river to the end of the section the soil becomes sandy with boulders, and although classed as inferior, I found fine crops of barley growing at the Hudson Bay Company's flying post on Ground Hay Lake. The barley was stored at the time of my first visit, viz, September 15th. The potatoe vines had been touched with frost about that time, but were not killed till later on in the season.

The timber of this section is very similar to that of *Section* 1, except that red pine takes the place of the spruce. Considerable quantities of red and white pine of good size are found throughout the whole of this section.

Section 4.—This section lies between the Ground Hay and Matagama Rivers, a distance of 44 miles along the explored line. It is much higher and more broken than the other sections. Considerable rock is met with on the higher ridges and around the lake shores. The soil is sandy loam and boulders, and may be classed as inferior. Barley and oats of an inferior quality were grown at the Hudson Bay post on Matagama Lake. I think the poor quality of the grain was owing to poor cultivation and the exhausted condition of the soil, rather than to any natural sterility.

There is a great abundance of red pine growing on this section. It is tall, straight and sound, varying from four to 14 inches in diameter; probably not up to the standard of lumber for exportation, but of great value for local and domestic uses.

The numerous lakes and streams will afford an easy means of moving the raw material to points where abundant water power may be found for its manufacture. Means of transportation being furnished, there will spring up a large and increasing trade in the produce of the forests between this section of the country and the prairies of the North-West.

In considering the adaptability of this country for railway construction it will be necessary to divide it into two sections.

Section I.—From Moose River to Ground Hog River, a distance of 70 miles. A good alignment may be obtained in the immediate vicinity of the explored line. No exceptionally sharp curves will be required.

The gradients for the most part will be light; any gradient heavier than 1ft. per 100ft. will be short and, I think, need not exceed 1.25ft. per 100ft., or 66ft. per mile. The work I should classify as light to medium with very little solid rock.

Section II.—From Ground Hog River to the Matagama River, a distance of 41 miles, will require a careful examination with levels to determine the best location. If possible the line should be placed further south than the explored line, in order to reach the south-west branch of the Matagama River, down the valley of which a good line may be found.

Sharper curves and heavier gradients will be required on this section. The work will rank from medium to heavy with some solid rock. The muskegs are not of a serious character and are of small extent. As we cross seven distinct branches of the Moose River, considerable bridging will be required, but by careful selection of crossings I think that not more than two spans of 100 feet each will be required over any of the streams.

All of which is respectfully submitted.

I have the honor to be, Sir,

Your most obedient servant,

C. H. GAMSBY,
Engineer-in-Charge.

To COLLINGWOOD SCHREIBER,
Engineer-in-Chief.

REPORT ON SURVEY FROM LAKE MATAGAMA TO END OF LOCATION ON STURGEON RIVER.

CANADIAN PACIFIC RAILWAY,

OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 13th December, 1880.

SIR,—I have the honor to report that, agreeably to your instructions, dated at Ottawa, July 3rd, 1880, directing me to make a compass survey from a point on the Sturgeon River, 63 miles from South-East Bay, Lake Nipissing, and hence by the Sturgeon and Whanapetœ Rivers, to meet Mr. Gamsby, who was on the located line from South-East Bay, Lake Nipissing, coming from Moose River to connect with my survey;

I beg to state that, from the difficulty in procuring boats and canoes, for transportation we were unable to commence operations before the 20th of the month.

The line for 22 miles from my starting point follows generally near the left bank of the river, and in numbers of places where we endeavored to shorten the route we found that an adherence to the river would be best with further exploration.

From the 22nd mile we cross to the right bank of the river by a good rock crossing, following this bank to the 38th mile, finding that here on the left bank the immediate valley near the river will have to be adhered to.

Thence again crossing to the left bank the line would retain that side of the river to the 49th mile; then crossing the river below Pants Lake to right bank and going nearly north-westerly, winding between a number of lakes over the height of land to the left bank of the Whanapetœ River, 58th mile; this distance over the height of land will have to be carefully explored to obtain an easy line.

From the 58th mile to the 61st mile the left bank is followed; thence crossing to the right bank and generally following it to the 70th mile, where again the river is crossed, and the left bank followed to near the 73rd mile, where again the river is crossed, and the right bank is crossed and adhered to up to the 77th mile.

Near the 77th mile another crossing is made to the left bank, thence the line follows the left bank, but here the river is very insignificant in size, and again crossing the stream and going in a north-westerly direction to the southerly shore of Oshkegami Lake, thence following near the lake and near the line surveyed to the 83rd mile.

Thence going north of Pijiwagamissing Lake and south of Obickumimiga Lake, and thence following to the 102nd mile where the Nebawgwasee River has to be

crossed, thence northerly to the point of junction with Mr. Gamsby, 116th mile, the line running in many places over a rough country, but as here as in other places generally, no efficient exploration was made, the line is only laid down as approximate.

The timber of the first part of the line is chiefly white pine, spruce, birch, tamarac, balsam, and maple; the latter half of the line is chiefly spruce, pitch pine, white and red pine, balsam, and some tamarac with a small quantity of maple.

There will be eleven river crossings in this distance of 116 miles, and with an ordinary number of smaller streams also to be crossed, the largest of these crossings being the entrance to a bay of the lake.

Up to the 70th mile there are a good number of rocky and other hills to be encountered, and in many places points to be cut through and gullies crossed. The first sections are generally sandy loam or sand; some good land has been gone over, but not of any great extent.

From the 70th mile to the termination of the work the land is more level, now sand, sand and gravel and sandy loam, with swamps in various places. There is some good land near the Matagama Lake, but it is not extensive.

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

W. A. AUSTIN,
Civil Engineer, P. L. S.

COLLINGWOOD SCHREIBER, Esq.,
Engineer-in-Chief, Canadian Pacific Railway.

REPORT ON SURVEY FROM STURGEON RIVER TO JUNCTION WITH MR. MURDOCH'S SURVEY OF 1872.

CANADIAN PACIFIC RAILWAY

OFFICE OF THE ENGINEER-IN-CHIEF.
OTTAWA. 13th December, 1880.

DEAR SIR,—Acting under instructions from Sandford Fleming, Esq., C.M.G., (late Engineer-in-Chief,) dated 12th May, 1880, I proceeded to the terminus of Mr. Austin's survey of 1879, on the Sturgeon River, where I arrived with my party on the 3rd June, and began a trial survey for a line of railway from that point towards the Sault Ste Marie.

I found what I considered a good crossing of the Sturgeon River at ten chains from my starting point, where the river is about 200 feet wide at high water. This would require 300 feet of bridging, or two spans of 150 feet each, on a grade of 0·75 per hundred. At Station 1750 the line rises on to a clay and gravel ridge, where a cutting of 16 feet deep at the mouth tapers off to grade at 32·00. From this point the line drops down on a grade of 0·62 per 100 to the flats of Busteed Creek, which it follows for 5½ miles in very light work, excepting three or four small spurs of rock where the creek is confined. Crossing Busteed Creek at Station 300 with a span of 100 feet, the line begins to rise to the summit between the waters of the Sturgeon and Wahnapitapee, and enters upon a barren, burnt, rocky country and follows along the side hills with moderate rock work and easy grades up to the eighth mile, thence on a grade of 1·00 per 100 to a little past the ninth mile, when it reaches its highest point at an elevation of 953 feet above sea level. From Station 500 the line follows the general level of the country at an elevation of 940 feet, through small rocky ridges and muskegs, with light rock work up to the eleventh mile, and then begins to descend on a grade of 0.76 per 100 for half a mile, and then 1.00 per 100 for three-fourths of a mile, dropping into a muskeg at the thirteenth mile. There are two

rather heavy rock cuttings on the last two miles, which can be partially avoided on location. After crossing the muskeg, which is about three-fourths of a mile long, the line enters green timber near the 14th mile, and the next four miles is over clay and sand ridges and spruce swamps, with light work and easy grades to the 18th mile, where it reaches the banks of the Wahnapetœ River. From the 18th mile the line follows along the banks of the river, mostly on side hill ground intersected by numerous ravines. The side hills consist principally of clay and sand on the surface, with probably rock underlying, excepting a few small rock cuts up to the 24th mile, where the line enters on a level flat, which carries it up to the 26th mile, when it crosses a stream 50 feet wide, requiring a bridge of about 80 feet span. Between the 26th and 27th miles the line crosses the Wahnapitapee River, at the head of a series of falls, with small rock cuttings on both sides. I propose to bridge this river with two spans of 150 feet each, and one span of 100 feet, there being good natural rock foundations above low water at the necessary points. From the 27th to 28th mile the work is very light on a clay flat. At the 28th mile the line crosses a small clay ridge and descends on a grade of 0·75 per 100, along side hill ground, to the 29th mile with middling heavy work about half clay and half rock. From the 29th to the 31st mile the work is all light side hill rock, excepting one heavy rock cut where the shore of the lake could not be followed. From the 31st to the 35th mile the work is light with very little rock. From the 35th to 36th mile, the line runs through a rocky muskeg, but work not heavy, and from thence along the shore of Long Lake up to the 39th mile principally on side hill clay and gravel, with moderate work. Leaving the shore of Long Lake at the 39th mile the line rises on easy grades to the plateau to the north of the lake, which it follows to the 43rd mile, work moderate and mostly in sand and clay. From this point the line begins to descend on grades of 1·00 per hundred to the 45th mile, with rather heavy cuts and fills and principally in rock. From the 45th mile the line follows the south shore of Lake Mugatawaganing; up to the 48th mile work easy, but about one-half rock. From this point it follows the stream from the outlet of the lake for three-fourths of a mile and crosses it at the mouth with a span of 60 feet, then following the shore of Round Lake up to the 50th mile, work on this portion light though it infringes on the lake for a short distance in shallow water. From the 50th to the 53rd mile the work would be very light and altogether in clay and sand. Between the 53rd and 54th mile the line rises over the divide between the waters of Whitefish River and those of the Vermilion River, all in rock work, but not heavy; here it enters a wet flat which stretches to the crossing of the Vermilion River at the 55th mile with a bridge 500 feet long. Between the 55th and 60th mile the work becomes somewhat heavier, there being two summits to get over caused by two long bends in the Vermilion River which is a very crooked stream. The work on this five miles would be moderately heavy, and composed of about half rock, and half clay and gravel. The same description applies to the work up to the 69th mile; in this distance the river is crossed three times, involving four spans 100 feet, two spans 150 feet and one span of 60 feet, all on good rock foundation. Between the 69th and 71st mile the work may be classed as very heavy, involving a bank across a deep bay of lake 1,500 feet long and 20 feet deep, also another bank and cutting somewhat lighter, but still heavy, mostly in rock. From this to the 75th mile there is no heavy work excepting two cuttings, which are moderately heavy with indications of being principally composed of clay and gravel, the last mile being very light. From the 75th to the 78th mile the work continues of a moderate character, being mostly on side hill with numerous gullies and a few light rock cuts, the rest in sand and gravel. At the 78th mile, the line strikes the shore of the Spanish River, after which the work becomes of a very light nature up to the 102nd mile, excepting two or three short pieces, where the line is crowded on the side hill and gullies are numerous. The line may be said to follow the surface of the ground, and is quite equal to a prairie section. At 95½ miles the line crosses the Spanish River, with three spans of 150 feet each, in 11 feet of water and clay foundations. From the 102nd mile the work becomes somewhat heavier, the ground being more undulating, but still it may be classed as light up to the 116th mile, the cuttings being, probably,

not more than one-fourth rock. Near the 116th mile the line begins to leave the shore of Lake Huron and rise over the summit between the Spanish and Serpent Rivers, where I had a good deal of difficulty in finding a feasible line. From this point to the 121st mile the work may be said to be heavy and principally in rock; crossing the Serpent River at 120½ miles, with a span of 100 feet. The work is of a light and easy nature, excepting a few small rock cuttings, up to the 126th mile. From this point to the junction with Mr. Murdock's line, at the 131st mile, the work is moderate and probably one-fourth rock. The grades laid down on the profile nowhere exceed 1·00 per 100, and then only in short lengths.

The curves are principally confined to four degrees and under, but in some few instances 5° curves have been found necessary in getting round sharp bends in lakes and rivers.

Timber for bridging and culverts is generally to be had within easy distance of the line, as also plenty of tie timber.

Ballast will be found along the line at convenient points and of good quality.

There are no lands of any extent fit for cultivation, being only found in isolated patches of no great extent.

The line is easy of access from the Georgian Bay and Lake Huron at several points. The eastern end by French River, Lake Nipissing and Sturgeon River, and also the Wahnapitapee River. The central portion by way of Whitefish River, and the western portion by Spanish River, which is navigable for about 20 miles from its mouth, and also by the river and shores of Lake Huron.

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

A. BRUNEL, Jr,
Engineer-in-Charge.

COLLINGWOOD SCHREIBER, Esq.,
Engineer-in-Chief.

REPORT ON CANADA CENTRAL EXTENSION FROM PEMBROKE TO LAKE NIPISSING.

OTTAWA 11th October, 1880.

SIR,—I have the honor to report on the subsidized portion of the Canada Central Railway, extending from the town of Pembroke to the vicinity of Lake Nipissing, a distance of 130 miles.

The line of this railway has been finally decided upon as far as the 107th mile from Pembroke, and the location of the remaining distance is now being carried on towards completion.

The land has been cleared up to the 95th mile at the village of Mattawa. The works of grading and bridging are in progress as far as the 74th mile. The track has been laid and ballasting nearly completed to the 61st mile; in this distance, however some of the large embankments have yet to be made up to the full height and width.

Station buildings have been erected and sidings put in at the following points: Chalk River, Weston, Point Alexander, Moore's Lake, Mackie's, Rockcliffe, Bissetts and Deux Rivieres, together with the necessary water service.

The track to Mackie's Station, 46th mile, has been laid to the contract guage, 4 ft. 8½ in., beyond that point, in order to enable the old broad gauge engines and cars of the Canada Central Railway to be used in construction, the 5 ft. 6 in. gauge has been laid, which will be reduced to the standard gauge as the line is progressively completed.

Rails sufficient for 131 miles of track have been delivered on the line, viz: 1,679 tons of iron and 9,530 tons of steel, being the whole required, with the exception of a small quantity for sidings.

Traffic is at present being carried on regularly to Bissetts, a distance of 60 miles from Pembroke, and it is expected to have the line so far completed by the end of November next as to enable freight trains being run up to the 71st mile, near Deux Rivieres.

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

THOMAS RIDOUT,
Engineer-in-Charge.

COLLINGWOOD SCHREIBER, Esq.,
Engineer-in-Chief,
Canadian Pacific Railway.

APPENDIX No. 7.

REPORT ON PROBABLE ROUTE OF A LINE OF RAILWAY BETWEEN SOUTH-EAST BAY, OF LAKE NIPISSING AND PRINCE ARTHUR'S LANDING.

CANADIAN PACIFIC RAILWAY,

OFFICE OF THE ENGINEER-IN-CHIEF,
OTTAWA, 20th December, 1880.

SIR,—I beg to submit a condensed report, descriptive of the probable route for a line of railway between South-East Bay of Lake Nipissing and Prince Arthur's Landing.

The line will commence at the termination of the Canada Central extension, subsidized by the Government, near the South-East Bay of Lake Nipissing, and follow generally the course of the Sturgeon River. It is found that the country is in many places broken and rocky, with some level reaches of land and boulders, and sandy loam and swamp. The alignment will be fair and the grades easy to the 20th mile, or to the base of Taylor Hills. This rough ground extending over 4 miles, will be overcome by crossing it in a diagonal direction, requiring grades of 1 per 100 in a number of places. The cuttings will be moderately heavy, and generally in rock.

From the 24th to the 52nd mile the line will trend to the northward and follow the Smoke River Valley, up to the 63rd mile; the country is very level, and the line will be easy of construction.

From 63rd to the 112th mile it was found that the valley of the Sturgeon River afforded the best location for the railway; it involves, however, three crossings of the river, the last being to the right bank, at the 112th mile, below Paul's Lake. The line thence runs north-westerly, winding between a number of lakes, over the height of land to the Wahnapitœ River, which it reached at the 121st mile. Further and careful exploration will be required in order to obtain an easy line over this height of land.

From the 121st mile the line was continued up the valley of the Wahnapitœ, crossing the river at the 124th, 133rd, 136th, and 140th mile, thence following the left bank of the river, which is here but a small stream, the line once again crosses to the right bank, and in a north-westerly direction, reaches the southern shore of Oshkegamie Lake, and continues near this lake to the 146th mile. Thence to the north of Pijiiwagamissing Lake, and south of Obickuminiga Lake, crosses the river Ojasing, near its mouth at the 153rd mile; thence for 12 miles, through a generally level country, to a crossing of the Ebawquasee River, from which, in a northerly direction, over a rough country, to the 1769th mile. The junction with Mr. Gamsby's exploration.

The timber from the 63rd, say to the 120th mile, consists chiefly of white pine, spruce, birch, tamarac, balsam and maple, and from the 120th to the 179th mile, of spruce, pitch pine, white and red pine, balsam and some tamarac, with a small quantity of maple.

From the 63rd to the 133rd mile the country is hilly, with considerable amount of rock, but the level portions are generally sandy loam or sand. There is some good land in the section, though of no great extent.

From the 133rd to the 179th mile the country is more level, consisting of sand and gravel, and sandy loam, with swamps in various places. Good land of limited amount was found near the Matagama Lake.

On the 116th miles last described there will be eleven river crossings. From the 179th to the 223rd mile, in a northerly direction, between Matagama and Ground-Hog Rivers, the country is higher and more broken than that lying farther west

towards Moose River, with a considerable amount of rock on the high ridges and the shores of the lakes. The soil is inferior, of sandy loam and sand, with boulders. Barley and oats were grown at the Hudson Bay post on Matagama Lake, but of poor quality of grain, owing, however, in a great measure to bad cultivation and the exhausted condition of the soil rather than to any natural sterility. There was found in the section an abundance of tall, straight and sound pine, from four to fourteen inches in diameter, of value for local consumption, though not up to the standard for exportation.

From the 223rd to the 239th mile, Ground-Hog Lake to the Nestodjiastono River, for about 12 miles the soil is sandy, with boulders, and although it may be classed as inferior, yet five crops of barley and roots were found growing at the Hudson Bay Flying Post, on Ground-Hog Lake. The barley was stored on the 15th of September, at which time the potato vines had been touched with frost, but were not killed until later in the season. From the Nestodjiastono River four miles, there is a fair proportion of clay soil. Considerable quantities of red and white pine of good size were found throughout the whole of this section, together with birch, poplar, cedar and tamarac.

From the 239th to the 261st mile, between the Nestodjiastono and Kapaskaski Rivers, the country is broken, with high ridges in which granite rocks crop out; clay and marl soil occurs only in belts, and is replaced by sandy loam mixed with boulders. Probably 50 per cent. of the soil of this section would rank as good, the remaining portion although not worthless would be classed as inferior. A large part of this section has been burnt over, but where the fire has not destroyed the timber, a moderate quantity of fair sized white pine is found mixed with birch, poplar, cedar, spruce and tamarac. No muskeg of any size was observed.

From the 261st to the 293rd mile between the Kapaskaski and Moose Rivers, the country is slightly undulating, with a slight gradual rise eastward. The soil is a clayey loam or greyish marl mixed with vegetable mould and is identical with that ground in the vicinity of the Hudson Bay post of New Brunswick House, where during the past season fine crops of coarse grains and roots were produced.

Fully 70 per cent. of the soil of this section may be classed as very good, the remaining 30 per cent. is composed of say about one-third inferior and the balance of small muskegs and gravel ridges. This character of country extends here from 30 to 60 miles in width from north to south. The timber consists of birch, poplar, cedar, and tamarac and is found in great abundance, in many places of large size. The cedars are particularly fine, and the other varieties will supply large quantities of fuel.

From 179th to the 223rd mile Matagama to Round Log River, sharper curves and steeper gradients will be required on this section than on the adjoining one to Moose River. The work will range from medium to heavy with some solid rock. The muskegs are not of a serious nature, and are of small extent. From the 223rd to the 293rd mile, Ground-Hog to Moose Rivers a good alignment may be obtained, no exceptionally sharp curves will be required, and the gradients will for the most part be light. The work would be classified as light to medium, with very little solid rock.

As seven distinct branches of the Moose River will have to be crossed, a considerable amount of bridging will be required, but probably no more than two spans of 100 feet each will be required over any one stream.

From the 293rd te the 350th mile the ground in the immediate vicinity of Moose River is somewhat broken, but a line three or four miles to the north of that surveyed would give favorable results; country generally flat or lightly undulating, with swamps or low sand ridges; fertile land and good timber is found along the river valleys.

From the 350th to the 400th mile the country is lightly rolling; a considerable portion has been burned over; some timber in the swamps; grades would be easy and the greater portion of the work light. On the line explored some ridges of rock are crossed, but they could be avoided on a location survey.

From the 400th to the 450th mile the line should be placed about 10 miles north of that explored, in order to avoid the height of land and Shallow Lake.

Crossing near the outlet of the above named lake a nearly flat country is met with, giving very easy gradients and light work.

From the 450th to the 500th mile the country is mostly flat, gravel and sandy loam predominating; gradients easy, and work light; timber scarce; some good land in the immediate vicinity of Long Lake.

From the 500th to the 550th mile the country is somewhat broken and rocky; the gradients heavy and undulating; the work would be medium to heavy; no timber of any value near the surveyed line; the soil is a barren mixture of sand and white clay.

From the 550th to the 580th mile, at the crossing of Nepigon River, the ground is very much broken up with high rock bluffs and deep ravines.

The gradients are heavy, attaining to a maximum of 1·50 feet per 100, for about two miles. There is a large percentage of curvature, and the work would classify as heavy to excessively heavy. Some timber is found in the vicinity of Lake Helen, and small tracts of fertile land. The bridging and water accommodation would be light, the streams being crossed at or near their sources, are narrow and of only medium depth. Valuable timber and fertile land is found throughout almost the whole length of this section, in belts of greater or less extent, their proportions being in some measure governed by the size of the rivers upon which they border.

From the 580th to the 585th mile at Red Rock, a considerable portion of this section is rough and broken, and a large percentage of the work would be rock, and possibly one or two short tunnels, the gradients would be mostly heavy. A large percentage of the alignment would be curvature, ranging from medium to sharp. A portion of the work, say from four to six miles, would be classified as exceedingly heavy, the remaining portion is heavy.

From the 585th mile the line will run southerly along the margin of Nipigon river and bay, for a distance of five miles, thence following the course of Trout Creek for two and a half miles, then crossing Black Sturgeon River at the 596th mile and continuing in a straight line to the 603rd mile, reaching the shores of Black Bay, thence along the same to the 610th mile. This section of 25 miles will be over ground suitable for easy alignment and light work, being composed of loam and sandy soil, except for about two miles where the line leaves Nipigon Bay, and though the material will be chiefly rock the work will not be heavy.

From the 610th mile the line continues tolerably direct over slightly uneven ground, crossing Pearl River at the 618th mile, and following close the course of the stream and Low Lake, the summit or neck of the promontory of Thunder Cape at the 625th mile, the elevation being 465 feet above the waters of Lake Superior.

From the 625th mile the line will follow the course of the east branch of the Mackenzie River with a descending grade of 26 feet per mile, for four miles, touching some rocky points. The alignment will be fair and the work moderate, with the exception of one mile at the summit, which will have rather heavy rock cuttings and sharp curvature. The grades for the next five miles will be light and the work very easy over sand clay soil.

From the 630th mile the line will follow up the west branch of the Mackenzie River, thence passing through an opening in a rocky ridge at the 638th mile, the line will descend to Prince Arthur's Landing at the 650th mile, with an average gradient of 24 feet per mile. The work over this section will be light and the alignment fair.

I have the honor to be, Sir,

Your obedient servant,

COLLINGWOOD SCHREIBER,

Engineer-in-Chief.

F. BRAUN, Esq., Secretary,

Department of Railways and Canals.

LIST OF CONTRACT intered into in connection with the Canadien Pacific Railway.

No. of contract.	Names of Contractors.	No. of contract	Names of Contractor.
1	Sifton, Glass & Co.	29	Cooper, Fairman & Co.
2	Richard Fuller.	30	Robb & Co.
3	F. J. Barnard.	31	Patent Bolt and Nut Co.
4	Oliver, Davidson & Co.	32	Cooper, Fairman & Co.
5	Joseph Whitehead.	32*a*	LeMay & Blair.
5*a*	Joseph Whitehead.	33	Kavanagh, Murphy & Upper.
6	Guest & Co.	34	North West Transportation Co
7	Ebbw Vale Steel, Iron and Coal Co.	35	Cooper, Fairman & Co.
8	Mersey Steel and Iron Co.	36	William Robinson.
9	West Cumberland Iron and Steel Co.	37	Heney, Charlebois & Flood
10	West Cumberland Iron and Steel Co.	38	Edmond Ingalls.
11	Naylor, Benzon & Co.	39	John Irving.
12	Hon. A. B. Foster.	40	Gouin, Murphy & Upper.
13	Sifton & Ward. / Purcell & Ryan.	41	Purcell & Co.
		42	Manning, Macdonald, McLaren & Co.
14	Sifton & Ward. / Jos. Whitehead (completing contract No. 14).	43	Joseph Upper & Co.
		44	West Cumberland Iron and Steel Co.
15	Joseph Whitehead.	45	Barrow Hœmatite Steel Co.
16	Canada Central Railway Co.	46	Ebbw Vale Steel, Iron and Coal Co.
17	Anderson, Anderson & Co.	47	Patent Bolt and Nut Co.
18	Red River Transportation Co.	48	John Ryan.
19	Moses Chevrette.	49	Richard Dickson.
20	Merchants Lake and River Steamship Co.	50	Miller Brothers & Mitchell.
21	Patrick Kenny.	51	Dominion Bolt Co.
22	Holcomb & Stewart.	52	North West Transportation Co.
23	Sifton & Ward.	53	Barrow Hœmatite Steel Co.
24	Oliver, Davidson & Co.	54	Guest & Co.
25	Purcell & Ryan.	55	West Cumberland Iron and Steel Co.
26	James Isbester.	56	The Kellogg Bridge Co.
27	Merchants Lake and River Steamship Co.	57	The Truro Patent Frog Co.
28	Red River Transportation Co.	58	W. Hazelhurst.

LIST of Contracts, &c.—*Continued.*

No. of Contract.	Names of Contractors.	No. of Contract.	Names of Contractors.
59	Whitehead, Ruttan & Ryan.	74	Wm. Gooderham, Jr.
60	D. O. Mills.	75	Pillow, Hersey & Co.
61	D. O. Mills.	76	Cooper, Fairman & Co.
62	D. O. Mills.	77	Stubbs & Co.
63	D. O. Mills.	78	Skead & Haycock.
64	Ryan, Whitehead & Ruttan.	79	The Truro Patent Frog Co.
65	James Crossen.	80	James Crossen.
66	Bowie & McNaughton.	81	Dunlop & Rainnie.
67	Moncton Car Co.	82	Ontario Car Co.
68	Ontario Car Co.	83	James Crossen.
69	North West Transportation Co.	84	Ontario Car Co.
70	North West Transportation Co.	85	Nobles & Follis.
71	The Toronto Bridge Co.	86	Fairbanks, Morse & Co.
72	Ontario Car Co.	87	James Crossen.
73	The Toronto Bridge Co.		

STATEMENT of Contracts entered into since the 1st July, 1879.

Railways.	Serial No. of Contract.	Deed, Letter or otherwise under which contract was made.	Name of Contractor.	Date of Contract.	General description of Contract.
Canadian Pacific Railway.....	44	Letter No. 20,289...	West Cumberland Iron and Steel Co. (Limited)..	June 24, 1879	To supply and deliver at Montreal 2,000 tons of Steel Rails.
do do	45	do ...	Barrow Hœmatite Co..	June 20 & 25,'79	To supply and deliver at Montreal 1,500 tons of Steel Rails.
do do	46	do ...	Ebbw Vale Steel and Iron Co.	June 19 & 26,'79	To supply and deliver at Montreal 1,500 tons of Steel Rails.
do do	47	do ...	Patent Nut and Bolt Co. (Limited).	July 4, 1879	To supply and deliver (*f. o. b.*) at Newport, 48 tons Bolts and Nuts.
do do	48	Deed No. 5,904.....	John Ryan.....	Aug. 19, 1879	To construct 1st 100 miles, section West of Winnipeg.
do do	49	do 5,896	R. Dickson	Aug. 15, 1879	To build Stations and Platforms, Pembina Branch.
do do	50	do 5,912	Miller, Bros. & Mitchell.....	Sept. 4, 1879	To supply 400 tons of Spikes at Fort William and 300 tons at Montreal.
do do	51	do 5,910	Dominion Bolt Co.	Sept. 8, 1879	To supply at Fort William 35 tons Fish Plate Bolts and Nuts.
do do	52	Letter No. 12,595...	North West Transportation Company	Sept. 30, 1879	To transport 4,000 tons Steel Rails and fastenings, Montreal to Fort William.
do do	53	Deed No. 6,022	Barrow Hœmatite Steel Co...	Aug. 30, 1879	To supply and deliver in bond at Montreal, 30,000 tons Steel Rails, etc.
do do	54	Deed No. 5,933	Guest & Co	Sept. 11, 1879	To supply and deliver at Point-Lévis or Montreal, 10,000 tons of Steel Rails, &c.
do do	55	do 5,934.....	West Cumberland Iron and Steel Co. (Limited)..	Aug. 29, 1879	To supply and deliver at Montreal, 5,000 tons of Steel Rails, &c.
do do Pembina Branch.	56	Letter No. 21,015...	The Kellogg Bridge Co.....	Nov. 24, 1879	To furnish iron superst'ct'e for Bridge over Rat River.
do do	57	O. in C. No. 21,257	The Truro Patent Frog Co. ...	Dec. 23, 1879	To supply and deliver on cars at Truro, N.S., 120 Railways frogs, with Signal frames and switch gear complete.
do do	58	Letter No. 13,284...	W. Hazelhurst..	Feb. 26, 1880	To supply, deliver and erect one decked and 3 open turntables.
do do	59	do 21,639...	Whitehead, Ruttan & Ryan...	Feb. 7, 1880	To supply 100,000 Ties for 2nd 100 miles Section West of Red River.
do do	60	Deed No. 5,973.....	D. O. Mills.....	Dec. 23, 1879	To construct Section A.—Emory's Bar to Boston Bar, B.C.
do do	61	do 6,014	D. O. Mills.....	Feb. 10, 1880	do do B.—Boston Bar to Lytton, B.C.

do	do	.....	62	do	5,975.....	D. O. Mills	Dec. 23, 1879	do	do C.—Lytton to Junction Flat, B.C.
do	do	.....	63	do	5,968.....	D. O. Mills.....	Dec. 15, 1879	do	do D.—Junction Flat to Savona's Ferry, B.C
do	do	.....	64	do	6,043.....	Ryan, Whitehead & Ruttan...	March 18, 1880	To build temporary pile and trestle bridge over Red River at Point Douglas, Winnipeg.	
do	do	.....	65	do	6,023.....	James Crossen	March 15, 1880	To construct 4 first class Passenger cars.	
				do	6,035.....	James Crossen.....	April 8, 1880	do	1 One Official car.
do	do	.....	66	do	6,059	Bowie, McTavish & Co.	May 3, 1880	To construct 2nd 100 miles section West of Winnipeg.	
do	do	.....	67	do	6,033.....	Moncton Car Co	March 31, 1880	To construct 60 Box and 60 Platforms cars.	
do	do	.. ....	68	do	6,025.....	Ontario Car Co.	May 8, 1880	do	2 Postal and Baggage cars.
do	do	.....	69	O. in C. No. 22,981		North West Transportation Company.	June 14, 1880	To transport 3,000 tons rails and fastenings Montreal to Emerson.	
do	do	.....	70	Deed No. 6,124		do do ..	May 25, 1880	To transport rails and fastenings about 23,000 tons from Montreal to Emerson and Fort William.	
do	do	.....	71	do	6,133.....	Toronto Bridge Co.....	June 22, 1880	To supply and erect superstructure for bridges over E. & W. outlets of Lake of the Woods.	
do	do	.....	72	O. in C. No. 23,301		Ontario Car Co.....	July 7, 1880	To supply and deliver 50 Flat cars.	
do	do	.....	73	Deed No. 6,151		Toronto Bridge Co.....	Oct. 9, 1880	To supply and erect superstructure for bridges, for Joe Creek, Rosseau and Seine Rivers.	
do	do	.. ...	74	do	6,172.....	W Gooderham, jnr	Aug. 14, 1880	To supply water service on the Haggas System.	
do	do	.....	75	do	6,161.....	Pillow, Hersey & Co.....	Aug. 16, 1880	To supply and deliver at Montreal 100 tons of spikes.	
do	do	.....	76	do	6,163.....	Cooper, Fairman & Co	Sept. 13, 1880	do	100 do
do	do	.. ..	77	do	6,169	Stubbs & Co.....	Aug. 17, 1880	To construct 200 miles of wire fencing, Pembina Branch and Main Line.	
do	do	.....	.....	O. in C. No. 23,725		Jno. Irving.....	Aug. 10, 1880	To complete the transport of rails from Vancouver to New Westminster..... ...	
do	do	.. ..	78	Deed No. 6,176		Skead & Haycock.	Sept. 3, 1880	To construct 200 miles of wire fencing, Pembina Branch and Main Line.	
do	do	.....	79	O. in C. No. 24,106		The Truro Patent Frog Co....	Sept. 18, 1880	Supply and deliver on cars at Truro, 50 Railway frogs and switch gear.	
do	do	....	80	Deed No. 6,190.....		Jas. Crossen.....	Sept. 22, 1880	To construct and deliver at Emerson 6 Flanger cars.	
do	do	.....	81	do	6,192	Dunlop & Rainnie..	Sept 23, 1880	do	do 6 Snow Ploughs.
do	do	.....	82	do	6,197.....	Ontario Car Co.....	Sept. 22, 1880	do	do 6 Wing do
do	do	.....	83	O. in C. No. 24,247		James Crossen	Oct. 7, 1880	To construct and deliver at Cobourg, 15 platforms cars.	
do	do	.....	84	do		Ontario Car Co	Oct. 5, 1880	To construct and deliver at London, 20 platforms cars.	
do	do	.. ..	85	Deed No 6,218		Nobles & Follis.....	Sept. 24, 1880	To erect freight transfer shed at Emerson.	
do	do	.....	86	O. in C. No. 24,250		Fairbanks, Morse & Co	Oct. 5, 1880	To supply 15 windsmills, towers and tanks for water supply.	
do	do	.....	87	do	24,608	James Crossen...	Nov. 15, 1880	To supply and deliver at Cobourg 2 Snow Ploughs.	

STATEMENT of Constracts entered into since 1st July 1879.

Railways and Canals.	Deed, Letter or otherwise under which contract was made.	Name of Contractor.	Date of Contract.	General description of Contract.
Intercolonial Railway	Deed No. 5,879	Wm. Hazelhurst	May 9, 1879	To supply and fix 4 iron Turntables at St. Flavie, Campbellton, Newcastle and Truro.
do do	Letter No. 20 754	Pillow, Hersey & Co	Oct. 21, 1879	To supply and deliver at Point-Lévis 50 tons of railroad spikes.
do do	do 20,755	Cooper, Fairman & Co	do	do do do
do do	Deed No. 6,021	Danforth Locomotive Co		To construct and deliver at Point-Lévis 3 locomotives for Rivière-du-Loup Section.
do do	do 6,031	James Crossen	April 1, 1880	To construct two 1st class passenger cars.
do do	do 6,037	M. J. Hogan	19,	To ballast line from Chaudière Junction to Rivière-du-Loup.
do do	do 6,053	Alex. Gartshore	March 20, 1880	To supply and deliver in cars at Chaudière Junction 7,000 feet of 6-inch water pipes.
do do	do 6,136	J. Harris & Co	July 16, 1880	To construct 80 box cars.
do do	do 6,138	Robt Cochran	July 6, 1885	do do
do do	do 6,142	Hinckley Locomotive Co. of Boston.	June 19, 1880	do 4 locomotive engines.
do do	do 6,154	Halifax Coal Co.		To supply 30,000 tons, gross, of round coal for Dist. No. 1.
do do	do 6,157	C. T. Bate	June 14, 1880	To grant the use of "Chapleau Patent Nut Lock" on the Rivière-du-Loup Section.
Prince Edward Island Railway	do 5,953	Canadian Engine and Locomotive Co (Limited)	Nov. 24, 1879	To construct and supply 2 locomotive engines.
do do	do 6,118	Wm. Gooderham, jnr.	Aug. 9, 1880	To furnish at places "Haggas Patent Water Elevator for Locomotives."
do do	O. in C. No. 23,595	Isaac Brown	July 31, 1880	To supply 110 tons of Anthracite coal.
do do	Deed No. 6,200	Intercolonial Coal Mining Company	Sept. 16, 1880	To supply 4,500 gross tons mixed round steam coal.
Windsor Branch, N.S. Railway.	do 5,978	Windsor and Annapolis Railway Co.	Nov. 20, 1879	To conduct traffic and working of the line (temporary arrangement.)
Carillon Canal	do 5,875	F. B. McNamee & Co	June 23, 1879	To construct a Dam across Carillon Rapids, and complete slide.
do	do 5,877	J. P. Cooke & Co	July 8, 1879	To form and complete canal works commenced near Carillon Rapids.
Galops Rapids	do 5,899	Wm. Davis & Sons	Sept. 25, 1879	To form channel through Galops Rapids.
Burlington Bay Canals	do 5,922	McDermid & Hendrie	do	To remove parts of old pier, replace the same with new superstructure and general repairs.
Welland Canal	do 5,942	Usher & Battle	Oct. 27, 1879	To construct regulating weir—sluice gates—and roadway bridge near outlet lock, Port Dalhousie.

do	do	5,965	Bannerman & Co	Dec.	5, 1879	To complete works of enlargement section No. 33.
do	do	5,971	F. B. McNamee & Co	Dec.	23, 1879	do do No. 34.
do	do	6,007	McCleary et McLean	Feb.	9, 1880	To supply timber for 1 year or more.
do	do	6,008	James Wilson		do	To supply castings—wrought iron—brass and sundries for 1 year or more.
do	do	6,009	George Gibson	July	7, 1880	To supply forged iron, blacksmithing, for 1 year or more.
do	do	6,143	O'Brien, Gordon & Bergin	July	21, 1880	To construct 19 road bridges.
do	do	6,148	Thos. B Townsend	July	17, 1880	To construct all lock gates, and spare gates, required.
St. Anne Canal	do	5,948	Baskerville, O'Connor & Cassidy	Nov.	26, 1879	To form a Canal, lift lock, &c.
Rideau Canal	do	5,970	John Askwith	Dec.	12, 1879	To extend wharf on East side of Basin.
Lachine and Cornwall Canal	do	6,012	Walter H. Brown	Feb.	17, 1880	To supply timber for lock gates.
Lachine Canal	do	6,145	O'Brien, Gordon & Bergin	July	21, 1880	To construct all lock gates, spare gates required.
Grenville Canal	do	6,140	Heney, Stewart & Co	July	20, 1880	To enlarge lower entrance at Greece's Point, River Ottawa.

APPENDIX No. 8.

OTTAWA, 8th December, 1880.

SIR,—Your letter No. 54,523, was duly received calling for a report on the various works now in progress for the enlargement and improvement of the different canals for the year ending 30th June last.

In relation to this it may be stated that in the early part of the present year a special report (printed) was prepared by me describing all the principal works and matters connected with the respective undertakings up to the end of March last. In the three following months, although a fair rate of progress was made with those that could be advantageously proceeded with at that season, still the actual condition of the different works was so little changed as to scarcely warrant me in occupying time in preparing a description of these minor details.

It may, however, be stated with reference to the Welland Canal that all the works on the Southern division were urged forwaid in such a manner as admitted of opening navigation throughout on the 1st day of May last.

The construction of the lock gates and bridges on this Canal was let and contracts for them entered into in July following; the whole to be completed and ready for use in July 1881.

The contractors for the aqueduct over the Chippewa River at the Town of Welland, after proceeding with the preparation of materials and endeavouring to reconstruct the coffer dam that had been formed with a view to the unwatering of the foundation and erection of the structure, became so discouraged with the result of their efforts that they offered "to relinquish their contract to the Government "and abandon all claims, trusting that the Government will return to them their "securities deposited for said section and pay for all the work done, materials "delivered," etc.

On the 27th of October last a minute of the Honorable the Privy Council was passed granting the contractors the privilege of relinquishing their contract on terms to be hereafter arranged. For this purpose a measurement of the work done and materials provided is now in course of preparation.

In the month of September this year the equipment intended for works connected with deepening a channel through the Galops Rapids was brought on to the place and was found to answer a good purpose, but as the drilling machinery for blasting operations, as well as the machinery for moving the materials is all on the same vessel, the acting parties appear to be convinced that some slightly different arrangement will have to be made in order to proceed with the operations more expeditiously.

The works embraced in the contract for the new lower entrance to the Cornwall Canal are well advanced toward completion, and timber has been provided and delivered for the lock gates required.

LACHINE CANAL.

The principal works connected with the enlargement of this division of the canal system are, with the exception of those at the upper entrance, completed and a settlement in full has been made for four of the sections.

James Worthington and Company were latterly the contractors for sections No. 1 and 2, the aggregate cost of the works on which amounts to the sum of $1,114,599.27. They consisted chiefly in the construction of two lift locks with a basin between them, the side walls of which are of masonry—the erection of piers

and abutments for a bridge above the second lock—forming a regulating weir and raceway—deepening a wide channel through Montreal Basin, excavating Wellington Basin and building side walls of masonry for it, &c.

All these works are adapted to the passage of vessels drawing 18 feet of water when, the levels of the canal are at their ordinary height, and the river is at the lowest stage it has been for the past forty years.

The peculiar nature of the material found at the place occupied by the outlet lock, originally part of the bed of the river, together with the shortness of the season in which the operations could be advantageously proceeded with, rendered the construction of this lock an undertaking that could only be effected by the most determined efforts on the part of the contractors, and frequently at considerable cost outside of any item in the schedule that forms the basis of the contract.

It may also be stated that the contractors suffered a considerable loss by the water from the canal breaking into Wellington Basin, in September 1876, before the works were completed and thereby not only retarding the operations but also damaging their plant. This, they alleged, resulted from there being some old cribwork in the bank of which they had no knowledge. The resident officer of the Department, however, states that the contractors were cautioned not to weaken the bank and that they therefore became responsible. The representations being conflicting, it was considered best after a good deal of discussion, to settle the matter by allowing the contractors part of the damages which they showed clearly that they had sustained.

As aboved stated the contractors for sections Nos. 4 and 5 have also been settled with in full.

The details of the work done on sections Nos. 3, 6, 7, 8, 9 and 10 are well advanced towards completion, so that there is every reason to believe that a fair and reasonable settlement of all of them will soon be made except, it may be, section No. 8 in connection with which some alleged claims ingeniously elaborated on a rather unusual basis have been presented.

Section No. 11, includes all the works connected with the formation of a new upper entrance to the canal, as well as those necessary for basin or harbor accomodation at Lachine. It is situated in that part of the river immediately on the south-easterly side of the present entrance channel to the old canal. It embraces an area of about 48 acres of water surface, part of which is naturally of the full depth and part of it has to be deepened. The entire space is a shoal with a greater or less depth of water over it, and all the soundings taken during the original survey and subsequently led to the impression that the bottom is a comparatively swooth rock surface.

In order to take advantage of the declivity of the river surface between the upper part of the swift water and that part of the line adjoining the shore, a distance of about 6,200 feet, it was decided to construct a line of pier-work the whole distance, and in this way form a smooth water basin inside, of the capacity above stated.

For a distance of fully two-thirds of a mile out from the shore a double line of cribwork has been built and sunk 6 feet apart, and this space on both sides has been lined with double ranges of sheet piles and the whole compactly filled with the best description of puddled clay.

On the outer or river side of this pier work, the material excavated from section No. 10, has been deposited, which forms a wide bank for the greater part of the distance occupied by the double pier work.

In rear of the pier, which forms the south side of the entrance to the old canal, a range of narrow cribwork has been sunk and the space between the old and new work has been lined with sheet piles and afterwards filled with puddled clay.

Two transverse dams have also been built, one at the upper end of the double range of pier work and the other about midway between that point and the lower end of the work.

In August last shortly after the water was pumped out of the lower part of the Section there was found to be considerable leakage at a place where the double range

of cribwork and, of course the puddle wall, is in moderately deep water. This leakage passed under the puddle through porous material deposited in a large hollow or cavity in the rock, the surface part of which was so hard that in sounding little or no difference was observed between it and the rock by which it is surrounded, nor was it ever discovered by the divers, employed by the contractors, when preparing and clearing the seat for the puddle wall.

The leakage was, however, cut off by driving an additional line of long sheet piles down through the puddle chamber and for a considerable time afterwards little or no water entered the basin at the place.

But the continuous heavy fall rains had the effect of raising the river at Lachine, fully two feet, about the middle of November. This increase of head resulted in the water forcing its way under the new range of sheet piles in such a volume that even the large powerful pumps of the contractors were unable to successfully contend with it, consequently the operations had to be discontinued for the season, this is the more to be regretted as about three weeks more work would have completed this part and have obviated the necessity of again unwatering this portion of the Section.

The construction of lock gates for the Lachine Canal was placed under contract, in July last, and those in the two new locks next the Harbor of Montreal will be in place early in May next.

On the 29th June a very serious occurrence took place at the second lock above the Harbor of Montreal by a vessel, under a full head of steam striking the upper gates and thereby displacing them, which resulted in the lower gates being also forced entirely out of position, when the rush of water from the reach above jammed several vessels against the lower gates of the outlet lock with such force that they were also driven round in a direction pointing downwards.

This disaster caused considerable damage to vessels in the Montreal Basin of the Canal and was at first looked upon as certain to lead to much detention, but having spare gates on hand, although the Canal was not well provided with the means of handling them,—the difficulty was rapidly overcome by the good judgment and energy of the superintendent Mr. M. Conway who, to my knowledge, carried on the works continuously from early on Wednesday, the 30th June, until a few vessels were passed on Sunday and navigation fully opened on Monday the 5th July.

To guard, as much as possible, against such occurrences in future, it appears to me that there should be a more rigid inspection of the bell-wires that connect the engine room of vessels with the position occupied by the captain or pilot. Moreover, that one or more persons should be stationed in such positions as to be able to communicate instantly with both the pilot and engineer, in all cases when vessels are entering or leaving locks on the Dominion Canals.

It may here be stated that recently a suitable vessel and equipment for handling gates has been built, and made so that it can be easily taken to wherever it may be required.

For any other special information connected with the canal system between Lake Erie and the City of Montreal, attention is respectfully invited to the general report above mentioned.

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

JOHN PAGE,
Chief Engineer of Canals.

The Secretary of
Railways and Canals.

APPENDIX No. 9.

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

DEPARTMENT OF RAILWAYS AND CANALS,
SUPERINTENDING ENGINEER'S OFFICE,
MONTREAL, 21st Oct. 1880.

SIR,—I have the honour to forward the annual report on the works under my charge for the fiscal year ending 30th June 1880, as requested by your letter No. 54.071.

This report has been prepared by Mr. Thos. W. Harrington who acted as Superintending Engineer on these Canals, from the date of the death of the lamented John G. Sippell, up to that of my appointment in May last.

It may not be out of place to express on this occasion my sincere gratitude for the cordial assistance I have received from Mr. Harrington and other assistants when getting acquainted with the details of my new office.

The works under the control of this office are the Lachine Canal, and Beauharnois Canal, on the St. Lawrence River; and the Chambly Canal, and St. Ours Lock and Dam, on the Richelieu River.

The only serious accident which occurred on these Canals took place on the 29th of June last, when the Steamer "Bohemian" ran against the gates of Lock No. 2 on the Lachine Canal; this caused a detention of five and a half days to navigation.

The maintenance of these Canals has been conducted with the strictest economy, and owing to the comparatively small amount appropriated to this object, many improvements much required, had to be left undone to the great detriment of navigation. This was the case more specially on the Beauharnois and Chambly Canals.

The maintenance of the Lachine Canal, although newly enlarged and rebuilt, has been more expensive than should have been expected owing chiefly to the frail structure of the slope walls on Sections Nos. 6, 7 and 8, portions of which have already given way.

The Chambly Canal is in a very dilapidated condition, considerable repairs are required to the three combined locks at the lower entrance. The other locks, although in a better state, also need extensive repairs. These repairs have been delayed, year after year, awaiting a decision as to the proposed enlargement of this Canal, but any further delay would compromise navigation for next season.

The Beauharnois Canal is in good working order. What is most needed there is the rebuilding of the upper entrance and lower entrance piers, the latter to be protected by an ice breaker.

With reference to damage done by vessels, the Superintendent of the Lachine Canal in his annual report to me, makes the following suggestions and remarks, which I think are well deserving of consideration; viz:—"More stringent measures, "in my opinion, should be dealt out to persons in charge of vessels passing through "Canals than is provided for in the Canal regulations at present. If the Captain or "person in charge of a vessel doing damage was subject to a Court of Inquiry, and "imprisonment imposed on him, as well as fines and damages collected from the "vessels, it would, no doubt, have a good effect, and make those men more carefull

"The trade through these canals is depending on the carelessness or viciousness of "the persons in charge of vessels, and may at any time be stopped through the fault "of these men, who are very often in an unfit state to conduct vessels through locks "in a safe or proper manner."

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.

This canal was closed by ice on the 4th of December, 1879, and again opened for traffic on the 25th of April, 1880.

As the work of enlargement was practically completed in the spring of 1879 on all the sections below No. 11, which embraces the new entrance at Lachine, it was not necessary to draw off the water during last winter, which was a great benefit to the mill owners and manufacturers using the same. It was necessary, however, to lower it for ten days in April to allow repairs to be made.

There was no interruption to the trade on this canal until the 29th day of June, when all the gates of Lock No. 2 were displaced by collision of the steamer "Bohemian" with the upper gates of that lock; the rush of water which ensued displacing the lower gates, as well as the lower gates of Lock No. 2 which were partially open at the time. The new works, lying between the old and new Basins No. 1, and between the new and old lower locks were also seriously damaged by the water flowing over them. This accident caused an interruption to the traffic of five and a half days, of which time thirty-six hours were in the fiscal year ending 30th June 1880.

During the first part of the fiscal year from 1st July to the close of the season the men were employed in repairs to mechanical structures, cleaning off-take drains, lowering bottom of new cut of River St. Pierre and cleaning the old channel of that river through the Lachine swamp, repairing roads, bridge approaches, towing paths, banks, &c.

After the close of navigation and during the winter the lock masters and bridge keepers were employed regulating the water, which was kept at summer level, and the carpenters were at work making platforms for lock gates, snubbing posts, lamp posts and booms for Lachine entrance.

Before the opening of navigation in the spring the upper and lower gates on north side of Lock No. 4, which had been badly injured last fall, received extensive repairs, and the walls of Lock No. 2, the dock wall in front of the mills and factories, and the large weir at head of Basin No. 2, were thoroughly pointed.

When the water was drawn down on April 15th, very serious leaks where discovered under the foundation of the Regulating "Weir at Cote St. Paul Lock. To staunch these leaks it was necessary to empty the upper reach. While this reach was empty, and repairs were being made to the weir, the rip rap slope walls on Sections 6, 7, and 8, were repaired where necessary; and the bottom of the old canal, between the Guard Lock and the upper end of Section 10, was cleaned of loose stone and gravel which had caused trouble to heavily laden vessels during the previous season.

After the opening of navigation, the usual repairs were made to wharves, flour sheds, floors of bridges, towing paths, roads, ramps, etc., etc.

The following is a statement, in detail, of the principal repairs made during the fiscal year.

Lock No. 1, at lower entrance.

This lock, which is submerged by the winter flood of the St. Lawrence, was dismantled, as usual, after the close of navigation and the gates securely bolted to the walls. In the spring the gates were remounted, valve working screws renewed, stanchions and hand railing repaired, six new mullions furnished, and a new fender post placed above upper gates on south side.

Lock No. 2.

The walls were thoroughly pointed with cement, new valve screws furnished, one new fender post placed above upper gates on south side, and stanchions and hand railings repaired.

Lock No. 3, St. Gabriel.

The roller frames in chain wells were taken out and brasses renewed; new brasses were furnished for the valve screws and crab winches, and stanchions and hand railing repaired.

Lock No. 4, Côte St. Paul.

The upper and lower gates on the north side of this lock which were very seriously damaged late in November, received the following repairs in the spring, viz:—New top oak bars, new mullions, new platforms, new top pieces of pine under foot bridges, new face binders, and gate mountings and working machinery put in good order.

Lock No. 5, Guard Lock, Lachine.

The repairs to this lock were but trifling and consisted of working brasses for valves, screws, crabs, etc.

Bridge No. 1, Lock No. 2.

This is a new bridge, built in the spring of 1879, only required adjusting, and a set of rubber bumpers to receive the bridge when being closed or opened.

Bridge No. 2, at Wellington Street.

This is also a new bridge built in the spring of 1879, only required rubber bumpers, some trifling repairs to iron work and adjustment in consequence expansion during extremely hot weather.

Bridge No. 3, at St. Gabriel Lock.

This is one of the small old bridges. It was built in 1866, and was to have been replaced by a new bridge last spring which is to extend over both locks. If the proposed new bridge is not put under contract during the winter, the present bridge must be renewed before the opening of navigation next spring, as it is now very rotten. At the same time it is not advisable to rebuild it, as it is too small to accommodate the extensive traffic at this point, and the proposed enlarged bridge must be constructed before the new lock can be used.

This bridge as well as three stationary bridges in connection with it, were newly planked last spring.

Bridge No. 4, or Brewster's Bridge.

This is one of the small bridges lengthened to suit the enlarged canal. The working gear was partly renewed, and the swing bridge and the fixed bridges at its ends were newly planked last fall.

Bridge No. 5, at Côte St. Paul.

This is also a small bridge lengthened. Its flooring was renewed, as well as that of the stationary bridges, last autumn. New rollers were furnished, and the working machinery repaired last spring. Damage done by barge "Fame" in June was temporarily repaired.

Bridge No. 6, at Lachine Guard Lock.

This bridge, and the six stationary bridges at this point, were newly covered with three inch flooring.

The sixteen stationary and four of the swing bridges have to be newly planked at least once a year. The oak flooring on bridges No. 1 and No. 2 wears well, but, owing to the very heavy traffic over them, will have to be renewed this fall.

Weirs.

Weir No. 1, on the south side of Basin No. 2, immediately above Lock No. 2, was built in 1878. It has six hoisting gates. No repairs required.

Weir No. 2.

Is also situated on the south side of Basin No. 2 at its upper end. The weir masonry and that of the dockwall in front of the mills was pointed. New working screws and brasses, and screw chambers were furnished.

Weir No. 3 at St. Gabriel Locks.

This is a new weir completed in the spring of 1879. It has four swinging, and four hoisting gates. The four hoisting gates, which did not work well, were taken out and adjusted last spring.

Weir No. 4, at Lock No. 4.

This weir has also four hoisting and four swinging gates. The four latter were taken out and repaired, and working brasses were furnished for the hoisting gates. Serious leakage was found to be coming from the old lock on the north side, and from the head race to the mills on the south side. These leaks were stopped with concrete, grout, and puddle. A large amount of excavation had to be done to get below them. The planking of tail race was removed and puddle placed between the timbers underneath, after which the planking was relaid.

The masonry was thoroughly pointed, and holes were drilled through the stone sills, into which grout was poured to fill up round the foundation timbers of breast wall.

Weirs No. 5 and 6 at Lachine.

These are situated, one on the south side of the old guard lock, and the other on the north side at the upper end of the same lock. The former has eight swinging gates and the latter sixteen. The only repairs required were the renewal of some head castings and staples.

Wharves.

The total length of wharfage in connection with the basins on this canal is about 2¼ miles. It is very expensive to keep them in repair in consequence of the great traffic and heavy freight handled on them, such as pig and other iron, coal, salt, sugar, &c. From the 1st of July to the close of last season two carpenters and a laborer were almost constantly employed in repairing these wharves. In April last they were thoroughly, cleaned, repaired, and put in good order for the opening of navigation.

Freight and Flour Sheds.

There are seven of these sheds, two at St. Gabriel Basins and five at Basin No. 2. The two former were built in 1873. The roofs were painted last fall, and the eaves, troughs, water spouts, and conductors repaired. These two sheds are intended for

flour and are in thorough good order. Three of the sheds on basin No. 2 are frame buildings covered with inch boards. They were built twenty years ago, and are used for both "up" and "down" freight. The flooring was renewed last year and the roofs repaired. The other two sheds known as Nos. 1 and 2, were built in 1846. They are frame buildings and were covered with sheet iron. Six years ago, this covering had become so much decayed that a coating of asbestos roofing was given to these roofs, but they are now in a leaky condition, and as these sheds are principally used for flour, the roofs must be repaired this fall. The sills and lower half of the posts renewed in 1856,—are now in a rotten state and should be renewed again in the winter of 1881 or 82 at the latest.

Stores, Workshop and Storeman's dwelling.

These buildings are situated on Mill street, Point St. Charles. They are built of brick on a stone foundation and were erected eight years ago by the Department of Agriculture as an Immigrant Depot, but were transferred to this Department two years afterwards. The flooring and floor timbers having become affected with dry rot required to be renewed. Means of ventilation were also provided by suitable openings made in the foundation walls.

Dwelling Houses.

There are fifteen of these dwellings which are occupied by canal employes who are entitled to lodgings or an allowance in lieu of the same. Two are situated on Charles Street, Point St. Charles; twelve on William, Guy and Basin Streets on the St. Gabriel property, and one at Cote St. Paul. They are principally old buildings and require a large amount of repairs to keep them in tenantable condition. During the year such repairs as were absolutely necessary were made to the houses and outbuildings and the closet vaults cleaned.

Piers and Booms at Lachine.

A new glancing boom was built to replace the old one immediately above the guard lock, at the entrance of the old supply weir on south side.

It is 166 feet long, 33 feet wide at lower end, 18 feet at upper end, with cross ties 10 feet apart and diagonal braces between the ties, the whole well secured with 1½ in iron screw bolts.

Four of the old booms of the timber basin were hauled out last fall on the bank to dry. This spring their cross bolts were tightened, and the booms were strengthened with six inch face timbers, after which they were replaced in position before the arrival of the new timber. The piers between the timber basin and the canal received some repairs, such as renewal of upper cross ties and end timbers, and of the tamarac sheeting on their corners.

Several scow loads of stone filling were also placed in these piers.

Mooring Posts.

Two hundred snubbing and mooring posts were renewed on the line of the canal, in the wing dam, and in the piers of timber basin, at Lachine.

Towing Paths and Rip Rap Walls.

Considerable expense was incurred in keeping the towing paths in repair behind the slope walls, above Lock No. 3, as the banks are new and the wash of the water through these dry walls caused holes to form in the towing path, very dangerous to horses towing vessels.

The water tables were also frequently cleared of slides from the spoil banks, and have been kept in good order throughout

Repairs were made to the rip-rap side walls between Cote St. Paul lock and the rock cut in many places, where portions had been displaced by contact of rafts and vessels. These walls are now in good order, but require constant attention, as the stones from their small size are very easily displaced.

Roads and Ramps.

A portion of the "Farmers Road" at Cote St. Paul, about $\frac{1}{8}$ of a mile in length, opposite Station 8, which had been left in a bad state by the contractors, was repaired with gravel from section 9. The ramps leading to Basin No. 1, the slips leading up to the wharves at Basin No. 2, and all the bridge approaches were repaired and kept in good order with stone and gravel brought by scow from the rock cut near Lachine.

Off-take Drains and River St. Pierre.

All the off-take drains leading from the canal to the River St. Pierre were cleaned cut. The River St. Pierre itself, as well as the new cut on south side of Lachine Railway were thorougnly cleaned, and the bottom of the latter lowered in some places where the muck had been forced up. The lands adjoining the River St. Pierre in what is called the Lachine swamp, suffered nothing from canal water during the year and are now, the Superintendent says, better drained than they have been for the last twenty six years.

Scows.

There are two small scows on this canal which are used for repairs; they are very old and not at all suitable, particularly when lock gates have to be handled. They received a thorough overhauling in the spring and were put in as good repair as possible. Timber for a suitable scow has been provided and tne scow with proper apparatus for lifting lock gates, &c., will be ready in October.

Sunk and abandoned Vessels.

Three barges employed to carry stone from section No. 9 to section No. 11, for crib-filling, were allowed to sink, while loaded, alongside the wing dam above Guard Lock in the fall of 1878. As they were not worth the expense of removing them, their owners refused to do so, consequently the Superintendent was obliged to remove them. This was done by capsizing them to empty their loads, when the barges were raised and deposited out of way of the trade, after which the stone with which they had been loaded was removed by a steam dredge and the channel thoroughly cleared.

NEW WORKS OF ENLARGEMENT.

Section No. 1.

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

This section had been nearly completed in the fall of 1878, but in the Spring of 1879, the coping of Lock No. 1, and that around Basin No. 1, was displaced by the river ice. It has since been reset by the Contractors and is now securely fixed and bolted to the walls.

The parapet piers at the end of Mill Street bridge, above Lock No. 2, were also constructed, the macadamizing of roads completed, some masonry built and coping reset at the junction of the old and new work above Lock No. 2. In November the whole of the work under contract, on this section, was completed.

Section No. 2.

This section includes the enlargement and deepening of Basin No. 2; and the construction of Wellington Basin, with its dock wall, wharves, &c. Contractors, James Worthington & Co.

At the commencement of the fiscal year, all the work on this section except some dredging in Basin No. 2, was completed. The dredging was completed by the contractors in November. The levelling of the bottom was left in rather a rough state and was to have been trimmed up last spring, but as the canal was not unwatered at that time, it still remains in the same condition.

The final estimates for these two sections, which are let under one contract, were completed and forwarded to the Chief Engineer on 10th September, 1880.

Section No. 3.

This section extends from the head of Basin No. 2, to a short distance above St. Gabriel Lock, and is 4,200 feet in length. The work consists in the enlargement of the Canal prism, building piers and abutments for two bridges at Wellington Street crossing; construction of a new lock with a regulating weir, raceway and bridge abutments in connection with it; taking down and rebuilding a greater portion of the old lock, building dock, and retaining walls, &c., &c.

Contractors: McNamee, Gaherty and Fréchette. After the commencement of the fiscal year the contractors finished the crib work at the Wellington street bridges, and a new road to connect with the north end of the upper bridge.

The whole work on this section was completed in the autumn of 1879, with the exception of a portion of the masonry for the new swing bridge at the St. Gabriel Locks. The stone for this work was nearly all supplied, and prepared for its place last spring; but as the new bridge is to occupy the site of the present one; and as no provision had been made for the construction of the superstructure of the new bridge, the old masonry was not removed, nor the new masonry completed. As this work can only be done in the spring of the year, before the opening of navigation, and as the present bridge is very much decayed and almost worn out, it is very desirable that the superstructure of the new bridge should be placed under contract as soon as possible, in order that the change of bridges may be effected next spring.

Section No. 4.

This section was completed in the spring of 1878, and the final estimate was forwarded to the Chief Engineer in May 1879. The contractors Messrs. Whitney and Doty, have been settled with in full.

The length of the Section was 3800 feet, and it extended from the upper end of Section No. 3, a little above the St. Gabriel Lock, to a point just above the Grand Trunk Railway Swing bridge, at St. Henry.

The work on it included;—the enlargement of the channel to a mean width of 200 feet, and to a depth of 13 feet below water line; facing the inside slopes with a wall of pitched stone; the removal of the masonry of two swing bridges; and the construction of piers and abutments for new enlarged bridges on the same sites; removal of the culvert for passing pipes of the Montreal Water Works, &c., &c.

Section No. 5.

Work was completed on this Section, in May 1879; and the final estimate was forwarded to the Chief Engineer in November 1879. The Contractor, Mr. Alphonse Charlebois, has been settled with in full.

The length of the Section was 4,200 feet, extending nearly to the Cote St. Paul Lock from the upper end of Section 4. The work consisted chiefly of the widening and deepening of the prism of the canal to a mean width of 200 feet, and a depth of

13 feet below water line; building of pitched stone side walls, and the construction of an arched stone culvert of three spans for the passage of the River St. Pierre under the canal.

Sections No. 6 and No. 7.

These two sections were let under one contract to Messrs. William Davis and Sons. The total length is 10,000 feet, and the work includes the enlargement of the channel; building a new litt lock, taking down and rebuilding with new stone the greater portion of the old Lock; building an arched stone culvert of one span, a by-wash, piers and abutments for a Swing bridge; and facing the inside slopes with walls of pitched stone and rip-rap.—The portion of Section No. 6, below the lock was widened to a mean width of 200 feet, and that part above the lock, as well as the whole of Section No. 7 to a mean width of 150 feet; the depth on both sections being 13 feet, below water line.

The whole of these works were completed in June 1879, and the final estimates are now nearly prepared.

Section No. 8.

Length 7,500 feet. Contractors, Messrs. O'Brien, Sullivan and Company.

The work on this section comprised widening and deepening prism of Canal to the same dimensions as section 7; forming a berme bank and a public road on the south east side, and lining the inside slopes, with pitched stone, and rip-rap walls, &c.

This section was completed in May 1879, and the final estimate has been forwarded to the Chief Engineer in September 1880.

Section No. 9.

Length 6,000 feet, commencing at upper end of section No. 8, and extending to within 1000 feet of guard lock. The work being chiefly the deepening and widening of the "Rock Cut," making towing path, and berme bank, side and cross drains, slope walls, &c.

Tho original contractors Messrs. John Lyons & Co., abandoned the work in March 1878. It was relet to Messrs. Williamson, Rodgers and Farrell, in November 1878, and the work was completed by them in May 1879. Final estimates are being prepared.

Section No. 10.

This section lies south of the guard lock and weir at Lachine, and is 14.000, feet in length. The work consisted in the formation of a new channel, the construction of a new guard lock, with abutments and a turn-table for a swing bridge, retaining walls, etc.

Contractors, Messrs. Rodgers, Kelly & Co.

At the end of the fiscal year 1878–79, the lock masonry and excavation of prisms below it had been completed. During the remainder of the summer of 1879, the bridge masonry was completed, and the retaining walls above the lock, extended to the end of the section, and connected with those of section No. 11. The remaining earth and rock excavation adjoining section No. 11 was also removed, the south approach to swing bridge graded and macadamized and the whole work trimmed up and finished. The final estimate, of work done under this contract, is in an advanced stage.

Section No. 11.

Contractors, Messrs. Wm. Davis & Son.

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. This harbor is separated from the river by a pier 6,200 feet in length, which is formed by sinking timber cribs to level of low water. Above that level the inner face of the pier is formed

by a wall of rubble masonry, laid in cement, and the outer face, towards the river, by a similar wall laid dry, the space between being filled with hand laid stone, and macadamized on top. At the upper end the superstructure is to be of timber work protected by an ice breaker sheeted with oak.

During the summer months of 1879, work was continued upon the crib-work of pier and dams, also upon sheet piling and puddling. The superstructure of the upper 600 feet of pier, as also of the ice breaker, was completed, and the latter sheeted with oak before the close of the season.

In order to arrest and prevent the spreading of crib-work forming the inner line of dams, caused by the pressure of the puddle when carried to full height, it was found necessary to place piles of stones at the foot, as well as on the top of these cribs, which stone will be removed as the work progresses.

Earth excavation above water, was commenced on 1st July 1879, pumping on the 22nd, and rock excavation on the 28th of the same month, which was carried down to grade at the lower end of section. The work of excavation was carried on until 20th December, when all work in the bottom was stopped by the breaking down of one of the large pumps, after which the contractors determined to discontinue all operations in excavation until spring.

Sub-aqueous excavation was also carried on, by means of blasting and dredging, during the entire season of 1879, on that part of the section outside of the coffer dam.

During the winter months the pier superstructure was filled with stone, floored and sheeted on the river side with six inch tamarac. Measures were taken to protect the unfinished crib work from damage by the ice drift, and alterations, improvements, and repairs were made in the pumping machinery.

Pumping was recommenced on the 10th June last, with two pumps of very large capacity and continued until the 16th, when they were stopped, as it was found to be impossible to pump out the section, or to repair the cross dam under the head of water then existing, the river being very high. Under these circumstances the contractors decided upon building a new dam by constructing a line of crib-work immediately above their old cross dam. At the close of the fiscal year, this dam was not finished. Since then it has been completed, the space enclosed by dams successfully unwatered and the excavation in the bottom resumed, and carried on vigorously with a large force of men.

During the year 77 cribs were placed in position, of these ten had been framed during the preceding year.

The quantity of timber framed in the remaining 67 cribs, is 85,430 lineal feet, and quantity of iron used 16,232 lbs. Twenty cribs were also placed in the second cross dam alluded to above.

Of rock excavation under water, outside of the coffer dam, 3,600 cubic yards were removed. It is not intended to do any more of this latter class of work, until the removal of the upper cross dam.

Beauharnois Canal.

This canal was closed by ice on 2nd December 1879; and re-opened on 20th April 1880, being an open period of navigation of 227 days.

An interruption to traffic, of thirty-six hours duration, was caused by the sinking of the steam barge "Saxon," loaded with grain, on 23rd of November last, just below Lock No. 14 at Valleyfield.

During the summer and autumn of 1879, the superstructure of the pier on south side at lower entrance was rebuilt and the face of it sheeted with plank.

The Dyke at Hungry Bay, which is used as a public road, was raised with stone and gravel, and about five miles of other roads connected with the canal were well repaired.

Locks and Lock Gates.

Six pairs of old and damaged lock gates were hauled out and taken apart. Two pairs were rebuilt; one pair of these are placed under cover on the bank below Lock No. 11, as spare gates; the other pair were placed in the upper end of Lock No. 10. Two other pairs are nearly finished both of which are intended for Lock No. 8.

At Lock No. 6, two new chambers were placed on the upper gates.

Lock No. 7. Two valves and two head plates were renewed, and various other repairs done.

Lock No. 8. The whole of the gates were raised and adjusted, and one valve, three valve rods, two chambers, and two rollers were renewed.

Lock No. 9. The two upper gates were raised and adjusted. One nut box, two valve rods, and one chamber were renewed.

Lock No. 10. All of the gates were raised and adjusted, and the binding strap and one valve rod renewed.

Lock No. 11. Two valve rods were renewed.

Lock No. 12. All the gates raised and adjusted.

Lock No. 13. Two of the gates were raised and adjusted, and two rollers renewed. The recess below the lower mitre sill was replanked.

Two bumping or fender posts at Lock 14, one at Lock 10, and one at Lock 12 were renewed, the whole of these posts at Locks 6, 7, 8, 9 and 10 have been painted in the month of June.

During the month of April the walls of all the locks were pointed with hydraulic cement.

Bridges.

The swing bridges of Locks 7, 8 were replanked. New pivots were placed under the bridges of Locks 8, 9 and 11, and under St. Timothy Bridge, and new locomotive working apparatus on the two former. The bridge over Lock No. 12 had the bottom girders strengthened, a new cross beam between suspension chain posts supplied; flooring and bottom of balance box renewed; and a new locomotive for working it put on. New approaches were made to the bridges at Locks 10 and 14 and new segments placed under those at Locks 10 and 11. The masonry in the pivot pier of the bridge over Lock No. 11 being much dilapidated was taken down and rebuilt in cement.

Four new farm bridges were built over back ditches, and all the others about 120 in number were kept in repair. The bridge over waste weir near Lock 6 was replanked, and a new bridge 60 feet long was built over the waste weir a little above Lock No. 7.

Three scows were hauled out: of which one was thoroughly repaired for Ferry No. 2; the other two, being entirely worn out, were broken up. A new scow for Ferry No. 1, and another for canal repairs, are now being built.

Twenty-two new snubbing posts were placed on the banks, and many others reset. The side ditches and discharges have all been thoroughly cleaned. The total length of these is about thirteen miles. The canal banks, towing path dykes, dams and public roads on canal grounds have been kept in good repair; and the weeds cut as usual on canal property.

All the Government buildings have been kept in good repair. The houses of the lock laborers at Locks 12 and 13 were rebuilt internally. The lock master's house at Lock 14 received a new roof and other repairs. The Collector's house was also renovated and a small store was built near the Superintendent's house for the safe-keeping of paints, oils, and other supplies.

The whole of the works on this canal have been maintained in an efficient state although, from the limited amount of the appropriation for repairs, several matters, which should have been attended to, had to be deferred. Of these the principal is the repair of both piers at upper entrances, and of the north pier at lower entrance with its ice breaker. The services of a steam dredge are also required at both entrances.

During the months of July, August and September 1879 Mr. C. E. Michaud, P. L. S., was detached from this office to define the limits of the Government reserve lands in connection with the Dyke at Hungry Bay. This was done by a careful survey, and boundary stones placed where required.

Chambly Canal.

No interruption to navigation occurred on this canal during the fiscal year. It was closed by ice on the 6th December 1879 and re-opened on the 20th April 1880.

The principal repairs made during the fiscal year were as follows:

Lock No. 1 at St. John's.

Walls pointed and repaired, lower gate repaired, three foot bridges and one sluice gate put on. One pair of spare gates built and placed under cover.

Lock No. 2.

Upper part of wing walls at lower end, taken down and rebuilt. One new sluice gate and two new foot bridges supplied.

Lock No. 3.

The piers below hollow quoins on east side taken down and rebuilt. Gates repaired and one new sluice gate put in.

Lock No. 4.

The piers on east side were taken down and rebuilt with new stone and the lock gates repaired.

Lock No. 5.

Upper pier on east side taken down and rebuilt.

Lock No. 6.

Gates repaired. One new balance beam put on. Bottom of Lock cleaned and repaired.

Lock No. 7.

Three new mitre posts to gates and one new sluice gate put in.

Lock No. 8.

Two new sluice gates put in and mitre sill repaired.

Lock No. 9.

The wall near upper end was bulged in and had some large leaks running through it. It was found that the ashlar face stone had separated from the backing. A French drain was made to carry the leakage to the rear of the bank, and the bulged portion of the face stone forced back to its place by screw jacks and secured there by iron bolts.

A dry retaining wall was built at the lower end on the same side, and the bottom and entrance from the basin cleaned.

The old portion of the mooring pier at lower entrance of this lock, which had been damaged by the ice in Spring of 1879 was temporarily repaired.

All the walls of this lock were braced with timber during the winter, and in the spring they were pointed with cement. Fenders of timber were also placed at their upper entrance.

Bridges.

Swing bridges Nos. 3, 4, 5, 6 and 7 were repaired and bridge No. 8, over Lock No. 7 was removed and replaced by a new one built during the winter, a temporary bridge being used while this one was being built. Two other road bridges were replanked; and an obstruction caused by projecting timbers in the foundation of Jones Bridge at St. John, was removed by the diver. Fenders were placed at the whole of the bridges.

Fryers By-Wash was replanked and Culvert No. 2 repaired.

The banks and towing path were repaired throughout, about three miles in length being raised and three small breaks closed. Fifty new snubbing posts were placed on the banks. The prism of the canal was cleaned from St. Therese island to Lock No. 7, and several slides of earth, removed. The slope walls were repaired and 500 feet in length of new wall built. On the berme bank between bridges 5 and 6, a new ditch 600 feet long was made. All of the old ditches were cleaned out.

All the buildings and fences were repaired and kept in good order. New frame dwelling houses 24′ × 18′ in size were built for the bridge keepers at Bridges 5 and 6. A watch house at Bridge 5, and kitchens, at Bridge 7 and Lock 4, were also built.

Two new scows were built, one for the ferry at St. Therese Island, and the other for the canal repairs.

SAINT OURS LOCK AND DAM.

This lock was closed by ice on 24th November, 1879, and re-opened on 7th April, 1880. No detention worthy of note occurred during the open period.

The lock masonry was pointed with cement this spring. Two pieces of coping stone, at lower hollow quoin on east side, to which the suspension gear was anchored, having given way last summer, a roller was placed under the toe of that gate, and in May last, the broken coping stones were removed and replaced by new stones, to which the suspension gear was secured.

All the gates were raised and adjusted and necessary repairs and renewals were made to the working machinery. The piers at each end of lock were repaired, and the landing stage was removed from the upper pier in December and replaced in May. The scows for repairs to dam and the ferry scow were repaired this spring.

The Superintendent's house with the other buildings, fences &c., received such repairs as were necessary.

The water having fallen in October, 1879, to 6 feet 3 inches on the lower sill of this lock, great difficulty was experienced in navigating the river immediately above and below it. It was therefore recommended, in January last, that a steam dredge should be sent to improve these approaches, especially the lower one, during the following season. This work is now being done by the Department of Public Works.

It was also recommended in a special report dated 19th January last, that an extra pair of lower gates should be built for this lock, to be held in reserve in case of serious accident to those now in use. Timber for these gates could be spared from a supply now on hand for repairs of Lachine Canal. Nothing has been done in the matter as no appropriation was made for the purpose.

STEAM DREDGE "QUEEN OF CANADA."

In the latter part of November this dredge was brought down to the Lachine Canal and placed in Tate's Dry Dock, she was most thoroughly repaired by the Superintendent of the Lachine Canal, and was then transferred to the Department of Public Works.

Steam Dredge No. 1.

In the month of April this dredge was thoroughly repaired and fitted out, and in May was loaned to the Department of Public Works, under which Department she has since been working.

BUOYS.

Great difficulty having been experienced in navigating Lakes St. Louis and St. Francis in the fall of 1879 caused by smoke from bush fires and fog, application was made by the chairman of the Harbor Commissioners of Montreal to have the channels in these lakes more closely buoyed. As the season was then so near its close it was decided, after consulting with some of the most experienced pilots navigating this portion of the river, that 25 buoys of cedar should be prepared during the winter to be moored in the spring at such places as would be pointed out by one of their number.

These buoys were accordingly prepared by the Superintendent of the Lachine Canal during the winter, and were placed in position shortly after the opening of navigation, since which time there has been no difficulty in navigating these lakes in day time even when there is a smoky or foggy atmosphere.

SURVEYS.

St. Lambert Shoals.

A survey was made of a rocky shoal in the River St. Lawrence at St. Lambert opposite Montreal, and a plan and estimate of the cost of improving the channel at that point forwarded to the Department of Public Works in the latter end of April accompanied by a special report.

This survey was made on the ice, and an area of 2,000 by 1,500 feet was sounded at close distance, a large portion of it at ten feet apart.

ROAD FROM COTE ST. PAUL TO LACHINE.

In March last many of the inhabitants and proprietors of land fronting on the south-east side of the Lachine Canal between Cote St. Paul Village and Lachine, petitioned the Government to make a macadamized road for them between these places and offered to give any land required for that purpose. Instructions were given by the Department to prepare an estimate of the cost of such a road. The whole distance is about 4½ miles, of which it was necessary to make a survey of the upper two miles at the Lachine end. This was accordingly done in April, and plans with estimate and report were forwarded on 13th of May.

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

E. H. PARENT,
Superintending Engineer.

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 ending 30th June 1880. (From Lockmaster's Returns.)

Months.	Lock No. 1.—Lower Sill.				Lock No. 5.—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1879.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
July	19	8	18	6	12	0	11	4
August	18	6	17	2	11	5	10	5
September	17	2	16	8	10	8	10	4
October	16	11	15	10	10	5	9	10
November	17	0	15	5	10	1	9	5
December	32	3	16	0	12	2	9	8
1880.								
January	32	4	28	5	12	5	10	5
February	29	10	26	8	12	0	10	6
March	28	6	25	9	11	11	10	9
April	33	7	22	3	13	8	10	9
May	23	10	22	0	14	9	13	7
June	22	8	19	11	14	6	12	8

Beauharnois Canal.

Statement showing the depth of river water on the mitre sills at Lock No. 6 at lower entrance, and Lock No. 14 at upper entrance, during the Fiscal Year ending the 30th June 1880. (From Lockmaster's Returns.)

Months.	Lock No. 6.—Lower Sill.				Lock No. 14—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1879.	Ft.	in.	Ft.	in.	Ft.	in.	Ft.	in.
July	11	8	11	1	12	2	11	11
August	11	0	10	6	12	3	11	8
September	10	6	9	10	11	9	11	4½
October	9	10	9	4	11	8	11	4
November	9	8	9	4	11	5	10	9
December	13	0	9	5	11	8	11	2
1880.								
January	16	3	12	8	12	0	11	5
February	19	0	12	6	12	0	11	8
March	14	10	12	2	12	5	11	8
April	12	10	12	2	12	11	11	9
May	14	2	12	10	12	10	12	0
June	13	8	12	0	12	5	12	0

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 ending 30th June 1880. (From Lockmaster's Returns.)

Months.	Lock No. 9.—Lower Sill.		Lock No. 9.—Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1879.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July	11 2	9 7	9 2	8 2
August	9 7	8 10	8 6	7 6
September	8 11	8 6	8 1	7 2
October	8 7	7 5	8 0	6 8
November	8 11	7 2	8 6	6 10
December	12 3	8 9	9 0	7 5
1880.				
January	15 8	11 6	8 10	8 5
February	17 8	14 7	9 7	8 10
March	16 0	12 6	10 0	9 0
April	15 6	13 0	10 9	9 0
May	13 3	12 0	10 3	9 4
June	11 8	9 5	9 4	8 2

St. Our's Lock.

Statement showing the depth of river water on the mitre sills of the St. Our's Lock during the Fiscal Year ending 30th June 1880. (From Superintendent's Returns.)

Months.	Lower Sill.		Upper Sill.	
	Highest.	Lowest.	Highest.	Lowest.
1879.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
July	11 2	9 7	9 6	8 6
August	9 9	8 5	8 7	8 0
September	9 0	7 8	8 4	7 10
October	8 2	6 3	8 1	7 4
November	8 3	6 3	9 1	6 11
December	10 9	7 8	10 4	7 8
1880.				
January	14 6	10 5	10 4	8 5
February	15 9	13 8	11 2	9 5
March	16 6	14 1	12 5	10 2
April	19 0	14 3	14 8	10 3
May	15 10	14 4	11 6	10 7
June	14 7	10 11	10 8	8 7

Lachine Canal.

Statement of Fines and Damages collected during the Fiscal Year ending 30th June, 1880.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Totals.
1880.			$ cts.	$ cts.	$ cts.
July 26	Tug William	G. Tate & Co	20 00		
Aug. 22	Barge Dorchester	Montreal Transport. Co.	20 00		
Aug. 26	Schooner D. N. Foster	G. Williamson	4 00		
Sept. 19	Schooner Sligo	A. McCrae		20 00	
Sept. 23	Barge Hawk	Montreal Transport Co.	10 00		
Oct. 1	Tug Zebra	G. Tate & Co	40 00		
Oct. 2	4 Lockages Deals	St. Denis	16 00		
Oct. 3	Barge Nore	McKenzie	4 00		
Oct. 3	Barge Eel	do	4 00		
Oct. 17	Schooner Fortune	Zealand	4 00	8 00	
Oct. 27	Barge Saturn	Crysler	8 00		
Oct. 29	Barge Bay	Lusk & Co	20 00		
Nov. 17	Schooner Flora	Arcand		4 00	
Nov. 27	Propeller Argyle	J. Graham		60 00	
Nov. 28	Barge Superieure	Mayrand		2 00	
1880.					
May 25	Barge W. Green	Lafontaine	4 00		
June 4	Barge Cleveland	Montreal Transport. Co.		4 00	
June 4	Barge Lancaster	do		4 00	
June 18	Yacht Mowhay	J. McJohain	4 00		
June 21	Barge Fame	J. B. Auger & Co	40 00	350 00	
		Totals	198 00	452 00	650 00

Lachine Canal Office,
Montreal, July, 1880.

M. CONWAY,
Superintendent.

LACHINE CANAL.

STATEMENT of amounts collected for Wood Rent and Wintering Vessels, during the Fiscal Year ending 30th June, 1880.

Date.	Items.	Number.	Rates.	Amount.
1879-80.		Cords.	$ cts.	$ cts.
	Firewood	28,978	04	1,159 12
	Wintering Vessels			724 25
	Total			1,883 37

JOHN O'NEIL,
Collector Canal Tolls.

COLLECTOR'S OFFICE,
MONTREAL, July, 1880.

LACHINE CANAL.

STATEMENT of Basin, Firewood, Fines and Bank Dues collected at Lachine, for the Fiscal Year ending 30th June, 1880.

Date.	Items.	Amount.	
1879-80.		$ cts.	
	Basin dues	362 87	
	Firewood dues	138 83	
	Bank do	63 76	
	Fine do	9 00	
	Total	574 46	

JOHN DYDE,
Sub-Collector.

SUB-COLLECTOR'S OFFICE,
LACHINE, July, 1880.

Beauharnois Canal.

Statement of Fines and Damages collected during the Fiscal Year ending 30th June, 1380.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1879.			$ cts.	$ cts.	$ cts.
Oct. 9	Barge Dorchester	Montreal Transport. Co.		5 00	
" 9	Steamboat "Johnson"	Johnson		6 00	
" 17	Schooner Fortune	Zealand	5 00		
1880.					
June 19	Barge Energy			4 00	
		Totals	5 00	15 00	20 00

J. F. BÉIQUE,
Superintendent.

Beauharnois Canal Office,
Melocheville, July, 1880.

Chambly Canal.

Statement of Fines and Damages collected during the Fiscal Year ending 30th June, 1880.

Date.	Name of Vessel.	Name of Owner.	Fines.	Damages.	Total.
1879.			$ cts.	$ cts.	$ cts.
Sept. 11	Barge Bronson	P. St. Luc		2 50	
Nov. 14	Scow Douat	Jos. Lemire		2 00	
" 19	Barge Mary	W. Gendron		3 50	
" 19	Barge Shamrock	E. Laliberté		3 50	
		Total		11 50	
	Wharfage dues			18 80	30 30

C. ULRIC,
Superintendent.

Chambly Canal Office,
Chambly, July, 1880.

Canals and River Works.

Report upon the repairs done to the Canals on the Ottawa River, for the fiscal year ending the 30th June 1880.

St. Anne's Lock.

During the past year only ordinary repairs have been executed on this lock, but further repairs are now necessary to the planking and timber work in its crib approaches.

This, especially at the head of the lock, has become so decayed that its outside sheeting and some of the timbers are beyond repair and must be entirely renewed to prevent the escape of the stone filling in the cribs.

Nothing during the past year has been required to call for an excess of expenditure over the estimate.

Carillon Canal.

The ordinary repairs here to Locks Nos. 1, 2 and 3 have been made, the upper gates of Lock 2 recapped, and the lower ones of Lock 3 taken down and renewed.

The roads, embankments, fences and buildings along the Canal have also received the usual amount of attention. Before the opening of navigation, the prism of the Canal was cleaned out, and some 400 feet of cribbing forming a portion of the tow path at Carillon taken down and rebuilt with fresh timber.

A considerable amount of labour and expense has been found necessary on the North River dam and feeder, the former requiring to be almost rebuilt. This mode of supplying the canal is a precarious one, it requires constant care and watching, and when done away with, as it will be on the completion of the new works, a heavy item of revenue expenditure will be removed.

A large amount of outlay is incurred every year owing to the entrance and outlets of this canal, (which are rock) being above the level of the mitre sills, and this one has formed no exception to the rule. They fill up with debris of all kinds which impedes the navigation, and can only be removed by divers. The work being delayed by the passage of vessels becomes necessarilly tedious and costly.

Chute à Blondeau Canal.

Here the lockgates, sluices, valves etc., have been repaired where found necessary, and various snubbing posts of wood and iron placed in the vicinity of the lock.

The walls have been pointed and the entrances cleaned out, the cut above the lock dredged, and stones, gravel and other debris removed by a diver.

Vessels experience the same difficulties in passing here as at Carillon, owing to the canal bottom being above the level of the mitre sills, and every year sees a repetition of the expense incurred by the removal of obstruction caused by deposits of various kinds.

But for the near approach to completion of the new works, a very considerable amount of work would be here found necessary to accommodate properly the increasing demands of the traffic.

Grenville Canal.

The usual expenditure for repairs here have been demanded by Locks 5, 6, 7 and 8, and some new crab chains and sluice castings have been provided.

Locks 9, 10 and 11, being new structures, little has yet been needed by them. A pair of new lock gates are held in reserve at Grenville, a suitable covering from the weather having been erected over them. The towing paths, road, fences and bridges have been kept in repair, and an old building known as Dewar's Mill, close to the canal bank and which endangered both life and the navigation, has been taken down sufficiently to insure safety.

The Canal Superintendent is desirous of having stop logs immediately provided for Lock No. 11 (the Guard Lock) at Grenville.

I beg to recommend the erection of suitable buildings along the line of the Carillon and Grenville Canals for the use of the Lockmasters. The old ones built many years ago by the Ordnance Department are now almost in a state of ruin, and are besides in most cases but ill-adapted for dwellings. The one at Greece's Point has immediately to be pulled down, and pending the provision of a new building, a house for the Lockmaster must be rented.

At Lock No. 10, the only building existing has perforce during the season of navigation to be made use of as a watch house also, and I found representations from the Lockmaster as to the discomfort and inconvenience he had to put up with in consequence, well founded.

I consider that a sum of, say, $15,000, would be well expended on this item, and would be found a sufficient one for all the accommodation required.

The traffic on these canals during the season has been unprecedently great, causing the employment of extra labour on some of the Locks a necessity.

They were closed for navigation on the 24th November last year. The Carillon Canal was opened for traffic on the 24th and the Grenville on the 29th of April last

Culbute Canal.

There is little in connection with this work to report upon.

The wooden lock is completed and the drawbridge at Chapeau Village nearly so. Low water is being waited for to have some necessary alterations made in the foundation of the superstructure to which the rails it runs on are fastened.

This lock cannot be brought in to effective service until the proposed dams in connection with it at the Grand Calumet and Rocher Fendu Rapids are completed.

Report upon Canals under construction on the River Ottawa for the fiscal year ending the 30th June, 1880.

D. STARK,
Superintending Engineer.

Ste. Anne's Works.

Upon the completion of the work here known as the "Channel across the shoals," tenders about the month of October 1878 were called for the new lock and approaches, but no contract was then awarded.

In August 1879, tenders were again called for and the contract awarded to Messrs. Baskerville, O'Connor and Cassidy, who, however, did not sign the document until the 26th November of the same year.

Up the 1st of June of the present year nothing was done save getting out a quantity of stone at the Hull quarries for the new pier which has to be erected for the Grand Trunk Railway Bridge, and making purchases of timber, which towards tne end of June was delivered on the ground.

By the first of July an Engineering Staff was organized, an office established in a building opposite the existing lock, and the work begun in the framing of the cribs for the pier on the southerly side of the new basin east of the locks, and the excavation to the water surface of a portion of this basin and the new lock pit. Land valuators were also engaged on the expropriations necessary for the construction of the canal.

CARILLON CANAL AND LOCKS.

These works were, as I am informed by the Resident Engineer, begun in the year 1875, were discontinued in the spring of 1877, when they were about one third completed.

A contract for their further construction was entered into with Messrs. R. P. Cooke and Co. dated 8th July 1879, and this firm began work towards the end of that month.

By the time the winter of 1879-80 had set in the following works had been done:

The crib work along the outer side of the embankment between the canal and the river was completed.

The retaining wall on the inner side of the same embankment was built from the westerly end of the work to within 480 feet of its connection with the lower lock, to an average height of some ten feet above its foundation. The embankment was formed for its full length up to the height, generally, of an ordinary high water. The walls of the upper locks were carried to a height of about twelve feet below their finished level, and a little more than three fifths of the total length of the foundation cribs of the piers at both ends of that canal was built up to a few feet above low water level.

A small quantity of rock excavation was also taken out of the bottom of the canal.

Stone for the masonry of the locks and retaining wall was quarried at Isle Bizarre and transported to the work in barges.

In November, 1879 the site of the lower lock was laid dry, and the greater portion of the pit excavated previous to the water being let into the canal in the following spring.

During the progress of the excavation it was discovered that a portion of the southern side of the site originally chosen for the lock, was gravel instead of rock, as was all the rest of the foundation, and it was therefore found necessary in order to obtain a rock bottom throughout, to move the position of the lock 10 feet to the northward.

In the winter of 1879-80 the quarrying of stone for the masonry was carried on at Isle Bizarre, Hull, and also at "Lamb's" quarry near Point Fortune, the stone from the latter being for backing only.

Timber for mitre sill platforms was delivered during the winter and partly prepared.

No great progress was made with the work between the opening of the spring of 1880 and the end of the fiscal year. High water in the river afforded some excuse for this, but considerably more might have been done than there was.

Since then, however, preparations have been made to proceed with the work more rapidly and with greater energy.

The oak for the mitre sills for the lower lock has been brought on the ground and framed, and a large quantity of pine and hemlock timber delivered.

As there existed a probability of the water in the river being raised by the portions of the dam which have been built on each side, to an extent sufficient to overflow the banks of the old canal at its upper end, and consequently create damage, it was decided to construct an embankment and wooden bulkhead for stop logs across the old canal, and some adjacent land of low elevation, about a mile and a half above the village. This work was not included in the contract for the "Canal and Locks."

It was built under the immediate superintendence of the Resident Engineer in the months of March and April last, by day's work, and at a cost of $1,630.

In order to guard against the possibility of similar damage next spring, it will be well to have the gates hung upon the new lock in the course of the ensuing winter, the more especially as the old coffer dam, at present existing there, must be removed before the coming on of the spring freshets.

In the event also of the completion of the dam across the river, or additions to it, the effect upon the water might be to flood the old canal, and so cause a stoppage to the navigation which the entire completion of this lock will prevent.

Carillon Dam and Slide.

Nothing whatever had been done to this work up to the end of the fiscal year since its stoppage by the rise of water in the fall of 1879 and the coming on of winter, except the erection of a building over the sluiceways of the slide. The contractors are only awaiting the fall of the water to resume work.

Grenville Canal.

The works here for the past year have consisted almost exclusively of excavation and the building of dry walls for the protection of the canal banks

On Section 1, extending from the upper entrance of the canal to Lock No. 10, a few men have been engaged on the part of the contractor in enlarging and grading the tow path, repairing culverts, and building retaining wall, chiefly on the south bank.

On the close of navigation 1879, work was resumed in the prism of the canal, and this is nearly though not quite completed, there still remaining the deepening of the upper entrance and the removal of the existing steamboat wharves there, with the sloping of various portions of the south bank. The work done on this section during the year, was the excavation of 15,700 cubic yards of earth, 15,900 cubic yards of rock, and the building of 1530 cubic yards of retaining wall.

On Section No. 2, which extends from the lower end of Section 1 to the upper approach of Lock 9, the works were resumed on the first day of December 1879.

They consisted in the grading of the bottom of the canal over the whole reach, the sloping of the greater portion of the north bank, and the construction of retaining walls where required with stone from the excavation. The amount of work done upon this Section during the year covers 10,300 cubic yards earth excavation, 11,000 cubic yards of rock, and 2,900 cubic yards of retaining wall. To complete it, some dry wall is still required, both banks of the canal have to be sloped at various points, old walls require repairing, and a new waste weir is wanted to replace a worn out and insufficient one situated about 1,000 feet above Lock 9.

On Section No. 3, (from the lower end of Section 2 to Lock No. 8,) little has been done. What has, consists of the cleaning out of the canal bottom, sloping the north bank for a length of 1,500 feet, and the building of 270 cubic yards of retaining wall to protect the foot of the slopes. Some sloping still remains to be done on this Section, as well as repairs to a couple of culverts under the towing path.

The whole of the canal embraced in the above sections has been taken out to bottom, and the work enumerated as remaining to be done include all really necessary to give it the calibre called for by the specification, but the work as it stands, presents generally a somewhat rough and slovenly appearance, and should in my opinion receive a considerable number of finishing touches at the hands of the contractor before it is taken off his hands.

Culbute Works.

Not much has been done here during the year. The high water of 1879 washed out the bed of the river to some extent below a couple of the flat dams and entailed the filling in of a quantity of stone, an addition of 35 feet in length to the apron of one of them and the building of a side pier of 156 feet in length.

Work on the drawbridge at the Chapeau was commenced on the 25th September 1879, and the structure was finished about the 6th March 1880. It is 75 feet in length over all, with 12 feet in width of clear roadway, and an opening for the navigation of 45 feet.

Owing to the rails upon which it runs, having been thrown out of level by frost, I have not yet been able to ascertain with what efficiency this bridge will work.

It is rather out of the ordinary course of bridge construction of this nature and although I have no doubt that when fairly completed it will answer its purpose, it is I think of a greater dead weight than was called for by the kind of traffic it will have to accommodate. The Resident Engineer is waiting for low water to get the rails into place again and take the necessary steps for preventing their being further disturbed by the action of frost.

An effort was made to resume work on the contract for the "Ottawa river improvements" by putting a force of men on the shoal in "Macdonald's Channel," and about 750 cubic yards of excavation was moved when a stop was put to further progress by a sudden rise of water on the 1st December 1879.

Continued high water has since held the work in abeyance.

(Signed) D. STARK,
Suptg. Engr. O. R. C.

Ottawa, 20th August, 1880.

CORNWALL, August 2nd, 1880.

SIR,—I have the honor to submit my Annual Report on the Cornwall Canal, for the fiscal year ending 30th June, 1880.

The canal was kept in good working order, from the 1st of July, 1879, to the 9th of December, when it was closed for the winter months.

It was opened again on the 26th of April 1880, and kept in good working order, to the 30th of June last.

The works in progress during the past year, may be classed under the head of ordinary repairs, lockgate bridges, sluices &c., &c.,—and preparing and framing timbers in case of accident to the present bridge—raising embankment, protecting canal by raising slope-walls, and cleaning side drains and culverts.

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

(Signed) D. A. McDONELL, *Superintendent.*

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

Cornwall Canal.

Statement showing the depth of River water on the mitre sills of Lock No. 15 at Lower Entrance and Lock No. 21, at Upper Entrance, during the Fiscal Year ended 30th June 1880. (From Lockmaster's Returns)

Months.	Lock No. 15—Lower Sill.				Lock No. 21—Upper Sill.			
	Highest.		Lowest.		Highest.		Lowest.	
1879.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
July	10	10	10	7	11	0	10	6
August	10	7	10	3	10	8	9	8
September	10	4	9	8	10	6	9	9
October	10	1	9	4	9	11	9	3
November	9	11	9	3	9	9	8	7
December	14	6	9	2	9	8	8	0
1880.								
January	22	8	11	5	10	5	8	9
February	23	7	11	8	10	6	8	11
March	14	10	10	8	10	1	9	5
April	10	11	10	3	10	11	9	10
May	10	10	10	4	10	10	10	1
June	10	10	10	6	10	10	10	6

Morrisburgh, 31st July, 1880.

Sir,—I have the honor to submit my report, on the working and condition of the Williamsburgh Canals under my charge, for the fiscal year ending the 30th June, 1880.

These Canals (embracing the Farran's Point, Rapid Plat and Point Iroquois Junction and Gallops Canal) were closed for the winter season on the 9th December, 1879, and re-opened for traffic on the 20th April 1880. During the season of navigation, no interruption from any accident to the Canals occurred. These canals are in good working order.

Farran's Point Canal.

The upper gates at Lock No. 22, were taken up at the close of the navigation last fall, and thoroughly repaired with new rollers, binders, bridge plank and knees, new sheaves were placed in the chain holes, and some new snubbing posts planted. The banks of this canal are well stoned and in good order. The pier at the foot of this canal requires to be rebuilt.

Rapid Plat Canal.

The repairs on this canal consisted in stoning the banks, and restoring the lock gates; the upper gates at Lock No. 24, were repaired, new rollers placed on them, and two new sheaves were put in chain holes; these gates should be taken up and fully repaired during the winter. This canal requires dredging in several places. Dredging the slip on the inside of the dock at the entrance of this canal, so that boats could load and unload from the ship, would be of much convenience to parties in charge of vessels as well as to the shippers.

Point Iroquois Junction and Gallops Canal.

The piers at the entrance of Lock 26, at Edwardsburg, and the pier at the entrance of Lock No. 27, Gallops, have been rebuilt. Some repairs were made to the swing bridges at Locks No. 25 and 26 as well as to the lock gates at Locks No. 25, 26, 27. The booms in this canal were overhauled and repaired this spring. The swing bridge over Lock No. 25 at Iroquois is becoming decayed and a new bridge should be built to replace it. The lock gates at Lock No. 27 will require to be repaired during the winter.

The buoys under my charge between Johnstown and Dickenson's Landing, have been replaced this spring.

From the lowness of water on the St. Lawrence during the fall of 1879, and the consequent decrease of water in the canals, vessels drawing over 8 feet of water experienced great difficulty in passing through these canals. The difficulty occurred in getting over the mitre sills of Lock 22, Farran's Point, Locks 23 and 24, Rapid Plat and Lock 27, Gallops, and from the low water in the Rapid Plat Canal.

At Lock No. 22 Farran's Point one vessel was detained half a day.

At Locks 23 and 24 Rapid Plat, where the greatest difficulty occurred, six vessels were detained from 6 to 12 hours, and three vessels were detained 24 hours. At Lock 27 Gallops, one vessel was delayed and obliged to unload a portion of her cargo.

I submit a statement shewing the extremes of water on the mitre sills of the locks during the season of navigation from 1st July 1879 to 30th June 1880.

Lock 22, Farran's Point—	Highest, July	1879,	10 ft.	
	Lowest, Nov.	"	8 ft.	
	Highest, June	1880,	10 ft.	3 inches.
	Lowest, May	"	9 ft.	
Lock 23, Foot of Rapid Plat—	Highest, July	1879,	10 ft. 5	"
	Lowest, Nov.	"	7 ft. 6	"
	Highest, June	1880,	10 ft. 3	"
	Lowest, May	"	9 ft. 3	"
Lock 24, Head of Rapid Plat—	Highest, July	1879,	10 ft. 9	"
	Lowest, Nov.	"	7 ft. 6	"
	Highest, June	1880,	10 ft. 6	"
	Lowest, May	"	9 ft. 3	"
Lock 25, Point Iroquois—	Highest, July	1879,	13 ft. 8	"
	Lowest, Nov.	"	9 ft. 6	"
	Highest, June	1880,	13 ft.	
	Lowest, May	"	11 ft. 10	"
Lock 27, Gallops—	Highest, July	1879,	10 ft. 3	"
	Lowest, Nov.	"	8 ft. 6	"
	Highest, June	1880,	10 ft. 7	"
	Lowest, May	"	9 ft. 9	"

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

(Signed) A. G. MACDONELL,
Superintendent,
Williamsburgh Canals.

Welland Canal.

Superintendent's Office,
Ste. Catherines, 24th September, 1880.

Sir,—I have the honor to submit my annual report, of the condition and working of the Welland Canal for the year ended 30th June, 1880.

The canal was closed on the 5th day of December last, and opened on the 16th of April from Port Dalhousie to Port Maitland by way of the Welland Canal feeder, the remaining portion of the main canal, viz: from the Junction at Welland to Port Colborne was opened through on the 1st of May, 1880, the delay in opening the main line of the canal throughout was occasioned by the condition of the works of enlargement at and near Port Colborne.

Upon examination I found no formidable obstacles in the feeder to prevent the spring fleet of vessels and propellers passing out that way into Lake Erie provided they did not draw over 7 ft. 6 in. I accordingly took the necessary steps and over 80 propellers and vessels passed out safely that way three weeks earlier than they would otherwise have been able to do. I understand it is many years since that facility was afforded, but I propose it shall hereafter be regularly done if possible.

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 29th April. 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 during navigation season 18 inches above.

The feeder was kept at a uniform level of seven feet above Lake Erie.

Navigation has been interrupted on two occasions only, viz: on June 23rd for four hours by a jam in the guard lock at Allanburg between the vessels "Mary Battle" and "Huron," and on June 30th, by the sinking of the schooner "Lillie Hamilton" near the guard lock at Thorold, where navigation was stopped for 11 hours at that point.

The supply of water through the feeder from the Grand River has been sufficient during the year for navigation and manufacturing purposes, and a good head has been maintained for a much longer period than usual at Dunnville.

The traffic through the canal up to date has been considerably in excess of last and previous years, and freight rates have ruled more favourably; as a consequence the shipyards and dry docks along the canal have been kept busy, as have also the canal staff.

When I assumed charge here in January last I found the condition of the canal and the contiguous weirs, basins and other property in very many cases in a very seriously dilapidated, rotten, and in some cases dangerous condition, and I immediately addressed my attention and energies to the worst places, and the renewals and repairs I have since done have been extensive and I hope to be able during the next winter to renew the remainder of the underwater work that at present in many places endangers navigation, as well as the remainder of the works demanding prompt attention throughout.

I wish it understood I am not responsible for the dangerous condition of the tow paths that have been in very many places scoured and gullied out along that part of the canal where the enlargement works have been completed, but I feel it is my duty to draw the attention of the Department to their condition, which is of course getting worse every day. The remedy or cure for these serious washings and wearings away in the Deep Cut and other places will be increasingly costly, the longer they are neglected.

The banks along the canal are in some places much worn away, and so low that water in canal is as high as the top of the bank.

Many old lock gates have been replaced by new ones, the old ones cut up, irons taken off and worked over again, girts worked into snubbing posts.

I opened a new quarry between Locks 19 and 20 upon the Government property alongside the canal, out of which a very large quantity of very fine stone has been quarried at a very moderate cost and used for dry retaining walls &c.

Much delay, inconvenience and in some cases damage is caused to vessels ascending the Thorold mountain range of levels by wind, and I purpose planting the most exposed portions with quick growing willows, same as along some of the exposed U. S. Canals. These I can procure (cuttings) along our own property by our maintenance staff who will do this much desired improvement at an outlay of fifty dollars.

I found large quantities of old iron, brass &c., along the canal from end to end. I have had that also collected, weighed and charged to the contractors at their schedule rates.

It will be necessary to put say two or three dwarf dams across the hydraulic race to produce still water where there is at present scour, wearing away the banks and causing claims for damages; this can be done at a trifling expense when water is drawn off in spring, when the somewhat costly work of entirely renewing the present aqueduct will I think also have to be done.

Canada thistles along the various divisions were cut on all Government property at the proper time.

The mud and other deposits along the various levels were wheeled out at the worst places.

An unusually large number of snubbing posts were made and put in during the season, and the various ditches cleaned out, valves cleaned and repaired.

The wall and high sloping bank behind it at the entrance of Lock 3 on the west side are still on the move as I understand, they have been for many years past at intervals, and I am of opinion this is caused by the leakage from the hydraulic race running along parallel; the bank is in consequence kept in a constant state of saturation, and I recommend that no time be lost in having a thoroughly watertight chamber prepared—say of wrought iron for the passage of this water, to be on hand, and ready to put in place immediately the water is drawn off next spring. The Department will have to decide at whose expense this somewhat costly but unaviodably necessary cure shall be provided, or something else that will prove more effective than the present unsatisfactory and unreliable wooden flume.

In connection with the above, I have to report that the south-eastern portion of the large and substantially built Government building, in which my office and that of the Canal staff is located, as well as the office of Customs, Inland Revenue and Weights and Measures, and situated in St. Catharines and known as the Canal office, is also on the move and seems to be following the above mentioned slide. Wide crevices are observable in the outer walls almost from top to bottom, as well as in the internal partitions, and I propose without further delay to run a series of iron rods through the building from front to rear to be screwed on the outside through bands of iron running up from basement to cornice to hold the wall if possible from further spreading.

We have a fair supply of new gates on hand and are engaged in making more. The canal is working satisfactorily throughout.

The repairs made during the year may be generally indicated as follows:—

No. 1 Division—Port Dalhousie to Lock 20.

Port Dalhousie.

The houses occupied by the Harbour Master and Collector of Customs and Lockmaster have been overhauled and repaired. One pair of gates were put in place in the lock at entrance of new canal.

Lock 1 and Swing Bridge.

7,500 ft. lineal of floats on this level have been entirely renewed with 3 inch plank and 6 × 8 stringers bolted at each end.

34 oak protection piles have been driven opposite new weir, and waled, fendered and capped.

Lock 2 and Swing Bridge.

Repaired bridge and raised foundation, replanked platform 30 ft. × 40 ft. and repaired stringers. Repaired and raised swing bridge over tail-race. Rebuilt two long bridges over weirs at factory, 70′ × 22′ and 60′ × 12′. Drove 13 protection piles, and bolted 60 feet walings and fenders, and capped the piles. Put new drum legs and guide rods on weir valves. Repaired Lockmaster's and Bridge-tenders houses, built new shed and fence around yard.

Put new floor in store house. Pointed the lock walls, chiselled off two inches from the lock walls at entrance to Lock 3, the lock chamber being too narrow to admit full canal size vessels.

Extensive repairs and improvements have been made on the east side of this level, at the foot of Lock 3, along side the dry docks. Seventy oak piles have been drive ', these were faced on the inside for a short distance up with elm plank and a substantial dry stone retaining wall carried up to support the bank, road, and dock at this important point from further slipping. 210 feet of walings were bolted on and the piles cut off and capped : a short length to join to the lock remains incompleted. This I propose to finish when the water is drawn off next spring.

A large number of heavy retaining wall stones were taken out of the bottom of canal at foot of Lock 3 ; these were imbedded edgewise, and had proved dangerous and very damaging obstructions to vessels for many years past ;—these were undoubtedly a portion of the old and first built retaining wall that had been squeezed or forced gradually into the canal by the pressure of the high slipping bank and race behind it.

St. Paul St. Bridge, St. Catherines.

Bridge replanked, raised and blocked for winter and covered with temporary plank and stripped ditto, in spring.

Lock 3.

Repaired Lockmaster's and Lock houses ; put in one new gate. Repaired floats between Locks 3 and 4. Pointed lock walls—19 piles driven at foot of Lock 4, walings and fender bolted on and continued to cribs and to bank, piles capped, bumping cribs on both sides rebuilt and raised above water piles, planked behind Piles and built dry stone retaining wall.

Hydraulic Race.

The aqueduct repaired twice and partially renewed and channel cleared out.

Canal office St. Catharines.

Sills renewed under stable and barn, and new floor put in and platform. Standards &c., put in office safe.

Lock 4 and Bridge.

Raised bridge and put new lever, repaired and altered Lockmaster's houses, painted lock house, raised bridge over mill race, repaired flume and bridge, built new fence around Lockmaster's house, pointed lock walls.

Lock 5 and Bridge.

Repaired bridge several times. Painted lock-house. Pointed lock walls. One balance beam put on. Repaired bridge on heel path. Rebuilt cribwork abutments and superstructure of bridge 12 x 30 over creek, and raised approaches thereto.

Lock 6.

Repaired Lockmaster's house and put in drains. Painted lock-house, repaired and replanked two bridges, and rebuilt one. Put on one new balance beam, built road round pond at Gate Yard and put in box drain and gate, replanked bridge tow path side, pointed lock-walls.

Lock 7 *and Bridge.*

Replanked bridge, and repaired feeder and bridge at Pulp Mill. Pointed lock-walls.

Lock 8.

Painted lock-house. Pointed lock-walls.

Lock 9.

Put up handrailing to waste weir bridge; put large tow-line timber to end wall; wing walls of waste weir at Disher's taken down and rebuilt; portion of dilapidated wing wall foot of lock taken down and removed; pointed lock walls.

Lock 10.

Repaired lock-house; put handrail to weir bridge; laid one pair new gates in pond; wing walls of waste weir taken down and rebuilt at Smith's; pointed lock walls; put up hitching posts and rails; put new top on bridge over raceway.

Lock 11.

Repaired Lockmaster's house; built new cistern and steps; repaired floats; rebuilt long bridge over race and put up handrail; pointed lock walls.

Lock 12.

Put up handrail to weir bridge, and face planked gates; built new foot bridge across tail race.

Lock 13.

Repaired waste weir bridge; put on one new balance beam, put handrail to weir bridge, rebuilt one heel path bridge.

Lock 14.

Repaired waste weir bridge, and renewed handrail, rebuilt bridge over raceway from Riordon's Mill, and made extensive repairs to macadamized road leading to Lock 15 and bridge.

Lock 15 *and Bridge.*

Repaired bridge and house, rebuilt bumping crib at head of Lock 1, new gate put in, put handrail to weir bridge, rebuilt heel path bridge, widened the approach to bridge and put up protection railing along road.

Lock 16.

New bridge built over waste weir, rebuilt two bumping cribs at foot of lock, drove 25 wing piles and bolted on walings and fender, planked behind piles and built dry retaining wall behind to hold up bank, capped piles, put handrail to weir bridge; put in one new gate. Pointed lock walls.

Lock 17.

Repaired house, painted lock house, rebuilt bumping crib foot of lock, put in one new gate, rebuilt bridge over East waste weir. Pointed lock walls.

Lock 18.

Built addition to Lockmaster's house, put handrail to weir bridge and rebuilt two heel path bridges, pointed lock walls.

Lock 19.

Painted lock house, put new floor in Lockmaster's kitchen. Pointed lock walls.

DIVISION NO. 2,—LOCK 20 TO FEEDER JUNCTION.

Lock 20.

Repaired Lockmaster's house and built new cistern. Apron of waste weir, sheet piled, replanked, filled with puddle and stone, and side walls backed up. New float bridge across waste weir and renewed the handrail; built a dry stone retaining wall the whole length of this level on the north side 366 feet long, averaging 8 feet high. Pointed lock walls.

Lock 21.

Repaired Lockmaster's house and built new cistern, framed and put in place abutments for float bridges, built new bridge abutments to waste weir bridge; put handrail to same and filled behind walls. Put in 150 ft. piling and sheeting, materials furnished by adjoining owner; built 858 ft. of dry stone retaining wall along north side of this level averaging 51 feet high; also built 136 feet of dry stone wall on south side averaging 3' 6," high. Pointed lock walls. Old bridges, (over outlet of tail race where it falls into canal) abutments, and apron taken down and removed; new apron, abutments, bulkhead and bridge built in lieu with handrail, both ends sheet piled and stoned, stream changed, approaches faced with stone walls, and level of path for considerable distance lowered several feet.

Lock 22 *and Bridge.*

Pointed lock walls, put in, one new gate. Repaired and altered Lockmaster's house. Rebuilt bumping cribs at foot of lock on each side. Rebuilt abutment walls of bridge tow paths; repaired floats and aprons. Rebuilt level approaches to swing bridge. Sheeted inside of foot gates; 600 ft. super. of old rotten wing wall, at foot of lock in a dangerous condition, taken down and removed. Built 116 feet of dry stone retaining wall averaging 7 ft. high, and 54 ft. averaging 3 ft. high. Converted abandoned building on Government property into workshop, storehouse and office for this Division. Heel path graded and raised for considerable distance.

Lock 23.

Pointed lock walls. Repaired lock houses. Repaired bridge near Band's Mill. Built new float bridge. Built 330 ft. dry stone retaining wall, on west side from Welland Mills to foot of Lock 24, averaging 5 ft. high.

Lock 24 *and Bridge.*

Pointed lock walls. Put in one new gate. Renewed old wooden foundation of swing bridge, put in new one of stone laid in cement, and new track. Repaired

and altered Lockmaster's House. Built 196 feet of dry stone retaining wall on west side from head of lock. 40 feet lineal of protection piling waled, and fendered, and copped at head; and 100 feet wing piling at foot of lock, waled, fendered capped, and planked up for a few feet on inside. Dry stone retaining wall carried up and capped. Rebuilt and raised bumping cribs at head and foot of lock. Rebuilt Abutment walls of tow path bridge over flume, and increased the height. 100 ft. of guide approach piling at head of lock waled, fendered and capped. Drew down level and sheeted foot gates.

Lock 25.

Pointed lock walls. Partially rebuilt semaphore signal.

Guard Lock—Thorold.

Put in two new gates. Put up new railing west side to clear gates. Put braces under gates.

Three mile level Guard Lock, Thorold to Lift Lock, Allanburg.

Marlatt's bridge raised, repaired, and approaches partly renewed. Replanked west approach to O'Neil's bridge. Re-boomed timber at Marlatt's Pond. Took down old cribwork and stone walls and old apron at Higgins waste weir, put in new apron, new cribbing, new walls in cement, filled and faced cribs and approaches, raised and strengthened banks and sodded same, put in all proper gearing &c., built small ferry scow.

Lock 26, *Allanburg.*

Pointed lock walls and renewed masonry in chamber, repaired storehouse, put new braces under gate, built dry stone retaining wall on west side of bank at foot of lock.

Swing Bridge, Allanburg.

Bridge raised and repaired. The guide approaches at H. end on each side extended by piles driven and walings, and fender bolted.

Guard lock, Allanburg.

Put new braces under gates. Put new gearing to valves of new waste weir. Built new stonehouse. Laid new plank walk along west approach to lock. Underpinned lock-house with stone. Put new iron rack in front of new waste weir and removed contractor's dam left in.

Port Robinson.

Replanked bridge. Collector's office partially taken down and rebuilt, new fireproof vault put in, and entrance porch built; new ferry established here after the swing-bridge was removed by the contractors for enlargement works. Ferry scow fitted up and put on; approaches at each side made safe; walk laid to ferry from village. Built new tow path bridge over Coulter's Creek.

Quaker's Ferry.

Fitted up scow for ferry, put on new rollers and chains, made approaches, put second scow in position and formed pontoon bridge for winter use.

Welland.

Removed 4 large lock gates out of way of dredging machine for enlargement works Repaired swing bridge.

Feeder Junction.

Repaired swing-bridge and bridge house, cleaned out lock pit and entrance, drove wing piles at foot of weir on each side and faced the same inside with timber, filled behind with stone and earth to prevent further wash

No. 3 Division.—Feeder Junction to Port Colborne.

Rebuilt floating fenders 5 feet wide for protecting vessels from the stone retaining walls at various places. Built new ferry boat, repaired floats. Repair d the approaches at Stonebridge Ferry. Raised house purchased from Mr. Cross and repaired and fitted the same for Lockmaster's residence. Raised and renewed three other Lockmaster's houses, built stone foundation under same, put in cement floors to cellars in each and drains from same. Built back kitchen to Kenshaw's house. Floats and scow removed to winter quarters to allow unwatering of level for Contractors and replaced same in spring. Hauled out Stonebridge Ferry scow and caulked and painted her; made new approaches to said ferry. Put in numerous snubbing posts. Removed lock-house on N. side canal, built ferry landing, Port Colborne; readjusted toe rollers on Port Colborne lock gates, repaired two old lock gates, dug offtake ditch from Welland Railway to Lake Erie. Hauled stone to repair banks, raised lock-house east side of canal. Thistles cut on all Government property. Put in four new gates at Port Colborne lock, shifted roller track, &c., &c.

No. 4 Division—Feeder Junction to Dunnville and Port Maitland.

From Dunnville to Stromness and Port Maitland, distance 6⅓ miles, there are 2 locks, 3 swing bridges, 2 waste weirs, 1 dam, 5 culverts, 1 lock house, 2 Lock-tender's houses, 2 bridge houses and 600 feet boom timber.

From Stromness to Boulton Ditch, Marshville, and Junction along Feeder, distance 16⅓ miles, there are 1 lock, 2 swing bridges, 3 culverts, 14 stationary bridges with an aggregate length of 2400 feet and 1 Lock-tender's house. During the year there have been no accidents caused to shipping on this Division.

The supply of water has been better this season than during previous year; this has allowed the mills to be run almost continously throughout the season.

The traffic through this division has been greater than for many years previous, about 80 propellers and sailing vessels passed up safely into Lake Erie during the month of April. During the year 21,000 cubic yards of earth has been excavated from the back ditches as follows: 6,000 yards between Sunfish Creek Culvert and Cranberry Creek Culvert, 6,000 yards from the outlet leading from stone culvert to Marsh, 9,000 yards between Stromness and Grand Trunk Railway, and 4½ acres of clearing and grubbing has been done on the east side of Grand Trunk Railway leading to Boulton Ditch.

Large quantities of sunken logs and rubbish have been removed from bottom of feeder.

The water in the feeder has been kept during the winter at a uniform level of seven feet (7 feet) above Lake Erie Level.

The entrances to Dunnville Grand Lock and Port Maitland Lock were cleaned out; large quantities of drift wood, logs, stumps and rubbish have been removed from entrance to waste weir and dam.

The tow path and other banks have been kept in good repair and faced with stone and gravel to prevent wash, piles, driven in front of wing walls of Junction Regulating weir were backed with timber and filled in with brush and stone to prevent the banks on its side from being washed by discharge of weir; piles were also driven at the foot of Junction Lock and fender bolted on to protect the end of the crib placed to facilitate entrance of vessels to lock. On the stationary and swing bridges the old plank where found decayed has been removed and replaced. Canada thistles

and obnoxious weeds have been cut on both sides of feeder, also on all Government lands in connection with canal.

The well holes of all the culverts have been cleaned out and the rubbish burnt; some of the stations and bridges have been coated with paint and oil.

The old timbers of the Marshville and Cranbury Creek culverts have been removed down to water line and built up with new timber and the well holes lined with 2 inch plank.

The swing bridges have been raised on their pivots, the approaches properly ballasted, and the rods tightened where required.

A new pile driver which was much needed has been purchased and works well.

The old swing bridge at Stromness was removed and a new one is now in course of construction.

Port Maitland.

The advertisement calling for tenders for the rebuilding of the East pier, &c., is now out, and the completion of the work contemplated will restore this important harbor to its very useful condition.

I have collected during the year from masters and owners of vessels the sum of $146.80 in fines for violation of Canal regulations and for damages to works, which amount I have handed to H. A. Collier, Collector at this Port, and I append a statement of the above, 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 1879 and 1880, which shows that the water has been lower by 5½ inches at Port Dalhousie and 3½ inches higher at Port Colborne than for the same month in the year 1879.

I have the honor to be,
Your obedient servant

(Signed) WILLIAM ELLIS.
Superintendent.

Secretary,
Department Railways and Canals.

STATEMENT of Fines and Damages collected from Vessels Contravening Canal Regulations for fiscal year ended 30th June, 1880.

Date.	Name of Vessels.	Fine.	Damages.	Total.
1878.		$ cts.	$ cts.	$ cts.
July 4.....	Schr. Wm. Howe	10 00		
1879.				
Aug. 30.....	do Clara Yowell.....	.....	6 00	
Sept. 12.....	do do	.....	7 20	
do 12.....	Prop. A. Munro.....	.....	5 75	
do 12.....	do do	20 00	.....	
do 18	Schr. D. M. Foster.....	.....	9 61	
do 18	do Phœbye	.....	.....	
do 18	do Catherines.....	20 00	10 89	
Nov. 14.....	do Erie Stewart	.....	29 75	
do 14.....	do Cataract.....	.....	7 00	
1880.				
May 13	Tug Gordon.....	.....	10 00	
June 1.....	Schr. Ella Murton.....	10 00	10 00	
		60 00	86 80	
				*$146 80

*Handed H. H. Collier, Esq., Collector, St. Catherines.

STATEMENT showing the depth of water on the Lower Sill of Lock No. 1, Welland Canal, for the fiscal year ended 30th June, 1880.

Months.	Lower Sill.				Months.	Lower Sill.			
	Highest.		Lowest.			Highest.		Lowest.	
1879.	Ft.	In.	Ft.	In.	1880.	Ft.	In.	Ft.	In.
July.....	13	2	11	5	January.....	12	3	11	8
August	12	8	10	0	Febuary.....	12	5	11	5
September	12	7	11	2	March.....	12	10	12	2
October	13	6	10	7	April.....	13	3	12	4
November.....	12	9	10	11	May.....	13	5	12	9
December	12	3	11	2	June.....	13	6	12	11

Average depth, June 1879..... 13 9
" " " 1880..... 13 4

STATEMENT showing depth of water on the Upper Sill of Lock 27, Welland Canal for the fiscal year ended 30th June, 1880.

Months.	Upper Sill.				Months.	Upper Sill.			
	Highest.		Lowest,			Highest.		Lowest.	
1879.	Ft.	In.	Ft.	In.	1880.	Ft.	In.	Ft.	In.
July	12	8	11	5	January	13	10	11	0
August	12	8	10	0	February	12	11	11	2
September	12	7	11	2	March	13	9	11	0
October	13	6	11	0	April	13	5	10	10
November	12	9	10	11	May	13	3	12	1
December	13	2	10	8	June	13	5	12	5

Average depth, June 1879 ..... 12 4½
" " " 1880 ..... 12 8

BURLINGTON BAY CANAL.

SUPERINTENDENT'S OFFICE,
ST. CATHARINES, 24th Sept., 1880.

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, 1880.

The canal was closed on the 16th day of December, and opened on the 1st day of April.

The number of vessels that have passed through this canal has increased during the last season.

The canal piers are now being used by a great many steamers as a landing place for the large numbers of pleasure seekers that they convey to the rapidly increasing popular resort known as Burlington Beach.

The reconstruction of the pier that was burnt two years since, and the removal and rebuilding of the other rotten pier on the opposite side of the canal, was commenced in February last and is proceeding satisfactorily.

Next year the remaining portion of the south-east pier will require to be rebuilt and the balance of the north-west pier the following year.

No accident or damage of any consequence has occurred to the works throughout the season.

The traffic across the ferry has at this place increased immensely within a recent period and some other mode of propulsion besides manual labor for the ferry scow will probably become necessary very soon.

The stone filling washed out entirely in many parts of the cribbing I have had recently filled up.

I have found it necessary to do some repairs to the Ferryman's house and outhouses. The other repairs have been very light.

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

(Signed) WILLIAM ELLIS,
Superintendent.

Secretary,
Department Railways and Canals.
Ottawa.

RIDEAU CANAL OFFICE.
OTTAWA, 11th August, 1880.

SIR,—I have the honor to submit my annual report on the works under my charge during the fiscal year ending 30th June, 1880.

Navigation closed at Kingston Mills on the 21st and at Ottawa on the 23rd November 1879. Opened at Ottawa and Kingston Mills on the 27th of April, 1880.

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

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

Kingston Mills.

Swing Bridge repaired and general repairs to station.

Lower Brewer's.

New swing beams to lock and gravel delivered on dam.

Upper Brewer's.

New swing beams delivered and repairs to bulkhead.

Jones Falls.

Repairs to by-wash, cleaning gravel out of lower lock, repairs to sill of middle lock.

Davis's.

By-wash renewed and general repairs to machinery.

Chaffey's.

General repairs to station, new chain blocks.

Newboro.

Lower gates repaired.

Narrows.

Cleaned out recesses of lock and bolted on mud sill.

Poonamalie.

Repairs to masonry of lock wall and cleaning out lock.

Smith's Falls.

Gates painted and general repairs to station.

Old Slys.

General repairs to works.

Edmond's.

General repairs to works.

Maitland's.

Repairs to back dam.

Merrickville.

Fencing approaches to locks. One new swing beam and general repairs.

Nicholson's and Clowes.

General repairs to stations.

Burritt's.

Repairs to machinery.

Beckett's Landing.

Swing bridge renewed and painted.

Long Island.

Repairs to masonry in the man holes of lock.

Manotick.

Repairs to bulkhead and gravel delivered for same.

Black Rapids.

New swing beams and repairs to by-washes.

Hartwell's.

Framing and erecting two pairs of new lock gates.

Dow's Swamp.

Gravel and stone delivered on dam.

Ottawa.

General repairs to work. Timber delivered for one pair of gates.

An extension of wharf on each side of the Basin 200 feet was built during the winter. The old wall on the north-east side was also taken down and rebuilt with crib-work as well as other repairs to the existing wharves. The extension and the repairs which have greatly facilitated the business in the basin, were much required. The wharf on the west side should also be extended a similar distance of 200 feet.

The works generally are in good working order. The iron ore trade is increasing and is likely to bring a considerable increase of traffic to the canal.

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

FRED. A. WISE,
Superintendent Engineer.

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

TRENT CANAL WORKS.

ENGINEER'S OFFICE,
PETERBORO, Nov. 8th, 1880.

SIR,—I have the honor to report on the works under my charge for the fiscal year ended 30th June 1880.

The water levels on the several reaches along the line of navigation from July 1st until October 20th stood at a fair navigable height, from this date to November 5th they rapidly declined, but on letting off the back reservoirs they ascended and reached mean high water mark on December 8th, when navigation closed. On April 7th the several canals and reaches being free of ice navigation opened; the water levels gradually ascended, giving on the upper reaches the highest reading on May 14th, and on the lower reaches the highest on May 20. No freshet occurred, this is in a great measure due to the damming up of the back reservoirs on the feeders, which under careful management the supply therefrom can be always so regulated as to give a minimum depth of 5 feet water on the mitre sills of locks, on the main line of navigation. Of late years, with the exception of one month in the season there has never been less than 5 feet on the locks sills, the variation ranging from 9 ft. 6 in. to 5 ft.—The water that can be held in reserve on the feeders for supply altho' never required before the middle of September exceeds 110,000 acres, and by the erection of properly constructed dams, a 4-feet head can always be stored which will give when required for the main line of navigation a supply of 19,406,400,000 cubic feet. A volume greatly in excess of what can ever be required for navigation purposes.

The number of lockages made at any single lock during the past fiscal year was 1144, the total number of lockages was 1821, of which 667 were for barges of between 200 and 250 tons capacity, and 1154 for steamers, the total tonnage carried amounted to a little over 74,000 tons consisting of products of the forest, agricultural and mineral products and general merchandise.

The works embraced in this navigation consist of locks and canals constructed to connect the several long expansive stretches of navigation that open up the midland portion of Ontario and permeate its most fertile districts, extending as it does in a north-westerly direction from the Bay of Quinte to Lake Huron; it would give, if opened out, the shortest and safest possible water route for barges between Montreal and Lake Huron. There are also some works erected to facilitate the descent of timber, such as slides, dams and booms.

The quantity of timber that passed through the slides for the past year amounted to the following, viz:—

Saw logs	490,600	pieces.
Floats	6,336	"
Square timber	3,000	"
Cedar	20,000	"

The following is a description of the works at the several stations along the line of navigation, together with the repairs executed during the past year and also those required.

Port Perry.

This is the head of the inland navigation in a south-westerly direction; it is distant from the Bay of Quinte 190 miles. No repairs in new works have been executed here during the past year, but applications have been made to have some snags removed from the channel.

Lindsay.

Situate on the river Scugog, a branch of the main line of navigation.

The works here consist of a lock 133 ft. × 34 × 5 feet water in lower mitre sill. A dam 280 ft. long, 9 ft. high, 30 ft. base; this dam maintains the water

at a navigable height for vessels of 5 feet draught up to Port Perry, a distance of 29 miles.

In the approach to the lock, and at the mouth of the river there are a number of "snags" which require removal and the channel which is tortuous requires straightening up. These slight improvements could be accomplished at no very great cost and would be a great benefit to the navigation. It is also desirable that a small light house should be erected to indicate the mouth of the river, as in the dark nights in the Fall of the year "tows" experience great difficulty in making the river.

The necessity for these improvements has been pointed out to the Hon. the Minister by a deputation of steamboat Captains, during his tour of inspection.

Fenelon Falls.

This station is situate on the Fenelon river which flows in a south-easterly direction from Cameron's Lake to Sturgeon Lake, and is on the main line of navigation Here there is a slide for the descent of timber under the control of the Department, 200 feet long and 33 feet wide. A boom 3,090 feet long extending down the river and dividing it into two channels, one being for the passage of timber and the other for the passage of steamboats and barges.

The flooring timbers of the slide require to the renewed, this should be done as soon as possible, as they are not capable of standing another season's "drive." The piers and booms have been over hauled and fixed.

Bobcaygeon.

The works here consist of a canal 973 feet long, a lock 134 ft. × 33 ft. built of ashlar masonry, 7'3" lift with a minimum depth of water on lower mitre sill of 5 feet, a swing bridge across the canal 65 feet long, 13 feet wide. A dam 1262 feet long and 6 feet high. This dam was erected for the improvement of the navigation of Sturgeon Lake, and is intended to maintain the level of the lake at such a height, that there may, during the season of low water be at least 5 feet of water on the lower mitre sill of the lock at Lindsay, but in order that this standard depth of navigation may be carried out it is necessary to place slushboards on the dam, to retain as much as possible of the surplus water, pending the construction of the necessay dams on the feeders.

The repairs exécuted during the past year consisted in repairing the dams and waste weir and cleaning out the canal.

The repairs required, consist of new upper gates for the lock, strengthening the Western dam so as to resist the increased head of water, and planking the floor of the lock, and removing boulders from the channel leading thereto.

Buckhorn.

The works here consist of a dam 387 feet in length 5 feet high, truss frame. A slide 95 feet long and 33 feet wide with guide booms leading thereto; this dam regulates the water level up to Bobcaygeon Lock.

The repairs executed here, during the past year; consisted in planking the side walls of the slide and supplying new hind lasses for waste weir.

The following repairs required to be executed as soon as possible:

The side piers of waste weir renewed from low water to top: the dam gravelled and guide booms to slide repaired.

The inhabitants of the adjoining townships feel the want of a grist mill here very much, and it would be advisable to give a grant of the surplus water on favorable terms to any enterprising person who would erect one.

I may here state that the race way leading to the saw mill is in a bad state of repair, and the owner should be called upon to have it repaired at once and the leakage stopped.

Burleigh.

The works here were erected, for the descent of timber, by the Lumberers some years ago; the dam and slide are in fair repair, but the water weir in the "Big Chute" is in a bad state of repair. It would be advisable for the Department to perform the necessary repairs on the "Big Chute" and charge a small toll on timber passing the station,—such as would give a fair rate of interest on the expenditure.

This would be of great benefit, not alone to the lumberers but to the steamboat navigation.

Lakefield.

The dam of this station maintains the navigation up to Young's Point Lock, and as that navigation is altogether dependent on this dam and it being private property, it would be in the interest of the public if the Government were to assume control thereof, and regulate the water, as the present management is injurious to the navigation on the main line. The owner, I am assured, would not offer any unreasonable objection.

Peterborough.

I beg again to state that the channel leading to the town wharf is rapidly filling in with saw dust and refuse from the saw mills on the river. The evil is annually increasing and it is absolutely necessary that a dredge should be set to work as early as possible.

The steamboat owners have constructed a wharf and store houses and the Town Council has expended a sum of money in cutting down and improving the street leading thereto, and they sadly complain that this saw dust is not removed from the channel.

The booms and piers on Little Lake under the management of the Department require repairs this coming season before the spring.

Whitlas Rapids

The works here consist of a lock 134 ft. by 33 ft. of first class masonry with solid gates; a truss frame dam, 383 feet long consisting of two portions; a wing 323 ft. line and a cross dam 160 ft. long, the average height being about 9 ft. A sluice of 30 ft. wide and 6 ft. deep giving a sectional area of 180 square feet was constructed during the past year, which greatly benefit the navigation, and in the spring admit of such an additional escape for the freshet, as not alone to ease the pressure on the dam and thereby ensure its safety to a great extent, but also by the increased velocity of the current so created helps to draw off the saw dust and mill refuse that has accumulated in the river.

The repairs executed here consisted in cleaning out the lock chamber, repairing sluices in lock gates, planking a portion of the wing dam and repairing the apron of the cross dam.

The repair required consists in enlarging the sluices and the lock gates so as to give despatch in locking through.

Deepening the approach to lock and repairing upper mitre sill.

Otonabee River.

The obstructions to navigation in this river known as (1) Yankee Bonnet Shoal, (2) Robinsons Island, (3) Dangerfield, on which I submitted a detailed report in accordance with obstructions conveyed in letter No. 86,449 are being removed.

This station formerly known as Crooks Rapids is situate on the River Trent, 54½ miles above the Bay of Quinte.

The works consist of a lock of 1st class masonry similar in construction to that at Whitla's Rapids and described above.

A canal 610 ft. in length.

A dam 253 ft. in length 7 ft. 6 in. in height, with base of 40 ft.

A slide 97 ft. long, 33 ft. 6 inches wide.

A swing bridge across lock, 680 ft. long and 13 ft. wide and guide piers and booms.

This dam maintains the water level on the reach up to Whitlass Rapids lock, it leaks badly in consequence of the longitudinal sills having never been properly scribed to the bed rock. In accordance with instructions contained in letter No. 3,623 the necessary repairs to this dam are being carried out, and the "bar" composed of bed rock is being removed. When these repairs are executed, a 5 feet navigation will be obtained to Peterboro.

Three of the boom piers have been renewed from low water mark to top. One of the lower gates of lock will have to be raised this "fall" and a new roller fixed on. The sluices in the gates of this lock also require to be enlarged.

Heely's Falls.

The works here consist of a dam, Truss frame, 488 ft. long and 8 ft high.

A slide 713 ft. long, 33 ft. wide. The dam maintains the water level up to Hasting's lock on which there is at low water a depth of six feet. It requires to be gravelled and resheeted with 2 in. plank.

Two winches for raising stop logs have been supplied for the slide, and the throat of the slide renewed.

Middle Falls.

The works here were erected exclusively for the descent of timber, they consist of two dams, each about 96 ft. in length; 2 slides, one 455 ft. + 33 ft., the other 60 ft. + 33 ft. A wing dam also of crib work 638 ft. + 8 ft. +5 ft. extends from the upper dam to an Island near head of the rapids—with guide booms to slide.

In the benefit of the Lumber trade it is desirable that a flat dam should be constructed from the Island at head of rapids to the west bank of river so as to throw a greater depth of water on the slide and retain the water in Crow Bay for flooding over the shallows between Campbellford and Percy boom.

Ranney's Falls.

These occur about 1 mile below the Town of Campbellford; from the head to the foot of the rapids there is a fall of about 39 ft. 11 in. This water power is about being utilized, an extensive paper factory being in course of erection, which will give employment to a number of hands, and be of great benefit to this already thriving part of the Province.

Chisholm's Rapids.

This station is 15½ miles above Trenton on the Bay of Quinte; according to survey by N. H. Baird, Esq., C. E, the elevation of the river Trent at this station above the Bay is 116 ft. 5 in. the fall of the Rapids is 8 ft. 8 in.

The works erected here consist of:—

A canal through bed rock 2930 feet in length.

A lock of cut stone masonry 133 ft. × 32 ft. 6 in. between the quoins with about 4 ft. 6 in. of water on lower mitre sill, this can be increased to six feet when the navigation demands it.

The erection of a substantial dam of Widow Harris.'

A dam 715 ft. long truss frame varying from 6 to 7 in height.

A slide 100 ft. long 50 ft. wide with guide booms.

The works are of the very best description of their class.

The lock requires new gates, to make it fit for traffic. A new steamer is to run on this stretch next season.

The dam requires to be gravelled to make it staunch, and keep the water at as uniform a level as possible.

There is a small foundry, grist mill and a saw mill, at work, the motive power being the surplus water from the canal. A paper factory is also in course of erection, which will be driven by the water from the canal.

In conclusion I may state that there seems to be new life and activity along the entire line of this extensive navigation, which is nearly 200 miles in length.

A deputation of gentlemen from Montreal, composed of members of the Harbour Board and Councillors inspected this inland navigation with a view of ascertaining how it would benefit the City of Montreal in having it extended to the Georgian Bay, and expressed themselves as surprised at its extent and the possibility and small amount of work to open it out for a barge navigation of 6 feet draught; in their report they recommend that Government should authorize an accurate survey to be made as soon as possible, to ascertain the amount necessary to extend it to the Georgian Bay.

Appended is a statement giving the number of steamers with their tonnage that at present navigate this line of navigation.

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

THOS. D. BELCHER,
Superintending Engineer.

F. BRAUN, Esquire, Secretary, &c.,
Department Railways and Canals,
Ottawa.

ST. PETER'S CANAL.

OTTAWA, 24th November, 1880.

SIR,—I have to report that the work of enlarging the St. Peter's Canal, Cape Breton, was prosecuted satisfactorily during the year.

I may add that early in October last, the works were in so forward a state, that the canal was opened for traffic. The final completion will not take place until the end of 1880.

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

(Signed) HENRY F. PERLEY,
Engineer in charge.

F. BRAUN, Esq.,
Secretary, Railways and Canals.

APPENDIX No. 10.

GENERAL STATEMENT SHOWING

1st. Water Power and other Public Property leased on Canals and Railways, during the Fiscal Year ending 30th June, 1880.

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, 1880.

GENERAL STATE

1o.—Water Power and other Public Property leased on Canals,

Date.	Term of Lease.	Lessees	Property Leased.	For what purpose used.
			Rideau Canal.	
July 7, 1879	Pleasure of Government.	Sam. Mulligan.....	Part of Canal reserve, lot 3, S. E. of basin, Ottawa.	Storing Coal.....
Nov. 12, "	do	Robt. McCloy	Part of Canal reserve, sub-lots 34, 35 of lot K, Conc. C, Nepean.	Gardening.....
Dec. 2, "	do	Smith's Falls Curling Club.	Part of Canal reserve on lot 1, in 4th Concession Elmsley at Smith Falls.	To build a curling rink.
Oct. 18, "	do	Temporal Committee of St. Andrews Church.	Part of Canal reserve, sub-lease to Wm. Slattery of part of lot H, Conc C, Nepean, etc., etc...	Farming.....
June 25, 1880	do	Francis Abbott.....	Part of Canal reserve, ½ acre of lot 40, 1st Concession, Nepean..	do .....
			Chambly Canal.	
May 26, "	do	Catelli Brothers.....	Triangular lot at Chambly Basin, near lock 7.	....
			Intercolonial Railway.	
July 2, 1879	5 years.....	Peter Mowat.....	To lay down a 1-inch pipe to connect his salmon freezing establishment at Campbellton, with Intercolonial Railway Water Works.	Water supply.....
May 15, 1880	....	Nova Scotia Sugar Refinery Company (Limited.)	Government to construct a siding from Railway to their factory at Richmond.	Traffic.....
June 28, "	....	Moncton Sugar Refining Co.	do do at Moncton.	do ....
			Lachine Canal.	
July 22, 1879	Pleasure of Goverament.	St. Lawrence Sugar Refining Co.	To lay down a 10-inch pipe from their factory to S. W. corner of basin No. 1, *vid* Queen Street, Montreal.	Water supply.....
			Galops Canal.	
July 23, "	do	Jos. C. Irvine.....	Part of lot 6 in 1st Concession, Edwardsburg.	Ornamental grounds.
			Welland Canal.	
July 8, "	21 years renewable	John Battle.....	Mill lot near Keefer's mill race, lock 25, Thorold.	Cement and Plaster Mills.
July 8, "	Pleasure of Government.	do	Lot near Keefer's Mill race, to build platform, lock 25, Thorold.	Coal and wood yard.
Oct. 29, "	do	Jos. C. & James Gillespie, jr.	Part of lots 14 in 6 Conc. and 14 in 7 Conc., Grantham lock 5, St. Catherines, Old Canal.....	Lumber yard.....

MENT SHOWING:

Railways, etc., during the Fiscal Year ending 30th June, 1880.

Amount of water power leased.	Area of property leased.	Date from which lease is reckoned.	Annual rental.	Terms of Payment.			Remarks.
				Amount of each instalment.	When payable each year.	When first instalment was payable.	
.....	66x99	July 1, 1879	60 00	60 00	July 1.....	On delivery of lease.	
.....	.....	Nov. 1, 1879	2 00	2 00	Nov. 1.....	Nov. 1, 1879	
.....	160x40	do	1 00	1 00	do	do	
.....	A. R. P. 2 1 12 63/100	April 1, 1879	7 00	3 50	Oct. 1, April 1.	Oct. 1, 1879	Assented to 22nd January, 1880, by Min. of R and C. as to part held from Govt. under lease of 23rd July, 1877.
.....	½ acre	July 1, 1880	2 00	2 00	July 1.....	On delivery of lease.	This cancels lease to S. Howlett.
.....	feet 65x60x100	May 1, 1880	20 00	20 00	May 1	May 1, 1880	
Through 1-inch pipe.	.....	July 2, 1879	50 00	25 00	Dec. 1, June 1.	Not stated...	
.....	.....	.....	.....	.....	.....	.....	Co. to pay all charges, damages if any, &c.
.....	.....	.....	.....	.....	.....	.....	do do
Through 10-inch pipe.	.....	July 1, 1879	100 00	100 00	July 1.....	July 1, 1879	
.....	feet 563x93 56x87	July 1, 1879	5 00	5 00	July 1.....	On delivery of lease.	
1 run or 10 horse power.	½ acre.....	April 1, 1873	40 00	80 00	Jan. 1, July 1..	July 1, 1873	Renews lease, No.2,510.
.....	1/10 acre.....	July 1. 1879	25 00	25 00	July 1.....	July 1, 1879	
.....	1½ acre.....	Oct. 1, 1879	75 00	75 00	Oct. 1.....	Oct. 1, 1879	

10.—Water Power and other Public Property

Date.	Term of Lease.	Lessees.	Property Leased.	For what purpose used.
			Welland Canal—Concluded.	
Oct. 1, 1879	21 years renewable.....	John Riordon.....	Part of lot 11 in 10th Concession, Grantham at locks 16, 18, 19 and 21, Merritton.	For his paper mills.
Feb. 11, 1880	do	John Battle.....	Part of lot 17, Thorold, between locks 14 and 25.	Cement mill.....
			Beauharnois Canal.	
Sept. 4, 1879	Pleasure of Government.	James Anderson.....	To build wharf and shed on basin, Valleyfield, Beauharnois Canal.	Storage of grain &c.
Aug. 23, 1879	do	Hilaire Larocque.....	To build wharf and shed on Canal, Ste. Cécile, Beauharnois Canal.	do
Jan. 8, 1880	do	Chas. E. Wilson	To build shed on river basin, Valleyfield, Beauharnois Canal.	Coal shed.....

leased on Canals, Railways, etc.

Amount of water power leased.	Area of property leased.	Date from which lease is reckoned.	Annual rental.	Terms of Payment.			Remarks.
				Amount of each instalment.	When payable each year.	When first instalment was payable.	
Suffic'nt water for mills to be erected within 5 years.	.....	July 1, 1879	240 00	120 00	Jan. 1, July 1..	Jan. 1, 1880	
20 horse power.	.....	April 18, '79	120 00	60 00	do	July 1, '79 $24.00, Jan. 1, '80 $60.00, &c. halfy'arly.	
.....	100x66 ft..	July 1, 1879	23 00	23 00	July 1.....	July 1, 1879	
.....	140x30 ft..	Aug. 1, 1879	20 00	20 00	May 1.....	May 1, 1879	
.....	75 ft. wide	Nov. 1, 1879	20 00	20 00	Nov. 2.....	On delivery of lease.	

2nd.—Property purchased by the Department of Railways and Canals and Property sold by the same Department as not being required for the Railways and Canals, during the fiscal year ending 30th June, 1880.

Date of signature.	Vendors.	Purchasers.	Property purchased or sold, &c., &c.	For what purpose used.	Area of land.	Price of sale.	Remarks.
April 8, 1880	Peter Lynch & others	Her Majesty.	Procès-verbal of C. E. Michaud, P. L. S., establishing boundaries of land taken for Dyke at Hungry Bay in Catharinestown	Beauharnois Canal	40 ft. each side of centre line whole length.	Free ..	Taken by Govt. in 1855 with consent of Agents of the Seignior of Beauharnois, to construct a Dyke.
Jan. 14, 1880	John W. Brown *et ux.*	" ...	Part of lot W½ 5 in 1st Concession, Osnabruck taken in 1843	Cornwall Canal....	3a. 1r. 17p.	232 40	With release for damages.
April 20, 1880	Gabriel Lemieux	" ...	Tender to him for part of his land (6 & 7) Chaudière curve	Intercolonial R'y ..	$1\frac{824}{1000}$ arp.	319 20	
May 3, 1880	Her Majesty....	J. J. Wood..	Part of lots 23 to 35 Victoria St., Halifax	"	40 ft. each lot	1 00	This area had been includ. by mistake in the deed from J. T. Wood to Her Maj., 5th Nov. 1874.
July 18, 1879	McGauvran & Tucker	Her Majesty.	Receipt for buildings and fixtures on Ostell's Island taken for canal	Lachine Canal.....	. ...	10,210 35	Lesse, reserved $330.
Nov. 11, 1879	Western Counties Railway Co.	" ...	To given up possession to Government of Windsor Branch, N.S	Intercolonial R'y...	....	....	Notice.
July 2, 1878	Luke O'Reilly	" ...	Release, damages to lots 1 and 2 in 10th Concession Loughboro	Rideau Canal.	. ...	385 00	
Sept. 2, 1879	Joseph Donovan.....	" ...	Release, damages to lots 17 and 19 in 2nd Concession, Bastard	"	....	120 00	Poonamalie Dam.
Mar. 8, 1880	John Branigan	" ...	Deed of part of quarry lot 35 in 4th Con. Kingston	"	1 acre.....	300 00	
Sept. 23, 1878	College St. Boniface.	" ...	Lots 72 & 73 St. Boniface No. 3, County of Selkirk	Pembina Branch, C. P. R.....	1·29 acre 1·31 "	90 65	
May 2, 1879	Hon. Jos. E. Cauchon	" ...	" 68, 69 & 70 " 5, 6, 7, " ..	" ...	1·75 " 0·44 " 1 24 "	142 00	
Sept. 28, 1878	John Polson *et ux*.....	" ...	" 50 St. John 11, " ..	" ...	0 65 " .	3 25	
Oct. 11, "	George Bannerman...	" ...	" 48 " 13, " ..	" ...	0·80 " ..	4 00	
Sept. 27, "	Alex. McPherson *et ux*	" ...	" 97 Kildonan 16, " ..	" ...	1·03 " ..	40 15	
Sept. 28,	Daniel Hamilton *et ux*	" ...	" 95, 97 " — " ..	" ...	0·51 " 1 55 "	9 79	
Sept. 27, "	Angus Polson *et ux*...	" ...	" 94 " 19, " ..	" ...	2·07 " .	10 35	
Sept. 30, "	Alex. Munroe *et ux*...	" ...	" 90 " 22, " ..	" ...	1·55 " ..	7 75	
Oct. 31, "	Alex. Bannerman *et ux*		" 87 " 25, " .	" ...	1·08 " ..	27 00	

Sept. 30,	"	Hon. John Sutherland *et ux*..	"	...	"	86	"	26,	"	..	"	...	2·58 " ..	46 44	
Oct. 11,	"	Rev. John Grisdale ..	"	...	"	80	"	32,	"	..	"	...	0 51 " ..	2 04	
" 24,	"	Rev. S. Pritchard. ...	"	...	"	71, 75 / 102	" / St. Paul	—	"	..	"	...	0·51 " / 0·51 " / 4·04 "	94 48	
Sept. 23,	"	James Inkster *et ux*..	"	...	"	73	Kildonan	39,	"	..	"	...	0·51 " ..	2 04	
Oct. 7,	"	Jacob Kauffman *et ux*	"	...	"	66	"	46,	"	..	"	...	1·03 " ..	10 30	
"	"	do	"	...	"	63	"	49,	"	..	"	...	0·52 " ..	5 20	
Nov. 11,	"	Rev. Alex Mathieson	"	...	"	59	"	53,	"	..	"	...	2·09 " ..	20 90	
" 12,	"	Rev. S. Pritchard & J. C. Forbes...	"	...	"	55	"	—	"	..	"	...	1·54 " .	12 32	
" 15,	"	Gilbert Hackland	"	...	"	54	"	58,	"	..	"	...	1·29 " ..	32 90	
Oct. 8,	"	Angus Henderson *et ux*	"	...	"	51	"	61,	"	..	"	...	1·86 " .	61 16	
" 19,	"	J. J. McRea.....	"	...	"	50	"	—	"	..	"	...	1·11 " ..	36 66	
" 5,	"	Wm. Henderson *et ux*	"	...	"	49	"	63,	"	..	"	...	1·40 " .	36 80	
" 10,	"	John J. McRea	"	...	"	46	"	66,	"	..	"	...	1·51 " ..	18 12	
" 23,	"	Donald McIver	"	...	"	45	"	67,	"	..	"	...	2 26 " .	27 12	
" 10,	"	Peter Henderson	"	...	"	44	"	65,	"	..	"	...	0·75 " ..	39 00	
" 7,	"	John Geddes...	"	...	"	43	"	69,	"	..	"	...	1 25 " .. / crops ..	69 76 / 10 94	
" 22,	"	John Henderson	"	...	"	39 / 118	" / St. Paul	—	"	..	"	...	1·26 " / 1·51 " / cropsinc	39 08	
" 18,	"	Donald Cumming.....	"	...	"	120	"	74,	"	..	"	...	1·26 acre...	12 60	
Mar. 16, 1880		Robert Mulholland...	"	...	"	114, 115	"	78,	"	..	"	...	2·04 " / 0·78 "	36 45	
Oct. 22, 1878		Archbald Pritchard .	"	...	"	107, 108, 112	"	—	"	..	"	...	0·69 " / 1 14 " / 1·01 "	66 33	
"	"	Chas. Haywood.	"	...	"	111	"	88,	"	.	"	...	1·26 " .. / crops ..	28 90 / 17 98	
"	"	James Knight.	"	...	"	110	"	89,	"	..	"	...	1·01 " . / crops ..	11 60 / 4 06	
Nov. 2,	"	Félix Bone	"	...	"	106 s. pt.	"	—	"	..	"	...	0·52 " .	2 08	
Oct. 24,	"	Peter Fiddler	"	...	"	106	"	93,	"	..	"	...	1·04 " ..	4 16	
"	"	Thomas Bird	"	...	"	105	"	94,	"	..	"	...	0·75 " ..	3 00	
Nov. 2,	"	Margaret, widow of Wm. Bunn...	"	...	"	98	"	101,	"	.	"	...	3 43 " ..	20 56	
Oct. 31,	"	Henry Joachim..	"	...	"	95	"	—	"	..	"	...	4·19 " .	41 90	
Oct. 28, 1878		John Sutherland, farmer....	Her Majesty.		Lot 93,		St. Paul,	No. 106,	County of Selkirk		Pembina Branch, C. P. R.....		2·02 acres..	20 20	
Nov. 2,	"	Caroline Ann, wife *et vir* Wm. L. Loucks.	"	...	"	89	"	110,	"	..	"	...	2·00 " ..	40 00	
Oct. 29,	"	Wm. Work...	"	...	"	88	"	111,	"	..	"	...	2·00 " ..	20 00	
"	"	Peter Flett...	"	...	"	87	"	112,	"	..	"	...	1·22 " ..	12 20	
Nov. 12,	"	E. Adhemar	"	...	Receipt, damage to crops lots 105, 106, 107, St. Clément.....						"	...	....	24 36	In year 1877.

2nd.—Property purchased by the Department of Railways and Canals and Property sold, &c.—*Concluded.*

Date of Signature.	Vendors.	Purchasers.	Property purchased or sold, &c., &c.	For what purpose used.	Area of land.	Price of sale.	Remarks.
Nov. 25, 1878	Philip Harper.	" ...	Receipt, damage to crops lots N.E. ¼ sec. 8, T.13, R. 5, East....	" ...	....	27 26	In year 1877.
Oct. 24, "	Benj. Froom...	" ...	" " 42, Kildonan.....	" ...	....	17 40	"
" 10, "	Josiah Adams & Jas. McLachlan, lessees	" ...	" " 72 & 73, St. Boniface	" ...	....	8 29	"
Nov. 15, "	Robt. Cox.....	" ...	" " N. W. ¼ sec 5, T. 13, R 5, East...	" ...	....	15 08	"
" 17, "	J. J. Chandler	" ...	" " 114 & 115, St. Paul.	" ...	....	11 27	"
Feb. 28, 1880	Albert Monkman	" ...	Deed N. W. ¼ of S. W. ¼, sec. 8, T. 13, R 2, East,—and N½ & S½ of legal sub-division 13, 14 of sec. 23, T. 13, Range 2, E	" ...	....	4,000 00	
July 8, 1878	Jos. McGovern.....	" ...	Release for damages by Dunnville Dam to lot No. 1, S, of Chippawa St. Cayuga.....	Welland Canal damages...	.. ..	25 00	
Aug. 6, 1879	R. H. Kirkpatrick.....	" ...	Release for damages by D nnville Dam to lot No. 3, Village of Dunnville.	" ...	....	2,000 00	
Oct. 3, "	Geo. Schurr *et ux*	" ...	Part lot 26 in 4th Concession, Humberstone.....	Welland Canal enlargement.....	10·72 acres..	643 20	
Sept. 30, "	Oscar Upper *et ux*.....	" ...	" 96, Thorold, viz: lot 2, Allanburg North St., and Holland Road	" ...	0·33 " ..	500 00	
Oct. 10, "	Cath. Neff *et vir*..... .	" ...	" 28 in 2nd Conc. Humberstone.	" ...	0·50 " ..	500 00	
" 3, "	Wm. Upper *et ux*	" ...	" 96, Thorold, viz : lot 5, Allanburg North St. and Holland Road	" ...	0·38 " ..	500 00	
Nov. 1, "	Peter Hover *et ux*	" ...	" 14 and 15, Thorold..	" ...	2 21 " ..	420 00	
" 21, "	Elisha Turry *et ux*.....	" ...	" 27 in 2nd Conc. Humberstone near Petersburg.....	" ...	0 26 " ..	100 00	
Dec. 19, "	A. Schwaller.....	" ...	Release for throwing earth on lot 15 or A–B, Thorold.....	" ...	....	300 00	
" 29, "	Matthew Brown *et al*	"	Pt. lot 15, Thorold, or C. 4, 5, N. Albert St., Thorold; 3, 4, 5, S. " "	" ...	1·10 " ; 0·50 " ; 4·75 "	10,950 00	Release from R. B. McPherson administrator of estate J. Brown, 29th Dec., 1879, and report of Master in Chancery, 30th Oct. 1879.
Feb. 16, 1880	Wm. Toyne..	" ...	Release damages by flooding part lot 27 in 6th Concession, Crowland..	" ...	0·70 " ..	50 00	
" 14, "	A. Williams *et ux*.....	" ...	Deed to Government of part lot 26 in 6th Con., Crowland.....	" ...	1·94 " ; 4·36 "	2,362 50	
Dec. 29, 1879	S. D. Woodruff *et ux*.	" ...	" " 21 in 1st Con., Grantham.	" ...	⅛ " .	250 00	
Mar. 9, 1880	Wm. Mellanby *et ux*..	" ...	" " 26 in 2nd " Humberstone	" ...	1·83 " ..	345 15	

" 9, "	do	"	...	" part road allowance between lots 27 and 26 in 2nd Con., Humberstone	"	...	0·65 " .	122 63
" 9, "	do	"	...	" part lot 27 " " ..	"	...	13 01 " ..	2,453 47
" 25, "	Aaron Higgins	"	...	Release, by raising bank E side of lot 74, Thorold.	"	...	4·00 " ..	150 00
" 25, "	Wm. Higgins & widow Sarah Higgins	"	...	" " S. E. " " ..	"	...	6¾ ac. 33 rds.	300 00
April 13, "	Thomas Wilson	"	...	Deed of part of lot No. 51, Thorold	"	...	....	75 00
" 9, "	J. P. Merritt.....	"	...	Release for flooding part lots 18, 19 in 7th Con., 17, 18, 19 in 8th Con., and 19 in 9th Con.,				
" 24, "	Walter Ekins *et ux*, & Union Loan and Savings Co.	"	...	Grantham..... .... Release for flooding part lot 6, sub-division 5,	"	...	....	950 00
May 8, "	Trustees School, section No. 2, Thorold	"	...	Thorold Township .... Release for flooding part lots 27, 28, sub-division	"	...	0·35 acre...	215 00
April 30, "	Rev. T. Buller, Bishop of Niagara.....	"	...	5, Thorold Township..... .... Release for earth thrown on sub-lots 50, 51, 52 of lot 7, Thorold Township.	"	...	....	230 00
May 19, "	R. Smith & B. King...	"	...	" " lot 74, " ..	"	...	....	100 00
					"	...	....	60 00

A. FISSIAULT.

OTTAWA, 28th September, 1880.

APPENDIX No. 11

DEPARTMENT OF RAILWAYS AND CANALS,
1ST OCTOBER, 1880.

SIR,—I beg to transmit herewith a statement the claims referred to and arbitrated or reported upon, by the Official Arbitrators in connection with the Department of Railways and Canals, during the fiscal year ended 30th June, 1880.

I have the honor to be, Sir,
Your obedient servant,
F. H. ENNIS,
Secretary.

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

STATEMENT of claims referred, and arbitrated or reported upon, by the Official Arbitrators, in connection with the Department of Railways and Canals; during the Fiscal Year ended 30th June, 1880.

Claimant.	Nature of Claim.	When referred.	Whether referred to one or more Arbitrators.	Whether referred for award under Act 31 Vict., c. 12, or for report under Act 41 Vict., c. 8.	Amount claimed.	Amount awarded or recommended to be paid.	Date of award or report.	Remarks.
Joseph Hamilton.....	Intercolonial Railway—contract for building wharf at Pictou.....	1878. Oct. 10	One arbitrator	Report.	$ cts. 8,000 00	$ cts.	1879.	
J. B. Chamberlain	Intercolonial R'y—land taken.	Nov. 5	do	do	1,000 00	Nil.	Nov. 3	
O. & C. Ouellette.	do damage by water.	do	do	do	300 00	Nil.	do	
C, Martin.....	do water cut off, etc.	do	do	do	100 00	Nil.	do	
Geo. Duncan.....	do land taken, etc...	do	do	do	3,925 10	1,035 00	do	
A. Campbell, Jr.	do land damages	do	do	do	200 00	Nil.	do	
J. B. McNutt.....	do building flooded..	do	do	do	860 00	....	do	The report made is a preliminary one.
P. Dumont.....	do land damage	do	do	do	772 00	65 00	do	
Jean Rousseau.....	do damage by water.	do	do	do	150 00	Nil.	....	
Jules Tessier.....	do water cut off mill.	do	do	do	150 00	....	do	Claim abandoned.
Alex. St. Laurent.....	do damage by water.	do	do	do	400 00	Nil.	do	
G. W. Bartholomew.....	do land damage.....	do	do	do	400 00	Nil.	....	
Donald Smith.	do do	do	do	do	500 00	....	do	Claim abandoned.
T. Beaulieu.....	do land taken, etc...	do	do	do	68 00	68 00	do	
Pierre Côté.....	do do ...	do	do	do	150 00	Nil.	do	
Alex. Forbes.	do erect'g of fencing.	1879. Jan. 13	do	do	4,172 48	657 95	Feb. 28	This claim was first 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 to claimant of $657.95, 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.

STATEMENT of claims referred to and arbitrated or reported upon by the Official Arbitrators &c.—*Continued.*

Claimant.	Nature of claim.	When referred.	Whether referred to one or more Arbitrators.	Whether referred for award under Act 31 V., c. 12, or for report under Act 41 V., c. 8.	Amount claimed.	Amount awarded or recommended to be paid.	Date of award or report.	Remarks.
		1879.			$ cts.	$ cts.		
J. & T. Williston	Intercolonial R'y—loss of fish	Feb. 7	One arbitrator	Report.	184 93	.....	.....	
Thomas Nihan	Welland Canal—land taken for enlargement	Feb. 8	Whole Board.	Award.	1,539 00	.....	.....	Claimant failed to appear when called.
Arr. Brownson	do do	do	do	do	350 00	.....	.....	Claim withdrawn.
T. De Yonghe	do do	do	do	do	100 00	.....	.....	Claim withdrawn.
John Bradley	do do	do	do	do	1,184 00	.....	.....	Claimant failed to appear when called.
Coulon Bros	do do	do	do	do	240 00	.....	.....	Claim withdrawns.
Henry Clark	Intercolonial R'y—loss of property.	April 15	One arbitrator	Report.	150 00	.....	.....	
J. B. Dumont	do damage by accumulation of snow.	do	do	do	not stated.	Nil.	Nov. 3	
Joseph Lavoie Sylvain Lavoie Bruno D'Anjou	do damage by water.	April 19	do	do	1,000 00	Nil.	do 1880.	
Estate of late G. Moffatt	do receiving and transporting rails.	April 16	do	do	6,168 54	4,857 15	April 5	
A. Johnson & Co	do contract for engine-house, Truro.	May 10	do	do	2,575 48	2,575 48	June 28	
D. McPherson	do damage by extension of Railway, from Richmond Depot to North Street, Halifax	May 30	Whole Board.	Award.	6,000 00 (also 1,200 per year.)	.....	.....	
Mrs. D. Macdonnell	Cornwall Canal—land taken for enlargement	May 31	do	do	11,500 00	.....	.....	This case at first hearing was tried by two Arbitrators, who awarded $3,000. Mrs Macdonnell refused the amount and appealed to the whole Board from that decision.

F. J. Barnard	Canada Pacific R'y—contract for construction of Telegraph line	June	7	One arbitrator	Report	227,389 00		Feb. 23	The Arbitrator has reported facts without recommendations.
E. Wilgress	Lachine Canal—land expropriated	June	11	Whole Board.	Award.	16,200 00	8,180 00	Jan. 31	This claim has already been enquired into, and awarded on by the Arbitrators. It was referred again for the purpose of having the award already made reconsidered on the evidence adduced at first hearing.
Heir of P. Jackson	do do ...	do		do	do	8,495 80	2,320 33	do	do do
F. X. Jarry	do do ...	do		do	do	2,981 76	2,981 76	do	do do
J. S. Brookfield	Intercolonial R'y—land taken at Salisbury, N.B	June	23	do	do	200 00			
Mrs. Matilda Bilton	Burlington Canal—Loss of a span of horses	June	23	One arbitrator	Report	300 00			
W. S. Hamilton	Dismissal as Station Master at Brookfield	June	23	do	do	460 46			
D. McCallum	Welland Canal—damage to sch. "Upper"	June	27	do	do	Not stated			
The Anchor Marine Insurance Co'y	do damage to cargoes of vessels "Jennie Graham" and "St. Andrews"	June	28	do	do	do			
Capt. James Dick	Contract for building steamer for the Red River Route	July	2	do	do	3,466 28			
Michael Paquet	Prince Edward Island R'y—land expropriated	July	5	Whole Board.	Award.	1,500 00	879 80	Feb. 21	
John Berryman	Welland Canal—land expropriated.	July	19	do	do	Not stated			On demand of claimant, hearing of case postponed *sine die*.
W. McIlwain	do damage to schooner "St. Andrews"	Aug.	19	One arbitrator	Report	do			
Mrs. C. S. Beaton	Prince Edward Island R'y—land expropriated	Sept.	3	Whole board.	Award.	7,500 00	2,250 00	Feb. 21 1879.	
Hugh McDonald	Cornwall Canal—land taken for enlargement	Sept.	5	do	do	7,500 00			
J. W. McCurdie	Intercolonial R'y—loss of a cow	Sept.	5	One arbitrator	Report	250 00	Nil.	Nov. 3	
J. Duncan	do land damage	Sept.	5	do	do	1,005 00	176 00	do	
J. B. Foster	do loss of a horse	Sept.	10	do	do	150 00			Claim settled by Railway Officials.
T P. Freeman	do land damages	Sept.	10	do	do	135 00			do do
G. A. Girouard	do contract for sleepers	Sept	10	do	do	6,450 66	Nil.	do	On 2nd June 1880, this case was referred for further consideration with a view of obtaining additional evidence.

STATEMENT of claims referred to and arbitrated or reported upon by the Official Arbitrators, &c.—*Continued.*

Claimant.	Nature of claim.	When referred.	Whether referred to one or more Arbitrators.	Whether referred for award under Act 31 V., c. 12, or for report under Act 41 V., c. 8.	Amount claimed.	Amount awarded or recommended to be paid.	Date of award or report.	Remarks.
		1879.			$ cts.	$ cts.		
Marcel Lebel	Intercolonial R'y—horse killed	Sept. 10	One arbitrator	Report.	100 00	Nil.	do	
Augustin Lepage	do contract, repairs to snow shed, Ste. Flavie	Sept. 10	do	do	440 00	440 00	do	
R. Stevenson	do land damage	Sept. 12	do	do	800 00	150 00	do	
Revd. D. F. Macdonald as Trustee for St Mary's Church	P.E. Island R'y—land expropriated	Oct. 16	Whole board	Award.	1,962 87	1,476 87	1880. Feb. 21	
P. A. McIntyre	do do	do	do	do	500 00	350 00	do	
Mrs. Stark	Intercolonial R'y—barn burned	Oct. 14	One arbitrator	Report.	340 00	Nil.	April 12	
Silas Clarke	do for loss of hay	Nov. 28	do	do	246 36	do	April 13	
Jérome Gagnon	do loss of water supply	do	do	do	150 00	.....	.....	
Abraham Thiberge	do do	do	do	do	100 00	.....	.....	
Irénée Caron	do do	do	do	do	100 00	.....	.....	
William Morrice	do land damages	do	do	do	300 00	.....	.....	
T. B. Smith	do fencing done on sec. 12.	do	do	do	8,538 96	2,595 90	March 24	
E. Rioux	do land damages	Dec. 3	do	do	Not stated	.....	.....	
S. Woodruff	Welland Canal, do	Dec. 19	Whole board	Award.	do	.....	.....	
		1880.						
M. Frenette	Intercolonial R'y, do	Jan. 8	One arbitrator	Report.	do	.....	.....	
I. M. Doucet	do do	do	do	do	do	.....	.....	
F. Melançon	do do	do	do	do	do	.....	.....	
J. S. Doucet	do do	do	do	do	do	.....	.....	
L. Boudreau	do do	do	do	do	do	.....	.....	
D. Begin	do do	Jan. 12	do	do	500 00	.....	.....	
Stephen Beatty	Welland Canal—loss of water supply	Jan. 15	do	do	1,000 00	700 00 with interest	May 14	
J. W. Johnston	do damage to property	Jan. 28	do	do	Not stated	.....	.....	
Mrs. Eliz. Holditch	do turnpike road, traffic cut off	do	do	do	do	.....	.....	

D. Gibbons	do	land damages	do		do	do	do			
Mrs. Sarah Russell	Cornwall Canal	land damages	Feb.	5	do	do	1,000 00	600 00 with interest	May	7
D. J. McDonald	Intercolonial R'y	contract for sleepers	Feb.	13	do	do	346 09	Nil.	March	27
T. Blenkinsop	do	sheep killed	Feb.	18	do	do	65 00			
Judge Botsford	do	land damaged	do		do	do	150 00	150 00	April	13
W. W. Pride	do	horse killed	do		do	do	Not stated	Nil.	April	13
J. L. Hachey	do	do	do		do	do	140 00			
J. M. McDonald & A. Urquhart	do	cattle killed	do		do	do	58 00			
Donald Grant	do	contract for sleepers	March	2	do	do	360 00	Nil.	April	16
W. W. Doherty	do	water diverted from mill	April	9	do	do	400 00 per ann.			
Patrick Ultican	do	land damages	do		do	do	100 00			
Halifax City Railroad Co	Intercolonial R'y	loss and damage by extension of Intercolonial Railway in Halifax	Aprii	14	Whole Board.	Award.	260,000 00 with int'st			
Edward Wasell	do	infringement of bridge patent	April	29	One arbitrator	Report.	not stated			
Mme Rufus Fillmore	do	cow killed	May	3	do	do	40 00			
Elie Mailloux	do	land damages	May	13	do	do	80 00			
Jos. Doucet	do	do	May	22	do	do	200 00			
Grégoire Frenette	do	do	do		do	do	not stated			
Geo. C. Sutherland	do	sec. 16, wages paid and provisions supplied to laborers	do		do	do	4,318 09			
Ferdinand Turgeon	do	claim contracts for sleepers	do		do	do	2,225 00			
C. H. Mann	do	for extras, &c., on a contract for snow sheds	do		do	do	4,000 00			
Marc Devereux	do	land damages	do		do	do	not stated			
Thos. Hair	do	do	do		do	do	not stated			
Paul Foster	do	sheep killed	do		do	do	4 00			
A. Crowell	do	house burned	do		do	do	800 00			
John Robinson	do	horse killed	May	28	do	do	20 00			
Edward Fisher	do	barn burned	do		do	do	264 75			
John Mulroney	do	damage by delay carrying freight	May	31	do	do	167 00			
G Lemieux	do	land expropriated	June	8	Whole Board.	Award.	not stated			
Andrews & Co	Welland Canal	damage resulting from injuries to Port Robinson Dry Dock	June	21	One arbitrator	Report.	20,000 00			

APPENDIX No. 12

TABLE of distances of 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	48	16	0.05
9	Merrickville	46¾	3	25 0	1	150	6	0.33
10	Maitland	55	1	4 9	1	270	8	0.13
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	0.66
	Total rise at low water	.....	.....	292 3				
				Fall.				
16	Isthmus	87½	1	4 0	.....	.....	.....	1.25
17	Chaffey's	92	1	12 6	.....	.....	.....	0.13
18	Davis	94¼	1	9 0	1	300	15	0.06
19	Jones' Falls	97¼	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	120¼	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

APPENDIX No. 13.

TABLE showing the dates of the closing of Canals in the Autumn of 1879 and of the opening in the Spring of 1880.

Canals.	Closing.	Opening.
Lachine Canal	December 4th, 1879.	April 25th, 1880.
Beauharnois Canal	do 2nd	do 20th
Cornwall Canal	do 9th	do 26th
Williamsburg Canals	do 9th	do 20th
Welland Canal—		
Port Maitland to Port Dalhousie	do 5th	do 16th
Welland Junction to Port Colborne	do 5th	May 1st
Burlington Bay Canal	do 16th	April 1st
St. Anne's Lock and Dam	do 3rd	do 24th
Carillon Canal	November 24th	do 24th
Grenville Canal	do 24th	do 24th
Culbute Lock and Dam	do 20th	do 15th
Chute à Blondeau Canal	do 24th	do 29th
Rideau { Kingston Mills	do 21st	do 27th
Rideau { Ottawa	do 23rd	do 27th
St. Ours' Lock	do 24th	do 7th
Chambly Canal	December 6th	do 20th
Erie Canal (New York)	December 6th	do 20th
St. Peter's Canal (Cape Breton)	Closed June, 1876.	.....
Trent Canal Works	December 8th, 1879.	April 7th

APPENDIX No. 14

REPORT ON LOCATION SURVEYS IN THE NOTH-WEST TERRITORY.

CANADIAN PACIFIC RAILWAY.

OTTAWA, 3rd January, 1881.

MY DEAR SIR,—I have the honor to submit a Report on the surveys made during the past season for the location of the Canadian Pacific Railway in the North-West Territories.

The object of these surveys was to find the shortest line compatible with economy in construction, and having in view its passing through, or conveniently near, the greatest extent of land fit for settlement.

During the season of 1879 a general examination of the country was made from Red River westward to the south branch of the River Saskatchewan, and transversely from the Rivers Assiniboine and Qu'Appelle, on the south, to Lake Manitoba, the Riding and Duck Mountains, and the main stream of the Saskatchewan on the north.

A location survey was made from Red River through the Province of Manitoba, intersecting its western boundary near the 4th Base Line of the Dominion lands surveys; and a contract (No. 48) was entered into for the construction of this section of the railway, called the First 100 miles west of Red River. If this line were extended due west about 20 miles, thence on a north-westerly course to touch the south end of Shoal Lake, cross the Assiniboine near the mouth of Shell River, the Whitesand near its intersection with the 8th Base Line, and pass a little to the north of Fishing Lake, it would intersect the telegraph line nearly due north of Little Quill Lake.

This is the theoretical line for the railway, which, following very near the centre of the rich agricultural belt above defined, it is believed, would afford the greatest facilities for its settlement at the least cost of construction; for, as the distance to the outside settlements on either side of the line, at least as far as Shell River, would be under 30 miles, no branch lines would be needed for some years, and when required they could be constructed at very small cost.

This line crosses, nearly at right angles, the deep valleys of the Little Saskatchewan, the Birdtail and the Assiniboine. Hitherto no practicable line had been found across the two latter, but in 1877 a fair crossing of the Little Saskatchewan had been found about 7 miles south of the theoretical line and about 2 miles below the site on which the town plot of Rapid City has since been laid out.

Therefore, in 1879, a line was projected and surveyed from a point on the western boundary of Manitoba a little north of the 4th Base Line to this crossing of the Little Saskatchewan, thence eastward to a point on the Assiniboine, below the mouth of the Birdtail, so as to avoid the valley of the latter altogether. From this point the line descends the slope of the Assiniboine valley obliquely, then follows the bottom of that valley up to the mouth of the Qu'Appelle; the northern slope of the latter affording a means of ascending with moderate gradients to the plateau west of the Assiniboine.

This line having some disadvantages, the examination of the deep valleys was extended further north than any previous survey had been carried; the result was that feasible crossings were found both of the Little Saskatchewan and the Birdtail valleys, and another line was projected.

This commences at the same point on the boundary line of Manitoba as the last, and takes a north-west course to the valley of the Little Saskatchewan, which it crosses a little below the northern main cart trail and near the town plot of Odanah, which has since been laid out. Thence it extends by the south end of Long Lake to the Birdtail valley, crossing it near the north end of the Indian Reserve. The Second 100 miles from Red River terminates on the west side of the valley, in thick poplar woods, near the 6th Base Line.

The surveys of 1879 were carried up to this point, but the season was too far advanced to extend them farther; a detached survey, however, was made of the crossing of Shell River on the projected line, and a good crossing of the Assiniboine valley had been found on the same route a few miles below Fort Pelly.

Those lines, as well as the country traversed by them, are fully described in the Canadian Pacific Railway Report of 1880, pages 251 to 260. Both are good lines, with some disadvantages. The western line, by Fort Ellice, bears too far to the south, and the north-western line too far to the north, to fully serve this district. The latter on the whole was considered the best for the settlement of the country, and it promised to be the shortest for through traffic. A contract (No. 66) for the construction of this Second 100 miles west of Red River was entered into; it being understood, however, that considerable changes might have to be made in the location, so as to conform to that of the next section—Third 100 miles west of Red River—which presented some difficulties and had only been partially surveyed.

The work of the present season, 1880, was: The location of the Third 100 miles, which governs that of the preceding section; the continuation of the surveys to intersect the surveyed line from Selkirk to Battleford on which the telegraph is placed; and the revision of the Second 100 miles to make it conform to the line east and west of it.

Before these surveys were commenced it had been decided to carry the western portion of the line through Manitoba a mile-and-a-half south of the 4th Base Line, so as to avoid some large swamps on the line first projected.

Immediately west of the Province boundary there is a range of sand hills, having the appearance of an ancient sea-beach, which form the escarpment to a higher plain, called the Grand Plain. These dunes are in great part covered with a thick growth of poplar, occasionally mixed with some spruce and oak. They are serrated by narrow valleys and deep ravines; and the light sand has been blown into fantastic shapes like snow drifts. These are now held in place by a covering of juniper, bearberry and other creepers.

The line surveyed in 1879 crosses these hills where they slope northward to the valley of the Whitemud. The change of the line farther southward necessitated other means of crossing them, which was found by a narrow valley trending in a general westward direction. By this route a favorable line was found, reaching the plain near the 10th mile, with a total rise of 250 feet. The maximum gradient is 52·80 feet per mile, of which there is only $1\frac{1}{2}$ miles against 5 miles on the line of 1879; the other gradients are easy. This part of the line was located for construction and approved by the Government.

At the 10th mile, this line is about 3 miles south of the corresponding point on the former line and therefore less favorable for the crossing of the Little Saskatchewan near Odanah. A re-survey, however, was made of this crossing, by which the profile was improved and the line shortened about a mile-and-a-half.

The crossing of the Birdtail valley, on the same route, was also revised and the location improved up to the end of the second 100 miles.

From that point westward the country was examined for the continuation of the line, which, as projected, appeared to be the shortest. It was, however, found that deviations would have to be made which would carry the line so far northward as to materially lessen this advantage, and also throw it into long stretches of dense forest on the slopes of Riding and Duck Mountains so near the margin of the agricultural belt, that, as a colonization line, it would be inferior to one farther south.

Meanwhile a thorough examination was made of the valleys of the Birdtail and

Assiniboine, extending from this line southward, and instrumental surveys were made of several feasible crossings. The country from the Assiniboine westward to the Whitesand River—near which the Third 100 miles would end—was also examined on two separate routes.

From the information thus obtained, a new line was projected a very little south of the theoretical line above defined. This would cross the Little Saskatchewan 4 to 5 miles south of Odanah, but a careful survey of the valley between Odanah and Rapid City demonstrated that it could not be crossed anywhere between these two points, with good gradients, and moderate cost in construction.

It was therefore decided to locate two lines commencing at a common point near the 10th mile, and crossing the Little Saskatchewan near Odanah and Rapid City respectively, re-uniting at a point on the east bank of the Birdtail valley.

These, with the located lines from Red River through the Province of Manitoba, and westward to the end of the surveys, are shewn by red colored lines on the maps herewith submitted.

The more northerly line is practically the same (improved) on which the contract for constructing the Second 100 miles was made, up to the 55th mile, near the south end of Long Lake; at which point it diverges from a north-west course to one more westward, passing near the north end of Salt and Shoal lakes to a point on the east side of Birdtail valley, about one mile south of the north-west corner of Township 17, Range 26 west, and near the 90th mile from the western boundary of Manitoba.

The alternative line is nearly identical with that surveyed in 1879, viâ Rapid City to Fort Ellice, up to the crossing of the Little Saskatchewan whence it diverges north-westward, taking a nearly direct course to the south end of Shoal Lake, thence to its junction with the other line at a point on the east bank of Birdtail valley above described.

From the junction the line crosses the Birdtail valley obliquely, by which it is deflected from its direct course to a variable one, the average bearing being nearly due north to the end of the Second 100 miles, on the west side of the valley. Both of these are good lines, and pass through excellent lands, which are being rapidly taken up and settled.

The more northern line, by Odanah, is the shortest by about two miles, but the cost of construction would exceed that of the other line, chiefly owing to a heavy bridge being required to cross a lateral ravine on the west slope of the valley of the Little Saskatchewan, which is 900 feet wide at rail level, 200 feet at the bottom, and 92 feet deep. The earth work would also be a little heavier than on the other line.

The curves on both lines are very easy, the sharpest being three degrees, or 1,910 feet radius. The maximum gradient is 1 per 100 or 52·80 feet per mile.

From the 10th mile, near Boggy Creek, on the Great Plain, the whole country rises rapidly westward to the high rolling plateau that extends from the Riding and Duck mountains southward.

The altitude at the 16th mile, on the Great Plain, is 2,210 feet above the level of the sea. At the 36th mile of the Odanah line, on the east bank of the Little Saskatchewan, it is 1,760 feet—a rise of 540 feet in 20 miles. On the Rapid City line, the altitude at the 39th mile on the east bank of the Little Saskatchewan is 1748 feet—a rise of 528 feet in 23 miles.

On the Odanah line the descent of the eastern slope of the valley is made with a gradient of 42·24 feet per mile for a length of 2¾ miles, and the ascent of the western slope with a gradient of 52·80 feet per mile for about 4 miles. The altitude on the plain at the 45th mile being 1,894 feet. At the 58th mile, the highest point on the plateau, the altitude is 1,925 feet; on the east bank of the Birdtail, between the 90th and 91st mile, it is 1,755 feet.

On the Rapid City line the descent of the eastern slope of the Little Saskatchewan is made with a gradient of 52·80 feet per mile for nearly 4 miles; and the ascent of the western slope is made in 4 miles with gradients varying from 42 feet to 52·80 feet per mile, the altitude at the 50th mile being 1,773 feet. At the 58th mile, the

highest point between this and the Birdtail, it is 1,823 feet, while at the junction with the other line, as stated above, it is 1,755 feet.

From the junction on the east bank of the Birdtail valley the line crosses that valley obliquely on a variable course, the general direction being nearly north, to the end of the section on the west side of the valley, which, by the Rapid City line, is 97¾ miles, and by Odanah 96 miles, this section having been shortened by the last surveys more than had been anticipated.

The descent of the eastern slope is made with a gradient of 45 feet per mile for nearly four miles, and the ascent of the western slope with a gradient of 52·80 feet per mile for about three and one-third miles.

From the above statement of the variations in the altitude of the country it is obvious that maximum gradients rising westward must be frequently used; accordingly, in addition to these longer stretches, in crossing the deep valleys and the sand hills near the boundary of Manitoba, above specified there are a number of short lengths varying from a quarter of a mile to one mile, on which gradients of 40 feet to 52·80 per mile have to be used.

But in going eastward, which will be the direction of the heaviest freight, the gradients are very favorable. The only adverse gradients on this section, over 30 feet per mile, are in ascending the slopes of the valleys of the Birdtail and Little Saskatchewan, which, by the Odanah line, are four miles of 45 feet per mile, and two and three-quarter miles of 42·24 feet per mile.

On the line by Rapid City there are four miles of a gradient of 45 feet per mile, and four miles of 52·80 feet per mile. Thus the line by Odanah has a slight advantage in gradients, travelling eastward, in addition to its being two miles shorter, but the cost of construction will be greater. The cost, however, on either of these lines will be considerably less than on that on which the contract was let.

The third 100 *miles west of Red River.*

From the end of the second one hundred miles, on the west bank of the Birdtail valley, the line extends north-westward in an almost direct course to the valley of the Assiniboine, reaching its east bank about five miles below the mouth of Shell River in a straight line.

The distance to this point is 33½ miles, across a high, rolling prairie, interspersed with groves of good-sized poplar with some brush, and dotted with lakelets and ponds. There are some perennial streams of good water and numerous sloughs. The soil is very rich, except on a strip three to six miles wide alongside the Assiniboine, which is chiefly sand and gravel, and appears to have been the ancient bed of the river when it was probably a lacustrine stream of much larger dimensions and flowing nearer the surface of the country than at present.

A number of settlers have come in and taken up lands during the past season.

The altitude at the 1st mile, on the edge of the Birdtail valley, is 1,760 feet; at the 8th mile, 1,800 feet; at the 21st mile, 1,832 feet; at the 27th mile, 1,655 feet; and at the 33rd mile it is 1,618 feet. The intermediate undulations are very considerable, so that gradients of 40 feet to 52·80 feet per mile have to be frequently used, rising in both directions.

From this point to the 44th mile, great difficulty was experienced in crossing the valley of the Assiniboine, which is here about 280 feet deep. None of the lateral valleys or coulées could be used, as they all drop too suddenly in the last two or three miles to their junction with the main valley; so the slopes of the latter had to be used, crossing them obliquely to obtain the proper gradients.

But it requires five to six miles to overcome the difference in height between the top of the slopes and bottom of the valley, and there is scarcely any part of the valley where that distance can be found unbroken by lateral coulées. The line across the valley is therefore deflected widely out of its true course, and it is somewhat tortuous, but the curves are easy, the sharpest being three degrees, or 1,910 feet radius.

The descent of the eastern slope is made in six miles, with gradients varying from 40 to 52·80 feet per mile; the altitude at the bottom of the valley being 1,337 feet. The River Assiniboine is crossed between the 38th and 39th mile at a point about two miles below the mouth of Shell River. From the 39th to the 44th mile the line ascends the western slope of the valley, with a gradient of 52.80 feet per mile, the altitude at the latter being 1,608 feet.

From the 44th to 47½ mile the course of the line is nearly due west; thence to the 68th mile the course is north 61 degrees west, from which point to the end of the section it is nearly north-west. This section—Third 100 miles—ends on the east bank of the Whitesand River, about two miles north of the 8th Base Line, in Range 4, west of the second principal meridian.

After crossing a strip of poor land along the bank of the Assiniboine the soil is generally good to the end of the section; but between the 60th and 75th mile—on which there are some heavy poplar woods, partially burnt, much scrub and willow brush,—the country is very flat and wet, with numerous ponds and sloughs; these, however, are not deep and the bottoms are sound so that, when drained, the whole of this tract would be fair agricultural land. The balance of the section is prairie, dotted with groves and clumps of poplar and brush, the surface of the ground is and remarkably uniform, with a gradual swell to the crown that divides the water-sheds to the Assiniboine and Whitesand Rivers.

The works will be light except in crossing the Assiniboine valley and its affluent streams, between the 30th and 45th miles, on which length both the earthwork and bridging will be rather heavy. The River Assiniboine will require a bridge of one span of 200 feet, 10 feet above water level. On the east side of the valley there is a coulée to be bridged 800 feet wide, at rail level, 250 feet at the bottom, and 113 feet deep. On the western slope there is a coulee 800 feet wide at rail level, 100 feet wide at the bottom, and 100 feet deep. These are the heaviest works on this section.

The location surveys were carried up to the Whitesand River. Beyond this there is an extensive plain or basin lying between the Touchwood Hills on the south, and the Pas Hills on the north, and extending round the west end of the former, southward to Long Lake, which discharges its surplus waters into the Qu'Appelle. This plain is part prairie, mixed with poplar woods, scrub and willow brush. In it lie the Fishing and Quill Lakes—the latter are strongly alkaline—with numerous smaller lakes, ponds and sloughs. The soil is variable. There are tracts of very fine land, others are wet and swampy, intersected with ridges of sand and gravel. The plain west of Big Quill Lake and the Touchwood Hills is generally prairie, much of the soil is light and strongly impregnated with alkali.

A trial line was run from the end of the third 100 miles, in the same north-west course, about 23 miles, when it had to be discontinued on account of the exceptionally wet season. The long continued rains flooded the low lands, and every little stream and valley was filled to the brim, so that it was almost impossible to get the necessary supplies forward. The line, however, was carried to a well defined point, being near the intersection of the line between Ranges 8 and 9 west of the second principal meridian and the 8th Base Line.

The line last described and laid down in red color on the map from Red River to the Whitesand may, from its position relative to other surveys, be appropriately termed the *central line*, and it is undoubtedly the best that can be found for the settlement of the fertile region between the Assiniboine and Qu'Appelle on the south and the Riding and Duck Mountains on the north, at least up to the 250th mile, on the west bank of the Assiniboine.

From this point westward the best lands do not lie in block, but are widely extended and diversified with hills and low plains of indifferent soil, and broken up with lakes and sloughs; but there are no engineering difficulties of much importance for a long distance and the line may be deflected to the right or left without materially affecting the cost. If carried a little more northward so as to cross the Pas Hills on an almost direct line to Prince Albert, it would embrace very extensive tracts of exceedingly rich land. Thence it could be extended to Peace River or to Yellowhead

Pass by the Athabaska valley. Or it may be deflected a little southward to pass between the Quill Lakes and Touchwood Hills, and thence westward to join the telegraph line at the Elbow of the North Saskatchewan, which would shorten the line a few miles.

As the surveys were not carried on to intersect the original or telegraph line the exact difference in length has not been ascertained, but by calculation it is estimated that the telegraph line is about 16 miles the shorter.

It is therefore in respect of through traffic that the present line is defective; it is so deflected from its general course in crossing the deep valleys, above described, as to increase its length about 11 miles beyond that of the theoretical line. The intervening portions, however, are so straight that on the whole 300 miles the increase, it is estimated, will be barely 6 per cent. over the theoretical line.

It is obvious that it would be true economy to shorten the line, even if the variabl quantities of grading and bridging were considerably increased, as this would be counterbalanced by the reduction of the constant quantities of fencing, ties, ballast, rails, etc., through the reduction of the mileage.

This cannot be done on the line above described, for the valleys are so wide and deep, the cost of bridging them would be so enormous as to greatly exceed any reduction by shortening the mileage. Having this in view, it was deemed expedient to extend the survey of the line made in 1879 *via* Fort Ellice.

This diverges from the last near the 45th mile of the second 100, in the valley of the Little Saskatchewan near Rapid City. The altitude in the valley is 1,531 feet, and the western slope is ascended in four miles, with gradients of 35 feet to 52·80 feet per mile; the altitude at the 50th mile being 1,695 feet. Thence it takes a westerly course direct to a point on the left bank of the Assiniboine valley, below its junction with that of the Birdtail; this is at the 91st mile. The surface of the country between these points is slightly rolling or lumpy, and it is intersected with several narrow coulées. The gradients are generally easy, and the works will be moderate.

From the 91st to the 96th mile the line descends obliquely the Assiniboine valley, with a continuous gradient of 52·80 feet per mile, and some curves of four degrees or 1,433 feet radius. Both the grading and bridging on this length will be heavy.

The line crosses Birdtail Creek near its confluence with the Assiniboine, where a bridge of one span of 100 feet, 15 feet above water level, will be required.

From this point the line follows the bottom of the valley of the Assiniboine with easy curves and gradients to the mouth of the Qu'Appelle, about the 12th mile on the third 100. The grading on this length will be light, and the Assiniboine will require a bridge of one span of 200 feet, sufficiently high above water level to render it safe from floods.

At this point the line enters the valley of the Qu'appelle and ascends its northern slope to the plain west of the Assiniboine. The altitude in the valley is 1,261 feet, thence there is a continuous gradient, rising westward, of 52·80 feet per mile for a little over five miles. The plain is reached at the 18th mile, where the altitude is 1,540 feet. The slope of the valley is fine sand, and both the grading and bridging will be moderate.

From the last point the line was carried on a north-west course parallel to the Big Cut Arm Creek, in an almost straight line to the end of the third 100 miles, near Whitesand River; thence it was extended as a trial line about 35½ miles to the 8th Base Line. The gradients on this length are remarkably easy and the works will be very light, the country being flat and the soil generally light; a great deal of it is sand and gravel.

This line is one mile longer than the last, but the bridging will be considerably less, while the earthwork will be increased. The cost on the whole will probably be slightly reduced.

The only course by which the line can be materially shortened is to carry it from a point on the north bank of the Qu'Appelle valley directly to a point near the Indian Reserve on the south side of the Touchwood Hills; thence as direct as practicable to the Hay Lakes to join the surveyed line about twenty-seven miles south-east of Edmonton; or to the elbow of the North Saskatchewan there to join the surveyed line.

The country on this route has been examined from the mouth of the Qu'Appelle to the South Branch of the Saskatchewan, about 250 miles. The most important work on this length will be the bridging of the valley of Big Cut Arm Creek, which is about a quarter of a mile wide and 110 feet deep in the centre; but this may probably be avoided by following the Qu'Appelle valley till the Cut Arm is passed. Beyond this the only difficulties are some stretches of undulating lumpy ground, and some swamps on the salt plain west of the Touchwood Hills.

Either line would cross the South Saskatchewan at a favorable point, in the Moose woods. From this point westward the country has not been examined by an engineer, but has been explored generally, by Professor Macoun and others. The line to Hay Lakes would pass near the Ear Hills, about thirty miles south of Battleford, over a country described in Reports as fertile.

The crossing of the valley of Battle River will probably be a difficult work as it is reported to be about 250 feet deep. It will, therefore, have to be crossed diagonally like the Assiniboine and Birdtail, which will lengthen the line some miles. Deviations from the direct course may also have to be made to avoid hills or broken ground. Nevertheless, after making a liberal allowance for such contingencies, this line promises to be the shortest of all by several miles, as well as the lowest in cost of construction.

Yours very truly,

MARCUS SMITH.

COLLINGWOOD SCHREIBER, ESQ.,
Engineer in Chief.

RETURN

(5*a*)

To an ORDER of the HOUSE OF COMMONS, dated 14th February, 1881;—For a Return stating in detail the Names of the several Persons to whom was paid the sum of $23,931 11—given in page 10 of the Report of the Minister of Railways for the year ending 30th June, 1880, as the Total Sum paid for "Construction of Railways, Old Accounts," and charged to Expenditure on Capital Account; the Amount claimed, and the Amount paid in each case; and the Report on which payment was made.

By Command,

JOHN O'CONNOR,
Secretary of State.

Department of the Secretary of State,
9th March, 1881.