

NATIONAL TRANSCONTINENTAL RAILWAY.

[45.]

To the Honourable H. R. EMMERSON, P.C.,
Minister of Railways and Canals,
Ottawa.

SIR,—We have the honour to transmit through you to His Excellency the Governor General in Council our first annual report for the year ending June 30, 1905, setting forth the receipts and expenditures in connection with the Eastern Division of the National Transcontinental Railway, and such other matters in relation to the said railway as appears to be of public interest, and deem it our duty to supplement the same with a few remarks on the different operations under our control.

The interim report submitted to Parliament as Sessional Paper 62c, of 4-5 Edward VII., A.D. 1905, gives full information in regard to the organization of the commission, the engineering, purchasing, transport and accounting departments; also as to the negotiations for the purchase of the surveys, plans, etc., made by the Grand Trunk Pacific Railway; and the form of tender, contract, and specifications for construction.

In order, therefore, to avoid unnecessary repetition and expenditure, we will refer to said Sessional Paper for information regarding work done prior to April 1.

The report of the Chief Engineer, however, and those of the accounting, purchasing and transport departments, incorporated in this report, cover the entire fiscal year ending June 30, 1905, and furnish complete information in regard to their respective departments.

CONTRACTS FOR CONSTRUCTION.

We desire to direct your attention to that portion of the Chief Engineer's report in which he advises that he has every reason to hope that the work will have so far progressed by the end of January, 1906, as to enable us to call for tenders for the construction of 100 miles or more from the Quebec bridge westerly, and of about 250 miles from Winnipeg easterly to the junction of the Fort William branch line of the Grand Trunk Pacific Railway.

PROGRESS OF WORK.

The engineering work on the balance of the line is progressing satisfactorily. Owing, however, to the necessity of making additional surveys between Grand Falls

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and Moncton, N.B., and to the difficulties under which the work must necessarily be performed in the northern sections of Ontario and Quebec,—due to the absence of transportation facilities,—it will be readily understood that the work in these districts is less advanced. It will, therefore, be some time yet before locations can be completed.

ENGINEERS' REPORTS.

The reports of our Chief Engineer and of our District Engineers show that they have been successful in securing easy gradients and favourable curves.

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CHARACTER OF COUNTRY.

We direct your attention to the reports of our engineers on the general character of the country, which is for a great part of rich soil, and well adapted for settlement. The whole respectfully submitted.

C. F. McISAAC,

ROBT. REID,

C. A. YOUNG.

S. N. PARENT, Chairman.

Commissioners.

COPY OF RESOLUTION.

OTTAWA, May 25, 1905.

At a meeting of the Commissioners held this day at which Commissioners Young and Reid, H. D. Lumsden, Chief Engineer, and P. E. Ryan, Secretary, were present.

It was resolved that the Board record its deep sorrow for the great loss sustained in the untimely removal by death of Mr. F. B. Wade, K.C., their chairman, and that in extending their heartfelt sympathy to Mrs. Wade they bear witness to the marked ability and peculiar fitness of Mr. Wade for the important position from which he has been so suddenly removed, and at the same time express their feeling of having lost not only an able colleague but a warm and sincere personal friend.

Certified correct,

P. E. RYAN, Secretary.

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To the Commissioners
of the Transcontinental Railway.

SIR,—I have the honour to submit my first report on the progress of the exploratory and preliminary surveys for this railway, between Moncton and Winnipeg, up to June 30, 1905; the distance between Moncton and Winnipeg being estimated at 1,890 miles.

ORGANIZATION.

The organization for the carrying out of these surveys was as follows:—

Mr. M. J. Buttler was appointed Assistant Chief Engineer.

The entire distance was divided into six districts, giving an average of 315 miles to each, though actually the more accessible ones considerably exceeded this length, while the inaccessible ones were considerably decreased in length.

The districts are approximately as follows:—

DISTRICT 'A'.

From Moncton to the boundary between the province of New Brunswick and Quebec, under Mr. Guy C. Dunn, District Engineer, with headquarters at Fredericton, N.B., Mr. C. O. Foss being appointed his assistant in February, 1905.

DISTRICT 'B'.

From the last mentioned boundary to the vicinity of longitude 74° west, under Mr. A. E. Doucet, with headquarters at Quebec, P.Q., and Mr. S. R. Poulin, his assistant in the field, who was promoted to District Engineer of District 'D,' on the 1st of April, Mr. F. A. Hibbard being appointed Assistant District Engineer succeeding Mr. Poulin. The section in the vicinity of the Quebec bridge from St. Jean Chrysostome to the county line between Quebec and Portneuf, a distance of say 17 miles, which would be included in District 'B,' was placed under Mr. E. A. Hoare, with headquarters at Quebec, P.Q.

DISTRICT 'C'.

From the vicinity of longitude 74° to near the provincial boundary between Quebec and Ontario (east of Lake Abitibi) under Mr. A. N. Molesworth, District Engineer, with headquarters at Ottawa, Ontario, and Mr. A. T. Fraser and G. H. Garden, assistants in the field.

DISTRICT 'D'.

From near the last mentioned provincial boundary to near longitude 84° west, under Mr. John Aylen, Acting Assistant District Engineer, with headquarters at New Liskeard. On the 1st of April Mr. S. R. Poulin was appointed District Engineer with headquarters at North Bay, Ontario, with Mr. John Aylen as his assistant.

DISTRICT 'E'.

From near longitude 84° to near longitude 89° 30', under Mr. C. E. Perry, District Engineer, with headquarters at Nepigon, Ontario, and Mr. C. F. Hannington his assistant in the field.

DISTRICT 'F'.

From near longitude $89^{\circ} 30'$ to Winnipeg, under Major Hodgins, District Engineer, with headquarters at Winnipeg, Manitoba. About the middle of April, 1905, his headquarters were moved to Kenora, Ontario, being more central.

INSTRUCTIONS TO ENGINEERS.

District engineers were furnished with printed instructions for their guidance and for that of the engineers in charge of parties under them, giving full particulars as to their various duties. They were also instructed to adhere to grades not exceeding 0.4 feet per 100 adverse to eastbound, or 0.5 adverse to westbound traffic, though in regard to the last mentioned this has been changed to 0.6 per 100, in one or two exceptional cases. The maximum curvature was limited to 4° .

Organization.

DISTRICT 'A.'

On September 27, Mr. Guy C. Dunn, who had been appointed Acting District Engineer for that district, organized and started out six survey parties, and during the following month six more parties; two of these, however, were disbanded before the end of December.

Commencing at Moncton and extending through to Quebec boundary, a large area of country has been explored, and several preliminary surveys have been made to Chipman, on the Salmon river, and thence by what is known as the Back Route up the valley of the Gaspereau river, and passing south of Boiestown to the headwaters of the Taxes and Miramichi rivers, thence to near Plaster Rock, then to Grand Falls and Edmundston, and connecting with the surveys made in District 'B', at a point about twenty miles beyond the province line.

Another route was surveyed branching off the foregoing near Chipman, striking the valley of the St. John river, and crossing it at Fredericton, thence following the west side of the river to Woodstock and Andover, and re-crossing the river at the last mentioned point, thence to Grand Falls, where it joined the back route survey.

On both these routes many pieces of alternative lines were run or explored. The total distance by the back line from Moncton to the Quebec boundary is, say, 294 miles, which distance will probably be shortened on location. By the river route the distance is 311 miles, but will probably be lengthened on location.

Total mileage covered in this district was, of explorations 1,535 miles, preliminary lines, 1,521.

Grades 0.4 adverse to eastbound and 0.6 adverse to westbound traffic, with maximum curvature of 4° were obtained, except the curvature which may require the use of several 6° curves.

Details of these surveys and comparison of routes are fully given in Mr. Dunn's following report.

HUGH D. LUMSDEN, Esq.,
Chief Engineer, Transcontinental Railway,
Ottawa, Ont.

SIR,—I herewith beg to submit the following report of preliminary and exploration surveys of District 'A,' from the beginning of operations on this district, the latter part of September, 1904, to the 30th June, 1905.

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ORGANIZATION.

On the 16th of September, 1904, I received my appointment, in Ottawa, from the Commissioners of the Transcontinental Railway, as Engineer in charge of the New Brunswick district, known as District 'A'. On instructions from yourself and the then chairman, the late Mr. F. B. Wade, I proceeded to Moncton to organize parties to run preliminary surveys through the district on the east from Moncton, and about twenty miles into the province of Quebec on the west.

My instructions from yourself and the late Chairman, were to run surveys through my district by the most direct line obtainable across country and also to run an alternate line from some point at, or near, the Salmon river, in the vicinity of Chipman, to Fredericton, and up the valley of the St. John river to the first-named line near Grand Falls, to exhaust all possibilities of both lines in so far as ascertaining the shortest possible route obtainable under gradients and curvature asked for. My instructions in regard to grades and curvature were, the grades rising westward should not exceed 0.6 per cent or 31.68 feet per mile, and rising eastward of 0.4 per cent or 21.12 feet per mile compensated, and the curvature was not to exceed anything over a 6° curve, and this only to be used sparingly.

On reaching Moncton on the 24th of September, 1904, I was joined by a number of men selected for the work, and during the latter part of September and the beginning of October, I organized ten parties under the following chiefs, viz.: Karl Weatherbe, party No. 1; D. W. Burpee, party No. 2; H. M. Balkam, party No. 3; C. O. Foss, party No. 4; Charles Garden, party No. 5; G. R. Balloch, party No. 6; K. McIntosh, party No. 7; D. F. Maxwell, party No. 8; H. Longley, party No. 9, and C. LeB. Miles, party, No. 10. On the 20th of October party No. 11 was organized at Woodstock under the charge of Mr. Gillmor Brown, but owing to illness he was not able to join his party for about two weeks later, in the meantime his party was run by his transitman. On the 20th of October, a small party of 12 under Dr. Murphy was assembled for the surveys of bridge sites, &c.

DISTRICT OFFICE.

Permanent headquarters were obtained in the city of Fredericton, an office being opened there early in October.

OFFICE STAFF.

Guy C. Dunn, district engineer.

C. O. Foss, assistant district engineer, promoted from chief of party 4, February 15, 1905.

R. A. Harry, office engineer and draughtsman, appointed April 9, 1905.

W. P. Collins, accountant, October 4, 1904.

D. Harnett, stenographer, appointed October 4, 1904; retired December 31, 1904.

M. K. Burchill, stenographer, appointed January 10, 1905.

W. H. Boyd, office boy, appointed May 4, 1905.

PURCHASING DEPARTMENT.

Frank S. West, district purchasing agent, appointed September 15, 1904.

TRANSPORT DEPARTMENT.

A transport officer was attached to party No. 10 for several months, but owing to the fact (except on one or two occasions) that none of the parties were out of reach of bush roads and they each had a team, it was considered advisable to do away with this

department. The local purchasing agent, outside his own duties as such, gives every assistance possible in forwarding supplies, outfits, &c., and, so far, there has been no cause for complaint from running short of any supplies by any party on the district.

GENERAL DESCRIPTION, LINES OF SURVEY SO FAR RUN.

Up to June 30 a continuous line of survey had been run from Moncton to the Salmon river, near Chipman and up the valley of this river to the mouth of the Gaspereau, thence up the valley of the Gaspereau to the crossing of the Intercolonial Railway about eleven miles south of Boiestown. From there westerly to the headwaters of the Taxes river to the forks of the Northwest Miramichi to the summit of Lindsay brook, and from that point south of the Wapskehagen to Plaster Rock, from Plaster Rock to Grand Falls, and then up the valley of the St. John river, through the town of Edmundston to Baker's brook. Up the valley of Baker's brook to the Quebec boundary near the north end of Baker's lake, thence by the south shore of Long lake to a point of connection with preliminary surveys run in District 'B.' Many other alternative lines were run in this district, more particularly between Plaster Rock and Moncton, and a shortening of the line was made by preliminary survey run from Moncton to Berry's Mills, thence in a northwesterly direction down the valley of Lake Stream lake, crossing the Salmon river about seventeen miles north of Chipman, then running westerly up McLeod brook to a connection with a previously mentioned line on the Gaspereau river. A continuous line of survey was also run from the first-mentioned line at Chipman to the city of Fredericton, crossing the St. John river at that point, and running up the west shore of its valley by way of Woodstock and Andover. From this point to Grand Falls an alternative line was run on both sides of the valley of the St. John river.

WORK DONE BY PARTIES.

Party 1.

Party No. 1, Karl Weatherbe, engineer in charge. This party assembled at Moncton on September 27, 1904, and received orders to start a preliminary survey from the Intercolonial Railway station in the city of Moncton and run westward to a connection with another party which was working to meet them, with which they kept in touch from time to time in regard to the general direction each party was taking, so as to make their lines of survey as direct as possible. Mr. Weatherbe ran his survey by way of Berry's Mills to a crossing of the North river, with several alternative lines between these points. He also ran an alternative line as mentioned in the general description of surveys run, branching from his first line near Berry's Mills, running in a northwestern direction and making a connection with another party northeast of Lake Stream lake. He also ran an exploratory survey from a point near the village of Salisbury to a connection with his previous line near its crossing of Wilson's brook. This party was disbanded on April 17, and a small exploration party was re-assembled under Mr. Weatherbe on May 20, who received instructions to make an instrumental exploration of several proposed routes, from the junction of Baker's brook with the valley of the River St. John, west of Edmundston, to a connection with surveys run on District 'B,' at the north of Long lake. Mr. Weatherbe reported that he could not find any better line than that run by Baker's brook, unless a line by way of Caron brook might prove a slight improvement. This route was to be tried later on in the summer.

Party 2.

Party No. 2, D. W. Burpee, engineer in charge. This party was organized at Moncton on September 27, 1904, and proceeded to Chipman with instructions to start

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from some point in that vicinity and run a preliminary survey easterly towards Moncton until a connection was made with party No. 1. This tie-in was made near the Canaan river on what is known as the South line, after which the party ran several alternative lines in the vicinity of Chipman to a crossing of the Salmon river, and also ran another preliminary survey at a point about seventeen miles north of Chipman, eastward by the valley of Lake Stream and joined party No. 1 at a point northeast of Lake Stream lake. This party was disbanded on April 12.

Party 3.

Party No. 3, H. M. Balkam, engineer in charge. This party assembled at Moncton on September 27, 1904, and started work at Chipman with instructions to start from a common point with parties 2 and 6 and run a line of survey to the City of Fredericton. This they did, crossing the River St. John, near that place, and finishing that survey about the end of the year, this section being on the river route. About the beginning of the year they were sent to Plaster Rock, with instructions to make surveys of several of the crossings of the Tobique river and preliminary lines from that point eastward with a view to improving the line between Tobique and the height of land on the Miramichi range eastward, this survey being on what is known as the Back Route. This party was disbanded on the 13th of April, and on the 14th of May they reassembled at Chipman with instructions to try a more direct route from that point towards Arnold Brook, on the Intercolonial railway, by way of the headwaters of the Newcastle creek. On the 30th of June they were still on this work and they have so far been successful.

Party 4

Party No. 4, C. O. Foss, engineer in charge until February 15, 1905, he was then promoted to assistant district engineer and A. Foster, his transitman, was promoted to his place.

This party assembled at Moncton on September 27, 1904, and proceeding to Fredericton, commenced a survey from that point up the west side of the valley of the St. John until they met party No. 5, who were running down the river. They made a connection with this line the beginning of November, when they were instructed to go to Edmundston and run a preliminary line from there down the St. John river to Grand Falls; this they completed on November 27, 1904, after which their instructions were to start from a point on the Intercolonial railway west of Boiestown and run eastward to the Cains river to meet party No. 6. After meeting this party they returned to their starting point on the Intercolonial railway and ran westward by the way of the headwaters of the Taxes river to the Forks of the Northwest Miramichi, up the latter river till they joined the survey being run by party No. 8. This party ran an exploratory line from the Southwest Miramichi at the junction of the Teague brook, up Teague brook to the summit, and another alternative line from the junction of West brook with the north branch of the Southwest Miramichi, up West brook to another summit. They also ran preliminary with projected location from a point on the Taxes opposite the head of Jewett brook, down the Taxes to the junction of Mullin brook with the Taxes, and thence across country crossing the Canada Eastern railway at the same point from which the line was started west in the early part of the winter, thence easterly to Burnt Land brook, and down this brook about six miles and thence easterly across country to Cains river at the point where the connection was made with party No. 6 in the early part of the winter. This party was disbanded April 15, but reassembled on June 6 with instructions to start a survey from their old crossing of the Intercolonial railway west of Boiestown and work westward improving and shortening their first preliminary. They were still at work on June 30 and had considerably improved the first line that was run.

Party 5

Party No. 5, Charles Garden, engineer in charge. This party assembled at Moncton on September 27, 1904, and were instructed to start their survey at Woodstock and run down the west side of the valley of the St. John river until they met party No. 4, which they did at the beginning of November, 1904. They were then instructed to go to Grand Falls and run an alternative survey down each side of the St. John river to meet party No. 11, near Andover. This tie-in was made and they were disbanded on December 22, 1904.

Party 6

Party No. 6, G. R. Balloch, engineer in charge. This party assembled at Moncton on September 27, 1904, and were sent to Chipman with instructions to commence at the same point as party No. 2, and to run a line of survey westward over the most promising territory at a point near, or south, of Boiestown. This survey was run up the valley of the Salmon river to the Gaspereau stream, up this stream a distance of about twenty miles and then in a westerly direction to a crossing of the Cains river, between the north branch of Gordon's brook, at which point they were joined by party No. 4.

Party 7.

Party No. 7, K. McIntosh, engineer in charge. This party assembled at Moncton on September 29, 1904, with instructions to start from a point near the village of Boiestown and run a preliminary line up the Miramichi river. They reached a point west of Burnt Hill brook at the end of December. This line was not found to be available and was abandoned. After this survey was finished the party was instructed to go to Grand Falls and try an alternative line from that point towards Edmundston on the higher lands north of the river, this line did not prove satisfactory and the party was disbanded March 2.

Party 8.

Party No. 8, D. F. Maxwell, engineer in charge. This party after being organized at Moncton on September 27, 1904, were instructed to commence a survey at the Tobique river, near Plaster Rock, and to run eastward to endeavour to secure a preliminary line from that point to the height of land on the Miramichi. They ran several preliminary lines eastward up the valley of the Wapschagen to the head waters of the River de Chute at Beaver lake, and to the head of Lindsay brook and the north branch of the Southwest Miramichi. This party was continually occupied on this district until April 13 when they were disbanded. They were reassembled on June 7 and were sent into the same district with instructions to run further lines with a view to improving and shortening the line already run. They also ran a line for a possible pusher grade from the crossing of the Tobique to the summit of the Miramichi watershed at West Brook.

Party 9.

Party No. 9, Horace Longley, engineer in charge. This party assembled at Moncton on September 27, 1904, and proceeded to Grand Falls with instructions to run a survey from that point to a connection with the starting point of party No. 8 on the Tobique river. Several alternative lines were also run by this party, and they remained in this territory until April 9, when they were disbanded. They were assembled on May 19 with instructions to run a preliminary line from Moncton by way of Salisbury to a connection with the south line run by party No. 1 by the east of Lewis Mountain to a connection with Mr. Weatherbe's southern line near Harewood. They were still at work on this survey on June 30.

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Party 10.

Party No. 10, C. LeB. Miles, engineer in charge. This party assembled at Moncton on September 27, 1904, and were sent to Edmundston with instructions to run a line of survey from that point westward up the valley of the St. John river, thence by way of Baker's brook to the Quebec boundary at the north end of Baker's lake, from that point they crossed over to the west shore of Long lake. They made a connection with surveys run by parties on District 'B,' near the northwestern end of Long lake, and ran a preliminary survey by the west shore of Jerry lake to a point where they previously connected with the party on District 'B.' This line was found to be longer than the survey previously run and it was abandoned and the party was disbanded on April 12.

Party 11.

Party No. 11, Gillmor Brown, engineer in charge. This party was organized at Woodstock on October 19 and was instructed to run from that point where party No. 5 had commenced their survey, up the valley of the St. John river until they joined the survey being run by another party from Grand Falls down. Mr. Brown being delayed by illness, the party was in charge of his transitman for the first two weeks' work. This party ran up the St. John river at a point between Tobique and Aroostook rivers, where they connected with Mr. Garden's survey from Grand Falls on the west side of the river, and also recrossed the St. John river connecting with his line which was run down the east shore. They completed this survey about the end of the year, after which they proceeded to the summit of Lindsay brook on the Miramichi range and from that point ran northeasterly to the Gulquack lakes with a view to determining whether there was any possibility of crossing this range further north with a lower summit. They also ran several other preliminary lines in this district, and were disbanded on April 2.

Party 12.

Party No. 12, Dr. Martin Murphy, engineer in charge. This party assembled at Clipman, October 20, 1904, and were instructed to make a traverse of the Salmon river from that point several miles up. This party was disbanded at the end of December.

In giving above dates as to when parties were assembled and disbanded, I have used the date the party as a whole were put into the field or laid off. Chiefs of party and individual members of same were very often kept on after the party was disbanded, finishing plans, &c., and in some cases were employed at office work preparing for their surveys before the party was assembled.

CLIMATIC AND OTHER CONDITIONS UNDER WHICH SURVEYS WERE RUN.

The work done during the months of October and November, 1904, was under very favourable weather conditions, very little rain falling, but a great deal of difficulty was experienced during the winter from excessive snowfall and extreme cold, all the parties working between Moncton and Grand Falls being delayed in their work by the depth of snow, making transportation very difficult. The total depth of snow in some of the districts, more particularly in the Miramichi range, reached six feet of light snow without any crust to support a man on snow shoes, and adding greatly to the difficulty of exploring and moving camp, making it very difficult to break roads, &c., &c., the cold also being the greatest ever known in the province; in some of the sections the thermometer for weeks at a time being below the zero mark, and at Fredericton going as low as 45° below zero, and in Grand Falls and the Tobique Districts almost 10° lower. Outside the depth of snow, most of the parties were able to

move their camp and outfit by teams, those parties on the river being close to the main road, and those in the back country being fairly well supplied with bush and lumber roads; several of the parties, more especially 1, 4, 6, 8, and 11, were obliged in some cases to cut roads and in others to move camp on sleds and toboggans.

COMPARATIVE DISTANCES RUN.

River Route.

	Miles.
Moncton to Grand Falls via Salmon river (near Chipman), Fredericton, Woodstock and Andover.	249
Grand Falls to Edmundston.	37
Edmundston to boundary between New Brunswick and Quebec.	25
Boundary to junction with parties district 'B'.	22
Total distance.	333

Back Route.

Moncton to Grand Falls.	232
Grand Falls to Edmundston.	37
Edmundston to boundary between New Brunswick and Quebec.	25
Boundary to Junction with parties, District 'B'.	22
Total distance.	316
Distance in favour of back line.	17

I would also state that another line of survey is to be run from Moncton by way of Berry's Mills and thence in a more direct route to Chipman, from there by the way of the headwaters of the Newcastle river to Arnold brook near the Intercolonial railway south of Boiestown, thence to the summit of the Miramichi by the headwaters of the West brook, descending between the valleys of the Wapskehagen and river de Chute to the Tobique river, which would materially lessen the distance on the central on back route. A pusher grade has also been projected from the summit of the Miramichi to the Tobique, which, if adopted, will shorten the distance several miles.

CHARACTER OF COUNTRY TRAVERSED.

From Moncton to the Salmon river on what has been described as the southern line crossing the Canaan river near the mouth of the Alward brook goes through a region either cultivated or adapted to farming purposes and indications of coal showing in many places in the vicinity of Chipman and the Salmon river. The northern line from Berry's Mills westerly down the valley of the Lake Stream has not to any extent been opened up, the greater portion of this country is well adapted for cultivation and also has a heavy growth of spruce, cedar and hardwood timber, very little rock appearing on the surface.

From the Salmon river to the crossing of the Intercolonial railway south of Boiestown the line passes through a light soiled country not in a general way adapted for cultivation, but having a light growth of spruce and other timber extending over the whole distance. Crossing the Intercolonial railway westward to the Tobique river the line passes through a country almost entirely unsettled and covered with spruce, birch, cedar and hardwood, extending in places at least five to ten miles on each side of either survey, some of the birch being above the average in size and quality of any I have seen growing in eastern Canada. The soil over a greater portion of this section is fit for cultivation, well watered, and at present one of the most magnificent game districts in the Dominion, more especially caribou being very plentiful, and the Salmon,

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Miramichi and Tobique rivers having an abundance of salmon. From the Tobique river to Grand Falls, the line goes over a magnificent farming country, about half of the whole distance being now settled. From Grand Falls up the valley of the St. John river to Baker's brook the land is all taken up and under cultivation chiefly by comfortably settled and well-to-do French Canadian farmers, and before reaching Baker's brook passes through the prosperous little town of Edmundston, having a population of about twelve hundred.

From the mouth of Baker's brook by way of Baker's lake and the northwest end of Long lake, the country is not so desirable for farm purposes, but a prosperous little settlement of farmers is located at the south end of Baker's lake. From Chipman to Fredericton a very small area of the country passed through is under cultivation, but the greater part is adapted for same. The Minto coal mines now in operation are on the line of survey about fourteen miles west of Chipman, and after crossing the St. John river, the city of Fredericton is reached, and all the way up the River St. John, through the town of Woodstock to the village of Grand Falls, the country is well settled, the farmers being comfortably off.

BALLAST PITS.

Ballast pits of good material will be obtained at a reasonable distance along our lines of survey, perhaps with the exception of that portion of the line from Moncton to the Salmon river, over which, so far, very little indications of material suitable for ballast have been found.

PRINCIPAL STREAMS TO BE CROSSED.

Between Moncton and Grand Falls, on the River Route, the Canaan river requires a span of about one hundred and fifty feet. Then a crossing of the Salmon river at a point near Chipman has three hundred feet of bridging, and also the following are to be crossed :—

	FEET.
Newcastle river.	100
Little river.	150
Burpee's Mill stream.	150
Bartlett's Mill stream.	100
St. John river (first crossing).	1,800
Shogomoc.	150
Eel river.	200
Maduxanakeag.	200
Upper Guisguit.	100
Lower Guisguit.	100
River de Chute.	150
St. John river (second crossing).	1,200
Little river.	150
Salmon river.	200

Between Moncton and Grand Falls on the Back Route, the Canaan will be crossed requiring a span of 125 feet.

	FEET.
Salmon river (near Chipman).	150
Cain's river.	150
Jewett's brook.	100
with considerable viaduct approach on the west side.	
Southwest Miramichi, near the forks of the North Branch.	200
Tobique river.	300
with high crossing.	

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	FEET.
Salmon river (near Grand Falls)	150
with heavy viaduct approach.	
Little river	1,200
of viaduct.	

And from Grand Falls to Edmundston the Grand river will be crossed with 150 feet and the Green river with 125-foot span. The Madawaska river at Edmundston, 300-foot span, with considerable viaduct on each side, and from Edmundston to the junction with the Quebec district there are no streams of any size to be crossed. The estimate of bridging as given above in feet is only approximate, subject to change of location.

SMALL STRUCTURES REQUIRED.

Small bridges and culverts required on the back line are very few and small in size. On the River Route, as is always the case when the line runs along the shore of a large stream, small sized structures will be much more numerous and openings required very much larger than on a cross country line.

EARTH AND ROCK QUANTITIES.

The quantities per mile as shown by the profiles over the entire distance will be light, those on the back line will be considerably less per mile than the river route, and the percentage of solid rock will be very small on either line.

CROSSINGS OF OTHER RAILWAYS.

On the river route between Chipman and Fredericton two level crossings of the New Brunswick Coal and Railway Company's track will be required, one level crossing of the Canadian Pacific railway at Woodstock, and one overhead crossing of the same railway at Andover. On the back line survey one level crossing of the Intercolonial railway will be required south of Boiestown, one overhead of the Canadian Pacific at Tobique, and another level crossing of the same line between Grand Falls and the town of Edmundston, and an overhead crossing of the Temiscouata railway at the latter town.

MILEAGE RUN.

The total mileage run by the parties from the commencement of operations in September to June 30, 1905, is as follows :—

Preliminary instrumental lines	1,521·33
Exploration	1,535·00

I estimate that if a 1 per cent grade was used on the general route of back line surveys run last winter, that a saving of 57 miles of distance could be made, as follows :—

	MILES.
Moncton to Grand Falls	50
Grand Falls to Quebec boundary	7
	57

Location on our light grade line on the back route will shorten the distance by probably at least twelve miles, making a total distance from Moncton to Quebec boundary not over 282 miles.

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PERSONALITY OF STAFF.

The discipline in parties on the work has been very good, with the exception of a few cases where it was necessary to make changes in the personnel of the party. The chiefs of party, officers and men are in almost every instance natives of Nova Scotia, Prince Edward Island or New Brunswick.

CONCLUSION.

It gives me great pleasure to be able to report that we have secured a line from Moncton to the Quebec boundary, and also an alternative by way of the valley of the River St. John, with grades and curvature in no case exceeding my instructions.

GUY C. DUNN,
District Engineer 'A.'

DISTRICT 'B.'

ORGANIZATION.

The first of eleven survey parties in this district was sent out October 10, 1904, from which date to March 1, 1905, a large area of country has been explored and examined, some 1,080 miles of exploratory, 1,064 miles of preliminary, and 48.7 miles of location surveys having been run.

GRADES.

The results of these surveys have proved that the entire distance (433 miles) from the boundary between the provinces of New Brunswick and Quebec, near Lake Baker on the westerly limit of this district near longitude 74° west, grades not exceeding 21.12 feet per mile opposed to eastbound, and 31.6 feet per mile opposed to westbound traffic have been obtained, and the last mentioned grade has only to be made use of in a very few cases. The curvature was limited to 4° , but it has been found necessary to use 6° at two or three exceptional points.

Parties 7 and 10.

Parties Nos. 7 and 10 were not found to be working satisfactorily and were disbanded in December. The other parties were withdrawn from the field when the winter broke up, and returned to work in May, or early in June. There are now ten parties in the field, some making a first location and others trying alternative lines, all making fairly good progress.

Parties 4, 4a and 5.

The new lines being run by parties 4, 4a, and 5, keeping more to the south by way of the Etchemin and Abenakis rivers, should be completed shortly, and, I am given to understand, will show a summit over two hundred feet lower, much lighter work, and less bridging, but several miles longer than the first line.

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The following report from Mr. Doucet gives full particulars of the work done on these surveys.

HUGH D. LUMSDEN, Esq.,
Chief Engineer, Transcontinental Railway,
Ottawa, Ont.

SIR,—Conforming to your request that I should inform you of the work done in District 'B,' from the inception of the surveys to the end of the fiscal year on June 30, 1905, I beg to report as follows :—

The commissioners met in Quebec on October 3, 1904, and after two days' deliberation, I was instructed on the 5th to proceed as quickly as possible with the formation and equipment of eleven engineering parties and to run a preliminary line of survey from Quebec boundary west of Edmundston, at or near Lake Baker, to a point about 50 miles west of the St. Maurice river, the western division between my district 'B' and district 'C,' in charge of Mr. Molesworth, being an imaginary north and south line passing through Lake Clear and Waymentachene.

I accordingly set to work with all possible diligence and on October 10 I was in a position to report to you that parties Nos. 1 and 1a were leaving Quebec for their scene of operations on the 11th, at St. Alexandre, County of Kamouraska; party No. 2 was leaving Quebec Tuesday the 11th for St. John Port Joli; party No. 3, on the 11th, for L'Islet; party No. 4, on the 11th, for St. Jean Chrysostome; party No. 5, on the 11th, for Belaire; party No. 6, on the 12th, for St. Genevieve; party No. 7, on the 13th, for Grandes Piles; party No. 8, on the 11th, for St. Genevieve; party No. 9, on the 13th, for La Tuque; and party No. 10, on the 13th, for Joliette.

ASSISTANT DISTRICT ENGINEER.

According to a previous understanding with you, I had obtained your consent to nominate Mr. S. R. Poulin as my assistant on the eastern portion of my district. As I knew this would be a difficult piece of location owing to the abrupt fall of the country from the height of land to Lake Pohenegamook, I considered it most important that an engineer in whom I had full confidence should be sent ahead of the parties about to start work at this point to explore the country before their arrival, so as to be in a position to then instruct them as to the proper course to follow with their preliminary lines.

Mr. Poulin, while acting as my assistant, has rendered me invaluable service, and his promotion to the district engineership of district 'D,' has been well merited. On Mr. Poulin's departure I recommended Mr. A. F. Hibbard, who, up till then, had been in charge of party No. 5, to succeed him, and I am happy to state that he also has done good work and deserves great credit for his attention and hard work.

COMMISSARIES.

I also arranged with you that I should have four commissaries, or transport officers, to look after the distribution of the supplies and to ensure their safe delivery to the different parties in the field. One commissary was assigned to parties 1, 1a and 2, another to parties 3 and 4; a third to parties 5, 6, 8 and 10, and the fourth to parties 7 and 9.

As soon as the work of provisioning and settling the parties was well under way, I found that I could dispense with the services of two of my commissaries, so that I have but two with me now, who, however, are satisfactorily performing their duties. These two commissaries and one storkeeper attend altogether to the commissariat work and the payment of the men.

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INSTRUCTIONS GIVEN.

As you are aware, before starting upon this work, I was convinced, from my previous knowledge of the engineering features of my district, with which I had become familiar owing to the surveys I had formerly been in charge of for the Trans-Canada railway, that a line could be had possessing all the essential conditions required in the instructions received from you in the way of grades and curvature. This previous knowledge thus enabled me to assign to each party a section of country of which I had ample information, so that no time was lost in starting operations after reaching the starting point. Verbal instructions were given to each engineer in charge before leaving Quebec, and in order to insure the proper carrying out of these instructions, a written circular was delivered to each chief of party.

DIVISION OF DISTRICT.

My district was divided up into the following sections :—

To party 1A, was assigned the section from the head of Long lake to a point on the road leading from St. Alexandre and some 20 miles south of the Intercolonial railway station at this point, a distance of 36 miles.

Party 1, was instructed to start from this latter point and to run westwards to join party No. 2 at the St. Philippe road, a distance of 23.5 miles.

Party 2, was to run a line from the St. Philippe road westwards to St. Marcel, where a junction was to be made with party 3, a distance of 40 miles.

Party 3, was instructed to start from a point near St. Marcel, working westwards to meet party 4, at St. Philemon, a distance of 34 miles.

Party 4, was given orders to begin operations at St. Jean Chrysostôme, on the Intercolonial railway, and to run a line southwards along the Etchemin river to somewhere opposite the Abenakis river, thence up the Abenakis river to St. Damien, Notre-Dame and St. Philemon, a distance of 74 miles.

Party 5, had orders to start near the Canadian Pacific railway on the boundary line between the counties of Portneuf and Quebec and to run westwards paralleling the Canadian Pacific railway to the south until opposite St. Basile, where a crossing of that railway was to be effected, and to then run westwards to St. Alban, on the St. Anne river, and in the same general direction to the Batiscan river, where a junction was to be made with parties 6 and 8, a distance of 60 miles.

Party 8, was to start two miles north of St. Stanislas on the Batiscan river, following that river for some fifteen miles and then strike northwesterly to Reed's camp, on the Great Northern railway, which was to be crossed at this point. The route was then to be via the Eau Morte river to Lac Rochet, thence to the St. Maurice river and La Tuque, where the line was to be joined to that of party 9, a distance of 56 miles.

Party 9, had orders to start at the top of La Tuque Falls of the St. Maurice river, crossing the river at this point and to follow the western shore of the river to the Vermillion river, which was to be ascended to the height of land between it and the Flamand river. The Flamand river was to be crossed somewhere near its junction with the St. Maurice river, and this general direction of eastwards of the Great Northern railway by Garneau Junction and the Batiscan river, making a junction at this point with the line run from Quebec by party 5. It was thought advisable to start a survey party from Joliette following the Assumption river northerly to the height of land between the headwaters of the Assumption river and those of the Mat-tawin river, following the latter river to St. Michel, where a crossing was to be made, and the line was then to proceed up the Rivière du Poste to Lake Clear, making a junction at this point with party 7, the whole of this section having an estimated distance of 112 miles.

From the above it is easily seen that my district was so divided up and apportioned as not to ignore any possible route from east to west. The only way of penetrating through the Laurentian range of mountains to the height of land between the St. Lawrence and James bay waters is by following up the large rivers which take their rise at the height of land at an elevation of from 1,200 to 1,450 feet above sea level, and though I am personally convinced from previous explorations made in this district that the valley of the St. Maurice river offered the greatest advantages, from a railway engineering point of view, the only way to settle this matter definitely and for all time was to run such lines as would readily prove which was the easiest route to follow from Quebec westwards. Your instructions in this respect have been faithfully carried out, and as the results obtained on the south or Lake Clear line did not prove satisfactory, I received orders from you to discontinue the instrumental surveys on this line and to make all haste to tie on an exploratory line with that of district 'C,' some 25 miles west of Lake Clear.

DESCRIPTION.

Starting at the eastern end of my district, the elevation of the line is some 600 feet above sea level. Between this point and the St. Lawrence river at Quebec, the location has to be taken up to an elevation of 1,580 feet and then down again to 150 feet above sea level at the Quebec bridge. This elevation of 1,580 feet being found a very serious obstacle to the economical operation of the line, it was thought advisable to deviate from the general direction of the route southwards through the townships of Bellechasse and Montmagny, and though this deviation lengthens the line somewhat, the summit between Lake Pohenegamook and the River Etchemin has been reduced to 1,355 feet above sea level, whilst the cost of construction will also be very considerably less on the southern line than the northern line. The line between Lake Pohenegamook and the Etchemin river is taken through a beautiful range of hills following the general course of the St. Lawrence river, and from ten to twenty-five miles south, generally well wooded and supplied with rivers and streams, which, as a rule, are well stocked with fish. The timber has in a great many places disappeared under the axe of the lumberman, that is the pine and spruce, but except in the immediate vicinity of the villages along the route of the railway, the whole of the ground is still covered with maple, birch and ash, whilst at intervals here and there one still meets with groves of pine and spruce trees. Cedar of good quality is also met with along the route. On my visits to the different parties, I have seen the farmers clearing land and burning up spruce trees twelve inches at the butt for which they had no use, as the settlers are so far removed from available markets for their lumber. On account of the easy grades required, we have had to follow the valleys of the different rivers and streams as far as possible, and the highest summit met with on the northern line between Lake Pohenegamook and Quebec occurs near St. Paul in the county of Montmagny, where the line attains an elevation of 1,580 feet above sea level, whilst, as before stated, the highest summit on the southern line is met with in the county of Bellechasse, ten miles east of St. Magloire, its elevation being 1,355 feet. Though the land has a high elevation, from 1,090 feet to 1,355 feet, it is, generally speaking, of very good quality, as the different settlements along the route easily demonstrate. The best farms as a rule are situated on the hills away from the valleys, and I am told the farming season in the interior is, if anything, longer than on the coast of the St. Lawrence river. Years ago at Confederation, the Quebec government, in order to settle this part of the country, undertook the construction of a highway running from west to east, some 25 miles back from, and parallel to, the St. Lawrence river. This road begins from Notre-Dame de Buckland, in the township of Buckland, and runs through the townships of Patton, Arago, Garneau, Lafontaine, Chapais, Painchaud and Pohenegamook. The road has not

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been kept up in these two latter townships. As the whole of this highway will be of the greatest value, and, I may say, of necessity to the construction of the Transcontinental railway, it is imperative that the second growth of trees on the last fifteen miles be cut down, and the roadbed graded anew, so that through communication can be established by the Taché road from Lake Pohenegamook to the Etchemin river. A sum of fifteen thousand dollars would, in my estimation, be sufficient for this purpose. Settlements have been made at different points along the road, but, of course, no great development could be expected as the country has been left without railway facilities and the long haul from the settlements to the Intercolonial railway renders almost prohibitive the selling of farm produce and timber at remunerative prices to the farmer. The construction of our new railway in this district will, I am positive, be the cause of the establishment of several new and thriving settlements, as the essentials of good land, good timber and good water are all at hand.

From Quebec westerly the railway runs through a settled country to the Batiscan river, through the townships of Portneuf and Champlain, some 70 miles, and on this portion no engineering difficulties are met with; the gradients and curvature are easy, and the Jacques Cartier, St. Anne, Charest and Batiscan rivers are the only points which will require more than an average outlay for construction.

From Reed's camp northwesterly there are no settlements whatever and the country is still the haunt of the lumberman and trapper. On the St. Maurice river around and above La Tuque Falls some 5,000 lumbermen are kept continually at work during the winter months, and the mills at Grand Mere, Shawinigan Falls and Three Rivers are all supplied from this point. The timber limits are taken up as far northwesterly as Waymontachene, but above this point the land and timber are still in the possession of the Quebec government. A great deal has been said of the small growth of timber at the height of land, but our engineers report that at Waymontachene and north spruce grows to a size of 36 inches at the butt. I have not been able to get very positive reports as to the value of the land at this portion of the line, from an agricultural point of view, but from previous reports made by explorers and land surveyors, one gathers that a great deal of land is fit for cultivation, and the advent of the railway will doubtless be the means of the establishment of large and thriving settlements wherever a water power, for which the St. Maurice river is famous, occurs along the route of the railway.

On the southern line from the Batiscan river westerly to the Mattawin river the country is thinly settled and the character of the soil sandy. No good crossing of the St. Maurice river has been found, and though the one we have actually taken may be somewhat improved, it would at least be a very expensive and almost prohibitive one. The St. Maurice Valley at this point is cut up by innumerable wide and deep gullies, necessitating the construction of very expensive viaducts. Could we use grades of 52 feet to the mile, we would doubtless obtain a fairly cheap line, but as we are limited to grades of 21 feet to the mile, we are compelled to cross these several gullies at a very high elevation and to take a crossing of the St. Maurice river some 200 feet high and 1,000 feet wide.

The valley of the Mattawin river is narrow and the water very rapid, fall after fall occurring in short distances. We have found it advisable to leave this river as soon as possible and to grade up the Gros Castor Noir river in order to attain a fairly level country, which, I am told, extends from this river to Lake Clear. We have had to use grades of 75 feet to the mile and over between the crossing of the St. Maurice and Mattawin rivers and this, I think, will make the use of such a line of no value for a transcontinental low grade railway.

The parties have been continually at work since the start of operations in October, with the exception of a short break in the month of April, when the melting snow and swollen streams militated against the efficient prosecution of the work. Advantage has been taken of this lull in operations to finish the plans and profiles of the projected location, and on May 1, as the season was far enough advanced to justify

the resumption of the work, I sent out the necessary instructions to the different engineers in charge, and since then to the present date the work of the surveys has been vigorously prosecuted.

WORK DONE BY PARTIES.

Returning to the work in detail of the several parties in my district :

Party 1a, under charge of Mr. A. F. Macallum, has run a preliminary line from the north end of Long lake, in the township of Cabane, to the foot of Lake Pohenegamook, crossing the St. Francis river at this point. The valley of the river is about one mile wide, and a viaduct about 125 feet high and about one mile long will be required to cross the valley on this route. The line then loops around Wild Cat brook and runs up Lake Pohenegamook to the Smoky river, which is crossed by a viaduct 1,000 feet long and 175 feet high, and proceeds up the St. Alexandre road, which it crosses at a point marked 'A' on the plan, some twenty miles north of the St. Alexandre station on the Intercolonial railway.

A line was also tried from the point 'A' above referred to, to Lac des Cedres, in order to establish the summit between the St. Alexandre road and the St. Francis river, which was found to be 1,300 feet. This line would be useful in case we decided later on to grade down the St. Francis river to Lake Pohenegamook, but even by using this route we would still have the two bad crossings of the Smoky river and the St. Francis valley. The grades opposed to westbound traffic are 6.10, and those to eastbound traffic 4.10, and but one 6-degree curve would be required on this stretch at the loop around Wild Cat brook. In order to eliminate the two bad crossings above referred to, Mr. Poulin, after careful exploration of the surrounding country, and after consultation with me, decided to cross the St. Francis valley at an elevation of thirty to forty feet above the level of the bottom of the valley and to grade up the western slope of Lake Pohenegamook to Smoky river where a loop, using a 6-degree curve, is made, and the gradual ascent continued in a southerly direction to the foot of Lake Pohenegamook, where the line curves to the westward and follows the south branch of the Wild Cat brook to its source and continues in this direction till the valley of the River Noir is reached. The direction of the line is then northwesterly following the valley of the River Noir, which it crosses, and where a junction is made with the line run by party 1.

A line was also run from the summit at St. Alexandre road to Cross Mountain on Lake Pohenegamook, looping at this point up the St. Francis river to see if it would not be possible to cross the river above the lake and grade down the eastern side of Pohenegamook. The crossing of the St. Francis river on this line being prohibitive, we discontinued its further prosecution and Mr. Macallum was instructed, in the middle of June, to move his camp to Lake Baker and begin the first location from this point westerly. The lines which have been actually run on the ground, and which will be followed on location, are denoted on the plan by a continuous line, and the remaining lines run are marked by a broken line.

Lake Pohenegamook is a beautiful sheet of water, and its shores are dotted with the well-kept houses of the farmers. There is still a considerable amount of good wood in the township of Chabot, Pohenegamook and Bungay, and the cedar of Bungay particularly will be of great assistance in the construction of the railway.

At the end of December it was found advisable to re-organize party 1a, as the former engineer in charge, transitman and topographer had not given satisfaction, not that they did not work hard and to the best of their ability, but their want of experience in railway surveying prevented them from obtaining the best results in the shortest space of time and at the least expense. The party, as now constituted, is giving perfect satisfaction, the first and second preliminary lines are completed, and the first location is now being proceeded with.

Party No. 1.

In charge of Mr. E. H. Pierce, has been working from St. Alexandre road, in a westerly direction passing north of Lac Rocheux, where the line attains an elevation of 1,360 feet above sea level. The ascent continues until the summit between the St. Francis river and River Noir is attained at an elevation of 1,430 feet. From this point the line falls to the River Noir which is crossed at an elevation of 1,300 feet, when the direction is northwesterly till the southern end of Lac aux Loutres is reached. At this point the line turns to the southwest and continues on until a junction is made with party 2, at the Government road leading to St. Pascal on the Intercolonial railway. This party has also run a line via Lac à l'Est to see whether it would be possible to secure a more direct line from Wild Cat brook than that run by party 1a. The western side of the lake rises so rapidly, however, that a line with the required grades cannot possibly be obtained by this route. The party then improved their present preliminary line in several places, notably at the western end where the previous summit of 1,500 feet was reduced to one of 1,330 feet. This party has now started its first location at Lac Chaudière and is working eastwardly to tie on to the line run by party 1a up the River Noir. This section is a hard piece of location, as the knolls and ridges overlap one another, and to strike the right line at the first trial would be more a matter of luck than good judgment. We have also secured the required grades and curvature throughout the whole of this section.

The land in Painchaud is good agricultural land, and the maple groves of this same township to the south of the Taché road cannot be surpassed anywhere. There is no settlement here, however, as the highway has been allowed to fall into decay, and were the road to be opened up again with the close proximity of the railway there can be no doubt that this portion of the township will be quickly settled.

The organization of this party was also not satisfactory at first, so that it became necessary to change the engineer in charge. Since the beginning of January, since Mr. Pierce was appointed, the results have been most satisfactory, and we will be enabled to proceed with our location as soon as the snow disappears.

Party No. 2.

In charge of Mr. P. C. Talbot, started work south of St. Marcel, in the township of Arago, on the road leading from L'Islet, on the Intercolonial railway. The route followed is through the savanne notes on the map, which is at an elevation of 1,170 feet above sea level. It then follows the River Grande Coulée for some seven miles when it falls into the valley of the River Ouelle, and crosses the road leading from St. Jean Port Joli, on the Intercolonial railway, about one mile north of St. Perpetue, at an elevation of 1,260 feet. The course of the line is then northeasterly and passes one mile south of Lake St. Anne. From this point the line continues in the same direction from one to three miles north of the Taché road, the summit between Lake St. Anne and the government road at the terminus of sections 1 and 2 being 1,350 feet above sea level, and from this point the line falls to elevation 1,250 at the junction of the two parties 1 and 1A. From St. Marcel to Lake St. Anne the country is fairly well settled, and the villages of St. Perpetue and St. Pamphile are, or will be, points of considerable traffic in lumber and farm produce. From St. Perpetue to the government road the country is not settled, but the land is good agricultural land and there is still some very good timber standing. Lake St. Anne is a very pretty sheet of water and a good fish and game club house is erected here in charge of a guardian. Lac de l'Est, further to the south, is also a beautiful lake and I had an exploration made of this portion of the country to see whether it would be possible to locate a line directly from the River Noir, from where the line run by party 1A, reaches this valley, to Lac de l'Est, then up Lac à la Truite to Lake St. Anne. The valley of the River Noir is too deep and wide to be crossed at this point, and the country on both

sides of Lac l'Est rises too rapidly to allow us to obtain a line with the required grades.

The preliminary line on this section is finished and the first location has been started. Further preliminary lines, will, however, be run at a few places in order to better the alignment and gradients.

Mr. H. E. Huestis replaced Mr. Talbot as engineer in charge of the party in May, and the work of the first location is now progressing satisfactorily.

Party No. 3.

In charge of Mr. C. Garnet, started from a point two miles north of St. Marcel and ran a line to Lac Violon, but as the country was rising too quickly for our grade, the party was turned back and started south of St. Marcel. The line then followed the valley of the River Noir to Lake McKim (elevation 1,260 feet) and then up the River Veau, which is crossed at elevation 1,500; the line then loops around the south passing by Lake Joly and on to Lac Boilard, which has an elevation of 1,640 feet. As this summit is only 1,500 feet long, a deep cut might be made so as to reduce the summit between Lake Pohenegamook and Quebec to 1,600 feet. From Lac Boilard the line continues on to St. Paul, which is at an elevation of 1,370 feet, and St. Philemon, elevation 1,360, where a junction is made with party 4, working easterly from St. Jean Chrysostôme on the Intercolonial railway. In order to see if it would be possible to get a lower summit than that at Lac Boilard, a preliminary line was also run by this party following the River au Veau to Lac Long, which has an elevation of 1,580 feet. From this point the line turned westerly to River du Moulin and joined the first preliminary at St. Paul. The line, though longer, will be sixty feet lower. The country between St. Marcel and St. Philemon is fairly well settled, and the state of the different houses along the Taché road shows that the people are in comfortable circumstances. The farms seem to be well looked after, and the people having shorter connection and better roads leading to the Intercolonial railway, evidently feel the effects of being nearer a market at Quebec for their produce. On making inquiries I was informed that the soil is of good quality, well watered and the back-woods to the north of the Etchemin river are still well timbered. In order to still further reduce the summit of 1,580 feet, I instructed Mr. Garnet to deviate southwards from Lake McKim and to join party 4, under Mr. d'Abbadie, about six miles south of St. Magloire. I am happy to state that we have found the new summit to be but 1,355 feet, and though this line extended to Lake Etchemin and the Etchemin river will be some seven or eight miles longer than the line via St. Damien and the River Abenakis, I am positive that the saving in elevation and cost of construction will more than make up for the increased distance. I expect the two parties 3 and 4 will soon effect a junction when the plans, profiles and estimated cost will be forwarded to you. A great deal of the land on the new line is fit for settlement, and timber of good size and quality is still to be found throughout its course.

As I was not satisfied with the progress made by this party in October, November and December, I had to recommend a change of engineer in charge. Mr. Garnet was appointed on January 1, since which time the progress and results obtained have been most satisfactory.

Party No. 4.

In charge of Mr. C. A. d'Abbadie, started operations at St. Jean Chrysostôme, on the Intercolonial railway, near Lévis, and ran a preliminary line up the Etchemin river to a point opposite the Abenakis river. They then moved up to the summit of Lac Vert (elevation 1,248 feet) and ran down grade westerly on the Abenakis river using a 4-10 grade. This grade brought them to the Etchemin river about four miles south of St. Malachie, where a good crossing was effected and the down grade con-

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tinued on the west bank of the Etchemin river until they tied on to the line previously run to the crossing of the Quebec Central railway. We thus have a continuous 4:10 grade for some forty miles from St. Jean Chrysostome to Lac Vert. From Lac Vert the line has to make a loop around the Rivière aux Originaux, as the ground between Lac Vert and St. Philemon falls very much too quickly for our grades.

This part of the country is well settled, Notre Dame and St. Damien being quite large villages, with good houses, churches, school houses, mills, &c. We must take some fairly heavy crossings of streams and gullies in the long grade to the Etchemin river. But a few miles of this section are left undone, though considerable revision work will have to be done at several points in order to lighten the work. Party 5, which had finished its work on the north shore of the St. Lawrence river, was sent by me to revise the preliminary line from St. Jean Chrysostome to the crossings of the Quebec Central railway, as I am under the impression that we can get a much easier line from the Etchemin river and passing near St. Isidore and St. Henedine.

This party also ran the second line above alluded to from a point six miles south of St. Magloire to Lake Etchemin, thence following the River Etchemin to St. Malachie. The work from St. Magloire to Lake Etchemin will be light work; the land is well settled and of fairly good quality. There will be some three miles of heavy work at the Vivian river, which empties into the Etchemin river ten miles west of Lake Etchemin, but the remainder will be of average quantities. This preliminary line is not yet finished, but should be run through by the middle of July. When it is done, as before stated, the plans, profiles and comparative cost of both north and south lines will be submitted to you for a final decision.

Party No. 4a.

In charge of Mr. R. M. Charlton. As the distance from St. Jean Chrysostome to St. Marcel was too long for parties 3 and 4, I obtained your consent to start a new party at St. Jean Chrysostome to meet party 4 near St. Malachie. Mr. Charlton was therefore instructed to start a first location at St. Jean southwards and the party is now making satisfactory progress. Should he be finished his location before the others, I will double up the parties so that the whole of the work may be terminated about the same time.

Mr. Hoare ties on to my district at St. Jean Chrysostome on the east, at the boundary between the counties of Quebec and Portneuf on the west.

Party No. 5.

In charge of Mr. F. A. Hibbard. Very good progress indeed has been made by this party, the whole of this section of 60 miles having been finished with most satisfactory results. A line has been secured throughout with grades not exceeding 4:10 either east or west bound, and no curves sharper than four degrees. The cost of construction should also be moderate, the only points requiring expenditure above the average being the crossings of the Jacques Cartier, St. Anne, Charest, and Batiscan rivers. The country throughout is well settled and is altogether a farming country. Several very important villages are met with, but as the line parallels the Canadian Pacific railway for some thirty-six miles, we will naturally have to expect a certain amount of competition. The grades on the Canadian Pacific railway, however, are of 52 feet to the mile, maximum, and as our steepest grade, easterly, is but 21 feet to the mile, we should be in a fairly good position to compete successfully. As the party had finished its preliminary work, and as you did not wish to have the location started before the snow had altogether disappeared, I sent it, as mentioned above, on the south shore to revise a portion of the line staked out by party 4. Great credit is due to Mr. Hibbard for the good work he has done and the satisfactory result of his operations.

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On Mr. Hibbard's appointment to the vacancy caused by Mr. Poulin's promotion to the district engineership of District 'D.' Mr. Gordon Grant was appointed to replace him. This party is making excellent progress, having started at the boundary line between the counties of Portneuf and Quebec, and reached the 25th mile of first location by June 30. The results so far obtained are most satisfactory as regards quantities and cost, the only work of any magnitude occurring at the crossing of the River Jacques Cartier, and even this point is very much less as regards cost than it was on the preliminary line. I had hoped to obtain an under-crossing of the Canadian Pacific railway near the Portneuf river, but it is doubtful whether we can do so. By using momentum grades, however, I think we will succeed in securing an over-crossing of this railway.

This party will tie on to party 8, at Reed's camp on the Great Northern railway,

Party No. 8.

This section extends from the Batiscan river to La Tuque on the St. Maurice river. We have secured the required grades and curvatures throughout. That portion of the line between the Batiscan river and the Great Northern railway at Reed's Camp is settled, but from Reed's Camp to La Tuque the country is still in its primitive wildness, except that the best of the timber has been cut out, though the supply of pulp wood remaining is very considerable. Large birch of good quality also exists in large quantities, and if manufactured into square birch should provide traffic for the railway. I also met with cedar north of Reed's Camp which may be used for ties as it seems too small for other purposes. The country does not seem adapted to agricultural purposes and is altogether different to the formation of the south shore of the St. Lawrence. To meet with bare rock is an exception of the south shore, whereas the moment one enters the Laurentian Range rock cliffs are in evidence on every side.

The falls of La Tuque offer a water power of 90,000 horse-power and are destined to be the cause of the formation of industries which will outrival Grand Mere and Shawinigan Falls as the source of timber supply is so much nearer at hand.

Mr. Hunter has now started his first location from Reed's camp north-westwardly.

Party No. 9.

In charge of Mr. B. Bourgeois. The section assigned to this party extends from La Tuque Falls, on the St. Maurice river, to Waymentachene, also on the same river, a distance of 81 miles. The route chosen was from La Tuque following the St. Maurice river for about six miles to River au Lait, which discharges into the St. Maurice river at this point. The River au Lait was then to be ascended to its summit and the line taken down to where the Flamand river joins the St. Maurice, so as to cut out the big bend of the latter river. The line from this point was to follow the St. Maurice river to Waymentachene. The whole of this section has been run with most gratifying results, and the party has returned to La Tuque, where it is now engaged revising its line from La Tuque to Waymentachene. The first line crossed the St. Maurice river at La Tuque and followed the west shore of the river for some six miles, when it branched off westwardly up the River au Lait to the Flamand river. Another line was run from River au Lait to the Vermillion river, ascending that river and striking the original line at Lake Clear, thereby saving some four miles of distance. Still another line was run starting from La Tuque and following up the east side of the St. Maurice river and crossing it about three miles from La Tuque. The results obtained on this line are most satisfactory, as all the heavy rock work on the western side of the St. Maurice river is eliminated. Mr. Bourgeois has been instructed to try and continue the line on the eastern side of the St. Maurice river some eight miles further, crossing the St. Maurice at this point, and cutting out the bend which

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the Vermillion river makes with the Flamand river. Should he be successful in this change we will reduce our distance to Waymontachene by some eight miles. Mr. Bourgeois has also been instructed to run an exploration line from the junction of the Rat river with the St. Maurice river some twenty miles below La Tuque, to tie on to the first preliminary at Lake Clear.

The timber on the first part of the line from La Tuque to the Flamand river has been burnt, but from the Flamand westerly to the height of land the reports are to the effect that the finest spruce and cypress are to be met with, 36 inches at the butt being a common occurrence. The character of the soil is not promising from an agricultural point of view, but better is to be met with on the James Bay slope.

The St. Maurice river offers an easy means of distribution of supplies and construction material above La Tuque, and the new railway which the Quebec and Lake St. John railway are building to La Tuque will bring the latter point within six hours of Quebec, so that good progress should be made with the construction of the railway at least up to the height of land between the St. Lawrence and James Bay waters.

Party No. 6.

This section in charge of Mr. P. E. Mercier, extends from the Batiscan river to Lake Clear, which is the western limit of my district. I originally had two parties on this distance, but as party 7 was not giving satisfaction I recommended its being disbanded and the whole distance assigned to Mr. Mercier.

The first fifteen miles west of the Batiscan river consists of light work, but the whole trouble begins when endeavouring to reach the level of the St. Maurice valley with grades of 4:10. There does not seem to be a good crossing of the St. Maurice river south of La Tuque, and the bridge we will have to erect across the river, if the line south of Lake Abitibi is chosen, will be some 1,000 feet long and 200 feet high. On each side of the river also several deep gullies have to be crossed, necessitating long and expensive viaducts. Once clear of St. Maurice river, however, the country becomes more level. The Mattawin river has to be joined about five miles from its junction with the St. Maurice river, as the lower portion of it would require grades of 2 per cent, as it is a continuation of falls and rapids for this distance.

The line has almost reached Lake Clear and we have tied on to District 'C.' The party will run a preliminary line down the River du Poste to St. Michel, thence to the headwaters of the Assumption river, following this river until they tie on to the preliminary line run last autumn by party 10. From the plans and profiles already sent in you will see that the country traversed does not lend itself to the requirements of a through line, as the grades are in excess of our limit.

The progress of this party is slow, as all the provisions have to be packed on men's backs, but once the party reaches Lake Clear they will be able to make use of the River du Poste to portage their provisions. The highest summit level reached so far on this Lake Clear line is 1,500 feet, whereas on the northern line the height of land at the headwaters of the St. Maurice will not exceed 1,350 feet.

The Mattawin river is narrow and rocky, and in my estimation, offers a very poor passage for the Transcontinental railway. However, we will soon know definitely whether a line with the easy grades and curvature required is at all possible via this route.

There are a great many men employed cutting timber every year on this river, the supplies being taken in from Joliette to St. Michel des Saints by teams, as the Mattawin river is too rapid for portaging economically. The logs are floated down the St. Maurice river and used at the Grand Mere mills.

The land at St. Michel des Saints is good agricultural land, and there is an extensive stretch of country north of this point which is very favourable for farming purposes.

Party No. 10.

As previously stated, the purpose of this party was to demonstrate whether a practicable line could be had leaving the Transcontinental railway at Lake Clear and extending south to Joliette, thence easterly to Quebec and east. Some 48 miles of preliminary lines were run by this party, but as the results obtained by this party were not satisfactory, principally, I believe, owing to the engineer in charge not having had any previous practical experience in the management of railway surveys, and as no information of any practical value was to be had by continuing this party in the field I thought it wise to recommend its being disbanded. The distance covered by the surveys was from Joliette to St Anne on the Assumption river, and should the suggestion meet with your approval the survey could again be resumed later on when party 6 will have reached Lake Clear, and this party might then be instructed to run south from Lake Clear to tie on to the end of the line already run by party 10 to St. Come.

COMPARISON OF DISTANCES.

The distance from the Quebec bridge to Edmundston via the present survey on the Transcontinental railway, is as follows :—

From Quebec bridge to St. Jean Chrysostome	6.0 M.
St. Jean Chrysostome to Quebec boundary at Lake Baker	210.0 "
Quebec boundary, Lake Baker to Edmundston	25.0 "
Total	241.0 "

Taking the Intercolonial railway to River du Loup and Temiscouata railway from River du Loup to Edmundston the distance would be as follows :—

Quebec bridge to Chaudiere Junction	5.5 M.
Chaudiere Junction to River du Loup (I.C.R.)	122.5 "
River du Loup to Edmundston (Temiscouata railway)	81.0 "
Total	209.0 "

It should be remembered, however, that the grades of 1:25 per hundred feet on the Intercolonial railway are very much steeper than the gradients we are allowed to use, and that the Temiscouata railway has maximum grades of 105 feet to the mile. In order, therefore, to make a fair comparison of distances between the two routes, an increase of length sufficient to compensate for reduction of grades to our standard should be added to the Intercolonial railway and Temiscouata railway. If we take 33 per cent as a fair addition, this would give 278 miles via the Intercolonial railway and Temiscouata railway to Edmundston, as compared with our distance of 241 miles between the same two points. The great loss of distance on our railway occurs from St. Jean Chrysostome near Quebec to Lac Vert at the head of the Abenakis river, the difference in level between the two points being 1,034 feet. As the grade is opposed to east bound traffic, we can only use grades of 21 feet to the mile, compelling us to cover a distance of 49 miles, whereas by using grades of 6.10 we could reach the elevation at Lac Vert in a distance of 32 miles. Another great increase in distance occurs at Lake Pohenegamook, where we have to fall 613 feet in 10 miles. This grade being opposed to west bound traffic by using a 6.10 grade, we have to loop around the valleys so as to make the distance 19½ miles. If we could use an ½ grade at this place we could reduce the distance by 4½ miles. Between the two places above mentioned we are compelled to add 21 miles to our distance. I do not think, however, it would be wise to break our standard of grades for the sake of 21 miles' saving in distance, for I am certain the saving in operation will very much more than compensate for the increased cost of construction.

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Should the line via Etchemin be adopted we will have to add some seven miles to our distance between St. Jean Chrysostome and Edmundston.

I attach a list of distances which might be saved were a 1 per cent grade allowed :

Distance Using Present Grades.	POINTS WHERE DISTANCE MAY BE SAVED.	Distance if 1% Grade were used.
<i>Miles.</i>		<i>Miles.</i>
31.0	Lake Baker to Lake Pohenegamook.....	29.0
18.3	Loop at Lake Pohenegamook.....	11.0
9.5	River Noir.....	6.5
7.5	Summit at Government Road.....	7.0
24.0	Lake St. Anne to St. Marcel.....	21.5
20.5	Lake Boilard to St. Philemon.....	15.0
18.5	St. Philemon to St. Damien.....	12.5
32.5	St. Damien to Quebec Central.....	17.5
16.5	Quebec Central Ry. to St. Chrysostome.....	15.0
178.3		135.0
	Saving in distance.....	43.3

CONCLUSION.

It may be allowed to remark that the results we have obtained to date justify us in stating positively that a first-class line of railway has been obtained extended from the Quebec boundary at Lake Baker, near Edmundston, via Lake Pohenegamook, Lake St. Ann, St. Perpetue, St. Pascal, St. Philemon, Notre Dame, St. Damien and the Etchemin river to the Quebec bridge, and from the Quebec bridge westerly via the Batiscan river, La Tuque and the St. Maurice river to Waymontachene, a distance of 433 miles. In no case will the grades opposed to east bound traffic exceed 4-10 or 21-12 feet to the mile, and in very few cases will the maximum gradient of 6-10, or 31-6 feet to the mile, be required opposed to west bound traffic. The maximum curvature of six degrees will only be called into requisition in a few places. The line from one end to the other passes through a country, which where not capable of being developed into good agricultural districts, will supply a good timber traffic to the railway, and though it cannot be expected that the cost of a line of such easy gradients and curvature will be very moderate, I am firmly of the opinion that the average cost will not exceed by very much the sum of thirty thousand dollars per mile.

I attach to this report for your information a table of estimated distances, miles of line explored, miles of preliminary lines run, and miles abandoned.

I also forward you under separate cover, maps on a scale of four miles to an inch, on which the different sections are noted, and the lines run and to be run are shown, the former in continuous lines, and the latter in dotted lines.

A. E. DOUCET,
District Engineer 'B.'

DISTRICT "E."

REVISED TABLE of Estimated Distances and Mileage of Lines explored and run by the several parties from beginning of operations (October, 1904) to June 30, 1905.

Party.	From.	To.	Engineer in Charge.	Estimated Distance.	Exploration.		Preliminary Location.		Lines Abandoned.
					Miles.	Miles.	Miles.	Miles.	
1A	Lake Baker.....	Summit Lac Landry.....	A. F. MacCallum.....	52 00	21 90	133 04	2 65	14 20	
1	Summit Lac Landry.....	Lac Chandiere.....	E. H. Pierce.....	32 70	46 00	84 85	3 75	32 00	
2	Lac Chandiere.....	St. Marcel.....	H. E. Haesdis.....	34 00	116 05	69 77	6 50	20 55	
3	St. Marcel.....	St. Magloire.....	C. Garneth.....	32 00	69 95	64 75	.....	33 50
4	St. Magloire.....	St. Malachie.....	C. A. d'Abadio.....	45 00	143 50	116 86	.....	.....
4A	St. Malachie.....	St. Jean Chrysostome.....	R. M. Charlton.....	34 00	14 00	19 25	10 30	4 50	
5	St. Jean Chrysostome.....	Idley Co. Portneuf.....	E. A. Heare's District.....	15 30	.....	.....	.....	.....
6	Idley Co. Portneuf.....	Reed's Camp.....	Grandon Grant.....	66 00	69 64	102 40	24 57	35 12	
8	Reed's Camp.....	La Tuque.....	R. E. Hunter.....	46 00	165 00	99 23	1 00	30 78	
9	La Tuque.....	Weymontachens.....	B. Bourgeois.....	76 00	214 00	134 31	.....	12 00
	Total distance Lake Baker to Weymontachens.....			433 00	860 84	824 46	48 77	182 65	
6	Basiscan River.....	Lake Clear.....	P. E. Mercier.....	78 00	297 56	80 83	.....	14 69
7	St. Maurice River.....	Lake Clear.....	S. LePage (disbanded).....	.....	.....	11 00	.....	11 00
10	Joliette.....	Lake Clear.....	P. du Tremblay.....	112 00	12 00	48 00	
				1,080 40	1,064 29	48 77	208 34	

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QUEBEC BRIDGE AND TERMINAL SECTION.

This section was put under the charge of Mr. E. A. Hoare; comprising the main line of this railway, from the Intercolonial railway main line near St. Jean Chrysostome to the south end of the Quebec and Railway Company's yard south of the St. Lawrence river, and from the north end of the bridge to the county line between Quebec and Portneuf. Also the proposed approaches and terminals for Quebec city. The main line distances are as follows :—

Line 1, with viaduct over Cape Rouge river—

	MILES.
Intercolonial Railway to B. and R. Company's yard	5·33
B. and R. Company's bridge and line	2·65
Bridge to county line	7·60
Total	15·58

Grade 0·4 eastbound.
Grade 0·6 westbound.

Line 2, avoiding viaduct—

Intercolonial Railway to B. and R. Company's yard	5·33
B. and R. Company's bridge and line	2·65
Bridge to county line	13·14
Total	21·12

Grade 0·4 eastbound.
Grade 0·6 westbound.

City approaches, bridge to Champlain market, 6·40 miles.

Grades adverse to westbound traffic about 53 feet to the mile. Total distance county line to Champlain market via line No. 1, 14 miles.

Branching off line 2, avoiding viaduct to Louise basin, 7·40 miles.

Maximum grade 0·4.

Total distance county line to Louise basin via line No. 2, 12·75 miles.

Maximum grade westbound 0·6.

Total length of location and preliminary survey lines run in this section, 85 miles.

DISTRICT 'C'

CHARACTER OF COUNTRY.

The country through which the line in this district will pass is entirely uninhabited save by several Hudson's Bay or fur trader's posts, and a few Indians, and un-surveyed with the exception of a few explorations, geological and others, along the principal rivers, and these generally at right angles to the direction of the proposed line. No reliable information is obtainable as to the country between the streams. As far as reports heretofore received by us would indicate, this country is dotted with numerous lakes, the land being more or less timbered with spruce, cypress, birch, poplar and small tamarac and cedar.

ORGANIZATION.

Eight parties were organized and sent out in this district in October, four going out by way of Maniwaki, P.Q., and four others by way of Kippawa, P.Q. Owing to

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the lateness of the season, these parties took considerable time in reaching their destination, caused by the low state of the water in the rivers, the early forming of ice and the difficulty in transporting considerable quantities beyond the regular transportation routes.

Parties 2 and 4.

Parties 2 and 4 came out before the winter broke up, but returned again about May 10.

WORK DONE.

They have now been at work for some time, but in many cases have had to abandon miles of line owing to their meeting with numerous lakes and stretches of country where it was impracticable to obtain the grades required.

From the latest reports they are now making fair progress, but it will be some time before it can be decided whether the north or south line will prove the most advantageous.

CACHES.

Caches with provisions for all the necessary parties for the next ten months have been provided at the Forks of the Gatineau and at the north end of Grand Lake Victoria, and these supplies are being distributed east, west and north from these caches for the use of the various parties.

The reports so far received would indicate that the north line will probably be found the most advantageous, both as to the cost of construction and the nature of the country passed through in respect to its suitability for settlement.

The following report of Mr. A. N. Molesworth, shows fully the work done in this district.

HUGH D. LUMSDEN, Esq.,
Chief Engineer, Ottawa.

SIR,—Herewith I beg to submit report of progress of preliminary and exploratory surveys in district 'C' from date of organization, October 4, 1904, to June 30, 1905.

ORGANIZATION.

On October 4 last, I received instructions to organize eight parties, to make exploration surveys over this district, and on October 8 they were all ready to proceed to the scene of their operations. Four parties were to go in by way of Kippawa, P.Q., and Grand Lake Victoria, and four by way of the Gatineau river. The four parties going in by way of the Gatineau river were put under the charge of Mr. R. A. Hazlewood (who had been appointed engineer in charge of party No. 4) until such time as they should reach what is known as the Forks of the Gatineau, where the parties would separate. I went myself with the four parties going in to Grand Lake Victoria by way of Kippawa, reaching the last named point on October 9. Owing to the burning of one of the steamers on the route beyond Kippawa, considerable delay was caused. But we reached the north end of Grand Lake on November 1. The weather now turned very cold and the smaller lakes and streams commenced to freeze up. I at once started on my return journey to Ottawa, reaching there on November 8, and as soon as possible proceeded to join the four parties that had gone up the Gatineau, whom I found cutting a winter road from the end of the existing road to the Forks of the Gatineau. I found they had made considerable progress, but as two of the parties had still some sixty miles or more to go before they reached their starting point and they only had six weeks' supply with them, I at once returned

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to Ottawa and advised the letting of a contract for the delivery of the necessary supplies from Maniwaki to the Forks; this was done, and transport parties were organized to take provisions to the various parties by dog teams and toboggans.

Owing to the very heavy fall of snow, great difficulty was encountered in keeping the parties supplied at the north end of Grand Lake, and on January 4, I took several teams in from Moor lake by way of Demoiné, hauling supplies which were then en route to a point some twenty miles north of the Height of Land. These teams were employed for some two months and succeeded in getting the necessary supplies required for the summer's work to our cache at the north end of Grand lake. We also had provisions put into the Hudson's Bay post at Grand lake for our summer's work in that vicinity.

Party No. 1.

My instructions covered the running of two lines across the district, one being called the north line and the other the south line, they being between thirty and forty miles apart. On the south line party No. 1, in charge of Wm. Osborne, arrived at their starting point about fifteen or eighteen miles above the Forks, early in January, and commenced working in easterly direction towards Lake Clear. This country was found to be very rough and broken, our line running at right angles to the valleys. We had difficulty in climbing over summits and down to the streams on a maximum grade without having more or less heavy work, and the alignment bad, having to wind round through the hills making comparatively short tangents. About May 20 Mr. Osborne was recalled and Mr. A. L. McDougall took his place, and he has up to date completed preliminary to 24th mile.

Party No. 3.

Party No. 3 on the south line is in charge of Mr. E. B. Haycock, who commenced work at the same point as party No. 1 and ran westward. He also encountered very rough hilly country, crossing several very high summits between waterways, in consequence of which his work will be very heavy and alignment bad on the first thirty miles of his line. He has up to date run fifty miles. The last twenty miles is through a better country.

Party No. 5.

Party No. 5 on the south line, which went in by way of Grand Lake Victoria, arrived at starting point at the north end of Lake Wapousan, which is in the Ottawa waters, and ran easterly to meet party No. 3. This party was in charge of Mr. D. B. Brown, who returned to Ottawa in February and was replaced by Mr. D. O. Lewis. The latter, however, was unfortunately taken ill and had to be replaced by Mr. Mellis Ferguson. The country through which they worked proved very rough and broken, and they were forced some ten or twelve miles north out of their course by high ranges of hills. This party has run up to date 31.4 miles.

Party No. 7.

Party No. 7 left Ottawa in charge of Mr. J. F. Armour, but on the way he came to the conclusion that he could not stand the work and resigned, and was replaced by G. H. Garden. This party commenced at the same point as party No. 5, and ran westward to connect with district 'D.' Mr. Garden made very good progress with his line and found a much better country, both for grades and alignment, than the parties east of him. Early in February Mr. Garden was promoted to the position of assistant district engineer, to have supervision of the four parties in the Grand lake division of district 'C,' and Mr. M. B. Almon was put in charge of party No. 7. He proved a most

efficient, hard-working officer, and was doing splendid work when he and his transitman, Mr. W. White, were unfortunately drowned in the Upper Ottawa, on June 16. They had then run about forty miles through a comparatively level country, but were likely to strike a much rougher country ahead.

Party No. 2.

Party No. 2, north line, went in by way of the Gatineau to a point about fifty miles north of the forks on northwest fork of the Gatineau, near its source, and ran in an easterly direction towards Weymontachene on the St. Maurice river, at which point they were to connect with district 'B.' This party left Ottawa in charge of Mr. E. O'Sullivan, but he was replaced by Mr. Mellis Ferguson. This party reached their starting point about the middle of January, having to wait at the forks until the rivers froze over hard enough to carry the men and toboggans. The country was not so rough on this line, but they were hampered by the difficulty of keeping them supplied with provisions and they came in about the middle of March. In May Mr. E. R. Blackwell was appointed to take charge of this party, and after reorganizing he at once returned to the point where Mr. Ferguson left off, arriving there ready to commence work on June 13, and up to date has reached the twenty-second mile. He is getting a comparatively good line with grades not exceeding 4 and good alignment.

Party No. 4.

Party No. 4, north line, in charge of R. A. Hazlewood, reached their point of commencement early in January. They began work at the same place as party No. 2, and ran westerly. By the middle of March Mr. Hazlewood had run about twenty miles of line through a rather hilly country full of lakes. He got a very good line this far, but he also brought his party in, stating that the men refused to stay during the break-up, as they would not be able to do anything for at least a month, and thought it more economical to disband the party. He reorganized his party early in May and returned to the point where he left off, reaching there on June 9 and up to date has run thirty-seven miles.

Parties No. 6 and 8.

Party No. 6 in charge of W. P. Wilgar, and party No. 8, under Mr. J. P. Pim, reached their proposed point of starting about December 11; but after making a survey of the Bell river for several miles, they selected a crossing about six miles southerly from where they originally intended. Party No. 6 ran easterly and party No. 8 ran westerly from that point. Mr. Wilgar's party has up to date run about forty miles getting a good line, and he and Mr. Hazlewood cannot be more than twenty miles apart. I hope soon to learn that they have connected their line.

Party No. 8 also got a very good line westerly, but owing to the illness of Mr. Pim, he was relieved during May, and Mr. L. B. Copeland was appointed in his place. This party has up to date run about forty-three and a-half miles. The country is reported level almost as a prairie, and is alternately muskegs and spruce timber on a clay loam, the muskegs being not more than two or three feet deep to clay.

CHARACTER OF COUNTRY.

South Line.

The country traversed by the south line at the eastern end of the district is rough and rocky in places, with tamarac swamps and muskegs between the hills. There are several indications of good gravel pits for ballast, and the muskegs all have good sand bottoms.

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The timber is principally spruce, balsam and dead tamarac. The spruce runs from four to ten inches and the dead tamarac is large enough for ties, and is still quite sound and hard.

At the western end the country is more level, being mostly spruce and tamarac swamps and muskegs. The timber is very small and very little of it will be of much use. There are also indications of large deposits of magnetic ore on Mr. E. B. Haycock's section west of the Gatineau.

North Line.

The country traversed by the north line at the eastern end of the district is generally sandy soil, hilly and broken, with small outcroppings of rock occasionally, and muskegs and swamps between the hills. The timber is mostly small spruce and jack pine with very little commercial value.

The western half of the district is much more level, but still continues sandy until the vicinity of Bell river is reached, when the soil is mostly a rich clay from there to Lake Abitibi, with here and there a shallow muskeg with good clay bottom, seldom over three or four feet deep. The timber on this half is better than anywhere else on the line, there being large tracts of spruce running 8 inches to 18 inches, and a great deal of dead tamarac fit for ties.

The line from the Bell river to the Ontario boundary will make very fine farming land, and moose in the forests are numerous.

Gravel of good quality is found on the eastern end of the district, which will make very good ballast.

COMPARISON OF LINES.

Though we have not as yet completed either our north or south lines, we have gone far enough to be convinced that the north line will prove the better, both as to cost of construction and suitability for settlement.

TRANSPORT.

Owing to the country to which these parties were being sent being little known, and no regular transport routes reaching the points to which they were destined, a great deal of delay was necessary in order that sufficient supplies and provisions should accompany the parties to keep them for a time, and also that arrangements might be made for their future supply.

DIFFICULTY IN GETTING SUITABLE MEN.

Several of the engineers in charge or their assistants, and many of the men who went out with these parties, were found to be unsuitable for the work and could not stand the necessary hardships which such work involves, many of them leaving the parties before they reached their destinations. Since then we have endeavoured to select men who have been used to work in the woods and canoes, but many of these also left the work as they either could not or would not help in the packing of the outfit and supplies, which is a very necessary part of the duties of men employed on survey parties. These men, although they had signed engagements to work until the survey was completed, would leave the work and forfeit fifteen dollars of their wages, thus leaving the parties shorthanded, and as it took a month, and sometimes more, before they could be replaced a great deal of time was lost. With the exception of half-breeds and Indians, in the vicinity of Hudson's bay and other traders' posts, it seems almost impossible now to get men who are accustomed to packing heavy loads on their backs or by sleds or toboggans.

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Another cause of delay to all the parties in my district was the exceptionally heavy fall of snow in January and February, which made the roads and trails we had cut out very heavy, and the moving of camp from one point to another, in from four to six feet of snow, slow work.

CASUALTIES.

I regret very much to have to report that we have had four drowning accidents on this district.

The first was Joseph Desroches, of Quebec, axeman on party No. 4. He was drowned by the upsetting of canoe going up rapids on the Gatineau river, about thirty miles above the Forks. He was drowned on May 24, and when his body was recovered he was buried near the scene of accident.

Next was M. B. Almon, engineer in charge of party No. 7, of Halifax, N.S., and Walter White, his transitman, of Bannockburn, Ont. They were both upset out of a canoe in the Upper Ottawa on June 16. The bodies when recovered were forwarded to their relatives.

Then last was H. Tranchemontagne, of Hawkesbury, Ont., an axeman on party No. 4, drowned June 21. He lost his life by canoe striking rock in rapids.

A. N. MOLESWORTH,
District Engineer, 'C.'

DISTRICT "C."
 TABLE OF ESTIMATED DISTANCES AND MILEAGE.
Preliminary Lines.

Party.	From	To	Engineer in Charge.	Estimated Distances.	Preliminary Lines Run.
				Miles.	Miles.
1	N. E. Fork of Gatineau.....	Clear Lake.....	South Line	80 00	44 00
3	" " " " " " " " " " " "	Kaptsachuan Lake.....	A. L. McDougall.....	66 00	58 00
5	N. end Wasipusan Lake.....	" " " " " " " " " " " "	E. B. Haycock.....	50 00	47 10
7	" " " " " " " " " " " "	Wabaskus Lake.....	M. J. Ferguson.....	62 00	75 91
	Total distance Clear Lake to Wabaskus Lake.....		M. B. Almon.....	258 00	225 01
2	N. W. Fork of Gatineau.....	Waymontachene.....	North Line	78 00	37 00
4	" " " " " " " " " " " "	Atiak River.....	E. R. Blackwell.....	61 00	48 00
6	Bell River.....	" " " " " " " " " " " "	R. A. Hulsewood.....	55 00	51 00
8	" " " " " " " " " " " "	Makemik River.....	W. F. Wilgar.....	75 00	59 45
	Total distance Waymontachene to Makemik River.....		L. B. Copeland.....	269 00	195 45

DISTRICT 'D.'

COUNTRY.

The nature of the country and of the timber in this district is in many respects similar to that of District 'C.' and there are no settlements in the vicinity of the proposed line other than Hudson's Bay and fur trading posts on Lake Abitibi, close to which lake the lines will run.

ORGANIZATION.

Two parties have been at work in this district since early in the year, No. 1 on the line passing to the south and No. 2 on the line passing to the north of Lake Abitibi.

Parties 3, 4 and 6 were sent out in March; No. 3, to run east and west from a point northeast of what is known as McDougall's Rapids on the Black river, No. 4, from the northeasterly bay of West Abitibi Lake westerly, and No. 6, westerly from a point about six miles easterly of a proposed crossing of the Abitibi river, in about latitude $49^{\circ} 10'$.

Three more parties, Nos. 5, 7 and 8, were sent out about the middle of May, the two former working on the south line west of party 3, and party 8 on the north line east and west from the Ground Hog river. Parties 3 and 6 were driven out from their work by fire towards the end of May, but returned again about the middle of June.

Prior to our taking over the surveys made by the Grand Trunk Pacific, they had run in this district about 50 miles of line, but this line was found to be too far south to be used by us, though the caches and what provisions were found in them were made use of.

The accompanying report from Mr. S. R. Poulin, district engineer, will give full details of the work done in this district.

Mr. HUGH D. LUMSDEN,
Chief Engineer,
Transcontinental Railway.

SIR.—I have the honour to submit to you the following report of work done in District 'D,' from November, 1904, to June 30, 1905:—

APPOINTED DISTRICT ENGINEER.

On April 1, 1905, the board of commissioners on your recommendation, transferred me from the position of assistant district engineer in District 'B,' to that of district engineer in District 'D.' I assumed charge of the district on April 15, 1905.

PARTIES IN THE FIELD.

There were then five parties of engineers fully equipped, working on the two projected lines, one passing on the north side of Lake Abitibi, and the other on the south side of the said lake. Two of the said parties had worked in during the winter.

Parties 1 and 2.

Party No. 2, under Mr. Frank Moberly, had been assigned the exploration of the northern part of Upper Lake Abitibi, and No. 1 under Mr. H. W. D. Armstrong, who was later on replaced by Mr. H. J. Muckenzie, was assigned the exploration of the southern portion of Lake Abitibi.

Parties 3, 4 and 6.

Three more parties were sent out during the winter months ; No. 4, under Mr. E. P. Goodwin, No. 6, under Mr. G. F. Hanning, and No. 3, under Mr. F. J. Heatherington. These three parties reached their destination about the beginning of April, 1905.

Parties 5, 7 and 8.

On May 8, three other parties left for Biscotasing to go down the Ground Hog river and commence work where the two projected lines crossed the said river. They were party No. 5, Mr. A. F. Cotton in charge, party No. 7, Mr. R. W. Laird in charge, and party No. 8, Mr. W. J. Clifford in charge.

The following is a short concise report of the work of all these different parties up to the end of June, 1905.

DISPOSITION OF PARTIES.

In order to facilitate understanding the disposition of these parties, the even numbers 2, 4, 6 and 8, had previously been placed by yourself on the northern route, and the odd numbers 1, 3, 5 and 7, on the southern route. I shall take up first the northern route.

NORTHERN ROUTE.

Party No. 2, was to explore the first fifty miles lying on the east end of my district, or from a point on the Kanikitawakasi river (a small river flowing in the northeast bay of Lower Lake Abitibi) to the junction of district 'D' with district 'C,' or a point about five miles northeast of Makamik lake. Party No. 4, was to explore from the western initial point of party No. 2 to a point eight miles east of the Abitibi river crossing. Party No. 6, from the said point eight miles east of the Abitibi river crossing to the Poplar Rapid river, and party No. 8, who commenced on the Ground Hog river, was to run eastward ten miles to the said Poplar Rapid river, then turn back and run westward to the Kehinakagomi river or the junction of districts 'D' and 'E.'

Party No. 2.

Mr. Moberly in charge of party No. 2, had, after overcoming many difficulties, reached his starting point on the Okikodasik river about the middle of March, and ran eastward as weather would permit, on a course of S. 75° E. for a distance of four teen miles to a point shown on the general map as the Nine Mile portage. He reached there on April 8, and on account of difficulties in keeping up his supplies during the breaking up of the weather, he returned to his starting point at zero on April 12 in order to be nearer his base of supplies, and ran westward on a course of N. 72° W. for a distance of twenty-one miles effecting a junction with the line of party No. 4, on May 19. The junction was at station 135 x 79, of Mr. Goodwin's line. At that time Mr. Moberly had run:—

	Miles.
From Okikodasik river east.	14½
From Okikodasik river west.	20½
Tie line with party No. 4.	4
Tie line with White Fish river.	2½
Traverse of Okikodasik river.	10½
Total.	52

Mr. Moberly then moved back to the point which he had abandoned and continued his line eastward until he was relieved by Mr. Hervey about June 15. A letter written by Mr. Aylen, assistant district engineer, informs me that Hervey had reached the point at which he evidently thought he was intended to stop, such point being a few miles east of Lake Makamik, or the division point between district 'C' and 'D.' Evidently, Mr. Hervey had not then received my letter, which was embodying the carrying out of your instructions as to his keeping on the same course eastward until he effected a junction with party No. 8, of district 'C,' but he was starting to work backwards revising his line and running cross sections, and I am positive he would have received my instructions before he moved away any distance. He finished at the 30th mile east of the Okikodasik river, making in all fifty and a half miles for that portion of the line. The line was two tangents, and although it ran pretty well across the country, as the valleys are all falling towards Upper Abitibi lake, still from the profile and plan sent to me, I am positive we can get a good location well within the required 0:40 (four-tenths of a foot per hundred feet) ascending eastward, and 0:50 (five-tenths of a foot per hundred feet) ascending westward, and very easy curvature, if any, on that portion of the line. The profile of the trial line does not show excessive work, the quantities running between 35 to 40 thousand cubic yards per mile, with a very slight percentage of solid rock on the first forty miles, but gradually increasing as the distance increases east of Abitibi lake. The knolls and ridges are mostly all rocks though the valleys show very good soil. The bridging in that section will be light.

Party No. 4.

Party No. 4, under Mr. E. P. Goodwin, started work on the Kanikitawaskasi river and ran a line westward until meeting party 6 on June 10. He had then run 43.6 miles and kept very close to the projected line on the general map. He has also kept within the limit of grades and curvatures laid down in the general instructions. The country is fairly flat north of Lower Lake Abitibi. Mr. Goodwin says that this summit can be lowered by keeping further north of our present line. He is now engaged revising trial lines about the Circle river and the summit. From the plans and profiles received the work on the whole distance will be medium on account of the crossing of valleys which range from 40 to 60 feet in depth. There is only a small percentage of rock shown in this section of the line.

Party No. 6.

Party No. 6, Mr. G. F. Hanning in charge, started work on April 4. First he traversed down the Abitibi river from Speight's base line of 1904, and chose a crossing $4\frac{1}{2}$ miles north of said base line, and ran eight miles east to ascertain the feasibility of reaching the summit between Abitibi river and Mustongo river, then ran westward to the Frederickhouse river, a distance of twenty miles. He also explored westward as far as Driftwood creek. Mr. Hanning had only a small party and his progress was consequently slower, but he has acquired sufficient data to enable me to state that a very fair crossing of the Abitibi river can be had one and a half miles north of the one he adopted at first, getting a better chance to get away both eastward and westward, and we have now the certainty that a fair line can be had in close proximity to the projected northern line on the general map, from Driftwood creek about ten miles west of Frederickhouse river to the junction point of district 'C' and 'D,' or a distance of one hundred and twenty-five miles. Mr. Hanning's work was stopped about June 10 by bush fires which have been raging fiercely in all the district between Matagama river and the big bend of the Abitibi river as far south as McDougall's rapids, and the south shore of Lower Lake Abitibi. With your approbation Mr. Hanning's party was reorganized about June 20, giving him a complete

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party, and instructions were sent to him by Mr. Webster his assistant, to hereafter run an instrumental line, from which a final location could be projected. He will have to run westward to Poplar Rapid river on the course of N. 73° W. a distance of about 35 miles west of Frederickhouse river, where he shall join to party No. 8.

Party No. 8.

Mr. W. J. Clifford in charge, only reached his initial point on the Ground Hog river, about the end of June, with instructions to run eastward ten miles to Poplar Rapid river, and then turn back and run a line westward until he meets parties from District 'E.'

SOUTHERN ROUTE.

The following disposition was made of the four parties, 1, 3, 5 and 7. Party No. 1 was to explore the country from Ghost river (which flows into the southwest bay of Upper Lake Abitibi) eastward to the junction of District 'D' and 'C.' Party No. 3, from Ghost river westward to the Frederickhouse river, party No. 5, from Frederickhouse river to Ground Hog river and party No. 7 from the said Ground Hog river westward to junction with parties of District 'E,' at the western end of District 'D.'

Party No. 1.

Party No. 1, Mr. H. J. Mackenzie in charge, started from a point south of Agotawakami lake and ran eastward and had at the end of June twenty-four miles of line run, bringing him about the junction point of District 'C' and 'D.' The country is rather difficult, and Mr. Ayley, the assistant district engineer, advised him to try a line some three miles north of Island lake, so as to have a summit 130 feet lower than the present one, previous to his returning to Agotawakami lake to run westward to Ghost river to effect a junction with party N. 3. The work of this party has been greatly retarded for want of men, as several left when the trail began to break up in the spring time and could not be replaced until the latter part of May when canoeing opened.

Party No. 3.

Party No. 3, explored lines through the townships of Walker, Wilkie and Coulson and ran trial lines through Miligan and Warden. Mr. Heatherington had to keep from one to four miles north of the direction indicated on the map, on account of a high range of rugged bare granite hills extending eastward from the southwest corner of Warden township and merging into a sandy plateau at the southeast corner of the said township. The altitude of the said range is about 1,200 feet (datum of survey being 1,000 feet) and it is difficult through that portion of the country to secure a direct line with 0.40 per cent grade, because the trend of the hill range and the plateau is about at right angles to the general direction. When I heard last from the said party the line had been explored to the southeast corner of Miligan township, a distance of forty-five miles, and actual trial lines run of twelve miles through what was considered the most difficult part, the summit between Shallow river and Ghost river. Mr. Heatherington reported that he had a good outlet to fall back into the general direction and reach the junction point of party No. 1, on Ghost river. The profile of the portion of the line run shows pretty heavy work for a few miles, the line on account of the many deviations necessitated by broken country does not compare favourably with the line north of Abitibi. Mr. Heatherington must have been called on to fight fires at McDougall's rapids as a report from Mr. McGrath, one of our mail carriers, who arrived at North Bay on July 6, said that our cache southwest of Abitibi had been completely

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burned by bush fires, also that the locating party of the Temiskaming and New Ontario railway had been driven out, losing all their outfit and provisions, but that one of our parties, Mr. Heatherington in charge of party No. 3, had gathered all his men around McDougall's chute, and had managed to save our cache. Mr. Heatherington will complete his work to Ghost river, then return to run westward until he meets party No. 5, about the Frederickhouse river.

Party No. 5.

Party No. 5, under Mr. A. F. Cotton, had on June 30 just reached the point on Ground Hog river, from which he is to explore and run a trial line eastward towards Frederickhouse river to meet party No. 3.

Party No. 7.

Party No. 7, under the charge of Mr. R. W. Laird, had also on June 30 just reached the Ground Hog river crossing which he and Mr. Cotton had selected, and had instructions to run westward on the southern projected line until he met parties from District 'E.'

PROGRESS.

This sums up the progress of the different parties in my district up to June 30, 1905.

MEN AND SUPPLIES.

In conclusion I beg to state that all parties were, at the beginning of July, well provided with men, and that they had ample supplies at the different caches, except perhaps in some lines of lighter foods of which some of the caches were running short, but which were to be remedied at once.

DESCRIPTION OF COUNTRY.

In general the country through which the line passes in my district, especially the eastern 150 miles and along the northern projected route, is well adapted for settlement, the soil being of a rich clay loam, the timber being mostly poplar, spruce, white birch, and balm of Gilead, the latter growing especially along the river banks. From the reports gathered to June 30 it would be premature to come to any definite conclusion as to the producing capabilities of the great unopened country lying to the north, but I have not the least hesitation in saying that there is a fertile belt of land extending from twenty-five to seventy-five miles on each side of the projected line capable of supporting a very large population.

S. R. POULIN,

District Engineer 'D.'

DISTRICT 'E.'

COUNTRY.

The general character of the country for the easterly 150 miles in this district is very much similar to that of district 'D,' there being considerable stretches of clay loam with gravel knolls at intervals, and the climate is much the same as in the Temiskaming district. The westerly portion is very much broken by rocky ridges and lakes, and will necessitate heavy work in places.

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G.T.P. SURVEYS.

The surveys in this district, prior to Mr. Perry taking over the parties, were under the charge of Mr. J. R. Stephens, the engineer for the Grand Trunk Pacific railway; but it was found that the easterly 100 miles inclined too much to the south going easterly, and new surveys keeping a more direct line for Abitibi are now being made.

Three of the parties working for the Grand Trunk Pacific were taken over by Mr. Perry in February, but one party under Mr. Proctor was disbanded in March, and the other two were put to work on new lines; one under Mr. R. W. Coldwell, and the other under Mr. J. S. Tempest. Two more parties were sent out in May, one under Mr. Alex. McLellan, and the other under Mr. D. W. MacKay. These four are all now at work.

The accompanying report from Mr. Perry goes fully into the nature of the country, and the work being done.

H. D. LUMSDEN, Esq.,
Chief Engineer, Transcontinental Railway,
Ottawa, Ont.

SIR,—In accordance with instructions received from the chief engineer on February 8, an inspection trip was made by myself and the assistant district engineer, and caches examined from the western end of the district as far east as the Missanabie river. The Grand Trunk Pacific had three parties in the field: two of these, under Messrs. Coldwell and Tempest, decided to remain on the work, and the other party under Mr. Proctor was disbanded almost immediately after my visit. The work already done was inspected and the engineers instructed as to future operations. Part of February and all of March was taken up with the trip, the distance travelled being 640 miles.

On the opening of navigation, the assistant district engineer examined the work along the head of Nipigon lake to the height of land and eastward to the summit of Red Paint, travelling 40+ miles.

LINES RUN.

Previous to the government taking over the work the Grand Trunk Pacific parties had made some 502 miles of survey and reconnaissance lines as follows:—

McCarthy line north and west of English river via Ogoke river	93 miles.
Hill line from east end of district westward	41 "
Boucher line continuation Hill line westward	35 "
Nelson's line continuation Boucher's line westward	57 "
Coldwell's line improvement of Nelson's line	57 "
Balloch line continuation of Nelson westward	44 "
Gzowski line continuation of Balloch westward	67 "
Proctor line improvement Balloch line	28 "
Tempest line Robinson lake westward	80 "
Total	502 "

A Mr. Nutting made some canoe track surveys near height of land, mileage of which is not obtainable.

The route now adopted, and on which the parties are engaged, is in many places 18 to 20 miles north of the former G.T.P. surveys, decreasing to four miles at English river crossing. This northern line was projected by the chief engineer, and the direction has been successfully followed.

West of English river extensive improvements were made in shortening of distance and character of work, and a good line obtained approaching to and passing the watershed near head of Lake Nipigon through a terribly broken and rocky country, possibly as difficult a piece of work as exists on the whole Transcontinental line in the province of Ontario.

Trial lines are being run to better alignment and reduce curvature and gradients.

Parties 1, 2, 3 and 4.

There are four parties engaged on survey in this district.

Party No. 1, Mr. A. McLellan, who is running trial line from Missanabie river, westerly.

Party No. 1, Mr. A. McLellan, who is running trail line from Missanabie river,

Party No. 3, Mr. W. D. MacKay, running from Robinson lake to English river.

Party No. 4, Mr. J. S. Tempest, from Robinson lake to junction with District 'F', summit watershed.

The main difficulties encountered exist in the approaches to the river valleys which cross the line of survey at right angles, but these difficulties have been very greatly reduced and there is really no work of heavy character from the eastern end of district for fully 160 miles to the west.

From summit of Red Paint river to Robinson lake, 28 miles, a rougher country is met with and considerable rock occurs.

From Robinson lake to western end of district, some 88 miles; on this section the most difficult work of the district occurs. The ascent to the summit at its eastern approach is rougher than on the west, isolated rocky ridges and a perfect labyrinth of lakes are the principal features.

Reconnaissance is difficult and in this case one must trust to instrumental measurements. Very careful surveys are being made on this section to reduce cost of construction, alignment and curvature.

GRADES AND CURVATURE.

Maximum grade rising east, 0.4%, 21 feet per mile.

“ “ west, 0.5%, 26.4 feet per mile.

Maximum curvature, 4°, 1,433 feet radius.

Very few of these curves will be required. There may be some six miles of 0.4% gradient, and possibly 14 miles of 0.5% gradient required to overcome the watershed summit, but as surveys are still in progress, I trust these will be materially reduced. Gradients do not occur over any great length, generally in distances of from 1½ to 2½ miles, with long intervals of flatter grade between.

The total length of the district from Kebenakagama river to the western watershed and junction with district 'F', near Upper and Lower Twin lakes, is 257 miles.

BRIDGING.

The bridging required on the district is not difficult or costly. Taking six of the largest streams we have:—

	Width.	Depth.
Kebenakagama	160 feet.	9 feet.
Negogami	200 “	8 “
Pegetchewan	150 “	5 “
Flint	130 “	4 “
Kawakashkagama	150 “	6 “
English river	180 “	8 “

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The highest of these structures is at English river, which is 60 feet above water level and required a fixed span of 200 feet with trestle approaches. The others can be crossed on small spans or ordinary trestles. There are no signs of dangerous floods occurring in these waterways or marks of drift piles or ice jams.

TIMBER.

Ample timber for ties can be obtained along the line or within a reasonable limit of haulage. Bridge timber is scarce, existing rarely outside the river valleys and even there very few and scattering pieces are met with.

BUILDING STONE.

On the first 120 miles very little occurs, but enough for constructive purposes can be found within reasonable haulage distances.

SNOWFALL.

Last winter's observations, two to two and one-half feet average fall; no violent storms or drift met with.

COLD.

February and March, 1904, 35° was the lowest. Clear fine weather to 22nd March, when thaw set in.

RAINFALL.

Considerable in May, July and October. Nipigon lake opens and closes (H.B. Co. returns):—

1900	Opened	7th	May,	closed	26th	November.
1901	"	10th	"	"	12th	"
1902	"	23rd	"	"	29th	"
1903	"	19th	"	"	3rd	December.
1904	"	29th	"	"	9th	"
1905	"	25th	"			

Missanabie lake opened 21st May, 1905; Dog lake opened 16th of May, 1905; Long lake about the same as Nipigon lake. Inland streams close from 18th October, to 5th November. To the interior canoeing may be said to cease at middle of October, and it is certainly taking a great risk to send canoes into the line after the 10th of October.

TRANSPORT.

The question of transport of supplies to parties in the field has been a serious and costly undertaking, owing to the numerous portages and difficult waterways existing between the Canadian Pacific railway and the line. For example: to reach cache No. 9, the eastern end of District 'E', from Grasset on the C.P.R., there are 13 portages totalling 9½ miles, to the line three more, 1½ miles.

To reach cache No. 9-A, Negogami River from Montizambert C. P. Ry., there are sixteen portages amounting to 8 miles.

To reach cache No. 10, there are twenty-nine portages, amounting to eleven miles.

From Heron Bay to reach caches 10a and 11, there are sixteen portages on the Pic river alone, and fully 28 to 30 in all to reach the caches. Much of the way in broken and dangerous water. The mileage to be portaged over would be nine to ten miles to each cache.

Arrangements are being made to avoid a great deal of this costly transport by cutting short lengths of winter road.

ACCIDENTS.

I regret to report the drowning of Wm. Findlow in the Wabinoah river on the 21st of June ulto. The body has been recovered and decently buried, and the grave marked with a cross.

GENERAL CHARACTER OF THE COUNTRY.

The country traversed by the line differs little, if any, from similar portions of Ontario along the Ottawa valley. What is known as the clay belt is almost identical with the country lying along the line of the Temiskaming and Northern railway in the vicinity of New Liskeard. There is, however, an exception in the absence of pine timber, as the timber met along the line is mostly small spruce, tamarac, birch and poplar. The soil over long distances is a clay loam interspersed with gravel knolls approaching the rivers and large muskegs, in many cases dry moss covering a clay subsoil. Beyond Robinson lake and approaching the summit, gravel and rock predominate, yet there are many large alluvial flats at head of Nipigon lake and in the stream valleys. In the summer season the vegetation on the benches and in the river valleys is dense and rank. Vetches, coarse grasses and willows predominate. I found the banks of the Pic river covered with wild roses for many miles, mixed with raspberry bushes, strawberries, service berries, blackberries, hazel bushes and other wild flowers and fruit. There would seem to be no reasonable doubt that this country will be found readily adaptable for cultivation, as the climate compares favourably with other portions of the country. The cold is no more severe than in the city of Ottawa or province of Quebec, the snowfall is not nearly as great, the summer is short and hot, no more so than other portions of Ontario. The autumn has long intervals of bright clear sunny days and the precipitation no greater.

ROADS TO REACH THE LINE.

The difficulties now met with in provisioning the survey parties have proved very costly, but the methods used would be utterly inadequate where the heavy tonnage required by contractors is under consideration. It is hardly to be expected that any competent contractor can tender for the work on this district at ordinary prices, handicapped as it is by the extreme haul required for supplies and plant. It is then a question as to whether it would not be as well to build roads to points within reasonable distances of the work and thus secure a fair contract price being made.

If the building of roads would lower the cost of construction, as it should do, it would seem a strictly business proposition that they should be built.

Statement of preliminary lines run which are on approximately the direct line of final location to June 30, 1905 :

Total miles direct available	128
Approximate total miles across district	257
Total cost	\$30,976.64
Cost per mile of available direct line	242.00

C. E. PERRY,

District Engineer 'E.'

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DISTRICT 'F.'

The surveys in this district up to near the end of February were continued by the Grand Trunk Pacific engineers, who in November commenced locating a line which showed heavy work in places. From the information furnished by them it was my opinion that there was not sufficient exploration through the country to warrant the continuance of location until such time as I was sure the line they had run was the best the country afforded. Accordingly, in January last, I sent out one preliminary, and five exploratory parties under Major A. E. Hodgins, district engineer, to explore and examine other sections of the country than those shown to have been explored by the Grand Trunk Pacific parties.

The following is Major Hodgins' report, showing fully the work that has been done in that district :—

H. D. LUMSDEN, Esq.,
Chief Engineer,
Ottawa, Ont.

SIR,—I have the honour to submit the following report on explorations and preliminary in my district 'F' to June 30, 1905, in accordance with your instructions :—

ORGANIZATION.

On January 12 the organization of five exploratory parties and one preliminary party was completed in Winnipeg, and parties sent out to the various points on a line selected south of that chosen by the Grand Trunk Pacific engineers.

GRAND TRUNK PACIFIC PARTIES.

I was considerably handicapped at first by not being able to visit the Grand Trunk Pacific engineers' parties that were working in this district, and for lack of plans and profiles of the work that had been done for the previous eighteen months by those parties.

GRAND TRUNK PACIFIC PLANS AND PROFILES.

These difficulties have been overcome, and I now have copies of most of the plans and profiles made by the Grand Trunk Pacific engineers.

Another difficulty was that there were no accurate maps published of this district showing the natural features of the country to be explored for a railway.

GRAND TRUNK PACIFIC SURVEY.

If you take on a map a direct line from Winnipeg to the north end of Lake Nipigon, the Grand Trunk Pacific survey is shown north of this line. It should be noted that the Grand Trunk Pacific survey runs in many places along the southern bank of the large waterways, viz. : Winnipeg river, English river and Lac Seul. Cut-offs have been run in several places by the Grand Trunk Pacific engineers to throw out bends in the original survey, but, as far as I am able to ascertain, no other country for a more direct route has been explored by them. I have had this more direct route explored, and a preliminary line run.

Six parties, mentioned above, were placed at various points south of the Grand Trunk Pacific survey, north of the Canadian Pacific railway, with instructions to explore for a more direct route and a less costly one by keeping away from the canoe routes and the shores of the large waterways.

Parties 1 and 2.

Parties 1 and 2 are not yet organised.

Parties 3 and 4.

Parties 3 and 4 were sent into the north end of Sturgeon lake via Ignace on the Canadian Pacific railway, with orders to explore east and west from that point.

Party 3 explored west of party 4, and made a junction with the Grand Trunk Pacific survey at Willow creek. Mr. M. C. Macfarlane, who was appointed in charge of this party, hurt his knee and had to return, leaving the party with his assistant Mr. Phillips. You appointed Mr. T. S. Armstrong to take charge of this party, but on account of the transfer of the Grand Trunk Pacific parties. I kept Mr. Armstrong to take charge of one of the Grand Trunk Pacific parties, and Mr. Phillips continued the exploration. He reports a very fair line with good grades, no very heavy work, and a fair amount of timber and gravel. I recalled Mr. Phillips on account of the approaching spring, and gave him the transit on Mr. McIntosh's party.

Party 4.

Party 4 found an excellent route along the Sturgeon river, and reported good grades, also large deposits of gravel, an abundance of timber, and some timber for piling north and south of the Sturgeon.

I started Mr. McIntosh, who was in charge of this exploration, on a preliminary survey over this route on the 20th of April. This survey is finished, and Mr. McIntosh reports that he has obtained a grade of 0.3 rising eastward, and 0.4 rising westwards. The largest water crossing on this survey is Tawatmaw creek, elevation 1,260 feet, 400 feet wide, with a deepest sounding of 40 feet.

Party 5.

Party 5 was sent from Dinorwie, in charge of Major Villiers Sankey, to the north end of Lake Minnitaki (Abraham's Chute) to examine and report on all possible crossings of the English river between that point and the G. T. P. proposed junction of the Thunder Bay branch near Lac Seul, then to proceed west and explore for a possible route on the south shore of Lost lake. Six crossings have been reported on, and a possible route connecting with Mr. McIntosh to the east, and Mr. Bucke to the west near Rock lake. This party came out via Dryden in April, and in May I sent Mr. Heaman with canoes to start preliminary survey from Sioux Lookout crossing west. Mr. Heaman's preliminary survey shows an easy line in grades and work along the south shore of Lost lake, and excellent in direction.

Party 6.

Party 6 was sent north of Dryden, and have explored west and east, connecting with party 5 on the east and party 7 on the west. This party worked through what was called the Dryden Clay Belt, and found a very direct line, but encountered a burnt timber country. Mr. Bucke, who had charge of the exploration, was put on preliminary survey over this route, and got a very good line, with grades not exceeding the maximum allowed. His line shows a tunnel, and some very heavy work on the approaches of the Wabigoon river, which cuts through the clay belt. Another route is being explored throwing out this tunnel, and the heavy work near the Wabigoon river has been reduced.

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Party 7.

Party 7, in charge of Mr. A. G. Macfarlane, was sent north of Rat Portage, on the Winnipeg river, to look for a possible crossing near the direct line between Winnipeg and the north end of Lake Nepigon. Mr. Macfarlane has been successful. He found an excellent crossing near Gun lake, and discovered a river running out of a chain of lakes in the direction required. He reported that there would be a very hard climb from the river to the east, and on his preliminary survey he has been able to get a 0.3 grade compensated to the summit. The work is heavy, but no heavier than on the Grand Trunk Pacific survey, which is 14 miles to the north or the Canadian Pacific railway to the south.

Another party, in charge of Mr. T. S. Armstrong, was organized in March, and explored from the western shore of the Winnipeg river crossing mentioned above to the Manitoba boundary. The country traversed is very much broken up, and a steady rise from the river for seven miles on a maximum grade, followed by a number of lesser summits, which will put a considerable amount of curvature in the line to get the grade required. This portion of the line is north of the Kalmar summit on the Canadian Pacific railway, and is broken up by granite ridges in all directions. The preliminary survey was commenced on May 16, and a fair profile has been obtained considering the nature of the country. A 0.4 compensated grade rising westward has been obtained. One 6° curve at the summit will be necessary.

There are several places where gravel pits for train filling can be opened up. East of the Cygnet river there is a fair amount of tie timber, and a limited amount of pine timber. There is only one river crossing shown on this profile of any size, at Cygnet river, 200 feet in 6 feet water, and no tunnels.

Party 8.

This party was put in charge of Mr. N. B. MacTaggart, in January, on preliminary survey near Whitemouth to try for a better line crossing the Great Julius Muskeg. Several lines were run through the muskeg showing by the soundings that the muskeg was shallower than further north on the G. T. P. survey. On the approach of spring I moved this party to the Manitoba boundary to run a line from a narrow crossing of Cross lake to join with the line run by Mr. Armstrong's party, and have got a fair line, the approaches to Cross lake requiring the maximum grades allowed. Some very rough and broken country is encountered west of the boundary of Manitoba to Cross lake, but, on nearing Brereton lake (north of Rennie Station, C.P.R.) the country begins to flatten out, and finally rocky knolls disappear in muskeg and prairie.

TRANSFER OF G. T. P. PARTIES.

The explorations were interrupted when the transfer of the G. T. P. parties was ordered (February, 1905). I recalled Mr. Macfarlane and later Mr. Armstrong, as I was instructed that Mr. Morse requested that the engineers in charge be retained in the service of the Grand Trunk.

There were three G. T. P. parties to be taken over and several caches.

Mr. Heaman was in charge of the first party I visited, but, on finding Mr. Heaman willing to continue, I was enabled to let Mr. Macfarlane return and complete his explorations.

Mr. Heaman reported that he was in difficulties encountering muskegs that had been reported five to six feet deep to show thirty-eight foot soundings with no bottom. I therefore brought his party to White Dog Rapids to run a cut-off on the G. T. P. survey, which I had noticed on my way to White Dog Rapids. This was run by Mr. Heaman. His party then asked to be discharged, not willing to keep on exploration, as they had been out for the past 16 months.

Another G.T.P. party, in charge of Mr. Darey, was working in the neighbourhood of Winnipeg on location. As the entry into Winnipeg had not been determined, and our explorations east not finished, I broke up this party, sending the transitman on exploration with a dog team and a few men to ascertain the position of two lakes near Red Rock. Mr. Darey and his topographer came to my office to complete their plans and notes. When this work was finished I disbanded the party.

By running south of the G. T. P. junction of the Thunder Bay branch and the main line near Frenchman's Head, we may, by crossing at Sioux Lookout, or Pelican Falls, save the G. T. P. from building several miles of their branch.

DESCRIPTION.

North of Dryden we touch what is known as the only farming land between the Manitoba boundary and Lake Nipigon. Crossing the Winnipeg river I expect to meet with some difficulty, but hope to save enough in distance to more than compensate for large quantities.

The prairie country will be much the same. The muskegs to be crossed will be shallower, and less of them, and the line across the surveyed farms near Winnipeg will run as far as possible along section or township lines. I hope to escape the Julius muskeg where the Canadian Pacific Railway had so much difficulty during the construction of their line. I anticipate there will be enough tie timber to supply the whole of my district and the Thunder Bay branch. There will be very little timber for piles and dimension timber.

The country consists of rocky knolls, surrounded by series of lakes, and occasionally the line crosses patches of sand and muskeg.

On the rocky ridges scrub spruce and jackpine are growing, occasionally jackpine reaching the dimension of 12 inches. Muskegs usually timbered with small spruce four to eight inches in diameter, sometimes having occasional tamarac trees from eight to fourteen inches.

There will not be much borrow for large fills, except rock.

There is an excellent water power at Pelican Falls, and many smaller ones at different points near the surveyed line, none of which have been gauged. The Pelican Falls, I am informed, were measured this summer by an engineer from the Ontario Public Works Department.

GAME.

There is not much game in the country explored, except moose, which are plentiful near the Manitoba boundary. Red deer have been seen in places, but the timber wolves are thinning them out.

SLEIGH DOGS.

When the spring weather made the use of toboggans impossible I had thirty-eight sleigh dogs collected and put on an island in the Winnipeg river in charge of a caretaker, who reports that they are in good condition.

WORK OF ENGINEERS AND MEN.

In conclusion, I wish to bring to your notice the good work done, and the untiring zeal of the engineers employed on preliminary and explorations to date. They all suffered certain privations, and encountered unexpected difficulties. There were one or two cases of frost bite and axe cuts, disabling men temporarily. Others fell through the ice, but were rescued by their companions, there being an order that no man was permitted to travel alone in the winter.

A. E. HODGINS,
District Engineer 'F.'

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From the reports of the various district engineers, and from my knowledge generally of the country through which the line passes, I am in hopes that by the end of January next I will be in a position to submit to you sufficient information to enable you to call for tenders for the construction of one hundred miles, or more, of line from the Quebec bridge westerly, and also from the point where the Grand Trunk Pacific branch from Fort William connects with our line in the vicinity of Sioux Lookout, westerly to Winnipeg, a distance of say two hundred and fifty miles. Although we have a number of parties at work over the entire line it will take some time before I will be able to give you the necessary information from Moncton westward, and Quebec eastward, and a still longer time before a final location can be determined on from the St. Maurice river westerly to the junction of the Grand Trunk Pacific, near Sioux Lookout, the last mentioned portion being through a country inaccessible to ordinary means of travel, and about which little was heretofore known, except in the vicinity of the larger streams, which, as a rule, run at right angles to the general direction of our line.

In conclusion I regret to report the following casualties:—

On November 28, 1904, Mr. W. T. Leary, who had charge of the transport service for parties Nos. 1 and 2, District 'D,' broke through the ice in the narrows of Opasatica lake and was drowned. The body was recovered after the opening of the lakes and rivers in the spring, and was sent to Hull, P.Q., for burial.

On May 15, 1905, Urgele Cusson, axeman, party 5, District 'D,' who was hired in Ottawa, disappeared from camp at Bisco, Ont., and no trace of him has ever been found. He had been acting in a peculiar manner for several days previous to his disappearance.

On May 24, 1905, Joseph Desroches, of Quebec axeman, on party 4, District 'C,' was drowned in the Gatineau river. Desroches was standing in a bow of a canoe, poling it up stream, when it upset in the rapids. The body was recovered on June 19, and buried near the scene of the accident.

On June 16, 1905, Mr. M. B. Almon, of Halifax, N.S., engineer in charge, party 7, District 'C,' and his transitman, Walter White, of Banockburn, Ont., were drowned in the Upper Ottawa, caused by their canoe being upset in the rapids. The body of Almon was recovered on June 21, and that of White on the 22nd; both bodies being shipped to their relatives for burial.

On June 21, 1905, H. Tranchemontagne, axeman, party 4, District 'C,' was drowned in the Shoshokwan river, caused by the canoe striking a rock and being upset in the rapids. The body has not yet been recovered.

On June 21, William Findlow, cachekeeper, District 'E,' was drowned in the Wabinoash river, the canoe being upset in rapids. His body was recovered and buried on the bank of the river.

HUGH D. LUMSDEN,
Chief Engineer.



YEAR 1904-05.

STATEMENT OF RECEIPTS, EXPENDITURES

AND LIABILITIES.



THE COMMISSIONERS OF THE TRANSCONTINENTAL RAILWAY.

YEAR 1904-05.

STATEMENT of Receipts, Expenditure and Liabilities, September, 1904 to June 30, 1905.

Receipts.

1904—		
	September 24—Letter of credit.	\$ 100,000 00
	December 22—Letter of credit	100,000 00
1905—		
	January 30—Letter of credit.	100,000 00
	March 4—Letter of credit.	200,000 00
	June 8—Letter of credit—Supplementary.	290,423 35
		<hr/>
		\$ 790,423 35

Expenditure.

Headquarters' staff and general accounts, as per attached statement.	\$ 127,783 51
Cost of survey parties and transport service in the field, as per attached statement.	650,580 12
	<hr/>
Total expenditure.	\$ 778,363 63
Balance of appropriation, lapsed.	12,059 72
	<hr/>
	\$ 790,423 35

Liabilities.

Pay-roll.	\$ 680 99
Accounts for supplies, &c.	16,080 90
	<hr/>
	\$ 16,761 89

Cost of Grand Trunk Pacific surveys, east of Winnipeg, taken over by the commissioners. \$ 352,191 73
(Including interest at 4 per cent up to July 26, 1905.)

A. T. GOW,
Accountant.

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STATEMENT OF EXPENDITURE FOR THE YEAR 1904-05.

Headquarters' Staff and General Accounts.

Salaries of commissioners and staff.	\$55,747 15	
Travelling expenses, &c., of staff	5,767 83	
		\$ 61,514 98
Sundry general office expenses.	\$ 6,145 29	
Rent of general offices	5,978 28	
Telegraph and telephone.	2,159 12	
Freight and express.	2,154 89	
Insurance.	690 26	
Postage.	660 00	
		\$ 17,787 84
Office furniture and fixtures.	\$11,246 90	
Instruments.	12,484 96	
Stationery.	7,930 99	
Draughting office supplies	821 18	
Stock.	10,670 91	
Engineers' field equipment stock.	58 07	
Engineers' reference books	238 75	
Advance account.	4,014 18	
Audit of Grand Trunk Pacific survey accts.	1,014 75	
		48,480 69
		\$127,783 51

A. T. GOW,
Accountant.

STATEMENT of expenditure on account of survey parties and transport service in the field, including pay-roll, camp outfit, provisions, travelling expenses, &c., September, 1904 to June 30, 1905.

District 'A'—		
Pay-roll.	\$69,244 11	
Supplies.	32,484 96	
		\$101,729 07
District 'B'—		
Pay-roll.	82,704 11	
Supplies.	40,883 85	
		123,587 96
Quebec bridge—		
Pay-roll.	4,673 16	
Supplies.	1,132 06	
		5,805 22
District 'C'—		
Surveys—		
Pay-roll.	77,311 60	
Supplies.	66,248 92	
		\$143,560 52
Transport—		
Pay-roll.	22,216 31	
Supplies.	11,186 97	
		33,403 28
		176,963 80

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District 'D'—			
Surveys—			
Pay-roll.	38,253 49		
Supplies.	52,990 40		
	<hr/>	91,243 89	
Transport—			
Pay-roll.	8,559 57		
Supplies.	6,450 00		
	<hr/>	15,009 57	
		<hr/>	106,253 46
District 'E'—			
Surveys—			
Pay-roll.	20,791 57		
Supplies.	15,699 32		
	<hr/>	36,490 89	
Transport—			
Pay-roll.	3,356 87		
Supplies.	2,233 24		
	<hr/>	5,590 11	
		<hr/>	42,081 00
District 'F'—			
Surveys—			
Pay-roll.	39,691 50		
Supplies.	41,264 07		
	<hr/>	80,955 57	
Transport—			
Pay-roll.	5,676 22		
Supplies.	7,527 82		
	<hr/>	13,204 04	
		<hr/>	94,159 61
		<hr/>	\$650,580 12

A. T. GOW,
Accountant.

STATEMENT OF CHEQUES ISSUED.

1904.

September.	\$ 10,235 63
October.	25,098 79
November.	37,296 25
December.	83,784 91

1905.

January.	74,296 53
February.	93,134 66
March.	116,639 21
April.	61,552 13
May.	103,930 38
June.	104,517 56

1904-1905.

July..	93,190 63
August..	9,312 52
	<hr/>
	\$812,989 20
Less—Amount deposited to credit of Receiver- General..	34,625 57
	<hr/>
	\$778,363 63
	A. T. GOW, Accountant.

GENTLEMEN,—I have the honour to submit the following statement of purchases made in the different provinces and also Great Britain and United States during the fiscal year ending June 30, 1905:—

Province of Ontario..	125,078 30
“ Quebec..	71,252 57
“ Manitoba..	24,664 91
“ New Brunswick..	8,213 01
“ Nova Scotia..	3,114 24
Great Britain..	3,141 24
United States..	459 39
	<hr/>
	\$236,923 76

A. L. OGILVIE,
General Purchasing Agent,
Transcontinental Railway.

STATEMENT of petty purchases made by engineers in charge of parties and transport officers in the fields. These purchases are not included in statement of purchases by Purchasing Department.

New Brunswick..	\$3,551 84
Quebec..	4,914 38
Ontario..	1,494 61
Manitoba..	86 89
..	<hr/>
	\$10,047 72
	A. T. GOW, Accountant.

REPORT OF TRANSPORT DEPARTMENT.

To the Commissioners of the
Transcontinental Railway.

GENTLEMEN,—I beg to submit the following report, covering the operations of the transport department up to the end of the fiscal year June 30, 1905.

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DISTRICT 'C'

This district is divided into two divisions, known as the Gatineau division and the Upper Ottawa division.

GATINEAU DIVISION.

This district is under the supervision of Transport Officer W. L. McGiverin, salary \$100 per month. Mr. McGiverin's staff consists of the following parties:—

Horace G. Black, storekeeper, Adelard Proteau, assistant, in charge of Manuan Post, salary, \$40 per month each.

J. J. Rickard, storekeeper, R. H. Christie, assistant in charge of Camp No. 2, salary, \$40 per month each.

F. J. Tighe, storekeeper, in charge of main depot, Gatineau Forks, salary, \$40 per month.

J. S. B. Forbes, foreman, \$50 per month.

T. Plante, foreman, \$70 per month.

Twenty-four packers and canoemen, average salary \$40 per month.

The canoemen during the winter months act as dog drivers or otherwise assist in the packing of supplies.

There has been a total of 199,390 pounds of supplies, including camp outfit, forwarded from Maniwaki to the main depot situated at the Gatineau Forks, a distance of 105 miles. These supplies have been taken in by contract at an average price of 5.42c. per pound. The transport service in this district has been engaged exclusively in transporting supplies from the main depot at the Gatineau Forks to Camp No. 2, and also delivering supplies to parties 1 and 3 on the south line and 2 and 4 on the north line.

A small lot of supplies consisting of 4,000 pounds has been forwarded to Post Manuan via St. Felix de Valois and St. Michael des Saints, by contract at a price of 6 cents per pound for the use of party No. 2, operating on the south line in the extreme east of this district.

MAIL SERVICE.

A semi-monthly mail service has been given in this district, leaving Maniwaki on the 1st and 3rd Tuesdays after the 1st Sunday of each month. Mr. Harry Flynn of Maniwaki has the contract for this service at the price of \$38 per round trip, mail not to exceed 200 pounds in weight; small parcels, other than those inclosed in the mail bag, 5 cents per pound. The mail is delivered to our main depot situated at the Gatineau Forks, and from there is delivered to the different parties by the men taking in supplies to parties 1 and 3 on the south line, and parties 2 and 4 on the north line.

UPPER OTTAWA DISTRICT.

This district comprises the territory bounded on the east by Lake Kapitchuan, on the west by the Hurricanaw and Kenejevis rivers. This district is under the supervision of Transport Officer J. McG. Rutherford, salary. \$85 per month.

His staff consists of the following parties:—

L. J. Almon, storekeeper, J. J. Lynch, assistant in charge at Grand Lake Victoria depot, salary, \$40 per month each.

T. Hora, storekeeper, F. Flannigan, assistant, in charge at South Kenojevis cache, salary, \$40 per month each.

A. E. Cameron, storekeeper, D. B. McKinnon assistant, in charge of North Kenojevis cache, salary, \$40 per month each

J. D. Fraser, foreman, \$50 per month.

John Gordon, head packer, \$62 per month.

Three cooks at \$60 per month, and 30 packers and canoemen, average salary \$40 per month.

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A total quantity of 67 tons of supplies, including camp outfit, has been forwarded to Grand Lake Victoria depot and the north and south Kenojevis caches, via Moore Lake to Grand Lake Victoria depot and via Ville Marie to the Kenojevis caches. The distance between Moore lake and Grand Lake Victoria is approximately 136 miles, and the distance between Ville Marie and the North Kenojevis cache is practically the same distance, viz., 136 miles. The cost of forwarding the supplies to Grand Lake Victoria depot was 6.70 cents per pound. The supplies and camp outfit forwarded to the Kenojevis caches did not reach their destination until the latter end of July.

MAIL SERVICE.

A semi-monthly mail service has been given in this district, leaving Stubb's bay on the 1st and 3rd Tuesdays after the 1st Sunday of each month. Louis A. Christopherson has the contract for carrying the mail between Stubb's bay post office and the commissioners' depot, situated at the north end of Grand Lake Victoria, a distance of 65 miles, at a price of \$55 per round trip, mail not to exceed 200 pounds in weight. The mail is delivered to parties 5 and 7 on the south line and 6 and 8 on the north line by the transport men delivering supplies to these parties.

DISTRICT 'D.'

This comprises the district bounded on the east by Agotawegami lake, on the west by the junction of Abitibi river and Kettle Falls. This district is under the supervision of Transport Officer George H. Starnes, salary \$100 per month. His staff consists of the following parties :—

- T. Marcil, storekeeper; A. Douglass, assistant, in charge at McDougall's rapids, salary, \$40 per month each.
- J. E. Dowling, storekeeper; C. Parker, assistant, in charge of North Abitibi cache, salary, \$40 per month each.
- O. D. Wilde, storekeeper; H. McAuley, assistant, in charge of Height of Land cache, salary, \$40 per month each.
- J. B. St. Paul, storekeeper; L. Rainville, assistant, in charge of cache at Agotawegami lake, salary, \$40 per month each.
- E. T. Dillon, storekeeper; J. Boileau, assistant, in charge of South Abitibi cache, salary, \$40 per month each.
- One cook, salary, \$40 per month.
- Two mailmen, salary, \$60 per month.
- Two mailmen, salary, \$40 per month.
- Thirteen canoemen and packers, average salary \$40 per month.

There was a total quantity of 114 tons of supplies forwarded in this district, 86 tons of which were delivered to caches situated at McDougall's rapids and Lake Abitibi, at a cost of 6½ cents per pound, the distance between end of Steel and Northwest Abitibi cache being 120 miles. About 25 tons were taken in from Temiskaming over the Height of Land cache and Lake Agotawegami cache by dogs. As these supplies were taken in before the organization of this department, I am unable to state the cost of delivering same to their respective caches.

MAIL SERVICE.

The transport department has maintained a semi-monthly mail service in this district via two routes, known as the North Temiskaming route and the McDougall Rapids route. The North Temiskaming route is in charge of S. F. McGrath, mailman, salary \$60 per month, and J. Boyd, assistant, salary \$40 per month. These parties take the mail from New Liskeard to parties 1 on the south line and 2 on the north line.

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The McDougall's Rapids route is in charge of D. Ravie, mailman, salary \$60 per month, and D. Bisson, assistant, salary \$40 per month. These parties take the mail from New Liskeard via McDougall's rapids to party 3 on the south line and parties 4 and 5 on the north line. As the territory covered by the mailmen on the two above mentioned routes depends to a large extent on the location of the different parties to whom they deliver mail, it is rather difficult to estimate the exact distance covered. I may state though that it takes practically two weeks and sometimes a little longer to make the round trip, consequently they are continually engaged in the service.

DISTRICT 'D' WEST.

This district comprises the territory bounded on the east by the junction of Abitibi river and Kettle Falls, and on the west by the junction of the Kabinakagami and Mattawushkia rivers. This district is under the supervision of Transport Officer R. P. Strickland, salary \$60 per month. His staff consists of the following:—

- A. F. Defoy, cachekeeper, Geo. McKirdy, assistant, in charge of cache 6a, salary \$40 per month each.
- C. H. McIntyre, cachekeeper, Geo. H. Stewart, assistant, in charge of cache 7a, salary \$40 per month each.
- E. T. Dillon, cachekeeper, A. J. Kehoe, assistant, in charge of cache 8, salary \$40 per month.
- K. H. Gordon, cachekeeper, D. R. Farquaharson, assistant, in charge of cache 8a, salary \$40 per month each.
- W. D. Balfour, cachekeeper, J. D. Brown, assistant, in charge of old 8a cache, salary \$40 per month each.
- One foreman, salary \$55 per month.
- Four mailmen, salary \$50 per month.
- One guide, salary \$50 per month.
- One cook, salary \$60 per month.

Thirteen packers and canoemen, salary average \$40 per month.

There was a total of 20,130 pounds of supplies forwarded in this division of District 'D.' These supplies were taken in by our transport men, a distance of 150 miles, at a cost of 8.8c. per pound. The apparent high cost of forwarding these supplies was due to the fact that the supplies went in during the summer months when we experienced great difficulty in getting our supplies up the rivers on account of the low water.

MAIL SERVICE.

As there were only two parties operating in this district during the month of June (parties 5 and 7) the transport department sent their mail in to them once a month. Mailmen Harry Hookiss and Ignace 'Indian' were engaged for this service at \$50 per month each.

DISTRICT 'E'

This district comprises the territory bounded on the east by the Kalitchaun river and on the west by Smooth Rock Island lake. This district is under the supervision of Transport Officer R. C. MacDonald, salary \$100 per month. His staff consists of the following:—

- C. E. Fordyce, cachekeeper, E. Hewitt, assistant, in charge of cache 9, salary \$40 per month each.
- R. H. McRae, cachekeeper, O. W. Cotter, assistant, in charge of cache 10, salary \$40 per month each.

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- L. F. Howard, cachekeeper, W. Reilly, assistant, in charge of cache 10a, salary \$40 per month each.
- C. T. Leachman, cachekeeper, P. S. Quinn, assistant, in charge of cache 11, salary \$40 per month each.
- P. G. Stewart, cachekeeper, J. H. McKay, assistant, in charge of cache 11a, salary \$40 per month each.
- J. Hyman, cachekeeper, J. Turriff, assistant, in charge of cache 12a, salary \$40 per month.
- J. Burns, cachekeeper, in charge of cache 13, salary \$40 per month.
- E. Eagles, cachekeeper, H. Walker, assistant, in charge of cache 14, salary \$40 per month each.
- E. H. McLeod, cachekeeper, F. Sanderson, assistant, in charge of cache 15, salary \$40 per month each.
- E. S. Hamilton, cachekeeper, in charge of Wabinoah warehouse, salary \$40 per month.
- G. Sumner, cachekeeper, in charge of Ombabika warehouse, salary \$40 per month.
- R. C. Wilson, cachekeeper, in charge of cache at Montizambert, salary \$40 per month.
- B. W. Dickison, cachekeeper, in charge at Missanabie, salary \$40 per month.
- One foreman, salary \$65 per month.
- One foreman, salary \$45 per month.
- One cook, salary \$60 per month.

Fourteen packers and canoemen, average salary \$40 per month.

There has been a total of 141,970 pounds of supplies forwarded in this district, 30 tons to cache 9 via Grasset, a distance of 80 miles, at a cost of 7 cents per pound, and 30 tons to Wabinoah and Ombabika warehouses via Lake Nipigon, a distance of 92 miles, at a cost of 2½ cents per pound. The low cost of forwarding these supplies is accounted for by the fact that over two-thirds of this route is via Lake Nipigon, permitting the supplies being taken in large quantities and at small expense.

MAIL SERVICE.

No regular mail service has been inaugurated in this district, each party sending to the nearest post office for their mail. This work is performed by men attached to the different parties.

The department experienced great difficulty during the past few months in getting supplies into the different parties on account of the condition of the rivers due to the lowness of the water. I have been reliably informed that there has never been such a scarcity of water as has existed this summer, for the past twenty years.

As an indication of how this hampers the transport of supplies, I may say that on some of the routes there are as many as 45 or 50 portages, necessitating the canoes being unloaded and reloaded at each portage. This trouble is common to all routes, but the greatest difficulty was encountered in the Gatineau district. In some instances the canoes after making one trip were rendered practically useless.

Another difficulty this department has had to contend with is the obtaining of a suitable class of men to handle the canoes. In view of the large quantity of supplies transported and the number of men engaged in the service, we have been very fortunate indeed, having had but one fatality in the person of Wm. Findlow, cachekeeper, Wabinoah, District 'E,' who lost his life through drowning by the upsetting of his canoe on June 30.

During the latter end of June bush fires took place in the vicinity of Abitibi lake and McDougall's rapids. The large depot at McDougall's was threatened for two days, and it was only through the heroic efforts on the part of the cachekeeper, who fortunately was assisted by a transport party which happened to be at the depot at the time,

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that the cache was saved. The cache known as the Southeast Abitibi cache, situated on the southeast shore of Lake Abitibi, was destroyed with its contents, about 5 tons of supplies, on June 18. This is the only loss incurred through fire.

CECIL DOUTRE,
Transport Clerk.

OTTAWA, May 9, 1905.

The Commissioners of the Transcontinental Railway,
Ottawa, Canada.

GENTLEMEN,—The undersigned have the honour to report that they have this day completed the audit of the expenditure made by the Grand Trunk Pacific Railway Company, for cost of surveys subsequent to and not included in our report, dated February 7, 1905.

The meetings were held in the presence of Mr. M. J. Butler, assistant chief engineer.

The requisitions for supplies furnished were duly examined and compared with the accounts submitted and with freight bills for same, and the books of the Grand Trunk Railway system and the vouchers for all payments were duly verified with the following results.

The total expenditure since our previous report, including interest at 4 per cent ($\frac{1}{2}$ p. c.), computed to March 31, 1905, is \$60,609.77, as per schedule annexed, marked 'A.'

But as your commission has decided to assume only one-fifth of the cost of party No. 3, the total amount to be paid to the Grand Trunk Pacific Railway will be \$54,065.95, as per statement annexed, marked 'B.'

The undersigned also submit the following statements:—

List 'C.'—Statement showing total cost of party No. 3.

List 'D.'—Statement giving names of district and assistant engineers employed on main line east of Winnipeg.

List 'E.'—Statement giving list of caretakers and memo. of board bill.

KENT & TURCOTTE,
WM. AINSLIE,
G. A. BELL,

Auditors.

The Commissioners of the Transcontinental Railway to Grand Trunk Railway system, 1905:

April 30—For amount expended on surveys on main line of the Transcontinental Railway, east of Winnipeg, including the whole of party No. 3, subsequent to Nov. 30, 1904, as per detailed statement attached.	\$60,234 21
Interest on above to March 31, 1905, per statement attached.	\$383 37
LESS—Interest on credits to March 31, 1905, per statement.	7 81
	375 56
	\$60,609 77

KENT & TURCOTTE,
WM. AINSLIE,
G. A. BELL.

GRAND TRUNK RAILWAY SYSTEM.

STATEMENT of Amounts Expended on Surveys of the National Transcontinental Railway East of Winnipeg, from December 1, 1904.

Date.	No.	Name.	Particulars.	Amount.
				\$ cts.
Dec. 31..	36939	Bouchard, A	Transporting supplies	1,803 61
	37005	Hudson's Bay Co.	Rent	50 00
	37019	McCauley, Chas.	Building storehouse	280 00
	37031	Agent G. T. R.	Freight	1 08
	37748	Hudson's Bay Co.	"	29 68
	9	Agent G. T. R.	"	2 86
	37866	Browning, A. G.	Proportion of rent, North Bay	35 71
	7	Dickison, B. W.	Expenses	83 10
	37877	Hannington, C. F.	"	11 95
	8	Hudson's Bay Co.	Cartage	2 00
	37881	Lefebvre, L.	Board	28 50
	2	Mitchell, C. A.	Expenses	34 39
	3	Schellge, H.	Care of dogs	70 00
	5	Tempest, J. S.	Disbursements	62 00
	37890	Ward, E.	Proportion of rent, Winnipeg	25 71
	37970	Ellis, R.	Repairing harness	16 50
	38059	Proctor, A. F.	Expenses	39 39
	38156	Hamilton, W. B.	"	203 22
	38089	Austin, J. McN.	Supplies	20 68
	38276	Hudson's Bay Co.	"	110 53
	7	"	"	37 01
	38280	"	"	32 70
	1	"	"	14 10
	2	"	"	375 41
	3	"	"	42 76
	7	"	"	38 85
	38359	Harrison & Co.	"	8 75
	39356	McDonald & Hay	"	16 05
	38364	Ogilvie Flour Mills Co.	"	46 45
	38377	H. L. Piper Co.	"	17 63
	38387	Purvis Bros.	"	1 05
	38524	Boyd, T. W. & Son	"	1 00
	38700	Martin, D. B. & Co.	"	36 12
	38670	Imperial Oil Co.	"	2 00
	38914	McBean, Cyrus.	Making pickets	19 50
	39289	Heman, J. A.	Disbursements	16 50
	39292	Kelliher, B. B.	"	20 75
	3	Knowlton, G. A.	Proportion of expenses	46 93
	4	"	Expenses	74 12
	39560	Agent G. T. R.	Freight charges	2 93
	1	"	"	13 45
	2	North Bay L. H. P. Co.	Electric light	7 45
	40216	McLaren, A.	Transporting supplies	2,962 31
	40220	Hudson Bay Co.	Sundries	67 11
	1	"	Freight charges, &c.	8 50
	30638	Stephens, J. R.	Proportion of salary	230 26
	9	Knowlton, G. A.	"	238 08
	30642	Hannington, C. F.	Salary	2 50
	3	Kelliher, B. B.	Proportion of salary	71 43
	32	Pay roll	" " staff engineer's office	151 29
	62	"	Surveys	1,375 00
	1470	"	"	150 00
	1471	"	"	310 71
	1474-6	"	"	3,923 26
	1477-84	Pay rolls	Surveys	5,761 66
	1486-92	"	"	3,780 28
	1500	"	"	114 28
	15 A	Transfer	Stationery	146 69
	5 A	"	Bell cord supplied	3 45
	559	Browning, A. G.	Proportion of rent, North Bay	35 71
	568	Hudson's Bay Co.	Disbursements	2 50
	1121	"	Sundries	10 10
	2	"	Rent	10 00
	4	"	Sundries	8 90
		Carried forward.		

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STATEMENT of Amounts Expended on Surveys, &c.—Continued

Date.	No.	Name.	Particulars.	Amount.
				\$ cts
		Brought forward.		
Dec. 31.	7	Ward, E.	Proportion of rent, Winnipeg.	25 71
	1287	Hannington, C. F.	Expenses.	55 18
	1703	Coldwell, R. W.	Disbursements	13 10
	5	Heman, J. A.	"	26 25
	8	Hudson's Bay Co.	Transportation.	3 50
	9	Kelliher, B. B.	Disbursements	23 82
	1712	Macrone, G.	"	148 92
	1715	Orde, L. R.	"	91 80
	346	Caverhill, Learmont & Co.	Supplies.	4 74
	1388	J. H. Ashdown Hardware Co.	"	6 75
	1400	Blanchet, J.	"	6 00
	5	Canada Paint Co.	"	0 52
	1461	Harrison & Co.	"	3 65
	1473	Hudson's Bay Co.	"	86 20
	4	"	"	75 55
	7	"	"	102 52
	8	"	"	126 03
	9	"	"	7 77
	1489	"	"	14 00
	1	"	"	692 53
	1501	Loughrin, Jno.	"	13 50
	1521	McDonald & Hay.	"	32 40
	1557	Rorabeck, A. C.	"	6 15
	2789	Kuowlon, G. A.	Proportion of expenses	120 58
	3059	Hudson's Bay Co.	Rent of boat, &c.	50 00
	3060	"	Sundries.	7 90
	1	Knowlton, G. A.	Disbursements	25 36
	2	Agent G. T. R.	Freight charges.	3 37
	8	Mitchell, C. A.	Disbursements.	30 85
	3098	Lefebvre, L.	Board	10 00
	682	Stephens, J. R.	Proportion of salary.	230 26
	3	Knowlton, G. A.	"	238 08
	6	Kelliher, B. B.	"	95 24
	33	Hannington, C. F.	Salary	250 00
	39	Pay roll	Proportion salary staff engineer's office.	158 42
	498	"	Surveys	334 20
	1501-2	"	"	1,569 66
	1503-4	"	"	1,745 91
	1505-11	"	"	6,520 24
	1512	"	"	1,153 70
	1514	"	"	114 28
	1517-18	"	"	2,338 68
	15 A	Transfer.	Stationery.	31 13
	15 A	"	Supplies transferred	10 35
Feb. 28.	4235	Hudson's Bay Co.	Freight	8 86
	4240	Ward, E.	Proportion of rent, Winnipeg.	8 57
	45-14	Kelliher, B. B.	Disbursements.	10 52
	6	Orde, L. R.	"	58 90
	4545	Hudson's Bay Co.	Express charges	0 75
	4550	J. H. Ashdown Hardware Co.	Supplies.	13 97
	1	Austin, J. McN.	"	10 50
	4561	Blackwood & Hugel.	"	15 00
	4526	Fraser, W.	"	3 72
	4040	Harrison & Co.	"	0 75
	4636	Hudson's Bay Co.	Supplies.	49 82
	7	"	"	19 52
	9	"	"	8 00
	4661	"	"	20 58
	2	"	"	493 47
	4	"	"	9 85
	5	"	"	12 45
	7	"	"	69 70
	8	"	"	471 90
	4780	Montreal Tent, Awning and Tarpaulin Co.	"	92 00
		Carried forward.		

STATEMENT of Amounts Expended on Surveys &c.—Continued.

Date.	No.	Name.	Particulars.	Amount.
				\$ cts.
		Brought forward.....		
Feb 28.	4812	Purvis Bros.....	"	11 13
	5526	Bell Telephone Co.....	Messages.....	2 00
	7	Browning, A. G.....	Prpn. rent North Bay.....	35 71
	9	Coldwell, R. W.....	Disbursements.....	39 57
	5532	McDonald, D.....	Checking caches.....	97 40
	3	Macrone, G.....	Disbursements.....	104 20
	6	North Bay Light, H. & P. Co.....	Prpn. of electric light.....	4 47
	7	Tempest, J. E.....	Disbursements.....	49 45
	6067	Hudson's Bay Co.....	Supplies.....	175 25
	8	"	Rent.....	2 50
	9	"	Express.....	6 70
	6072	Knowlton, G. A.....	Proportion of disbursements.....	91 16
	3	"	"	38 62
	8	McLaren, A.....	Transporting supplies.....	1,076 27
	6440	Hudson's Bay Co.....	"	120 75
	1	"	Transportation.....	5 00
	3776	Stephens, J. R.....	Proportion of salary.....	199 30
	8	Knowlton, G. A.....	"	238 08
	9	Kelliher, B. B.....	"	31 75
	3933	Pay roll.....	Proportion staff eng. office.....	170 55
	1625	"	Surveys.....	307 01
	1628-32	"	"	4,732 57
	1637	"	"	38 09
	1647-48	"	"	1,624 63
	1650	"	"	1,097 32
		Supplies transferred.....	"	5 65
Mar. 31.		"	"	3 35
	6312	Hudson's Bay Co.....	Transporting supplies.....	7,396 27
	6520	"	Sundries.....	4 58
	6519	Darey, L. A.....	Expenses.....	35 40
	0954	Hudson's Bay Co.....	Freight charges.....	62 88
	8	Macrone G.....	Disbursements.....	154 90
	7480	Hudson's Bay Co.....	Cash paid.....	12 00
	7978	"	"	13 35
	9	"	"	50 58
	7981	"	"	87 93
	3	"	"	7 00
	4	"	"	14 83
	6	"	"	17 74
	7	"	"	12 00
	9	"	"	56 95
	7991	"	"	10 40
	2	"	"	1 34
	8236	"	Disbursements.....	10 52
	8	Knowlton, G. A.....	"	114 44
	8911	Bell Telephone Co.....	Messages.....	0 65
	9336	Austin, J. McN.....	Supplies.....	114 62
	1474	Pay roll.....	Survey parties.....	39 13
	1475	"	"	358 66
	1476	"	"	888 71
April 30.	10507	Agent G. T. R.....	Freight.....	4 52
	10712	McLean, J. D.....	Compensation.....	30 00
	10713	Macrone, G.....	Disbursements.....	46 00
		Pay roll.....	Surveys.....	123 00
	1158	Hudson's Bay Co.....	Supplies.....	11 75
	1430	"	Dogs.....	68 00
	1431	"	Supplies.....	52 28
	2064	Wells & Emmerson.....	Equipment.....	37 53
	2311	Hudson's Bay Co.....	Supplies.....	14 15
	2324	"	Toboggans.....	7 00
	2913	"	Supplies.....	5 05
	2914	"	"	18 35

61,538 95

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STATEMENT of Amounts Expended on Surveys, &c.—*Concluded.*

Date.	No.	Name.	Particulars.	Amount.
				\$ cts.
		Brought forward.....		
			LESS CREDITS.	
1904.				\$ cts.
Dec. 31.	91	Supplies transferred at Frenchman's Head.....	676 45	
	91	Transfer, deductions on pay rolls Nos. 1476 and 1479.....	12 04	
	105	Transfer, blankets sold.....	30 00	
1905.				
Jan. 31		Supplies transferred.....	16 25	
		Deductions on pay rolls.....	61 65	
		Paid by Mr. Stephens.....	4 87	
Feb. 31.		Supplies transferred.....	12 50	
	48	Transfer, Lockerby Bros., acc. condensed cream spoiled.....	155 50	
	95	Deduction on pay roll.....	5 00	
	98	Pay draft 20356, D. Dupras.....	27 53	
	98	Hudson's Bay Co., supplies.....	16 56	
Mar. 31.		" ".....	281 87	
April 31.		C. P. Ry. refund of freight.....	4 52	
				1,304 74
				60,234 21

STATEMENT showing Interest due to March 31, on Amounts advanced subsequent to November 30, for Surveys of Transcontinental Railway, East of Winnipeg.

Month Advance made.	Amount.	No. of Months.	Rate.	Amount.
	\$ cts.		p. c.	\$ cts.
December.....	23,328 64	3	4	233 28
January.....	16,672 49	2	4	111 14
February.....	11,687 31	1	4	38 95
March.....	9,432 88	—	4	.....
April.....	417 63	—	4	.....
	61,538 95			383 37

STATEMENT showing Interest on Credits to March 31 or Credits to Advances made subsequent to November 30, for Surveys on the Transcontinental Railway, East of Winnipeg.

Month Advance made.	Amount.	No. of Months.	Rate.	Amount.
	\$ cts.		p. c.	\$ cts.
December.....	718 49	3	4	7 19
January.....	82 77	2	4	0 55
February.....	200 53	1	4	0 07
March.....	16 56	—	4	.....
April.....	286 39	—	4	.....
	1,304 74			7 81

6 EDWARD VII., A. 1906

AMOUNT expended on Surveys, with Interest, from December 1, 1904, to March 31, 1905, as per Statement annexed.

	§	cts.	§	cts.	§	cts.
Total cost of Party No. 3.....			6,571	96	60,609	77
Less cache-keepers.....		790	78			
One-fifth of balance assumed by Commission.....		1,156	24			
		1,946	97			
Less interest charged on four-fifths of party cost.....		28	81			
		1,918	16			
Less board.....		1,890	02			
				28	14	
						6,543 82
						§ 54,065 95

KENT & TURCOTTE,
Wm. AINSLIE,
G. A. BELL. } Auditors.

Total cost of party No. 3, from December 1, 1904, to March 31, 1905.

	§	cts.	§	cts.	§	cts.
Wages.....	6,131	56				
Add proportion North Bay office.....		3 5	68			
" Montreal ".....		124	72			
				6,571	96	6,571 96
Less cache-keepers.....				790	73	
				5,781	23	
One fifth Transcontinental Ry.....				1,156	24	
				4,624	99	
Add interest on expenditure.....				28	81	
				4,653	80	
Add board 50 months and 26 days at \$26.00 per month.....	2,362	53				
Less Transcontinental Railway one fifth.....		472	51			
				1,890	02	6,543 82
Amount due Grand Trunk Railway by the Commissioners of the Transcontinental Railway.....						28 14

Details of cost of party No. 3, from Dec. 1, 1904, to March 31, 1905.

	§	cts.	§	cts.	§	cts.
Wages.....	6,131	56				
Proportion of North Bay Office, $\frac{1}{4}$ of \$2,209 70.....		315	68			
" Montreal " $\frac{1}{4}$ of \$2,369 76.....		124	72			
		6,571	96			

KENT & TURCOTTE,
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G. A. BELL, } Auditors.

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WAGES OF CARETAKERS ON SECTION NO. 3.

November, 1904,	2	caretakers, 1 month at \$45.	\$90 00
"	2	" 11 days at \$45 per month.	33 00
December, 1904,	2	" 1 month at \$45.	90 00
"	1	" 9 days at \$45 per month.	13 06
January, 1905,	4	" 1 month at \$45.	180 00
"	1	" 17 days at \$45 per month.	24 67
February, 1905,	4	" 1 month at \$45.	180 00
March, 1905,	4	" 1 month at \$45.	180 00
			\$790 73

BOARD BILL.

November, 1904, 19 months, 17 days.
 December, 1904, 18 months, 8 days.
 January, 1905, 14 months, 28 days.
 February, 1905, 14 months, 17 days.
 March, 1905, 16 months, 22 days.
 April, 1905, 6 months, 24 days.
 Total, 90 months, 26 days.

STATEMENT showing basis upon which Assistant Chief Engineers' salaries were pro-rated from November 30, 1904, to March 31, 1905.

J. R. Stephens—

December, 1904.—7 Transcontinental, 12 Grand Trunk Pacific parties.
 January, 1905.—7 Transcontinental, 12 Grand Trunk Pacific parties.
 February, 1905.—7 Transcontinental, 12 Grand Trunk Pacific parties for one-third months.
 5 Transcontinental, 12 Grand Trunk Pacific parties, for two-third months.

G. A. Knowlton, division engineer—

December, 1904.—5 Transcontinental, 12 Grand Trunk Pacific parties.
 January, 1905.—5 Transcontinental, 2 Grand Trunk Pacific parties.
 February, 1905.—5 Transcontinental, 2 Grand Trunk Pacific parties.

B. B. Kelliher, division engineer—

December, 1904.—2 Transcontinental, 5 Grand Trunk Pacific parties.
 January, 1905.—2 Transcontinental, 5 Grand Trunk Pacific parties.
 February, 1905.—2 Transcontinental, 5 Grand Trunk Pacific parties, one-third months.

KENT & TURCOTTE,
 WM. AINSLIE,
 G. A. BELL,
 Auditors.

