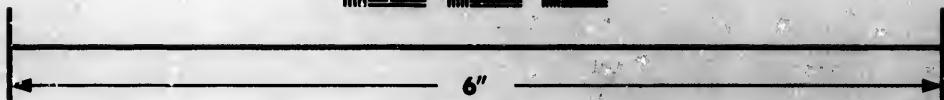
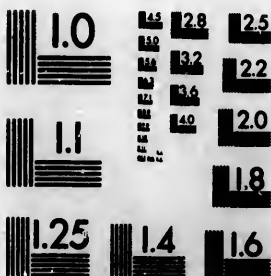


**IMAGE EVALUATION  
TEST TARGET (MT-3)**



**Photographic  
Sciences  
Corporation**

3 WEST MAIN STREET  
WEBSTER, N.Y. 14580  
(716) 872-4500



**CIHM/ICMH  
Microfiche  
Series.**

**CIHM/ICMH  
Collection de  
microfiches.**



**Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques**

**© 1983**

Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

Coloured covers/  
Couverture de couleur

Coloured pages/  
Pages de couleur

Covers damaged/  
Couverture endommagée

Pages damaged/  
Pages endommagées

Covers restored and/or laminated/  
Couverture restaurée et/ou pelliculée

Pages restored and/or laminated/  
Pages restaurées et/ou pelliculées

Cover title missing/  
Le titre de couverture manque

Pages discoloured, stained or foxed/  
Pages décolorées, tachetées ou piquées

Coloured maps/  
Cartes géographiques en couleur

Pages detached/  
Pages détachées

Coloured ink (i.e. other than blue or black)/  
Encre de couleur (i.e. autre que bleue ou noire)

Showthrough/  
Transparence

Coloured plates and/or illustrations/  
Planches et/ou illustrations en couleur

Quality of print varies/  
Qualité inégale de l'impression

Bound with other material/  
Relié avec d'autres documents

Includes supplementary material/  
Comprend du matériel supplémentaire

Tight binding may cause shadows or distortion along interior margin/  
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure

Only edition available/  
Seule édition disponible

Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/  
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/  
Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

Additional comments:  
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/  
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X

The copy filmed here has been reproduced thanks to the generosity of:

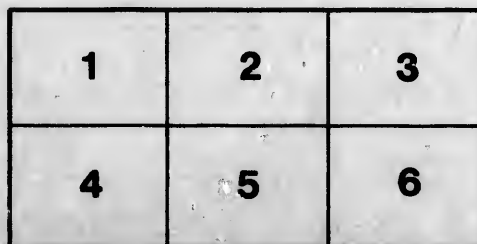
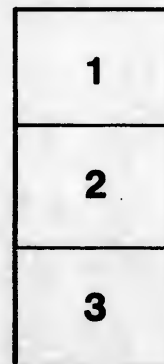
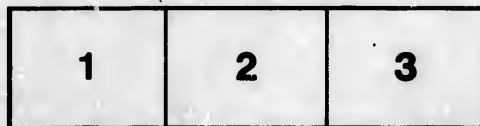
Library of the Public  
Archives of Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol  $\rightarrow$  (meaning "CONTINUED"), or the symbol  $\nabla$  (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

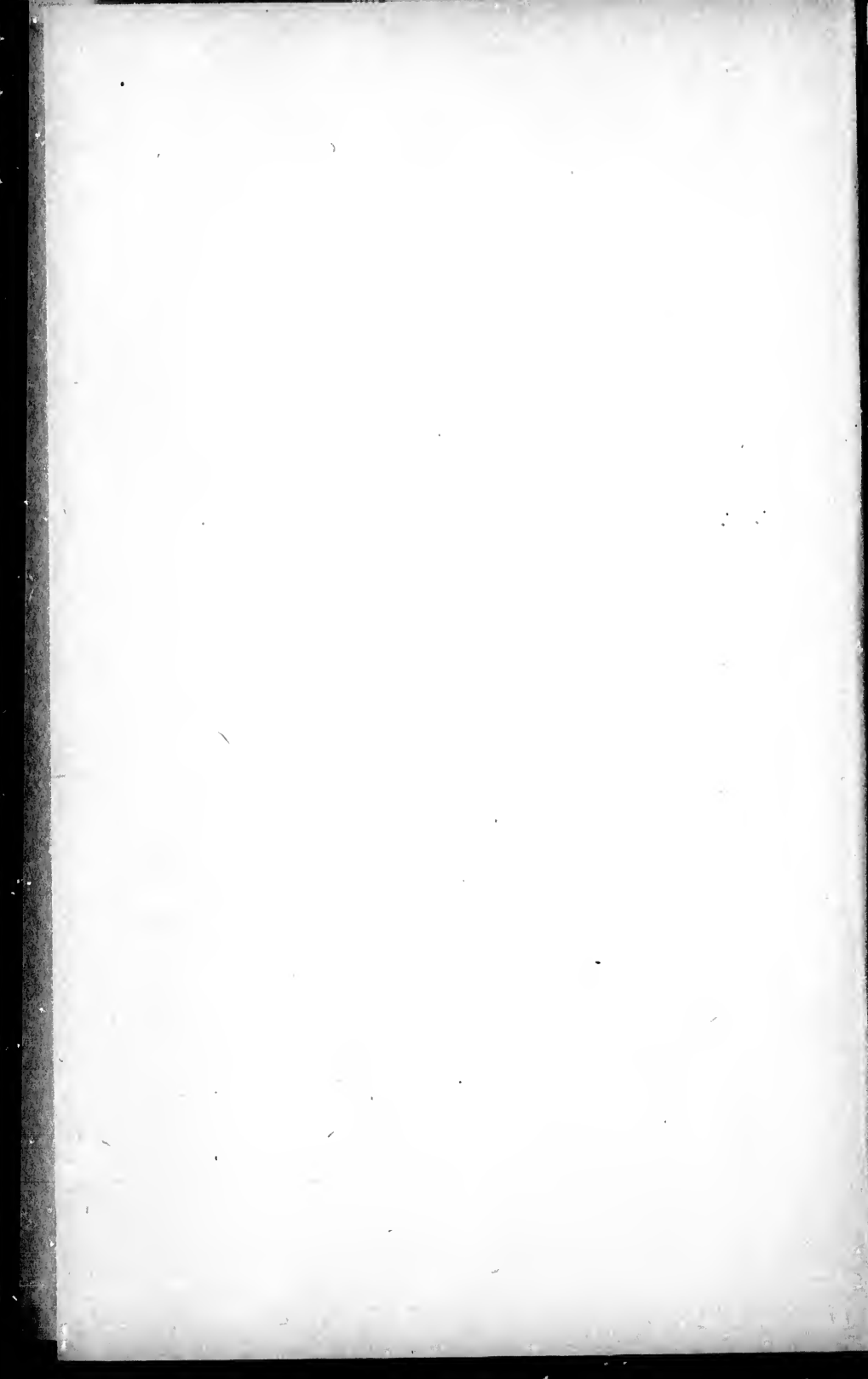
La bibliothèque des Archives  
publiques du Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole  $\rightarrow$  signifie "A SUIVRE", le symbole  $\nabla$  signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.



*J. Simpson*

CORRESPONDENCE

RELATING TO

THE PROJECTED RAILWAY

FROM

HALIFAX TO QUEBEC.

---

FREDERICTON:

J. SIMPSON, PRINTER TO THE QUEEN'S MOST EXCELLENT MAJESTY.

1852.

Copy

S  
of t  
son  
Ca  
Ha  
I  
of y  
info  
gen

Sir

S  
tran  
De  
com  
by  
He  
Qu  
rec  
hav  
com  
in r  
I  
bee  
tion

He

# CORRESPONDENCE

RELATING TO

## THE PROJECTED RAILWAY FROM HALIFAX TO QUEBEC.

Copy of a Despatch from Earl Grey to Lieutenant Governor Sir Edmund Head, Bart.

*Downing Street, 10th April, 1849.*

SIR,—I have to acknowledge the receipt of your Despatch No. 1, of the 1st of January last, containing observations by Mr. Wilkinson, of Fredericton, on the joint Report of Major Robinson and Captain Henderson, on the proposed trunk line of Railway from Halifax to Quebec.

Having judged it proper to furnish Major Robinson with a copy of your Despatch and of its enclosure. I now transmit for your information the copy of a letter which I have received from that gentleman, enclosing his reply to Mr. Wilkinson's observations.

I am, &c.

(Signed)

GREY.

Sir Edmund Head, Bart., &c. &c. &c.

Enclosure in No. 2.

*Portsmouth, 30th March, 1849.*

SIR,—In reference to your letter of the 10th February last, transmitting to me, by direction of Earl Grey, the copy of a Despatch from the Lieutenant Governor of New Brunswick, and containing a copy of certain observations which have been made by Mr. Wilkinson upon the joint Report of myself and Captain Henderson, on the proposed trunk line of Railway from Halifax to Quebec, and acquainting me that his Lordship would be happy to receive any remarks which I might wish to offer on the subject, I have the honor in reply to submit through you, for his Lordship's consideration, the accompanying observations which I have made in reply to those of Mr. Wilkinson.

I beg leave at the same time to state, that these would have been forwarded to you at an earlier period, but for many interruptions which have arisen from my own present professional duties.

I have, &c.

(Signed)

WM. ROBINSON,

Capt. Royal Engineers, Brevet Major.

Herman Merivale, Esquire, &c. &c. &c.



Reply to the observations made by Mr. Wilkinson, of Fredericton, upon Major Robinson's Report on the proposed Trunk Line of Railway from Halifax to Quebec.

*Portsmouth, 30th March, 1849.*

SIR,—Mr. Wilkinson was one of the civil surveyors employed on the exploration Railway Survey in British North America, and was engaged on that duty from the 10th of June to the 31st of December 1847.

The portion of country for which his services were required, and to which his attention was directed, was the difficult and hilly (if not to say mountainous) portion lying between the upper part of the Restigouche River and the Saint Lawrence, near to where the latter receives the waters of the Trois Pistolles River. The object he had to accomplish was to find a practicable line through this country for about 70 miles, and by so doing, to complete the exploration of a central and direct route through New Brunswick to the Saint Lawrence.

The account of this exploration is given in his Report, which forms Appendix No. 3 to the General Report.

It was entirely unsuccessful. The difficulties of the ground tried by him were too great to be surmounted.

In the opinion expressed by the Lieutenant Governor of New Brunswick of Mr. Wilkinson's great experience in surveying, and that he possesses considerable knowledge of that country I most willingly concur.

But as it affects the question now between us, viz. the relative merits of two lines for a Railway, I beg leave to express a doubt whether Mr. Wilkinson has had any experience as a civil engineer, or has had sufficient opportunity of acquiring such a practical knowledge of Railways, as to give any unusual weight to the observations he has offered upon my Report.

I make this preliminary remark, because it will be seen from what follows, that we differ, at the first starting, upon one of the most essential attributes of Railways, viz. easy grades.

In gaining the head waters of the Green River, Mr. Wilkinson encountered in his progress from the Saint Lawrence a narrow valley of four miles in length, decreasing in width until at its termination it was merely a ravine. A section of it was made with a theodolite and the levels taken.

Viewing it in a favourable light, that is, supposing the line could have been made in one slope, from its commencement to its termination, there must have been a grade of about 1 in 49, or a rise of  $107\frac{1}{2}$  feet per mile for four miles, and involving heaving cuttings and embankments.

Speaking of this part, over which I passed myself and examined it carefully, Mr. Wilkinson thus reports:—

“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.”

These heavy grades on the English Railways quoted are but for very short distances, and not to be compared to the long one met on this part of the exploration, and even as short as they are they are most objectionable.

The effect of heavy grades upon a line is to increase greatly the expense of working. As the ascent increases, the power of an engine to draw freight diminishes rapidly, whilst, at the same time, the strain upon the rails is most detrimental to the durability of the road.

An engine which could draw a load of freight up a moderate grade of 30 feet per mile of 144 tons, would, on an incline of 1 in 49, draw only 36 tons. As a remunerative line, so far as it depends upon the heavy freight to be expected between Quebec and Halifax, it will depend greatly upon the expenses of working it, and these depend most materially upon the nature of the gradients.

Mr. Wilkinson speaks of a long grade of four miles, rising 1 in 49, as being nothing more than “objectionable.”

I consider it as being next to impracticable; and as it is most probable there would be others of a similar nature, in descending on the opposite side, in connection with other heavy grades, though not so great, I should condemn such a line and look for another.

Mr. Wilkinson and myself have therefore widely different views as to one of the qualities of a good Railway.

The shortest line between two points may not be the best.

A circuit with easy grades is far superior to a shorter route with heavy ones.

I now proceed to consider the observations which Mr. Wilkinson has deemed it his duty to make upon my Report.

The purport of the first portion of his objections I take to be as follows:—

1. That the Report is too peremptory in the recommendation of the Eastern or Bay Chaleurs line.

2. Equally too peremptory in the condemnation of any more direct or central route.

3. That he has looked in vain for reasons of adequate force and validity to concur in that opinion. And,

4. That he is of opinion that sufficient efforts have not been made, and that consequently more explorations and surveys are desirable, either to improve upon the central route through New Brunswick, together with, if possible, a continuation of it to the Saint Lawrence.

These objections I shall endeavour to answer by stating what has been done on the central line.

Mr. Wilkinson, having joined the exploration survey in the second year of its labours, and having been exclusively employed upon the portion of it allotted to him, may be presumed to be ignorant of much or all that had been done in the previous season.

The reports and proceedings of the surveyors were not submitted to him, and it is not probable that he has ever seen the plans and sections of that year's explorations, which were sent home with a preliminary report by Captain Henderson.

These plans and sections related principally to the central portion of New Brunswick, to which the energies of Captain Pison and his parties were that season chiefly devoted.

Mr. Wilkinson has not, therefore, had the same facilities or data for forming an opinion of that difficult country as the officers employed have had.

It may be otherwise, but I do not think that he has himself ever been in or seen that part of New Brunswick, and mere inspections of the published maps are not calculated to give a practical knowledge of it.

In the first season, this country was traversed by our parties, not only in the direction of the line, but an expedition under Mr. Grant, a surveyor and draftsman also, of great experience, and of the Crown Land Office at Fredericton, (to whose valuable exertions and zeal, even to the risk of his life, the service is deeply indebted), was sent up the Tobique Valley for the express purpose of examining that long mountainous ridge which continues from the mouth of the Tobique River until it joins on to the highest mountains in the centre of New Brunswick, the object being expressly to find the lowest and most favourable point at which they could be passed.

Mr. Grant took with him Indians, as guides, from the village at the mouth of the river; persons to whom the whole district was known, forming part of their hunting grounds.

It should be mentioned that Mr. Grant did not confine himself to boating up and down the different streams, but ascended the highest ground he could find, and took views of the surrounding country.

The result of this expedition was that in the ensuing season the surveying and exploring party succeeded in finding a practicable route across the Tobique Valley, and on to the Restigouche River.

Whilst Mr. Grant was thus engaged on the western side of the central group of mountains in New Brunswick, Captain Henderson was on the eastern side, and ascending high ground, also was able to obtain a good knowledge of the nature of that part of the country.

These gentlemen have therefore had the advantage of having seen and been engaged in the country of which they make mention in their Reports. From Mr. Grant's, which has not been published, I make the following extracts:—

“From the surveys and explorations made in the Tobique district, I have the honor to lay before you the following Reports of the prospects afforded of finding a practicable line through that difficult section of country.

“In carrying out the project of a Railway from Halifax to Quebec, I had, by a careful examination of several maps of the intervening country, from the shed of the waters, combined with such local information as I could bring to bear on the subject, correctly anticipated that one of the great difficulties would be the passing an unbroken range of high lands extending from the River Saint John, below Tobique mouth, to the northeast, lying between the head waters of tributaries to the Rivers Miramichi and Tobique, and connected with Blue Mountain, and the mountainous district of Restigouche.

“As this bar extends completely across the face of the country, it of course follows that one of the most important preliminary steps is that of ascertaining the lowest points of transit across it, as the one easiest of access from both directions must become a fixed point, and to a greater or less extent influence both the direction and gradients of the line on either side of it.

“On my arrival at the Blue Mountain, I ascended to one of its summits, and had a most extensive view of the surrounding country, of which I made a complete panoramic sketch, with compass bearings, to such of the principal elevations as were known to the Indian who accompanied me.

“A continuous range, as already stated, extend from the mountainous district in the vicinity of Nictor Lake, and the head quarters of the Tobique, and separating the tributaries of the Rivers Miramichi and Tobique, until it connects (some distance below the Red Rapids) with the great mass of high lands extending upwards from the River Saint John.”

Speaking of the opposite side of the Tobique Valley, Mr. Grant says:—"To the north and west of the highlands at the head of Three Brooks, and as far, I presume, as the highlands near the Saint Lawrence, there is a table land about 400 feet above the bed of the Tobique. Viewed from an elevated position, this section of country has the appearance of a widely extended plain; but on examination is found to be cut up (wherever there are water-courses) with deep ravines of from about 100 to 300 feet, and which are likely to create a very heavy expense in bridging and viaducts."

To cross the Tobique River at the desired point, a very heavy bridge and viaduct are reported necessary, as the height of the bank on one side is much higher than that of the other.

It will be observed that Mr. Grant speaks of this ridge of highland on the south side of the Tobique River as being continuous and unbroken, extending as a bar completely across the face of the country.

An assistant surveyor, who was employed for two seasons on this part of the central line, speaks of these hills as being "high, and extending in an unbroken chain from 30 or 40 miles, increasing in height until they meet the Tobique Blue Mountains, said to be more than 2000 feet above the sea."

From the point on the ridge where the line passes, to the bed of the Tobique River, the levels were taken instrumentally and barometrically.

From the results so obtained, which were found to agree very closely, the summit level of 1,216 feet was obtained.

It is of course within the limits of possibility, that there may exist some gap in this chain by which it could be passed at a somewhat lower level, but it is highly improbable that there should be, and that it should have been unknown to the Indians, and undiscovered by our exploring parties.

In the country, more to the westward, and nearer to the Saint John River, a line for a mail route had been explored between Fredericton and the Grand Falls some years before, but the ground was found very unfavourable, even for a common road, and it was never carried out.

Previous to our parties commencing their operations in the country, there had been officers exploring through it for the purpose of making a great military road from the River du Loup, on the Saint Lawrence, through New Brunswick, as far as the Bend of Petitcodiac.

Their Plans and Reports were sent to us, and we had the benefit of their experience.

They met with almost insurmountable difficulties in the centre of New Brunswick.

The Commanding Royal Engineer in Canada, in his Report on this line, dated 20th March 1845, writes thus:—Paragraph 18, "From the 137th mile, when the surveyed line goes southeast to the Tobique River" (but that line, and along the Odell River, was found difficult and indifferent for settlement.) Paragraph 19, "The chained line follows the Odell to the Forks, and afterwards deviated to the northeast, so that the actual line of road may be somewhat shorter." Paragraph 20, "This part of the road, however, from the 137th mile (going southerly) to the 189th mile, shown by the dotted line, will require further examination, it having been found impracticable during the working season of last year."

This was for a distance of fifty two miles that so much difficulty was found for a common high road.

The Commanding Engineer afterwards reported his opinion that it could be passed with grades of 1 in 15.

To have tried more to the eastward would have been increasing the altitude above the sea, and becoming more involved in the heart of the mountains.

It is rather remarkable, and may not be considered irrelevant to the subject, to state here that there were parties in the country then who objected to the line for the military road passing centrally through New Brunswick.

In paragraph 32 of the Report quoted, the Commanding Engineer says, "It is of course to be expected that the formation of any new line of road must be displeasing to such persons as may be established in other parts, and may conceive their particular interests to be injuriously affected by it. While this road was being surveyed, objections were made to the course of the explorations.

The parties objecting were in favour of going round by the Metis and Kempt road.

Mr. Wilkinson observes, "That an exploration by the way of the right hand bank of the Tobique, towards Boiestow, was suggested at the commencement of the season of 1847."

"It might not have been 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 proposal is adverted to in the Appendix No. 3, at p. 49, 50, of the Report, but not adverted to in the Report itself."

A proposition was made to me by Mr. Wilkinson, in a letter which I received from him, dated the 6th of August 1847, that he himself, with a party, should ascend the Tobique River, and explore from thence, southerly, as far as the main Miramichi River, a distance of some fifty to sixty miles. But as at the time this proposition was made two months of the working season had passed, and Mr. Wilkinson had not completed one half of the task allotted to him, it was not noticed.

More especially too as at the same time, or soon after, good accounts were received from the party upon whose ground he proposed to intrude, and who, instead of failure, as anticipated by him, succeeded in carrying out a practicable line right through to the Restigouche River. The failure proved on his own ground, and the winter found him still embarrassed in the high lands at the head of the Green River.

Large parties were thus employed at great expense for two seasons on this central and direct line through New Brunswick.

Year after year explorations might be continued to be made, and great expenses incurred, in the hope of finding a better line, or improving upon the one last found, and parties interested would still say that every effort had not been exhausted.

Judging from the results of our own labours, from those of others, and the natural difficulties of the country as described, I do not think any further exploration would be attended with any marked difference of success; and that in point of easy gradients, and in every other point, save the one of distance, the eastern, or Bay Chaleurs rout, would still command a preference over the central one through New Brunswick to the Saint Lawrence.

Proceeding next to consider the observations made by Mr. Wilkinson upon that part of the country lying south of the Miramichi, and between it and the Shediac River, I find that in this case his doubts and criticisms have been called forth in consequence of my not giving a sufficiently peremptory opinion, and expressing a belief merely that it would prove, with the exception of the banks of the Saint Lawrence, one of the easiest portions of the line.

I shall endeavour to answer this part, as I did in the first instance, by referring to what was done, and by quoting extracts from the reports of the surveyors who had the conduct of the exploration.

In my General Report I described that this portion of country was the last explored, because it was of the most importance to try those portions first where the greatest difficulties were to be expected.

The country in question is well known to be the most level in New Brunswick.

One author (Dr. Gesner, page 186), in speaking of it, says, "The whole country is remarkably level, and upon an average its elevation above the sea will not exceed 20 feet." Another (Mr. Perley), in his description of the Counties of New Brunswick, says, page 12, "There is scarcely a single hill of any magnitude in the whole of this County (of Kent), and the land, especially on the Gulf shore, is very low and level. It may be described as the most level County in the Province."



Captain Henderson and myself both passed through it, and traversed it from south to north, and found it to be extremely level and favourable.

But as our route was more to the eastward than it was desirable the line of railway should take, it was determined to send in exploring parties.

And it was tested in the severest way, that any country could be tried, by cutting straight lines across it, through the heart of the country. The sections of the lines thus cut and levelled are given in the book of plans.

Our object was not to locate the exact line, but to ascertain that there was nothing impracticable in the way, and to ascertain the general nature of the features of the country.

Two parties were employed under competent surveyors.

They commenced at the same point, nearly a central one, on the Richibucto River; one party cut northwesterly and the other southeasterly, taking the levels over both lines barometrically.

No obstacles were encountered but what could have been avoided, and the surveyor's report is most favourable.

I make the following extracts from the report of Mr. Layton, dated Richibucto, 19th October 1847:—

“The point selected as the most convenient for commencement was on the Harley Road, at about  $6\frac{1}{2}$  miles from Taylor's, on the Richibucto. Corporal Forbes, taking a direction bearing by the magnet north  $39$  degrees west  $10\frac{1}{2}$  miles; thence northerly  $25$  degrees west  $9\frac{1}{2}$  miles to the line between the Counties of Northumberland and Kent, crossing the old Indian portage about half a mile to the westward of the Richibucto (as will be seen upon reference to the plan accompanying the report), and crossing the river at a distance of  $7\frac{1}{2}$  miles from the Harley Road, which will be in a direct line about  $15$  miles above the head of the tide, also crossing the head of the south branch of the Kouchibouguasis and two other small streams running into it; and also crossing two small streams which empty themselves into the Miramichi.

“The whole extent of this line presents nearly an even surface, with the exception of two slight dips, one at the crossing of the Richibucto, and the other at the crossing of the south branch of the Kouchibouguasis.

“I took a direction bearing by the magnet south  $37$  degrees east, from the starting point at the Harley Road, which would pass about a mile to the eastward of Irish Town settlement.

“The country from the Harley Road to the Buotouche, a distance of  $17\frac{1}{2}$  miles, presents generally an even surface with the exception of a few slight dips at the crossings of the different streams, which are laid down upon the plan.



"At the Buctouche the land rises generally on either side to the height of about 50 feet, but there are places where the same height of land comes boldly out on both sides, keeping the same platform. Between the Buctouche and the Cockburn Road, a distance of  $7\frac{1}{2}$  miles, the country presents nearly an even surface, with the exception of a slight dip at the crossing of the north branch of the Cocagne.

"At the Main Cocagne there will also be a dip of about 50 or 60 feet, as at the Buctouche. On this line there is a large quantity of very excellent land for settlement, and passing in its whole length through unlocated Crown lands. The same description will answer for the country between the Cockburn Road and Shediac River, passing below Irish Town settlement."

The result of these explanations and Mr. Layton's report prove this line to be practicable and favourable, perhaps only to be exceeded by the plateaus and terraces along the Saint Lawrence.

In the first season a section of the line was made from the Bend of the Petitcodiac to Boiestown.

Comparing one section with the other, which is the most decisive way of testing the merits of any two lines, the eastern one has the advantage over the other. It will be seen, therefore, from what has been done on this line, that it is not put forward upon the borrowed merits of the central line, but stands upon its own.

"By inspection of the map," Mr. Wilkinson says, "It will be seen that there will be, at fewest, about eight principal summits or water-sheds 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.

How any mere map could have supplied such information, I am at a loss to conceive. The country of New Brunswick has not been surveyed on any systematic plan; and the maps published of it, are only general outlines of its coasts and rivers. The latter, for the most part sketched in.

Against Mr. Wilkinson's inspections of the map, and the imaginary summit-levels which he has derived from them, with the obligation to descend everywhere to the tide-levels, I place the explorations and report of Mr. Layton, who had the advantage over Mr. Wilkinson of going personally over and surveying the ground in question.

The adding together all the small summit-levels to make an amount equal to that passed over by the central line, is more ingenious than scientific; but it would have been fairer if, at the same time, to the latter had been added the rises and falls occurring before that summit-level is reached, and those which occur after.

Mr. Wilkinson, in contending for his central line, can foresee no

impracticability in getting through or over two ranges of highlands: and to do so does not object to some of the heaviest grades known in railway practice; but foresees alarming cuttings and embankments through the most level district in New Brunswick.

As our lines run, and the surveys were only exploratory, it is impossible to say what these latter will be with accuracy; but there is no fear that they will be anything great or extraordinary.

The next question which Mr. Wilkinson enters upon is a military one, and he puts the following case:—"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 island, or that it should, as much as possible, run centrally through from north to south, with branches to either coast?"

To this I have no hesitation in saying that the one following the coast is perfect everywhere as a means of defence against an invading force; and that the one with branches is imperfect at every point intermediate to where they terminate.

To be equivalent to the other, the branches must be multiplied *ad infinitum*, for between any two points on the coast the defence is imperfect.

A line of railway following along a coast anywhere, would afford additional facilities for its defence. In so much, then, as this affects the question of the two lines, it is another advantage in favour of the eastern or Bay Chaleurs line.

The Gulf and River Saint Lawrence may become the highway of all nations; but if it should, nature and the climate will block it up for six months of the year; when the railway will have undisputed possession of the field of communication for the other six. If the line be laid out with care and judgment, it may be made to pass at such moderate distance from the shore, that without being exposed to any danger from cruisers at sea, it will afford the best and readiest means of defence against any attack which they might make upon the settlements.

The central line, without assisting these, and deriving a revenue therefrom, would, from near the Bend of Petitcodiac, enter upon the great wilderness forest of New Brunswick, and not emerge until after a course of about 300 miles upon the banks of the Saint Lawrence. Thus, as it were, turning its back upon and depriving numerous existing settlements of all advantage to be derived from it; without, at the same time, giving any one advantage to any other portion of the country, save and except to diminish, by a few miles, the distance at which it should pass from Fredericton.

Mr. Wilkinson next enters upon the subject of probable revenue from freight transmitted between Quebec and Halifax.

To aid him in depreciating the advantages of this line, he has called in two additional railways which may or may not at some remote period be made, viz. from Saint Andrews to Quebec, and from Saint John to Quebec.

To neither of these two lines could the Imperial Government give its support in preference to that from Halifax; and without such aid, I do not believe that either the one or the other will ever be completed.

The progress of the railway from Montreal to Portland, which is the great commercial rival of the Halifax and Quebec line for the trade of Western Canada and the Far West of the United States, is advancing so slowly that it is impossible to say when it will ever be completed.

By the last accounts, 30 miles only out of 120, or one-fourth, on the Canadian side, was completed, and their funds were exhausted.

But little more was done on the Portland side, and they were also in want of fresh funds.

Looking to the list of imported and exported articles from the Canadas to England, and *vice versa*, there are but few whose bulk and weight, in proportion to their value, are so great as to forbid the prospect of their passing by railway.

The great items exported from Canada are ashes, salted beef, wheat, flour, fish, oil, salted pork, furs of every description, timber unhewn and in scantling, deals and battens, and staves.

The timber in scantling I consider will come by sea, as at present.

Deals and battens will depend upon the rates at which the railway can be worked. If the cost of transportation be low, there will be certain advantages offered by the railway, which may give it the preference. These are, ready and instant transmission when the article is ready, diminished rate of insurance, and diminished freight from Halifax.

A ton weight of the other articles will be of such pecuniary value, that these advantages will leave a good margin towards paying their transit by railway.

A still wider margin will be left for the articles imported into Canada. They are all, or nearly so, the manufactured articles of the mother country, such as apparel, haberdashery, arms and ammunition, books, brass and copper work, upholstery, cotton, linen, woollen and silk manufactures, hardware and cutlery, glass, china, plate and plated ware, saddlery and harness, &c.

Of which, whether by ton-weight or measurement, the value must be so great as to allow a good sum to pay railway carriage, when it is considered that the difference of insurance between the two ports of Halifax and Quebec is, at some times of the year, as much as £8 per cent.

The value of this immense trade (exports and imports together) cannot be estimated at less than 5,500,000 sterling per annum.

For which the railway will have no competition by sea for six months of the year.

Instead, therefore, of there being a faint prospect, I think there is a good prospect of revenue arising from freight by the railway.

There are also some further advantages to be gained by it, which will be adverted to afterwards.

One essential point to be considered as an element of success in competing with its rivals is, the cost of transportation.

On this side of the Atlantic, railways successfully compete with canals and transit by sea. There is no reason why it should not be the same on the other side.

The Halifax and Quebec line, passing over a country abounding in fuel, will have a great advantage in that respect over other railways.

In my report I estimated the cost of transportation from Halifax to Quebec, at 11s. per ton, and gave the details showing how it was derived. It was founded upon the best authority, viz., the evidence given before the Gauge Commissioners, and the document attached to the Report, Appendix No. 7.

I have as yet seen no reason to increase that estimate.

I make the following extracts from a report by Colonel Simpson, the Commissioner appointed by Canada to make statistical inquiries for the Quebec and Halifax Railway. It is dated 13th May 1847, and is addressed to the Governor General of Canada, page 2:—"In the meantime, whilst collecting the general statistics of all railroads upon which authentic details were attainable, I have particularly directed my attention to the important question of the cost of motive power.

"The amount of profit in a railroad will be found to be a resulting sum, from the amount of capital absorbed, the degree of motive power acquired, and the extent of the traffic. Mr. Joseph Pease, Chairman of the Stocton and Darlington Railroad, in England, recently stated to a Committee of the House of Commons, upon the subject of motive power, that in the transportation of coal upon the proposed London and York Railroad, one farthing per ton per mile would be found ample to cover all transportation expenses, including 5 per cent. interest on the capital employed in the moveable stock, and the proportion of the maintenance of way belonging to this branch of the traffic. At this rate the transportation of a ton of mineral ore, or eleven barrels of flour, would be 12s. 6d. sterling between Quebec and Halifax."

Page 3, from data furnished by the Philadelphia and Reading Railroad, Colonel Simpson calculates it at 2 dollars 71 cents per ton between Quebec and Halifax, or 11s. 4d. per ton for 600 miles.

Pages 8 and 9:—"That I may not mislead as to the importance of favourable gradients to the success of an enterprise demanding such an outlay, I beg to show the items of cost of transport on other railways, where the gradients are less favourable, &c.

"Contrasting with the statement of Mr. Pease, the Baltimore and Ohio, and the Philadelphia roads, it will be seen that, from the difference of level, the one carried, on an average, during the year 1845, 295 tons; whilst the other attained only 31½ tons."

Mr. Wilkinson has drawn up a table of freights for three supposed railways, and has assumed as a basis, that the price charged for freight per ton per mile on the Western Railway in Massachusetts, is the lowest remunerative rate at which goods can be carried; and having made his calculations by the mileage, draws the conclusion that as my estimated cost is only one seventh part of the rate charged by that railway, a mistake or oversight has been made in the estimate, which destroys the speculations founded upon it, as far as heavy freight is concerned.

This is very summary, but the question is not so easily disposed of.

Mr. Wilkinson should first have proved that the estimate of cost of transport was wrong, and that doubling that amount was not sufficient to produce a profit to the railway. 11s. was the cost of motive power, but 22s. was the charge calculated upon per ton. In the 11s. estimated was embraced, as will be seen by Appendix, No. 7, 1st. Enginemen, firemen, brakesmen; 2nd. Fuel; 3rd. Repairs of engines and tenders; 4th. Oil and cotton waste; 5th. Interest on cost of engines; 6th. Conductors; 7th. Repairs of railroad chargeable to locomotive and tender, and for deterioration of iron.

But little, therefore, if anything, was omitted from the cost of motive power.

The question then is, whether if 11s. be the cost, 22s. is sufficient to pay superintendence, repairs, and interest of capital.

If a railway has been expensively built, and has large dividends to pay, if its gradients be bad, as we have seen they can be, so that one line can carry nearly per train ten times as much as the other, then the charges upon the heavily graded and expensive line must be increased proportionally to insure any profit, and the rate per mile must also be higher on a short line than upon a long one.

Now such a line is the one which Mr. Wilkinson has assumed for his remunerative rate of 1½d. per ton per mile. The Western Railway passes over the highest summit level (upwards of 1400 feet), and to do so has some of the heaviest gradients in the States. Its capacity for running large trains of freight is greatly diminished thereby.

But the charge of 1½d. per mile by this railway does not apply to large quantities.

Articles for which the above rate is charged are entitled to a discount of 20 per cent., if previous notice be given that there will be the quantity of 6000 lbs., or not quite three tons.

One-fifth, therefore, off 1½d. per ton per mile is considered a remunerative rate by that railway.

But it is quantity that has the greatest influence in fixing the rates of charge, and is the great element of profit to a railway.

During the demand for provisions of all kinds in this country in the winter of 1846, at a time too when the River Hudson was closed, and gave them a monopoly of the traffic from Albany to the sea, this railway carried (if my information be correct, and I have no reason to doubt that it is, but it is not so direct as I could wish), flour from Albany to Boston, a distance of 200 miles, for 1s. 3d. sterling per barrel, which is equivalent to three-fourths of a penny per ton per mile, or only one-half of the rate assumed in the table by Mr. Wilkinson.

This reduction in charge was no doubt due to the quantity.

But the length of a line has also an effect.

The establishment at the termini of a railway, for the loading and delivery of the goods, and the superintendence or management, must be pretty nearly the same for a line of 200 miles as for one of 635. A long line, therefore, can afford to charge a lower rate per mile for its through-traffic, and yet will have sufficient profit to pay its expenses and interest.

That this view of the case is borne out in practice the following table, compiled from "Doggett's Railroads in the United States," for 1847, will show.

I take the Massachusetts railways as I have before taken them for costs of construction.

The freight-rates are on coal, iron, manure, lumber, corn, grain, sugar, salt, butter, groceries, &c., which generally are on these lines charged under one class, that of heavy goods:—

NAME OF RAILWAY.	Length in Miles.	Price per ton per Mile.	Equivalent in Sterling per ton per Mile.		Annual Dividend in 1847
			Cents.	Pence.	
Nashua and Lowell .. .. .	14	7	3½		10 per cent.
Pittsfield and Adams .. .. .	19	7	3½		" "
Boston and Lowell .. .. .	26	4·7	2½		8 per cent.
Connecticut River .. .. .	36	5·5	2½		7 " "
Old Colony .. .. .	37½	4·8	2½		7½ " "
Boston and Providence .. .. .	41	5·0	2½		7½ " "
Boston and Worcester .. .. .	44½	5·0	2½		10 " "
Fitchburgh .. .. .	49½	4·0	2		9 " "
Fall River, 42 miles only, but is a part of a line of ..	53½	3·7	1½		3 " "
New Bedford and Taunton, 20 miles, but is part of a line of .. .. .	56	3·5	1½		8 " "
Norwich and Worcester .. .. .	59	Not given.			" "
Boston and Maine .. .. .	73	3·0	1½		9 " "
Eastern, 38 miles, but is part of a line of .. .. .	105	3·4	1½		8 " "
Western Railway .. .. .	156	3·0	1½		8 " "
Or with its 20 per cent. discount .. .. .	156	3·0	1½		" "

\* Was only completed during the year.

The table shows a diminishing rate of charge as the lines increase in length. The dividends are high, exceeding on the average 8 per cent.

On the Baltimore and Ohio road, which is 179 miles long, coal is carried at a less rate than three-fourths of a penny per ton per mile.

On the London and North Western Railway, in England, coal is carried for three-fourths of a penny per ton per mile, if the distance be above 50 miles.

On the Stockton and Darlington, it is, I believe,  $\frac{1}{2}$ d. per ton per mile. The cause of these low rates is no doubt due chiefly to quantity.

If the Halifax and Quebec Railway can carry at all, it will have this essential element of success.

And if the London and North Western Line, which cost about £42,000 per mile, can carry coal at three-fourths of a penny per ton per mile, then I think that the other, which will only cost £7000 per mile, may expect to carry at a profit the article of timber, especially deals and battens, for about 22s. per ton, as taken in my estimate of this item (timber): there was imported in the year 1846 no less than 1,258,336 loads.

Of this 482,685 loads were of deals, battens, &c., and 46,000 of staves.

A load is 50 cubic feet, and the deals, battens, and staves would weigh probably not less than 400,000 tons.

From this quantity, however, must be deducted probably one-half, which is shipped from the Saint John's River in New Brunswick, and would not be within the influence of the railway. Again, if quantity and length of line have an influence upon rates of charge, and the Western Railroad, 156 miles long, can carry heavy goods, in moderate quantities, at  $\frac{1}{2}$ d. per ton per mile, and when the quantity is great, at three-fourths of a penny, and pay its shareholders 8 per cent. dividends, at how much lower rates could not the Halifax and Quebec line, with its 635 miles, afford to charge to pay only 4 per cent. dividends?

My object, by the table and these remarks, is to show, that taking the rates of charge upon any line of railway, is not the proper criterion to be guided by, and that Mr. Wilkinson's assumption of  $\frac{1}{2}$ d. per ton per mile, as the lowest remunerative rate, is not applicable to the Quebec and Halifax case.

If the rates for traffic and passengers were fixed by law to be the same for all the railways in the table, and the lowest rate assumed, where would be the dividends upon the short lines?

To assume any fixed rate per mile is, I conceive, erroneous.

Captain Huish, the General Manager of the London and North Western Railway Company in England, in a pamphlet recently published by him, thus speaks on the subject of goods traffic:—



"I have a right to assume that the highest obtainable rate is charged, and this being so, the trade should be carried on so long as any margin of profit remains, even if the expense of working it be 90 per cent. of the receipts. The total balance of profit is the point to look at, and although a per centage of working expenses is, to some extent, a useful guide for ordinary purposes, it would lead to error if adopted as a general test. A line working a large traffic at 60 per cent. (cost) may pay a much larger dividend than one working a small traffic at 30 per cent. (cost). I would, moreover, beg to remind Mr. Whitehead [his opponent], that the most profitable lines in England, and the only profitable ones in Scotland, to the present times, have been confined exclusively to the carriage of coal and other minerals."

That is for freight of the heaviest description.

This is from the experience of the manager of the greatest railway in England.

There is hope, then, that with a monopoly for six months in the year, a protecting duty of 4 to 5 per cent. on the average (imposed by Nature), in the way of extra insurance and reduced freight from Halifax, a large portion even of the heaviest freight may find its way to the Atlantic terminus by this railway, and *vice versa*, from Halifax to Quebec.

Quantity forming so important an item to the success of a railway, it may be necessary to say something of the immense field of existing traffic into which this railway enters for competition.

Quebec and Halifax, the termini, are not to be regarded as merely cities of so many inhabitants each, and calculated upon as affording so much revenue according to their numbers.

Halifax is the centre of a great export and import trade; the first it receives from, and the latter it distributes over half the Province of Nova Scotia. In value it cannot be much less than £2,500,000 annually.

This is great, but it is only one-half of the immense trade of Quebec. The latter city may be considered as the shipping port for the exports and imports of a million of inhabitants in Canada.

In value, as has before been said, it cannot be less than 5½ millions sterling per annum.

The tonnage arriving in Quebec was, according to Colonel Simpson's Report to the Governor General, before quoted—

In 1845 ...	1,475 vessels ...	559,712 tons
In 1846 ...	1,439 " ...	573,208 "
or the average for the two years	1,457 " ...	566,460 "

Owing to the short period of the year that the Saint Lawrence is open for navigation, the vessels from the United Kingdom arrive and depart in fleets, as it were.



In the spring of the year, in May, between three and four hundred merchantmen may be counted at anchor and by the side of the wharves at Quebec.

To arrive thus early, and so secure a second voyage during the season, they arrive in the Gulf of Saint Lawrence before it is clear of floating ice, and have to pay a higher insurance.

What the loss of property has been in the gulf I have not the means of ascertaining, but it is well known to have been enormous: and if taken for a number of years back I have no doubt would amount to a sum equal to the cost of making the railway.

To all those ships engaged in the trade between Canada and the United Kingdom, whose cargoes are of such a nature as, with reduced insurance and charges for navigating, to leave a margin for paying transit by railway, will be offered the additional advantage to being saved the dangers of the gulf—that of making one additional voyage at least during the year.

To secure an early arrival of their goods in Canada in the spring of the year, merchants send large quantities by the Cunard steamers, and can afford to pay £7 per ton freight for them in addition to the expense of transit through the United States.

Such portion of these as are destined for Quebec and the Lower Provinces would assuredly travel by the railway, and the whole would no doubt as soon as other railways should be completed from Quebec to Montreal and Upper Canada.

One of the great staples of Nova Scotia is her fishery.

The product of this she now exchanges away with the United States for flour and provisions.

The railway will enable her to exchange it far more profitably with Quebec.

In the winter of 1847-8 there was an inducement of as much as 13s. per barrel of flour in favour of going to Quebec for it instead of to the United States.

The whole of this staple commodity would find its way to the markets of Canada and the Far West, and a large portion of it could well afford to pay transit per railway.

Without any reference, therefore, to the trade of Western Canada and the Far West of the United States, there are sufficient grounds for inferring that in a trade of such magnitude, employing such an amount of vessels and tonnage, there will be no lack of quantity, if the railway can compete at all with the Saint Lawrence.

This will depend upon the carrying expenses or cost of transportation.

Captain Huish states that "a hundred tons of goods would occupy 22 trucks of the London and North Western Railway Company, and could be taken by a very ordinary engine."

In the Report of the Directors of the Boston and Worcester Railroad in Massachusetts for the year 1847, is the following:—"The freight engines weigh 20 tons, and they bring with ease from Worcester to Boston—the maximum grade in each direction being 30 feet in a mile—upwards of 150 tons of merchandize, of 2,240 lbs. per ton, and they have been known to bring at a time 360 tons, the weight of cars and their loading included."

The speed of the London and North Western not being required, I think from the above, that 100 tons per train was a fair estimate for the power of a locomotive on the Quebec and Halifax Line.

While it will be seen from an inspection of the accompanying Table, that 1s. 8d. sterling per train per mile was rather too high than too low for the estimated cost of motive power; and the 11s. per ton from Halifax to Quebec was therefore a sufficiently high estimate for the cost of motive power.

CARRYING EXPENSES.—GOODS TRAINS.

Table showing the carrying expenses of Goods Trains, and average speed per hour of the undermentioned Railways, for the year ending 1844, as returned to the Commissioners for Inquiry into the Gauge of Railways.

NAME OF RAILWAY.	Average expense of Locomotive Department per Train per mile.	Heads of Expenses.		Average load per Train per mile.	Average speed in Miles per hour.
Great North of England,	0 6	Wages, fuel, grease, repairs, and sundries,	100	16	16
Maryport and Carlisle,	1 8	Coke, tallow, oil, wages, water, repairs and sundries,	60	16	16
Glasgow, Paisley, & Greenock,	0 9	Coke, oil, tallow, wages, repairs and sundries,	29	25	25
Manchester and Birmingham,	0 5	Wages, repairs, materials, and sundries,	...	13	13
York and North Midland,	0 10	Wages 1½d., coke 3½d., repairs 3½d., sundries 1½d.,	...	15	15
Manchester and Bolton,	0 6½	Coke, oil, tallow, repairs, materials and sundries,	100 to 500	17	17
Midland, ... ..	0 11	Working, repairing, and coke,	37	15	15
London and Birmingham,	1 7	Wages, coke, oil, tools, repairs, gas, water and sundries,	100	20	20
Liverpool and Manchester,	0 8	Coke, oil, tallow, wages, repairs and sundries,	177	16	16
London and South-Western,	1 3	Coke, oil, tallow, wages, repairs and sundries,	100	20	20
Grand Junction, ... ..	1 6	Coke, oil, water, wages, materials and sundries,	29	13	13
London and Brighton,	1 1	Coke, oil, waste, wages, repairs and sundries,	154	16	16
Bristol and Gloucester,	1 1	Coke, oil, waste, wages, repairs and sundries, ...	36	18	18
Sheffield and Manchester,	0 7	All locomotive expenses, ... ..	180	15	15
Glasgow, Paisley, and Ayr,	1 4	Coke, oil, waste, tallow, repairs and wages, ...	50	15	15
Great Western, ... ..	1 6	Repairs, coke, oil, grease, wages and sundries, ...	125	15	15
Birmingham and Gloucester,	1 1½	Wages, coke, oil, tallow, waste, repairs and sundries,	300	20	20
Hull and Selby, ... ..	0 8½	Coke, oil, tallow, repairs, wages and sundries, ...	190	15	15
Preston and Wye, ... ..	0 8½	Coke, oil, materials, repairs and wages, ...	100	15	15
		Coke, oil, tallow, wages, repairs and sundries, ...	30	18	18

What the charge should be depends both upon the quantity which it will have to carry, and upon the amount which has been expended upon its construction and equipment.

With reference to the latter, I beg leave to quote the following, taken from a pamphlet, on the Condition and Prospects of Railway Property, by S. Smiles, Secretary to the Leeds and Thirsk Railway Company, page 29 :—" The following calculation by Mr. H. Williams, the actuary, puts the matter in another form. Thus :—

	Total yearly Traffic. Number of Passengers or Tons of Goods.	Original cost of Construction £15,000 per mile.	Original cost of Construction £20,000 per mile.	Original cost of Construction £25,000 per mile.	Original cost of Construction £30,000 per mile.
Fixed charge $\frac{1}{2}$ mile on every passenger or ton of goods, requisite in order to give common interest at 5 per cent. on the outlay.	90,000	d. 1-00	d. 1-33	d. 1-66	d. 2-00

" It is clear, therefore, that a line which costs £30,000 per mile must either have double the traffic, or charge double the fares on the same traffic, as compared with the line that has cost only £15,000 per mile."

Applying this same scale, then, to the Halifax and Quebec Railway, which has been estimated at £7000 per mile, the rate would be per ton per mile, 0.46 of a penny, or, for the whole distance of 635 miles, 2s. 4d. per ton.

In my general report, when applying the cost derived from the estimate of 11s. to the carriage of barrels of flour, I made the charge per ton 22s., which is only 2s. 4d. per ton under the above.

This difference, however, is fully counterbalanced by the 4 per cent. instead of 5 per cent., which it is calculated will be the interest to be paid on the guaranteed loan.

But further, under certain advantages as to lands to be appropriated, the estimated cost of the Halifax and Quebec Railway was taken at £3,000,000 only, or less than £5000 per mile.

When Mr. Wilkinson calculates another table of freights, he should bear in mind that the Western Railway in Massachusetts cost £10,000 per mile, and pays a dividend of 8 per cent. ; whilst the Halifax and Quebec Railway is estimated at £7000 per mile, or under favourable circumstances, £5000 per mile, and will be required to pay only 4 per cent. interest.

With reference to the remarks in Mr. Wilkinson's second paper, dated 28th December, 1848, on the disadvantages of the line running near the coast of the Gulf and River St. Lawrence, because, by treaty, the French and the United States have certain rights therein of fishing, &c.

I derive a directly opposite conclusion from him.

Wages, coke, oil, tallow, waste, repairs and sundries, ... 20  
 Coke, oil, tallow, repairs, wages and sundries, ... 15  
 Coke, oil, materials, repairs and wages, ... 18  
 Wages, coke, oil, tallow, waste, repairs and sundries, ... 190  
 Coke, oil, tallow, repairs, wages and sundries, ... 100  
 Coke, oil, materials, repairs and wages, ... 30  
 Wages, coke, oil, tallow, waste, repairs and sundries, ... 4  
 Coke, oil, tallow, repairs, wages and sundries, ... 6  
 Coke, oil, materials, repairs and wages, ... 11  
 Wages, coke, oil, tallow, waste, repairs and sundries, ... 8  
 Great Western, ...  
 Birmingham and Gloucester, ...  
 Hull and Selby, ...  
 Preston and Wye, ...

If the settlements along the coast are liable to be attacked by the enemy, the railway will, as I have before stated, afford the best means of defending them, and may, with care and judgment, be kept so far back as not to be injured from the sea. But, as between the two lines, I conceive this objection against the eastern line can only be applied to that part of the Bay of Chaleurs from Bathurst to Dalhousie, a distance of about 50 miles.

In winter, when the greatest object of the railway is to be attained this objection can have no force, for then the sea is closed to all alike; and in summer, the Bay of Chaleurs, running up so far into the land, can scarcely be looked upon as the open sea, but must be considered inland waters, into which it would be very unlikely that the enemy's vessels would enter.

The results of railway experience generally and the opinions of experienced engineers are, I believe, quite opposite to those quoted by Mr. Wilkinson. Branches are looked upon as costly appendages to trunk lines, and the attention of engineers is at the present moment directed to construct smaller engines and lighter carriages, so as to work them without loss.

Much of the recent depreciation in the value of railway property, and in the dividends of otherwise good lines, has been attributed to the multiplication of branches.

The branches to the Erie Canal in New York are a losing addition to the main trunk.

Mr. Wilkinson, in a letter addressed to Sir William Colebrooke, under date 17th March 1847, which has been published by order of the House of Assembly of New Brunswick, has advocated warmly the employment of wood in the construction of railways, and makes long quotations in favour of the piled and trestle-bridge railways of the United States.

Amongst other lines, the Syracuse and Utica was held up as an example of the success attending the principle.

It is to be remarked, that nearly at the same time this letter was written, that company had determined upon making a substantial structure, adequate to the performance of the business required of it, and had condemned the old one as worn out, sunk, and gone.

The New York and Erie Railroad adopted the principle for a portion of the line, and many miles were so constructed. A stoppage in the works for want of funds occurred, and when they were recommenced a few years after, the greater portion of the wood-work was decayed and had to be taken away.

Notwithstanding these facts, and that all the best lines in the States are permanently constructed, and have good heavy iron rails, Mr. Wilkinson still leans strongly to wood rails and wooden railways.

As an example of the total failure attending the latter, I would refer Mr. Wilkinson to the half-yearly reports of the directors and the report of the committee of investigation (which have been recently published) of the Waterford and Kilkenny Railway Company.

The wood-work of America requires great care for its preservation. In a Report of the Canal Commissioners, made to the House of Assembly, New York, in 1835, it was stated :

"That the canal was commenced in 1817, and completed in 1825. Every part of it has been in use ten years, and some parts of it fifteen years.

"In this period many of the structures of wood have been twice renewed, and all of them once.

I might adduce further instances of the disadvantages attending its use for lines of railway, but I think sufficient has been said upon that subject.

Mr. Wilkinson considers it inconsistent my condemning the use of wood as a principle in the construction of railways, and yet adopting it for the bridges.

I do not think it so. If a bridge be not built of wood, it must be made of stone or iron, and the expense is enormous. But the railway, if not made of wood, is made of earth, and the difference of expense not so very great.

If I wanted any additional evidence to confirm me in the view I have taken as to the use of wood, the quotation made by Mr. Wilkinson from the report of the chief engineer of the Baltimore and Ohio Railroad for the year 1847, would afford it to me.

From this extract it appears eleven bridges and one viaduct of trestle-bridging, making an aggregate length of bridge of 5,748 feet, or 1.09 mile, not having been properly and substantially made with seasoned wood, and covered in, had gone to decay, and were unequal to support the heavy weight passing over them.

The decay, it says, soon commenced. An entire reconstruction 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.

The new structures have succeeded admirably, and stood the test of two years.

A very important part of the improvement applied to them consisted in covering them from the weather, and with this protection it is believed, so says the report, they will be as durable as if built of iron or stone.

Without going quite so far as this, I think they can be rendered very durable and lasting by being covered in.

Bridges can be covered in and preserved, but hundreds of miles of railway could not be so easily done, and without it, it is clear,



from the extracts quoted, the trestle-bridge principle is bad and to be avoided.

Mr. Wilkinson says it is to be remembered that no water-crossings of great magnitude are likely to occur on the central line through New Brunswick. This is true; but there do occur, on the line explored by us, some long and very high viaducts, which, in my opinion, are as objectionable as the bridges on the eastern route.

They all, I believe, without exception, cross at places where the rivers are so shallow as to have only a few feet of water in depth, and their height in consequence will not require to be very great.

I do not comprehend exactly the import of the concluding paragraph of the remarks relative to "long bridges immediately in the tideway of the Gulf of Saint Lawrence."

If it means that these long bridges will be exposed to be destroyed by an enemy from the side of the gulf shore, his alarm is groundless, as the bridges alluded to all occur at a very long distance from the sea-shore, sufficient to save such a catastrophe. Or if it means that on the latter account the line does not pass at the greatest possible distance from the United States, I am willing to allow him the benefit of his finely-drawn distinction.

Mr. Wilkinson, towards the conclusion of his remark, says:—"There is no hope that a line terminating at Halifax can systematically compete either with the navigation of the Saint Lawrence, or with shorter railroads terminating in the Bay of Fundy."

The latter I need say nothing about, the prospect of their accomplishment is too remote, but in opposition to the opinion expressed by him, I have the greatest hope and belief that a very large portion of the traffic from the United Kingdom to Quebec will pass by that railway, and that it will command nearly all the passenger traffic, not only to Canada, but also, in the course of time, a very large portion of that between Europe and the continent of North America.

The punctuality and shortness of the voyages made by the Cunard steamers from Liverpool to Halifax, as compared with all others running between England and the United States will, I conceive, ensure this result.

But however important to the Quebec and Halifax Railway may be the carriage of the heavy goods between those two places, it has, though this should fail it, so many other direct and indirect benefits to confer upon the three provinces, and the mother country also, if it be desirous to retain them as colonies, that no loss, I feel assured, can arise to either party from the construction of this railway, even if it should not be a remunerative line when considered in a merely commercial point of view.

The money spent upon it must enrich the provinces, induce

settlement, and promote trade and agriculture. And the benefits arising therefrom will be apparent in the provincial treasuries.

If the railway balance-sheet should produce an unfavourable result, that of each province will be all the better for its having been made.

What the Erie Canal has accomplished for the State of New York, this railway may possibly do for the British Provinces.

In the former case it has doubled the population, and doubled the value of real and personal property, and pays annually out of its surplus profits a large revenue to the State Government, and contributes funds also to pay the interest of money borrowed for the formation of branch canals, or other internal improvements.

Between the year 1820 and the year 1845 the population of this State increased by 1,231,683 souls, and added about 50,000,000 sterling to the value of real and personal property.

It will not be too much, I think, to estimate that within the same period one-third of that number, or about 400,000 settlers, might, by means of the works afforded by the construction of the railway, and the opening out of such a wide field for agriculture, be added to the population of the three provinces.

With plenty of work, and good markets opened to them by means of the railway, the provincial revenues would derive from these settlers, at a moderate estimate 10s. per head, or £200,000 annually, the total amount of interest required if the railway should cost the whole of £5,000,000 sterling.

In conclusion, I beg leave to offer a few more figures to show not so much what may be gained, as what is actually lost yearly by the British North American Colonies, for want of railway intercommunications with each other.

They are taken from the "American Almanack," published at Boston, a work of very great merit.

Value of Imports and Exports of the United States with the British North American Colonies.

For the year ending 30th June 1844:—

	Dollars.	Dollars.
Exports—Domestic Produce ... ..	5,361,186	
Foreign Produce ... ..	1,354,717	
	<hr/>	6,715,903
Imports ... ..		1,465,715
		<hr/>
Balance paid by British Colonies ... ..		5,250,188
		<hr/>

Equal to £1,093,734 sterling for the year 1844.



For the year ending 30th June 1845:—		Dollars.	Dollars.
Exports—Domestic Produce	... ..	4,844,966	
Foreign Produce	.. ..	1,209,260	
		<hr/>	6,054,226
Imports	... ..		2,020,065
			<hr/>
Balance paid by the British Colonies	... ..		4,034,161

Equal to £840,450 sterling for the year 1845.

For the year ending 30th June 1846 :			
Exports—Domestic Produce	... ..	6,042,666	
Foreign Produce	... ..	1,363,767	
		<hr/>	7,406,433
Imports	... ..		1,937,717
			<hr/>
Balance paid by the British Colonies	... ..		5,468,716

Equal to £1,139,315 sterling for the year 1846.

For the year ending 30th June 1847 :—			
Exports—Domestic Produce	... ..	5,819,667	
Foreign Produce	... ..	2,165,876	
		<hr/>	7,985,543
Imports, ...	... ..		2,343,927
			<hr/>
Balance paid by the British Colonies	... ..		5,641,616

Equal to £1,175,336 sterling for the year 1847.

			Sterling.
Balance of trade paid by the British North American Colonies to the United States, for the year 1844,		£	1,093,734
Ditto ditto, 1845	... ..		840,450
Ditto ditto, 1846	... ..		1,139,315
Ditto ditto, 1847	... ..		1,175,336
			<hr/>
Total for four years,	... ..		£4,248,835

The British Provinces must therefore have paid to the United States, in the course of four years, a sum exceeding £1,250,000 sterling.

Of the exports from the United States during that period, no less an amount than £1,597,000 sterling is for articles of their own domestic produce.

New Brunswick and Nova Scotia have paid the largest portion of this to supply their lumbermen and fishermen with provisions, but what proportion is due to Canada I am unable to ascertain.

Dollars.  
 54,226  
 2,020,065  


---

 4,034,161

The latter is an exporting country for provisions, and could well supply the two sister provinces. I cannot conceive either that in the list of exported articles of their domestic produce there is any one but which could, if it met with due encouragement, be produced in some portion or other of the British North American Possessions.

If I am correct in so supposing, then there is a clear loss to them of that amount, and to be saved by a greater attention being paid to agriculture, and the settlement of the hitherto uncultivated lands.

The railway is the one thing needful to afford the means of distributing the produce from one Province to another.

From the foregoing, I think it may be said that the British Colonies of North America pay, for their want of enterprise and neglect in developing their internal communications and resources, an annual fine of £1,000,000 sterling to the United States of America.

7,406,433  
 1,937,717  


---

 5,468,716

I have, &c.

(Signed)

WM. ROBINSON,  
 Capt. R. E., Brevet Major.

Portsmouth, March 30, 1849.

7,985,543  
 2,343,927  


---

 5,641,616

Sterling.  
 £  
 1,093,734  
 .. 840,450  
 .. 1,139,315  
 .. 1,175,336  


---

 £4,248,835  
 o the United  
 ; £1,250,000

at period, no  
 of their own  
 largest portion  
 th provisions,  
 ascertain.

