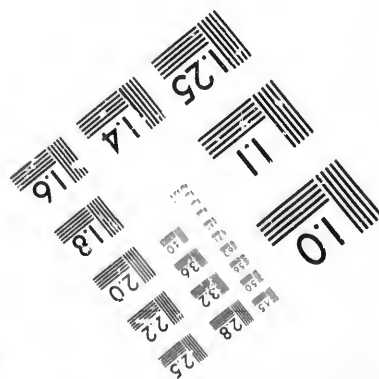
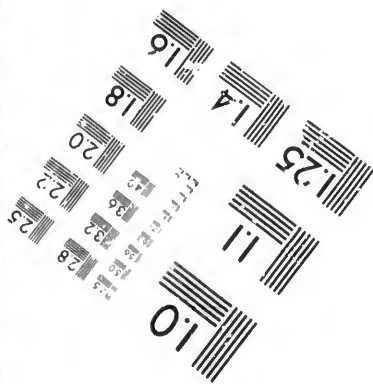
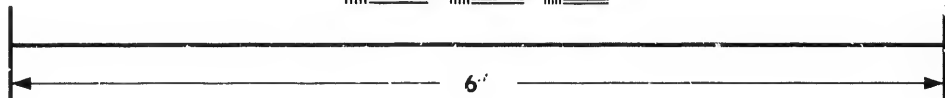
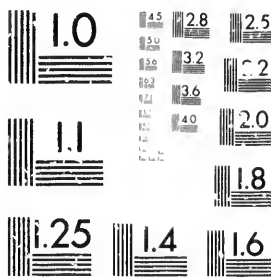
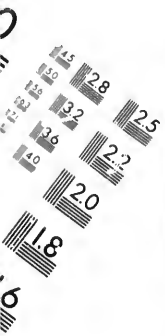


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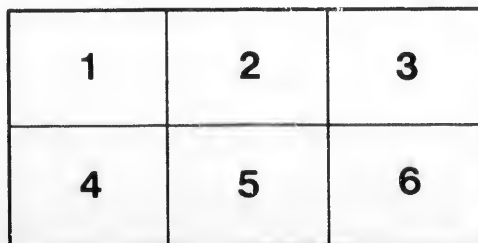
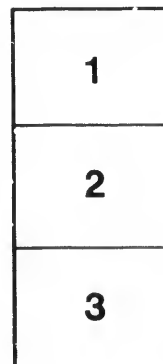
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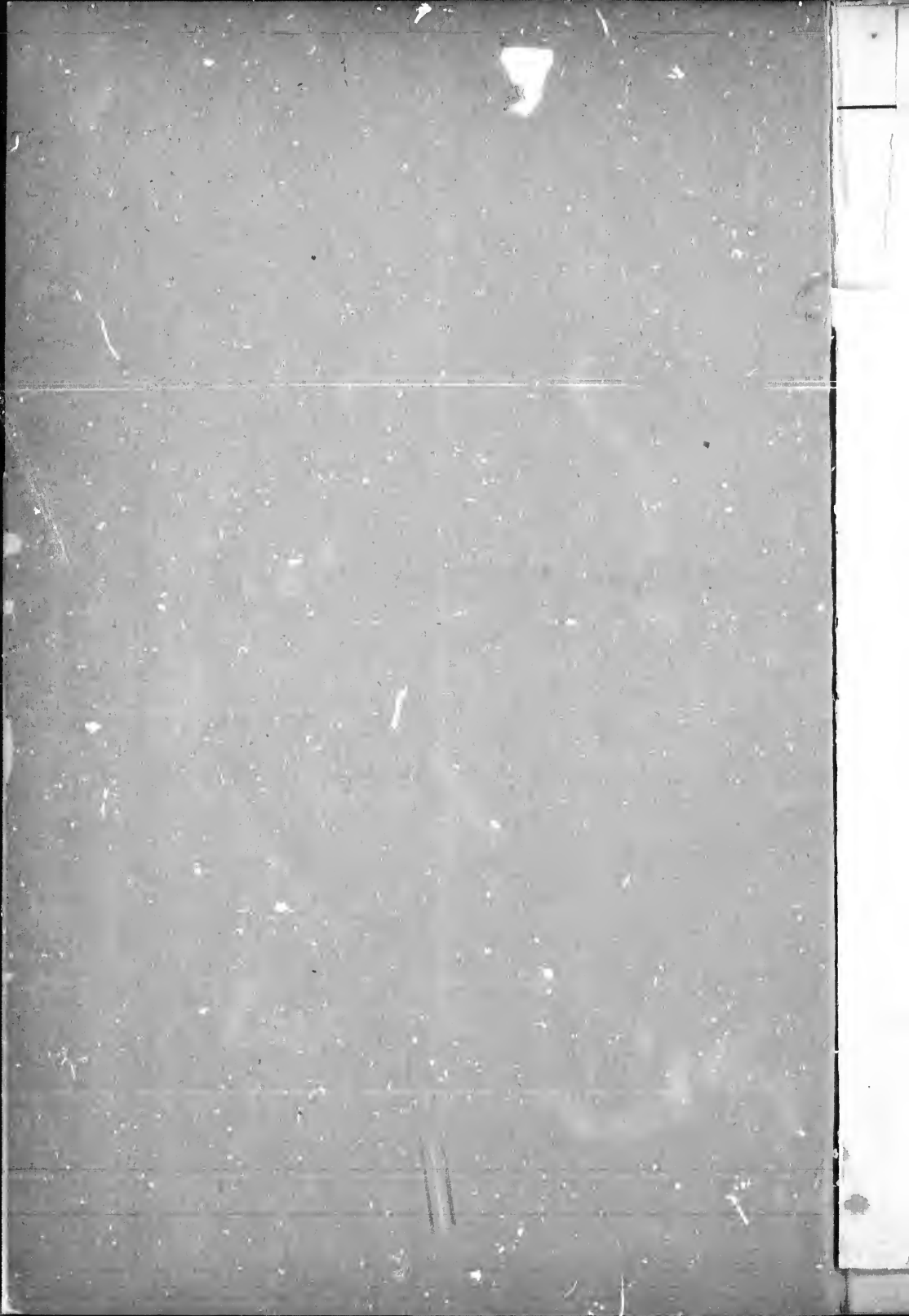
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MONTREAL & OTTAWA CITY
JUNCTION RAILWAY.

WITH TABULAR STATEMENTS APPENDED.

BY
CHARLES LEGGE, ESQ.,
CIVIL ENGINEER.

MONTREAL:
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1871.

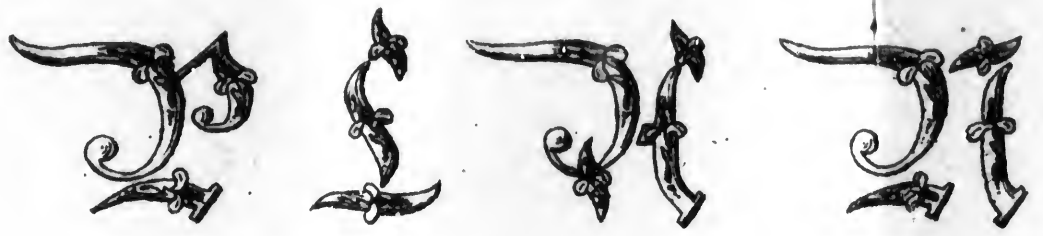




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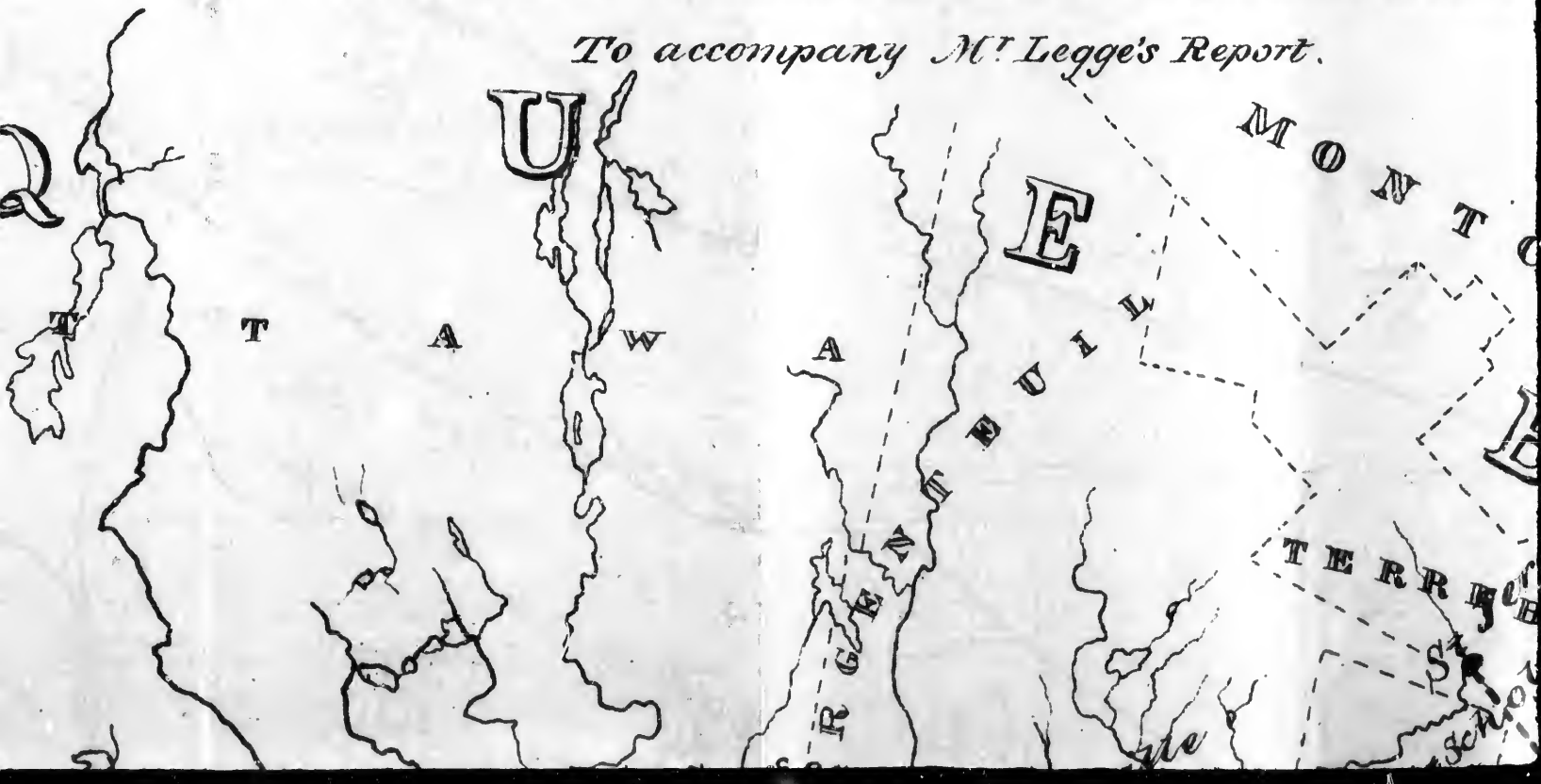
OF

OTTAWA CITY JUNCTION
WITH CONNECTIONS AND RIVAL

Scale of Statute Miles.



To accompany Mr. Legge's Report.





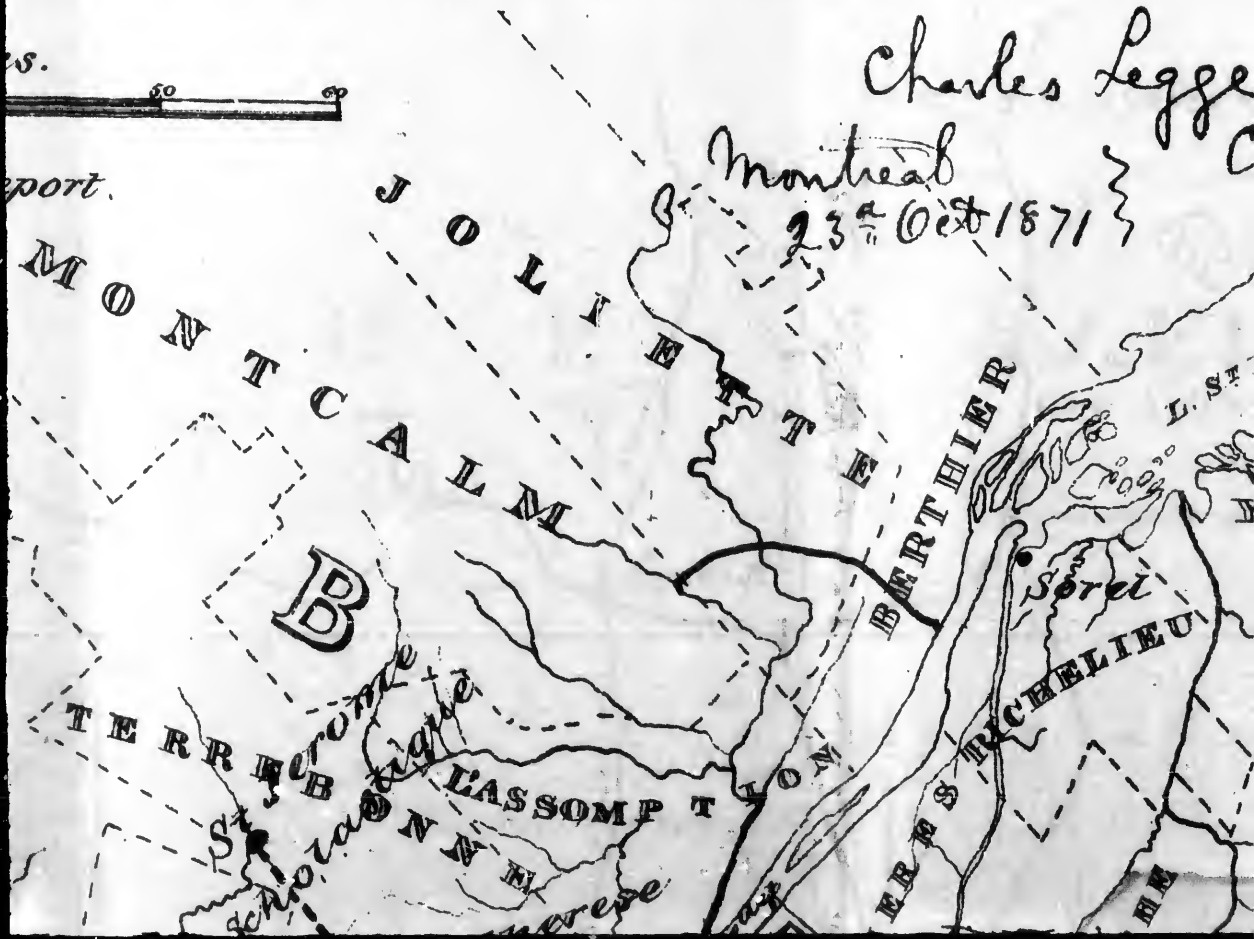
JUNCTION RAIL RIVAL ROUTES



port.

Charles Legge

Montreal
23rd Oct 1871



RAILWAY

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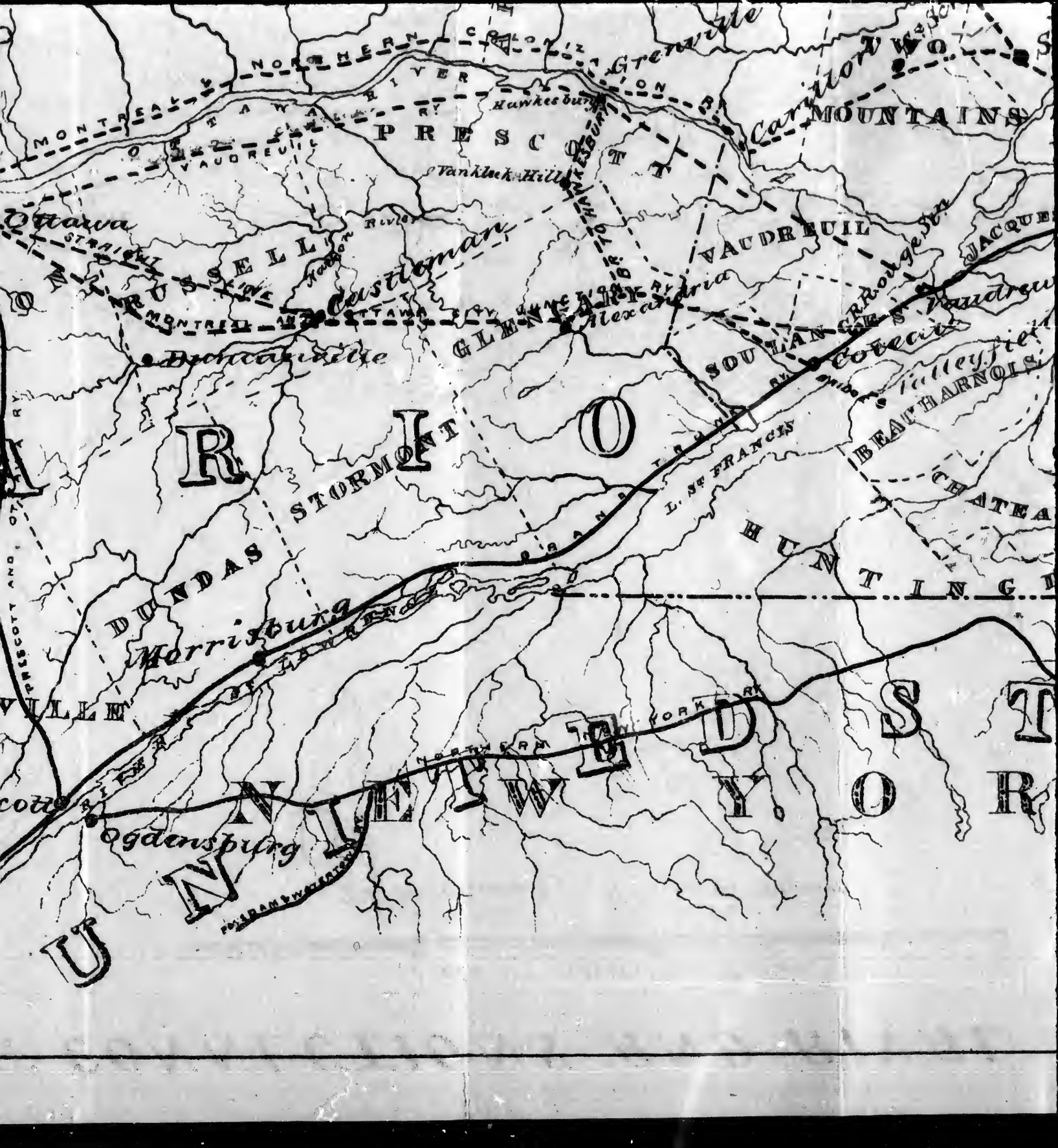
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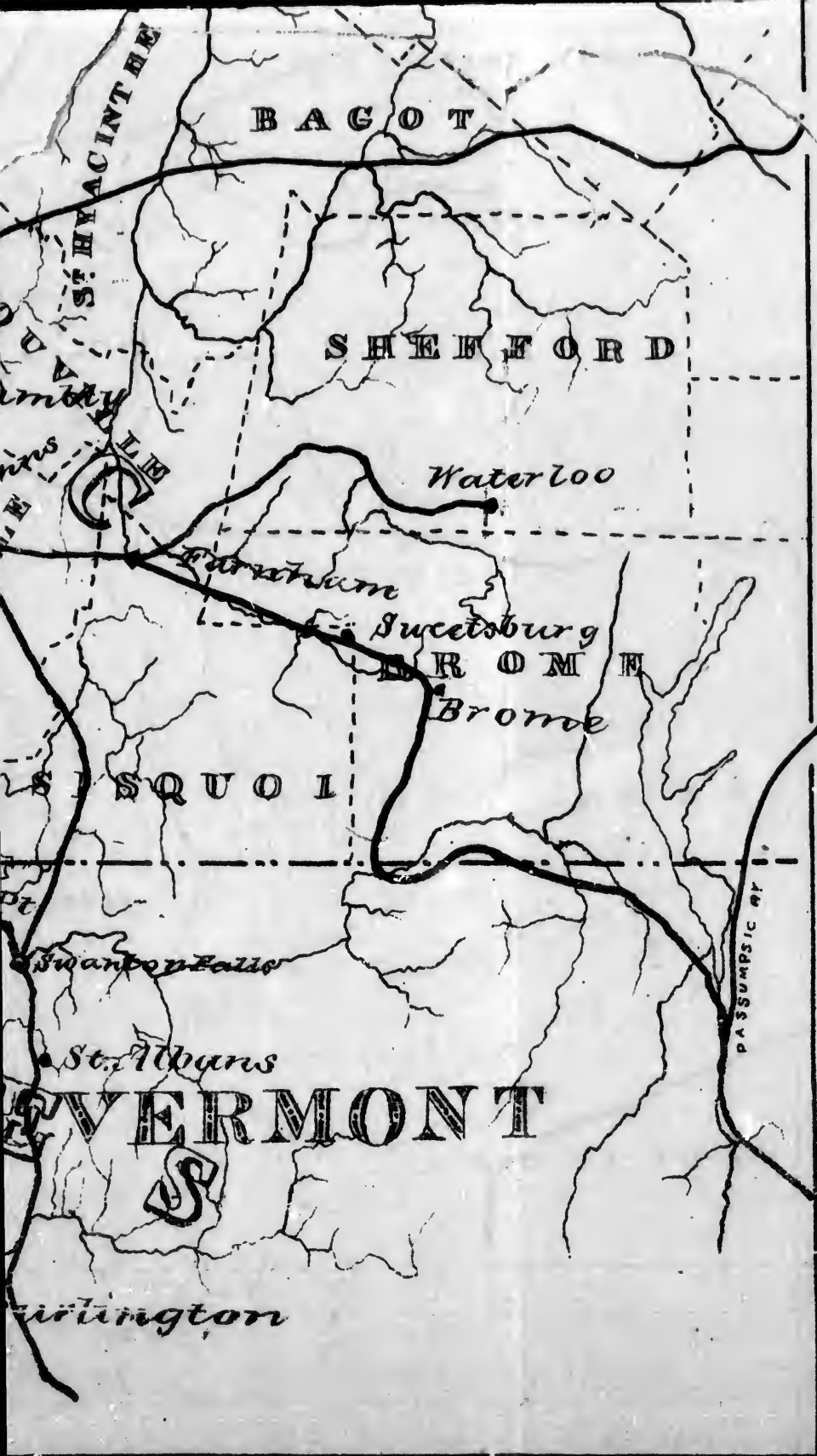
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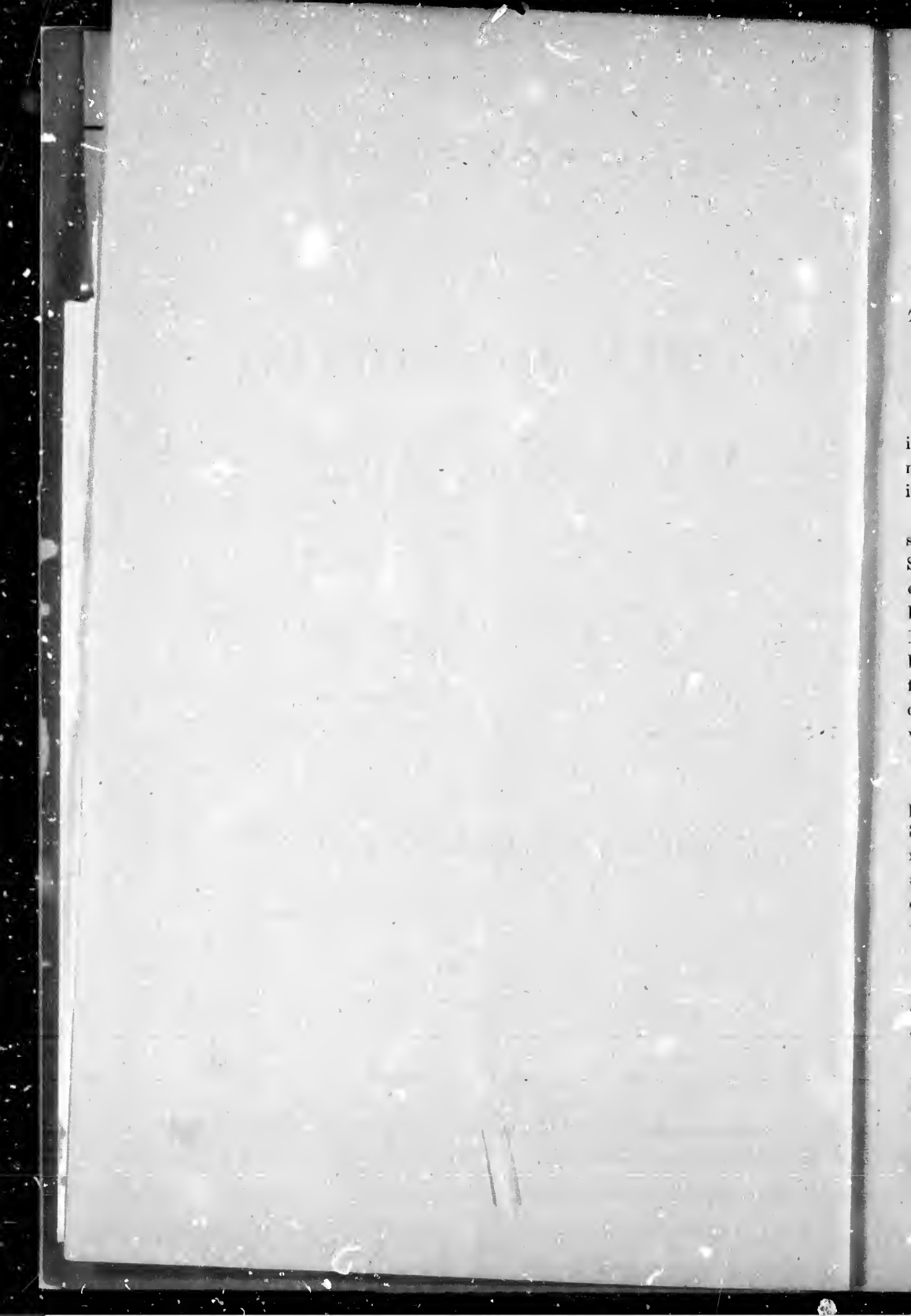
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1871.



MONTREAL, 23rd October, 1871.

To the President and Directors

MONTREAL & OTTAWA CITY JUNCTION RAILWAY:

GENTLEMEN,

On the 25th May last, I was honoured by the receipt of your instructions to proceed with a survey for a line of Railway from a suitable point, at or near the Coteau Landing Station, on the Grand Trunk Railway, to the City of Ottawa, in accordance with the provisions of a charter granted by the Dominion Government.

In the general instructions received from you at that time, I was authorized to select and examine two lines—one leaving the Grand Trunk Railway at the Coteau Station, and the second at the River Rouge Station, about four miles to the east of the first. These two distinct lines to proceed in a north-westerly direction, but converging and forming a junction near the boundary of the Parishes of Longueuil and Newton; afterwards to follow in the direction of Ottawa City by the cheapest and most direct course the character of the ground would furnish; keeping in view, at the same time, the selection of a route, which, while opening up the unsettled portions of the country to the greatest possible extent, would also yield the maximum amount of facilities to the settled or inhabited sections.

Having completed the work you required, I now beg to submit:

Firstly, a plan of the country between Montreal and Prescott, shewing the eastern portion of the Province of Ontario, or the Peninsula lying between the Ottawa and St. Lawrence Rivers, drawn to a scale of two miles to an inch. On this map will be found the various Counties and Townships through which the proposed line passes, as well as those contiguous thereto, and to be beneficially affected in a greater or lesser extent by the action of the Railway. You will also find a projected branch to Hawkesbury *via* Vankleek Hill.

This map will give, at a glance, the general course of the entire line.

Secondly, a detailed plan, drawn to a scale of four hundred feet to an inch; on it you will find delineated all the ordinary and topographical features of the country through which the line passes.

Thirdly, a profile, showing the contour of the ground, drawn to a scale of four hundred feet horizontal to twenty feet vertical. The grades, cuts, fills, bridges, culverts and character of soil will be found on this section in full detail.

A prior examination of these plans, with an occasional reference to them in the course of reading this Report, will enable you more fully to understand its general

scope. I will therefore, with these introductory remarks, at once proceed to lay before you the various results arrived at from the surveys made.

Before commencing the instrumental examination, it was thought well to make a *reconnaissance* of the country to be passed over, with the view of becoming more fully acquainted with its general character, and to select a few salient points it might be well to touch, providing they were not too far from the air line, and, at the same time, offered sufficient inducements for local traffic to warrant such a deviation.

The result of this exploration will be seen in the course followed and adopted in the instrumental survey afterwards made, a full description of which it may be well to give for the benefit of those who have not access to the plans now before you, but who may be enabled to follow and identify the localities from local knowledge, or by reference to a map of the country.

First, in relation to the branch intersecting the Grand Trunk Railway at the Coteau Landing:—

Leaving that Railway at a point thirteen hundred feet west of the station, it runs in a straight course for a distance of eight miles, or on a line about midway between the Villages of St. Polycarpe on the left, and St. Justine on the right, entering the Parish of Newton on the farm of Francis Ouimet, and forming a junction with the second branch road, which leaves the Grand Trunk Railway at River Rouge Station, running from thence, in a straight line, through the Parish of Soulanges, crossing the southern corner of the Parish of Newton, and entering the adjoining Parish of Longueuil; a total length to its point of junction with the Coteau branch of about nine and one-half miles.

From thence onward, the joint line passes through the western corner of the Parish of Newton, skirting the western slope of the St. Justine Hill, about one and one-half mile from that village, and curving northerly, crosses the road between the 4th and 5th Concessions, passing over Lots 3, 2, 1, and letter A in the 1st Concession of Lochiel, it crosses the Alexandria Road between the 1st and 2nd Concessions of that Township, and enters the south-west corner of J. Fraser's farm, there curving southerly, it proceeds westerly, parallel with, but about six hundred feet north of the Alexandria Road, to Lot No. 33. From this point, by easy curves, the line is carried in a north-westerly direction, intersecting the Military Road between Lots 37 and 38 on the northern limits of the Village of Alexandria.

This place is one of the points selected for connection, and is a flourishing village, with a population of about 800 souls. It is the centre of a large local trade and possesses a considerable amount of water power, a portion being utilized for several mills and factories, but with a surplus easily available for additional manufacturing establishments.

Before proceeding further with the description, it may be well to refer to attempts made to straighten the line near the Province Boundary.

From a point opposite the Village of St. Justine, a route was explored in the direction of Lot No. 8, in the second Concession of Lochiel. A survey of the

intervening country was abandoned when it was discovered that extensive cuttings of over fifty feet in depth were encountered. A second attempt to shorten the line, after entering the Province of Ontario, was abandoned for a like reason, and it therefore, became necessary, in order to avoid very heavy work, to carry it into the 2nd Concession of Lochiel on the track indicated.

An exploration along the rear of the 2nd Concession of Lochiel was also made, with the view of carrying the railway more northerly, or in a more central course through at Township. Leaving the surveyed line at J. Fraser's, and striking to the rear of the Concession, a very level route can be had, but principally through timber land. If this line curve south, for the purpose of coming into Alexandria, it will be about three-quarters of a mile longer than by the one in front; and, if we suppose that in the rear to continue straight on and intersect the one surveyed on Lot 4, in Kenyon, it will still be one-quarter of a mile longer than its rival, and at the same time, nearly three-quarters of a mile from the village. The front line, to a considerable extent, passes through cleared country, and saves the expense of clearing and grubbing; this on the rear will be considerable. The track in front also cuts through fine gravel hills of great value for ballasting; while, on the rear, as it passes over level ground, and of an earthy character, the ballast would probably require to be brought from the front. As the branch line to Hawkesbury passes through the back Concessions of Lochiel, that section of the Township will be served by it to a great extent.

Taking everything therefore into consideration, it is thought that public interests, as well as those of the road and of the through traffic, will be best considered by placing the Railway as indicated on the plan.

Returning to Alexandria, we resume the description of the course followed :

Curving slightly to the north, the line passes into the Township of Kenyon, and proceeds in a north-westerly direction through Concessions 3, 4, 5 and 6, passing in its course about one-fourth of a mile north of the Town Hall. It then enters the Indian Lands on the 18th Concession, crosses the 19th and south-west corner of the 20th Concession, about one-fifth of a mile south of the Congregational Church, and striking the south-west corner of the 8th Concession, Roxborough, thence in a north-westerly direction over the 9th and 10th Concessions, it enters and crosses the rear west corner of the Township of South Plantagenet and the Gore of Roxborough, coming into the Township of Cambridge, at the 6th Concession, traversing it in a westerly course, and crossing the Nation River at a point about nine hundred feet above the High Falls.

An improvement in the course of the line may be made from the boundary between Indian Lands and Roxborough, by continuing in a direct course from that point, southerly to Lot 13, in the 9th Concession of Roxborough, and from thence to a junction with the surveyed line at High Falls, in case no difficulties are encountered, which can only be ascertained by instrumental examination.

The place selected for bridging this river is considered to be a very favourable

one, and was adopted, after very considerable examination below the Falls had demonstrated that, owing to deep gullies to be crossed, no cheap line could be had in that direction.

The High Falls, or Casselman, is also a point, which, both in the interests of the road and surrounding country, should be touched by the rail. At this place, we find a very considerable water power, caused by the passage of the Nation River over a fall of forty-five feet in a short distance. This power is now partially used, but could be so, to a much greater extent.

It is in contemplation by the Ontario Government to construct a feeder, leading from the River St. Lawrence, below Prescott, into this stream, so as greatly to increase the flow of water. With this improvement in operation, the available power at High Falls will be much augmented, and the manufacturing establishments it would call into existence, in connection with the Railway, will create much freight.

At the present time, about 2,000,000 feet of lumber are cut per annum, and sent to Montreal, by rafts, *via* the Nation and Ottawa Rivers. With the road in operation, Colonel Casselman informs me, he will be prepared to saw 4,000,000 feet per annum, and transport the same to market by rail.

For a distance of eight miles above the Falls there is navigation in slack water, while for a length of thirty-two miles below, or to the far-famed Plantagenet Springs, the same thing obtains with great depth. Indeed, it is now in contemplation, to place a small steamer on this long reach during the summer months, making it a pleasant route for tourists or invalids in going to or leaving that place of resort. It would also prove a good feeder for the Railway in the conveyance of freight to the depot from the country bordering on the river.

With these facilities for traffic in operation, and the increased manufacturing operations resulting therefrom, together with the centrality of the position in a country possessing a rich and fertile soil, it does not require much prophetic knowledge to predict for Casselman a prosperous future, and as such it will prove a valuable adjunct to the Railway.

In view of these considerations, it was thought desirable to deviate slightly from the air line in a southerly direction; thereby avoiding a considerable number of gullies, that would have been encountered had the line followed a more northerly course.

From the Nation River, the line still pursues a westerly direction through the 6th and 5th Concessions, and enters the Township of Russell on Lot No. 10, in the 10th Concession, where it curves to the left, and runs to a point about one and three-quarter mile north of Duncanville, having passed over Concessions 10, 9, 8, 7, 6, 5, 4 and 3. At the intersection of the side road between Lots 15 and 16, near the boundary road of the 2nd and 3rd Concessions, the line turns to the right and heads in a direct course for Ottawa City, passing through Concessions 2 and 1, and entering the Township of Osgoole, near the division line between Lots 8 and 9, in

the 10th Concession, crossing, in its direct course, the western Lots, and striking the south-east corner of Lot 4, Concession 9, of the adjoining Township of Gloucester.

From this point, the line, still proceeding in a direct course, passes over Concessions 8, 7, 6, 5, 4 and 3, meets the intersection of the west side road, Lot 27, with that between the 2nd and 3rd Concessions, afterwards crossing Lot 13 and intervening Lots to No. 8, it curves to the left, and crosses the "St. Lawrence and Ottawa Railway" on a level, striking the Rideau River at the Rifle Ranges, and, inclining slightly to the left, passes over the Rideau Canal at a high level, to obviate a swing bridge, and enters the City of Ottawa on the line of Biddy Street, or at Cartier Square, a central point where a grand Union Depot may be placed, and an easy connection obtained with the Canada Central, or any other road entering the city.

Before taking leave of this descriptive portion of the Report referring to the location of the line, it may be well to allude briefly to that section in the neighbourhood of Duncansville.

Prior to the survey of the western end of the line, from the Nation River, a considerable amount of pressure was brought to bear on your Company to have it carried through Duncansville, a Village with a population of about 150 inhabitants, in the Township and County of Russell. Some of the arguments advanced in favour of this diversion of the road, were, that the Duncansville Station being only about two miles from the Township of Osgoode, would be the most convenient position for the trade of fully one-half of the Township, including the Village of Metcalf, distant seven miles, and the Village of Kenmore five miles, especially for freight and passengers to and from Montreal. The Village of Morewood in the Township of Winchester, distant from Duncansville eight miles, would also be much nearer to this station than to any other, and a large amount of business could be confidently looked for from these two Townships both being populous and wealthy, and no doubt was entertained but that Duncansville Station would be one of the most important for way traffic on the line. It was also maintained that a station at Embrun would be the most convenient for parts of the Townships of Winchester and Finch; the Village of Chrysler in the Township of Finch being distant from Embrun about ten miles.

Such were the representations made by the leading gentlemen of this locality, and when coupled with the offer of a bonus of \$25,000 by the Township of Russell towards the construction of the road, in the event of the line being diverted, it appeared to be good policy to meet their views to a certain extent, even at the expense of a longer through line. The route finally determined on as a compromise, and followed in the present survey, passes one and three-quarter mile to the north of Duncansville, and lengthens the main road about two miles.

This increased length will quite absorb the bonus of \$25,000 in its construction, leaving the Company with two additional miles, over which all through freight will require to be transported; against this loss is to be placed a certain amount of way

traffic to be obtained at Duncanville, but in my opinion, this would be equally sure were the line carried straight through, and the two miles saved.

As, however, a compromise was agreed on, I suppose the Company will adhere to it, but in the event of any difficulty in getting the promised bonus of \$25,000 from the municipality, or in carrying out their part of the stipulation, it would be good policy for the Railway Company to withdraw from the agreement, and straighten the road, by following the dotted line shewn on the plan, making a direct route from the Nation River to Ottawa. This will increase the distance of Duncanville from the nearest point on the Railway to about ten miles. From all the information obtained, the ground covered by the dotted line is equally favourable for the construction of a road, as that gone over by the one surveyed.

It may be well at this stage of the Report to refer a little more in detail to the proposed branch to Hawkesbury, passing through Vankleek Hill, for the construction of which application to the Ontario Government for a charter, has been made. No instrumental survey of this portion of the road is accomplished, but an examination, sufficiently thorough to warrant an opinion being formed, was carried out during the last season. The country is of a similar character to that surveyed for the main line, and will not exceed its cost per mile. The route explored leaves the main line at Lot No. 8, in the 2nd Concession, Lochiel, and follows that Lot to the rear of the 3rd Concession, from thence along the centre of lots 8 in Concessions 4, 5 and 6; the entire distance so far being nearly level, and about three-fourths cleared land. From the 6th Concession, the line will pass between Lots 8 and 9 in the 7th and 8th Concessions, and through Lot 9 in the 9th Concession, entering the Township of West Hawkesbury in the 6th Concession, passing in a direct course to the east side of Vankleek Hill, and from thence to Hawkesbury Village, connecting with the extensive lumber establishment of the Messrs. Hamilton.

From the 6th Concession of Lochiel to Vankleek Hill, the country is level, and nearly all cleared, but from the latter point to Hawkesbury, it is somewhat rolling although not seriously so. The hills to be cut through are gravel, and apparently no rock will be encountered. The entire distance is about 20 miles.

The route passes through as fine farming country as any to be found in Canada, and in a high state of cultivation. A considerable local traffic exists, but the leading item of freight will be sawed lumber from the Hamilton establishment.

These gentlemen kindly informed me that the annual product of their mills was about 45,000,000 feet B.M.; that hitherto a large per centage of this was cut in the form of deals for the European markets, rafted to Quebec, and there placed on ships. The quantity cut for the American markets, in past years, has not much exceeded 4,000,000 feet; but they were going more largely into this branch of manufacture, and during the present season will increase the amount to 8 or 10 millions of feet.

With cheap and expeditious rail transport from the Hawkesbury Mills to the leading American markets, during all seasons of the year, it is probable that even

the last mentioned quantity will be largely increased, and thereby give constant freight.

Having dwelt thus far on the proposed location of the Railway, a brief reference will be made to the character of the curvature, grades, soil, timber and bridges.

From the generally very level nature of the country, the curvature is of a remarkably favourable character.

TABLE SHEWING COMPARISON OF ALIGNMENT AND CURVATURE OF ROUTES FROM COTEAU LANDING AND RIVER ROUGE STATIONS, GRAND TRUNK RAILWAY, FOR THE MONTREAL AND OTTAWA CITY JUNCTION RAILWAY.

DESCRIPTION OF ROUTES.	Total length of Main Line.	Length of straight Line.	Length of curved Line.	Amount of Curvature.	LENGTH OF CURVED LINE.							
					1 degree; or, 11,460 ft. radius.		2 degree; or, 5,730 ft. radius.		3 degree; or, 3,820 ft. radius.		4 degree; or, 2,865 ft. radius.	
					Miles	Miles	Miles	Miles	Miles	Miles	Miles	Miles
Coteau Landing Station to Ottawa.....	78.50	65.53	13.17	802	3.08	0.60	4.83	1.28	0.55	0.63	1.63	0.56
River Rouge Station to Ottawa.....	80.00	67.23	12.77	759	3.08	0.60	4.43	1.28	0.55	1.20	1.63	0.60
Showing a difference in favour of River Rouge Line of..	.....	1.90	0.40	43	.....	.....	0.40	.....	.....	.....	.....	0.56

It will be seen by reference to the table, that in the whole length of road from Ottawa to its point of junction with the Grand Trunk Railway at River Rouge Station, a total distance of eighty miles, there are about $67\frac{1}{4}$ miles of straight, and only $12\frac{3}{4}$ miles of curved line, with but 759 degrees of curvature, or an average of $9\frac{1}{2}$ degrees per mile.

This curvature is made up of curves ranging from $\frac{1}{2}$ degree, or 11,460 feet radius, to 2 degrees, or 2865 feet radius. It may be remarked that the minimum curve on the main track of the G. T. R. is a 2 degree curve, or corresponding with the sharpest curve on our line.

In a route so favourably situated in respect to curvature, it is but natural to expect easy gradients. This supposition is fully borne out in the present instance.

For the first ten miles from the River Rouge Station, the grades do not in any place exceed 22 feet per mile, while for the greatest portion of the distance they range from level to five or six feet. The soil is clay, with no through cuts, and the grading will be made up of excavation from the side ditches.

Over the next ten miles no grade exceeds forty-five feet per mile, while in the great number of instances they run from level up to twenty-five feet, the soil being either clay or gravel. Several small cuttings occur, but in nearly all instances the hills are pure gravel, of great value for ballasting. The wood, where such occurs, is usually of a mixed character.

Between the twentieth and thirtieth miles we first encounter our steepest

grade of 52.8 per mile, or the maximum grade of the Grand Trunk Road : the average of grades on this section will not, however, exceed twenty feet to a mile. The country passed over is more rolling, the small hills cut through being in most instances composed of gravel of a superior quality for ballasting. The timber is usually mixed. From the 30th to the 33rd mile the general grade is ascending, but with an easy rate of inclination. At the latter point the summit level of the watershed between the Rivers St. Lawrence and Ottawa is attained, at a height of 222 feet above the level of the G. T. R. rail at River Rouge Station, an average rise in the entire distance of seven feet per mile. From the summit the grade descends to the fortieth mile, but at no point with a greater inclination than 52.8 feet per mile. The cuttings, where such occur, are either clay, sand or gravel, and the timber of mixed wood.

In the succeeding ten miles, the steepest grade does not exceed 29 feet to a mile, but for the greatest portion of the distance it is level or nearly so ; the soil is clay, sand and gravel ; the wood of a mixed character, but principally tamarack and pine, of a very superior description and fine growth for railway ties and lumber.

From the 50th to the 60th miles the country is almost a dead level, and no grade exceeds ten feet per mile. The embankments will be made from side cuttings of clay and sand. The timber is principally tamarack and pine

From the 60th to the 70th mile the country may be called level, there being only one short grade of about 32 feet to a mile, while the remainder are either level, or do not generally exceed five feet ; the soil still continuing to be clay or sand, and the timber principally tamarack, pine, and hemlock.

From the 70th mile to Ottawa the country continues to be very level ; the maximum grade of 52.8 occurs at Green's Creek, and again between the Rideau River and Canal. With these two exceptions the grades are either level, or but of trifling inclination sufficient to give good drainage. The soil is either clay or sand, and the timber of a mixed description.

It may be mentioned as a singular fact, that from one end of the line to the other, in as far as could be ascertained, not a single yard of rock excavation will be encountered in the grading. Gravel occurs in large quantities in most convenient localities for ballasting, not only for this line, but where it can be easily obtained for similar purposes on the Grand Trunk Railway. Tamarack timber for ties exists in great abundance about centrally on the line, and pine timber also.

A glance at the small map submitted will shew the general course of the line to be about central along the peninsula, or, in other words, following pretty nearly the summit of the water-shed between the St. Lawrence and Ottawa Rivers. In consequence of this location, but few streams are encountered, or, where met, they are usually small. The streams, and notably those flowing to the north and emptying into the Ottawa, have formed deep and wide gullies in the alluvial formation through

which they pass, increasing in extent as the main river is approached. In this manner comparatively small brooks have, in the course of ages, formed very extensive excavations, running at right angles with any railway which might be located along the course of and contiguous to the Ottawa River.

The presence of these natural obstacles materially increases the cost of a line of railway, if built where located, some twenty years ago, along the front of the Counties of Prescott and Russell, and through Vaudreuil. The extra cost of grading and bridging, under such circumstances, would probably be fifty per cent. in excess of your road, mile for mile.

A brief notice of the streams and rivers encountered will now be given, together with a description of the bridges by which they will be crossed.

If the Coteau Line be adopted, the River Delisle, near that station, will be passed by a bridge of one hundred feet span; the banks and bottom are of clay. If the River Rouge Line is selected, no stream, worthy of the name of river, will be met until we reach the Nation, about forty-seven miles from the Grand Trunk Railway. It is true that, in the neighbourhood of Alexandria, the Garry and Delisle have to be crossed, (the latter twice) but reduced or changed to the character of mere creeks, and spanned by bridges, each of thirty feet in length.

The point selected for crossing the Nation, as before stated, is extremely favourable, the bed of the river being a flat rock bottom, with easy approaches, having a depth of water not exceeding two feet during low stages, and about seven feet at high or freshet level. It is proposed to construct a bridge, with four spans of one hundred feet each, resting on masonry abutments and piers; the superstructure to be either of wood or iron, through which, it is arranged, the trains shall pass. Limestone, of good quality for building, is found on the spot; also, pine timber, with mills for sawing within a few hundred yards.

The bridge over the Rideau River will also be in four spans, of one hundred feet each, resting on a flat rock bottom, with from one to two feet deep flowing over it during low water and several feet additional during high water. The superstructure, of wood or iron, will rest on stone piers and abutments, and the trains pass through. Good building material is also found here in abundance.

In order to avoid the nuisance and danger of a swing bridge over the Rideau Canal, it has been arranged to cross on a high level, with the bridge placed at a sufficient altitude to permit vessels navigating the Canal to pass underneath. The structure will be in one span, of one hundred feet, either of wood or iron, with the track passing through, and brought on an easy grade down to the level of the ground at the Union Station on Bidy Street.

In addition to the bridges described, ample provision has been made for the flow of water from side to side of the Railway, by some forty beam and bridge culverts, with

spans ranging from ten to thirty feet, and one hundred and twenty box culverts, each of six feet sectional area discharge.

By reference to the accompanying estimates, it will be seen that the total cost of bridging, culverts, &c., on River Rouge route will amount to \$89,882, supposing that masonry abutments and piers are used in connection with wooden superstructures. If iron girders are substituted, the cost will be about \$115,882, or, say \$26,000 in excess of wood.

The land taken for railway purposes is eighty feet in width, a sufficient quantity to enable a double track to be laid at any future time, when the requirements of increased traffic may demand such extension. The extra amount required for this purpose will cost but comparatively a small sum, and it will be good policy to secure it at the outset. Of the land so taken, 510 acres are bush land, and 262 acres cleared. An extra quantity of twenty-four acres has been taken for station purposes, being at the rate of two acres for each of twelve way stations. An additional quantity of at least ten acres should be secured at Ottawa City for the Union Depot; but as this would be common to all Railways centering there, your line should be charged with but a share of the expense. What this will amount to cannot now be stated; but if, for this purpose, the Government would set apart a portion of land owned by it at this place, the cost to the respective Companies for land purchase would be but trifling.

The station buildings are intended to be cheap wooden structures, and an allowance of three miles for sidings has been added in the estimate of the length of permanent way.

The cost of grading the line has been predicated on the narrow gauge of four feet eight and one-half inches being used. To have this national gauge universally adopted is generally advocated, even the Grand Trunk Railway Company admitting its propriety, and that their road will be brought to this standard so soon as circumstances will warrant. The Canada Central Railway, running up the Ottawa Valley to Pembroke, have it in contemplation to place a third rail on their line, and any future extensions westward from Pembroke to the Sault Ste. Marie, there to unite with the Northern American Pacific Road, will conform to the gauge of that great work. If, in connection with this, we take into consideration the fact that a large amount of the traffic over your line will consist of sawed lumber for the American markets; that the national gauge of the American system of railways has now reached Montreal, *via* the Victoria Bridge, and that it can be extended to the River Rouge Station by placing a third rail for a distance of only thirty-four and one-half miles, enabling (*via* your route) trains from the Upper Ottawa, and eventually from the Pacific, to pass into the New England States and to the Eastern sea-board, without breaking bulk, it will certainly be wise policy at once to adopt a gauge on your road which will permit of this being done, making the cost of construction less in the first

instance, as well as the future working expenses, and at the same time, causing the Grand Trunk to take a step, to the extent of thirty-four and one-half miles, in carrying out their avowed policy.

To accommodate this gauge, the width of embankments on top has been placed at fifteen feet, with side slopes of one and a half to one.

Based on this assumption, the cost of the line, including sidings, *via* the River Rouge, will be \$1,004,180, or at the rate of \$12,098 per mile.

In the foregoing estimate, although fair prices have been allowed, as you will see on reference to the detailed estimates, no provision has been made for contingencies and superintendence. It is a usual practice with engineers to allow for these items about ten per cent. of the estimate. If we adopt this safe rule, the amount will be increased to \$1,104,598, or about \$13,308 per mile of permanent way, including sidings.

If iron bridges are used, the cost will be \$1,130,598, or \$13,621 per mile.

The laying of a third rail, along the line of the Grand Trunk, to Montreal will cost \$106,157, making a total sum of \$1,236,755 to be expended before the narrow gauge New England roads can connect with Ottawa City and Valley, *via* Montreal.

An estimate of the amount of money required to equip the road may be placed at \$4,000 per mile, or say \$320,000, making a grand total of \$1,556,755.

By the use of the narrow gauge as proposed, a large quantity of rolling stock from the American roads could pass over the line, especially in connection with the lumber traffic, and therefore diminish this sum.

If the broad gauge of five feet six inches be adopted, to connect with the Grand Trunk Railway, the grading and permanent way will be increased in cost, but the third rail to Montreal will be saved. The estimated amount to be expended, with iron bridges and percentage for superintendence and contingencies, &c., may be placed at \$1,237,844; with rolling stock added, this will be increased to \$1,557,844; or but \$1,089 in excess of the narrow gauge road, with third rail to Montreal.

In the event of adopting the wide gauge, the platform cars, employed in the American through lumber traffic, will have to be provided with moveable wheels, and change gauge at Montreal.

In the foregoing examination the River Rouge route has been followed. If we adopt that surveyed to and forming a junction with the Grand Trunk Railway at the Coteau Station, the length of line to be actually built from Ottawa, will be reduced to 78½ miles, but the total distance from Montreal to Ottawa City will be increased to 116 miles, or three miles more than by the River Rouge.

As both branches of the line have been surveyed to points of junction with the G. T. R., it may be well to give in a tabular form a comparative view of their rival

features, premising, however, that for about seventy miles they follow the same route.

ROUTE.	Distance, Montreal to Ottawa.	Length of Line.	Length of Bridging.	Cost per mile, including sidings, and wooden bridges.	Cost per mile, including sidings, iron bridges.	Total cost, including sidings, and iron bridges.	Total cost including sidings, iron bridge, and equipment.	Total cost to Montreal, including sidings, iron bridges, extra rail and equipment.
	Miles.	Miles.	Feet.					
Ottawa City to River Rouge Station ... }	115	50	1384	\$13,308	\$13,621	\$1,130,598	\$1,460,598	\$1,656,755
Ottawa City to Coteau Landing Station. }	116	78½	1484	\$13,410	\$13,761	\$1,121,538	\$1,435,538	\$1,650,573
In favour of River Rouge Route. }	3	.....	100	\$102	\$140	.....	.....	.....
In favour of Coteau Line	.....	1½	.....	.....	.....	\$15,060	\$13,000	\$6,182

Having now ascertained the length and cost of the line from Ottawa City to point of junction with the Grand Trunk Railway, with continuation to Montreal, and described the general features of the country traversed, it may be well to institute a comparison with other proposed and existing rival routes between these two grand terminal points, and from this learn the advantages which will result from the construction of the proposed line between these two Cities.

These rival routes may be specified as follows:—

1st. From Montreal to Ottawa City by rail, <i>via</i> Prescott Junction, } the distance is - - - - -	166 miles
2nd. From Montreal to Ottawa by Navigation - - - - -	130 "
3rd. " " " " by proposed Vaudreuil Railway, } Kingsford's survey - - - - -	119 "
4th. Montreal and By-town Line, Syke's survey, <i>via</i> St. Eustache -	119½ "
5th. Montreal Northern Colonization Road, <i>via</i> St. Therese to } Ottawa - - - - -	119½ "
6th. Montreal Northern Colonization from Ottawa to Victoria } Bridge, <i>via</i> Hochelaga - - - - -	122½ "
7th. Montreal and Ottawa City Junction, <i>via</i> River Rouge Station -	113 "
8th. " " " " <i>via</i> Coteau Landing Station	116 "

An inspection of the foregoing table of distances will at once indicate No. 7, or the line *via* River Rouge, as the most favourable in point of distance. A closer comparison of it, with several of its rivals, will be made, and after eliminating Nos. 1, 2, 4, 6 and 8 as foreign to the subject, we have remaining for this purpose the line *via* Vaudreuil, and the Northern Colonization.

With reference to this last road, it may be stated that, though six and one-half miles longer than its competitor, it has most important and distinct functions to

follow the same

Total cost including sittings, iron bridges and equipment.	Total cost to Montreal, including sittings, iron bridges, extra rail and equipment.
\$1,450,598	\$1,550,755
\$1,435,538	\$1,550,573
\$13,060	\$6,182

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perform, being largely subsidized by the Quebec Government for colonization purposes in that Province, in opening up a vast extent of country north of Montreal, which cannot be touched by either of the other lines, accommodating the extensive lumber establishments on the north shore, as well as at Hull, and connecting the same with the Montreal markets; to constitute, also, a most important outlet from the Ottawa Valley, and, as a continuation of the Pacific Railway, aid in conveying the enormous traffic of that line to and from Montreal, crossing the River St. Lawrence by an iron tubular bridge at the eastern end of the city, and uniting by a line, independent of the G.T.R., with the American roads on the south. It will also connect a portion of the trade of the Ottawa Valley and Far West with the ocean shipping at the Hochelaga end of the harbour, while the Montreal and Ottawa Junction will perform a similar function at the Point St. Charles extremity.

From Grenville upwards, this Northern Colonization road will accommodate the trade of the country on the south side of the Ottawa to a distance of from six to eight miles back from the river, as the inhabitants within that belt will find it more convenient to take the train for Montreal on the north side than to travel a greater distance south to reach the Montreal and Ottawa Junction. With a distance of from twenty-five to thirty miles between the two parallel lines, and also a navigable river intervening, there can be no local rivalry for freight, and when they reach either Ottawa or Montreal, there is enough for both. Montreal and the Province of Quebec require the Northern Colonization Road as a main trunk or Provincial line, and the work must be built.

From Hawkesbury to Ottawa, the Vaudreuil line, following the south side of the river, several miles from its bank, would prove a rival to the Northern Colonization, and also, in its entire length, to the Montreal and Ottawa Junction. The comparison of routes will therefore be narrowed down to Nos. 3 and 7, or the line from Vaudreuil with that from the River Rouge.

As will be seen by reference to the table, there is a saving in distance between Montreal and Ottawa, of six miles, by following the Montreal and Ottawa Junction line.

The length of line requiring to be built from Vaudreuil to Ottawa is ninety five miles, as against eighty miles from River Rouge.

In a detailed estimate of sixty miles of the front or river line, from Ottawa to Hawkesbury, which has come under my notice, made by a very skilful, experienced and careful engineer, (Mr. Starke, of the Canada Central Railway Company) the cost per mile was estimated at \$20,000, with wooden bridges, but without rolling stock. The remaining portion of the line, from Hawkesbury to Vaudreuil, passes over a still more uneven country, and we may fairly assume that the entire length of

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ninety-five miles will not cost less than \$20,000 per mile, or fifty per cent. in excess of that from the River Rouge.

The cost of the two lines will stand as follows:—

1st. River Rouge to Ottawa, with wooden bridges, 80 miles, at \$13,308	\$1,104,598	
Rolling stock, 80 miles, at \$4,000	320,000	
Add extra rail to Montreal	103,157	
		\$1,530,755
2nd. Vaudreuil to Ottawa, 95 miles, at \$20,000	\$1,900,000	
Rolling Stock, 95 miles, at \$4,000	380,000	
Add Extra rail to Montreal	73,848	
		\$2,353,848

Shewing an increased cost of the line *via* Vaudreuil of - \$823,093.

We will now present the two Roads in their financial aspect, and ascertain the probable amount required to be raised by issue of bonds, after having deducted from the total cost the amount of money which would be received in the form of bonuses and Government assistance; assuming that each line will get from the Ontario Government \$3,000 per mile to aid in construction.

Taking, in the first instance, the Montreal and Ottawa Junction Line:—

Ontario Government, 66 miles, at \$3,000	\$198,000
Ottawa City	100,000
Russell	25,000
Cambridge	30,000
Roxborough	15,000
Kenyon	40,000
Lechiel	40,000
Newton	12,000
Montreal	200,000
Total amount of bonuses	\$660,000
Total cost of line, wooden bridges, and equipment,	\$1,530,755
Amount to be raised on bonds	\$870,755

2nd. Vaudreuil Line:—

Ontario Government, 75 miles, at \$3,000	\$225,000
Ottawa	100,000
Counties of Prescott and Russell	120,000
Vaudreuil (assumed)	20,000
Montreal	200,000
Total bonuses	\$665,000
Total cost of line, wooden bridges and equipment,	\$2,353,848
Leaving amount to be raised on bonds	\$1,688,848
Or an excess over the Montreal and Ottawa Junction of	\$818,093.

as neither of those Cities would contribute to both lines on the south shore, it may reasonably be assumed that their bonuses would follow the Government grant, and be given to the "Montreal and Ottawa City Junction Road."

The two Companies will now enter the money-market, for the sale of their bonds, under the following very unequal conditions:—

Montreal and Ottawa City Junction Road,—total cost	- - - - -	\$1,530,755
Ontario Government grant, and bonus from Cities of Montreal, Ottawa, and Municipalities as before	- - - - -	660,000
		\$870,755
Amount to be raised on bonds	- - - - -	\$870,755
2nd. Vaudreuil and Ottawa Road,—total cost	- - - - -	\$2,353,848
Municipal grant from Counties of Prescott and Russell of \$120,000 and assumed grant from Vaudreuil of \$20,000*	- - - - -	140,000
		\$2,213,848

Shewing a difference in favour of the Montreal and Ottawa City Junction of \$1,343,093. In other words, while the first road has reached a very high bond basis, the Vaudreuil line has failed to attain that point, by the amount of the difference just mentioned, and must therefore be regarded as dead, or without financial life.

The Counties of Prescott and Russell have voted the amount mentioned as a bonus, subject to the balance of the money being raised elsewhere, but as this latter course has been demonstrated to be beyond the bounds of possibility, it now rests with those united Counties to reconsider the vote, and either devote the money to the assistance of the main line, passing through and opening up their rear Townships, or to the construction of cheap branch roads connecting with it, as for instance the 4 feet $8\frac{1}{2}$ gauge road to Hawkesbury, with a continuation from Vankleek Hill to Caledonia and Plantagenet Springs of, say, three feet gauge, in the County of Prescott. A branch of 3 feet gauge could also be carried from the main line at the High Falls, northerly through the centre of the County of Russell. These proposed narrow-gauge roads can be constructed and worked very cheaply, be of great utility to the surrounding country, and at the same time prove good feeders to the main railway.

While referring to those minor roads as being most desirable both to the country and to the main line, I must not be understood as advocating their construction at the present time, if by so doing the financial position of the main through line is weakened or impaired. Rather than have this occur, or its construction delayed, it would be preferable to devote a part, or even the whole of the County grant, in addition to the Township grants, to its immediate construction, and the minor roads will follow in due time, either with the surplus earnings of the main trunk.

*The County of Vaudreuil has since refused to grant any bonus to this Road.

after paying interest on bonds, or partly from that and other sources which may then be available.

The principle of aiding the construction of Railways by Government and municipal gifts or bonuses, is now adopted in parts of Canada and the United States. Owing to this wise policy we see the Province of Ontario and the neighbouring States covered with a network of this great system of communication.

In a sparsely settled country like ours, with comparatively a light freight and passenger traffic, and heavy running expenses during the winter season, it cannot be expected that the net returns would be sufficiently great to warrant private capital being embarked in the construction of roads to the full extent of their cost. If, however, from one-third to one-half is assumed by the public, the balance can be controlled, and capitalists prevailed on to furnish the amount, with good security for a moderate return.

That the portion furnished by the municipality is not lost, but on the contrary, is placed in a position to yield a rich harvest to the donors, we will now shew.

To illustrate this we will take the Township of Kenyon, through which the Railway passes. The bonus recently granted by this Township amounts to \$40,000.

The length of Railway to be constructed in Kenyon will be about twelve miles, and will cost in grading and other expenses, independently of iron rails and rolling stock, in the neighbourhood of \$6,000 per mile, or a total of \$72,000, which will be paid out in the form of wages, and distributed amongst the inhabitants. It will thus be seen that the municipality will have received back the \$40,000 given, together with \$32,000 additional, and have the Railway, with all its attending advantages, to the good.

To attempt a description of those advantages on this occasion, would be almost like a reflection on the intelligence of the well educated people of the different Counties traversed by the road.

I may be permitted, however, to glance very briefly at some of the leading points in this connection, and leave the inhabitants to supply the remainder from their personal knowledge.

If a few of the principal products of the country—such, for instance, as grain, wool, wood, and lumber are taken—we find that, by the present means of transport to market at Montreal in one direction, or at Ottawa in the other, the cost is about as follows:—

From Alexandria, as a central point for a large extent of fine farming country, and controlling large local trade, it costs about 15 cents per bushel for conveyance of oats and other coarse grains, required by lumbering establishments, to Ottawa City. The cost by rail will not exceed 5 cents, or a saving of 10 cents per bushel, which will nearly all go into the pockets of the farmers.

It costs \$4 per ton to draw hay twenty miles over ordinary roads, and with a selling price at from \$12 to \$16 per ton in the city, it will not pay to draw it more

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than that distance. By rail it can be removed as far for \$1; a saving of \$3 per ton to the farmer. The distance from market, at which the greatest number of farmers in this section of the country live, renders the growth and selling of hay, beyond that required for home use, unprofitable.

Hard wood cannot be drawn more than twenty miles, and at a cost of \$2.25 per cord. It can be transported that length by rail for \$1, and proportionally for longer distances; or, in other words, for a distance of at least forty miles in the central part of this portion of the Province, there is no market or sale for what should be the farmer's first paying crop, from his uncleared land, viz. cordwood.

The timber within marketable distance would be of great value, but without such facility of transport, is a source of much expense and labour in destroying it by fire to clear up the land. With the Railway in operation, every tree for a distance of twenty miles on each side of the line, becomes possessed of a cash value. When we take into consideration that nearly two-thirds of the country passed over by the line is forested, it will not be assuming too much to assert that there is a sufficient quantity of forest wood, now going to decay, to pay the interest on the entire bonuses to be given by the Townships, if the same could be sold as cordwood along the Railway. Without this cheap transport, the making of cordwood is impossible.

It costs \$4 to draw sawed pine lumber twenty miles, and \$8 for hard wood lumber, for each thousand feet, board measure. By rail, pine may be carried that distance for 30 cents, and hard wood lumber for about 50 cents per thousand; the difference in rates of course going to the producer and consumer.

I am aware that sawed lumber is hauled over twenty miles, from places in these Townships to the Grand Trunk Railway; the heavy expense attending the operation must make a large hole in the profits, and in fact, quite prevent any hard wood lumber being sent to market.

If the Railway is built, not only will many steam saw mills come into operation along the line, and greatly increased quantities of pine, hemlock, and basswood lumber be manufactured at more profit; but in addition, we will have maple, oak, ash, elm and other descriptions of lumber seeking markets from which they are now excluded, owing to cost of transport by ordinary means.

The foregoing remarks will apply equally well to every product of the farm and forest, such as cereals, root crops, cheese, butter, milk, pork, flour, cattle, bark, staves, hoops, &c., sent to market, and also to the merchandise brought into the Townships.

The passage of the first train along the line will at once double the value of real estate for ten miles on each side, and proportionally less for greater accessible distances. Since the date of the survey, I am informed that land crossed by the line and owned by the "Canada Company," has advanced from \$2 to \$8 per acre, and that, at other points, the price of property has already increased one hundred per cent. in anticipation of the railway and its "iron horse."

Reference has now more particularly to be made to one of the leading items of through traffic for the road, and it will be my endeavour to place the subject in a clear and concise manner before you, and also before the gentlemen who are so deeply interested in the matter. I refer to the "Ottawa lumber trade" and to the "Merchant Princes of the Chaudiere and Hull," who have brought it into existence.

From reliable statistics, it is ascertained that the lumber annually cut at Ottawa City, and the neighbouring Town of Hull, amounts to the enormous quantity of 240,000,000 feet. Of this, it is stated, that at least 190,000,000 feet are sent to the United States market; heretofore, principally by water, *via* Montreal, Sorel and Chambly Canal to Burlington, Whitehall and Albany, as principal distributing marts for the inland cities and towns of that country. Latterly, a portion of this transport has been performed by the St. Lawrence and Ottawa Railway, transshipping, or rather ferrying its loaded cars, at Prescott, to the Ogdensburgh Northern Road, and by this route reaching Burlington, and other New England Cities.

The relative distances from Ottawa City to Burlington by these several routes, and also by your proposed line, are as follows;—

1st. Distance by water, <i>via</i> Chambly Canal	- - - - -	310 miles
2nd. " " rail, <i>via</i> Prescott and Ogdensburgh	- - - - -	230 "
3rd. " " " <i>via</i> River Rouge and Montreal	- - - - -	213 "

It will be seen that your Railway will be 97 miles shorter than the water route, and 17 miles less than its rival line by Prescott, which is also burdened by the expense and delay of the ferry to Ogdensburgh, while your road crosses the St. Lawrence by the Victoria Bridge.

Running side by side for the same distance and under the like conditions of loading and unloading, railway transport cannot compete with that by water for a bulky article like lumber. In the present instance, however, the distances and conditions are so dissimilar that the rail leads the way both in time and cost.

As before stated, Burlington has hitherto been the distributing point for the New England States, while Albany and Troy have performed like functions for the State of New York and those to the south.

At Burlington, the lumber passes from the barges into the yards of the "middle man," or person who sells it on commission, and, in due time, is sent by rail to its ultimate destination. In passing through this stage of its history the lumber is subjected to a charge of from 20 to 25 cents per M. for transshipping, or, with the commission on sales, to about \$2 per M. in all.

This practice of retailing, or selling through a middle man at Burlington, Albany, &c., dates from the early history of the trade, and has no doubt, been continued in consequence of the water transportation terminating at those points.

With a much shorter rail route, and consequently cheaper and more speedy transport inaugurated, it does not follow that the system of middlemen should be

continued, or at least not nearly to the same extent. Ottawa and Hull should assume the position of distributing as well as producing points. In other words, those cities should ship direct to every city, town and village in the United States, where rail connection can be had, and where the Ottawa lumber is required.

The difference of \$2, or the charge of the middleman, would then pass into the pockets of the producer, or perhaps be divided about equally between him and the consumer, a result certainly more satisfactory to those parties than the present arrangement.

To illustrate this more fully the following comparison is made, shewing the cost of transport by the various routes. For this purpose we will assume the City of Boston to be the point reached in each case, and that the lumber passes through without the intervention of the Burlington middleman, and is sold on commission at Boston.

1st. Cost of transport by water, <i>via</i> Chambly Canal to Burlington,	\$3 00 per M.
Transshipping from barges to cars at Burlington	0 20 "
Transport by rail from Burlington to Boston (\$5.50 U.S. Cy., at 13 per cent. dis.)	4 35 "
Total cost for distance of 544 miles	<u>\$7 55 per M.</u>
2nd. Cost of transport by rail <i>via</i> Prescott and Burlington (\$8.40 U. S. Cy., at 13 per cent. dis.) including transshipping of cars at Ogdensburg, for a distance of 464 miles	<u>\$7 31 per M.</u>
3rd. Cost of transport by rail <i>via</i> River Rouge, Montreal, and Burlington, for a distance of 447 miles	\$7 00 per M.

Shewing a saving by your line of 55 cents per M. over the water route, and 31 cents per M. over the competing one *via* Prescott.

The same relative differences will obtain if any inland city or town be taken with Burlington as a water termination. The saving in time from Ottawa to Burlington will be, at the least, two-thirds in favour of the rail, and open the year round; while by water, for six months, the navigation is closed.

If we now assume that 190,000,000 of feet are transported by your road, the saving to the trade over the water route will be 190,000,000 feet, at \$0.55 per M., equal to \$104,500 per annum.

If a new system of purchase be introduced, with Ottawa as the selling and distributing point, and orders, with remittances, sent direct from the localities requiring the lumber, the following will be the profit to the producer over the old system, or the cost of transshipment and commission at Burlington:—

190,000,000 feet, at \$2 per M., equal to \$380,000 per annum, being an amount sufficiently great to entirely build and equip your road in four years.

It is probable, however, that this new system may not come into operation in its

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full extent for a time, and that we may only look for a partial realization of it for some years to come. Still, if it reached about half-way, or a saving, say of \$200,000 per annum, it will be stopping a huge leak in the cost of the traffic, and adding largely to the wealth of our country.

In the last few years, an extensive trade in sawed lumber has come into existence with South America, the Southern States of America, and even with Australia.

I have been favoured, by the politeness of the Hon. John Young, President of the Montreal and Dominion Boards of Trade, with the following figures, giving the yearly increase in this branch of commerce from the Port of Montreal alone:—

Shipments during the year 1867	-	-	728,116 feet.
" " " " 1868	-	-	6,407,634 "
" " " " 1869	-	-	13,806,276 "
" " " " 1870	-	-	24,998,914 "

From Ottawa to Montreal, lumber can be transported more cheaply by water than by rail: at prices, *pro rata*, with those given to Burlington, the cost per M. by water will be \$1.26, and by rail, \$1.90; or, \$0.64 per M. in favour of the barge.

The Railway will be able, however, to reach many lumber-producing points, which cannot be touched by the boats.

During seasons like the present, when the navigation of the Ottawa has been seriously interrupted by lowness of water, the delay in getting the lumber forward to Montreal must have entailed very heavy losses both on the producer, and also on the shipping interests of the Port. Many millions of feet, intended for shipment, have been unable to come down at all, while that which arrived, did so tardily, and at a considerable advance on the ordinary rates. The detention of ocean shipping has, in consequence, been great.

With the Railway in operation, all this expense and delay would have been avoided, and much greater exports been made from Montreal.

Before concluding the Report, it may be well to give a few statistics, in relation to population and the leading productions of the country to be opened up, and connected with the cities of Montreal and Ottawa, and, from this, form some general idea of the amount of traffic which will flow over the line for the benefit of those cities and of the bond holders.

Every exertion, and all the influence which could be brought to bear, were used in the endeavour to obtain from Government the returns of the census taken this year, but without success. I, however, succeeded in obtaining a close estimate of the present population of the various Townships, and, with the published census of 1860-'61, can ascertain the probable ratio of increase. A corresponding increase

may, with propriety, be applied to the products given by that census, and so furnish an approximate estimate of the present production.

I find by the returns of 1861, that the population of the Counties of Glengary, Prescott, Russell, Stormont, Carleton, Renfrew, Pontiac, Ottawa, Soulanges, Vaudreuil, and Ottawa City, amounted in the aggregate to 193,506 souls, and by a safe estimate of the same for the year 1871, to 264,000, being an increase of about 70,500, or 36 per cent. for the decade. Some gentlemen estimate a population of at least 50 per cent. more than in 1861, but for our present purpose I prefer to err on the safe side, and will therefore adopt the lesser rate.

By a careful examination of the Townships of the various Counties through which your line passes, or which will be affected by its influence during summer and winter, it is regarded as highly probable that 137,000 people will find this the most direct route to Montreal, independently of the large travel from the south and east, to and from the Dominion Capital. What this latter may amount to is difficult to state. With the Railway giving a direct through route from Montreal to Ottawa, many American tourists will take this line of travel during the summer, and pass through by the Prescott or Canada Central Roads to the west, or *vice versa*; we shall be quite within the limit in placing this number at 13,000 a year.

It may consequently be safely assumed, of the total population depending on the Railway for journeys to and from Montreal, or Ottawa, that at least one trip a year will be made, say to a total average distance of 40 miles, at an expenditure of \$1 for each of the 150,000.

In the accompanying table of the leading agricultural products of the several counties traversed by the line, or influenced by it, we have allowed one-half of the estimated total quantity as coming directly within the carrying range of the Road, and that with the facilities offered, at least one-half of this last amount, or 96,715 tons, will be sent to market, either to Montreal or Ottawa City; that the average distance carried over the road will be 20 miles; also, that one-fifth of the amount of this outward tonnage will come inward in the form of merchandize, &c., making a total of 116,000 tons, at 4 cents a ton per mile, for 20 miles, or a charge of 80 cents per ton.

It has been shewn that a great saving will be effected in the carrying of lumber by this route over all others, and no doubt it will command a great per centage of the entire traffic. To move the total quantity of 190,000,000 feet will require 19,000 car loads, carrying 10,000 feet per car, or six trains, each made up of ten loaded cars, during every working day of the year.

To be far within the realm of safety, we will assume that but one-third of this quantity is carried by your Road, amounting, with way lumber, to 65,000,000 feet, at the rate of \$1.26 per M., for 80 miles.

Abstracting the leading items mentioned, we have the following traffic results :—

Passengers, 150,000 at \$1	- - - - -	\$150,000
Freight, 116,000 tons at 80 cents	- - - - -	92,800
Lumber, 65,000,000 feet at \$1.26 per M.	- - - - -	81,900

Total annual traffic	- - - - -	\$224,700
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Now, if the large allowance of 80 per cent. for traffic expenses, wear and tear, and renewals, be allowed, there will be on this account	- - - - -	259,760
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Leaving a balance of	- - - - -	\$64,940
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to meet the interest on the bonds.

After deducting bonuses, the balance to be raised on bonds by the preceding estimate was	- - - - -	\$870,755
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Or with Iron Bridges	- - - - -	896,755
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If these bonds are floated at 7 per cent. par value, the annual interest will amount to	- - - - -	62,772
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But then there is a surplus of earnings, after paying all traffic and renewal expenses, of	- - - - -	64,940
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Or leaving a net balance of, say, \$2,000, after meeting the interest on the bonds, and all other charges.	- - - - -	
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In making an examination of the data on which the foregoing results are based, you, no doubt, will consider that a much more favourable exhibit could be made in favour of traffic returns. In this opinion you would be correct, but I have considered it a duty to keep considerably within the mark in every respect.

With the Canadian extension of the "Northern American Pacific," *via* the Sault Ste. Marie, or the "Canadian Pacific," on the north shore of Lake Superior, or the construction of the inland route from Toronto, all of which centre in Ottawa City, your Road, from its more direct connection with Montreal than by any other route, will command a full share of the great through traffic of these lines, as well as of that of the Ottawa Valley to the west of Ottawa City, now rapidly filling up with settlers. All this will be in addition to the merely local business between Ottawa and Montreal, which has alone been considered or embraced in the present estimate.

This will also be the postal route between the Capital and the south and east, as well as for the European mails, and will be entitled to a Government subsidy, for the service, of from \$8,000 to \$10,000 per annum.

It now rests with the inhabitants of the counties, and of the two cities, Montreal and Ottawa, all of whom will be so largely benefited by this road, to put their shoulders to the wheel and move it forward. Motion in this direction will be life and prosperity to all classes; inactivity will result in material stagnation and poverty.

The Engineer has endeavoured, with the best of his ability, to point out the

route over which these good results will flow. It is for the people, if they accept the correctness of his conclusions, to put them in force by giving a bond basis to the road, in the granting of the several bonuses required; the balance will readily be obtained by the Company, and the enterprise crowned with success.

I cannot conclude without an expression of thanks for the valuable services of one of your Directors, Mr. McNab, Reeve of Lochiel. This gentleman kindly accompanied the party during the whole course of the survey, and, from his knowledge of the country, was of great use. It may also be proper to return, through you, the thanks of myself and staff to the inhabitants with whom we came in contact, for the courtesy and hospitality shewn during the time we "camped in their midst."

To Mr. Malsburg, the Engineer directly charged with the work, is due great credit for the energetic and skilful manner in which the survey was conducted, and for the admirable style in which the results have been delineated on the plans, aided in the latter work by Mr. Reynolds, of my office staff. Mr. Malsburg was also assisted by Mr. Macfarlane, C.E., to whom was entrusted the charge of the levels, and who acquitted himself very satisfactorily.

To these gentlemen, aided by "the strong and willing arms of the Glengary Highlanders," who wielded the axes, is to be attributed the successful completion of surveys to the extent of 93 miles, two-thirds of which were through heavy bush land, in the short space of forty-four working days.

I have the honour to be,

Gentlemen,

Your obedient servant,

CHARLES LEGGE,
Civil Engineer.

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EGGE,
 Civil Engineer.

POPULATION OF VARIOUS COUNTIES BY CENSUS OF 1861, WITH
 APPROXIMATE ESTIMATE OF INCREASE IN 1870, AND PROPOR-
 TION OF THE POPULATION TO WHOM THE RAILWAY WILL GIVE
 TRAVELLING FACILITIES:—

	Year 1861.	Estimated for 1871.	Under direct influence of Railway.	
Glengary	21,187	26,000	$\frac{2}{3}$	17,000
Prescott	15,499	20,000	$\frac{1}{2}$	10,000
Russell	6,824	10,000	$\frac{1}{2}$	5,000
Stormont	18,129	24,000	$\frac{1}{2}$	8,000
Carleton	29,620	39,000	$\frac{1}{2}$	19,500
Ottawa City	14,669	23,000	all	23,000
Renfrew	20,325	27,000	$\frac{1}{2}$	13,500
Pontiac	14,993	24,000	all	24,000
Ottawa County	27,757	37,000	$\frac{1}{2}$	9,250
Soulanges	12,221	17,000	1-5	3,400
Vaudreuil	12,282	17,000	$\frac{1}{4}$	4,250
Total	193,506	264,000		136,900, say 137,000

CHARLES LEGGE, C.E.

MONTREAL, 23rd October, 1871.

BE SHEWING AGRICULTURAL PRODUCTIONS, VALUE OF STOCK AND FARMS, WITH NUMBER OF ACRES CLEARED AND UNDER BUSH, IN THE FOLLOWING COUNTIES, BY THE CENSUS OF 1860-61: ALSO, THE ESTIMATED CONDITION OF SAME FOR THE YEAR 1870, WITH TOTAL TONNAGE OF FARM PRODUCE WHICH WILL PROBABLY PASS OVER THE ROAD TO MONTREAL AND OTTAWA CITIES:—

COUNTRIES.	PRODUCE AT LAST CENSUS.										Value of Live Stock.	Cash Value of farms & implements.	Land held in acres.	Woods and Wildlands, acres.	Land cultivated, acres.
	Cereals..	Root Crops	Hay.	Butter.	esse.	Beef & Pork	hrls.	lbs.	lbs.	hrls.					
Glengary	bushels. 809,336	bushels. 229,434	tons. 18,505	lbs. 429,661	lbs. 122,627	hrls. 5,138	lbs. 44,724	\$660,548	\$4,135,687	277,421	177,541	99,880.			
Prescott	466,785	248,486	12,290	308,671	344,436	4,184	60,824	354,639	1,927,354	145,223	91,289	53,934			
Russell	159,687	91,357	5,424	108,922	4,316	1,516	1,669,418	155,958	835,290	72,715	52,003	20,712			
Stormont	630,551	176,756	13,249	361,217	22,023	5,008	1,042,779	2,378,844	193,180	113,109	80,071	89,071			
Carlton	1,032,653	901,719	31,334	684,175	23,932	13,673	3,766,770	866,182	6,281,055	406,671	257,625	149,046			
Renfrew	604,190	456,920	12,606	280,675	12,173	6,510	1,669,418	469,507	1,832,438	360,647	275,186	83,461			
Southages	529,908	81,459	4,386	157,331	11,287	4,081	3,766,770	331,406	2,828,927	93,756	25,332	69,394			
Vanderkul	458,113	109,640	5,964	255,788	8,576	4,614	3,766,770	398,776	3,219,426	119,835	50,694	69,141			
Total for year 1860	4,691,225	2,295,771	103,748	2,586,440	549,372	44,724	3,766,770	\$23,440,021	\$23,440,021	1,669,418	1,042,779	626,639			
Adding 36 p.c. for increase to 1870.	6,380,066	3,122,248	141,097	3,517,558	747,145	60,824	\$5,122,807	\$31,878,428	\$31,878,428	1,669,418	817,189	852,229			
Amount within the influence of the Road, say one-half	3,190,033	1,561,124	70,548	1,758,779	373,573	30,412	\$2,561,403	\$15,939,214	\$15,939,214	834,709	408,594	426,114			
Estimated amount of crops sent to market, say one-half	1,595,016	780,562	35,274	879,389	186,786	15,206									
Amount in tons to pass over Rail-way, say to an average distance of 20 miles, at 4 cents per mile..	39,875	19,514	38,274	439	93	1,520									

Of Farm Produce, say one-half or 4387 tons, will reach Montreal annually, and the remaining 18343 will go to Ottawa City, and number establishments of the Upper Ottawa.

Or, say 116,000 tons.

Total TONS.
Outwards 96,715
Inwards, say one-half - 18,343
116,068

MONTREAL, 23rd October, 1871.

CHARLES LEGGE, C.E.

THE SHEWING AGRICULTURAL PRODUCTIONS, VALUE OF STOCK AND FARMS, WITH NUMBER OF ACRES CLEARED AND UNDER BUSH, IN THE FOLLOWING COUNTIES, BY THE CENSUS OF 1860-61; ALSO, THE ESTIMATED CONDITION OF SAME FOR THE YEAR 1870, WITH TOTAL TONNAGE OF FARM PRODUCE WHICH WILL PROBABLY PASS OVER THE ROAD TO MONTREAL AND OTTAWA CITIES:—

COUNTIES.

PRODUCTS AT LAST CENSUS.

Value of Live Stock.	Cash Value of Farms & Farming.	Land held in acres.	Woods and Wildlands, cultivated.	Land cultivated.
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CHARLES LEGGE, Esq.,

Civil Engineer,

MONTREAL:

SIR,—

I beg to acknowledge the receipt of your Plans and Final Report of the MONTREAL AND OTTAWA CITY JUNCTION RAILWAY Survey, and to express to you, on behalf of the Directors, their high appreciation of the able manner in which the work has been executed—both as respects the Plans and Profiles of the Line, and your searching and satisfactory Report.

I take this opportunity, also, of expressing the pleasure which the Directors experienced in their intercourse with you, your assistant Mr. Malsburg, and the other Members of your Engineering Staff, while the Survey was in progress.

I may also add, that no complaints of damage or trespass on their property have been made to the Directors by the people along the surveyed route; on the contrary, the inhabitants everywhere declare their entire satisfaction with the judgment and fairness displayed by you, on all occasions, and in all your transactions with them.

D. A. MACDONALD,

President.

ALEXANDRIA, 10th November, 1871.

MONTREAL & OTTAWA CITY JUNCTION RAILWAY COMPANY.

INCORPORATED 1871.

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UNCTION

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