BRITISH NORTH AMERICA.

FINAL REPORT OF THE OFFICERS

EMPLOYED ON THE

SURVEY OF THE LINE

FOR THE

QUEBEC AND HALIFAX RAILWAY,

WITH THE

SUBSEQUENT CORRESPONDENCE THEREON;

AND ON

PUBLIC WORKS IN CANADA.

Presented to both Houses of Parliament by Command of Her Majesty,
FEBRUARY 1849.

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SCHEDULE.

DESPATCHES FROM THE RIGHT HON. EARL GREY, SECRETARY OF STATE.

DESPATCHES FROM THE RIGHT HON. THE EARL OF ELGIN AND KINCARDINE, GOVERNOR-GENERAL OF CANADA.

DESPATCHES FROM SIR E. HEAD, LIEUTENANT-GOVERNOR OF NEW BRUNSWICK.

DESPATCH FROM SIR J. HARVEY, LIEUTENANT-GOVERNOR OF NOVA SCOTIA.

* Similar Despatches to the Lieutenant-Governors of Nova Scotia and New Brunswick.

† This Despatch will be found printed at page 19 of the Papers relative to Emigration to British North America. Presented to both Houses by Command, February, 1849.

PAPERS

RELATIVE TO

THE QUEBEC AND HALIFAX RAILWAY, AND PUBLIC WORKS IN CANADA.

Despatches from the Right Hon. Earl Grey, Secretary of State.

(No. 299.*) No. 1.

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No. 1.

COPY of a DESPATCH from Earl GREY to Governor-General the Earl of ELGIN AND KINCARDINE.

MY LORD, Downing-street, November 17, 1848.

1. THE Commissioners appointed by Her Majesty's Government to explore and survey the line of country offering the greatest advantages for the formation of a railway from Halifax, through New Brunswick to Quebec, having completed the duties with which they were charged, I have now the honour to transmit to your Lordship the final report of Major Robinson, addressed to the Inspector-General of Fortifications.

August 31, 1848.

2. I have perused this able document with the interest and attention it so well merits, and I have to convey to you the assurance of Her Majesty's Government that we fully appreciate the importance of the proposed undertaking, and entertain no doubt of the great advantages which would result, not only to the provinces interested in the work, but to the empire at large, from the construction of such a railway; but great as these advantages would be, it is impossible not to be sensible that the obstacles to be overcome in providing for so large an expenditure as would be thus incurred would be of a very formidable kind.

Before, therefore, Her Majesty's Government proceed to consider the question as to whether any steps should be taken to carry this plan into effect, it is necessary that we should be informed how the several provinces would be prepared to co-operate in its execution.

3. It is obvious that the cost of the work would be too great as compared to the return to be anticipated from the probable traffic, to give reasonable hope of its being undertaken by any Company as a private speculation. The question, therefore, arises whether it would be expedient that in some form public assistance should be given towards the accomplishment of an object in which the public is so much interested.

4. The answer to this question must, in a great measure, depend upon the degree of importance which the provinces attach to the opening of this line of communication, and upon the amount of exertion they would be prepared to make for the purpose. I am, therefore, anxious that the subject should be brought under the early consideration of the respective Legislatures, and that I should be placed in possession of their views with respect to it as soon as may be practicable.

5. In forming a judgment as to whether public assistance ought to be given towards the execution of the work, it will be necessary to take into consideration the different ways in which this might be done. Various modes of proceeding have been proposed: one is that of endeavouring to form a Company, by guaranteeing to them a certain minimum interest on the capital, to be invested in the undertaking.

This plan would, no doubt, possess some advantages, but on the other hand it would be attended with the disadvantage of depriving the public of the proper control over a great national work, and also of having a tendency to encourage inattention to economy both in the construction and subsequent working of the line. This last objection has been met by proposing that any Company formed

* Similar Despatches addressed to the Lieut.-Governors of Nova Scotia (No. 131, Nov. 17) and New Brunswick (No. 78, Nov. 17).

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to construct the line should receive assistance, not in the form of a guarantee of any given rate of interest, but of a fixed payment either of capital towards the execution of the work, or of an annual sum of money in addition to the receipts derived from traffic when the line is completed.

6. Another plan which has been suggested is that the required capital should be raised by loan by the Government, and contracts entered into for the formation of the line which, when finished, could be worked either by the Government or by any Company formed for that purpose, and to which Company the working of the line might be leased, under such conditions and for such a period as might be deemed advisable. The objections to this proposal are those usually raised against the undertaking of such a work by a Government, while on the other hand it would be attended with these advantages: first, that probably the capital required would there be raised on better terms than could otherwise be expected, and secondly that the Government would have a more complete control over a great national line of communication.

7. I am not able at present to pronounce any opinion in favour of one or other of these plans, or even in favour of the measure being attempted at all; but I merely throw out these different suggestions for the consideration of your Lordship and of the Executive Council and Legislature of Canada.

8. It will further be very material to consider what return is to be expected for the outlay, and from what source the means of affording any pecuniary assistance, to be given by the respective provinces, can best be provided. Upon this part of the subject I have to remark that, in estimating the probable return which the railway would yield, it appears to me highly necessary to advert not only to the direct return from the traffic, but to the indirect return from the increased value given to the lands through which it will pass. That the opening of the line would, in the districts it traversed, greatly enhance the value of the lands which are still lying waste, and also, though in an inferior degree, the value of those already settled, there can be no reasonable doubt, though I do not possess the means of judging whether the amount of that increased value has been correctly estimated by Major Robinson in his report. Hence it seems to follow that this increased value ought to be made available towards the execution of the work, and I would suggest, for the consideration of the Colonial Authorities, whether it might not be advisable that Acts should be passed vesting in the hands of the Commissioners, to be appointed for that purpose, all the hitherto ungranted lands lying within a certain distance of the line, in order that these lands might be sold or otherwise appropriated for the promotion of the undertaking.

9. It might also, I think, be very reasonably enacted that lands lying within a given distance of the line should be subjected, on its being completed and opened, to some moderate charge in the nature of a rate in consideration of the benefit the proprietors receive from it. The practice is general both in this country and in America of rating for the highways the property which is benefited by them, and I can see no reason why this rule should not be extended to railways. Should this suggestion be adopted, it would, I think, be expedient to give the owners of lands subjected to this charge the option of redeeming it upon easy terms, and of paying in land where they might have a difficulty in doing so in money.

I understand from Major Robinson that the owners of land in one portion of Nova Scotia have already offered to contribute liberally to this object.

10. In addition to the value which the different Legislatures would be prepared to contribute in land, or by the imposition of a local charge upon lands benefited by the line, it would be necessary also for them to consider respectively what amount they would be willing to grant from the general revenue of the provinces towards the payment either of the interest of a loan to be raised for the execution of the work, or towards the sum which might be required to make good the engagements entered into with any Company that might undertake it.

11. The whole subject is one of the very highest importance on which I shall be anxious to learn the conclusions to which the Colonial Authorities may come, after mature consideration, and after such communication with each other as may be necessary.

I have, &c.,
(Signed) GREY.

The Right Hon. Earl of Elgin and Kincardine,
&c. &c. &c.

Enclosure in No. 1.

REPORT on the Proposed Trunk Line of Railway from an Eastern Port in Novia Scotia, through New Brunswick, to Quebec.

Halifax, Nova Scotia, August 31, 1848.

THREE principal lines or routes for a trunk line of railway present themselves for consideration; and by combining portions of two of these lines together, a fourth and fifth route may be formed.

1st. Commencing at Halifax and crossing the province of Nova Scotia to a port in the Bay of Fundy, from thence by a steamer to St. John, in New Brunswick, and then by Fredericton along the St. John River to the Grand Falls.

From the Grand Falls by the best practicable route across to the mouth of the Rivière du Loup, on the St. Lawrence, and by the right bank of the St. Lawrence to Quebec.

The distance by this route would be as follows:—

	Miles.
Halifax to Windsor	45
Windsor to Annapolis	85
Annapolis to entrance Bay of Fundy	11
Across Bay of Fundy to St. John (by sea)	45
St. John to Fredericton	65
Fredericton to Woodstock	62
Woodstock to the Grand Falls	71
The Grand Falls to the mouth of the Rivière de Loup	106
Rivière du Loup to Quebec	110
Total distance Halifax by the St. John River to Quebec	600

This line may be termed a mixed route, by railway and steam-boat.

2nd. Commencing at Halifax and running to Truro at the head of the Bay of Fundy, thence over the Cumberland Mountains to Amherst, then along the coast from Bay Verte to Shediac, thence by a north-westerly course, crossing the rivers Richibucto and Miramichi above the flow of the tide, so as not to interfere with the navigation.

Then by the valley of the north-western Miramichi to Bathurst, on the Bay Chaleurs, along the coast of this bay to the Restigouche river, and by it and the valley of the river Metapedia to the St. Lawrence, and by the right bank of the St. Lawrence to Quebec.

The distance by this route would be as follows:—

	Miles.
Halifax to Truro	55
Truro to Amherst and Bay Verte	69
Bay Verte to Shediac	26
Shediac to Miramichi River	74
Miramichi River to Bathurst	56
Bathurst to the Eel River, near Dalhousie	48
Dalhousie to the mouth of the Metapedia River	30
Metapedia River to the mouth of the Naget River, near the St. Lawrence	86
Along the St. Lawrence from this point to Quebec	191
Total distance by this route	635

This, for the sake of reference, may be called the Halifax and eastern or Bay Chaleurs route, through New Brunswick to Quebec.

3rd. Commencing at the harbour of Whitehaven, near Canso, at the north-eastern extremity of Nova Scotia, thence along the Atlantic coast to Country Harbour and valley of the river St. Mary, thence by or near to Pictou and along the northern shore to Bay Verte.

From Bay Verte to or near to the bend of Petitcodiac, thence across to Boistown, and northerly to the Restigouche River, crossing it several miles to the east of the Grand Falls.

From thence by the most direct and practical course to the Trois Pistoles River, and along the right bank of the St. Lawrence to Quebec.

The distance by this route would be nearly as follows:—

	Miles.
Whitehaven to Country Harbour	40
Country Harbour to St. Mary's Valley and Pictou	64
Pictou and along the coast to Bay Verte	77
Bay Verte to Bend of Petitcodiac	40
Petitcodiac to Boistown	80
Boistown to the crossing of the Restigouche River	115
Restigouche River to Trois Pistoles, by the Kedgwick and Rimouski Vallies	105
Along the St. Lawrence to Quebec	131
Total distance from Whitehaven by Boistown to Quebec	652

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This may be termed the direct route.

4th. Combining the Halifax route through Nova Scotia, and the direct route through the centre of New Brunswick.

The distances will be probably as under:—

	Miles.	
From Halifax by Truro and Amherst to Bay Verte, as per Route No. 2	124	In Nova Scotia.
Bay Verte to the Bend of Petitcodiac, Boistown, Restigouche River, as per route No. 3	235	In New Brunswick.
By the Kedgwick and Rimouski, to the mouth of the Torcadi	75	In Canada.
Mouth of the Torcadi to the crossing of the Trois Pistoles River	30	
Along the St. Lawrence River to Quebec	131	
Total distance from Halifax to Quebec by this route	595	

5th. Combining the Whitehaven route through Nova Scotia, with the Eastern or Bay Chaleurs route through New Brunswick to Quebec, the distances will be as under:—

	Miles.	
From Whitehaven by Pictou and the North Coast to Bay Verte, as in route No. 3	181	In Nova Scotia.
From Bay Verte to the Bay Chaleurs, and mouth of the Metapedia, as in route No. 2	234	In New Brunswick.
Mouth of the Metapedia River to the mouth of the Naget	86	In Canada.
Along the St. Lawrence to Quebec	191	
Total distance from Whitehaven to Quebec by this route	692	

Thus the distances will be as under:—

	Miles.
1st. By the mixed route, Halifax to Annapolis, by the St. John to Quebec, the distance will be	600
2nd. By the Halifax and Eastern, or Bay Chaleurs route, to Quebec	635
3rd. By the direct route, Whitehaven, Boistown, and Quebec	652
4th. By the Halifax, Truro, Amherst, and Boistown, to Quebec	595
5th. By the Whitehaven, Bay Verte, and Bay Chaleurs, to Quebec	692

The first line fails in the most essential object contemplated by the proposed railway, viz., a free and uninterrupted communication at all times and seasons of the year from the port of arrival on the Atlantic terminus in Nova Scotia to Quebec.

The intervention of the Bay of Fundy is fatal to this route.

In summer the transshipment of passengers and goods to and fro would be attended with the greatest inconvenience, loss of time and additional expense; whilst in winter it would be even still more inconvenient, and liable to be interrupted by storms and the floating masses of ice which then occur in the bay.

In the case of the conveyance of troops, transport of artillery and munitions of war, the crossing the bay would at any time be most objectionable; and if suddenly required in critical times, might be attended with the worst consequences.

Commercially, too, it would destroy the fair prospect of the proposed line from Quebec to Halifax, competing successfully with the route by the Gulf of the St. Lawrence, and with rival lines in the neighbouring States.

But there are also other serious objections to be offered against it.

Passing through New Brunswick, and on the right bank of the St. John River, as it must necessarily do, to the Grand Falls, it would for a considerable distance, both before and after the reaching that point, run along and close to the frontier of the United States.

In case of war, therefore, or in times of internal commotion, when border quarrels or border sympathies are excited, this line, when most needed, would be the most sure to fail, for no measures could be taken which would at all times effectually guard it from an open enemy, and from treacherous attacks.

The passage across the Bay of Fundy so close to the shores of Maine, would invite aggression, and require a large naval force for its protection.

The engineering difficulties as the line approaches the Grand Falls from Woodstock would not be easily overcome.

The space between the St. John River and the boundary line becomes gradually contracted to a width of not more than two to three miles, and the country is broken and rough, whilst the banks of the St. John are rocky and precipitous for many miles below the Falls.

From the Grand Falls to the St. Lawrence, a distance of more than a hundred miles, the country is so far known as to make it certain that there is very difficult and unfavourable ground to be encountered, which would require careful explorations and extensive surveying.

This intervention of the Bay of Fundy, therefore, and the proximity of this line for a con-

siderable distance, to the frontier of the United States, was so objectionable and fatal to this route, that the attention of the officers and the exploring parties was, after a slight examination of the country between Halifax and Annapolis, directed in search of other and more favourable lines.

To understand the comparative advantages possessed by the other routes as well as to be able to weigh the objections which may be raised against each, and afterwards determine from their relative merits which is the best direction for the proposed line to take, it will be necessary, previously, to give some description of the country through which the lines pass, the present amount and distribution of the population, and the engineering difficulties which were met with along the lines examined.

As it will be seen in the end, that only one of the lines, viz., the second, has been explored and carried out successfully from its terminus on the Atlantic quite through to Quebec, it may be perhaps considered superfluous to enter upon the discussion of rival lines, but the object to be gained by so doing, is to show that so much has been done and is known of the country as to render further explorations for new lines unnecessary, because, if completed, they would not be likely to be recommended in preference to the one which will be proposed for adoption.

The distance from the Atlantic coast of Nova Scotia to the bank of the St. Lawrence is about 360 miles in a straight line. Intersecting the country which must be traversed by any line of railway, and crossing its course at right angles, are five great obstacles which have to be either surmounted or avoided.

The first is a broad range or belt of high and broken land which runs along the Atlantic shores of Nova Scotia, from Cape Canso to Cape Sable. The breadth varies from about 20 miles in its narrowest part up to 50 or 60 miles in other places. Its average height may be about 500 feet. The strata of which it is composed consist of granite, slate, and a variety of rocks, hard and difficult to cut through. The characteristic features of the surface are rugged and uneven, and therefore very unfavourable for railway operations. No useful minerals of the metallic kind have been found in it, in quantities sufficient to work to advantage.

Valuable quarries of stone for building purposes are abundant, but these will be found everywhere nearly along the proposed line.

This formation is estimated to cover nearly two-thirds of the surface of Nova Scotia. It is, generally speaking, unfavourable for agriculture; the timber on it is stinted in growth, and it is an object of some importance to pass through it, and leave it behind as soon as possible.

If a line be drawn from the head of the estuary of the Avon, near Windsor, to the Great Shubenacadie Lake, and then across the Stewiacke River, along the upper parts of the streams in the county of Pictou, to the Gut of Canso, all the portion lying to the south of this line belongs to this formation, and all to the north of it to the more favorable and highly valuable formation of the carboniferous system.

The narrowest and shortest line by which this range or belt can be crossed occurs at Halifax, and at the same time, owing to a favourable break in the chain, at the lowest point in altitude; the summit level through it not exceeding 90 feet.

The Halifax line (route No. 2) is clear of it in 20 miles. Before the same can be done by the Whitehaven and direct line (route No. 3), it must follow the coast for upwards of 30 miles, as far as Country Harbour, and then a further course across it of another 30 miles; involving in this distance two, if not three tunnels, and must surmount a summit level of 400 feet.

2. The second great obstacle is the Bay of Fundy. This, as stated, is fatal to the first route. By the other routes it can be turned and avoided.

3. The third obstacle is the range of Cobequid Hills. These extend all along the north shore of the Bay of Minas, and very nearly across but not quite to the shore at the Straits of Northumberland. In breadth, the range preserves nearly an uniform width of about 10 miles. In altitude, the hills average from 800 to 1000 feet. The lowest point, after a careful survey, was found to be at the Folly Lake, 600 feet above the sea. This range can be avoided and passed by the Whitehaven and direct route, but must be surmounted and crossed over by the Halifax and Eastern line (route No. 2).

The prevailing rocks are granite, porphyry, and clay slate, in the upper portions; along the shore of the Bay of Minas and on the northern side, the formation is of the red sandstone and the coal measures.

This range abounds with the most valuable minerals, of which a large mass of specular iron ore, of unequalled richness, occurs close to the line, and only requires facility of carriage for bringing coals to the spot, to be worked with profit.

A large portion of this tract still remains ungranted, and timber of excellent growth, with abundance of the finest stone for building purposes, are to be met with, and still belonging to the Crown, can be had for the expense of labour only.

4. The fourth obstacle is the broad and extensive range of the highlands which occupies nearly the whole space in the centre of New Brunswick from the Miramichi River north to the Restigouche. Some of these mountains rise to an altitude exceeding 2000 feet.

The Tobique River runs through them, forming a deep valley or trough, which must be crossed by the direct line, and increases greatly the difficulty of passing by them.

The lowest point of the ridge, overlooking the Tobique River, at which any line of railway must pass, is 1216 feet above the sea. Then follows a descent to the river of 796 feet in 18 miles, and the summit level on the opposite ridge or crest between the Tobique and Restigouche waters, is 920 feet above the sea, or a rise of 500 feet above the point of crossing at the Tobique water. These great summit levels which must be surmounted, form a serious objection to this route.

The Eastern line, by the coast, avoids this chain altogether. The greatest summit level

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along it will not be above 368 feet, while the distance by each from the province line at Bay Verte, to the Restigouche River (the northern limit of New Brunswick) will be as nearly as possible the same, there being only a difference of one mile in these two routes through this province.

The rocks composing this chain of mountains are granite, various kinds of slates, grauwacke, limestone, sandstone, &c.

5. The fifth and last obstacle to be overcome, and which cannot be avoided by any of the routes, is the mountain range running along the whole course of the river St. Lawrence, in a very irregular line, but at an average distance from it of about 20 miles. It occupies, with its spurs and branches, a large portion of the space between the St. Lawrence and the Restigouche River. The rocks and strata composing the range are of the same character and kind as the Tobique range. The tops of the mountains are as elevated in the one range as in the other.

The exploring parties failed in finding a line through this range to join on to the direct line through New Brunswick, but succeeded in carrying on the Eastern or Bay Chaleurs route, owing to the fortunate intervention of the valley of the Metapediac River.

The line which tried and failed was across from the Trois Pistoles River, by the heads of Green River, and down the Pseudy, or some of the streams in that part, running into the Restigouche River.

A favourable line from the Trois Pistoles was ascertained along the Eagle Lake and Torcadi River, as far as the Rimouski, and it is probable that by ascending this river, and descending the Kedgwick River, this line (route No. 4) could be completed.

But it is most improbable that it could compete in favourable grades with the Metapedia.

It will be allowing it sufficient latitude to suppose it will be equal in engineering merits, and that if accomplished it will give the route No. 4 an apparent advantage of 40 miles in distance.

A very striking characteristic in the geological formation of North America, and which has been noticed in the writings of persons who have described the country, is the tendency of the rock strata to run in parallel ridges in courses north-easterly and south-westerly.

On referring to the General Map No. 1, and confining the attention more particularly to that portion of country east and north of the St. John River, through which any line must pass, this general tendency cannot fail to be remarked.

The river St. Lawrence, the main Restigouche River and intermediate chain of mountains, the Tobique River and mountains, and all the streams in New Brunswick (the main trunk of St. John, and a branch of the Miramichi excepted).

The Cobequid Range, the Bay of Fundy, and the high and rocky range along the Atlantic shore have all this north-east and south-western tendency.

It will be evident, therefore, that any line from the coast of Nova Scotia to the St. Lawrence has a general direction to follow, which is the most unfavourable that could have occurred for it, having to cross all these mountain ranges, streams, and valleys at right angles nearly to their courses.

The lines explored for the direct route through New Brunswick were obliged, on this account, to keep the elevated ground crossing the upper parts of the streams.

By so doing a line was found to the Restigouche, which may be considered just within the limits of practicability, but having very unfavourable summit levels to surmount.

And the peculiar formation of the strata and general course of the valleys and streams renders it most improbable that any further explorations to improve this direct line through New Brunswick would be attended with much success.

Very fortunately for the Eastern line, one of the branches of the north-western Miramichi presented itself as an exception to the general tendency, and enabled that line to reach the coast of the Bay Chaleurs.

The distance across in a direct line from the coast of Nova Scotia to the St. Lawrence has been stated at about 360 miles, forming the difficult and unfavourable portion of the line. When the St. Lawrence mountains are passed, then the tendency of the strata and courses north-easterly and south-westerly becomes as favourable for the remaining 200 miles along that river as it was before adverse.

The general character of the ground between the St. Lawrence River and the mountains, is that of irregular terraces or broad valleys rising one above another by steep short banks, having the appearance as if the river had at some former periods higher levels for its waters.

The streams run along these valleys parallel with the course of the St. Lawrence until, meeting some obstruction, they turn suddenly off and find their way over precipices and falls to the main river.

Having described such of the physical features of the country which form obstacles in the way of the lines under consideration, it is proper next to describe those features and other resources which are advantages, and should be sought for by competing lines.

The geological systems which prevail through the intermediate country to the mountain ranges are the carboniferous and new red sandstone.

They include large deposits of red marl, limestone, gypsum, freestone of excellent quality for building purposes, and extensive beds of coal. Indications of the latter are met with in abundance from the banks of Gay's River (20 miles from Halifax) up to the Restigouche River, and along the shores of the Bay Chaleurs.

Wherever these systems and minerals are found a strong and productive soil, favourable for agricultural pursuits and settlement, is sure to accompany them.

The surface of such a country, too, is generally low or moderately undulating, and therefore the more of such a district that a line can be led through the better for it.

In Nova Scotia, this formation occupies its northern section, and amounts to nearly one-third of its whole area. It then extends all over the southern and eastern parts of New Brunswick.

In this respect, therefore, the route No. 2 has a decided advantage.

The greatest and most valuable coal-field is that of Pictou.

It is situated on the south side of that harbour. The exact extent of the bed is not known, as it is broken by a great (geological) fault. It occupies, however, an area of many square miles.

The coal is bituminous, of good quality, and the veins of most unusual thickness.

Mines in it are extensively worked, and large exports from them are made to the United States. Iron ore is abundant.

This is an advantage in favour of the Whitehaven and direct route.

The next great coal district is the Cumberland field, and it is second only in importance to that of Pictou.

It is supposed to extend from the Macon River, west of Amherst, over to Tatmagouche, in the Straits of Northumberland.

Some mines in it have been recently opened, and promise to be very productive.

The line No. 2 passes over this field for miles, and may be considered, from that circumstance, as not being deprived altogether of an advantage possessed by the other route.

The great agricultural capabilities of the eastern counties of New Brunswick have been described in the reports of Mr. Perley, the Government Emigration Agent, which were presented to the New Brunswick Legislature in February, 1847, and ordered to be printed.

One most important object to be attained by the construction of the railroad is the settlement of the public lands, and the encouragement of emigration from the mother-country.

As bearing very strongly upon this point, in the choice of the best direction for the line, I subjoin the following extract taken from Bouchette's Work on Canada, vol. i., page 331. It is a quotation made by him from "The Commissioners' Report of 1821."

"The Bay of Gaspé, and particularly the *Bay des Chaleurs*, are susceptible of the most improved agriculture. For the establishment of emigrants no part in Canada offers such immediate resources of livelihood as may be derived from the fisheries. It is a fact worthy of notice, that in the year 1816, when the lower parts of the province were afflicted with a famine from the destruction of the harvest by frost, no such inconvenience was experienced at Paspébiac, nor at any other place within the level tract above mentioned."

The tract alluded to here is not clearly defined by the quotation, but it is supposed to mean the whole district along the south shore of the Bay Chaleurs.

This tends to show the effect produced by the vicinity of the sea, in moderating the temperature and saving the crops from untimely frosts. In this respect, therefore, the line No. 2 has an important advantage over the one through the central and more elevated land of New Brunswick.

As the interior is approached, and the distance from, as well as the elevation above, the sea increases, the danger to crops from cold nights and early frosts also increases.

In the Madawaska Settlement, and on the Upper St. John River, great failures of crops have occurred from this cause, and wheat and potatoes are very liable to be destroyed.

From the Bend of Petitcodiac to the St. Lawrence, a distance of upwards of 300 miles, the direct line would pass through a perfect wilderness, with not a single settler on the whole line, except a few at or near to Boistown.

Leaving engineering difficulties for the moment out of the question, the cost of construction would be materially increased by the extra difficulties attendant on the transport of necessary materials, and in supplying with food the labourers and others engaged on the line.

The disadvantage is not shared by the second route, which can be approached in numerous places along the Gulf shore by means of bays and navigable rivers.

The direct line No. 4 will not have such advantages to present to settlers as the second. On the contrary, if adopted, it might be found necessary to incur expenses, for the establishment of small communities along the line, to repair and keep it open.

The facilities for external as well as internal communication, and other advantages arising from commerce and the fisheries, which will be developed by the Eastern line (and entirely wanting along the direct route), will, it is fully expected, make its vicinity eagerly sought for by settlers, and that it will, in the course of no very great length of time, lead to the extension of that long-continued village which now exists with but little exception from Quebec to Metis (200 miles), from the shores of the St. Lawrence to the Atlantic Ocean.

An important item bearing upon the consideration of the best route is the present distribution of the population in New Brunswick and Nova Scotia.

In illustration of this part of the subject, and to afford a better idea of the nature of the country than can be given by a merely outline plan, a model map (No. 3) has been prepared, showing the whole course of the lines (routes Nos. 2 and 4) from Halifax to the St. Lawrence, and by the latter over the Trois Pistoles River, beyond which the line is continued through a level fertile and densely-peopled district to Quebec.

The red line shows the proposed route No. 2: the Halifax and Eastern or Bay Chaleurs line.

The black line shows the direct route, No. 4, from the Bend of Petitcodiac.

The yellow tint shows the present settlements.

The green is the wilderness of uncleared forest, unsettled, and the far larger portion of it still ungranted and waiting for occupation.

It must be premised that a branch railway from the city of St. John is contemplated to pass up the Valley of the Kennebecasis, and connect with the main trunk at the Bay of Shediac.

The survey of this line, ordered by the Provincial Government, is in progress; and from the latest information received, the line promises most favourably.

The total population of New Brunswick has been estimated to amount, at the beginning of 1848, to 208,012, distributed in the proportions as under:—

County of Restigouche	4,214	
,, Gloucester	10,334	
,, Northumberland	19,493	
,, Kent	9,769	
		43,810
,, Westmoreland and Albert	23,581	
,, Kings	19,285	
,, St. John	43,942	
		86,808
,, Queens	10,976	
,, Sunbury	5,680	
		16,656
,, York	18,660	
,, Carleton	17,841	
		36,501
,, Charlotte		24,237
Total		208,012

Of these, the first four, amounting to 43,810, are on the line of the proposed route No. 2, and will be entirely thrown out by the adoption of the other.

Campbellton, Dalhousie, Bathurst, Chatham on the Miramichi, and Richibucto—sea-ports and shipping places of consequence on the Gulf shore, all of them susceptible of the greatest development, will be left isolated and cut off.

These ports are ice-bound during the winter months; and railway communication will be to them of the greatest importance.

It will affect most materially the interests of the city of St. John, and the receipts upon their branch railway.

It will affect also most sensibly the receipts of the main trunk line.

Along the south bank of the St. Lawrence, from Quebec to Metis, there are settled along it, in what can be only compared to one continued village for 200 miles, 75,000 inhabitants.

Of these also a large population, probably 12,000 in number, residing between the Rimouski and Metis River, will be deprived of the benefit of the railway if the direct line be adopted.

To counterbalance the serious detriment which would thus be caused, this line would diminish the length of the branch line likely to be made to connect it with Fredericton, which is the seat of Government, and contains about 6000 inhabitants.

The population of Nova Scotia may be estimated to be about, viz.:—

City of Halifax and County	40,000
County of Cumberland	10,600
,, Colchester	14,900
,, Pictou	30,300
,, Sydney and Guysborough	23,200
Remaining Counties	111,260
Total	230,200

The population of Cape Breton is estimated at 49,600.

Of the above, if the Whitehaven and direct route be adopted, the city of Halifax and county, amounting to 40,000, will be excluded from the benefit of the line.

If the Halifax and Eastern line (route No. 2) be adopted, then the population of Sydney and Pictou, amounting to 53,500, will be excluded.

To the population in the southern or remaining counties (111,200), the Halifax route will be of essential benefit.

From the other route they would derive no advantage whatever.

It is now proposed to give an account of the explorations and their results.

The dotted lines on the General Plan, No. 1, show where these were made, and the courses taken.

In the season of 1846, the Cumberland Hills were very carefully examined; sections with the theodolite were made, and barometrical observations taken, to ascertain the lowest and most favourable point for crossing them.

The line which had been cut out and explored for the military road was followed from the Bend of Petitcodiac to Boistown.

From Boistown the general course was followed, and levelled as far as the Tobique River, but the country was so unfavourable that new courses had to be constantly sought out.

A new line altogether was tried from the Tobique, as far as the Wagan Portage.

The results deduced from the observations and sections proved this line to be quite impracticable for a railway.

Whilst the line was being tried, other parties explored from Newcastle on the Miramichi River, over to Crystal Brook on the Nipisiguit, the valleys of the Upsalquitch and its tributaries, and as far as the Restigouche River.

The country at the upper waters of the Nipisiguit, and the whole of the Upsalquitch valleys, were found to be rough, broken, and totally impracticable.

The result of this season's labours went to show, that the best, if not the only, route that would be likely to be practicable, would be by the North-west Miramichi to Bathurst, and then along the Bay Chaleurs.

During the winter, a small reconnoitring party (on snow shoes) was sent up the Metapediac Valley, as far as Metallis Brook, and they made their way across the country, from thence to the mouth of the Torcadi River on the Rimouski.

Their report on this line was rather favourable, and had there been any necessity for it, it would have been more fully explored the next season (1847).

As soon as this was sufficiently advanced to admit of the parties entering the woods, the explorations were resumed.

A grade line was carried over the Cumberland Hills. It was cut out through the woods, from the foot on one side to the foot of the slope on the other, a distance of 10 miles, and carefully levelled with a theodolite. This proved it to be quite practicable.

The exploration of the Eastern line was again taken up.

It was commenced at the head of the tide, on the south-west of Miramichi, and was carried up the valley of the north-west Miramichi over to and down the ~~Upsalquitch River~~ to Bathurst, and along the shores of the Bay Chaleurs to the Restigouche, up the Metapediac to the Metis, and along the bank of the St. Lawrence to the Rimouski and Trois Pistoles River.

The result of this exploration was so satisfactory that the party engaged upon it returned by the same route, surveyed it, and took the levels along it back to the Miramichi River.

An exploratory line was then cut through the greater portion of the flat and generally level country between this river and the province line at Bay Verte.

An examination of the country was made from the Trois Pistoles River along the St. Lawrence to Quebec, which, with what had been done in Nova Scotia, during this and the former season, completed the whole of one good and favourable line from Halifax to Quebec.

The details are given in the accompanying Report, Appendix, No. 1; General Plan, No. 1; Model Map, No. 2; and Book, containing exploratory sheets, No. 16, containing plans and sections of the whole route, and comprises the line recommended to be adopted.

Unwilling to abandon the direct route through the centre of New Brunswick, by which, if a line could be successfully carried out, the distance would be so materially shortened, as is apparent by the mileage given in route No. 4, it was determined to use every effort to decide either the practicability or impracticability of such a line. To this end large parties were employed the whole season.

One party explored, cut, and levelled a line the whole way between the Napadagan Lake and the Restigouche River, a distance of 96 miles.

The line explored was a very great improvement upon the one of 1846.

It is considered to be so far satisfactory as to prove that a line for that distance can be found which would be within the limits of railway gradients.

The details are given in the Assistant-Surveyor's Report, Appendix No. 2, with three exploratory sheets, Nos. 17, 18, 19, containing plans and sections of the ground passed over.

A large party was engaged in trying to find a line from Trois Pistoles River on the St. Lawrence, through the Highlands to the Restigouche River, for the purpose of connecting on to the New Brunswick party. The winter overtook them whilst still embarrassed in the Highlands at the head waters of the Green River.

The dotted lines on the General Plan, No. 1, will show their attempts.

A line was tried up the valley of the Abersquash, but it ended in a *cul-de-sac*. There was no way out of it.

A second line was carried from Trois Pistoles over to Lac-des-Isles, Eagle Lake; and by the middle branch of the Tuladi River, the north-west branch and head waters of the Green River were gained.

But this point was not reached, except by a narrow valley or ravine of four miles in length.

A theodolite section was made of it, and it was found to involve a grade of at least one in forty-nine, and to attain that, heavy cuttings at one part, and embankments at another, would be necessary.

There is no occasion at present to enter upon the discussion of whether this should condemn a whole line for having attained the Forks; at the head of the main Green River no way was found out of it, and this explored line, like the first-mentioned, must be considered to have ended in a *cul-de-sac* also.

Further details are given in the report of Mr. Wilkinson, the surveyor entrusted with the more immediate charge of this part of the line, in Appendix, No. 3, with sketches attached to it.

It is just probable that a line might be found by way of the Kedgwick River and the Rimouski, as far as the mouth of the Torcadi River. From which, to the Trois Pistoles, there was ascertained to be no difficulty.

But as the advantages in every way, except distance, are so much in favour of the Eastern line, it would only be incurring delay, and perhaps useless expense, in further explorations of this part of the country.

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In the Report (Appendix, No. 3) there is a third route suggested for examination and trial, viz., by one of the lower branches of the Green River and the Squattock Lakes.

Whether successful or not it is liable to the objection of approaching the frontier of the United States.

There remains to be noticed the exploration for a line of railway from Whitehaven, on the eastern coast of Nova Scotia, towards Pictou and Bay Verte.

This was rendered necessary in consequence of the suggestion made by Captain Owen, R.N., to make Whitehaven the Atlantic terminus of the railway.

The details of this exploration are given in the accompanying Report, Appendix No. 4, and exploratory sheets, Nos. 20, 21, 22, and 24.

Engineering difficulties and expensive cuttings occur on this route.

From the commencement in the harbour of Whitehaven, the line must pass along a barren and rocky coast for upwards of 30 miles to Country Harbour, before it can turn off towards the interior. And it cannot do this and get clear of the sea-shore without the necessity of making a tunnel of about a mile in length through a ridge of whinstone.

Again, at the falls of the St. Mary River there will be required a tunnel of a quarter of a mile, and a viaduct across a valley of about 500 feet in length.

The summit level occurs between Lake Eden and Beaver Lake, and is 400 feet above the sea.

At Grant's Bridge, on the East River, for nearly three miles in length, there would necessarily be several expensive cuttings through rocks of sandstone and limestone.

The length of this line from Whitehaven to Bay Verte is estimated at 181 miles. From Halifax to the same point is 124; leaving a difference of 57 miles.

If the direct route No. 3 could be established, it would add 17 miles to the trunk line.

But as it is not to be supposed that Halifax, the capital and great commercial city of the province, would in such a case allow itself to be excluded from the benefits of the proposed railway, then it would involve, in addition to this 17 miles of trunk railway, a branch line of probably 90 miles.

Or if the Eastern Bay Chaleurs line through New Brunswick be added on to it, as in route No. 5, then it will involve no less than 57 miles extra of trunk line, and the same necessity for the branch line of 90 miles mentioned.

To compensate for such disadvantages, it must be shown that Whitehaven has the most paramount claims to be selected as the Atlantic terminus, in preference to Halifax.

The harbour of Whitehaven is 120 miles nearer to England by sea than Halifax; equivalent to, in ocean navigation by the steamers, 10 hours.

This, it is readily conceded, is a very great advantage; and were there no drawbacks or other considerations in the way, it would be quite sufficient to give that port the preference.

It is a well-known fact, however, that there is a time and season in the year when the Cunard steamers cannot keep their direct course to Halifax even, but are compelled by fields of ice to keep to the southward, and sometimes pass to the south of Sable Island.

During this time, which occurs in the spring of the year, and may last for two or three months, there would be some risk in their making direct for the more northern port of Whitehaven. And if for these three months the steamers were obliged to make Halifax their port, then for that time the Whitehaven line would be useless.

In respect to the advantages which it is said to possess, of remaining open all the year round, it is not quite clear that it does so.

From inquiries made on the spot in the summer of 1847, Captain Henderson learned that the preceding winter the harbour had been frozen over entirely, five to six inches thick,* and that it was sometimes blockaded up and much incommoded by ice.

Subsequently, however, and during this winter, when the objects of the inquiries made there in the summer became known, and the advantage of the railway spoken of, a statement accompanied with affidavits was forwarded, with a view to counteract the effect of the information given to Captain Henderson and the parties exploring there.

They are given in the Appendix No. 5 to this Report.

They tend to show that though the immediate entrance to the harbour may be, and generally is clear, yet that large quantities of floating ice find their way through the Gut of Canso, and by Cape Breton, which pass off in a southerly direction, crossing the direct path of steamers and vessels from Europe.

The coasting vessels keeping in shore are not so liable to be molested by it.

The harbour is admitted to be a fine sheet of water, but it does not and cannot vie with Halifax, either in appearance or capacity.

Referring to Lieutenant Shortland's Report, Appendix No. 5, who made a survey of it in obedience to the directions of Captain Owen, R.N., it appears that it is not free from the objection which is made against the port of Halifax, and is its only drawback, viz., the prevalence of fogs.

Lieutenant Shortland says, "that in foggy weather the harbour (Whitehaven) is difficult to approach, especially to a stranger, as the soundings in shore are very irregular, and I have not been able to learn any good indications of its vicinity to be gathered from the lead, so as to render its approach by that means certain; and Torbay, its immediate neighbour to the westward, is a dangerous place to get into.

"From the fishermen and small coasters I understand the currents round the point are

* Vide Appendix No. 5.

uncertain, and generally depend upon the wind, though the prevailing current is to the westward.

"I experienced this current in a boat when I visited the outer break; it was then setting to the westward, at the rate of one mile and a half per hour at least. I also perceived vessels in the offing setting rapidly in the same direction, the breeze was from the eastward and light, though it had previously blown hard from the same point.

"We also on our passage from Halifax to Canseau, during a fog, with the wind from the south-west, experienced an easterly current; but the land once made, the harbour is easily attained, especially by a steamer."

This can scarcely be considered a favourable report of its advantages as a harbour intended for the great Atlantic terminus.

Accommodation and safety for a fleet of merchantmen could be expected there, as is to be found at Halifax.

To make it a safe approach, Lieutenant Shortland continues thus:—

"A judicious arrangement of fog-signals and lighthouses with buoys, on the principal dangers, and a good survey with the sea soundings well laid down, would make the approach in the night, or during fogs, attended with small danger to a careful seaman."

One of the undoubted results of the railway will be to make Halifax, if it be made as it ought to be, the Atlantic terminus, the great emporium of trade for the British provinces and the Far West.

Whitehaven has not the capacity for this, and in winter it is evidently dangerous for sailing-vessels; and the selection of it as a terminus would be to exclude Halifax altogether, or to compel the formation of a branch railway of 90 miles in length, in addition to 57 miles of trunk railway.

It involves also the necessity of making expensive arrangements; lighthouses must be built, depôts for the supply of the steamers must be made, fortifications must be erected, and accommodation for a garrison provided. For the terminus of a great line of railway would need protection in time of war.

At present there are only a few fishermen's huts.

The probable saving of 10 hours of time in an ocean voyage which varies even with the Cunard steamers from 9 to 18 days, is not of such all-absorbing magnitude as to entail, by the choice of the terminus, such a fearful amount of extra expense and inconvenience to a whole province.

At a more advanced period, perhaps, when the provinces have attained all the prosperity they have a right to expect from this and other great works which would follow as surely as effect follows cause, then it may be time to consider the propriety of making a branch to Whitehaven.

Its selection now as the terminus would most materially affect the receipts to be expected from the traffic.

Whitehaven, therefore, with its longer and more expensive line of railway, full of engineering difficulties, passing for miles through a district of country, rocky, barren, and unfavourable for agriculture, benefiting a comparatively small proportion of the inhabitants, to the exclusion of the capital and the greatest amount of the province; or else involving the necessity of making a branch line of 90 miles in length, is decidedly recommended to be rejected.

And the city and harbour of Halifax (one of the finest in the world) is recommended to be selected as the Atlantic terminus for the proposed line of railway.

That part of the direct route (Nos. 3 and 4), viz., the line from the Bend of Petitcodiac by Boistown to the Restigouche and the St. Lawrence, crossing the range of New Brunswick mountains, having to surmount two summit levels of 1216 and 920 feet, causing heavy grades, and increasing materially the cost of transport; passing through a totally unsettled and wilderness country; involving greater difficulties in the transport of the materials necessary for its construction, and supplying food to the labourers engaged in its formation; excluding the towns and settlements on the Gulf shore, and so preventing the development of the vast resources of the country to be derived from the fisheries; and also inflicting a serious loss to the interests of the main line, and to the intended branch from the city of St. John in New Brunswick, is, notwithstanding its one great advantage of diminished distance, recommended most strongly to be rejected.

And the route No. 2, from Halifax to Truro, at the head of the Bay of Fundy, passing over the Cobequid Hills, and on or near to Amherst and Bay Verte, crossing from thence over to the rivers Richibucto and Miramichi above the flow of the tide, so as not to interfere with their navigation; then by the valley of the north-west Miramichi and Nipisiguit River to Bathurst; then along the shore of the Bay Chaleurs to the Restigouche River; then by the valley of the Metapediac over to or near to the River St. Lawrence; then by the route as shown in the General Plan No. 1, along the banks of the St. Lawrence to Rivière du Loup, and from thence continued through either the second or third concessions along the river until it approaches Point Levi, is recommended as the best direction for the proposed trunk line of railway from an eastern port in Nova Scotia through New Brunswick to Quebec.

It combines in the greatest degree the following important points:—

1st. The immediate prospect of direct, as well as the greatest amount of remuneration for the expenditure to be incurred; the opening up a large field for provincial improvements for the settlement of emigrants, and by affording the opportunity in addition to internal, of external communication, by means of the Gulf of St. Lawrence and the Bay Chaleurs, it will tend to develop in the highest degree the commerce and the fisheries of the Province of New Brunswick.

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2nd. Passing along the sea-coast for a great distance, and capable of being approached at several points by bays or navigable rivers, it possesses the greatest facilities for construction, tending to reduce the expense, and by its more favourable grades also the cost of working and subsequent maintenance.

3rd. By passing over a less elevated country, and at the least distance from the sea, there will be less interruption to be apprehended from climate, whilst the more favourable grades will increase the efficiency and rapidity of intercourse.

4th. Passing at the greatest possible distance from the United States, it possesses in the highest degree the advantage to be derived from that circumstance of security from attack in case of hostilities.

The best general direction for the proposed trunk line of railway being admitted to be that of route No. 2, viz., the Halifax and Eastern, or Bay Chaleurs route, some additional remarks may be made upon its peculiar advantages, as well as upon the few engineering difficulties which occur and in explanation of the plans and sections forwarded.

The details of the line are given in the Appendix No. 1. The plans referred to are the General Plan No. 1, the Model Map No. 2 (which should be stretched out on the floor to be properly viewed), and the book containing 15 exploratory sheets of plans and sections, which relate exclusively to this line.

The city of Halifax is situated on the western side of the harbour, whilst the best site for the terminus is on the opposite shore at Dartmouth.

The distance to Quebec from the latter will be four miles shorter than from the former; and one great advantage is, that its shore line is as yet comparatively free from wharves and commercial establishments, and an extensive terminus can be formed there at less expense and inconvenience than on the Halifax side, where the Government dockyard and private establishments would interfere materially in the selection of a good site for it.

At Dartmouth it is expected that vessels entering the harbour will be able to unload at the railway premises, or probably into the railway cars, whilst an equally good terminus is to be had at Point Levi, opposite to Quebec. The same railway cars, loaded from the ships in harbour at Halifax, will thus, after running an uninterrupted course for 635 miles, be delivered of their contents into the boats if not intot he holds of vessels in the River St. Lawrence. The same can of course be done from the River St. Lawrence to the vessels waiting in Halifaxharbour.

Such an uninterrupted length of railway, with such facilities at its termini, will be, it is believed, unequalled in the world.

In the transmission of goods and merchandize this will be a most favourable point in competing with rival lines. The American railways, especially along the Atlantic States, are constantly interrupted, and passengers have to transfer themselves not only from cars to steam-boats, but sometimes from one set of carriages to another set, in waiting for them on opposite banks of a river.

In Nova Scotia the passage over the Cobequid Hills cannot be effected without heavy grades of 1 in 79 and 1 in 85; but as these occur, the one ascending and the other immediately descending, and only for 10 miles, the inconvenience can be easily got over by affording an assistant engine for the goods' trains at that part. No engineering difficulties are expected to occur from this up to the Restigouche River.

It is necessary, however, to make some remark in reference to the sections shown in the Book Exploratory, sheets 6 and 7, comprising that part of New Brunswick lying between Shediac and the North-west Miramichi.

The whole of this portion of the country is believed to be generally low and flat, with occasional undulations. The section run through it in the previous season of 1846, towards Boistown, confirmed this impression.

Its exploration and examination, therefore, was left to the last, and it was not until the really formidable-looking obstacles had been explored and successfully got over, that the attention of the parties was turned to it.

As at this time the season was rapidly closing, the exploring parties were directed to cut straight lines through it, as the best means of obtaining the general altitudes and a knowledge of the country. No attempt was made to contour the hills. The sections, therefore, in these two sheets are not grades for the railway, but of the ground passed over by the straight lines. With the exception of the immediate banks of the St. Lawrence, this is expected to prove one of the easiest portions of the line.

When the line reaches the mouth of Eel River, it cannot proceed direct on to Dalhousie, but must turn off up the valley of that river.

Two courses are afterwards open to it, one to turn off through a valley, by which it can soon gain the Restigouche, the other to proceed on to the head waters of Eel River, and then turn down to that river. Which is the best of these two routes can be better determined when the detailed surveys of the route are made.

The most formidable point of the line is next to be mentioned, this is the passage up the Metapediac valley.

The hills on both sides are high and steep, and come down either on the one side or the other, pretty close to the river's bank, and involves the necessity (in order to avoid curves of very small radius) of changing frequently from one side to the other. The rock, too, is slaty and hard. From this cause, 20 miles of this valley will prove expensive, but the grades will be very easy.

About 14 bridges, of an average length of 120 to 150 yards, will be required up this valley. There is also a bridge of 2000 feet long, mentioned in the detailed report as necessary to cross the Miramichi River.

But bridging in this country is not the same formidable affair that it is in England. The rivers are nearly always shallow, and the materials, wood and stone, are close at hand.

The bridges in the United States, on the best lines, are built of wood on the truss-work principle, with stone piers and abutments.

On the Boston and Albany lines, and on many others in the New England States, the bridge generally used and approved of is known as "Howe's Patent Truss Bridge."

The cost of this kind of bridge, as furnished by the parties who have purchased the patent, is as follows:—

	Dollars.		£. s. d.	
For spans of 60 feet, single track,	11	per foot =	2 5 10	sterling
100 ,,	18	,,	3 15 0	,,
140 ,,	21	,,	4 7 6	,,
180 ,,	27	,,	5 12 6	,,
200 ,,	30	,,	6 5 0	,,

The cost for double track would be about 55 per cent. additional.

The price includes the whole of the superstructure ready for the rails, but not the piers and abutments.

The bridge over the Connecticut River at Springfield is built on this principle; it has seven spans of 180 feet each, and the sill of the bridge is 30 feet above low water. On other lines the same kind of bridge is used, but no iron-work is permitted (the unequal expansion and contraction of this metal is objected to), and the addition of an arch is introduced.

A bridge built on this principle on the Reading Railroad, 1800 feet long, cost 40,000 dollars, equivalent to 8330*l.* sterling.

Soon after passing the valley of the Metapediac, the great obstacle of the St. Lawrence chain of mountains is got over, and the line may range away towards Quebec. Having, however, occasionally a river or ravine to cross, whose passage requires consideration.

At the Trois Pistoles, the stream in the course of ages has worn out a very awkward and deep ravine. The bank on one side is generally steep and abrupt, whilst that on the opposite is low and sloping away back for a long distance, before it again reaches the height of the table land.

The most favourable site for crossing it occurs at about 11 miles from the St. Lawrence, where the two banks become nearer to each other, and are more equal in height.

At this point the breadth of the stream is 100 feet at bottom. The width between the banks at top 500, and the depth is nearly 150 feet. The banks are rocky. Though formidable, it is by no means impracticable.

On the New York and Erie Railway there is a bridge whose roadway is 170 feet above the bottom of the ravine, which it crosses by one span of 275 feet. Its cost was 5200*l.*

From Rivière du Loup to Quebec, the railway might, but for the snow, be carried almost at a surface level.

Through the whole of New Brunswick, for 234 miles, and through Lower Canada as far as Rivière du Loup, 167 miles, there will be found along the line abundance of timber and stone (including limestone) of the best quality for building purposes. There will be found also, in New Brunswick more especially, abundance of gravel for the superstructure.

In Nova Scotia, the railway will have to pass with but little exception through land which has been sold or granted away to individuals. The exception will be the other way in New Brunswick. It will be seen, on reference to the model map, that it approaches the settlements between Bay Verte and Shediac, and skirts along the Bay Chaleurs.

In Canada, from the mouth of the Metapediac to the Trois Pistoles, it runs through still ungranted land. But for the last 110 miles between Rivière du Loup, it runs through a densely settled country.

Until the detailed surveys are made, and the precise location of the line marked on the ground, it will be impossible to state precisely the exact number of miles it will pass through Crown land.

If the following estimate be taken, it will not be much out:—

In Nova Scotia	15 miles,
New Brunswick . . .	200 ,,
Canada	160 ,,
Total . .	375 miles.

The following synopsis will show approximately the quantities of ungranted land in the counties through which the line passes:—

In Nova Scotia.

	Acres.	
Halifax County . . .	780,000	
Colchester	120,000	
Cumberland	180,000	
		1,080,000

In New Brunswick.		
Westmoreland County . .	301,000	
Kent	640,000	
Northumberland . . .	1,993,000	
Gloucester	704,000	
Restigouche	1,109,000	
		4,747,000
In Canada.		
Bonaventure	2,000,000	
Rimouski	5,000,000	
Kamouraska	500,000	
L'Islet	600,000	
Bellechasse	500,000	
		8,600,000
General Total . . .		14,427,000

The land for the railway will have to be purchased in Nova Scotia for nearly its whole course, and in Canada for the 110 miles mentioned.

The latter, however, it is expected, will cost very little more than the expense which it would be necessary to incur in cleaning, getting out the stumps, and preparing the wild lands for the railroad.

No part of the line will ever be at any great distance from Crown lands; but it will be a question of detail for this part as well as for the Nova Scotia section, whether it will be more advantageous to cut and convey from them the timber and materials required, or purchase them.

The direction of the proposed line being determined upon, the next points which present themselves for consideration are, the character of the road and method of construction.

In the first instance, it is considered that one line of rails will be sufficient; but in taking ground for the railway and stations, and wherever the line passes, regard should be paid always to the prospect of its being made at some future time a double track. And in the anticipation of a heavy traffic, which there is a fair prospect of soon passing along it, and with a view to ultimate economy, as well as the saving of much inconvenience, it is recommended that the road (being intended for the great trunk line) should be constructed at once in a substantial and permanent manner, with a good heavy rail, capable of bearing high rates of speed for passenger trains.

On all the principal lines of railway in the United States, the flat iron bar is everywhere being discarded, and the H or T rail, generally of 56 lbs. to the yard, is being substituted for it.

On several of the lines also a double track is being made, and the works constructed are of a more permanent character than formerly.

Much has been said in praise of the cheap method of making railways in America, and the advantages to be derived from it in a new country.

As an example of this system, and its practical results, the Utica and Syracuse Railway may be here quoted.

This road is 53 miles in length, and forms part of the Great Western line, connecting Albany on the Hudson River, with Buffalo on Lake Erie—one of the principal lines in the country.

In its construction more than a usual amount of timber was used. For a considerable portion of its length (upwards of 19 miles) it passes through a deep swamp. Piles were driven into this, to support a long continued trestle-bridge, over which the railway track was carried upon longitudinal bearers.

For the other 33 miles the grading was made in the usual manner by excavations and embankments: but the superstructure was of wood.

Upon the grading in the direction of its length, a small trench was excavated, and a sill of wood was firmly bedded in it. Where the sills abutted end to end, they were supported by a piece of wood of the same section laid beneath them. At right angles to and upon the upper surfaces of the sills were spiked cross-ties, and again, at right angles to the cross-ties, and immediately over the sills, were laid the longitudinal wood-bearers, to which the iron plates were firmly spiked. The centre of the rail and sill were in the same vertical plane.

Thus everything was done for economy, as much wood as possible being used. This railway for its construction and equipment cost on an average only 3600*l.* per mile.

It was thought worthy, in 1843, to publish an account of it in London, and it forms the chief subject of a volume thus entitled "Ensamples of Railway Making, which, although not of English practice, are submitted to the Civil Engineer and the British and Irish Public."

The following Report is extracted from the Annual Statement of the Secretary of State to the Assembly of the State of New York, dated 4th March, 1847:—

"The Syracuse and Utica Railroad has been opened for the transportation of passengers for the last eight years.

"The company having determined to relay the road with an iron rail of the most improved form, have contracted for a considerable portion of the iron necessary, and are proceeding with the intention of laying a substantial structure adequate to the proper performance of the business required.

	Dolls.	Cts.
" The present wood structure has cost the company . .	417,075	55
" The iron now laid thereon is the flat bar and will be useless, and therefore will be sold. It is hoped that there may be derived from the sale of it	80,000	00
" Leaving the sum of . . .	337,075	55

which has been expended for the cost of the wood structure, which, in addition to a large annual amount for repairs, will be practically worn out, sunk, and gone, when the new structure is laid and used. The new structure, it is supposed, will cost about the same as the former, towards which, it is hoped, the old iron will pay as above, 80,000 dollars, leaving the sum of about 300,000 dollars to be raised by the company on its credit.

" This will, when paid, reimburse the capital of the company for the equivalent amount, which has been appropriated to the worn out structure. In addition to the cost of the new structure, there will be required a considerable sum for new engines, cars, &c. The demand upon the company for the transportation of property at the close of the canal, has entirely exceeded its capacity to do this business. Property destined for sale in the eastern markets in large quantities, was stopped at most points upon the line of railroad contiguous to the canal. Being practically confined to the winter months in this branch of business, it cannot be expected that the company could provide a supply of cars for this sudden and extraordinary demand, when they must stand idle and go to waste during two-thirds of the year.

" When the road shall be relaid with the proposed iron rail, the public will require that the trains shall be run with increased speed. In relation to this subject, it is deemed proper to refer to the following suggestions contained in the report of this company made last year:—

" Very great embarrassment is experienced from the fact that cattle are allowed to run at large, and to impede and so often delay trains as at present. It is a serious matter, and unless more care shall be bestowed by the owners in restraining them, either at their own suggestion or in pursuance of some proper law to be passed, it will be found very difficult to make good time upon this line. A part of our business must be always done in the night, and it is then we experience the great hazard. The trains are frequently thrown off by them, and the danger to the persons in charge and to the passengers is imminent. The owners always insist upon pay for their animals destroyed, without reflecting upon the great damage that they cause to the property of the company, and the more fearful injury that might ensue to passengers. If the owners will not take care of them it is impossible to keep them off. In Massachusetts much less difficulty in this respect is experienced, for their, it is believed, a penalty is incurred by the owner of domestic animals that go upon the railroad. Our business is conducted with all possible care in this respect, and the enginemen suitably feel the risk of life or limb (which to them is almost as important) that they incur from the growing evil.

" A very proper law in this State has guarded the public and the company against direct wanton injury to the trains by individuals. It is submitted that negligence in allowing animals to run upon the railroads should be prevented by some suitable restraints."

Some of the inconveniencies arising from a cheap railway may be learnt from this report.

At this time the total amount spent upon its construction appears from the same report to have been 1,098,940 dollars, equivalent to 4520*l.* sterling per mile.

The new superstructure, it was supposed, would cost about the same as the former, viz., 417,075 dollars, or about 1640*l.* sterling additional, which will make the price of this railway when completed as intended, 5960*l.* per mile.

In other parts of the States where these trestle-bridge or skeleton railways have been made, instances have been known of the locomotive slipping down between the rails, which have warped outwards.

With a view, therefore, to ultimate economy, and to save inconvenience and interruption to the traffic when once established, it is most strongly recommended that the line whenever commenced shall be at once properly and efficiently made.

In determining the form of the road, it is necessary to bear in view that it will pass through a country everywhere liable to be obstructed by heavy falls of snow. It does not appear, however, from the results of inquiries made in the United States, that anything beyond inconvenience, and some additional expense in the cost of working the line, is to be apprehended from this cause.

The railway from Boston to Albany, which crosses the range of mountains between the Connecticut and Hudson rivers, attaining upon them an elevation of upwards of 1400 feet above the sea, to which it ascends by a grade of about 80 feet per mile for 13 miles. Traverses a country subjected to the same sort of winter as the British North American Provinces.

The average depth of snow in the woods is from 3 to 4 feet, which is not much less than it is in the woods of New Brunswick and Canada.

In 1843, a year remarkable for the great number of snow storms which occurred, there was 63 falls of snow, but the traffic was not interrupted to any very serious extent, not more than two or three trips.

To keep the roads clear, two descriptions of snow-ploughs are used, one for the double track and another for the single. In the former the *share* of the plough travels immediately over the inner rail, throwing the snow outwards from the track. It is first used on one track, and then runs back upon the other.

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In the single line the ploughshare travels in the centre of the track, throwing the snow off at once upon both sides.

For the double track the snow-plough weighs from 5 to 6 tons, and cost about 125*l*. For the single track it is somewhat lighter.

The plough requires generally, when run without a train, two engines of 20 tons each, or with a train three engines.

When the fall of snow does not exceed a few inches, the small plough, always fixed in front of the engine, consisting of an open frame-work projecting about 5 feet in front, and called a "*cow-scraper*," is found, when cased over, to be sufficient to clear the line. When the fall is deeper, the plough is used immediately after the snow has ceased to fall.

It can be propelled by three 20-ton engines through three feet of newly fallen snow at the rate of six miles an hours.

If the fall does not exceed two feet, it can travel at the rate of 15 miles an hour.

The drifts through which it is propelled are sometimes 15 feet deep, and from 200 to 300 feet long, and at others 8 or 10 feet deep, and from a quarter to half a mile in length.

The line of railway is marked in divisions of about eight miles, to each of which eight or ten men are allotted, who pass along the line each day with small hand-ploughs, picks, &c., clearing away the snow and ice which the trains collect and harden between the rails and the roadway.

It is found that the freezing of the snow or rain upon the rails does not impede the heavy engines, as the weight of the forward wheels is sufficient to break it, and enable the driving wheels to bite.

Whenever, from local causes, the snow is found to drift on the line of railway, snow fences are erected, which are found very effectual. They are simple board fences from 10 to 15 feet high, placed from 10 to 20 feet back from the roadway.

In wet weather the rails become very slippery; but the difficulty is overcome, and the wheels enabled to bite upon the steep gradients by the use of sand-boxes, which are fixed in front of the engine and immediately over the rails. These can be opened at pleasure by the engine-driver, and the sand is used wherever necessary.

The means thus successfully adopted to overcome the obstacles arising from ice and snow are employed much in the same way upon all the railways which are exposed to them.

In the year 1847 the expense incurred under this head (removing ice and snow) upon the western railroad in Massachusetts, was, according to the official return, 2763 dollars, equivalent to 575*l*. sterling.

Upon many of the other lines expenses under the same head are returned, but very much smaller in amount.

In places where the rails are not raised above the general level of the country, much greater difficulty is experienced in keeping the lines clear of snow than in parts where there are embankments.

From the foregoing it does not appear, therefore, that snow need be considered an insurmountable obstacle to the formation of a line of railway from Halifax to Quebec.

To obviate, as much as possible, the liability to interruption from this cause, it is recommended that in the construction of the line, it be adopted as a principle, that the top of the iron rail be kept as high as the average depth of snow in the country through which the line passes.

In Nova Scotia this will require probably an embankment of 2 feet high, gradually increasing as it proceeds northward to the St. Lawrence and along the flat open country on its banks, to 5 or even 6 feet.

The whole of that part of British North America through which this line is intended to be run, being as yet free from railways, the choice of gauge is clear and open.

Without entering into and quoting the arguments which have been adduced in favour of the broad or narrow gauge of England, as it is more a question of detail than otherwise, it will be deemed sufficient for the present report to recommend an intermediate gauge. Probably 5 feet 6 inches will be the most suitable, as combining the greatest amount of practical utility with the least amount of increased expenditure.

With the object of proceeding on to the consideration of expense of construction, the proposed trunk line will be supposed to have a single track with one-tenth additional for side lines and turn outs, to have a rail 65 lbs. to the yard, supported upon longitudinal sleepers with cross-ties, similar to the rail used upon the London and Croydon line; the wood to be prepared according to Payne's process, to have a gauge of 5 feet 6 inches, and as a principle, the top of the rails to be kept above the level of the surface of the ground, at a height equal to the average depth of the snow. For the best information as to the cost of making such a railway, reference must be made to the works of a similar character in the United States.

At about the close of the year 1847, there were in that country nearly 5800 miles of railway completed or in progress. The average cost for those having a single track has been estimated at 22,000 dollars, equivalent to 4166*l*. sterling per mile. For the double track, 32,000 dollars, or 6666*l*. sterling per mile.

But the extreme differences which are to be observed in the cost of construction in the various States are so great, ranging from 1600*l*. up to 24,000*l*. per mile, that no criterion can be established from averages obtained from such discordant data.

The State of Massachusetts affords the best materials for accurate information.

All the railroad corporations are by law obliged to make annual returns to the Legislature, and very valuable statistical information is thereby obtained upon railway affairs.

From the official reports for the year 1847, the following table has been compiled:—

RAILROADS in the State of MASSACHUSETTS.

Name of Road.	Length of Road in Miles.	Total Cost of Road and Equipment.	Cost per Mile.	Form of Rail, and lbs. per yard.	Miles of Single Rail.	Miles of Double Rail.	Dividend for 1847.	Cost per Mile of Single Track, Sterling.	Remarks.
		Dollars.	Dollars.	m. lbs.				£.	
Boston and Lowell . . .	26	1,956,719	75,258	H { 1½ 45 / 20 56 / 3¾ 63 }	None	26	8	7,830	
Boston and Maine . . .	73	3,021,172	41,385	{ H 6 m. 45 lbs. / rest 45 to 60 }	68	5	9	8,069	
Boston and Providence . .	48	2,545,715	53,014	T 56 to 58	32¼	15¾	7½	8,316	
Boston and Worcester . .	{ 44½ / 14 }	4,113,609	70,318	T or H 60 to 64	14	44½	8	7,583	Including Branches.
Connecticut River . . .	{ 36 / 2 }	1,167,156	30,714	H 56 lbs.	38	None	7	6,399	Ditto.
Eastern	{ 38 / 20 }	2,937,206	50,641	H and Chair { 57 lbs. / 46 lbs. }	42	16	8	8,269	Ditto.
Fall River	42	1,070,988	25,499	H 52 to 56	42	None	. .	5,312	
Fitchburgh	{ 49½ / 2 }	2,406,723	46,732	T 56 lbs.	46¼	5¼	10	8,835	Ditto.
Lexington and W. Cambridge	6½	221,309	34,047	56 lbs.	6½	None	. .	7,093	
Nashau and Lowell . . .	14¼	500,000	35,087	T 56 lbs.	1¼	13	10	3,822	
New Bedford and Taunton .	{ 20 / 1 }	483,882	23,042	56 lbs.	21	None	8	4,800	Ditto.
Norwich and Worcester . .	{ 59 / 7 }	2,187,249	33,140	T 56 lbs.	64¼	1¾	. .	6,725	Ditto.
Old Colony	{ 37 / 7 }	1,636,632	37,196	H 56 lbs.	44	None	6½	7,749	Ditto.
Pittsfield and N. Adams . .	19	446,353	23,492	H 56 lbs.	19	None	. .	4,894	
Western	118	6,982,233	59,171	56½ to 70	99	19	. .	10,617	
Total	683¾ / 146¼	31,675,946	. .	. .	146½	. .	. .	7,950	Average for single Track per Mile.
Single Track . .	830								

This table comprises, with the exception of about 50 miles, upon which there occur some doubts as to what the account precisely embraces, the whole of the railroads at present completed in the State of Massachusetts. The table shows 683¾ miles of railway, including branches, which have cost in their construction and equipment 31,675,946 dollars, or 6,599,155*l.* sterling.

There are 146 miles of double track. They have been taken at so much additional single track. A double track would not cost exactly twice that of a single one in its construction; but as these lines were made originally only with single tracks, and have been added to from time to time as circumstances would admit, it must have tended to increase the cost, and in calculating the average expense per mile, it is considered the result will not be much in error. The cost per mile it appears then has been 7950*l.* sterling.

There is no other State in the Union which presents equally good data for making an approximate estimate.

The climate and nature of the country bears also a strong resemblance to that through which the Halifax and Quebec line will pass, and in this respect the analogy of the two cases is extremely favourable.

The New York and Erie railroad, 450 miles in length, now in course of construction, will, it is supposed from the latest information, cost 6250*l.* per mile, exclusive of equipment.

The estimate for the Hudson River railroad from New York to Albany, now in progress, is for the single track 7440*l.* sterling per mile.

The estimate for the Montreal and Portland line is about 5080*l.* sterling per mile.

For the Great Western railroad in progress in Upper Canada, the estimate for that section of the line which would most resemble the Halifax and Quebec road, is 5638*l.* per mile.

On referring to the table, it will be seen that all the lines have either the H or T rail, generally 56 lbs. to the yard.

The price of railroad iron in the States is very much greater than in England, or what it can be procured for in the British provinces. It pays a very high duty on importation into the States.

On some of the lines upwards of 15*l.* per ton for rails have been paid. In England rails can now be bought for 8*l.* or 9*l.* per ton.

The advantage which the Halifax and Quebec line will possess over the lines in the table in the respect of iron alone may be estimated at 500*l.* per mile.

When these lines were constructed, also, the demand for labour was extremely great, and wages much higher than in the present day.

The average (of 7950*l.*) derived from the table may therefore very fairly be reduced by several hundred pounds.

The Halifax and Quebec line will have also many advantages which the American lines had not.

The land for the greater portion of the road will not have to be purchased. Timber and stone will be had nearly along the whole line for the labour of cutting and quarrying.

Judging then from the analogy afforded by similar, or nearly similar lines in the neighbouring States, giving due weight to the considerations which have a tendency to modify the cost in the

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particular case of the Halifax and Quebec line, and forming the best estimate to be derived from the data obtained upon the exploratory survey, which under the circumstances of a perfectly new country, only recently explored, and still covered with a dense forest, is all that can in the first instance be done, it is considered that if the sum of 700*l.* sterling per mile be assumed as the probable cost of the proposed line, it will not be far from the correct amount.

The total distance from Halifax to Quebec will be about 635 miles.

	£.
635 miles at 7000*l.* per mile will be . . .	4,445,000
Add one-tenth for contingencies . . .	444,500
	£ 4,889,500

Or, in round numbers, 5,000,000*l.*

It is estimated, therefore, that the cost for construction and equipment of the proposed trunk line, from Halifax, through New Brunswick, to Quebec, will amount to 5,000,000*l.* sterling.

The question which presents itself next for consideration is a very important one, namely, the probable returns for such an expenditure.

The information to be afforded on this head can only be derived in a very general way, from a consideration of the present population and resources of the three provinces.

The direct communication between the two termini, Halifax and Quebec, is of a very limited nature.

By land, it is confined almost to the conveyance of the mails. Passengers proceed generally by way of the United States.

By sea, in 1847, the communication was by 17 vessels, which arrived at Quebec, having a tonnage of 1257, and 18 departed from that port for Halifax whose tonnage amounted to 1386 tons.

This amount of intercourse does not at the first view appear encouraging to expected receipts, but when it is made to appear that this limited intercourse arises entirely from the want of good means of intercommunication such as would be afforded by the proposed railway, it becomes a strong argument in favour of making the line rather than against it.

The communication of the provinces with each other is cramped and restricted beyond measure by the same want.

By sea the amount of intercourse may be judged of by the return given in Appendix No. 6, furnished by the Quebec Board of Trade.

The chief elements which enter into, and upon which depends, the success of every railway enterprise, are population, agriculture, and commerce.

At the extremities of the line, and for some miles along the St. Lawrence, there is an abundant population. External commerce there is in an eminent degree. In that of agriculture its deficiency is great at present, but as there are millions of acres of good productive land only waiting for the hands necessary to cultivate them, and the means of access to which will be afforded by the railway, this very circumstance may be made to conduce to the advantage of the line, and pay a large portion of the expense of its construction.

The population of Halifax (the Atlantic terminus) is estimated at 25,000 souls. It is the capital of the province—the seat of government,—and its commerce extensive. The value of its imports and exports is estimated at 2,500,000*l.*

The city of Quebec, the other terminus, according to the census of 1844, contained (including the county which is not given separately) 45,000 persons.

But this city derives additional importance from its being the one great shipping port and outlet for all Canada. By its port passes the whole trade of that province. It may be regarded as the focus of commerce for a million and a half of souls. The value of the imports and exports together may be estimated at 5,500,000*l.* sterling, giving employment to a very great amount of shipping.

This immense trade is of necessity crowded into six months, the navigation of the St. Lawrence being closed for the remainder of the year.

In addition to these two great termini there are lying on each side of the line two most important tributaries, viz., the city of St. John and Prince Edward Island. The former with a population in city and county together of nearly 44,000 persons, with a commerce of the value of 1,800,000*l.* in exports and imports, giving employment also to a great amount of shipping. The latter with a population of 50,000 engaged principally in agriculture and the fisheries. The exports and imports of this island are about 200,000*l.* annually.

Between the city of Quebec and the River Metis there are, settled along the south bank of the St. Lawrence, 75,000 inhabitants all engaged in agriculture. These people are French Canadians, and almost every family has a small farm and homestead.

A striking peculiarity of these farms is their elongated shape, the length being generally 30 times that of the breadth, oftentimes a greater disproportion exists. The houses and farm-buildings are always built at one extremity, that which adjoins the road dividing one set of concessions from another. There are generally three or four lines of houses and roads running thus along the St. Lawrence.

The effect produced by this manner of parcelling out the land and building has been to form what can only be compared to one long and continued village for 200 miles.

For the first 100 miles out of Quebec, as far nearly as the Rivière du Loup, the proposed line of railway will run through the centre of this extended village, and with a train of moderate length, the last carriage will scarcely have cleared the door of one house before the engine will

be opposite another. For the second 100 miles it will leave these concessions and farms a little on one side, but still within reach. A more favourable disposition of a population (comprised of small farmers) for contributing to the way traffic of a railroad could scarcely have been devised.

In the country lying between the Restigouche River and Halifax, the inhabitants who will be near to the railroad will amount to about 100,000; making the population, either upon or near to the line, including the two termini, 250,000 persons. But if the total population be taken within the area, which will be benefited by and become contributors to the line, then it may be estimated at not less than 400,000 souls.

In a report of the directors, made upon the New York and Erie railroad in 1843, when the question of proceeding with that line was under consideration, one of the data upon which its future receipts was calculated was derived from population and relative distance. And using the data obtained from the working of one portion which had been completed and was in operation, it was calculated that 531,000 persons on a line of 425 miles in length, would return in net earnings to the railway 1,343,500 dollars, or 2½ dollars nearly per head, equivalent to 10*s.* sterling. As the railroad is not yet completed, the true result cannot yet be seen.

The net earnings of the railroads in Massachusetts for the year 1847 were 2,290,000 dollars. The population of that State, over whose area railways are everywhere extended, and the whole of which may therefore be considered as tributary to them, being at the time about 800,000. This gives 2¾ dollars per head, equivalent to 11*s.*, or the same result nearly.

Applying the same ratio (of 10*s.* per head) to the 400,000 inhabitants who are within the area and likely to become tributaries to the Quebec and Halifax railway, it would give 200,000*l.* as its probable revenue.

The great staple of trade of New Brunswick is its timber. For this all-absorbing pursuit the inhabitants neglect agriculture, and instead of raising their own supplies, they import provisions in large quantities from Canada and the United States. In the year 1846, New Brunswick paid to the latter for provisions alone 216,000*l.* sterling, whilst, in return, the United States only took from them 11,000*l.* in coals and fish.

Of Nova Scotia the great staples are timber and the products of the fisheries. The inhabitants import provisions also largely.

Canada is an exporting country, and capable of supplying the demands of both.

In the winter of 1847-8 the price of flour at Halifax and St. John was at 40*s.* the barrel, and it was being imported from the chief ports in the United States, even from as far as New Orleans in the Gulf of Mexico. At the same time, at Quebec the price of flour was only 25*s.* per barrel. A very great difference, which, had the railroad been in existence, would not have occurred.

Another great source of revenue likely to be developed by the railway is that of coals, to be derived from the Great Cumberland Field.

Quebec and the upper country would no doubt take large quantities for their own consumption. Halifax the same for itself, and also for exportation to the United States.

Considerable returns would arise from the fisheries and from the products of the forest lying contiguous to the line, which would find their way by it to the shipping ports.

The country through which the road will pass possesses, therefore, in itself, elements which, when fully developed, cannot fail to realize large receipts.

But there are, exclusive of these, other and highly important sources for productive revenue.

Halifax may be considered to be the nearest great seaport to Europe.

Passengers travelling between England and the Canadas would adopt this railway as the shortest and best line which they could take. Emigrants would do the same.

The mails, troops, munitions of war, commissariat supplies, and all public stores would naturally pass by it, as the safest, speediest, and cheapest means of conveyance.

If a straight line be drawn from Cape Clear, in Ireland, to New York, it will cut through or pass close to Halifax.

The latter is therefore on the direct route; and as the sea voyage across the Atlantic to New York may be shortened by three days nearly, in steamers, it is not improbable that on that account, when the branch railroad to St. John is completed, and other lines to connect on with those in the United States, the whole or the greatest portion of the passenger traffic between the Old and New World would pass through Halifax, and over a great section of the proposed railroad.

But the great object for the railway to attain, and which, if it should be able to accomplish, its capability to pay the interest of the capital expended would be undoubted, is to supersede the long and dangerous passage to Quebec by the Gulf of St. Lawrence.

To make two voyages in a season vessels are obliged to leave England earlier, and encounter the dangers of the ice in the Gulf, much sooner than it is safe or prudent for them to do.

The loss of life and property which has occurred from this cause, and returning late in the autumn, has been enormous. It cannot be ascertained, but probably it would have more than paid for the railway.

An opinion may, however, be formed of it from the rates of insurance, which in the spring and autumn are as high as 10 per cent. A much higher rate than to any other part of the world.

The navigation of the St. Lawrence is closed for about six months of every year. During the whole of this period all the produce of the country is locked up, and necessarily lies unproductive on the hands of the holders.

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The surplus agricultural produce of the year cannot be got ready to be shipped in the season it is produced. In the winter of 1846-7, it has been stated on good authority, that 500,000 barrels of flour were detained in Montreal at the time when famine was raging in Ireland. As soon as the season opened there was such a demand for shipping to carry provisions, that the ordinary course of the timber trade was deranged by it.

All this would have been prevented had the railway been then in existence.

For six months in the year then the St. Lawrence would cease to be a competitor with the railway, and large quantities of produce would be certain to be forwarded by it.

For the other six months of the year it would have also the following strong claims to preference:—rapidity of transport; the saving of heavy insurance; cheaper rate of freight from Halifax; vessels engaged in the Canadian trade could make three voyages to Halifax for two to Quebec.

The trade which is now crowded into six months, to the great inconvenience of every one concerned, rendering large stocks necessary to be kept on hand, would be diffused equally over the whole year.

It is most probable that these advantages will be found so great that only the bulky and weighty articles of commerce, such as the very heavy timber and a few other goods, will continue to be sent round by the Gulf of St. Lawrence.

If such should prove to be the case, then the proposed railway would have as much or perhaps more traffic than a single track could accommodate.

The cost of transportation, it is calculated, will not be too high on this line to admit of the above results being realized, and in that case, more especially if the capital can be raised at a moderate rate of interest, it is considered highly probable that it will, even in a commercial point of view, be a profitable undertaking.

From evidence given to the Gauge Commissioners in England, it appears that the cost of transport for goods on the undermentioned lines of railway was as follows:—

Great Western . .	·06	of a penny per ton per mile.
Grand Junction . .	·13	,, ,,
Birmingham and Gloucester	·09	,, ,,
South Western . .	·10	,, ,,
London and Birmingham .	·12	,, ,,
	5)·50	
	·10	Average per ton per mile.

This is supposed to be gross weight, including carriages, &c.

One-fifth of a penny per mile per ton will be a liberal allowance for the net weight.

From a very carefully prepared document,* extracted from a Report of the Commissioners appointed in 1846 by the Legislature of the State of New York, to locate certain portions of the New York and Erie Railroad, it appears that the cost of motive power on some of the principal railroads in the United States was 40 cents per train per mile, equivalent to 1*s.* 8*d.* sterling.

With the expected grades on the Halifax and Quebec line, it is calculated that an engine of good power, having the assistance of an extra engine for 25 miles of the distance, will convey 100 tons of goods at a moderate speed of 8 to 10 miles an hour over the whole line.

The total cost per train would then be—

	£.	*s.*	*d.*
635 miles, at 1*s.* 8*d.* per mile . . .	52	18	4
25 miles, at 1*s.* 8*d.* for extra engine .	2	1	8
Total for 100 tons . . .	£55	0	0

Or 11*s.* per ton for the whole distance. Equal to ·207 drs. per ton per mile, the same nearly as the average on the English railways.

At this rate the actual cost of carrying a barrel of flour from Quebec to Halifax will be only 1*s.* 1*d.*; and if it be doubled, to pay interest on capital, then 2*s.* 2*d.* might be the price charged for its conveyance.

The freight of flour from Quebec to England may be taken at 5*s.* per barrel; from Halifax, at 3*s.*

The difference in freight would therefore pay its transit by railway, and the difference in the rates of insurance would be to the profit of the owner; and the voyage being shorter, there would be less risk of its arrival in the market in a heated or deteriorated condition.

Provisions, and all other articles whose value is great in proportion to their bulk, would be as advantageously forwarded by this route.

It is fully expected, therefore, that the railway will be able to compete successfully with shipping in the St. Lawrence even during the summer season.

But there is still another great and important source from which traffic may be expected, viz.,—From those vast and extensive regions in the far west, round the Lakes Huron, Michigan, and Lake Superior.

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* Vide Appendix No. 7.

By the completion of the canals along the River St. Lawrence, the produce of these lake countries now finds its way to the markets of Montreal and Quebec.

Large cargoes, consisting of upwards of 3000 barrels of flour can now pass from their ports down to Quebec without once breaking bulk.

Already produce which found its way to New York by the circuitous route of the Mississippi and New Orleans has been diverted to the channel of the St. Lawrence.

The extent to which this will take place it is not possible yet to calculate; but there is no doubt that large quantities of produce which formerly found its way to the Atlantic ports of New York and Boston will be diverted to the St. Lawrence.

Of the enormous exports of provisions from the United States, the following will give some idea :—

	In 1846.	In 1847.
Flour, barrels . . .	2,289,476	4,382,496
Wheat, bushels . . .	1,613,795	4,399,951
Corn, bushels	1,826,068	16,326,050
Meal, barrels	293,720	918,066

The greatest portion, if not nearly all this immense produce, of which the above forms only a few items in the great account, was received at the Atlantic ports from the Far West. And it is for this most important and still increasing trade that Montreal and Quebec will now, by means of the St. Lawrence canals, have the most favourable chance of a successful competition with New York and Boston.

It has been calculated that the cost of transport for a barrel of flour from the Lakes to New York was 5*s.* 1*d.* sterling; to Boston 6*s.*, exclusive of charges for transshipment.

By the Quebec and Halifax line it is estimated, now that the canals are open, a barrel of flour may be delivered at Quebec for 2*s.* sterling, and carried to Halifax for 2*s.* 2*d.*; total 4*s.* 2*d.*

By the Montreal and Portland, 1*s.* 8*d.* has been estimated as the price per the railway, to which, if 2*s.* more be added as freight to Montreal, the price by that line will probably be only 3*s.* 8*d.* sterling per barrel. The Montreal and Portland will have, therefore, an apparent advantage over the Quebec and Halifax line, arising from its much shorter distance. But there are some drawbacks attending it, which may cause the preference to be given to the latter notwithstanding. The line passes through the United States.

A transit duty of 2½ per cent. *ad valorem* has to be levied upon all foreign produce, and introduces the inconvenience of custom-houses and custom-house officers.

Portland is a foreign port, and is 400 miles by sea farther from England than Halifax.

It has been seen in a former part of this report, when speaking of the Utica and Syracuse railroad, how inadequate that line was to take all the traffic which was required to be forwarded by it, at the time the Erie Canal is closed.

The growing population and produce of the Western States are so gigantic, that it is probable there will be more than sufficient to employ fully both the Montreal and Portland and the Quebec and Halifax railroads.

From the foregoing remarks it will appear, then, that although no very good or precise estimate of the returns for the expenditure of five millions sterling can be given, yet that there are very good general grounds upon which to form an opinion that ultimately, if not at once, the line will, in a commercial point of view, be a very productive one.

The Montreal and Portland, which will be the great competitor with that of the Quebec and Halifax line, is an enterprise of a purely commercial and local nature. As such, it is not likely shareholders will be contented unless they receive what they have every right to expect, a high rate of interest for the expenditure they have incurred and the risk they have encountered in the undertaking.

But with the Quebec and Halifax it is very different; the enterprise is of general interest. It concerns the prosperity and the welfare of each of the three provinces, and the honour as well as the interests of the whole British empire may be affected by it. It is the *one* great means by which alone the power of the mother-country can be brought to bear on this side of the Atlantic, and restore the balance of power now fast turning to the side of the United States.

Every new line of railway made in that country adds to their power, enabling them to concentrate their forces almost wherever they please, and by the lines, of which there are already some and there will soon be more, reaching to their northern frontier, they can choose at their own time any one point of attack on the long-extended Canadian frontier, and direct their whole strength against it.

The provinces, therefore, and the empire having such interest in the formation of the Halifax and Quebec line, it should be undertaken by them in common as a great public work for the public weal.

If so undertaken, the provinces supported by the credit of the mother-country could raise capital at a rate of interest which could not be done by any company of shareholders. And if to this advantage be added the disposal for the exclusive benefit of the railway of a portion of the wild lands along the line, and in the immediate country which it would be the means of opening to settlement and cultivation, then it is highly probable that it would be constructed for three millions sterling.

In a former part of this report it has been estimated that there are in the counties through which this line will pass fourteen millions of acres of land yet ungranted, and therefore remaining at the disposal of the Provincial Government.

The ordinary price of an acre of wild or uncleared land is about 2*s.* 6*d.* to 3*s.* per acre; but

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where public roads are made through them, the value immediately increases, and it will not be considered an extravagant estimate to suppose that the land along it, or in the immediate vicinity of the railway, will be worth 1*l.* per acre.

For the construction of the Great St. Lawrence Canal, by which Canada has now the prospect of reaping such immense advantages from the trade of the western country, the Imperial Government guaranteed the interest on a loan of two millions sterling and upwards, at four per cent. This loan was easily raised, and a large premium per cent. was received in addition for it.

There can be little doubt that another loan of three millions sterling at the same rate of four per cent. interest, could be raised upon the credit of the provincial revenues if guaranteed by the mother-country. With this amount of capital and two millions of acres to be reserved and sold from time to time, it is conceived the railway may be made.

Upon the strength of these two millions of acres and the loan as a basis, a large amount of notes might be issued in payment of the wages and salaries of the labourers and other persons employed on the works of the railway. They should be made receivable for taxes and customs duties. The amount authorized to be issued might be limited to the extent of the acres, and as these were sold, an equal amount of the notes should be cancelled.

The issue of a number of notes which would pass current over the three provinces would be conferring a great benefit upon the community at large. The currency is not the same throughout, and persons who travel from one province to another are now put to inconvenience, and have often to pay a discount upon exchanging the notes of one colonial bank for those of another. Advantage might be taken of the measure to assimilate the currency of the colonies to each other, and make it "sterling," the same as in England.

By a little arrangement also, these notes might be made payable at the chief ports of emigration in the United Kingdom; and in that case a very great convenience would be afforded to a large class of persons on both sides of the Atlantic.

To remit small sums now requires the intervention of bankers or agents. This has the effect upon persons resident in the settlements (and no doubt also often in towns) of preventing their sending the assistance which they otherwise would do to friends at home. Many a small note would be put up and sent in a letter, which now is never thought of for want of the convenience.

In remitting sums from Halifax to England, the banks do not like to give bills at less than 60 days' sight. These notes would, therefore, become a great public benefit, and there would be no fear of their being kept in circulation almost to any amount.

Upon the loan of three millions, the interest at four per cent. would amount to 120,000*l.* per annum.

Of this sum it may be fairly assumed that for the conveyance of the mails between Halifax and Quebec, the Post Office department would be willing to pay annually an equal amount to what is now paid for the same service. This has not been officially obtained, but there are good grounds for supposing that it is nearly 20,000*l.*

In the case, then, that beyond this the railway only paid its own working expenses, the sum of 100,000*l.* would have to be made good out of the revenues of the provinces.

The proportion of this, or of whatever sum might be deficient to pay the interest on the loan, would have to be arranged; and it may, for the sake of illustration, be supposed to be as follows:—

Nova Scotia . . .	20,000	Proportion	·2
New Brunswick . .	20,000	„	·2
Canada	30,000	„	·3
The Imperial Government	30,000	„	·3
Total .	£100,000		·10

For the proportion guaranteed by the provinces, they would receive the benefits conferred by the railway in developing their resources, increasing the value of all property, promoting the sale and settlement of their wild lands, increased population, and increased revenue.

For the proportion guaranteed by the Imperial Government, all Government officers, civil or military, troops, munitions of war, supplies, &c., for the public service, and emigrants should be transported over the line at the cost price.

New Brunswick and Nova Scotia it is understood are most willing to guarantee the interest to the extent of their means, and in a fair proportion.

Canada having done so much already for the communications above Montreal, it is fully expected will not be backward in perfecting those below Quebec.

In the extreme case supposed above, viz., of the railway yielding no returns beyond working expenses, it is not conceived that either one of the provinces or the empire would not receive an equivalent in some other form for its direct contribution to make good the interest.

An account is at present being taken of the existing way traffic between Halifax and Amherst, by the commissioner appointed by Nova Scotia to collect statistics for the railway. The same is being done for that portion of the line along the banks of the St. Lawrence.

There is some reason to believe that these two portions of the line will be found to have sufficient traffic to pay, over and above working expenses, the moderate interest upon capital of 4 per cent.

If such should prove to be correct, then the foregoing statement would be modified and stand thus—

Total distance, Haalifx to Quebec		635
Quebec to Rivière du Loup	110	
Halifax to Amherst and Bay Verte . . .	125	
	——	235
Leaving unproductive still		400 miles.

If the total line can be done for 3,000,000*l.*, then the proportion for the 400 miles would be 1,889,600*l.* or 2,000,000*l.* nearly.

The interest for which would amount to 80,000*l.*

Deducting 20,000*l.* for the conveyance of the mails, then the sum to be responsible for would be 60,000*l.*, which divided proportionally as before, would give for

Nova Scotia	12,000*l.*	proportion	·2
New Brunswick . . .	12,000*l.*	„	·2
Canada	18,000*l.*	„	·3
Great Britain . . .	18,000*l.*	„	·3
Total . .	60,000*l.*		·10

Therefore, for the responsibility (perhaps for assuming it only) of 100,000*l.*, or as the case may prove, 60,000*l.*, the Quebec and Halifax Railway may be made.

But to look at this great work only as a commercial speculation, and as yielding mere interest for the expenditure incurred, would be to take a very limited view of the objects it is capable of achieving.

In the United States they are well aware of the increased value which internal improvements and communications give to property of every kind.

In those countries works have been undertaken for that object alone, not for the mere return which the work, whether railway, road, or canal, would make of itself.

The indebtedness of the several States has been incurred almost entirely in making great internal improvements. And in the boldness and unhesitating way in which they have incurred debts and responsibilities for the purpose of developing their resources may be seen the secret of their unrivalled prosperity.

The State is in debt, but its citizens have been enriched beyond all proportion.

Most unfavourable comparisons are made by travellers who visit the British provinces and the United States. And some have gone so far as to state, that travelling along where the boundary is a mere conventional line, they could at once tell whether they were in the States or not.

On the one side the State Governments become shareholders to a large amount in great public works, lead the way, and do not hesitate to incur debt, for making what has been termed "war upon the wilderness;" employment is given, and by the time the improvement is completed, property has been created, and the employed become proprietors.

On the other side the provincial Governments do not take the initiative in the same manner, and hence in the settlements and in the provinces generally, may be seen this marked difference in the progress of people who are identically the same in every respect.

Until the British provinces boldly imitate the policy of the States in this regard, and make war upon their "wilderness," their progress will continue to present the same unfavourable contrast.

The creative or productive power of canals, railways, &c., may be traced in the history and progress of the State of New York.

The Erie Canal was commenced in 1817, and completed in 1825, at a cost of 7,143,789 dollars, or 1,400,000*l.* sterling. In 1817 the value of real and personal property in the city of New York, was from official documents estimated at 16,436,000*l.* sterling. In 1825, it was estimated at 21,075,000*l.* sterling. In 1829, the population of the State was 1,372,000, and in 1830 the population of the State was 1,918,000.

The canal was found so inadequate to the traffic, that between the years 1825 and 1835, a farther sum of 2,700,000*l.* was expended in enlarging it.

Making the total cost to that date, 4,100,000*l.* sterling.

It has been seen that in the city of New York—

In 1817, the official value of real and personal property was	16,436,000*l.*
1835, „ „ „	45,567,000*l.*

Being an increase of $2\frac{3}{4}$ times in 18 years.

For the State of New York—

In 1817, the official value of real and personal property was	63,368,000*l.*
1835, „ „ „	110,120,000*l.*

Or an increase of nearly 47,000,000*l.* sterling in the value of property attributed chiefly, if not entirely, to the formation of the canals.

In 1836, the amount conveyed to tide-water by the canal was 697,357 tons.

And on the 1st of July of that year there had accumulated in the hands of the Commissioners an amount sufficient to extinguish the whole of the outstanding debt incurred in its construction.

The net receipts from all the State canals, after deducting the expenses of collection and

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superintendence, for the year 1847, was 449,270*l.* Villages, towns, and cities have sprung up along its course.

The population of the State, which was—

In 1810	959,949
Was in 1845	2,604,495

In 1846, the value of real and personal property was estimated at 128,500,000*l.*

It will be seen from the above, therefore, that in addition to the wealth created for individuals, the canals produce a large annual revenue to the State.

The following extracts from the financial affairs and statistics of some of the States may be quoted in illustration of this part of the subject:—

1847.

Massachusetts.

	Dollars.
Total indebtedness of the State 1st January, 1847 .	999,654
Credit of the State, lent to railroads . . .	5,049,555
Total liabilities of the State . .	6,049,209

As security for the redemption of the scrip lent to railroads, the Commonwealth holds a mortgage on all the roads, and also 3000 shares in the Norwich and Worcester, and 1000 in the Andover and Haverhill.

Pennsylvania.

	Dollars.
Public property, canals, and railroads, at original cost,	28,657,432

Maryland.

	Dollars.
Receipts from Baltimore and Ohio Railroad . .	42,402
Ditto from Canal Companies	11,550

North Carolina.

	Dollars.
Debt of the State, on account of Railroad Companies .	1,110,000

Ohio.

	Dollars.
Debt contracted for the sole purpose of the construction of Public Works within the State . . .	19,246,000
Canals, 820 miles in length, cost	15,122,503
Net receipts in 1846, after paying repairs and expenses,	408,916
In 1810 the population of this State was .	45,865
In 1820 „ „ . .	581,434
In 1840 „ „ . .	1,519,467

Or tripled nearly in 20 years, during the progress of her canals.

Michigan.

	Dollars.
Debt on 30th November, 1845	4,394,510

Total length of railroads finished and belonging to the State, 222 miles.

This State was authorized to raise a loan of 5,000,000 dollars for internal improvements. For the same purpose, Congress granted to this State 500,000 acres of land.

In 1840 the population was . . .	212,267
In 1845 „ „ . .	304,278

Or an increase of 50 per cent. nearly in five years.

Indiana.

	Dollars.
1st January, 1847, the public debt was . . .	14,394,940

By the terms of the Act adjusting this debt, it is to be equally divided between the State and the Wabash and Erie Canal. Of this canal, which is to be 458 miles long, 374 miles are in Indiana; 174 of this portion are finished, and in operation. There remain 200 miles to be completed, upon which part about 1,200,000 dollars have been expended by the State. It is estimated to cost the farther sum of 2,000,000 dollars to complete the entire canal. To cover this amount, the State is to transfer to trustees 963,126 acres of land adjoining to or in the neighbourhood of the canal.

The population of this State in 1811 was .	24,520
„ „ 1830 was .	343,031
„ „ 1840 was .	685,086

Or doubled in 10 years.

Illinois.

	Dollars.
1847.—Total internal improvement debt . . .	8,165,081
Total canal debt	6,009,187
	14,174,268

The population in 1830 was . . .	157,455
„ 1840 was . . .	476,183

Or tripled in 10 years.

	Acres.
The sales of the public lands during one year (1845) in the United States amounted to	1,843,527
	Dollars.
Producing	2,470,298

Or an average of 5*s.* 7*d.* sterling per acre.

But to show the effect produced by a canal or railway passing through property, the following extract may be quoted from the Report of a Board of Directors of the New York and Erie Railroad Company in February, 1844:—

"The Board find that they have omitted one description of property, which has heretofore been considered of great value, but the right to most of which has been lost to the company by failure to complete the road within a certain period; the most valuable of which consisted of 50,000 acres of wild land in Cattaraquas county, near Lake Erie, and one-fourth part of the village of Dunkirk.

"An offer in writing was made in 1837 by responsible parties to take these donations, and pay further the sum of 400,000 dollars, provided certain portions of the railroad were completed within a specified time"

That is, about 8 dollars, or 33*s.* 4*d.* sterling per acre.

In Michigan 461,000 acres were granted by Congress for the endowment of a university. These lands were selected in sections from the most valuable of the State. The minimum price of these was at one time 20 dollars, or 4*l.* 6*s.* 8*d.* sterling per acre, but became lower afterwards: 17,142 acres, the quantity sold up to 30th November, 1845, brought 2*l.* 9*s.* per acre.

69,000 acres, devoted to schools, were sold for 1*l.* 7*s.* per acre.

Such, then, are some of the results of making "war upon the wilderness."

In New Brunswick there are, according to an official Report of the Surveyor-General, dated 15th December, 1847, 20,000,000 acres, of which about 6,000,000 are either granted or sold, and 3,000,000 may be considered as barren or under water; leaving, therefore, at the disposal of the Government, 11,000,000 of acres of forest land fit for settlement.

Of the 6,000,000 granted or sold, only 600,000 acres are estimated as being actually under cultivation.

By a statistical table published by W. Spackman, London, there are—

	Acres Cultivated.	Acres Uncultivated.	Acres Unprofitable.	Total Acres.
In England	25,632,000	3,454,000	3,256,400	32,342,000
Wales	3,117,000	530,000	1,105,000	4,752,000
Scotland	5,265,000	5,950,000	8,523,930	19,738,000
Ireland	12,125,280	4,900,000	2,416,664	19,441,944
New Brunswick . .	600,000	16,400,000	3,000,000	20,000,000

Population of England . . .	14,995,508
„ Wales . . .	911,321
„ Scotland . . .	2,628,957
„ Ireland . . .	8,205,382
„ New Brunswick . .	208,000

In Ireland there appears to be, from the above table, 17,000,000 acres of ground fit for cultivation, and it has a population of 8,000,000 to support.

In New Brunswick there is an equal amount of ground to cultivate, and it has only a population of 208,000 persons.

If the land yet uncleared and fit for cultivation be added, which remains in the northern section of Nova Scotia, and again between the boundary of New Brunswick and the River St. Lawrence to the east of Quebec, then there would be a quantity of nearly equal to that of England itself, supporting a population of 400,000 souls.

It is not too much then to say, that between the Bay of Fundy and the St. Lawrence, in the country to be traversed by the proposed railway, there is abundant room for all the surplus population of the mother country.

Of the climate, soil, and capabilities of New Brunswick, it is impossible to speak too highly.

There is not a country in the world so beautifully wooded and watered.

An inspection of the map will show that there is scarely a section of it without its streams,

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from the running brook up to the navigable river. Two-thirds of its boundary are washed by the sea; the remainder is embraced by the large rivers the St. John and Restigouche.

For beauty and richness of scenery this latter river and its branches are not surpassed by anything in Great Britain.

Its lakes are numerous and most beautiful, its surface is undulating, hill and dale, varying up to mountain and valley. It is everywhere, except a few peaks of the highest mountains, covered with a dense forest of the finest growth.

The country can everywhere be penetrated by its streams.

In some parts of the interior, for a portage of three or four miles, a canoe can float away either to the Bay Chaleurs and the gulf of St. Lawrence, or down to St. John's in the Bay of Fundy.

Its agricultural capabilities, its climate, &c., are described in Bouchette's works, in Martin's British Colonies, and other authors. The country is by them, and most deservedly so, highly praised.

There may be mentioned, however, two drawbacks to it, and only two.

The winter is long and severe; and in summer there is the plague of flies.

The latter yield and disappear as the forest is cleared; how far the former may be modified by it experience only can show.

For any great plan of emigration or colonization, there is not another British colony which presents such a favourable field for the trial as New Brunswick.

To 17,000,000 of productive acres there are only 208,000 inhabitants.

Of these 11,000,000 are still public property.

On the surface is an abundant stock of the finest timber, which in the markets of England realise large sums annually, and afford an unlimited supply of fuel to the settlers.

If these should ever become exhausted, there are the coal-fields underneath.

The rivers, lakes, and sea-coasts abound with fish.

Along the Bay Chaleurs it is so abundant that the land smells of it; it is used as manure; and while the olfactory senses of the traveller are offended by it on the land, he sees out at sea immense shoals darkening the surface of the water.

For about the same expense, five emigrants could be landed in New Brunswick for one in the Antipodes. Being within a fortnight by steam from London, any great plan of colonization could be directed and controlled by the Home Government.

In case of distress or failure, it would be long previously foreseen; the remedy or assistance could be applied; or, if beyond these, there would be the upper country and the far west always open, and ready to receive the colonists.

The present limited population being so generally engaged in the pursuit of the timber trade and in the fisheries, there is the richest opening for agriculturists.

New Brunswick annually pays to the United States upward of 200,000*l.* for provisions and other articles which she can raise upon her own soil.

Nova Scotia does very nearly the same thing.

Whilst within a few miles' reach of their own capitals, there is abundance of land for agricultural productions; these two provinces are dependent for large supplies of food upon the United States.

Flour is imported from as far as New Orleans.

Wheat grown in the valley of the Mississippi is shipped at St. Louis, and imported into New Brunswick. It is ground into flour at the mills of St. John, and furnishes a large share of the bread eaten by the labourers of that city.

There exists, therefore, a good market already on the spot for agricultural produce; and it would be a strange anomaly, indeed, if a country situated within three or four weeks' sail of the markets of England, could not compete with the growers of produce in the valley of the Mississippi and the countries round the great lakes in the far west.

One thing, however, is greatly to be deprecated; that is, any sudden or large emigration without previous preparation.

Before wheat or food of any kind can be grown, the forest has to be removed; and that is a work of time and hard labour, during which those engaged in it must be fed from other sources.

With some little previous detailed surveying, the proposed railway can be commenced both at the Quebec and Halifax ends as soon as decided upon, and carried on for miles. During which time the further detailed survey necessary for the remainder of the line, and particularly the portion through the wilderness might be made, and the line actually marked and cut throughout.

This line, when cut, would form a basis for laying out extensive blocks of land, and dividing them into allotments for settlers.

It will be unnecessary in this Report to recapitulate all the good effects produced upon every country in which railways have been established; but some may be mentioned.

They have become necessary to the age, and that country which has them not must fall behind in the onward march of improvement and in the development of its resources. And the longer it is suffered to do so, the greater and more unfavourable will be the contrast which it will present to the world.

Already in this respect the British provinces of Nova Scotia and New Brunswick are far behind their enterprizing neighbours.

One of the immediate effects of making this railway would be to place them in a position of equality. They are now dependent upon them for food.

At the closing of the navigation of the St. Lawrence, if the United States were merely to

prohibit the exports of provisions from their own harbours, the consequences would be serious to these two provinces. Canada could not then supply them.

In May, 1847, when the exploratory parties were being formed at Fredericton, and provisions were being forwarded to the woods for their use, there was a scarcity of flour at St. John. It was said that sufficient for only two or three days' consumption remained in that city. The prices rose considerably, and the scarcity was only averted by the arrival of some cargoes from the United States intended for Eastport.

The railway, had it been established, would have prevented such a state of things, and may save it for the future.

For the want of such a communication, Nova Scotia now finds it easier and more advantageous, notwithstanding a heavy duty of 20 per cent. against her, to export her great staple of fish to the States than to Canada; whereas, if the railway were made, it would pass on to the latter, where there would be an extensive market for it, and flour would be received in return.

Halifax would become the grand emporium of trade for the British provinces.

With the assistance of the electric telegraph, an order from Quebec could be received in a few minutes, and the articles wanted could be sent off by the next train.

As the vessels now arrive in fleets in the spring, and again in the autumn, it is a matter of forethought and consideration to the merchant of Canada to know what he shall provide himself with.

To the intending emigrant it will afford him the choice of any month in the year to set out for his new country, and if by means of friends previously settled, his place of abode has been chosen, he can time his arrival so as to have the shortest possible time to wait until his own crops are ready to supply him with food.

Arriving now, as thousands annually do, in the spring, when the seed time is at hand, and the land uncleared, they lose the valuable opportunity of that year's crop, and have to wait over, existing, perhaps, upon their little capital for nearly 18 months, until the succeeding harvest comes to them. To all such emigrants nearly a year may be saved.

Surprise has sometimes been expressed that out of so many who yearly land in the provinces so many pass on and become settlers in the States.

To the poor man his labour is his capital, and he must transfer himself to the place where employment is to be found.

The proposed railway would be such a work as would engage thousands in its immediate construction. While the stimulus and new spirit it would infuse into the whole community, now cribbed and confined as it were to their own locations, would give rise to branches and other works which would employ additional thousands.

It has been seen that the population of some of the Western States have doubled and even tripled themselves in the course of 10 years.

The population of New Brunswick is now only 208,000. Her revenue in 1847 was 106,000*l.* sterling, or 10*s.* per head.

There is no apparent reason why, if the same facilities of employment and land for settlement were afforded, that her progress should not be also very great.

Every emigrant, induced to settle and remain in the country, may be calculated as producing 10*s.* annual revenue to the province.

If the formation of the railway increased the population of New Brunswick by 40,000 persons only, then her proportion of the guaranteed interest would be covered from that cause alone.

The same might occur also to Nova Scotia and Lower Canada.

It may be asked what is to become of the labourers employed upon the railway during the winter. This is the season when lumbering or cutting of timber commences. They might engage in it also. But with the wages earned in the summer they should be incited to purchase small lots of ground of about 50 acres each.

The labours of the season over, or suspended upon the railway, they could most advantageously employ themselves in clearing, logging, and improving their own lots. This they could do to such an extent that in the spring the women and older children could burn the logs off and put in some sort of crops for food, such as potatoes, Indian corn, &c.

Mechanics might either do the same, if railway work could not be found for them, or find employment in the towns.

Another great effect of the railway would be to enhance almost immediately the value of all real and personal property. The effects produced by the Erie Canal in doubling and nearly tripling that of the City of New York has been stated.

Villages and towns would, no doubt, spring up in its course the same as on the canal. The railway would give them birth. Agriculture and external commerce would support and enrich them.

But if, by its means, the navigation of the Gulf of St. Lawrence is spared, what an amount of human suffering and loss of life will it not save.

The losses from shipwreck have been great, but not equal to that arising from protracted voyages and crowded emigrant ships.

In 1847, 89,738 persons emigrated to the British provinces, of whom 5293 persons perished at sea, and 10,000 are said to have died after their arrival.

This was a most unusual year, and it is to be hoped, by every friend of humanity, that anything like it will never occur again.

No human means could have saved all this loss of life, but there is, no doubt, a less protracted voyage, and a more favourable time than the spring of the year in the St. Lawrence would have prevented some of the fatal results.

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The railway established, the passage may be shortened, and the time of emigration may be selected at choice.

Troops are annually moved to and from Canada. About the close of the navigation in 1843, a transport, having the 1st Royal Regiment on board, was wrecked in the mouth of the St. Lawrence. The men got safely on shore, but there were no roads or means of getting away from the place. By the personal exertions of one of the officers, who made his way through the woods on snow-shoes to the nearest settlements, and thence to Quebec, information was given of the wreck, and a steamer sent down to take them off. But for this, the consequences must have been that the regiment would have had to winter there in the best manner they could.

Embarking and disembarking at Halifax, all danger and inconvenience from the Gulf navigation would be avoided. Time and expense would be saved, and the season might be disregarded.

The mails to and from Canada could pass over British territory exclusively, and they would be received at Quebec before the steamer reached Boston, and at Montreal about the same time as it arrived at that port.

In a political and military point of view, the proposed railway must be regarded as becoming a work of necessity.

The increasing population and wealth of the United States, and the diffusion of railways over their territory, especially in the direction of the Canadian frontier, renders it absolutely necessary to counterbalance, by some corresponding means, their otherwise preponderating power.

Their railway communications will enable them to select their own time and their own points of attack, and will impose upon the British the necessity of being prepared at all points to meet them.

It is most essential, therefore, that the mother country should be able to keep up her communications with the Canadas at all times and seasons. However powerful England may be at sea, no navy could save Canada from a land force.

Its conquest and annexation are freely spoken of in the United States, even on the floors of Congress.

Weakness invites aggression, and as the railway would be a lever of power by which Great Britain could bring her strength to bear in the contest, it is not improbable that its construction would be the means of preventing a war at some no distant period.

The expenses of one year's war would pay for a railway two or three times over.

The following extract from the Report of Lord Durham, Her Majesty's High Commissioner and Governor-General of British North America in 1839, is so apposite and just, and bears so strongly upon the subject under consideration, that it is conceived no better conclusion can be made to this Report than to insert it :—

"These interests are, indeed, of great magnitude; and on the course which your Majesty and your Parliament may adopt with respect to the North American colonies, will depend the future destinies, not only of the million and a half of your Majesty's subjects who at present inhabit those provinces, but of that vast population which those ample and fertile territories are fit and destined hereafter to support. No portion of the American continent possesses greater natural resources for the maintenance of large and flourishing communities. An almost boundless range of the richest soil still remains unsettled, and may be rendered available for the purposes of agriculture. The wealth of inexhaustible forests of the best timber in America, and of extensive regions of the most valuable minerals, have as yet been scarcely touched. Along the whole line of sea-coast, around each island, and in every river, are to be found the greatest and richest fisheries in the world. The best fuel and the most abundant water-power are available for the coarser manufactures, for which an easy and certain market will be found. Trade with other continents is favoured by the possession of a large number of safe and spacious harbours; long, deep, and numerous rivers, and vast inland seas, supply the means of easy intercourse, and the structure of the country generally affords the utmost facility for every species of communication by land. Unbounded materials of agricultural, commercial, and manufacturing industry are there. It depends upon the present decision of the Imperial Legislature to determine for whose benefit they are to be rendered available. The country which has founded and maintained these colonies at a vast expense of blood and treasure, may justly expect its compensation in turning their unappropriated resources to the account of its own redundant population; they are the rightful patrimony of the English people—the ample appanage which God and nature have set aside in the new world for those whose lot has assigned them but insufficient portions in the old."

And if for great political objects it ever become necessary or advisable to unite all the British provinces under one Legislative Government, then there will be formed on this side of the Atlantic one powerful British state, which, supported by the imperial power of the mother-country, may bid defiance to all the United States of America.

The means to the end, the first great step to its accomplishment, is the construction of the Halifax and Quebec Railway.

(Signed) WM. ROBINSON,
Captain Royal Engineers, Brevet-Major.

August 31, 1848.

Major-General Sir John F. Burgoyne, K.C.B.,
Inspector-General of Fortifications,
&c. &c. &c.

LIST of INCLOSURES to Major ROBINSON'S REPORT of August 31, 1848.*

Report on the proposed trunk line of railway from an Eastern Port, in Nova Scotia, through New Brunswick, to Quebec, with seven appendices.
Bound book containing 16 exploratory plans.
Printed map of Nova Scotia, New Brunswick, and a portion of Lower Canada, showing the explored route for the proposed trunk line of railway from Halifax to Quebec.
Model map.
General section.
The foregoing relate to the line of railway recommended.
Plans Nos. 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31, of a line of railway reported upon.

APPENDIX No. 1.

(Plans referred to :—General Plan No. 1, Book of Plans 16, Detailed Plans, Nos. 25, 26, 27, 28, 29.)

Report on and Description of the proposed Trunk Line of Railway from Halifax through New Brunswick to Quebec.

THE exploratory surveys which have been carried on during the years 1846-7, for the purpose of ascertaining the practicability of establishing a line of railway from the Atlantic shores of Nova Scotia, through the province of New Brunswick to the city of Quebec, on the River St. Lawrence, having resulted successfully, I have the honour to furnish you with a report upon the line which has been found practicable, and which has fallen under my more immediate observation and direction.

The port of Halifax, in Nova Scotia, being selected as the Atlantic terminus of the railway, the chief difficulties to be surmounted between that port and the St. Lawrence have been ascertained to be the range of highland in Nova Scotia, known as the Cobequid Hills, averaging from 800 to 1000 feet in height; and two ranges of highlands, one of which crossing the province of New Brunswick from the River St. John, below the Grand Falls in the north-easterly direction, rises to a considerable elevation at the head waters of the Rivers Tobique, Miramichi, and Nepisiguit, and thence descends gradually to the shores of the Bay Chaleurs.

The other range lying between the Rivers Restigouche and St. Lawrence, and nearly parallel to their general course, is very broken and lofty, some of the mountain ranges attaining an elevation of 3000 feet above the sea.

Another obstacle of a general nature exists, and which increased the difficulty of ascertaining a practicable line through New Brunswick, inasmuch as the course of the line of railway is at right angles to the general course of the numerous rivers which intersect that province.

The proposed line passes the first of these obstacles, the Cobequid Hills in Nova Scotia, about 65 miles from Halifax, by the valley of the Folly River, in the township of Londonderry, attaining its summit level 600 feet above high water at Halifax, at the lake from which that river flows, being the lowest point on the hills to which there is a favourable approach, which has been ascertained.

The line avoids the broken and lofty chain of highlands in New Brunswick, by following the level shores of the Bay Chaleurs, and it ascends the range of highlands north of the Restigouche, by the valley of the Metapediac River, and the lakes at its head waters, by easy grades, attaining its summit level 760 feet above high water at a point about six miles north of the Great Metapediac Lake, from which it then descends along the vallies of different tributaries of the St. Lawrence to the Metis River, which it crosses about 10 miles above its mouth, and is then clear of the highlands.

The distance from Halifax to Quebec by the proposed line or railway, will be about 635 miles.

Of these 124 miles are in the province of Nova Scotia,
234 miles in New Brunswick, and
277 miles in Canada.

Commencing at Halifax, the comparative advantages of having the terminus in the city which is situated on the western shore of the harbour, or in the village of Dartmouth, which is on the eastern side, and immediately opposite the city, becomes a matter of detail for future consideration.

From Dartmouth the line passes through the broken chain of land which runs parallel with the south-east coasts of Nova Scotia, by the valley formed by the chain of lakes which extend from Dartmouth to the Great Shubenacadie Lake, a distance of about 20 miles.

The highlands come in pretty close to the lakes on both sides, leaving here and there narrow flats along their borders. The rock is chiefly slate, and along the bottom of the valley are large quantities of loose fragments of rock from the adjacent hills, boulders, gravel, &c.

The gradients on this portion of the line which has been calculated chiefly from the sections made for the Shubenacadie Canal, which was intended to follow this chain of lakes, will be favourable, though from the rocky and broken character of the ground, it will be probably expensive.

For the first nine miles the line follows the western shores of the lakes. The hills are a short distance back, leaving a stripe of irregular low ground indented with bays, the waters in which is shallow.

The summit level is at the south end of Lake Charles, from which the water flows into the

* The Plans and Maps enclosed in Major Robinson's Report, being on a very large scale, are not printed but the annexed general Map has been prepared in lieu thereof.

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Shubenacadie. The Dartmouth Lakes, the first of the chain, empty themselves into Halifax harbour, being 65 feet above high water, the rise from them to the summit level Lake Charles is only 25 feet, the distance being one mile.

After reaching the northern extremity of Lake William, nine miles from Dartmouth, the line crosses to the eastern shores of Lake Thomas, the next in the chain, and thence by the eastern shores of Lake Fletcher to the Grand Lake.

The western shores of these two lakes are bold and rocky, with deep water. The eastern are easy as respects curvatures, and the water is shallow, should it be necessary to build into them.

The railway will, however, probably interfere with the present line of road.

Should the terminus be in the city of Halifax, the line thence would join one coming from Dartmouth at the northern extremity of Fletcher's Lake, 15 miles from Dartmouth, and 19 from Halifax. The latter would be consequently the longest by four miles.

The summit level in the line from Halifax, between the waters flowing into Halifax Harbour and those falling into the Shubenacadie, is 232 feet above tide-water in the former. The gradients will be consequently more severe.

For the first seven miles after leaving Halifax, the line follows the shores of the Bedford Basin, a portion of Halifax Harbour, which are broken and rocky. To obtain curves of half a mile radius, heavy embankments will be necessary across the deep bays; for the remainder the expense and difficulties will be about the same with the line following the lakes.

After leaving Bedford Basin, the line ascends the valley of the Sackville River for about three miles. On the east side of this valley is the ridge of land separating the Halifax and Shubenacadie waters.

The most favourable point ascertained for crossing this is about 5¼ miles from the head of the basin, and is 232 feet above its waters. The heaviest grade involved to reach this will be 43 feet per mile for three miles. It will also involve a heavy embankment, about 700 feet long, between the summit level and the shores of the Long Lake, from which it will descend to the north end of Lake Fletcher, by the valley of the Rawdon River, where it joins the line from Dartmouth.

Between the north end of Fletcher's Lake and the point where the line will strike the Grand Shubenacadie Lake are three ridges projecting into the lake, which will require to be cut through; the two next the Grand Lake being about 30 feet deep. Thence it follows the shore of the Grauk Lake for about three-quarters of a mile. The high land comes out close on the lake, but the water is shallow,

Leaving the lake shore at the 17½ mile it crosses to the west shore of the Gasperean Lake. There is a low ridge between the two which will require cutting.

It will be necessary to carry the line along the shallow water on the west shore of the Gasperean Lake, leaving which it again strikes the shores of the Grand Lake at Sandy Cove, and follows it for half a mile to the outlet of the Shubenacadie River, which flows into the Bay of Fundy.

After leaving the Grand Lake, the line for 19 miles follows the general course of the valley of the Shubenacadie River, as far as the mouth of the Stewiacke River.

About two miles from the Grand Lake, it crosses the Shubenacadie River, and then follows the western side of the valley, which comes in with an easy slope to the river, and offers no obstruction. An embankment of some 8 or 10 feet high will be required across the valley of the Nine-mile River, from which to Barney's Brook, at the 27th mile, the valley is broad and open, and nearly flat, and thence for a mile it will be on the level margin of the river.

At this place, Black-rock Point, the land runs out high upon the river on both sides. A cutting will be necessary on the eastern side, about 30 feet deep, and a quarter of a mile long.

The rock being plaster of Paris, with a covering of clay, it will be easily quarried. The line then crosses the river, the valley of which is crooked below this point, and passes through the highland on the western side by a grade of about 30 feet per mile, for less than a mile, and thence descends into a broad flat.

Between this and the mouth of the Stewiacke River it crosses the Shubenacadie twice; the ground offers no obstructions, except an embankment, which will be required at the 31st mile, about 6 feet high, for one mile, where the line crosses the broad marshes of the Shubenacadie, which are flooded by high freshets.

Between the crossing of the Stewiacke River, about 38 miles from Dartmouth, and the head of Truro mill-stream at the 50th mile, which is the water-shed of the Truro and Shubenacadie waters (145 feet above high-water at Halifax), there will be several cuttings of from 15 to 20 feet deep, so that none of the gradients may exceed 40 feet in the mile, and these will be short.

From the 50th mile the line descends by the valley of the Truro mill-stream, by an easy grade of about 17 feet per mile, to the village of Truro, at the 55th mile, which it will pass about a quarter of a mile to the westward, and cross the head of the Cobequid Bay by a bridge which will require to be about 500 feet long. From thence it commences the ascent of the range of hills known as the Cobequid Hills, which run north-east and south-west, nearly parallel with the bay, and directly across the line of the railway.

The rock formation through which the first portion of the line passes ceases at the Grand Lake; from thence to Truro the country, generally speaking, is of a fertile description, the hills being composed of a strong clay, with here and there limestone and gypsum rocks. The soil of the fertile valley in which Truro is situated, as well as the shores of the Cobequid Bay, is red sandstone.

After crossing the head of the Cobequid Bay the line passes along the southern slope of the

hills to the foot of the ascent at the 66th mile. In this distance it will have to cross the Chiganois and De Buit Rivers, and the swell of land lying between them, the highest elevation being between those rivers about 170 feet above high water; but none of the gradients, it is calculated, will exceed 40 feet per mile.

The summit-level which the line has to attain is by actual section determined to be 600 feet above high water, being at the lake from which the Folly River flows.

The section, which has been accurately , shows a gradient of 1 in 85 feet, or about 62 feet per mile, for $5\frac{3}{4}$ miles; but by keeping a higher level, the ascent to the lake may be overcome by a grade of 57 feet per mile for $6\frac{1}{2}$ miles.

In this distance there are eight ravines to be crossed, four of which will require heavy bridges.

The valley of the Pinebrook will require a heavy embankment, material for which will be supplied by a deep cutting necessary at the crossing of the road beyond.

The upper portion of the ascent, for four miles below the lake, is composed of hard, igneous rocks, with a covering of earth in most places, but the rock will probably be met with if cuttings to any depth become necessary.

At about four miles on the south side of the lake, 71 miles from Dartmouth, there is a breadth of about half a mile of conglomerates, shale, and sandstone, in which a valuable deposit of speculative iron ore has been discovered; it is of very rich quality, and operations have been commenced by a company to work it.

The heavy grade ceases at the saw-mill half a mile below the lake, in which distance there are three small ridges to cut through, which will furnish material for crossing the shallow arm of the lake; thence the western shore is nearly straight, with shallow water, admitting of a level line, with easy curvatures, along its margin.

At the 75th mile a small ridge at the north end of the lake separates its waters from those of the Wallace River.

The descent from the lake is very rapid into the valley watered by that river. By actual measurement it has been ascertained that the ground falls 356 feet in the first three miles northwardly from the lake; thence the valley is broad and flat. The hills on the eastern side rise very abruptly, those on the western side having a gentler slope towards the valley afford the most favourable ground for the location of the railway.

The actual section line, which has been run at a gradient of 70 feet per mile, may be improved upon by keeping a higher level, and the descent may be overcome by a gradient of about 66 feet per mile for $4\frac{1}{4}$ miles along the western side of the valley.

Here the hills turn abruptly to the westward, and on reaching the foot of this descent, at the 79th mile, some cutting will be necessary to carry the line with a radius of half a mile for one mile, round the shoulder of the hills.

A lesser range of hills lies north of the Cobequid range, which, at this point, is separated from them by the valley of one branch of the Wallace River, which the line ascends for $2\frac{1}{2}$ miles, at a grade of 35 feet per mile, and thence passes through this lesser range by the valley of the west branch of the Wallace River. Then crossing the valley of the Little Wallace River it falls at a grade of 35 feet per mile to the valley watered by Tulloap's Creek, by which it descends at easy grades for about seven miles to the 95th mile, where it turns the shoulder of the ridge of land lying east of the River Philip by a curve of three-quarters of a mile radius, involving some cutting, but to no great depth.

From thence it descends at a grade of 20 feet per mile for four miles along the fertile valley of the river Philip, which it will cross at a short distance below the confluence of the Black River, and ascend for five miles by the valley of the Little River by a very easy grade.

From this to Bay Verte the country presents a very level appearance, and the line will probably deviate but little from a direct line.

The gradients will be most favourable, and none, it is expected, will exceed 15 feet per mile.

At the 120th mile the line crosses the Tidnish River about a mile above its mouth, and thence follows the level shores of the Bay Verte, at a distance of from one to half a mile.

It leaves the province of Nova Scotia 124 miles from Halifax Harbour.

The section of country traversed by the line, from the Cobequid Hills to Bay Verte, is generally speaking through light soil of good quality. There is little or no rock. Should any be met with it will be sandstone, furnishing excellent building material.

Much of this portion of Nova Scotia is well cultivated and populous.

The line from Bay Verte enters the province of New Brunswick, and as far as the crossing of the Miramichi River at the 223rd mile, although running nearly at right angles to the course of the rivers flowing into the Gulf of St. Lawrence, will deviate but little from a general straight course and from the level nature of the country; although it will have to cross the swells of land lying between the different rivers, it may be expected confidently that the heaviest gradients will not exceed 40 feet per mile, the generality being very favourable.

As far as the Cocagne River the country traversed by the line is very level. The section line, which was run along the head waters of the rivers flowing into the Gulf of St. Lawrence, shows that the highest point is little more than 200 feet.

By following the general direction laid down on the plan, dependent, of course, upon the bridge sites which shall be selected on the different rivers, no difficulties of a serious nature will be encountered. Should any cuttings be necessary, they will not be expensive as no rock is likely to be met with.

The section of country which will be opened up between Bay Verte and the Richibucto River offers much excellent land for settlement. From thence towards the head waters of the

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Rouchibouguac are extensive flat barrens, and the country between that and the Miramichi is very level.

The rivers are all small, and no heavy bridging will it is expected be required.

It is proposed to cross the south-west branch of the Miramichi River near the head of the tide, opposite the mouth of Indian Town Brook. It will require a bridge about 500 feet long, and 30 feet high. There are heavy freshets in this river, but no damage need be apprehended to a well-constructed bridge either from ice or freshets.

Between this and the north-west Miramichi River a detour will be necessary to the westward, to avoid the swell of land lying between these two rivers, and which runs to an elevation of about 300 feet. The line crossing the Miramichi opposite to the mouth of the Indian Town Brook, will ascend by the valley of that brook, and then diverge to the westward, through a flat cedar country, to the north-west Miramichi River, which it crosses at the 234th mile by a bridge, which will require to be 2000 feet long and 30 feet high, the river here being very wide and shallow. A site requiring a bridge of less length may probably be selected on further examination.

From this the line follows the broad valley watered by the north-west Miramichi, as far as the 260th mile, at gradients varying but slightly from a level, excepting the first five miles, which will require gradients of about 25 feet per mile. The land between the north-west Miramichi waters and the Nipisiguit River traversed by the line is almost a dead level, and it descends to that river by a grade of 25 feet per mile for three miles.

It is proposed to cross the Nipisiguit River near the Pabineau Falls, and after following the valley of the Nipisiguit a short distance it continues as far as the 325th mile to follow the general direction of the shores of the Bay Chaleurs, passing within a short distance of the town of Bathurst.

The precise direction of the line will, of course, depend upon the bridge sites selected on the several streams and rivers flowing into the Bay Chaleurs.

As far as the 305th mile the land is very level and the streams small. The Jaquet River lies in a large deep valley, but it is believed may be approached and crossed about four miles from its mouth without any great difficulty.

The gradients on this portion of the line will be found very favourable, and will not, it is calculated, exceed 17 feet per mile, the greater portion being very much less.

The shores of the Bay Chaleurs are thickly populated. The inhabitants near Bathurst are chiefly Canadian-French. Towards the Restigouche the inhabitants are principally Scotch, many of them having excellent farms.

After reaching the valley watered by the Eel River the line may approach the Restigouche River, either by following the valley of the Eel River to its source, and thence by the vallies of several small streams, and reach that river either at the mouth of Christopher's Brook, seven miles above Campbellton, or at a point five miles above that.

The summit level at the head waters of the Eel River has been calculated at 368 feet, which will probably be found too high. This would involve a grade of about 18 feet per mile for 16 miles.

It will perhaps be better to avoid this gradient and the curves which will be necessary in descending the vallies of the small streams flowing into the Restigouche, to cross the Eel River, and pass through the range of hills lying south of the river Restigouche, about five miles from the town of Dalhousie. The hill which rises immediately in the rear of that town here falls away almost to the level of the country about Eel River, and from thence the line would follow the bank of the Restigouche, passing through the village of Campbellton, and continuing between the present road and the shore as far as the mouth of Christopher's Brook. The gradients on this portion would be very slight.

Opposite to and above the mouth of Christopher's Brook the Restigouche is full of islands; the mountains, especially on the south shore, come down boldly to the river, and it is proposed to take advantage of these islands to cross the broad channel of the river to the more favourable ground on the north shore.

There is no accurate survey of these islands, but they are so numerous that the expense of bridging will not be greater than if the line were to cross above, when it would require a bridge at least 1800 feet long, and a heavy embankment on the north shore. The danger from the rush of the ice freshets, which sometimes occur in the spring of the year in this river, will be less, if the bridge be carried over among these islands.

After crossing the Restigouche River the line will follow the north bank as far as the mouth of the Metapediac River, at the 359th mile.

The section of country lying between the Restigouche and St. Lawrence Rivers is a vast tract of high land, intersected in every direction by deep vallies and vast ravines, through which the rivers flowing to the St. Lawrence and Restigouche wind their course.

The height of land from which these rivers flow respectively north and south is full of lakes, and along them the mountain ranges rise to a great elevation.

The average distance between these two rivers is about 100 miles.

The only available valley which my knowledge of the country, or the explorations we have carried on enable me to report upon, by which a line of railway can be carried through this mass of highlands, is that of the Metapediac River.

This valley extends from the Restigouche to the Great Metapediac Lake, a distance of between 60 and 70 miles, and as the summit level to be attained in that distance is only 763 feet above tide-water, the gradients, generally speaking, are extremely favourable.

From the broken and rocky character of this section of country, some portions of this part of the line will be expensive, especially the first 20 miles of the ascent, in which the

hills in many places come out boldly to the river, and will render it necessary to cross it in several places.

The rock formation is nearly all slate. There are settlements on the Metapediac River as far as the Mill stream.

Generally speaking, however, the greater portion of this section of country is unfit for cultivation, consisting of a gravelly rocky soil, covered with an endless forest of spruce, pine, birch, cedar, &c.

From the mouth of the river as far as the 365th mile, the line continues upon the east bank. Above this, at the mouth of Clark's Brook, the rocky bank of the river is very unfavourable, and to obtain proper curves, it crosses to the point opposite, and then recrosses immediately above, to the more favourable ground on the east bank.

Between this and the mouth of the Apemetquagau River, the line, to obtain good curves and avoid those places where the hills come out bold and rocky, crosses the river four times.

The position of the line for three miles above and below the Apemetquagau River, where the hills are steep and rocky close on the river, will be the most expensive part of the line.

Above this the line follows the eastern bank to the 377th mile. The hills on either side are very high, but the eastern bank is pretty favourable. Between the 378th and 380th mile, the river turns twice almost at right angles, shut in on the south side by a rocky precipice 150 feet high.

It will be necessary to cross the river three times here. The centre bridge will be a heavy one, but there is an island in the elbow, which will serve as a natural pier. Above this from the 380th mile to the Forks (the mouth of the Casupscul River) at the 395th mile, the valley becomes more favourable. The hills on either side are not so lofty, and recede further from the river. The line crosses the river twice between the 385th and 390th mile, to avoid a rocky precipice on the left bank; and again about one mile below the Forks, making in the first 38 miles up the valley of the Metapediac, 12 bridges in all. These bridges will average from 120 to 150 yards long.

From the 395th mile to the Metapediac Lake, the line continues on the eastern side of the valley; the ground is stony and uneven. The gradients will be very favourable, and, with the exception of "The Grave," at the 405th mile, where there is a rocky spur running out on the river, there are no very serious difficulties.

The line again crosses the river at the 409th mile, and from thence follows the eastern side of the Metapediac Lake to the 420th mile.

The mountain ranges to the westward are very lofty. There are two spurs running out on the lake, at the southern end, which the line turns at easy curves close to the shore; beyond this it passes through a cedar swamp into more favourable ground at Brochers, clearing at the north end of the lake; from this it ascends to the summit-level 763 feet above tide-water at the 426th mile. This is the water shed between the Restigouche and St. Lawrence waters.

Between this and the St. Lawrence the country is intersected and crossed by a constant succession of ridges, rising to a considerable elevation between the different small tributaries of the Tartigau and Metis Rivers. The line descends at easy grades by the valley of the former to the 432nd mile, where it turns to the westward, and ascends to the 435th mile, by the valley of one of its small tributaries. The water shed here between the waters of the Metis and Tartigau is about 750 feet, and the descent from this to the Metis, by the valley of Pachet's Brook, is rapid, and will involve a grade of 55 feet per mile, for eight miles, which will carry the line clear of the highlands.

Further explorations may probably suggest improvements upon this line through the highlands, which, however, as far as regards gradients and curves, is as favourable as can be expected.

A party was sent to explore for a line from the Metapediac River, westward, following the valley of one of its tributaries, and thence across to the Rimouski River; and, from the reports I received from them, it appears probable that a practicable line may be obtained following the valley of Metallics Brook, five miles below the forks of the Metapediac, and along a succession of lakes to the Rimouski, and thence by the valley of the Torcadie River to the Abersquash, and by its valley to the point where the proposed line crosses it.

It would require a whole season to explore this section of country.

The proposed line, after descending the valley of Pachet's Brook and the valley of the River Metis, crosses the river at the 445th mile, about 10 miles above its mouth, and ascends by the valley of the River Haget, one of its tributaries, almost on a level to the water-shed at the 459th mile between the Metis and Rimouski waters, and descends to that river at the 469th mile at a grade of 44 feet per mile for five miles.

The Rimouski River lies in a deep valley, and the line descends to it at this grade by the valley of the "Rosseau Bois Brulé," to gain the opposite valley of the Rigamard stream, by which it is proposed to ascend to the table land lying between it and the Trois Pistoles River. A bridge 500 feet long and 40 feet high, will be required across the Rimouski, as it is necessary to pass it opposite the mouth of the Rigamard. The hills on either side for the first two or three miles of this valley are steep; above that it widens, and the line reaches the table-land which extends to the Trois Pistoles River, at a grade which it is calculated will not be more than 20 feet per mile for six miles.

An improvement on this line may, perhaps, be made by descending the valley of the River Bois Brulé, and ascending by the valley of the stream of the little Rimouski.

The line proceeds at almost nominal grades to the Abawisquash River, which it crosses at the 500th mile.

Four miles further the table-land is intersected by the deep ravine formed by the stream of the Trois Pistoles River.

This will require a heavy bridge. The width between the banks at top is 300 feet, the stream at the bottom is 100 feet wide; the ravine being 150 feet deep, it will be necessary to have the centre span as large as possible, to diminish the great height required for the piers.

The line from this continues at very favourable grades, crossing the Rivière du Loup at the 527th mile, about five miles above its mouth, and thence (either in the second or third concession) for 100 miles through a densely-populated country of the most favourable description, to the Boyer River at the 620th mile, from which it rises to Beaumont Church, 278 feet above tide water, and descends at a moderate grade for about nine miles, to Point Levi, opposite the city of Quebec.

(Signed) G. W. W. HENDERSON,
Captain Royal Engineers.

Major W. Robinson, R.E.,
&c. &c. &c.

TABLE of probable Gradients on proposed Halifax and Quebec Railway.

Prevailing Gradients.	Canada. Quebec to Restigouche River.	New Brunswick. Restigouche River to Bay of Verte.	Nova Scotia. Bay Verte to Halifax Harbour.	Total.
	Miles.	Miles.	Miles.	Miles.
Level and under 20 feet per mile	222	131	66	439
20 to 40 feet ,,	42	71	37	150
40 to 50 feet ,,	5	8	10	23
50 to 60 feet ,,	8	4*	7	19
60 to 70 feet ,,	None	None	4	4
Total . . .	277	234	124	635

* This gradient will be avoided by following the Restigouche instead of the Eel River.

(Signed) G. W. W. HENDERSON,
Captain, Royal Engineers.

APPENDIX No. 2.

(Plans referred to :—Nos. 17, 18, 19.)

Report on the Explorations from the Miramichi Lake, across the Valley of the Tobique, to the Restigouche River.

THE explorations carried on during the autumn of 1846 having shown that the chief difficulties to be encountered by any line of railway passing through the central portion of New Brunswick was the large valley watered by the River Tobique, which running directly across the general direction of the line must be crossed by it, and that the height of land on the southern side was of great elevation, the explorations were directed in the following year (1847), to ascertain the practicability of ascending to this height of land from the table-land between the waters of the Miramichi and Nashwauk Rivers to the westward of Boistown, and to which there is easy approach from the level country to the southward; and having gained that height of land south of the Tobique River, to ascertain the practicability of crossing its valley at the most favourable grades.

This valley is about 30 miles wide. The highlands bounding it on the south side are very lofty. The lowest point at which they can be passed, as ascertained by our explorations, being at a point about 19 miles south of the river; 1216 feet above the sea, or 894 above the river.

The height of land or water shed on the north side of the valley is about 12 miles from the river, and 418 feet above it, 838 feet above the sea.

The exploration was commenced between the Napadogan Lake and the Miramichi Lake, about 20 miles north of the portage road from Boistown to Fredericton.

The line which has been reported upon as practicable involves, as will be seen, very heavy grades.

From the point of starting the line descends at a grade of about 54 feet per mile for two miles to the Miramichi Lake; thence it passes through a dry spruce country to the south-west of Miramichi River, which it reaches at the fifth mile; from this it follows the valley of that river for seven miles at very easy grades to the forks of the river, where it crosses the west branch, and ascends by the valley of the north branch, as shown by the black line on the Plan, to the point D, at the 21½ mile, at easy grades, shown by the red line on the section; none exceeding 16 feet per mile.

Then it meets a ridge of land which will cause it to diverge to the eastward, and involve a grade of about 50 feet per mile for two miles; and thence follows the valley of the north branch of the Miramichi, at a gradient of 44 feet per mile. The valley here is very narrow and broken, the highlands coming in close on either side.

The line leaves the valley of the River Miramichi at the 26th mile, and follows the valley of one of its tributaries, called the Dead Water Brook, at the same grade of 44 feet per mile to the 28th mile, at the point F.

From this it continues along the same valley, but at an easier grade of 20 feet per mile to

the water-shed between the Tobique and Miramichi Rivers, 1205 feet above the sea at the 30½ mile.

The Otella and Beaver Brooks take their rise on this height of land, being tributaries of the Tobique, and the line attains its summit level 1216 feet above the sea, at the small lake which is the source of the Otella, at the 31st mile.

A small ridge divides this lake from the waters of the Beaver Brook, which would have to be cut through.

From this point commences the descent into the valley of the Tobique.

The direct descent by the valley of the Otella, &c., had been found impracticable, the fall being far too rapid.

The most favourable gradient which can be maintained is one of 58 feet per mile, for nine miles, by keeping along the side of the hills as far as the River du Chute, crossing several streams, one of which, that of Beaver Brook, will require heavy bridging.

After crossing the River du Chute, which will also require a heavy bridge, the line descends at a gradient of 15 feet per mile for three miles.

Here it has to cross the valley of the River Wapsky, about two miles wide, which will involve an ascending and descending grade of 66 feet per mile, each one mile, and a bridge 40 feet high across the stream.

This point (C 2 on the plan) is the water-shed between the Wapsky and the Little Gulquac, and the line descends at a gradient of 48 feet per mile for five and a-half miles to the River Tobique by the valley of the Little Gulquac.

The Tobique, which the line crosses at the 50th mile, will require a heavy bridge, 50 or 60 feet high; the river is about 242 feet wide: on the south side the bank is bold, and favourable for bridging; on the north is an interval flat, which will increase the length of the bridge or viaduct to about feet.

After crossing the Tobique, the line, keeping to the westward of that actually explored, ascends for the first five miles at a gradient of about 20 feet to the mile, through a dry level tract of country.

From this the grade increases to 44 feet per mile for three miles to the point E, from which the line ascends by the valley of the west branch of the stream, called the Two Brooks, for four miles, at a grade of about 43 feet per mile.

It continues so ascend at this grade for four miles (to the point (a)), the water-shed between the Tobique and Salmon Rivers, being 12 miles south of the former, and 418 feet above it.

Thence the line keeps westward of the exploratory line, avoiding the high ground crossed by it, following the vallies of the Salmon and Grand Rivers.

The first of these, it is calculated, will involve an ascending and descending grade of 20 feet per mile, each four miles.

The line will ascend to the water-shed between the Grand River and Beaver Brook, a tributary of the Restigouche River, about 920 feet above the sea, by an easy grade of about eight feet per mile.

From this point at the 78½ mile (b on plan), it descends to the Restigouche River by the valley of Beaver Brook.

It is calculated that the first 4½ miles will require a grade of 45 feet to the mile, and thence one of about 24 feet to the Restigouche River, about 11 miles. The whole distance being about 94 miles from the Miramichi Lake.

Other valleys also exist by which it is believed the Restigouche may be reached, after leaving the Tobique valley, and by about the same grades.

The valley of Boston Brook would bring the line to the Restigouche more to the westward; that of Jardine's Brook would carry it more to the eastward and nearer to the valley of the Kedgwick River, which is the only tributary of the Restigouche, by which it is believed a practicable route can be obtained through the highlands between the Restigouche and St. Lawrence Rivers on this general direction.

The tract of country which this line passes through, and would open up north of the River Tobique, is very excellent soil, and offers fine land for settlements.

(Signed) G. W. W. HENDERSON,
Captain, Royal Engineers.

Major W. Robinson, R.E.
&c. &c.

APPENDIX No. 3.

(Sketches attached.)

Report of Mr. Wilkinson.

SIR, Fredericton, December 31, 1847.

I HAVE the honour to state to you the general results of the exploratory survey in which I have been engaged, under your direction, during the past summer and autumn, with the view to the discovery in part of a line favourable for a railway between Quebec and Halifax. In doing so, I will as much as possible observe the brevity which you desire me to regard as sufficient.

Passing by the subject of preliminary arrangements, and the circumstances which controlled he selection of the lines examined, it will be sufficient to say, that the general object was to

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discover a favourable route between the valley of the Abawisquash, a branch of the Trois Pistoles, and a point on the Restigouche River, favourable for union with another division of the general line, in progress of exploration by Corporal Dumble, from the valley of the Tobique River.

The line first examined I will describe as Route No. 1, so distinguished in the sketch hereto annexed.

Between the head of Lac des Iles, discharging itself into the Tolidi, and the Abawisquash River is a low depression in the summit-level, or height of land, favourable, as I believe, for our object. From this point the ground appears generally practicable, following the margin of Lac des Iles, and thence the course of its discharge towards the outlet of Eagle Lake, a distance by estimation of about nine miles. From Eagle Lake it is very probable that a communication with the Rimouski would be found by following the valley of the left-hand branch of the Toledi to its source, and thence descending the valley of the Touradi. But the more direct course by Route No. 1 was experimentally continued. Between Eagle Lake and the middle branch of the Toledi is a continuous ridge of 300 or 400 feet average elevation above the former. Like other ridges in the neighbourhood, it consists of much good land for settlement, but apparently affords no pass suitable for our object within an extent of six or seven miles. On exploring from the middle branch westerly to the head of the lake, however, the descent appeared to exceed the ascent as much as 150 or 200 feet. A very direct communication would therefore be ineligible. The course to be recommended passes by an easy curve southward of the lake and the southern extremity of the ridge in the manner indicated in the sketch; thence, north-easterly by the valley of the Middle branch. Where the line would enter this valley the general inclination is apparently about 25 or 30 feet per mile, until approaching within about three miles of the last of four successive rapids or falls. It is probable that the inclination here may be from 40 to 60 feet per mile, until we reach the dead or smooth water. The banks of the Middle branch afford only a small extent of flat ground, say from one to three chains in width, on each side alternately, seldom on both sides at once; but the slope of the rising ground is commonly moderate, and without abrupt angles or turns, with the exception of the three miles just mentioned. Here some degree of difficulty might occur in determining the best site for the line. A small extent of rock cutting at one or two points would probably be necessary. Time did not permit an instrumental examination of the ground, but nothing like impracticability is indicated.

Passing the Falls, the valley of Middle branch south is level for a distance of about seven miles in a direct line south-westerly, including, in that distance, a lake of about two miles in extent. The bed of the valley consists of an alluvial deposit of great depth, through which the stream has a very tortuous channel, with a current scarcely perceptible, frequently very deep, and always remarkably clear. The next five miles of this valley ascend somewhat rapidly, say at the rate of 40 to 50 feet per mile.

From a distant but commanding point of view, I judged that the remaining rise might not be less favourable; but upon examination of the last four miles, the rate of ascent proved to be much more objectionable. The result, however, of a series of elevations and depressions taken by your direction over this portion of the route, and which at leisure moments have been somewhat hurriedly computed, do not warrant me in saying that the rate of inclination of the four miles in question is more than objectionable. Its practicability is, I believe, proved by at least two examples of much steeper inclined planes daily ascended by locomotive power, with both passengers and freight. I refer to the Lickey inclined plane of 1 in 37, on the Birmingham and Gloucester Railway; and another, of 1 in 34, which I understand to exist on the Hartlepool and Stockton. The sketch hereto annexed (No. 1.) exhibits, with regard to these, the proportion of the more favourable acclivity, by which it appears practicable to escape from the valley of the branch of the Toledi under examination. No exploration has, however, been made in order to discover facilities, the existence of which I am not prepared to doubt, of improving or avoiding this acclivity. Much lateral exploration must at some points be expected. We could scarcely hope that we should succeed at the first attempt, without map or guide, in passing through a wide extent of primeval and almost unknown forest, over a line in no respect objectionable.

Passing the summit-level at the source of the middle branch south, the route descends by the valley of the north-west branch of Green River. For the first five miles the rate of inclination is very moderate, deviating but little from a level; two lakes and much small water being included in that distance. From thence to the confluence of the east branch of Green River, a less regular and often more rapid descent is indicated. In the judicious distribution of the irregularities over a continuous descent in actual construction, however, I am not prepared to say, that an inclination exceeding 30 or 35 feet per mile would anywhere be necessary.

Descending the last nine miles of the north-west branch, the valley becomes more contracted, the flat margin generally narrower, the banks steeper and higher, and the turns more abrupt. But these characteristics do not become so remarkable as apparently to affect the practicability of this portion of the route until we approach to within about three miles of the conflux of the two branches, or upper fork of the main Green River; nor do they continue of the same kind beyond about two miles along the eastern branch.

This part of the line having come under your personal observation in order to ascertain its practicability, by curves of admissible radius, a more particular survey of the apparent obstacles, and a rough plot of the same, were made for your satisfaction. For more ready illustration, I avail myself of a trace from the original, No. 2, hereunto annexed, to which I beg leave to refer.

From A to I, being a distance of four miles and about 30 chains, are introduced six curves,

of one mile radius each, arranged in a manner the effect of which would be as follows: from A to C the cutting would be insignificant. At B, about 5 or 6 chains in extent, partly of clay, slate may occur. At the point D, perhaps for an extent of 10 chains in each direction, deep cuttings may be necessary, but no sufficient examination has been made to determine this fact; or whether, to some extent, a gap or depression may not exist, as at the point G. From E to I, the cutting would apparently be light, these points being nearly on the same common level with the intervening point G, or say 30 or 40 feet above the surface of the water at the confluence of the two branches. In order that in this part of the valley the roadway may be clear of water, snow, ice, and driftwood, at all times, perhaps a less elevation than about 10 feet above the lowest level of the stream could not be recommended.

Assuming that the maximum depth of cutting to be admitted should not exceed 25 feet, then the highest ground which could be intersected would be 35 feet above the lowest level of the water. With the exception of the point D, the elevation of which is uncertain, it does not appear from the facts ascertained that the intersection of any point so high as 35 feet would be necessary in order to obtain curves of one mile radius; on that cutting approaching to 25 feet in depth, would occur to an aggregate extent exceeding 50 or 60 chains along the portion of the line shown on the sketch. Were it a desideratum to pass this, apparently the most confined and crooked portion of the route, without cutting, it would appear that curves of from 20 to 80 chains radius would accomplish our object.

Pursuing the route along the east branch by an ascent apparently not exceeding 30 feet per mile, another branch occurs on the left, distinguished on the sketch as "Otter Branch." On opening here to the eastward was noted for further exploration. In the meantime, following the main stream about due south for three miles, another opening claims attention. It was at first deemed probable that this would lead to the source of the main Restigouche. It may, indeed, lead to a favourable communication with this stream; but it was subsequently discovered, as it will be again necessary to notice, that the opening in question was really at the head of the valley of a principal branch of Green River, distinguished on the sketch as Green River East. Resuming the exploration at the end of the southerly range just noticed, of the East Branch, this stream again turns suddenly to the eastward, flowing somewhat tortuously through a narrow valley, bounded by very high hills, and having a fall varying from 60 to 90 feet per mile. Having traced the stream to its source in a pass between high hills, and continuing an easterly course, we shortly meet with a spring, no doubt a tributary of the Restigouche, flowing south-easterly down a narrow and deep ravine. Crossing the head of this ravine, and passing over a high ridge, we descend suddenly 700 or 800 feet into the valley of the object of our search, the Gounamitz, a principal branch of the Restigouche. It was deemed probable that the source of the east branch of Green River and that of the Gounamitz might prove to be continuous and nearly on the same level; but it was now manifest that the source of the former was in a high group of hills, bounding not the source but the main valley of the Gounamitz, where this stream is still comparatively large, say 40 feet wide, with a brisk and copious current. Satisfied of the unfavourable prospect of a communication at this point with the valley of the Restigouche, I returned to the opening by way of the valley of the Otter Branch. Circumstances prevented my personal examination of the ground in this direction; but Mr. Ramsay, to whom I confided that service, reports that the source of the Otter Branch is surrounded by high ground without an opening; but that about two miles from the mouth of the stream, on its right or northern bank, is a low depression, affording a favourable communication with the valley of a stream flowing northwardly and eastwardly, and no doubt a tributary of the Restigouche. It is most probably the main branch of the south branch of the Quatawamkedgwick. He followed this newly-discovered stream downwards to where it receives a branch from the south, and then traced this branch upwards nearly to its source. By climbing, he had a good view southerly beyond the source, and down the valley of the Gounamitz, but was prevented by unfavourable weather, and other hindrances, from completing all I had directed him to perform. He does not doubt, however, the existence of a practicable communication between the east branch of Green River and the valley of the Gounamitz by the route he examined; but there will be about twe to three miles of rough ground and steep banks. Whether these may occasion any real difficulties an instrumental examination here, as well as at other points which have been noticed, will be necessary to determine. The general fact of practicability or otherwise, was, under the circumstances, all that we could hope to ascertain.

A route has now been traced from the valley of Abawisquash to the valley of the Gounamitz, which, with such corrections as might be expected would be necessary on a first examination, I believe to be practicable. I have also no reason to doubt, but many to induce me to confide in the practicability of the valley of the Gounamitz down to the Restigouche, with a general inclination, varying from 30 to 50 feet per mile. From its mouth is a favourable communication down the left bank of the Restigouche, to a point opposite the entrance of Beaver or Bostin Brook, the termination of Corporal Dumble's route from the Tobique before-mentioned. A bridge of 100 or 120 feet span at this part of the Restigouche would be necessary, and would probably be the only one of so large a span from hence to the St. Lawrence. In that distance numerous bridges will be required; but they will be generally small, and neither their number or their several sites could be determined without an instrumental demarcation of the line.

In order to explain the further cause of the exploration it is necessary to say, that after tracing the east branch of Green River to its source, and being yet uncertain of any favourable descent into the valley of the Restigouche, whilst that into the valley of the Toledi also remains unimproved, it seemed probable that the abandonment of the valley of Green

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River might eventually be necessary. The hope of avoiding this alternative seemed to rest upon the success of three lateral explorations. The first, that by way of the Otter branch, the success of which has already been mentioned. The second, that by way of the southerly opening, towards the supposed head of the Restigouche. The third, with a view to the discovery of a more favourable descent from the north-west branch of Green River, into one of the more northerly valleys of the Toledi, or, if necessary, into the valley of the Rimouski.

Leaving Mr. Ramsay with directions to make these three explorations, as far as practicable, I proceeded to employ as much as might be available of the rapidly-advancing season, in order to ascertain, by canoe, the character of such other routes as the country might afford from the Restigouche north-westwardly. The routes I had in view are distinguished on the sketch as No. 2 and No. 3.

Omitting the circumstantial matters of the exploration, I will commence my description at the Wagan Stream, the most southerly branch of the Restigouche. From hence, at an ascertained elevation of about 550 feet above the level of the sea, appears to be a favourable range of comparatively flat country, as observed from several commanding points of view, and as described by those who have passed over it towards the Sisson branch, a favourable stream of moderate current, through a flat valley, and joining the main Tobique River, where the elevation has also been approximately ascertained at about 600 feet above the sea. The exploration of this extension of our route continued by way of the right-hand branch of the Tobique towards Boistown, would probably have occupied the remaining portion of the season, had circumstances permitted me to leave the country behind me with satisfaction. This route, as marked by the dotted line in the sketch, is not much less favourable for communication with route No. 1, than with No. 3; but natural obstacles would render it apparently more difficult for continuation north-westward by route No. 2.

I may indeed here remark, that natural obstacles seem to magnify both to the north and south of the Restigouche, as we advance eastward. Above the confluence of the Wagan, the banks of the Restigouche are comparatively favourable all the way up the stream as far as explored or observed. Descending the same stream below the Wagan, the banks become more abrupt and steep, but are neither so close or angular, but that much cutting may be avoided by occasional bridging, and the inclination of the valley is very favourable.

The mean rate of descent from the Wagan to the sea cannot exceed seven feet per mile by the course of the river, but the much greater part of the aggregate descent must apparently occur above the Quatawamkedgwick, and cannot be estimated at a less mean rate than 10 to 15 feet per mile. But diverging from the valley of the Restigouche by route No. 1, we find the banks of the Gounamitz higher and steeper than those of the head of the Restigouche, by route No. 3, and again we find the banks of the Quatawamkedgwick by route No. 2, still higher and steeper than either, rising in fact 1000 or 1200 feet very abruptly above the bed of the river.

With regard to the last-mentioned route, it was at first my design to explore the Quatawamkedgwick by canoe to its extreme northerly source, to have found the most favourable communication thence to the valley of the Rimouski, and to have explored the latter as far as practicable. But insufficient opportunity of preparation, the advanced state of the season, and unforeseen causes of delay, obliged me to abandon the more difficult part of the undertaking, and I discontinued my ascent of the Quatawamkedgwick about a mile up the north or main branch, returning thence and ascending by the south branch, less for the purpose of exploration than for a more direct return to the party I had left at Green River. As far as I am able to speak from personal observation of route No. 2, the rate of inclination of the valley of the Quatawamkedgwick is no doubt favourable, say not exceeding 15 to 30 feet per mile up to the south branch. Above this point, the inclination of both the north and south branches appears to be steeper, at least for some distance, say not less than 35 feet per mile; but I have reason to believe that towards the head of each of these branches, but especially the north branch, there is much flat ground. But to render these inclinations available, however, it is most probable that the amount of bridging and cutting would prove to be heavy, owing to the very limited portion of flat margin, and the abruptly steep, and generally rocky character of the banks. An exact survey might prove these obstacles to be more avoidable than they appear to be; but without such survey no safe opinion could be formed.

These remarks will be understood to apply only to the main Quatawamkedgwick. The valley of the south branch is at several points wholly unfavourable for a railway, but it affords lateral openings which might be available.

Upon returning to Green River by way of the portage from the south branch, I found that the party I left there, having explored the Otter branch route, and cut out and surveyed the portage, had proceeded on their way to explore from the north-western branch of Green River, with the view already explained; but having met you on the way, received your directions to return, and to explore more minutely the apparently objectionable part of the valley of Green River before described, and shown in sketch No. 2, until I should rejoin them. This circumstance fortunately coincided with directions which in the meantime I had found it necessary to send them, to return and meet me at the portage; foreseeing, in consequence of unexpected casualties and delays, that it would be impracticable to rejoin them either in the valley of the Rimouski, or of the Toledi, as at first intended.

We had already been warned by snow and severe frost that only a small portion of the season remained. It appeared most desirable that this should be employed in tracing the supposed communication southerly from the east branch of Green River to the head of the Restigouche, and to join the survey to the end of my exploration by canoe, a little above the

branch distinguished as "Return Branch" in the sketch, and also to examine, as far as possible, the features of Route No. 3, between the valley of the Restigouche and the valley of the Squatuck, with the view to the connection of these by means of the lateral valleys of Green River.

I therefore directed Mr. Ramsay to proceed by the east branch, and to survey by way of the southerly opening referred to, until he found the termination of my canoe exploration on the Restigouche, if it should prove that the opening led directly to the valley of this river. But as it was equally probable that he might find himself descending a branch of Green River, in order in this case to cut him off, my own undertaking was at the same time to survey from the main Green River eastwardly by its lateral valleys, towards the same point on the Restigouche. Mr. Ramsay's course proved to be down the branch of Green River distinguished in the sketch as Green River East, and he opportunely intersected my exploration a few hours after I had passed.

The connection with the Restigouche was shortly afterwards made, and the party returned with the view to explore north-westwardly for a favourable communication with the Squatuck. Some progress was made in the latter object, when another fall of snow and the increasing severity of the weather rendered it unavoidable further to prosecute the survey beyond the reach of our canoes, which were left at the main Green River, and on which we chiefly depended for our retreat.

It remains only to state the imperfect knowledge which an unfavourable opportunity enabled me to acquire of Route No. 3. I have already remarked that indications existed of a favourable communication between the head of the Restigouche and the east branch of Green River, if such an object were desirable, either as an improvement or variation of Route No. 1. I have also stated that Route No. 3 is favourable as far as it adheres to the valley of the Restigouche. From thence to the valley of the Squatuck, are several lateral valleys and openings, which require more or less pains for due examination.

The only object which a cursory exploration could accomplish, was the discovery of which of these valleys and openings might appear most entitled to a particular survey. I have reason to believe, that practicable lines, approximating to those indicated in the sketch, would be found. My opinion is, that the difficulties of this route are confined to an aggregate distance of perhaps five or six miles on each side of the valley of Green River, and that they are not of great magnitude.

I have not personally examined, and have only partially seen, the valley of the Squatuck, but it is generally better known than any part of the ground included in this survey, and is reported to be, as I believe it is, generally flat and favourable for a line of railway. From thence up the valley of the left-hand branch of Toledi to the intersection of Route No. 1, the ground is flat with a very moderate ascent.

In the absence of barometers, by which to obtain an approximate section of the routes, as far as traced, the apparently difficult inclinations were occasionally tested by angles of elevation and depression; and from these, checked by the approximately known height of several points in the country examined, the assumed rates of inclination have been inferred. They would in most instances, I believe, prove to exceed what in actual construction would be necessary.

I may remark with regard to the habitable character of the routes, as far as examined, that No. 3 would be the most favourable for continuous settlement from the valley of the Tobique to the valley of the St. Lawrence.

Probably one-third, consisting of the more elevated parts of Route No. 1, would be unfavourable for settlement. Route No. 2, as far as examined, would not be suitable for cultivation immediately along the line, except at a few detached points, on account of the very broken and precipitous character of the banks of the Quatawamkedgwick.

I believe that each of these routes described, necessarily in very general terms, is practicable, as far as I have examined the same. Of the degree of practicablility, or of the probable expense of construction, I conceive that no safe opinion could be formed without an approximate location. To discover what route or routes may be most eligible for preliminary survey, I deem to be the object of the exploration. A judgment upon this point with regard to any subdivision, must of course be materially governed by its relationship to the whole line. As far, therefore, as it may be either my duty or privilege, to offer any opinion, it is, upon its special merits, in favour of Route No. 3; and more generally because upon both national and colonial grounds, it appears most desirable to avoid any unnecessary deviation from the most direct line between the Bend of Petitcodiac and the Rivière du Loup, which the natural facilities of the country will permit.

I have, &c.,
(Signed) J. WILKINSON.

Major W. Robinson, R.E.,
Commissioner of the Quebec and Halifax Railway
Exploratory Survey, &c., &c.

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APPENDIX No. 4.

(Plans referred to:—Nos. 20, 21, 22, and 23.)

Report on a Line of Railway from Whitehaven to Amherst.

Halifax, March 14, 1848.

SIR,

HAVING been directed by you to explore and report upon the capability of the country for a line of railroad from Whitehaven to Amherst, we have attended to that duty, and beg leave to lay before you the following Report.

General description of the country.

The general formation of the country consists of long continuous ridges, with valleys between them, in an eastern and western direction. One of these ridges, commences at Cape Canso, passes Country Harbour, runs westerly on the south of the west branch of the St. Mary River, and continues onwards to the western parts of the province. The crest of the ridge is near the northern side, whence it slopes gently to the sea-coast; the height is about 600 or 700 feet. It is cut through by the valleys of Country Harbour River and of the St. Mary. There are several indentations across it between Country Harbour and Canso; viz., from New Harbour to Salmon River, about 10 miles above its mouth; from Torbay, by Ingersol Betts Lake, to Salmon River, near its mouth; from Whitehaven to Crow Harbour; and from White Point to Fox Island.

Northwardly of this ridge there is another range of high lands, which, commencing at Cape Porcupine on the Gut of Canso, runs parallel to the former, and terminates in the highland southward and eastward of Truro. It is cut across by indentations from Country Harbour to Antigonish; from Glenelg to Antigonish, by College Lake; from Glenelg to Merigomish, by the east branch of the St. Mary and the French River, and by way of the East River to Pictou; also from Upper Stewiack to Pictou, by the Middle River; besides several minor indentations. This ridge is of about the same general height as the former.

Between these ridges is a valley running from Chedabucto Bay, on the east, to the Basin of Mines, on the west. It is interrupted by some hills at the head of the Stewiack, but it generally preserves the character of a continuous valley. The highest parts of the bottom of this valley, more immediately connected with the present survey, is between Guysborough and Country Harbour, about the head of Salmon River, and between Country Harbour and the St. Mary at Glenelg.

The latter of these is found, by barometrical measurement, at the place which we crossed with the line, to be 226 feet above the sea; the former appears to be about the same height.

The rock formation of the southern ridge is generally granite and various kinds of trap; that of the northern, coarse slates and shales, variously inclined to the horizon, but mostly vertical, with some patches of trap.

The valley is soft sandstone and slate in layers, horizontal, or but slightly inclined.

The coast of the Atlantic and of Chedabucto Bay are, so far as we could observe, composed of slate and shales of various kinds; the trap-rocks being confined to the high grounds. The general direction of the strata of these rocks is S. 60 E. by N. 60 W.

Our first care was to make inquiry of surveyors and others acquainted with the peninsula on which Whitehaven stands, as to its general features; and we were informed that the coast was rugged, but that in the interior there were extensive elevated flats, which, once gained, but little difficulty would be experienced in proceeding.

Whitehaven to Ingersol Betts Lake.

We accordingly adopted that course, and found a barren, rocky country, with elevated grounds, intersected with deep hollows, running across the course of the line. We pursued this line as far as Ingersol Betts Lake, and then abandoned it. It was now settled that we must either find a passage along the coast to Country Harbour, or get through to the northern side of the ridge, and follow the valley of the Salmon River; but as this was known to be rough and difficult, and withal circuitous, we resolved to make the first trial upon the coast.

Whitehaven to Cole Harbour.

Commencing at Whitehaven, at A, near Haulover Cove, the line may be carried across a level neck of land to Molasses Harbour, and thence along the shore of that harbour to B, at its head. Thence about three-eighths of a mile up a pretty deep valley, brings us to the Water-shed C, between Molasses Harbour and an extensive bay on a pretty large stream which flows into Cole Harbour at D. This water-shed is only about 20 feet above the high-tide mark, giving a passage as easy as can be desired.

The length of this section A to D, is about eight miles.

From D to E, four miles, the line is along the shore, passing through low points of ground and shallow bays. On this section cuttings and embankments of about 20 feet at greatest, will produce undulations within 40 feet to the mile.

From E to F, at the head of Torbay, six miles, there is a belt of flat ground between the high lands and the sea-coast, upon which the road can be carried so level as to require no particular remark.

From F to G, across the peninsula, 3¼ miles. The highest part of this section is within 30 chains of F, and about 54 feet above the sea; thence it is nearly level to within half a mile of the coast, where it is 50 feet in height; from which place it may descend with a uniform grade of 40 feet to the mile to G.

New Harbour to Cole Harbour.

From G to the head of New Harbour at I, about two miles, there are several bluffs of slate rock, one of which will require a deep cut, or possibly a tunnel of about 300 yards in length.

Or, by passing over a ridge of about 100 feet in height at K, which may be done at grades of about 50 feet per mile, a mile and three-quarters would be saved in distance between Torbay

and New Harbour; the expense not greater than by the shore. This will probably be found to be the most eligible route.

New Harbour to Isaacs Harbour.

From New Harbour to L, Coddles Harbour, four miles For the first two miles of this section, a track may be obtained quite smooth and level. On the remaining two miles there are a number of small slate ridges about 30 or 40 feet high, with valleys but little above the sea-level between them.

The direction of the strata is S. 60 E. by N. 60 W. They have not been examined, but it is probable that some of them will have to be cut through.

From Coddles Harbour to M, at the head of Isaacs Harbour, 8½ miles, there is but little difficulty in getting along the shore, except about a mile and a half at Coddles Harbour, where there is some broken ground that has not been particularly examined, but we do not apprehend much difficulty with that part. The remainder of the shore is sufficiently flat. It is supposed that a straight line can be found from L to M, but this has not been examined.

Isaacs Harbour to Country Harbour.

Between Isaacs Harbour and Country Harbour, three miles, is a ridge of 184 feet in height at N, which is its lowest part. On the eastern side of this ridge, from M to N, the rise is 1 in 32; on the western side, from N to O, the descent may be brought to 80 feet to the mile.

It is possible that a better passage may be found about a mile to the northward; it has not been examined, but from the general formation of the country, there seems but little hopes of success.

It is probable that the only alternative in crossing this ridge, will be the employment of stationary power, or the tunnelling of about a mile in length through whin-rock.

From O to P, about seven miles, there is between the hills which bound the valley and the water, a range of low ground with an irregular surface, upon which a line may be carried, so as to produce nearly a level by cuttings and embankings of 20 feet at the maximum.

Country Harbour to Glenelg, at St. Mary's River.

Turning off at P, we proceed up the valley of West Brook, a small stream which flows along the northern base of the southern ridge of hills formerly mentioned. Near the head of this stream at R, there is a water-shed, from which waters flow to the St. Mary by McKeen's Brook. The distance from the mouth of the West Brook to R, is four miles, and height, by barometer, 226 feet; giving an ascent of 56 feet per mile. The cheapest route is along West Brook, the valley of which appears open and smooth; but if it be required to reduce the grade, the ascent may commence one or two miles further down Country Harbour River, keeping along the face of the high lands, as shown by the line on the plan. The face of the high lands along the river is steep and broken, and would probably require a heavy expense, but along West Brook it appears pretty even.

By carrying the line to the river one mile below the mouth of West Brook, the grade would be reduced to 45 feet per mile.

From R to S, two miles, there are several small lakes with low ridges of ground between, which we did not particularly examine, but as seen from the road, we concluded it will be quite practicable to find a tolerably fair line between the lakes; the average descent will be about 15 feet per mile. Thence to T, at the St. Mary, 3½ miles, there is the valley of McKeen's Brook, which, as appears, is smooth and open; the descent is about 40 feet per mile.

East branch of St. Mary's River.

From T to Mr. Alexander Sutherland's, the highest settlement on the east branch of the St. Mary, 13 miles, the valley is with few exceptions pretty broad, with intervals along the river, and will present no obstacles, except from freshets. We could not ascertain the depth of the freshets very correctly, but from information, and from ice-marks on trees, we conclude it will not exceed four feet.

The river may have to be crossed several times. The sectional area of water-way required, will be from 300 to 500 square feet, according as the bridge may be higher or lower on the stream. The height of the river intervale at Sutherland's is, by a mean of five observations, 194 feet above the sea; and by a mean of two observations on different days, the height of T at McKeen's Brook is 54 feet, giving a rise of 140 feet in 13 miles,—about 11 feet per mile.

At about a mile above Mr. Sutherland's is the foot of the falls, where the river descends in a rocky crooked channel, between cliffs of trap-rock, 90 feet in about a mile. This is a formidable obstacle; the river is too crooked to admit of a line in the chasm through which it flows, and the hills on the western side are high and steep: it will therefore be necessary to cut across the point on the eastern side. On this side we have, at the head of the falls, a narrow ridge of trap-rock, of 60 feet in height, jutting upon the river from the eastward; and at the foot of the falls, a deep valley, in which flows Campbell's Brook, coming in also from the east; both of which must be crossed. The valley will require a bridge or embankment of 500 feet in length and 30 or 40 feet in height, and the ridge, a tunnel of about a quarter of a mile in length. By these means a grade of 60 feet to the mile may be obtained, as shown by the section.

Southwards of Campbell's Brook there does not appear to be any obstruction to a descending grade of 40 feet per mile, along the river hills down stream to the level of the river.

From the falls to Lake Eden, about two miles, there are no difficulties; the banks in some places are near the river, and the flat ground between them of moderate breadth; but there appears to be sufficient room for fair curvatures, though it may be necessary to cross the river two or three times. The rise in these two miles is about 15 feet.

Heights of Eden and Beaver Lakes.

From Lake Eden to Beaver Lake, about four miles, the line may pass close along the southern shore of Lake Eden, under a high range of hills, about a mile, to the entrance of a range of ponds and low ground two miles in length, leading westward to Beaver Lake, the head of the East River of Pictou. The height of Lake Eden above the level of high tide at Pictou is, by a mean of nine barometrical observations taken on three successive days, 381 feet; Beaver Lake is, by a mean of five observations taken on two different days, 398 feet above the same datum, and 17 feet above Lake Eden.

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The water-shed between Lake Eden and Beaver Lake, at U, is within half a mile of the latter, about 40 above Lake Eden, and 23 above Beaver Lake.

There may be a uniform grade from Lake Eden to U, and from U, by the southern side of Beaver Lake, for about a mile and a half, giving for the former 30 and for the latter 16 feet to the mile.

East River of Pictou.

From the foot of a range of flats connected with Beaver Lake, the East River of Pictou, which is here of a small size, begins to descend between high banks to the bridge on the St. Mary's Road, six miles. On this section the line must follow the river flats, which appear sufficiently wide to admit of fair curvatures, except a distance about three-eighths of a mile above the bridge, when it will be necessary to run through a valley on the southern side, to avoid a narrow crooked channel through which the river flows between limestone rocks. On this section the river will have to be crossed several times. The section of water-way of the bridges may be from 100 square feet near Beaver Lake, increasing as we descend, to 300 feet. The flowage of the intervals does not exceed three feet.

The average descent will be, for the first three miles, about 15, and for the remainder 33 feet per mile.

From the St. Mary's Road to Grant's Bridge, seven miles. The valley is broad and contains large intervals. The line, by cutting through some low upland points, may be carried pretty straight. The average descent is about 10 feet per mile.

From Grant's Bridge to the foot of the Rapids, near three miles, the river is crooked and confined between high lands of stratified sandstone and limestone, several points of which would have to be cut through.

This will be an expensive section. There is one circumstance, however, that would tend virtually to reduce the expense: the stone, owing to its structure and dip, which is about 50 degrees with the horizon, will be easily quarried, and will come in for drains, ballast, &c., on the road, as cheap, probably, as materials would from any other source. It will also open some capital limestone quarries, and it is not improbable that building stone would be met with, though we did not observe any seams of the sandstone sufficiently thick for that purpose. The average descent of this section is about 40 feet per mile.

From the foot of the Rapids to the Fish Pools, three miles, the line must keep along the river.

There will be little cutting through points, but it is likely there will be some bridging. The grade will be about 40 feet to the mile.

From Grant's Bridge, mentioned above, to the Fish Pools, there will be several bridges. It is impossible, by a mere passing glance at the river, to even guess very correctly at the number; but it is not unlikely that there will be not less than five or six. The span may be about 60 feet, till we get below the west branch, when it may be enlarged to 80 feet. The bottom is of rock, and it is not unlikely that stone for the abutments will be found in the excavations for the road.

East River to West River Pictou.

From the Fish Pools to the height of land between the Albion Mines and M'Culloch's Brook, at V, about three miles, there is a rise of 133 feet. The ground will admit of a uniform grade, being about 44 feet per mile. At the Fish Pools it will be necessary to cross the river upon a bridge 30 feet in height, in order to get upon a range of tolerably level ground immediately above the steep banks of the river.

From V to Middle River at W, three miles, there is a dip of 40 feet into the valley of M'Culloch's Brook, and then a swell of ground between this valley and Middle River. This swell may be crossed at grades of about 50 feet to the mile.

From W to X, two miles, the ground rises about 70 feet, being an average of 35 feet to the mile. It will be necessary to cross the Middle River at the height of 40 or 50 feet, in order to get upon a flat table of ground on its western side.

West River Pictou to River John.

From X to the West River at Y, four miles, there is a descent of 172 feet. The ground will admit of a nearly uniform grade, averaging about 43 feet per mile.

From Y to Z, 1½ mile, there is a rise of nearly 80 feet, giving an average of 53 feet per mile. The ground, though somewhat rough in some places, does not appear to contain any very formidable obstructions to a regular grade.

The point Z is on a flat table-land, from which the line runs off to the westward.

From Z to A', 2¼ miles, the line passes over some undulations into the valley of the Saw Mill Brook, thence up that stream in a broad valley, which, continuing westerly, becomes the bed of Black River, a branch of the River John.

The height of the water-shed between Saw Mill Brook and Black River, at A', is 227 feet above tide-water, and the height at Z 96 feet above the same datum; the difference is 131 feet and distance 2¼ miles, giving an average of 58 feet per mile.

It is likely that a uniform grade can only be obtained on this section by means of a good deal of earth-work. By embanking 16 feet at Y, and cutting 29 feet at A', the grade from Y to A may be brought to 47 feet per mile; and from the peculiar form of the ground, it does not seem likely that there would be much additional expense.

From A' to the mouth of Black River, 8½ miles, the valley is nearly half a mile broad, the stream meandering through flat lands with a sluggish current, showing the fall to be very trifling.

The height at the mouth of Black River is not measured, but may be supposed about 100 feet, and the descent along the valley 14 feet per mile.

River John to Tatamagouche Black River.

It will not be expedient to cross the River John below the mouth of Black River, because, though the general surface of the country is level, the river flows in a deep narrow valley, which would have to be crossed. Above this place the banks are low, and moreover, advantage may

be taken of the valley of Nabiscump Brook to obtain an easy rise to the table-land on the west of the river.

From the Forks of River John, mouth of Black River, we did not travel through the country, but ascertained it to be of the same character as the region along Black River,—a flat country with sluggish streams flowing through it, and offering no material obstruction to the formation of a railroad.

From Waugh River, Tatamagouche, towards Amherst, we made no observations relative to this line; but the country is known to be so level, that there would be little or no difficulty in getting a good railroad line across it.

With regard to curvatures, from our limited means of making up a judgment, we can say but little; but from the slight observations that we were enabled to make, we think there will be none of less radius than half a mile.

Distances.

The distances are as follows:—

	Miles.	
From Whitehaven to Cole Harbour . .	8	
Cole Harbour to Torbay	8	
Torbay to New Harbour	5½	
New Harbour to Isaacs Harbour	12½	
Isaacs Harbour to Country Mr. Archibald's .	6	
	—	40
Country Harbour to Glenelg	13½	
Glenelg to the summit of the highlands two miles west of Lake Eden	20	
Summit of highlands to Albion Mines . .	21	
	—	54½
Albion Mines to West River	10	
West River to River John	12½	
	—	22½
River John to Tatamagouche	14	
Tatamagouche to Wallace.	12	
Wallace to the Province Line at Otter Creek.	38	
	—	64
Total from Whitehaven to the Western Boundary of the Province.		181 miles.

Ice at Whitehaven.

Respecting the ice at Whitehaven, the result of a good deal of inquiry amongst the inhabitants, and of shipmasters accustomed to the navigation of the coast, is as follows: That the harbour is frozen regularly in winter as far down as Fisherman's Island. Haulover Cove is also regularly frozen. Beyond these limits, though it is sometimes frozen, the liability does not seem to be greater than in Halifax harbour. It was in consequence of this information that we fixed upon the point A for the terminus of the line. The ground will admit of a branch to the upper part of the harbour, which we have shown upon the plan.

The sea ice breaks up in march, and floats to the southward; that which passes through the Gut of Canso is in no great quantity, and in ordinary weather is set off by the current of Chedabucto Bay towards Sable Island. The main body of ice met with in that sea, passes eastwardly of Cape Breton, and with northerly and westerly winds is carried out to sea; but easterly weather brings it on to the coast of Nova Scotia. We could not learn that Whitehaven had ever been completely closed with this ice, but it has often been in such quantity as to make navigation in the night dangerous, and sometimes, at distant intervals of time, it has been in such quantity as to make the approach in daylight very difficult. On the whole, it would appear that between the last of February and last of April, it may be accounted dangerous for a steamer to run in the night near Cape Breton, and direct from thence to Whitehaven; as there would be almost a certainty of having to cross a stream of floating ice some part of this sea, though it but seldom happens that it approaches Whitehaven.

All which is respectfully submitted by

Your, &c.,

(Signed) GEORGE WIGHTMAN.
A. CALDER, Serjeant, Royal Sappers and Miners.

Major W. Robinson, R.E.,
&c. &c. &c.

APPENDIX No. 5.

Remarks on the Inner Part of the Entrance of Whitehaven.

Columbia, Halifax, N. S.,
August 27, 1846.

SIR,

IN pursuance of your orders, I have made a rough sketch of the inner part of the entrance of Whitehaven, which, with the accompanying remarks, I beg to submit for your consideration.

In fine clear weather, and by daylight, the approach to Whitehaven is easy, the shores being bold, and no out-lying dangers, if we except two rocks nearly a mile distant from the shore of White Island, one to the south-west, and the other to the south-east, These generally break, and so show themselves.

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White Island forms the turning point of the shore of Nova Scotia, as it deflects towards the northward to Canseau. The white rocks, and its elevation of 140 feet, make it stand out prominently, and easily distinguish it.

There are several channels in Whitehaven. Three can be used by steamers of any size. The middle, which is between White Island and the ledges to its westward, appears to be best, is about 250 fathoms broad in it narrowest part, and carries bold water on both sides, and is besides the shortest and most direct, not exceeding half a mile in length. However, as the directions of the channels differ, and all radiate nearly from the same point, a sailing-vessel can use the most favourable with respect to the winds. The western is also a very good channel, and is preferable for vessels going or coming from that direction. The soundings without this harbour are (near the shore) very irregular, especially in the approach to the eastern channel, which is also injured for vessels of large draught of water, by a rocky patch with 13 or 14 feet water. It is situated near the entrance, and rather more than one-third across channel, from the small island (Grassy Patch) off White Island.

When inside the harbour, care must be taken, as there are several shoal rocky patches (see plan), which render the navigation difficult to strangers, and require to be well determined and buoyed, should the harbour be used for commercial purposes. There is an abundance of safe anchorage, with good holding ground, black muddy bottom, land-locked, and perfectly smooth.

In foggy weather this harbour is difficult of approach, especially to a stranger, as the soundings in-shore are very irregular; and I have not been able to learn any good indications of its vicinity to be gathered from the lead, so as to render its approach by that means certain; and Torbay, its immediate neighbour to the westward, is a dangerous place to get into.

From the fishermen and small coasters, I understand the currents round the points are uncertain, and generally depend on the wind, though the prevailing current is to westward.

I experienced the current in a boat when I visited the outer break; it was then setting to the westward, at the rate of one mile and a half per hour at least. I also perceived vessels in the offing setting rapidly in the same direction; the breeze was from the eastward and light, though it had previously blown hard from the same point. We also, in our passage from Halifax to Canseau, during a fog, with the wind from the south-west, experienced an easterly current; but the land, once made, the harbour is easily attained, especially by a steamer.

A judicious arrangement of fog-signals and lighthouses, with buoys on the principal dangers, and a good survey, with the sea-soundings well laid down, would make the approach in the night or during fogs attended with small danger to a careful seaman.

Latitude of observation, Rock Whitehaven 45° 14′ 0″ N. Longitude of observation, Rock Whitehaven, 61° 11′ 4″ W. Variation 21° 42′ 20″ W. Rise of tide from three to six feet. High water at the change of the moon 7h 40m.

In the Admiralty plan of this place, the general features and soundings appear correct, if we except some of the inner dangers, which are not noticed; but the scale is discrepant.

I have, &c.,

(Signed) P. FRED. SHORTLAND.
Lieutenant and Commander.

The Hon. W. F. W. Owen, Captain, R.N.,
&c. &c. &c.

(Received from Mr. Des Barres, Solicitor-General, May 2, 1848.)

To the BOARD of DIRECTORS of the Projected Railroad from Nova Scotia to Quebec.

GENTLEMEN,

WE, the undersigned magistrates of the county of Guysborough, in the province of Nova Scotia, hereby beg to state, that, believing a report to have been made to the surveying party engaged in the survey of the contemplated railroad from this province to Quebec, and that such report has been made by certain inhabitants in the settlement of Torbay, near Whitehead, who supposed (in ignorance of the nature of such lines of communication) that the present facilities of intercourse with the interior of the country for purposes of procuring fuel from the woodlands, &c., would be entirely broken up in the event of the railroad terminus being at Whitehaven, and therefore have stated to the surveying party on the Whitehead route, that the "winter navigation to the spacious harbour of Whitehead is quite impracticable from ice."

We therefore, in view of the injurious tendency that such false information is calculated to produce on the minds of those unacquainted with the locality referred to, have obtained the accompanying affidavits of persons residing at Whitehead, and likewise of captains of coasting vessels residing in other places in this province, and of long experience in the winter navigation on the coast of said province, testifying to the capabilities of Whitehead Harbour at all seasons of the year.

To all of which we, as the residing magistrates of the county of Guysborough, wherein Whitehead is situated, beg hereby to record our certificate of their correctness, dated at Canso, Nova Scotia, January, 1848,

(Signed)

ROBERT HARTSHORN, J.P.	DAVID DOBSON, J.P.†
R. M. CUTLER, J. P.	E. J. CUNNINGHAM, J.P,
WENTWORTH TAYLOR, J.P.	WILLIAM HART, J.P.
E. H. WAUCHEVILLE, J.P.	FRANCIS COOK, J.P.
ABR. N. WHITEMAN, J.P.*	R. V. REFEEMAN, J.P.
W. J. BEYLOU, J.P.	

* One affidavit sworn before him January 14, 1848.
† Four affidavits, December 25; one affidavit, January 12.

Copies of the affidavits referred to in the above communication.

1.

William Spears, of Whitehaven, in the county of Guysborough, fisherman, maketh oath and saith,—That he hath resided at Whitehead aforesaid for 28 years, and is well acquainted with the harbour of Whitehead aforesaid, and also with the drift ice which passes from the eastward, also from the Gut of Canso to the westward, in the spring of the year; that the ice seldom comes into the said harbour in large bodies, and very seldom remains there long enough to prevent vessels entering the said harbour at any time of the year, it being carried away by the winds and currents, and dispersed over the ocean, generally in a south-westerly direction; that during deponent's residence at the said harbour he has not known a day on which vessels of the largest class would be prevented entering therein by ice, the said harbour being perfectly accessible at all seasons of the year.

(Signed) WILLIAM SPEARS.

Sworn to before me, at Whitehead, this 25th day of December, A.D. 1847.

(Signed) DAVID DOBSON, J. P.

2.

Robert Spears, of Whitehead, in the county of Guysborough, fisherman, maketh oath and saith,—That he hath resided at Whitehead aforesaid for 28 years; that he is well acquainted with the harbour of Whitehead, and also with the action of the ice which occasionally comes through the Gut of Canso, and also round the Island of Cape Breton, passing on to the westward, in the spring of the year; that the ice very seldom comes into the said harbour in large bodies, and very seldom remains therein long enough to prevent vessels entering the said harbour at any time of the year, it being carried away by the winds and currents, and dispersed over the ocean, generally in a south-westerly direction; that during this deponent's residence at the said harbour, he never knew the ice to come into the said harbour in a large quantity but once, and that was in the year 1828, and then not to prevent vessels to enter said harbour, the harbour being perfectly safe and accessible at all seasons of the year.

(Signed) ROBERT SPEARS.

Sworn before me, at Whitehead, this 25th day of December, 1847.

(Signed) DAVID DOBSON, J. P.

3.

John Munrow, of Whitehead, in the county of Guysborough, fisherman, maketh oath and saith,—That he hath resided at Whitehead 30 years; that he is well acquainted with the harbour of Whitehead, and also with the navigation of the said harbour, from the entrance to the extremity; that he is acquainted with the action of the ice, which occasionally makes its appearance off the said harbour, passing on in a south-westerly direction; that it seldom comes in in large bodies, and very rarely remains therein long enough to prevent vessels conveniently entering the said harbour at any time of the year, it being generally carried away by the winds and currents, and dispersed over the ocean in a south-westerly direction; that during this deponent's residence at the said harbour, he has never known a day on which vessels of the largest class would be prevented entering therein by ice, the said harbour being perfectly safe and accessible at all seasons of the year.

(Signed) JOHN his × mark. MUNROW.

Sworn before me, at Whitehead, this 25th day of December, 1847.

(Signed) DAVID DOBSON, J. P.

4.

John Feltmate, of Whitehead, in the county of Guysborough, fisherman, maketh oath, and saith,—That he hath resided at Whitehead aforesaid for 12 years; that he is acquainted with the action of the ice, which occasionally comes through the Gut of Canso and round the Island of Cape Breton, and which passes Cape Canso to the westward in the spring of the year; that the ice very seldom comes into the harbour of Whitehead aforesaid in large bodies, and never remains there long enough to prevent vessels entering the said harbour at any time of the year, it being carried away by the winds and currents, and dispersed over the ocean, generally in a south-westerly direction; that during this deponent's residence at the said harbour, he has but once only known a few clumpits of ice to come into the said harbour, which went out the next day; and has not known a day during the above period on which vessels of the largest size would be prevented entering therein by ice, the said harbour being perfectly free and accessible at all seasons of the year.

(Signed) JOHN FELTMATE.

Sworn before me, at Half Island Cove, in the said county, this 25th day of December, 1847.

(Signed) DAVID DOBSON.

5.

Thomas Monro, of Whitehead, in the county of Guysborough, mariner, maketh oath and saith,—That he hath resided at Whitehead aforesaid about 28 years, and during greater part

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of the years aforesaid owned a vessel and sailed her as master; that he is well acquainted with the action of the ice which occasionally appears off Whitehead, passing on in an oblique direction from the shore to the south-west; that the ice never, during his residence at said harbour, came in in large bodies but once, and remained but a short time; with this one exception, deponent don't remember one day that vessels of the largest class would be prevented entering said harbour, it being perfectly safe and accessible at all seasons of the year; deponent further saith, that he hath been coasting to Halifax, and all along the shores of Nova Scotia, at all seasons of the year, and has never on his return or outset, been prevented going or entering the aforesaid harbour during the time of his residing as aforesaid.

(Signed) THOMAS MONRO.

Sworn before me, at Whitehead, this 12th day of January, A.D., 1848.

(Signed) DAVID DOBSON, J.P.

6.

Abraham Whiteman, of Canso, in the county of Guysborough, maketh oath and saith,—That he is now in the 87th year of his age, and that he was a coasting trader on the coast of Nova Scotia for more than half a century, and was in and about Whitehead, on the coast of said province, at all times of the year, and always found the harbour there accessible and perfectly safe at all times.

(Signed) ABRAHM. WHITEMAN.

Sworn before me, at Canso, January 14, 1848.

(Signed) ABRAHM. N. WHITEMAN.

Heads of Information obtained by Captain Henderson, Royal Engineers, at Whitehaven, in October, 1847.

The ice from the Gulf of St. Lawrence, &c., comes round Cape Breton and through the Gut of Canso, in the spring of the year, and is brought by the easterly wind off the north-east coast of Nova Scotia, and if the wind chops round to the southward, it drives this ice into Whitehaven, Torbay, &c.

The harbour had been blockaded nine or ten times in the recollection of my informant, who had lived on that coast for nearly 40 years.

Four years ago the harbour of Whitehaven was blockaded up with drift ice for about 10 days.

Generally speaking, it is more or less incommoded by drift ice every two or three years.

It was frozen over in the winter of 1846-47, five or six inches thick all the way down to Big Island, at the mouth of the harbour.

This was considered unusual, as it requires the weather to be cold and very calm to freeze so much of the harbour. It freezes, however, every winter as far down as the long point opposite Fisherman's Island.

(Signed) E. W. HENDERSON,
Captain, Royal Engineers.

APPENDIX No. 6.

Report of the Sub-Committee, to whom was referred the communication from Lieutenant E. Walcott Henderson, Royal Engineers.

Council-room of the Quebec Board of Trade.
Quebec, May 12, 1847.

THE Sub-Committee, to whom was referred the communication from Lieutenant E. Walcott Henderson, Royal Engineers, have to report, that owing to the manner the accounts are kept at the Custom-house, and the nature of the trade with the lower ports, the value of the imports and exports cannot with any degree of accuracy be ascertained, and more especially to that portion of our trade with Gaspé, as, being in the province, a mere matter of form of clearance and entry inwards is observed.

Your Committee beg to hand at foot a statement of the number of clearances and arrivals to and from the various ports named in Lieutenant E. Walcott Henderson's letter, for which they are indebted to the collector of the customs, and although they abstain from giving the nature of the cargoes, owing to the causes above stated, they would remark, that, with the exception of but one vessel which cleared in ballast, the remainder had cargoes; those from Halifax, in general with valuable cargoes of West India produce, and from the other ports, fish and oils. The outward cargoes consisted almost exclusively of flour, provisions, &c.

With respect to the eastern ports of New Brunswick, your Committee are not of opinion that the trade between that portion of the above province and Canada has materially increased within the last few years; and with respect to the trade with ports in the Bay of Fundy, regret to say that it has all but ceased, which your Committee attribute to the changes in the Imperial laws, more especially the Act passed in 1842, generally called Gladstone's Act; before the passing of which all American provisions, by passing through the Canadas, were allowed to take the privileges and character of Canada produce and imported into our sister colonies as such, but with that change all inducements to receive their supplies from this ceased, as the proximity of those ports to Boston and New York, and the cheapness of breadstuffs and provisions in those markets, offered superior advantages; and the result has been as

stated. The same remarks apply, to some extent, to Halifax and other ports in Nova Scotia, where merchants, from their large increasing trade with Boston, by shipments of coals, plaster, &c., are enabled to take advantage by the return vessels of very moderate rates of freights, and a selection from a comparative cheap market.

With Gaspé the trade has been gradually increasing, and your Committee confidently look forward to be able to report the same with respect to our sister colonies, as our unrivalled canals are now being brought to a completion, and the spring of 1848 will see a fresh trade with the west brought into existence, and craft containing 3000 to 5000 barrels of flour loading in Lakes Erie, Michigan, and Ontario, brought to our doors. With this a reduction in freights must follow; and your Committee do not see why a barrel of flour or pork cannot be sold as cheap in Quebec and Montreal as it can in New York or Boston; and if one of the inducements to purchase in the American markets is removed, the other, viz., the proximity, will vanish with a railroad communication with Halifax, for we do not entertain any doubt but that St. John's will connect herself with the trunk line by a branch.

Among the almost numberless advantages that would follow the building of a railroad, both politically and commercially, your Committee would point out the certainty of a transportation to a sea-port in either New Brunswick or Nova Scotia, during the period our navigation is impeded with ice, of a large portion of bread-stuffs which every winter is locked up in Quebec and Montreal, to the great injury of the province at large, to which may be added the advantage that would follow by the transmission of the mails by the road, for which the Government now pay so large a sum for the transmission through the United States, which, for many weighty reasons, is objectionable, and, we may add, offensive to the feelings of a large portion of the inhabitants of both Canada East and Canada West. The Committee do not conceive they are called on to go into any length on the vast benefits that might follow by the line of railroad that is now engaging the attention of Government, to which the attention of this province as well as that of New Brunswick and Nova Scotia is so earnestly drawn, and in closing this report, the Committee would in the most urgent manner bring the attention of the Imperial Government, through the present channel of communication, to the absolute necessity of freeing the inland navigation of the St. Lawrence from all obstructions that now exist, and which prevent American vessels from bringing their produce (for your Committee would not recommend their being allowed to carry any other than their own) direct to Quebec, or should they wish it, to use our canals to take their produce to any market they think proper, without breaking bulk; this course, we think, highly desirable, as well as the equally desirableness of all our tolls being reduced to the lowest practicable scale, which, if followed up, must draw the vast produce of the West down our noble river, and for which trade there are now so many rivals in the field.

ARRIVALS from—

	Vessels.	Tons.	Men.
Gaspé	59	2545	222
New Carlisle	20	796	71
Antigonish	16	972	59
Aichat	14	792	55
Bathurst	1	44	3
Caraquette	7	245	20
Dalhousie	1	37	3
Guysborough	4	205	15
Halifax	17	1257	71
Miramichi	3	400	30
Pictou	2	79	6
Richibucto	7	250	23
Sydney	3	563	27

CLEARANCES for—

	Vessels.	Tons.	Men.
Aichat	12	749	42
Bathurst	7	320	25
Canso	1	68	4
Caraquette	3	103	10
Cocayne	1	38	3
Dalhousie	9	349	30
Guysborough	2	95	8
Halifax	18	1386	74
Miramichi	27	1376	96
Pictou	3	184	11
Richibucto	9	418	28
Restigouche	8	315	23
Shippigan	1	47	3
Sydney	2	215	10
Shelbourne	1	30	3
Gaspé	84	3334	249
Carleton	3	107	10
New Carlisle	10	489	32

APPENDIX, No. 7.

Extract from the Report of the Commissioners appointed by the Legislature of the State of New York, by the Act of May 11, 1846, *to locate certain Portions of the New York and Erie Railroad made to the Legislature, January* 14, 1847.

COST OF MOTIVE POWER ON RAILROADS, PER TRAIN, PER MILE.

1st. Engine-men, Fire-men, and Station-men:—

	Cents.	
Baltimore and Ohio Railroad	5	
Utica and Schenectady „	8	
Reading „	4·55	
Boston and Worcester „	5·50	
Fitchburgh „	7·00	
		30·05 ÷ 5 = 6·01
New York and Erie „	7·485	

2nd. Fuel:—

		Dolls.	
Reading Railroad.	Wood	3·50	23·70
Boston and Worcester „	„	4·90	22·20
Fitchburgh „	„	4·25	14·17
Baltimore and Ohio „	Coal	2·00	8·00
			68·07 ÷ 4 = 17·02
New York and Erie „			18·09

3rd. Repairs of Engines and Tenders:—

Reading Railroad	4·90	
Boston and Worcester „	9·05	
Utica and Schenectady „	7·93	
Fitchburgh „	5·20	
Western (Mass.) „	6·50	
Baltimore and Ohio „	9·00	
		42·58 ÷ 6 = 7·09
New York and Erie „	8·75	

4th. Oil and Cotton waste:—

Reading Railroad	1·74	
Boston and Worcester „	1·24	
Fitchburgh „	1·30	
Baltimore and Ohio „	1·46	
		5·74 ÷ 4 = 1·43
New York and Erie „	2·94	

5th. Interest on cost of Engines:—

Baltimore and Ohio Railroad	3·01	
		= 3·01

6th. Conductors and Brakemen:—

Reading Railroad	4·11	
Fitchburgh „	6·20	
		10·31 ÷ 2 = 5·15
Take 63 per cent. for brakeman (which is the ratio on Reading road), as conductors should not be included, and the expense for brakeman is . . .	5·15 × ·63 = 3·14	
Do. Baltimore and Ohio Railroad, as per estimate for coal trade	= 2·40	
		5·54 ÷ 2 = 2·77
New York and Erie Railroad	= 6·52	

7th. Repairs of Railroad, chargeable to Locomotive and Tender:—

1st. Ordinary repairs; of these one-fifth is regarded as chargeable to motive power:—

Reading Railroad	13·66	
Boston and Worcester „	18·00	
Boston and Lowell „	13·50	
Western (Mass.) „	13·75	
Baltimore and Ohio „	18·30	
		77·21 ÷ 5 = 15·44
and 15·44 ÷ 5		= 3·09

2nd. Deterioration of iron, not yet settled by experience. Half of this wear is believed to be chargeable to locomotives and tenders, on account of their greater weight. Suppose rail cost 7000 dollars per mile, and will bear transport of 20,000,000 tons on a level road, average (say) 250 tons freight per train, equal to 80,000 trains. The cost per train will be 8·75 dollars; and half of this is . . . . . 4·37

7·46

The weight of engines in the cases above detailed is not known, but is supposed to average less than 15 tons for an engine of 20 tons on driving wheels; would require an additional expense; but the fuel on the line of road under consideration would be less expensive, about 7 cents, than the average for the same size of engine. In view of both considerations, it is believed a reduction should be made from the preceding result of (say)	44·79
	4·79

And the estimate for a 20-ton engine, is . . 40·00 cents.

Forty cents per train per mile, equivalent to 1*s.* 8*d.* sterling.

No. 2.

(No. 318.)* No. 2.

COPY of a DESPATCH from Earl GREY to Governor-General the Earl of ELGIN AND KINCARDINE.

MY LORD, Downing-street, January 26, 1849.

I THINK it right to transmit for your information the enclosed copy of a report which has been made by Her Majesty's Commissioners of Railways, containing such observations as occurred to them upon Major Robinson's Report upon the proposed line of railway between Halifax and Quebec; but I abstain from making any remarks on these observations until Her Majesty's Government shall have had an opportunity of considering simultaneously the communications received or expected on this important subject from the neighbouring provinces, as well as from your own Government. January 12, 1849.

I have, &c.,

The Right Hon. Earl of Elgin and Kincardine. (Signed) GREY.
&c. &c. &c.

Enclosure in No. 2. Encl. in No. 2.

Office of Commissioners of Railways,
SIR, Whitehall, January 12, 1849.

I HAVE been directed by the Commissioners of Railways to acknowledge the receipt of your letter of the 22nd of November, transmitting, for their consideration, a copy of a report by Major Robinson of the Royal Engineers, on a proposed line of railway between Halifax and Quebec, and other documents connected therewith, and requesting them to endeavour to ascertain whether the estimate in that report of the probable cost of the work and of the return to be expected from it may be relied upon; and I am to inform you that the Commissioners have carefully considered the subjects referred to them, and have directed me to make the following observations for the consideration of Lord Grey, which are chiefly founded on the facts contained in the report, as they have but little other data on which to rest their opinion.

With respect to the estimate given by Major Robinson of the cost of the proposed works, they consider that where so long a line is concerned, the average, which he has taken from the actual cost of other lines as nearly similar as possible in their character, affords good data for an estimate; and they therefore concur in the conclusion he has drawn from the average cost of the completed railways in Massachusetts, and believe that, with prudent management, a single line of railway between Halifax Harbour and the St. Lawrence, opposite Quebec, if gradually constructed from each end, might be properly completed and supplied with a moderate plant for 5,000,000*l.*; but they fear that this sum would not be found sufficient if it be endeavoured, by locating large working parties on different parts of the proposed line, to expedite its construction, for the expenses attendant on forming the necessary establishments for the labourers, on forwarding them thereto, and on providing for them during the season when their labour could not be fully employed on the line, would probably be very great, and any expenditure which may be thus incurred can hardly be considered as provided for in the above estimate.

With respect to the probable return upon this capital, Major Robinson, it appears, considers that "there are very good general grounds upon which to form an opinion that ultimately, if not at once, the line will, in a commercial point of view, be a very productive one;" but after giving this question the fullest consideration, so far as they possess the means to do so, the Commissioners are disposed to think that, although in a military and political point of view the completion of a railway between Halifax and Quebec may be of great importance, that as a commercial undertaking it is very doubtful whether it can, at least for a long time to come, prove profitable.

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* Similar Despatches addressed to the Lieut.-Governors of New Brunswick (No. 105) and Nova Scotia (No. 138), January 24.

BRITISH NORTH AMERICA.

The Commissioners agree with Major Robinson in not attaching much importance to the direct intercourse between Halifax and Quebec; the passenger traffic between two cities, having respectively 45,000 and 25,000 inhabitants, and situated at the extremities of a railway 635 miles in length, would be quite insignificant, and there are no towns of any size between the termini. The productions also of the several provinces of British America are not of a nature to offer a prospect of any important interchange of commodities between them until new branches of industry have sprung up.

It is anticipated, apparently, that the principal immediate revenue would be derived from the transport of the agricultural produce of the western part of Upper Canada and of the parts adjacent thereto of the United States, to Halifax for exportation; that the construction of the railway would lead to the rapid settlement of the province of New Brunswick, and the development of its agricultural and other resources; that the Cumberland coal field, which is crossed by the line, would occasion a considerable traffic; and that the increased value likely to accrue to the ungranted lands adjacent to the railway would be equivalent to a considerable diminution in the cost of its formation. But it is difficult to believe that the agricultural produce from the settlements on the lakes of Upper Canada, when either the lateness of the season or the rate of freight at Montreal prevents its shipment at that port, will be forwarded by the circuitous route of the St. Lawrence to Quebec, and thence by railway to Halifax, instead of by the more direct existing communications through New York and Boston, or by that which the Montreal and Portland Railway, now constructing, will afford, especially when the differential duty which at present favours the exportation from a British colonial port has ceased; the early closing and the late opening of the navigation between Upper Canada and Quebec, on which the proposed railway would be dependent for its connection with the west, would also induce the merchants in this country to send their orders in the spring and autumn as well as in the winter, to New York, Boston, or Portland, instead of to Halifax.

It is easy to understand that Montreal may be an important depôt for the commerce of the district round the western lakes, and be able to share it with those ports of the United States upon the lakes which have communication by railways or inland navigation with the Atlantic; but it appears improbable that Quebec should obtain an important share of this trade. Produce at Montreal will be ready to be forwarded by the St. Lawrence when freights are low, or to Portland by a railway, one-half the length of that proposed between Quebec and Halifax; and the difference in freight and insurance at Halifax and Portland could not compensate for the additional water carriage of 180 miles between Montreal and Quebec, and the transport over 300 additional miles of railway.

That the construction of the proposed line would tend to expedite the settlement of New Brunswick there can be no doubt, but the Commissioners fear that a long time would elapse before this effect could be produced to a sufficient extent to make the railway profitable, or even to affect materially the value of the land. Although the provinces of British America have had for a long time a considerable advantage with respect to the duties on which their produce was admitted into this country, and although a few years ago the produce of the United States was entirely excluded from our West India colonies, it nevertheless appears that neither New Brunswick nor Nova Scotia can at present feed their own small population, and that the price, which in the principal towns of those provinces affords a profit to the distant agriculturist of the United States, is not sufficient to attract capital to agriculture along the river St. John. Of the traffic which the Cumberland coal-field might occasion, it is of course impossible to judge; within the province, while it remains thickly wooded, it is not likely that the coal would obtain a profitable sale at any great distance from the pits; but if it be of such quality as would command a good price in the ports of the United States, it might prove remunerative to connect this coal-field by railway with one of the ports of Nova Scotia, it would not, however, be prudent, until this is ascertained, to calculate on any important return from this source.

The successful result which has attended the construction of railways in the United States affords no grounds for anticipating similar results at present in British America.

Before any railway in Massachussetts was commenced, that State contained a tolerable population per square mile: the city of Boston had nearly as many inhabitants as Quebec and Halifax united have at present, and a considerable commerce must have traversed the State and passed through its port. But New Brunswick has barely a population of five to the square mile, and Halifax, notwithstanding its beautiful harbour, is more important as a naval and military station, than as a trading port.

To return 3½ per cent. on an expenditure of 5,000,000*l.*, a net receipt of 175,000*l.* will be required, and as the fixed charges contingent on the maintenance of 635 miles of railway, with the necessary buildings and staff, ought not to be estimated at less than 75,000*l.* per annum, a receipt exceeding the carrying charges by 250,000*l.* per annum, or 4808*l.* per week, should be obtained to yield 3½ per cent. upon the expenditure; and if it be supposed that two trains passed over the line in each direction daily, or 28 trains per week, the gross weekly receipt to make this return ought to be about 6500*l.*, or rather more than 10*l.* per mile.

On looking through some of the recently printed lists of the receipts on the different railways in England and Ireland, it will be found that on the East Anglian Railway, connecting the town and port of Lynn, and also several minor towns, and a considerable agricultural district and population, with the railway system of this country, the weekly receipts have generally been less than 10*l.* per mile, and that this has also been the case on the Belfast and Ballymena and on the Londonderry and Enniskillen Railways, the last being open between Londonderry and Strabane.

If this can be the result upon a railway connecting any district of England and Ireland with the port on which it depends, there is, it is feared, but little probability that a railway between

Quebec and Halifax could be profitable as a commercial undertaking for many years to come.

It must, however, be observed, that Major Robinson only considers it necessary for the receipts to be sufficient to return an interest upon 3,000,000*l.*, as he proposes that the remaining expenditure shall be met by an issue of notes. But the Commissioners understand that paper is at present extensively used in the currency of the three provinces, and they consider that any advantages which can be derived from an alteration in the principles on which it is issued, may be obtained independently of the construction of the railway, and that if it be possible for such alteration to be accompanied by an increase in the pecuniary resources of the three Governments, the returns to be expected from any proposed application of those additional resources should be as carefully considered as the return from the employment of capital under any other circumstances.

I return, herewith, the maps and plans which accompanied your communication, and remain, &c.

(Signed) H. D. HARNESS,
Captain, Royal Engineers.

H. Merivale, Esq.,
&c. &c.

(No. 319.) No. 3. No. 3.

COPY of a DESPATCH from Earl GREY to Governor-General the Earl of ELGIN AND KINCARDINE.

MY LORD, Downing-street, January 27, 1849.

I HAVE the honour to acknowledge the receipt of your Despatch No. 6,* of the 4th of January last, enclosing a tabular statement of the population and annual amount of rateable property in Upper Canada, from the year 1825 to 1847 inclusive; and I beg to assure your Lordship that I have perused this document with great interest, as containing much valuable information.

* Page 61.

I have, &c.,
(Signed) GREY.

The Right Hon. Earl of Elgin and Kincardine,
&c. &c. &c.

Despatches from the Right Hon. the Earl of Elgin and Kincardine, Governor-General of Canada.

No. 1. (No. 150.) No. 1.

COPY of a DESPATCH from Governor-General the Earl of ELGIN AND KINCARDINE to Earl GREY.

Government House, Montreal,
December 20, 1848.

MY LORD, (*Received January* 10, 1849.)

I HAVE the honour to transmit herewith the copy of a letter which has been addressed this day to Messrs. Baring and Co., of London, by the Inspector-General of this province, and which, I think, your Lordship will peruse with interest and satisfaction.

I have, &c.,
(Signed) ELGIN AND KINCARDINE.

The Right Hon. Earl Grey,
&c. &c.

Encl. in No. 1.

Enclosure in No. 1.

Inspector-General's Office, Montreal, Canada,
December 20, 1848.

GENTLEMEN,

I AM this day favoured with your letter of the 1st instant, in which you inform me that you will provide for the January dividends on the Canada Bonds, payable at your office, in the assurance of your being repaid the advance before 1st April next. I can assure you that the Canadian Government feel deeply indebted for this fresh proof of your anxiety to sustain the credit of the province. I have by this mail instructed Messrs. Glyn, Hallifax, Mills and Co. to transfer to you 30,000*l.* of the Canada debentures, which were placed in their hands last year for sale. A portion of these debentures bear 6 per cent. interest, and I should hope that the quotation of prices given by you refers to the 5 per cents. I feel very strongly that these debentures ought not to be sold under par, and that it would be much more advantageous in every way for this Government to pay whatever rate of interest may be required to command money than to increase the debt by making loans under par. Although, therefore, I have directed that a portion of our debentures should be placed in your hands, I rely that, unless it be unavoidable, you will not sell the 6 per cents. under par, and that you will advise me whether par can be obtained for debentures bearing a higher rate of interest, with a provision enabling the Canadian Government to pay them off by giving reasonable notice.

I think the present a favourable opportunity of communicating to you the views of this Government on the subject of our fiscal affairs generally. I gather from your letter that the Canadian Government declined in 1837 to constitute your house the sole agents for the province, and that, since that time, you have considered Messrs. Glyn and Co. to hold that position. It would, of course, be unprofitable to enter at present into any discussion with regard to the conduct of the Government of Upper Canada at the time referred to; but I have to repeat, that my own conviction has been, since I have taken a part in public affairs, which has been since the union of the provinces, that your house and that of Messrs. Glyn and Co. occupied precisely the same relative position towards the Government, and I therefore conceive that at a time of temporary embarrassment we were justified in making a similar application to both houses. Your letter has confirmed me in an opinion, formed very soon after my acceptance of office at the beginning of the present year, which is, that it is indispensably necessary that the province of Canada should secure, without loss of time, the services of an eminent house in London, which should be its sole agent, and at whose office all its dividends should be payable.

For such services the province of Canada is able and willing to pay, and they must be secured without loss of time. Before asking from you any proposition on the subject, it is necessary that I should notice some remarks in your letter now before me. You state that the bonds of Canada are looked on "much in the same light as the bonds of separate states of the United States of America;" that "the stock of the federal Government of the United States is certainly more valued, and finds readily purchasers on both sides the Atlantic;" and, after stating that "credit is only permanently maintained by the public knowledge of ample powers and constant regularity in meeting all money engagements," you add, "the debt of a colony always labours under some disadvantage in this respect." I desire to offer a few remarks on these passages in your letter. When your house negotiated a loan for Upper Canada some years ago at 5 per cent., that province was in a position precisely analogous to one of the separate states of the Union: it had no means of collecting a revenue from customs, the ports of entry being in Lower Canada; and in the event of the works, for the construction of which the loan was raised, proving unproductive, there were no means of paying the dividends

unless by a resort to direct taxation,—a measure not easily resorted to, and which, at all events, would have involved delay. The province of Canada occupies a widely different position,—her means of paying the interest of her debt are most ample, and are quite irrespective of the revenue from the works. The interest on the public debt is about 170,000*l.* sterling, while the revenue is more than double that amount; the grants for educational and charitable institutions alone are nearly 80,000*l.* currency per annum. Canada then has "ample powers" of meeting her engagements; in fact, precisely the same powers as the federal Government of the United States: both raise by duties on imports the revenues which they require; and if Canada wanted more there would be no difficulty in increasing the duties on imports generally, which are now, say 20 per cent. lower than the American average. But I admit that, besides power, there must be the will to pay the engagement of a Government. Has the Canadian Government or Legislature evinced any reluctance to meet its engagements? When your house was formerly under the necessity of advancing money to meet the dividends, and of selling our bonds at a discount to reimburse yourselves, Upper Canada was in the position I have already adverted to, and was unable to raise a revenue by Customs. One of the avowed objects of Lord Sydenham in recommending the Union was to enable the province to meet its liabilities; one of the first acts of the United Parliament was to double the duties on imports. since that time they have been further raised, and our proposed new tariff will ensure a still further increase of revenue. Here, then, is evidence of the will to meet our engagements; and to which I may state, and I do so with pride and satisfaction, that, amid all our political disputes, which have occasionally run high, as they sometimes do in England, the members of our Legislature of all parties have vied with one another in affirming the necessity of maintaining the public credit at all hazards.

The power and the will to meet our engagements exist; and, since the Union, you must admit, that our "regularity in meeting all money engagements" cannot be complained of. The unbounded credit of the British Government arises from the determination always evinced by Parliament to meet its engagements. The people of Canada are British subjects as well as the people of England: they have the same power and the same will to meet their engagements; and if they are ever in difficulty, it arises from the fact that British capitalists do not choose to place the same confidence in their honour that they do in that of the people of the United States, whose bonds are saleable without difficulty, although, after perusing these remarks, I confidently anticipate that you will admit that our means of meeting engagements are equally good with theirs. The fact is, that our bonds are not recommended as an investment, while those of the United States are; indeed I have felt mortified to find that the price of Canada Bonds is never quoted in the list of Stocks, although those of each of the United States, as well as of all other foreign Governments, are kept constantly before the public.

I must now state very briefly the cause of our present difficulties. Within the last three or four years there has been a surplus of revenue over expenditure of 400,000*l.*, which, instead of being applied to the redemption of our debt, has been invested in new works, on the success of which, as a source of immense revenue, we have every confidence: every effort and sacrifice must be made to complete these works. Since the creation of our Sinking Fund we have saved from actual surplus of revenue half a million currency, or one-eighth of our whole debt. But until our great line of ship canals, unsurpassed probably by any works of the kind in the world, are quite completed we shall be hampered, unless we can go into the money-market like other Governments and obtain loans. But in addition to the cause of embarrassment I have referred to, we have had this year a very deficient revenue, our imports being not more than two-thirds of the average. In England deficiencies of revenue often occur, and would be just as embarrassing as ours are but for the facility of raising money by an issue of Exchequer Bills. I have stated the cause of our embarrassments; and I trust I have shown you that, although not the slightest ground exists for uneasiness, although our revenue is most ample to provide for all our wants and for the extinction of our debt at no distant period, we are suffering severely from that want of credit in England which you have described. Our want is now, and has been all along, an active agent of high standing, able to maintain our securities in that credit to which they are entitled. A divided agency is not worth the attention of either your house or Messrs. Glyn's. Perhaps you would consider it equally unworthy if undivided; but one thing is to my mind clear, and I shall repeat it: the Canadian Government must obtain the services of an eminent house in London, and for those services it is able and willing to pay. I must state, in conclusion, that as I do not believe any house would be so likely to advance our interests as yours, I should be glad to be favoured with your views on the subject as early as possible. I have no doubt that our mutual friend Mr. Dunn, to whom I shall write by this mail, will be able to give you any further information you may require. With regard to Messrs. Glyn and Co., whose services to the Canadian Government it will always be ready to acknowledge, I need only say, that the opinion as to the expediency of having but one agent arises from no dissatisfaction with them, but from a conviction that a small account is not worth dividing, and that our interests will be promoted by such an arrangement as the one proposed.

I have, &c.,

Messrs. Baring, Brothers, and Co.,
Bankers, London.

(Signed) J. Hincks, Inspector-General.

BRITISH NORTH AMERICA.

(No. 151.) No. 2.

Copy of a DESPATCH from Governor-General the Earl of Elgin and Kincardine to Earl Grey, dated Government House, Montreal, December 20, 1848.

(*Received January* 10, 1849.)

(Enclosing Report of Inspector-General on Colonization and Public Works: will be found printed at page 19 of Papers on Emigration to British North America; presented to both Houses by Command, February, 1849.)

No. 3.

(No. 153.) No. 3.

Copy of a DESPATCH from Governor-General the Earl of Elgin and Kincardine to Earl Grey.

Government House, Montreal,
December 20, 1848.

(*Received January* 10, 1849.)

My Lord,

In pursuance of your Lordship's instructions I have brought the subject of the Quebec and Halifax Railway under the consideration of the Executive Council of this province, and I have now the honour to submit the copy of an approved minute containing suggestions as to the mode by which, with the concurrence of the Imperial and Provincial Governments, the necessary means for carrying out this important national undertaking may, it is believed, be provided. It is proposed that the work shall be executed by or under the exclusive and immediate authority of the Imperial Government; that where the line passes through a settled country whatever land is necessary for the road shall be purchased by the provinces, and handed over to the Imperial Goverment without charge; that where it traverses the public domain, ten miles on either side of it shall also be placed at the disposal of the Imperial Government, with a view, on the one hand, to the promotion of an extensive scheme of settlement in connexion with the work, and, on the other, to the replacing by land-sales a portion of the capital expended; and, finally, that the capital required for the actual construction of the road shall be raised on the security of a revenue to be derived from the imposition of a duty of 7*s.* 6*d.* per load on timber the produce of British North America when imported into Great Britain.

2. I am well aware of the fact that under existing circumstances grave objections present themselves to the adoption of any measure involving a large outlay. Nevertheless that which I now submit has so much to recommend it, and it bears so immediately upon questions which affect vitally the interests of Great Britain and Ireland that I need not, I am sure, bespeak for it your Lordship's serious consideration.

3. For a statement of the manifold advantages which will be conferred on the mother country and on these colonies by opening up to settlement the vast country which the proposed line will traverse; a country abounding in valuable timber, mines, and fishing stations; in many parts of admirable fertility; and accessible through Halifax by a short and easy voyage from Ireland; it is only necessary that I should refer your Lordship to the report of Major Robinson, R. E., in which these topics are ably and clearly treated. In submitting, however, the views of the Canadian Government upon this subject, I would desire, with your permission, to offer a few general remarks, which may serve further to illustrate the importance of the undertaking in a national point of view.

4. In the first place then, I would beg your Lordship to observe that one of the main obstacles to the rapid and successful colonization of British North America consists in the circumstance that there is little or no demand for labour on the sea-board. A destitute immigrant landing at New York finds himself at once in a busy scene where there is a fair chance of his obtaining employment until he has earned the means of transporting himself to the interior. But, generally speaking, he must proceed to Western Canada before he meets with any constant or certain market for his labour if he resort to British North America. Hence the necessity for a large expenditure for the conveyance of destitute persons from Quebec to the lakes, and the manifold charges connected therewith; such as the provision of hospitals at various points for the treatment

of the sick; charges which swell sometimes to a formidable sum, and which must be met either by the produce of taxes imposed on immigrants or by grants from the British Treasury. If the expenditure be defrayed from the latter source it is difficult to keep it within reasonable bounds; and if from the former, it has a direct tendency to check the immigration which it is most for the interest of the provinces to encourage, inasmuch as the healthy industrious settler who has money to pay his way, is taxed for the behoof of the destitute, the sickly, or the indolent, who cast themselves on the Immigration Department at the sea-ports. It cannot, however, I think, be doubted, that the undertaking of this great national work under the authority of the Imperial Government, and in connexion with measures of systematic colonization on the line, would go far towards the removal of this impediment to the general settlement of British North America. The immigrants who had inducements to seek the west, and money to pay their passage, would still proceed thither, while those who were either unwilling to go further, or without the means to do so, would immediately on landing seek employment on the railway or in some one of the various undertakings to which, when once fairly commenced, it would infallibly give birth, and they would eventually either become settlers on the lands in the vicinity of the line or move on to the west, leaving their places vacant for new comers. I am disposed to think that by thus removing the main obstacle to the rapid colonization of the vast British territory beyond it, this work will do far more for the interests of emigration from the mother country than will ever be effected by the employment and settlement of the large number of immigrants who are likely to be immediately engaged upon it.

5. As regards the probability of the work proving ultimately remunerative, I cannot but express my belief, that under the arrangement suggested by the Canadian Government, its cost to the British Government will be found to fall within Major Robinson's estimate. He has based his calculations, it would appear, on the expense of railways constructed in the State of Massachusetts, where large prices are frequently paid for land, and where the cost of the principal materials employed is enhanced by the operation of a highly protective tariff. As the land to be occupied by the line will cost the Government nothing, and as a considerable sum may be realized by the alienation of that portion of the public domain which will be placed at its disposal, a large deduction may, it is to be hoped, be made from these estimates; whilst the almost invariable productiveness of railways in America, which are frequently pushed, in the face of great engineering difficulties, into districts whose present resources and population would not appear to justify the outlay or warrant the expectation of a return on the capital expended.

6. I have chiefly insisted on the advantages which the mother country is likely to derive from the execution of this work, believing that the benefits which it will confer on the colonies are too manifest to require elucidation. I would, however, venture to offer one observation on this head. It is obvious that as soon as railway communication is extended throughout the provinces a smaller military force than is now requisite will suffice for their protection. But looking to the anxiety which your Lordship has repeatedly expressed that a diminution in the expenditure incurred by Great Britain on this account should be effected at the earliest period, I am prepared to go a step further in this direction, so confident am I that the mere undertaking of the work in question will tend to raise the colonists from the despondency into which recent changes in the commercial policy of the empire has plunged them; to unite the provinces to one another and to the mother country; to inspire them with that consciousness of their own strength and of the value of the connexion with Great Britain, which is their best security against aggression; that I would not hesitate to recommend that an immediate and considerable reduction should take place in the force stationed in Canada in the event of the execution of the Quebec and Halifax Railway being determined on.

I have, &c.,

(Signed) ELGIN AND KINCARDINE.

The Right Hon. Earl Grey,
&c. &c. &c.

BRITISH NORTH AMERICA.

Enclosure 1 in No. 3.

MEMORANDUM on the projected Halifax and Quebec Railroad.

Encl. 1 in No. 3.

THE subject of the projected railroad between Quebec and Halifax, has for some time past engaged the consideration of the members of the provincial administration, and having been entrusted by my colleagues with the preparation of a Memorandum explanatory of their views and for the consideration of his Excellency the Governor-General, I shall endeavour to the best of my humble ability to perform the duty assigned to me. In a recent Despatch from the Right Honourable Earl Grey, Her Majesty's Principal Secretary of State for the Colonies,* to his Excellency the Governor-General, his Lordship invites the attention of the Canadian government to a Report from Major Robinson of the Royal Engineers on the proposed trunk line of railway from Halifax, Nova Scotia, to Quebec. This interesting and able Report has been read with that attention which its importance demands, and it is most gratifying to learn that a work, the construction of which would be so desirable in a national point of view, is deemed by that officer to be not only practicable, but likely to prove remunerative.

No. 299, page 3.

The members of the Canadian Government have been most reluctant to press the subject of this railroad on the consideration of Her Majesty's Government, and would probably have forborne to do so still longer, but for the invitation contained in Earl Grey's Despatch. They feel strongly that should the work be undertaken and completed, and afterwards prove unproductive, the loss must fall principally on the mother country, and they have been unwilling, under such circumstances, to incur the responsibility of urging the Imperial Government on the subject. Major Robinson has entered very fully into the reasons which may induce the Imperial Government to embark in this great national work, one of the principal of which is that it will open a field for successful colonization. I shall not venture to enforce the arguments of Major Robinson, being fully convinced that they will have their just weight with Her Majesty's Government. I cannot however concur in opinion with Major Robinson, that the best mode of undertaking this work, would be by making it a sort of partnership concern between the mother country and the provinces of Canada, Nova Scotia, and New Brunswick. The money can only be got through the instrumentality of the Imperial Government, and it would be highly desirable that the work should be executed by the officers of that Government, and that it should be entirely under Imperial control.

If the anticipations of Major Robinson should be realized, and the work should prove remunerative, no difficulty could arise. The Imperial Government could, I should suppose, raise a loan with great ease for the required amount at 3¼ per cent., and the railway dividends on this continent generally, vary from 7 to 10 per cent. But it may be said that Major Robinson is too sanguine, that loss may be incurred, and that the provinces being deeply interested in the construction of the work, ought to bear their fair share of such loss.

As no one I presume could recommend the construction of such a work as a mere mercantile speculation, its total unproductiveness ought to be provided for. The question then for consideration is how aid can be afforded by the colony.

The province of Canada has already contracted a large debt for the construction of public works, which has seriously impaired its ability to assume additional charges on its revenue.

When the great line of ship canals, by which the navigable waters of the St. Lawrence are connected with the lakes, was undertaken, the protective system was in full operation in England, and it was justly believed that under the operation of that system, the products of the Western States of the American Union, as well as of Canada, would pass through those canals and the St. Lawrence, to England. Unfortunately, for Canada, the change which has taken place in the commercial policy of the empire has had a ruinous effect upon her commerce, and a wide-spread belief prevails among the Canadian people that unless the British Navigation Laws be speedily repealed, the whole trade of the West will be diverted to New York. This reference to the commercial policy of the empire may perhaps appear irrelevant to the present subject, but it is well to keep in view that another important interest in British North America is threatened with the loss of protection. It seems to be generally believed that the present protection in favour of colonial timber is likely soon to be withdrawn. Deep as is the interest of Canada in this important trade, the sister province of New Brunswick will probably suffer more severely from the withdrawal of protection. And I think that it may fairly be urged upon Her Majesty's Government that at such a period of suffering in the colonies, caused too by no fault of theirs, it would not be expedient to propose any direct addition to our burthens. I think that I am warranted in anticipating as I have done the removal of the present protection on colonial timber. The commercial policy of the Imperial Government has been so clearly defined, as to leave no room for doubt that some modification of the timber duties will shortly be proposed. Should such a measure be determined on, it might be carried out in a mode that would at least afford some compensation to the colonies.

Instead of reducing the duty on foreign timber, that on colonial might be increased from 1*s.* to 7*s.* 6*d.* per load, by which means a revenue might be obtained sufficient to meet the interest on a loan which might be raised to construct the Halifax and Quebec Railroad.

Should the imperial Government be induced to undertake this great national work, the Canadian Legislature would be ready, there can be no doubt, to transfer to the Imperial Government or its Commissioners, the lands on each side of the road, to the extent of two miles in depth, when it should pass through the public domain, and would also be at the expense of purchasing all the private property required for the railroad line, and for the station at the terminus.

Humbly submitted for the consideration of his Excellency the Governor-General.

(Signed) F. HINCKS,
Inspector-General.

December 18, 1848.

Enclosure 2 in No. 3.

BRITISH NORTH AMERICA.

Encl. 2 in No 3.

EXTRACT of a Report of the Committee of the Executive Council, dated 20th December, 1848, approved by his Excellency the Governor-General on the same day.

THE Committee of the Executive Council have had under consideration a Memorandum on the subject of the Halifax and Quebec Railroad, submitted for your Excellency's consideration by the Inspector-General of Public Accounts.

The Committee of Council concur in the opinion expressed by the Inspector-General, as to the importance of this work in a national point of view, and earnestly hope that Her Majesty's Imperial Government may be induced to recommend it for the favorable consideration of Parliament.

The Committee of Council are of opinion, that by devoting the revenue, to be obtained by an increase of the duty on colonial timber to such a purpose, Her Majesty's Government would do much to reconcile the colonists to the modification of the protective system.

The Committee of Council have no doubt that the Canadian Legislature would be prepared to sanction any measure having for its object the transfer to Her Majesty's Government of the unsettled Crown lands, through which the proposed railroad would pass to the extent of 10 miles in depth on each side, and that it would further undertake to obtain at the expense of the province, all the private property required for the railroad line in Canada, and for the several stations. And the Committee of Council recommend that a measure should be submitted to Parliament at the ensuing Session, for the purpose, in case Her Majesty's Government should determine to undertake the work.

Certified, J. JOSEPH.

(No. 1.) No. 4.

No. 4.

COPY of a DESPATCH from Governor-General the Earl of ELGIN AND KINCARDINE to Earl GREY.

Government House, Montreal,
January 3, 1849.

MY LORD, (*Received January* 23, 1849.)

I HAVE the honour to transmit herewith, for your Lordship's information, the copy of a Despatch which I addressed to the Lieutenant-Governors of Nova Scotia and New Brunswick respectively, in forwarding to them copies of the Minute of the Executive Council of this province, on the subject of the Quebec and Halifax Railway, which was enclosed in my Despatch to your Lordship, No. 153.

I have, &c.,
(Signed) ELGIN AND KINCARDINE.

The Right Hon. Earl Grey,
&c. &c.

Enclosure in No. 4.

Encl. in No. 4.

Government House, Montreal,
December 23, 1848.

SIR,

UNDER instructions from Earl Grey, I have called the attention of the Executive Council of this province to the subject of the Quebec and Halifax Railway, and to the report upon it which has been furnished by Major Robinson, R.E., and I have now the honour to transmit herewith a Minute of Council, embodying suggestions as to the mode in which, with the concurrence of the Provincial and Imperial Legislatures, it is believed that funds may be procured for the accomplishment of this great undertaking. The arrangement proposed in this document has commended itself after full deliberation to the approval of this Government, as one likely to prove, under existing circumstances, in a high degree advantageous to these provinces, and I trust it will receive a no less cordial support from your Excellency and your administration.

2. On the vast importance of the work, whether as affecting Imperial or Provincial interests, I feel that it is altogether unnecessary to insist. The subject has been long before the public, and its manifold recommendations have been ably stated in various publications, official and unofficial, as well as in the valuable report to which I have already made allusion. I cannot, however, refrain from observing that, while on the one hand, no undertaking seems to me so well calculated as this to connect the provinces together; to promote the interests which they have in common, to inspire them with a consciousness of their own strength, and thus to fit British North America for the fulfilment of its high destinies; so, on the other, none appears to be more likely to increase the population, extend the trade, and develop the local resources of each; and if this remark be true as applied to Canada, still more emphatically does it hold good of the lower provinces.

BRITISH NORTH AMERICA.

3. As regards that portion of the plan submitted which involves a partial surrender of the protection at present enjoyed by colonial timber in the markets of Great Britain, I shall add nothing to the statements contained in the minute, further than to remark, that I entirely concur in the opinion, that it would be imprudent to calculate on the permanence of such protection in the face of the change which is taking place in the general commercial policy of the empire, and of the contemplated modification of the Navigation Laws.

4. I have no authority to state that Her Majesty's advisers will deem it consistent with their duty to apply to Parliament for the necessary power to enable them to undertake this great work under the proposed arrangement, but I am so thoroughly convinced of their desire to promote the welfare of these valuable dependencies of the Crown, and to relieve them from the depression under which they now labour, that I am confident a suggestion of this nature, supported by the concurrent recommendation of the provincial Governments will command their immediate and most favourable consideration.

I have, &c.,

(Signed) ELGIN AND KINCARDINE.

Sir Edmund Head, Bart., and Sir John Harvey, K.C.B.,
&c. &c. &c.

No. 5. (No. 6.) No. 5.

COPY of a DESPATCH from Governor-General the Earl of ELGIN AND KINCARDINE to Earl GREY.

Answered Jan. 27, No. 319, page 53.

Government House, Montreal,
MY LORD, January 4, 1849.

I HAVE the honour to transmit herewith, three printed copies of a tabular statement, prepared with much care from official records, showing the population and annual amount of all property in Upper Canada, rateable under assessment laws for purposes of taxation, from the years 1825 to 1847 inclusive. The evidence which this document affords of the steady yet rapid increase which is taking place in the value of property in this section of the province, cannot fail to be highly interesting to your Lordship, and is well worthy the attention of capitalists in Great Britain.

I have, &c.

(Signed) ELGIN AND KINCARDINE.

The Right Hon. Earl Grey,
&c. &c. &c.

Enclosure in No. 5.

TABULAR STATEMENT, showing the Annual Amount of all Property in Upper Canada, rateable under Assessment Laws for purposes of Taxation, from the year 1825 to 1847 inclusive.

The following Table gives not the actual value of the property, but the value at which it is rated for taxation under statutes of very early date, and which have remained unaltered.
Wild Land is valued at 4*s.* per acre, its average value is fully 15*s.*, as the amount given in the column only includes that in possession of persons, and forming part of their farms.
Cultivated Land is valued at £1, whereas the lowest average is from £2 10*s.* to £3 per acre.

Years.	Population.	Lands.		Houses of all kinds, except Shanties.	Grist Mills.		Merchants' Shops.	Store-Houses.	Horses.	Oxen.	Milch Cows.	Young Cattle.	Saw Mills.	Carriages kept for Pleasure.	Amount of Assessed Value of Property.	Gross Amount of all Local Taxes.
		Uncultivated, Assessed Value 4s. per Acre.	Cultivated, Assessed Value £1 per Acre.		Number.	Additional run of Stones.										
		Acres.	Acres.												£. *s.* *d.*	£. *s.* *d.*
1825	158,027	2,500,304	535,212	8,876	232	71	456	54	22,589	23,900	51,216	23,501	394	587	2,256,874 7 8	10,235 8 2
1826	. .	2,641,725	614,254	9,732	250	80	487	57	24,095	26,580	61,954	24,806	422	582	2,409,064 17 9	9,940 4 11
1827	. .	2,826,070	632,607	9,889	262	94	496	51	25,520	29,128	67,349	27,918	460	750	2,442,847 11 0	11,509 10 5
1828	. .	2,977,807	678,618	10,183	274	98	548	68	27,303	30,879	67,945	29,527	515	968	2,579,083 3 4	12,533 12 3
1829	. .	3,008,777	717,552	11,291	296	102	604	72	28,388	33,451	75,091	34,844	535	982	2,735,783 10 10	12,732 17 5
1830	210,437	3,244,410	775,014	12,082	273	121	748	91	30,777	33,770	80,909	33,396	555	986	2,929,269 9 2	13,355 10 6
1831	. .	3,570,389	818,432	13,605	291	135	757	95	33,197	36,057	83,519	35,194	533	1,111	3,143,484 10 0	15,320 10 11
1832	261,060	3,799,014	916,173	14,550	320	152	854	96	36,601	38,941	91,676	35,250	671	1,203	3,415,822 0 1	16,503 6 10
1833	. .	4,115,253	981,955	16,446	307	173	1,025	105	40,249	41,870	95,042	36,089	723	1,421	3,796,040 4 2	18,397 5 7
1834	320,693	4,171,995	1,034,816	16,771	328	192	957	123	41,866	42,445	99,474	36,769	788	1,409	3,918,712 14 2	19,806 1 5
1835	. .	4,476,368	1,208,508	18,488	352	199	982	117	47,724	46,066	109,605	39,329	753	1,495	3,880,994 13 6	22,464 8 4
1836	372,502	4,807,406	1,283,133	20,951	356	227	1,043	133	54,616	48,929	120,584	44,698	902	1,720	4,605,103 1 9	23,169 0 8
1837	. .	4,736,268	1,453,556	22,057	366	233	1,198	117	57,170	49,347	123,028	48,598	860	1,627	4,431,098 8 9	24,337 14 8
1838	*	4,353,890	1,206,493	19,513	359	251	917	99	52,732	38,577	109,991	42,514	774	1,467	4,282,544 3 9	24,077 12 3
1839	407,515	5,113,423	1,587,676	25,049	420	298	1,036	113	66,220	47,569	136,951	47,624	953	1,769	5,345,372 11 6	33,210 16 7
1840	. .	5,290,014	1,710,000	25,857	420	294	1,123	130	72,734	49,317	144,900	48,625	963	1,863	5,607,426 7 8	37,463 14 4
1841	465,357	5,310,103	1,740,664	27,960	443	334	1,211	145	76,747	50,271	163,663	59,955	980	1,936	6,269,398 12 6	43,908 16 8
1842	486,055	5,548,357	1,916,319	31,638	455	359	1,299	164	83,755	55,137	173,394	76,648	982	2,188	6,913,341 9 3	58,354 12 11
1843	. .	5,783,197	1,993,659	33,190	451	375	1,330	154	88,062	58,531	184,186	84,326	1,169	2,648	7,155,324 18 6	64,849 9 3
1844	. .	5,845,935	2,166,101	35,631	465	369	1,431	155	94,168	62,306	187,298	79,050	1,246	3,042	7,556,514 12 5	74,736 5 0
1845	. .	6,072,076	2,311,238	37,214	478	417	1,636	174	98,598	65,127	199,537	78,665	1,272	3,810	7,778,917 9 6	76,291 10 6
1846	. .	6,182,419	2,464,704	39,625	492	426	1,868	180	105,517	68,963	211,565	74,370	1,401	4,510	8,236,677 18 0	84,137 5 9
1847	. .	6,477,338	2,673,820	42,937	527	475	1,945	179	113,812	72,017	218,653	76,935	1,489	4,685	8,567,001 1 0	86,058 16 0
1848	717,560	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* For this year the Assessment Rolls were very imperfectly taken owing to the disturbed state of the country.

NOTE.—The Wheat Crop of Upper Canada, as given by the Census for 1842, was 3,221,991 bushels, by that taken in 1848 it amounted to 7,494,732, showing an increase of 4,272,741 bushels or 132·62 per cent. on the 6 years.

Despatches from Sir E. Head, Lieut.-Governor of NEW BRUNSWICK.

BRITISH NORTH AMERICA.

No. 1.

(No. 1.) No. 1.

COPY of a DESPATCH from Lieut.-Governor Sir EDMUND HEAD to Earl GREY.

Government House, Fredericton,
January 1, 1849.

MY LORD, (*Received January* 23, 1849.)

I HAVE the honour to enclose a copy of certain observations on the Reports of Major Robinson and Captain Henderson, with reference to the proposed railway through this province.

These observations have been placed in my hands by Mr. Wilkinson, the gentleman who is the author of the Report, No. 3, printed at page 46 of the Appendix to Major Robinson's Report.* He is employed in the Crown Land Office here, and is a person of great experience in surveying. He possesses, moreover, considerable knowledge of this country, and is, I believe, perfectly trustworthy.

* See page 37 of this Paper.

At the same time I wish your Lordship to bear in mind that I did not call on Mr. Wilkinson for any observations on the report in question, nor do I now express or imply any opinion as to the justness of his views.

It is so material, however, that Her Majesty's Government should be in possession of all the information which can be obtained on this difficult and most important subject, that I should not feel justified in withholding from your Lordship remarks on Major Robinson's Report, thus placed in my hands in an official form, by a person like Mr. Wilkinson.

I have, &c.

The Right Hon. Earl Grey, (Signed) EDMUND HEAD.
&c. &c. &c.

Encl. in No. 1.

Enclosure in No. 1.

Fredericton, December 18, 1848.

MAY IT PLEASE YOUR EXCELLENCY,

The following observations appear to be invited by the Report submitted to Major-General Sir John F. Burgoyne on "the proposed trunk line of railway from an eastern port in Nova Scotia, through New Brunswick to Quebec," dated 31st August last.

It is with reluctance that they are offered in an official form, but the utility or propriety of any other course appears to be precluded.

The Report is peremptory in the recommendation of a particular route, and that the most circuitous one.

It is equally peremptory in the condemnation of any more direct or central route.

We of course look for reasons of adequate force and validity to command a concurrence in a decision so unqualified.

The proposed observations on the insufficiency of the reasons adduced, will be confined to the route as far as it falls within the limits of New Brunswick and part of Canada.

The Report affirms the superiority of the direct or central route, if practicable, in these words, "Unwilling to abandon the direct route through the centre of New Brunswick, by which, if a line could be successfully carried out, the distance would be so materially shortened, as is apparent by the mileage given in route No. 4, it was determined to use every effort to decide either the practicability or impracticability of such a line.

Report, p. 13. The efforts made are then detailed. In these details I am unable to discover, even an approach to the adequacy of effort which could warrant an unqualified, much less a peremptory opinion.

To follow minutely the Report is unnecessary, one effort only to discover a favourable line between Boistown and the Restigouche, is detailed. This, it is incidentally mentioned, was a great improvement upon a previous one. Why then did this great improvement rather discourage than encourage further efforts? Was every effort already exhausted by the peculiar efficiency of this second attempt?

A simple inspection of the map of the country, as previously known, will show that there was only a faint probability of the success of either of these attempts, which were by way of the extreme sources of the south-west branch of the Miramichi. There the land was already well known to be very high, and it is obvious that the descent into the valley of the Tobique from

this situation, would be the shortest and most sudden that could be selected. A direct and equable descent, proved, as was very likely, to be impossible, and any other must necessarily be very bad. The details in Appendix No. 2, of the Report confirm this.

The Report says that "the lowest point of the ridge overlooking the Tobique River, at which any line of railway must pass, is 1216 feet above the sea." That this great summit level "must be surmounted."

Now this unqualified affirmation implies that the elevation of every gap or depression in a dividing ridge, extending in a straight line north-east and south-west, about 70 miles, and probably 100 miles by its circuitous course, has been accurately ascertained. Yet no details are furnished in the Report to show that any knowledge of this kind exists beyond the vicinity of the single point at which the ridge was intersected as described by Captain Henderson, in Appendix No. 2. He says, "The highlands bounding it, (the valley of the Tobique,) on the south side, are very lofty. The lowest point at which they can be passed, as ascertained by our explorations, being at a point about 19 miles south of the river, is 1216 feet above the sea, or 894 feet above the river." This statement is satisfactory. It is all that could be said with safety. But it does not carry us either way along the ridge beyond the vicinity of the point examined.

An examination of the whole ridge, however, does not even receive advertance in the Report. Yet without such examination, and a conclusive result derived from the same, how can the Report plead an unwillingness to abandon the direct route, or affirm that the lowest point in the ridge in question, is 1216 feet above the sea.

An exploration by way of the right hand branch of the Tobique, towards Boistown, was suggested at the commencement of the season of 1847. It might not have proved successful, but it offered the greatest probability of success. It is obvious, at least, that the suggestion could proceed only from the anticipated failure of the route adopted. The proposed is adverted to in Appendix 3, at page 49, 50, of the Report, but not noticed in the Report itself.

My remarks would extend to tediousness in minutely following the Report. Their tendency would be of the same kind, with regard to the rest of the line of country from the Tobique onwards to the St. Lawrence. I could not conscientiously concur in the opinion that the country is barely within the limits of practicability, much less that it is impracticable, and that further attempts to discover a favourable route are useless. My personal knowledge of the face of the country, and my views of the importance of the central line, equally compel me to say, that no sufficient efforts have yet been made to warrant a peremptory opinion, or any safe opinion.

I must also add that no admissible data whatever are supplied by the Report for a satisfactory comparison of the circuitous and central routes.

In seeking for such means of comparison, we are foiled at the first attempt.

The Report says, at page 14, that the section of country between Shediac, (more properly perhaps the Bend of Petiticodiac) and Boistown, was proved in 1846 to be generally low and flat, with occasional undulations. This of course is part of the direct or central line.

In order, however, to make the corresponding division of the circuitous line, running 20 or 30 miles further to the eastward, pass review, it is put forward, not upon its own but upon the borrowed merits of the central line. The sections as submitted are acknowledged to be inadmissible. They "are not grades for the railway." What then? "With the exception," says the Report, "of the immediate banks of the St. Lawrence, this is expected to prove one of the easiest portions of the line." Why is it so expected? No reason is given, except that "the whole of this portion of the country is believed to be generally low and flat," like that between Shediac and Boistown. Why is it so believed, whilst the sections submitted show that the whole of the country is not so, and that restricting our judgment to what is known by these sections "they are not grades for the railway."

Thus nearly 100 miles of the circuitous line, so confidently and peremptorily recommended for its superiority, is not, as far as known, entitled to be recommended at all, and the fact of its eligibility yet remains to be discovered, whilst the easy practicability of the corresponding portion of the central line has been proved.

This criticism would not have been submitted, if an exact local knowledge recently obtained of a portion of the ground in question did not forbid the least concurrence in the gratuitous expectation held out in the Report, that "with the exception of the immediate banks of the St. Lawrence this is expected to prove one of the easiest portions of the line.

By inspection of the map of the country as already known, it will be seen that there will be at fewest about eight principal summits or watersheds to cross at right angles by this portion of the circuitous line, and that at every interval the level of the tide must be quite or nearly regained. It will be fortunate if these summits can be easily surmounted at a less average elevation than 200 feet. Assume that by deep cuttings and high bridging they may be reduced to an equivalent of 150 feet, we have at once by this favourable supposition an aggregate elevation of 1200 feet to cross, or as high as the trial summit of the Tobique ridge; but this is without making allowance for all the subordinate or secondary summits, which will be numerous. The difficulties, therefore, cannot be even guessed at without a careful survey.

The Report places much reliance upon the greater security which the mere remoteness of the circuitous line from the frontier of the United States will afford in case of war.

"Passing," it is said, "at the greatest possible distance from the United States, it possesses in the highest degree the advantage to be derived from that circumstance of security from attack in case of hostilities." Report, p. 13.

In one ignorant of military matters, it may be presumptuous to be incredulous on this point; but in seeking to run wide of one danger it would appear that the line recommended runs side

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by side with a danger still greater. It would run for several hundred miles close upon the highway not only of the United States but of all nations.

Assume that the United Kingdom were destitute of a railway, and that it was proposed to construct one for the security of military communication and commercial traffic, would it be recommended that it should follow the immediate coasts of the islands, or that it should, as much as possible, run centrally through from north to south with branches to either coast?

The case proposed in New Brunswick is not essentially different, except that the inland frontier will be less exposed to clandestine attack than the sea-coast. No formidable design could originate and ripen for an inland attack without some warning; not so on the sea-coast. It has been affirmed by high authority, that even in England there would be no difficulty in the present state of steam navigation, in landing without any available notice a well appointed army on the south coast, which could march unopposed to London in two days. How insignificant then would be the ordinary means of opposition on the eastern coast of New Brunswick, not even the slight obstacle of a landing could oppose the clandestine attack and interruption of the proposed line of railway. It would pass (according to the Report) immediately across the heads of navigable rivers or bays, of the Gulf of St. Lawrence, and for a long distance close along shore. Facility of approach by these means is mentioned in the Report as a superior advantage in the construction. This two-edged advantage also extends along the whole shore of the river St. Lawrence.

Report, p. 13.

It will scarcely be denied that it is important to reduce this source of danger to the shortest possible extent of the line. Nearly 100 miles of the most objectionable part of the shore of the St. Lawrence, and the whole of the gulf shore, are avoided by the central route through New Brunswick. If also it be the shortest and most expeditious, these would be most important offsets against an assumed increase of expense. It is not certain without survey that this construction of this part of the line would exceed the average cost. If not, then nearly a tenth of the whole expense would be saved. It would cost nothing along the line for defensive works, that would not be equally necessary if the railway did not exist. On the other hand, no limit could be assigned to the expense of efficiently guarding the sea-coast.

The central line would also be a common bond of union on a principle of equity to all local interests in New Brunswick; its branches would bind those interests as one. A one-sided line, with the influence of Government in its favour, would tend to the obvious antagonism of private enterprise.

The Report enters upon the question of the probable revenue from freight transmitted between Quebec and Halifax.

There can be but faint prospect of heavy freight finding its way along the whole line for shipment at Halifax for Europe, or the reverse, during the season of navigation, except where expedition is of more importance than cost, or in case of sudden emergency like that which occurred in 1846-7. During the winter season heavy articles required either way will naturally take the shortest line of railway, which may connect the open navigation of the sea with the nearest harbour of the St. Lawrence. The shortest line of railway of this description that can be constructed within British territory, or perhaps elsewhere, is that now in progress from the port of St. Andrew's. Another line, of not many miles greater extent, may terminate at St. John's; either of these will be 240 to 260 miles shorter than the circuitous line to Halifax, and both will be as promptly accessible as that port from Bermuda and the West Indies, and are only a few hours more remote from Europe. The central line would convert these branches into most important auxiliaries. The circuitous one would turn them into rivals.

The qualities of the trunk line, therefore, most calculated to insure revenue, are those of directness and expedition between the extreme points of communication, and as a commanding medium of distribution and absorption of traffic by branches to the chief maritime outlets. The most important of the latter must evidently be in the Bay of Fundy, because they are accessible all the year. To divert the trunk line as far as possible from these would be to exclude it from a fair prospect of revenue.

To render this more evident, an estimate of the comparative cost of transportation between the respective Atlantic ports of Halifax, St. John's, and St. Andrew's, and a common terminus either at Point Levi, or at River du Loup, is as follows:—

FREIGHT by RAILWAY, estimated at 1½*d.* sterling per ton per mile.

Delivered at	From Point Levi.			From River du Loup.		
	Distance in Miles.	Amount.		Distance in Miles.	Amount.	
		Per Ton.	Per Barrel.		Per Ton.	Per Barrel.
		£. s. d.	s. d.		£. s. d.	s. d.
Halifax . . .	635	3 19 4	8 0	525	3 5 7	6 6
St. John . .	390	2 8 9	5 0	280	1 15 0	3 6
St. Andrews .	375	2 6 10	4 8	265	1 13 1	3 4

This estimate is predicated on the lowest rate of freight at present charged on the western railroad in Massachusetts. This is a line competing with the navigation of the Hudson, and affords a fair guide in the case under consideration.

Report, p. 26.

The report in question, however, estimates the whole cost of transportation from Quebec to Halifax at 11*s.* only per ton, or about one-seventh of a remunerative freight, a mistake arising apparently from the supposition that the cost of motive power is the whole cost, whereas it is only a small fractional part. The oversight is the more inconvenient, as it destroys the speculations founded upon it. There is no hope that a line terminating at Halifax can systematically

compete either with the navigation of the St. Lawrence, or with shorter railroads terminating in the Bay of Fundy, for heavy freight. There is not the less doubt, however, that the way freight which it will command as a line of distribution will, in conjunction with other sources of revenue, be highly remunerative.

I have, &c.
(Signed) J. WILKINSON.

December 28, 1848.

IT may be proper to refer more particularly to the grounds of objection to a military line of railway, immediately along any considerable part of the coast of the Gulf and River St. Lawrence.

It is to be borne in mind that not only France, but the United States, have important rights in the Gulf of St. Lawrence, materially involving their respective plans of maritime advancement, and which continually occupy their jealous attention.

By a succession of treaties, since that of Utrecht, the French have a right to fish not only on the coasts of Newfoundland, but also in the Gulf of St. Lawrence, within three leagues of all the coasts belonging to Great Britain, as well as within 15 leagues of the Atlantic coasts of Cape Breton and Nova Scotia. The islands of St. Pierre and Miquelon, overlooking the main entrance of the Gulf of St. Lawrence, are ceded in full right to France, the unimportant right of fortifying excepted. These islands are held and governed as exclusively French.

It is evident that this cession was made on the part of Great Britain, and received on the part of France, with a mutually deep consciousness that it would always involve considerations of danger to the peace of both countries.

The foregoing and other rights were confirmed to France by the treaty of Paris in 1814.

Neither the past history of the fisheries on these coasts, nor the growing anxiety of late years, manifested both by France and the United States, on the subject of relative maritime progress, seem to afford that sure confidence of a permanently good understanding, which would warrant an entire indifference to any contingencies which might hereafter arise to affect the security of a line of military communication immediately along the coast under notice.

The author of "The Past and Future of the British Navy" does indeed ascribe the chief prospective danger to the sleepless jealousy of France alone, regarding it as the cherished ambition of that nation to strike a sudden and decisive blow at our commercial supremacy. The blow might possibly, however, lose nothing in either suddenness or decision in being dealt by a combined, rather than by a single arm.

It is further to be borne in mind that, besides a resident maritime population, acknowledging the jurisdiction of France alone, and the intimate knowledge of extensive portions of these coasts, maintained by the annual visits of many thousands of the fishermen of that country, counted upon at all times as an available maritime force; the British coast, the proposed site of the railway, is also lined with a population of French origin, retaining the language, habits, and predilections of their race, and remaining under the guidance of a foreign priesthood.

If, therefore, the central line of railway, the line equally remote both from the inland and the maritime frontier, must necessarily pass through vacant country, the consideration may not be altogether without value that the blank may be filled up with exclusively British attachments and preferences, habits and institutions.

But these remarks are made, much less under any serious anticipations of the eventual importance of avoiding, very widely, either the inland frontier on the one hand, or the sea coast on the other, than under a sense of the high importance of constructing a trunk line of railway which shall, as much as possible, bind together both colonial and national interests; and by its intrinsic adaptation to the purpose, independently of any adventitious aid from Government, preclude, for all time, a reasonable motive for the project of a competing line.

The results of railway experience generally, and the opinions of distinguished engineers, both in Europe and America, appear now very decidedly to recommend the system of central trunk lines with branches to remote points, rather than independent lines of communication between the latter.

There are portions of the Report under consideration, relative to the use of wood in the construction of railways, which do not clearly harmonize. The 14 bridges in 20 miles, up the rocky chasm of the Metapediac, of the aggregate length of nearly 6000 feet, and another bridge of 2000 feet, necessary to cross the Miramichi, are represented as not formidable at all, because wood may be used for their construction; and that bridges in the United States, "on the best lines," are built of this material. But immediately further on the liberal use of wood is disparaged as the "cheap method of making railways;" and a quotation from a report relative to the Syracuse and Utica Railroad is given to show "some of the consequences arising from a cheap railway." But the statement quoted seems less to disparage than commend the advantages of a wooden structure, at least in the first instance. The first cost, including equipment, was 3600*l.* per mile. For this small outlay, the advantages of a railway are obtained for eight years. After this a more perfectly re-constructed line will enhance the whole cost to only 5960*l.* per mile.

Report, p. 14.

Report, pp. 16, 18.

A perishable, as well as a durable, material may be badly employed.

A locomotive may drop through a trestle-bridge or may run off an embankment without either wood or stone being really responsible for the disaster.

Ever since Lord Stanley was pleased, immediately after the great fire in Quebec, to communicate, for the information and benefit of the North American colonies, the results of several experiments, under the auspices of Government, made with wood rendered incombustible, and,

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as also supposed, imperishable, by a new and simple chemical process, the value of a discovery so important has not ceased to be a subject of deep interest, though no attempt has yet been made to convert it to practical account.

The great saving of first cost in the construction of railways by the use of wood has been abundantly proved. The imperfection of the method undoubtedly lies in the perishable nature of the material; but this has been greatly aggravated by the slight and inefficient character of the first structures of this kind in the United States.

Some very interesting details and observations, relative to this subject, are supplied in the chief engineer's report of the Baltimore and Ohio Railroad, for the year 1847. The affairs of this road are under the presidency of the Honorable Lewis McLane, late minister to Great Britain. This line is considered to have a nearer resemblance to the Western Railroad in Massachusetts, than to any other in the United States, and both may be considered to have much resemblance to the projected line from the Atlantic to Quebec. The following is an extract from the Report referred to.

"*The Bridges.*

"This head of expenditure has shown a large and important one for the last three years, principally on account of the necessity of rebuilding most of the many wooden viaducts upon the line. Of these numerous and extensive structures the aggregate length is 4115 feet in spans varying from 40 to 150 feet, besides 1633 feet of trestle-bridging at Harper's Ferry, making the whole length of timber bridging 5748 feet, or 1·09 miles. They carry the road across 11 large rivers, and three smaller streams, intersected by the route.

"They were built originally with a view to much lighter locomotives and trains than those since traversing the road. They were also built of materials, the best to be had at the time but not offering the choice in quality which is now open, and put into the work with but little seasoning. Decay consequently soon commenced, while the increasing weight and frequency of the trains imposed a duty which required increasing instead of diminishing ability to perform. The result has been, that although some of the viaducts have suffered much more than others, yet that an entire re-construction of the whole has been considered expedient, rather than resort to a less thorough renovation, which would have been less safe, and in the end more expensive. In this, no pains and expense have been spared to render them capable of performing the severest duty that can ever be required of them, and entire success has been the result. All the new work has stood the test of its strength completely; and the most difficult and extensive structure of the whole, the wide arch at Harper's Ferry, has now borne the trade of the road under the most trying circumstances for two years, without exhibiting the smallest weakness in any of its parts. A very important part of the improvements applied to the new structures, consists in covering them from the weather, and providing for the seasoning of the timber more perfectly than before; and this protection, it is believed, is now so effectual, as to secure them against all the usual causes of decay, and to render them as durable as if built of stone or iron. The agent of destruction remaining to be guarded against is fire, and this danger can only be averted by a vigilant watch, the employment of which will always be indispensable, but the expenses of which will not increase with the expense of the road, and will thus be a diminishing tax upon it.

"Before leaving this subject it is right to state that the experience of all other roads of heavy trade in the United States, is, in regard to their wooden-bridges, the same. They were built too slightly in the first place, and have required to be re-constructed or strengthened in such a way as to amount to re-construction; and I may add that all the experience of those companies, as well as that of this, has gone to demonstrate the soundness of the principles upon which the Baltimore and Ohio Railroad are built."

It may be remarked that no water crossings of great magnitude are likely to occur on the central line through New Brunswick. The gigantic, and necessarily hazardous, structures which cannot be avoided on the circuitous line, would, under any circumstances, be objectionable; but long bridges immediately on the tideway of the Gulf of St. Lawrence do not appear to give to this line the superlative quality insisted upon in the report that, "passing at the greatest possible distance from the United States, it possesses in the highest degree the advantage to be derived from that circumstance, of security from attack in case of hostilities."

(Signed) J. WILKINSON.

No. 2.

(No. 2.)

No. 2.

COPY of a DESPATCH from Lieut.-Governor Sir EDMUND HEAD to Earl GREY.

Government House, Fredericton,
January 6, 1849.

MY LORD, (*Received January* 23, 1849.)

ON the 2nd of January I received from his Excellency the Governor General a letter on the subject of the proposed railway between Halifax and Quebec, together with copies of a memorandum from the Inspector-General of Accounts in Canada, and of a minute of the Executive Council of that province on the same subject.

Unfortunately the heavy drifts of snow in the province have prevented the

full meeting of my Executive Council, which ought to have taken place on Wednesday, 3rd instant. Mr. Chandler left home for the purpose of coming up, but was obliged to return; from Mr. Hill, I have not heard. This morning, however, Mr. Hazen arrived with some difficulty from St. John's, and a quorum of the Council has thus assembled.

I have laid before the Council, without delay, the documents relating to the proposed railroad, and I have now the honour to enclose a copy of a Minute which has been this day unanimously adopted by the Council. The meeting of the Council is not, as I have observed, a full one, but I have no reason to suppose, that this fact has made any difference in the views expressed by its members. or that the resolution now forwarded would be disapproved of by those who are absent.

With these views, I should add, that I, myself, most entirely concur.

I have, &c.,

The Right Hon. Earl Grey, &c. &c. &c.

(Signed) EDMUND HEAD.

Enclosure in No. 2.

Encl. in No. 2.

In Council, January 6, 1849.

Present:—

His Excellency the LIEUT. GOVERNOR,

The Hon. R. L. HAZEN,	The Hon. L. A. WILMOT,
„ J. R. PARTELOW,	W. B. KINNEAR.
„ C. FISHER,	

THE Lieut.-Governor laid before the Board the following papers:—

1. Despatch of Earl Grey, dated November 17th, 1848, relating to the proposed railway from Halifax to Quebec.
2. Printed Report of the Commissioners with reference to the aforesaid railway.
3. Letter and enclosure from his Excellency the Lieut.-Governor of Nova Scotia.
4. A letter from the Governor-General, dated 23rd December, 1848, and enclosing memorandum from the Inspector-General of Accounts for the province of Canada, together with a copy of a Minute of the Executive Council of that province thereon.

The Council having considered these documents with great attention and satisfaction, fully concur with the opinion expressed by Major Robinson in his very able report, that while the projected railway will be of great advantage to provincial interests, it is, at the same time, a work of imperative necessity, in a national point of view, for the preservation and integrity of his portion of Her Majesty's dominions.

Participating in this conviction, the Board anxiously desire to co-operate with the adjoining colonies in any practicable scheme for the completion of so important an undertaking.

Were the available resources of the province equal to our desires for the permanency of our connexion with the empire and the stability of British institutions on this continent, we would at once take upon ourselves our proportion of this great work, asking aid from no quarter; but as we, in common with our Canadian brethren, are now suffering from the recent changes in the commercial policy of the Imperial Government, we are left without the means of doing as we would.

Concurring in the views of the Inspector-General of Canada as to the continuance of the present protective duties on colonial timber, we readily agree with him in the proposition of an increase of duty from 1*s.* to 7*s.* 6*d.* per load, as a security to the British Government for any advances they may make for the completion of the railway.

Believing that but one opinion prevails in this province as to the great national importance of the project, the Council do not anticipate that any objection will be made to the additional impost on our timber, if such increase will be taken by the Imperial Gnvernment in security for the necessary advances.

Confident in the anxiety of the Provincial Assembly to do all in their power to forward this great undertaking, the Council believe that they will cheerfully afford facilities co-extensive with those proposed by Canada in securing to the Imperial Government the ungranted lands within 10 miles on each side of the line, and in obtaining, at an expense however great, all the private property required for the line and for the necessary stations within the province.

No question of greater importance to British colonial interests could be presented for the consideration of the Government. Upon it hangs the destiny of these provinces as portions of the empire; in its favourable termination we view the only guarantee of colonial unity and British supremacy in British North America; and so deeply rooted do we believe to be the attachment of this colony to British institutions, that we are of opinion no opposition will be offered in our Legislature to the proposition of the Canadian Government, however its adoption might bear upon what has hitherto been the principal staple of the province.

The Council concur in the views of the Inspector-General as to the impracticability of carrying out Major Robinson's scheme of the Imperial and Provincial partnership, and deem

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it far more desirable that it should be under the control and sole management of one directory, and that the Imperial Government.

The trunk line, as recommended by Major Robinson, may be the best which can be discovered, but if a more central one can be found between Shediac and the St. Lawrence, it would be more generally advantageous to the provincial public, and we entertain every confidence that Her Majesty's Government will take care to adopt such line as will be best suited for all purposes national and provincial.

Extract from the Minutes,
R. FULTON.

No. 3.

(No. 13.)

No. 3.

COPY of a DESPATCH from Lieut.-Governor Sir EDMUND HEAD to Earl GREY.

Government House, Fredericton,
February 2, 1849.

MY LORD, (*Received February* 20, 1849.)

I HAVE the honour to transmit, for your Lordship's information, the enclosed copy of the resolutions passed at a meeting held at Dorchester, in the county of Westmoreland, on the subject of the Halifax and Quebec Railroad.

I have, &c.,
(Signed) EDMUND HEAD.

The Right Hon. Earl Grey,
&c. &c. &c.

Encl. 1 in No. 3.

Enclosure 1 in No. 3.

Mount Whatley, Westmoreland, (*Near Amherst*),
January 19, 1849.

SIR,

IN pursuance of the directions of the meeting of the freeholders and inhabitants of this county yesterday, held at Dorchester, I beg leave to transmit you a copy of the resolutions passed at such meeting, on the subject of the proposed Halifax and Quebec Railway, and I have to request the favour of your laying them before his Excellency the Lieutenant-Governor.

I have, &c.,
(Signed) WILLIAM HENRY BUCKERFIELD,
Secretary to the Meeting.

The Hon. John R. Partelow,
&c. &c. &c.

Encl. 2 in No. 3.

Enclosure 2 in No. 3.

AT a Meeting of the Freeholders and Inhabitants of the County of Westmoreland, held at the Court-house in Dorceester, on the 18th day of January, 1849.

The Hon. WILLIAM CRANE was called to the Chair.

Mr. W. H. BUCKERFIELD was appointed Secretary to the Meeting.

The following resolutions were proposed by the Hon. A. E. Botsford, seconded by the Hon. Edward B. Chandler, and carried unanimously.

1st. Resolved unanimously as the opinion of this meeting, that the subject of the proposed railroad between Halifax and Quebec is one of paramount importance to the British North American Provinces, that the future destiny of these valuable possessions depends upon the early construction of this grand national work, and that it is a duty equally imperative upon Her Majesty's Government, the Colonial Legislatures, and upon every individual claiming the privilege of a British subject, to afford every aid and assistance to the promoting this truly patriotic undertaking, upon the success of which, unquestionably depends the future relations and prosperity as well of the mother-country as of these her colonies.

2nd. Resolved unanimously as the opinion of this meeting (deeply impressed with the vital importance of the subject), that the Legislature of this province should at the approaching session pledge the faith of the province for the payment of such proportion of the interest of the capital required to construct the railroad as may be deemed fair and reasonable, having regard to the relative position and capabilities of this province, as compared with those of our sister colonies of Canada and Nova Scotia, and should also empower the Executive of this province to make free grants of a breadth of way, and at least one half of all Crown lands over which the railroad may pass, or which may be in the vicinity thereof.

3rd. Resolved unanimously, that next to and intimately blended with the profitable operation of the great trunk line stands the contemplated branch railway from St. John to Shediac, connecting as it will the commercial emporia of the three provinces, Quebec, St. John, and Halifax, and securing, as it undoubtedly will, the general line of communication by steam for travellers to and from Europe and America, as well to Canada as to the United States,

through this province, that consequently this branch in the opinion of this meeting demands the warmest encouragement and support of the Legislature and people of this province.

4th. Resolved unanimously, that this meeting will afford every facility and aid in promoting these great public works, and as a substantial evidence of the sincerity of its opinions we will individually pledge ourselves to make a free grant of whatever cultivated lands may be required for a breadth of way over which the said railroad may pass, belonging to us respectively, as also a free grant of any wilderness lands that may be required for a similar purpose, together with one half of the quantity of such wilderness lands so belonging to us, in addition to such part as may be required for a width of way.

5th. Resolved unanimously, that a written agreement be immediately prepared, embodying the above views, and be submitted for signature.

6th. Resolved unanimously, that the Hon. Edward B. Chandler and Mr. W. H. Buckerfield be a committee to prepare a draft of such agreement.

7th. Resolved unanimously, that it is the opinion of this meeting that judging from the effects already produced by railway communications in other countries, the most beneficial results may be expected to arise from this undertaking to the agricultural and commercial interests of the province, and that it may through its main line and its probable connexions be the means of attracting the large and unceasing emigration from Europe, as well as the traffic between that continent and the greater part of North America, more especially from Canada and the Western States of the Union, to the ports of this and the adjoining province.

8th. Resolved unanimously, that copies of the foregoing resolutions be transmitted to the provincial Secretaries of the several provinces, for the information of the respective Governments.

(Signed) WILLIAM CRANE, Chairman.

The chairman having left the chair, Mr. John Robb was called thereto, when it was resolved unanimously, on the motion of Robert D. Gilbert, Esq., seconded by the Hon. Edward B. Chandler, that the thanks of this meeting be given to the Hon. William Crane for his able conduct in the chair, and for the valuable information he has kindly afforded to the meeting.

Despatch from Sir John Harvey, Lieut.-Governor of Nova Scotia.

(No. 63.) No. 1.

COPY of a DESPATCH from Lieut.-Governor Sir JOHN HARVEY to Earl GREY.

Government House, Halifax, Dec. 8, 1848.

MY LORD, (*Received December* 22, 1848.)

I HAVE the honour to acknowledge your Lordship's Despatch of the 17th November (No. 131)*, which, with the report of Major Robinson, will be submitted to the Legislature early in the session.

Your Lordship may rely on the members of my Government giving to the subject thus presented the favourable consideration which is due to a project so vast, and involving, as it necessarily does, so many national and intercolonial interests.

* Similar Despatch to that addressed to Lord Elgin, Nov. 17. *Vide* page 3.

I have, &c.,

To the Right Hon. Earl Grey, (Signed) J. HARVEY.
&c. &c. &c.