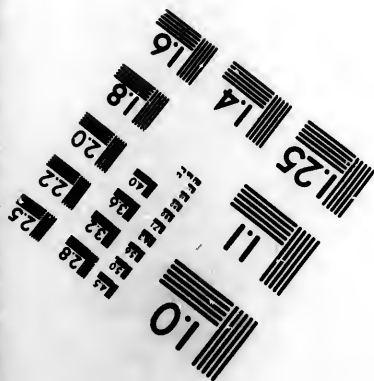
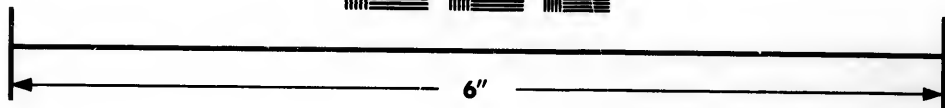
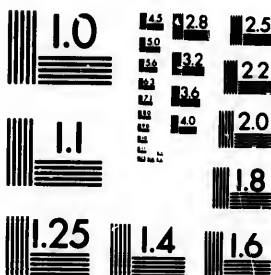


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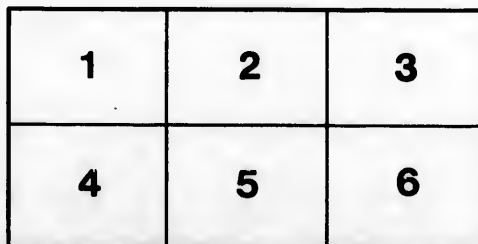
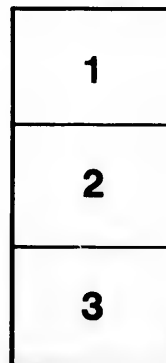
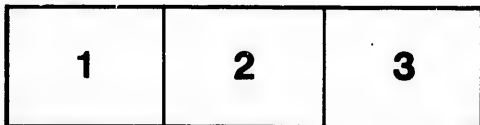
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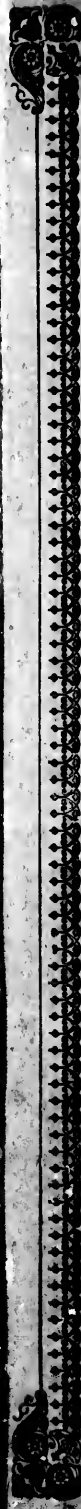
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*L. A. Russell*

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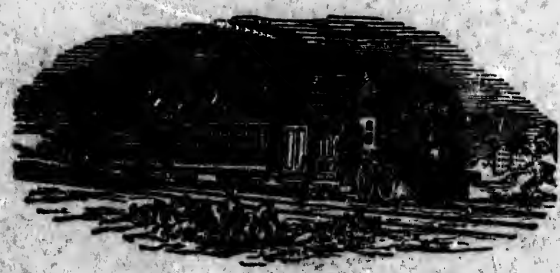
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Preliminary and Locating Surveys

OF THE

BYTOWN AND PRESCOTT

RAILWAY.

BY WALTER SHANLY,  
Chief Engineer.



TORONTO:

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1854.

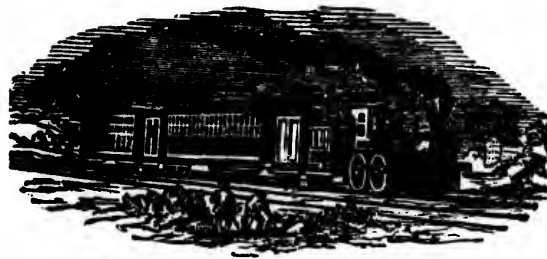


REPORTS  
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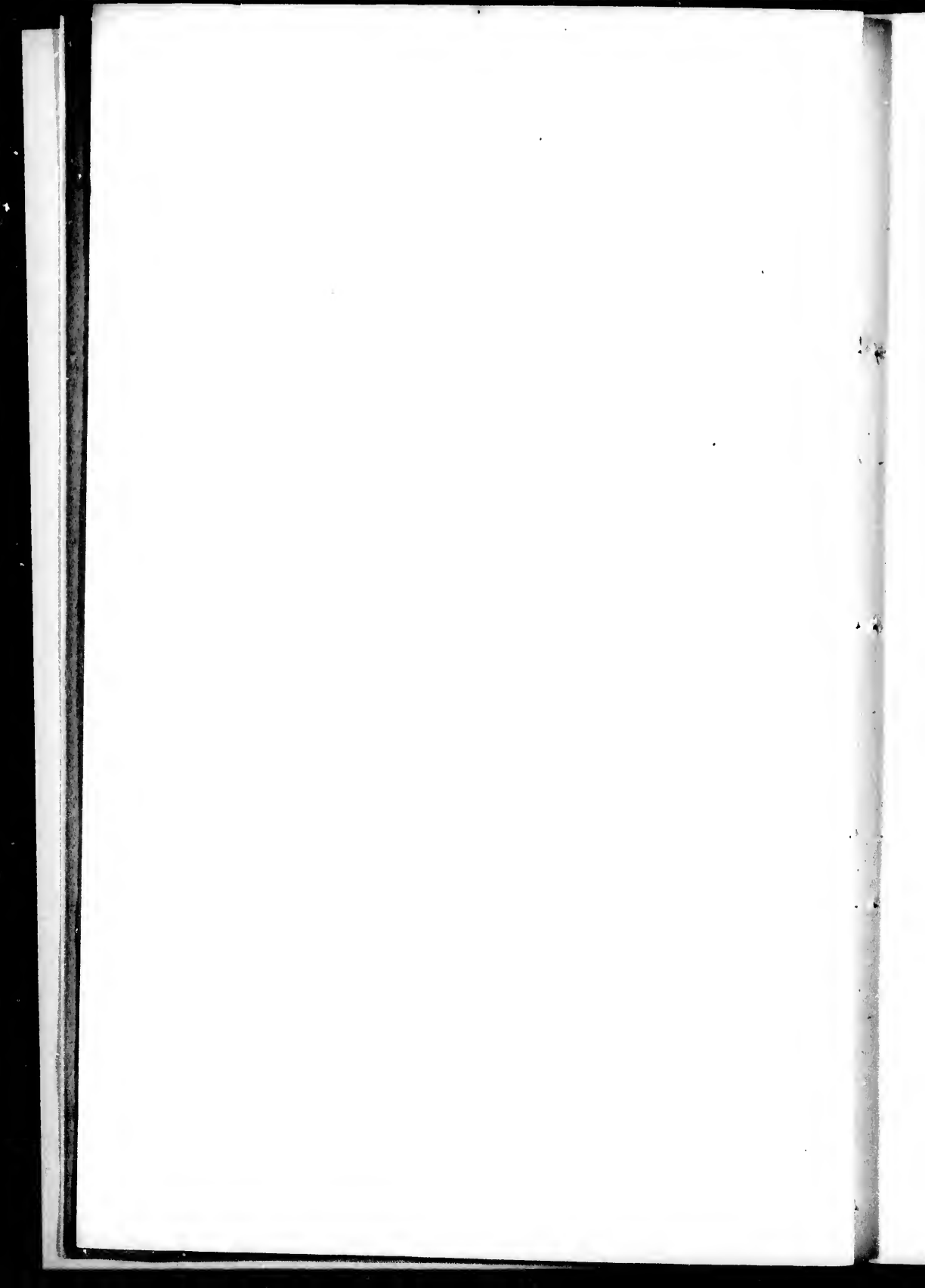
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# R E P O R T S .

BYTOWN AND PRESCOTT RAILWAY OFFICE, }  
PRESCOTT, 7th APRIL, 1851. }

*To the President and Directors of the Bytown and Prescott Railway  
Company.*

GENTLEMEN—

Acting upon instructions conveyed to me by your Secretary, in the form of a Resolution passed at the first meeting of your Board, on the 17th February last, I shortly afterwards proceeded to explore the Country from Bytown to Prescott, for the purpose as well of ascertaining the general facilities for the construction of a Railway between those places as for instituting a comparison between the several routes defined in the Resolution referred to ; and have now the honor to lay before you the following Report on the result of my examinations.

Your instructions to me bring under my notice four several Routes, which bind me, in all but one instance, to a certain intermediate locality. These Routes I have classified as follows :—

- 1st. *The Western Route*—via Kemptville and on West of the Rideau.
- 2nd. *The Middle or Direct Route.*
- 3rd. *The Eastern or " Heck's Corners' " Route.*
- 4th. *The Kemptville Route*—keeping East of the Rideau.

Before entering on a description of these several lines, I would beg leave to observe that I made no attempt to effect more than a cursory and general examination of the Country : my explorations

having been carried on at a period of the year when it is not practicable to obtain the data requisite for arriving at a reliable estimate of the cost of such a work as you are embarked in. The Surveys essential to such an estimate could neither be conducted within properly economical bounds at that inclement season of the year—nor, if made, would the results be satisfactory—the deep covering of snow rendering it impossible to obtain a sufficiently correct knowledge of the nature of the ground to be worked upon.

Having traversed the country from the Ottawa to the St. Lawrence, on foot, as nearly upon the ultimate location of each of the proposed Routes as mere ocular examination would admit of, I feel very confident that the conclusions I have arrived at will be borne out by the result of future and more accurate examinations; and the knowledge obtained of the country enables me so nearly to point out the proper “whereabouts” of the projected Railway as to preclude the necessity of actually surveying all the Lines under consideration—thereby effecting not only a considerable saving of time, but also admitting of the “locating” expenses being kept within the narrowest limits compatible with obtaining the most advantageous Line.

I shall now proceed to take up, in the order above given, each of the proposed Routes—briefly describing the general features of the country through which they pass, and their location with regard to each Township intersected.

#### **The Western Route.**

To those acquainted with Bytown, and its position with regard to the Rideau Canal, it will be obvious that the proposed line on the west side of the Rideau River should be located with a view to having its Northern terminus on the west side of the Canal; as well to avoid the inconvenience inseparable from crossing navigable water as to shun the abrupt descent which would then become necessary in order to reach the lower lands on the East. Two points present themselves for this terminus—the one at or near the Canal Basin—the other near the upper end of the Town, fronting directly on the Ottawa River, at the foot of the precipitous cliffs on the rear of Wellington Street. Departing from both of these points I find fea-

ible routes, which fall in with one another nearly opposite to, and about half a mile west of Hartwell's Locks. Thence my course was nearly parallel with the Rideau River as far as Lot No. 17 in the 3rd Concession Nepean,—from which point I took an undeviating straight course to Prescott.

Leaving Nepean about the middle of the 3rd Concession I passed diagonally through North Gower,  $1\frac{1}{2}$  mile to the East of the little village of "Stephensville," crossed the extreme South Eastern angle of Marboro', intersected the Rideau River and Canal, about half a mile below "Beckett's landing," and crossed the South Branch of the Rideau at Kemptville,  $2\frac{1}{2}$  miles further West—thence through the Township of Oxford, cutting the line between it and Edwardsburgh at or near Lot 21 of the former—my route through Edwardsburgh crosses the 'Nation' River about  $\frac{3}{4}$  of a mile West of Spencer's Mills—at a point very favorable for Bridging the Stream—and reaches the St. Lawrence in the Town of Prescott.

The country throughout may be termed very favorable for the cheap and speedy construction of the Railway. The main difficulties are to be encountered in the Townships of Nepean and Edwardsburgh, where the approaches to the Termini will involve considerable expense. About three fourths of the route is through wooded land, for the most part Cedar and Tamarac Swamps—which, however, have generally firm substrata of sand or gravel at an inconsiderable depth below the upper vegetable coating—and are susceptible of drainage.

The Bridging on this Route will form a considerable item in the expense of construction. The undernamed Streams are to be crossed :—

The Jock, .....	in .....	Nepean.
Stephen's Creek, .....	" .....	North Gower.
The Rideau.		
The South Branch of the Rideau, "	.....	Oxford.
The Nation River, .....	" .....	Edwardsburgh.
The South Branch of the Nation, "	.....	"

all of unimportant magnitude with the exception of the Rideau and the Nation—and the bridging of the latter being common to all the

routes under consideration need not be more particularly referred to here.

The Rideau at its intersection with my Line is about 400 feet wide, with a depth of water in the centre of upwards of 20 feet.

The crossing of this river is invested with more than ordinary difficulty from the fact of its being not merely "navigable water" but from its having been rendered so by artificial means—and at an immense outlay—by the Imperial Government—whose property it is. This circumstance would render imperatively necessary the construction and maintenance of a Draw Bridge. A wide margin of drowned lands on either side of the River would further add to the expense of carrying the Line across it.

A more favorable site for a bridge is to be found a short distance above Beckett's Landing; but would occasion considerable curvature, and consequently increase the length of my Line.

No more direct route from Bytown to Prescott can be obtained West of the Rideau than the one above laid down.

### **The Middle or Direct Route.**

An absolutely direct route from Bytown to Prescott is not practicable, without crossing the Rideau Canal three times. The one I have selected, however, as most direct, in view of not interfering with the Canal, differs, for all practical purposes, but little from a Straight Line. Leaving Lower Bytown at some convenient point, hereafter to be determined on, it crosses the Rideau near the foot of the lofty sand ridge, and curving swiftly to the South, runs through the Gore of Gloucester in a nearly Southerly direction, reaching the summit of the table lands, by a gradual ascent, somewhere about Lot No. 17, in the rear of Mr. Billing's residence, and enters the Rideau Front of Gloucester near the angle of the 2nd and 3rd Concessions,—passing about half a mile to the rear of Cunningham's Tavern, it strikes the Osgoode Line at the Eastern angle of its 2nd Concession, and running diagonally through this and the 1st Concession, enters South Gower at the North Easterly angle of the Township, and crossing it diagonally cuts the Edwardsburgh Line

a little East of the Oxford and South Gower corner—thence through Edwardsburgh, crossing the Nation River  $\frac{3}{4}$  mile to the East of Spencer's Mills—and reaching the St. Lawrence at the same point as the Western Route.

The most expensive portion of this Route will be found in the Township of Gloucester. The Line through Osgoode and South Gower is very favorable. In Edwardsburgh there will be no more than average work to be done except on the approach to the St. Lawrence.

The proportion of wood lands on this route is about the same as on the Western—three fourths of the entire distance,—and the character of the country generally similar—presenting upon the whole a desirable Railway Line.

The Bridging will be confined to the following Streams:—

The Rideau—

The Nation—

The South Branch of the Nation.

The point of crossing the Rideau, close to Bytown, where the Stream is not subservient to the purposes of navigation, offers, in every respect, a most eligible site for bridging at a moderate cost. The other two Streams are of minor importance.

This Line leaves Kemptville about  $3\frac{3}{4}$  miles to the West, and Heck's Corners half a mile to the East.

#### **The Eastern or Heck's Corners Route**

Takes its departure from Bytown, and crosses the Rideau, at the same points as the route last described—passing across the Gore and an angle of the Ottawa Front of Gloucester, it enters the Rideau Front on the rear of the 6th Concession, continues in this Concession throughout the Township, and enters Osgoode on the rear of the 5th Concession, and following the lowlands in front of Rossiter's Tavern and J. C. Bowers' Store, running nearly parallel with, and within a short distance of the Stage road to Prescott, cuts the Mountain line in front of the 2nd Concession of Osgoode, crosses an

angle of Mountain, enters South Gower on the 5th Concession, and passing close on the West of Heck's Corners, becomes identified with the middle route at the Edwardsburgh Line.

The features of this Line throughout the Township of Gloucester do not materially differ from those of the corresponding portion of the direct route. Through Osgoode, Mountain, and South Gower, the land is of a more varying character, presenting an undulating surface and some stony ridges. The proportion of 'improved' land is greater on this than on either of the foregoing routes.

The Bridging will be the same on this as on the middle Route—with one addition. The Line crosses the 'Castor' in Osgoode,—but at a point where the Stream is of inconsiderable width.

Kemptville lies about 5 miles West of this Route.

#### **The Kemptville Route, (East of the Rideau.)**

The most feasible plan of constructing the proposed Railway so as to touch Kemptville without interfering with the Rideau Canal, would be to adopt the middle Route as far as Lot No. 32, in the 2nd Concession of Osgoode—thence, taking a direct line to Kemptville, to fall in with the Western Route on the South of, without crossing, the South Branch of the Rideau. From which point the Western Route should be followed to Prescott. This link, connecting the middle with the Western Route, would be about seven miles in length, passing through low level land, where drainage will constitute the largest proportion of the cost of grading the Roadway.

The amount of Bridging will be the same on this as on the middle Route.

#### **Comparison of the Routes.**

In point of length, the several Routes will compare very nearly as follow, the distance being taken from the maps of the Townships:—

The Western Route	.....	about	.....	50 miles.
The Middle	“	.....	“	50 “
The Eastern	“	.....	“	52½ “
The Kemptville	“	.....	“	52 “

(The starting point of the Western Route is nearly a mile South of that of the others.)

The Eastern, it will be observed, is the longest of the Routes, whilst its facilities of construction are inferior rather than otherwise to those possessed by the shorter ones. It is evident, therefore, that it would be inexpedient to adopt it as the Line of your Railway.

I shall at once proceed, then, to weigh the relative advantages and disadvantages of the Western and Middle Routes.

As respects the grading of these Lines, the natural advantages are very nicely balanced—though upon the whole I incline to believe that an instrumental examination would be in favor of the Western.

It is upon the Bridging and the advantages presented for forming the Northern terminus, will hinge the decision upon the relative merits of these Routes.

The number of feet of Bridging on the Western is about double that on the Middle Line, and the average cost per foot will be greater on the former on account of the extraordinary expense attendant on crossing the Canal. The estimate of this portion of the work on the Western Line will be in excess of that on the Middle Line in the proportion of nearly 2½ to 1.

The Draw Bridge to accommodate the navigation of the Rideau, creating a break in your road, would be a source of much inconvenience—which it would be desirable to avoid at even an increase of cost.

The Bridging, therefore, both in point of cost and convenience, is in favor of the Middle Route.

The selection of the Southern terminus is a matter requiring more careful examination than I have yet been able to give it—nor is it necessary that it should now be decided on, because whichever



of the rival Routes may be definitely selected, the point of departure from Prescott will remain the same.

The Northern terminus must be peculiarly circumstanced with regard to the Ottawa. The lofty and precipitous nature of the banks, together with the extraordinary fluctuations of the River, (reaching 20 feet, I believe,) render it impracticable to run the Track down so as to suit the loading and discharging of the water-craft. All freights arriving by the Lower Ottawa, must, therefore, be raised to the level of the Town by some artificial contrivance. Supposing the terminus at the Canal Basin to be selected—this lifting could be effected by means of the Locks,—but the plan is objectionable. Firstly,—because the lift at that point would be very much greater (upwards of 80 feet,) than at either of the other points, and that method of raising burdens a tedious one—even were the Locks exclusively in your possession. Secondly,—because by locating the terminus at the Basin, you would render yourselves dependent for your connection with the Ottawa upon a work not under your own control, and with interests to a certain extent adverse to yours. This would be certain to prove a fruitful source of annoyance and inconvenience—sufficient in itself to warrant a decision against this location as the terminus of your Railway.

The other point proposed, at the upper end of the Town, possesses the advantage of admitting of the Track being carried down nearly to high water level,—which would modify, without obviating, the evil of having to lift freights from the River, but the construction of a Depot at this place would be attended with very great expense, from the fact that every foot of ground would have to be “made,” by building piers in *very deep water*, and cutting away the lofty cliffs to the rear; and even in this way it would be hardly possible to obtain the space that, it is but fair to expect, the business of the Bytown and Prescott Railway will ere long require. In those two particulars, *cost* and *space*, the location in question compares very disadvantageously with that which I would select as the terminus of the direct Route, that is on Lot Letter “O” in Lower Bytown, where the ground presents a uniform surface, capable of being converted into a convenient Depot-ground at comparatively small expense.

This, combined with the advantages already detailed, renders it incumbent on me to pronounce it for the interest of your Company to adopt the direct in preference to the Western Route.

It now only remains to be considered whether there are such advantages to be secured by touching at Kemptville—thereby adding about two miles to the length of your Road, as would render it expedient to adopt that Route. I am not yet in possession of data sufficient to warrant me in giving a decided opinion upon this point; but the course I would recommend is this,—That a thorough survey be made of the direct Route—that the Western Route be also surveyed from Prescott to Kemptville, and thence the link connecting the two Routes—should the estimates resulting from these surveys show that the extra cost to be incurred would simply be in the construction of the increased distance at the average cost per mile of the other portions of the Road, I think it would be well worthy of consideration, whether it would not be to the advantage of your project to adopt the Kemptville Route.

A Station on the Rideau Canal, at a point so central to the Line as Kemptville, would doubtless present some advantages,—giving you a water communication with several rich and productive Townships to the West, and rendering the Canal in a measure tributary, instead of rival, to your interests.

#### Cost.

The examinations thus far made being, as already stated, of a general character do not furnish me the means of forming more than an approximate estimate of the cost of the undertaking. From present appearances I consider that the grading, ballasting and superstructure of the Road can be completed for a sum not exceeding £3700 per mile—assuming this estimate as correct we have for the total cost of

The Direct Route, .....	£185,000
“ Kemptville Route, .....	192,000

The Western Route would exceed the direct one in cost by the

difference in expense of Bridging and forming the Depot-ground at Bytown,—which difference I would not venture to put down at less than £15,000,—making the total cost of that Route, £200,000.

The above estimate is predicated upon the contracts for iron being effected whilst that article is at its present low figure in the English Market.

### **Summary of the Characteristics of the Road.**

Apart from the question of cost the characteristics of the Road in point of directness and gradients will be very favorable. Whichever Route may be finally adopted, the amount of straight line will probably be four-fifths of the distance; and the curves, except perhaps at the immediate approaches to the termini (where Trains will always move slowly) will be very gentle. The only important ascents to be overcome are upon leaving the Rideau at Bytown, and the St. Lawrence at Prescott; but even at these points I am in hopes that no grades of greater elevation than 30 feet in the mile will be found necessary. With such favorable features you can look forward to having a Road of first class capacity, both for freight and passenger traffic.

As far as it was possible to judge of the nature of the soil, I incline to believe that a considerable amount of material well adapted for "ballasting" will be found in the Road bed, and at two points only could I detect any indications of rock formation near enough to the surface to interfere with the grade of the Road. From one end to the other the Line abounds in Timber well suited to the construction of a firm and durable superstructure.

Owing to so much of the Line lying through swampy and closely wooded ground the "locating" surveys must necessarily be somewhat tedious, but I have made arrangements for prosecuting them with vigor whenever the low lands shall be sufficiently dry to allow of their being commenced, and hope by the 1st day of July to have everything in readiness to admit of the work of clearing and grading being begun.

In conclusion I would beg leave to observe that the opinions herein laid down as to the choice of Routes are based upon their merits in an *Engineering point of view only*. A stranger, as I am, to your section of the Province, and having been limited as to time wherein to effect the examinations essential to reporting with correctness on the abstract question of feasibility of construction, I had no opportunities of gathering statistical information sufficient to enable me to judge in what manner the existing business of the country should affect the location of the Road. On this point, with the questions of distance and cost so evenly poised between the rival Routes, your own knowledge of the trade and resources of the country will enable you to decide whether or not there may be advantages of a commercial nature, commensurate with the disadvantages I have pointed out, that would render the Western Route preferable on the whole to the cheaper and *more convenient* one I have selected. In weighing this matter it should be borne in mind that in direct ratio with the increase of business to your Road would be the increase of inconvenience inseparable from crossing the Canal, and from hampered accommodations at the terminus.

Of the successful result of the enterprise I cannot for a moment harbor a doubt. It will serve to develop resources hitherto latent or unavailable, to awaken the slumbering energies of the people, and to create new and heretofore unthought of sources of commerce. Thousands of acres of land, contiguous to the Line, now untenanted and valueless because inaccessible, will, in addition to a newly acquired local importance, receive at once a direct value from the drainage consequent on the construction of the road, and will quickly be sought after by the hardy pioneer of the forest; to reward whose first labors the very timber that now "cumbers the ground," becomes a marketable article through the medium of the Railway, will yield an immediate return. Bytown, destined from its position to be the mart from whence the vast and rapidly improving country of the upper Ottawa will draw all its supplies of the imported necessaries and luxuries of life, will then be brought within seventeen hours journey, at all seasons of the year, of the City of Boston—whilst New York, the "Empire City" of this continent, can be reached in a little over 20 hours.

When it is considered that these great and important changes are attainable at less than half the average cost per mile attending the construction of Railroads in the United States, and that by energy and *will* they can all be brought about in the short space of two years, it would seem idle to apprehend that anything can interfere to prevent the completion within that time, of the Bytown and Prescott Railway.

I have the honor to subscribe myself,

Gentlemen,

Your obedient servant,

W. SHANLY.

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## Report No. 2.

ENGINEER'S OFFICE, BYTOWN AND PRESCOTT RAILWAY, }  
BYTOWN, 26th JULY, 1851. }

*To the President and Directors of the Bytown and Prescott  
Railway Company.*

GENTLEMEN,—

I am now enabled to lay before you my Report on the final location of the Line selected for the Railway which is to connect the Ottawa, at Bytown, with the St. Lawrence, at Prescott, embracing a detailed estimate of the cost of completing the undertaking;—Maps and Profiles are also submitted, exhibiting the geographical position and facial outline of the Route.

The time occupied in effecting the Surveys and preparing Estimates has somewhat exceeded the period I had hoped would be sufficient to accomplish them. This was owing in part to the very large proportion of heavily timbered lands upon the Route and in part to the additional Surveys required in Bytown and its vicinity, as called for under a Resolution passed at your meeting of 21st May.

The instructions conveyed to me subsequent to your Session of 17th April, adopting the "Kemptville Route, East of the Rideau," as the Line of your Road were followed out, and my Surveys and examinations confined wholly to that Route.

The opinion I formed last winter of the facilities presented for accomplishing your project at a moderate cost have been satisfac-

torily borne out by the more searching examinations since made, and, with some few exceptions, which will only slightly affect the General Estimate, I have no reason for pronouncing the advantages presented, for the cheap and speedy construction of a Railway, as less favorable than set forth in my Report of April 17th.

Immediately upon the low lands becoming sufficiently dry to admit of the examinations being carried on to advantage I commenced operations by sending out an exploring party from the Prescott end of the Route; this was towards the close of April. In the first week of May, a second party had commenced, at the Bytown end, and by the expiration of that month, a careful Trial-Line had been run—and Levels taken—from one terminal point to the other. The preliminary Survey completed, I lost no time in setting the two parties to “locate” the Line definitely, and that branch of the work was pushed forward with all the despatch compatible with taking the necessary pains to seek out a Route which, without too great a sacrifice of directness, would combine as many as possible of the advantages which admit of a road being graded speedily and at the same time with economy.

In charge of the party working from the St. Lawrence, I placed Mr. George Wadsworth; the Survey of the Ottawa half of the Route I entrusted to Mr. Alfred W. Sims; both gentlemen having had considerable practice in locating Railroads, under experienced Engineers, in the United States.

On the 27th May, I received, from your Secretary, a copy of the Resolution, passed at your meeting of 21st of that month, deciding upon having a Survey made with a view to ascertaining the facilities for carrying the Line to the Canal Basin instead of to Lot letter “O,” as suggested in my former Report, and adopted at your meeting of April 17th.

This Survey has been conducted by Mr. James D. Slater, and every pains have been taken to select the most feasible Route.

Departing from the Canal Basin at its South Easterly corner, it crosses Concession Line “D” at its angle with “Theodore Street,” then curving to the South passes close in the rear of Mr. McCracken’s

Distillery, and crossing the Rideau on Mr. Bearman's property falls in with the other Line on Mr. Smith's farm; Lot 12 in the Gore.

I observe from some of the Public Prints that the question of the location of the Northern Terminus is one of keen interest to the people of Bytown, giving rise, as is usual in such cases, to much diversity of opinion.

In the present instance, the rivalry is confined to two points; the one on the East side of, and bordering on the Canal Basin—the other on Lot letter "O," North of the Nunnery and fronting on the Ottawa.

The two most prominent features to be considered in "trying conclusions" upon such a subject as the one before us, are, firstly, the feasibility of arriving at each of the proposed points, secondly—the abstract merits of each as a fit and proper place for a Railway Terminus.

In such a case as the first mentioned the difference in cost of construction might be such as to warrant the sacrifice of a very eligible Terminal position to one of inferior merit,—or the reverse might be the case, and the most desirable location adopted, regardless of the cost of reaching it. Instances of both kinds are rife in Railway History.

In arbitrating between the rival locations at Bytown—and supposing their leading characteristics to be so far antagonistic, the one to the other, that the more eligible Terminus on the one Route should present greater difficulties of access than the less desirable one on the other—in such a case it strikes me that the *circumstances* of your Company would almost *compel* a decision in favor of that location which would involve the least outlay of Capital. That no such antagonism, as that above supposed, exists in the case under discussion, however, can, I think, be satisfactorily shown; but in order to place before you as distinctly as possible all the relative merits of the proposed Terminal points, and their adjuncts, it will be necessary for me to enter very fully into detail; before, therefore, proceeding with my Report as to the Line generally, I shall



first lay before you that portion of it bearing more particularly on the question at issue.

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The point where the lines from each of the proposed Termini fall in with one another, and the main Line, is on Mr. Smith's farm, Lot 15 in the Gore of Gloucester :—

The distance by the Surveyed Route from Lot "O"	
to that common point is .....	4.24 miles.
And from the Canal Basin .....	2.16 "
Difference in favor of the Basin Route .....	2.08 "

In point of cost the longer Route has the advantage. The 4.24 miles to Lot "O" can be constructed at less expense than the 2.16 miles to the Canal Basin by a very considerable sum, as I shall proceed to explain.

This difference of cost, making the longer cheaper of construction than the shorter Route will be understood at a glance by referring to the Profiles herewith submitted, and from which it may be seen that on the Route to Letter "O" there are no cuttings of greater depth than 8 feet—the average being scarcely 4 feet—and few embankments to exceed 8 feet in height, their average being but 3 feet. The material wherewith to form these embankments is in nearly every instance to be found close at hand—either supplied by the cuttings or else by the necessary side ditches—*all at first cost.*

On the Other hand, as regards the Basin Route, the valley of the Rideau would have to be crossed by means of an embankment of very considerable magnitude—upwards of one mile in length, with an average height of nearly 15 feet, whilst much of it would exceed 20 feet, and containing no less a quantity of material than *one hundred and eighty thousand cubic yards.* A deep cut would also be unavoidable in order to get through the ridge lying between the Basin and Distillery ; and which alone would involve the removal of *more material than the whole 4 miles leading to the Lower Terminus.*

The amount of material in this cut would be upwards of eighty thousand cubic yards; a portion of which, by being hauled a great distance, could be applied to forming the embankment on the West side of the Rideau—the remainder should either be disposed of by being cast up on each side of the cut (as in the case of the deep cut of the Canal), to the detriment of adjoining properties, or hauled, at an increase of cost, so as to be “wasted” on the low grounds bordering on the River.

The construction of the embankment across the valley would be attended with certain difficulties, causing it to cost more than the ordinary value of such work. These difficulties consist in the great distance the material would have to be hauled on the west side of the river and the total absence, within reasonable limits, of any material wherewith to make it, on the East Side.

The hauling of material from the cut, for the Western embankment, would add about 70 per cent to the first cost of the Excavation.

The absence of material on the east side of the valley leaves no alternative, in order to carry the Track across it, but the construction of a temporary timber structure of “Trestle work”—deferring the completion of the permanent way until the requisite material could be brought from a distance by means of the Engine and Rail-cars—which would not be till the whole Line was in operation. To any one at all conversant with the working of Railways, the inconvenience and expense attending such a work of construction carried on simultaneously with the ordinary business of the road—on a single track way—is too obvious to require comment.

The cost of bridging the Rideau River would be nearly equal in both cases—on the Letter “O” Route the width would be 400 feet with an average depth of water of 8 feet; against 300 feet width and 15 depth of water on the Basin Route—the cost of the greater length of superstructure in the former case being fully counter-balanced by the greater amount of masonry required in the latter.

The subjoined Table, embodying the Estimates of both Routes, exhibits in what items of construction the difference between them

consists, and what would be the actual excess of cost of the one Line over the other. The Estimates have been carefully prepared from actual measurements—similar characteristics being supposed for each Route,—namely, no gradient to exceed 30 feet to the mile; and half a mile of the roadway approaching the Terminus to be graded for Double-Track.

DENOMINATION OF WORK.	BASIN ROUTE.			LETTER "O" ROUTE.		
	Quantities.	Price.	Amount.	Quantities.	Price.	Amount.
			£ s. d.			£ s. d.
Excavation, .....cub. yds.	85,643	9d	3211 12 4	60,372	0d.	2226 9 0
Embankment from Cutting, "	40,780	6d	1244 10 0			
Embankment "borrowed".... "	20,792	1s.	6330 12 0	11,763	1s.	588 3 0
Bridging and Culverts .....			4580 0 0			4500 0 0
Trestle Work,.....lineal feet	3,500	8s. 9d.	1531 5 0	700	7s.	245 0 0
Fencing, .....	700	2s. 6d.	87 10 0	1,400	2s. 0d.	175 0 0
Road Crossings, .....	3		330 0 0	0		3 0 0
Farm Crossings, .....	4		200 0 0	10		50 0 0
Total cost of Grading,....			17524 9 4			8154 12 0
Superstructure,.....2 1-6th miles,	1,350l.		2925 0 0	4½	1,350l.	5737 10 0
Ballasting,.....2 1-6th miles,	250l.		541 13 4	4½	250l.	1092 10 0
TOTAL COST,.....			20091 2 8			14054 12 0
Difference in favor of Letter "O" Route,.....						£6036 10 8

By examining the above Table, it will be seen that there is a difference in the cost of *Grading* the two Lines of upwards of £9000, in favor of the longer one. This difference is reduced on the completed way to £6000,—owing to the cost of *Superstructure* being, of course, in favor of the shorter Route. I would here beg leave to impress upon you that in no branch of the work should economy be so carefully studied as in the *Grading*, because in that early stage of your undertaking you will have your chief financial difficulties to encounter.

A comparison of the CHARACTERISTICS of the two Routes, in their completed form, is still favorable to the longer one. As respects Gradients, it presents but one plane of 30 feet to the mile, the length of which is 4900 feet—the remainder of the Road being level or under 20 feet to the mile. Whereas, the Basin Route shows two inclines, each of 30 feet to the mile, descending both ways to the Rideau, and the joint length of which is 8300 feet.

In their lineal features both Lines present the most objectionable curves to be found on the whole Route of the Railway—each having two of about equal length in all cases, but on the Route to Lot Letter “O,” both occur either on level, or on very gentle Gradients; whilst on the other one of them is in conjunction with an ascent, *going Southward*,—of 30 feet in the mile.

Thus far I have only dealt with the relative merits of the *Routes leading* to the proposed Termini. The locations themselves are still to be considered.

At any point on Lot Letter “O,” a Station ground can be constructed at comparatively small expense—the excavation required would be inconsiderable, because the Grade-Line of the road agrees very closely with the natural surface of the land. The first cost of the ground, therefore, would be the principal outlay towards securing abundance of SPACE.

At the Basin there only exists of level land the narrow margin lying between it and Nicholas Street, affording an area entirely inadequate, if it is worth while to construct the Road at all, to accommodate its probable business. Further room should, therefore, be sought for in rear of the Court House, where the surface of the land is from 6 to 15 feet above the ‘Grade-Line; in addition to the first cost of the ground, therefore, every acre of room there required would have to be ‘made,’—demanding the excavation, and removal, of from 8000 to 25,000 cubic yards of material, in other words adding to the original cost of the ground from £300 to £1000 per acre.

There is one more objection which I have to this location—which is, that by adopting it as the Northern Terminus of your Railway you would retard the accomplishment of the undertaking *twelve months*—the magnitude of the works connected with and the route leading to, it, requiring, at least, that much more time for completion than would be sufficient to finish all the other works upon the Railway—to sum up, in conclusion, all the disadvantages attaching to the location in question, you would, by selecting it, have to incur an increased outlay of SIX THOUSAND POUNDS, to secure an inferior road—leading to an inferior Terminus—and, would sacrifice twelve months

of valuable time—which might, otherwise, be employed in earning you a dividend on your investments.

I trust that I have succeeded in showing that in an *Engineering point of view* everything, save distance, is in favor of the lower location, the point I selected when making a general examination of the ground last winter;—because, even at that unfavorable season of the year, any one practiced in such matters could see, ‘with half an eye,’ that no spot within the limits of the Town (East of the Canal) is so cheaply accessible or, when reached, so well adapted for the Terminus of your Railway as Lot Letter ‘O,’ and I was then of opinion—as I still am—that economy, both as regards *time* and *money*, is an element which, to ensure the success of the undertaking, must enter largely into the construction of the Bytown and Prescott Railway,—an opinion in which I am gratified to find I have the support of many who differ from me entirely on the question of ‘location’—for in the Proceedings of a partial meeting of Stockholders held some short time since in this Town, for the purpose of bringing before the Public the alleged advantages of the Basin Terminus, I find a Resolution, unanimously concurred in, to the effect, that in constructing this Road “Economy is of all things desirable”—a cardinal maxim—which all true friends of the enterprise should unite with them in inculcating.

I will now, with your permission, touch upon the subject in a commercial point of view:—

The facilities afforded by the Canal Locks as a medium of communication with the River might sound like a valid argument in favor of locating the Terminus at the Basin were the Trade to accrue to your Road from the region of the lower Ottawa likely to prove of such early importance as to warrant a sacrifice of the many advantages which the rival location holds out for the accommodation of all other business; but, though not prepared to go the length of an article which lately appeared in a Bytown Journal (advocating the claims of the Basin location) to the effect that all the merchandise to or from that quarter (the Lower Ottawa) “might be transported the year round by a Horse and Dray,” I still think it very certain that the Traffic to be derived from that source will for

some considerable time to come rank least in importance of any to which your Road must look for its support: But, supposing it to be otherwise, the space afforded by the Basin would be utterly inadequate to the requirements of a thriving Railway business; and as that business continued to increase, calling from year to year for enlarged land accommodation, in the same ratio would the water accommodation continue to *increase in littleness* until, as an adjunct of the Railway, the Canal Basin would sink into utter insignificance.

Doubtless at no very distant date the country North of the Ottawa, below Bytown, stimulated by Railway influence, will become a productive region, and a tributary of such importance to your Road as will render it worth while to afford its traders and their wares every possible facility for reaching the Rail, at Bytown. When that time does arrive appliances can be constructed directly on the River front, and in connection with your Track, whereby burdens can be elevated and lowered more expeditiously, and at less cost, than by Lockage, securing to your Road, at the same time, an untrammelled communication with the Ottawa.

I can point to works on this Continent where Freights are raised and lowered more than five times the height of the Ottawa banks at Lot Letter 'O' (which is 62 feet) by means of Machinery that cost less than half the sum which I have shown would be the excess of cost of the Basin line over the longer one I have recommended,—Machinery which can raise Eight Hundred Tons a day, and at rates, too, with which the Locks could not compete, even were the 'probable reduction of fifty per cent' from the present Tariff, as spoken of at the "partial meeting" above referred to, to become a fact.

Before dismissing this subject of the Terminus, I would beg leave to place it before you in one other point of view,—that of *Appearance*—which, however minor a consideration when placed in the scale against *Utility*, should not be wholly disregarded, where both attributes can be made to harmonize, in legislating in the premises for the future *City of the Ottawa*.

Immediately before reaching the Canal Basin the Track, for

upwards of half a mile, would lie in the bottom of a deep, unsightly cut, much resembling the "Deep Cut" of the Canal,—close by. Through this Trains would skulk into the Town, to reach a Terminus which would, inevitably, be soon built round on all sides—giving it a confined and hampered appearance, and limiting the prospect to an occasional view of the Basin, when it did not happen to be obscured from sight by the presence of a small number of diminutive craft.

On the other hand, the approach to Lot Letter "O" would be, for several miles, on the surface of a fine open country, where Trains would show to advantage—reaching their destination on a fair and level plane, fronting on, and in full view, of the noble Ottawa—*a view which can never be obstructed*, and the effect of which upon the stranger visiting Bytown would be to create a lively and enduring impression of the beauty of its situation.

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The position which I would recommend for this Terminus will be understood by referring to the Map of Bytown, which I have laid before you as an auxiliary to this Report.

I propose to run the Track through the centre of McTaggart Street, from the Rideau River to Dalhousie Street, without infringing on any private property.

Arrived at Dalhousie Street, I would there commence the Branch Tracks for Station purposes, and would here strongly recommended the acquisition, by the Company, of as much land North and South of McTaggart Street as it is within their means to secure. It should be bounded on the rear by Dalhousie street, on the front by the Ottawa—to the South it should reach to Cathcart Street, and should stretch as far as Baird Street on the North.

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### Description of the Line.

Having already described the linear features of the route from the Canal Basin to where it merges in the common line I shall commence

the *General Description of the Line* at the other proposed Terminal point, which from the reasons above given, cannot fail to be the one definitely selected as the starting point of your road.

Departing from the Ottawa at the waterlots where the new wharves are to be erected, I pursue the centre line of McTaggart Street to the East side of the Rideau, making a straight line of nearly 3000 feet. This brings us into the township of GLOUCESTER, through which the line is less favorable in point of directness than I had anticipated; the trial line was first run over the ground which I had selected in my previous cursory examinations, and was straight from the "L'Original Road" to the Southern limits of the township. The result of this survey went to show that the ascent of the "Hogs-Back" Ridge could be accomplished with less labor by keeping nearer to the Rideau. This location has been adopted and the greater facilities it presents for attaining the summit without having recourse to deep cuttings and steep embankments compensates for the increase of distance and curvature consequent on abandoning the straight line.

On leaving the Rideau the line curves rapidly to the South and runs nearly parallel to, and within a short distance of, the River as far as Mr. Billing's: passing close to the rear of his farmyard, and curving to the East, it enters the "Rideau Front" near the centre of the 3rd concession, and continues in a straight line—almost at right angles to the Lots, as far as No. 17, at which point it is half a mile east of Cunningham's Tavern. Here it deflects to the west, and intersecting the high road on lot 20, is straight to the southern line of the township, which it cuts at the angle post between the "Gore" and the 2nd concession.

Gloucester presents less favorable features for the construction of a Railway than any other township on the Route—except Edwardsburgh. There are four important ridges to be cut through—one of which will be "rock"—and the excavation from Bytown to the summit of the "Hogs-Back" will generally be hard clay interspersed with boulders—about two thirds of the distance is through woodlands—and most of the "improved" portions being in the vicinity



of Bytown will probably cause the land-damages to range higher on this section of the line than elsewhere.

The highest point on the whole route from the Ottawa to the St. Lawrence is met with in this Township—in the vicinity of Cunningham's—and is 244 feet above the former and 126 feet above the latter River.

The distance from the Rideau River at Bytown to where the line leaves Gloucester is 14 miles.

### **Osgoode.**

The Straight line which commences in rear of Cunningham's Tavern, continues into the Township of Osgoode for about a mile and a half. It then becomes desirable to bear to the west to avoid a lofty elevation on Lots 7, 8, and 9, in the 2nd Concession—continuing on this course for about  $1\frac{1}{2}$  mile, it resumes its previous direction and retains it as far as Lot 32, First Concession, where it becomes necessary to deflect strongly to the west, bearing up for Kemptville; on this latter course it reaches the western line of the Township.

The geography of the line as regards Osgoode is as follows:—It enters it on the N. W. angle of the 3rd Concession, and crossing Lots 1 to 10, inclusive, in the Second, enters the First Concession on No. 11—and leaves it on No. 33, thence to its point of departure from the Township (Lot 36) it is in what is termed the "Broken Front."

The whole of the Osgoode portion of the Route may be termed woodland, showing a large proportion of swamp, but it is all singularly favorable, both as to level and soil, for the construction of a Railway. The soil is for the most part sand; the timber Cedar and Tamarac.

The length of the road in this Township will be 9.65 miles, and the general level of the ground may be taken at 57 feet above the St. Lawrence.

### Gower.

The line through the Townships of Gower is perfectly straight (from the last deflection in Osgoode.) It enters North Gower on Lot 38 Second Concession—South Gower on Lot 8, eighth Concession and reaches the Oxford line on Lot 14, seventh Concession.

The Route through these Townships is all a woodland one—chiefly Tamarac Swamp, but with a firm sandy foundation, presenting a level surface, and only requiring to be drained and cleared to exhibit a highly favorable aspect for the formation of a Railway.

About 2½ miles of the line lie in North, and 3.1.5 in South Gower; the surface of the ground is very uniform, lying from 5 to 10 feet above the water of the long level of the Rideau Canal—which is 152 feet above the Ottawa, at the foot of the Locks, and close upon 34 feet above the St. Lawrence at Prescott.

### Oxford.

The straight line which commences on Lot 34 Osgoode, and continues through the last named Townships, enters Oxford to the North of the third Concession and runs uninterrupted to within less than a quarter of a mile of the village of Kemptville. At this point there is a deflection of 22 degrees - bending for Prescott—of the exact location of the line with regard to Kemptville I shall give a more particular description when I come to speak of Way-stations. From the point of deflection last noted the line is, with one exception, straight, throughout the Township. It crosses the "Heck's Corner's" Road a little to the west of the Reverend Mr. McDowalls House, and the Prescott and Kemptville plank road at the School House at Mr. McCargar's farm—thence crossing the lots almost diagonally it cuts the Southern boundary of the Township on Lot No 19.

Nearly half the distance through Oxford is in cleared lands—which are for the most part very stoney—whilst the wooded portions

in the Southern part of the Township are generally swampy, with a deep coating of vegetable soil—an unfavorable feature which, notwithstanding the uniform outline of the ground, will add considerable to the cost of grading it.

On leaving Kemptville the land rises to the South until in the eighth Concession it reaches a point 117 feet above the St. Lawrence, this is a ridge of limestone formation which will involve a cutting of some magnitude,—thence to the Edwardsburgh line the land falls gradually until at that point it is but 81 feet above the St. Lawrence.

The length of Rail in this Township will be 9.28 miles.

### **Edwardsburgh.**

The line continues straight from the Oxford boundary to the eighth concession of Edwardsburgh—then assuming a more easterly direction it crosses the Nation River 1.1-5 mile west of Spencer's mills, from which point to the St. Lawrence there is but one deviation from a straight course.

The route through this Township is laid more to the west than my explorations carried me last winter, whereby the "South Branch of the Nation" is entirely avoided and the ground generally found to be more favorable.

The point where the line strikes the St. Lawrence is one fifth of a mile below Fort Wellington—the line between the Fort and the Town of Prescott has also been fully surveyed—I shall state the reasons which induced me to adopt the former one when speaking just now of the Southern Terminus.

The greater portion of the line through Edwardsburgh is very densely timbered, and some of the swamps are of so soft a nature as will probably require the Track to be carried through them *on piles*—or some other kind of timber structure. The work altogether in this Township will be the heaviest met with in the same distance—there are hard ridges to be cut through on the 6th, 7th, and 8th

Concessions, and the deep cut on the approach to the St. Lawrence will be by far the most important on the whole route—as an offset to these difficulties, however, there is a good deal of sandy soil to be met with, and the amount of rock cutting will be inconsiderable—where I most apprehended finding it, close to the St. Lawrence, there will, upon the route I have adopted, be very little to interfere with the grade of the Road.

The highest point of land in Edwardsburgh is found in the ninth Concession, 122 feet above the St. Lawrence, and distant from it nearly 13 miles—thence it falls to the Nation River—which is 8 miles from the St. Lawrence and 48½ feet above it.

The distance through Edwardsburgh by Railway measurement is 13.91 miles.

### **Bridging.**

There are but two streams of importance to be crossed upon the route—the RIDEAU at Bytown and the NATION in Edwardsburgh;—making in all about 520 feet of Bridging. All other water courses,—and they are few,—can be crossed by means of simple culverts, or bridges of from 10 to 15 feet span.

### **Southern Terminus.**

A By-Law, passed at your meeting of 17th April, fixes the Southern Terminus of your Road within the limits of the Town of Prescott, and further ordains that the approach to it should be between the Fort and the Town, contingent, of course, on obtaining permission from the Ordnance to pass through their lands; in default of such permission being granted, the Track would have to be carried in front of the Ordnance property, on an embankment made in the waters of the St. Lawrence.

Awaiting the decision of the Ordnance Officers, I have had both lines surveyed, and from the result of these surveys consider it a matter of congratulation for the Company that the permission sought

for was not accorded in time to render the location, as laid down in the By-law referred to, absolute, without allowing latitude for more extended examinations.

The place which I consider most eligible for this Terminus is in the Bay lying between Frazer's wharf and the projecting point of land in front of Fort Wellington.

The most judicious way of approaching this situation, both as regards economy of construction and convenience of road when made will be by carrying the Track in front of the Ordnance Lands and curving into the Main Line on the farm next below that belonging to Sir James Stuart.

This Track can be so constructed as in no way to interfere with Ordnance rights, should permission so to do be withheld.

I propose to construct a wharf of Crib-work (similar to that enclosing the Ogdensburgh Railway Depot) from Frazer's wharf to the Point in front of the Fort—1200 feet in length—and to fill in the Bay between this wharf and the shore with material from the Deep cut above: this would afford you an area of about eight acres; space sufficient whereon to "set up" in business.

The deep cut on the ascent from the St. Lawrence will contain a large amount of material which must be hauled to the river—there being no other way of disposing of it. It could not, therefore, be better applied than in making embankments whereon to carry the Track to the place laid down as the Terminus, and in filling in behind the wharfing.

By laying the Track in this manner, it can at any time, or from time to time, to suit existing business locations, be continued up along the shore, at moderate expense, if necessary, to the extreme western limits of the Town. And when Prescott begins to find its present bounds too narrow to accommodate its increasing commerce and population, the Track can be carried down stream with as much facility as it will have been carried up, and there can, I think, be little doubt, but that it is in that direction, *down stream*,

the Town will extend when its present water front becomes fully occupied.

A Map of Prescott and the vicinity, herewith submitted, will render more clearly intelligible the proposed position of this Terminus. The relative position of the Terminus of the Ogdensburgh Railway is also shown.

I would here bring under your notice the very great advantage to be derived to your project from the acquisition of that part of the Ordnance property lying between the Queen's Highway and the St. Lawrence River, if the Department could be induced to dispose of it. It would enable you to enlarge your land accommodations as occasion required, to meet the increased demands of Trade; whilst the material necessary to be removed to bring it to the requisite "grade" could be advantageously applied to forming more land in the River and extending the water front.

Should there be no present disposition on the part of the Ordnance Department to dispose of this ground you might perhaps obtain the "refusal" of it whenever they should decide on selling.

It will be necessary to say a few words explanatory of my reasons for adopting the Line *below* the Fort instead of carrying it through the Gully *above* as laid down in the By-law referred to.

1stly. The Gully Line would involve the excavation of 220,000 yards.

The Lower Line—80,000 yards.

2ndly. The Gully Line excavation would be all Rock—the Lower Line would involve little or no rock cutting.

3rdly. The Gully Line would cost more than the Lower one by not less than £20,000.

4thly. As a good and convenient Railway Line, the comparison is largely in favor of the Lower Route.

#### Way Stations.

In laying out Railway Lines, the locating of WAY-STATIONS is

the question which, after that of the Termini, generally calls down the loudest anathemas on the Engineer's devoted head.

The following points will probably be best adapted, and sufficient in number in the outset, to meet the requirements of the way-business of your Road.

No.	NAME OF STATION.	TABLE OF DISTANCES.			TOWNSHIP.
		Between Stations.	From Bytown.	From Prescott.	
		Miles.	Miles.	Miles.	
	BYTOWN .....	.....	.....	<b>53.80</b>	Nepean.
1	Cunningham's.....	10.95	10.95	42.85	Gloucester.
2	Long Island .....	4.85	15.80	38.00	Osgoode.
3	Garlick's .....	6.55	22.35	31.45	Osgoode.
4	Kemptville .....	8.65	31.00	22.80	Oxford.
5	Sanderson's .....	6.10	37.10	16.70	Oxford.
6	Spencer's.....	7.60	44.70	9.10	Edwardsburg.
	PRESCOTT.....	9.10	<b>53.80</b>	.....	Augusta.

The first named location should accommodate, for some time to come, all the Gloucester business which will not be transacted directly in Bytown.

The second point is well situated to attack the Traffic from Metcalfe and all the Northern sections of Osgoode—also from a large portion of Nepean, North Gower, and Goulborn. It is situated on the "nine mile road" in rear of Rossiter's Tavern, ("Barton's Corners") from which it is distant about  $2\frac{1}{2}$  miles, and is within a little over 2 miles of the Rideau Canal, at the Head of Long Island.

The Station at Garlick's will be likely to prove an advantageous one. It is less than a mile from Garlick's wharf, on the Canal, and on the direct road from thence to John C Bower's store in the 3rd Concession of Osgoode—and distant from it about  $2\frac{1}{2}$  miles. A large portion of the business of Marlborough and North Gower, on the West, and of Osgoode, Mountain, and Winchester, on the East, will find its way to this Station.

Amongst the Maps before you is one of Kemptville and its vicinity—showing the location of the Line with regard to the village.

The most suitable position for the Station, is on the East side of the Creek near by Mr. Barnes' Saw Mill, being just half a mile from Adams' Tavern. The ground is almost "ready-made" for Station purposes, and the main Line can be connected by a few hundred feet of Side Track with the navigable waters of the South Branch of the Rideau.

The business to which the Railroad may look forward at this point, will be derived from the flourishing Township of Oxford, in which Kemptville is situated, and from Mountain and South Gower, East of the Line—whilst Marlborough, Montague, Wolford, and other productive Townships further West, on the Rideau Canal, will here find a cash Market, at all seasons of the year, for their surplus produce, and a cheaper one than they have ever yet known wherein to purchase their supplies.

The next point at which I have suggested the construction of a Way-Station is at Mr. Sanderson's Farm, on the Ninth Concession of Oxford—a little West of the "Johnston settlement." It is but  $4\frac{1}{4}$  miles from "Heck's Corners," and will be a convenient "rallying point" for the Settlers of the Northern portions of Augusta and Edwardsburgh and the Southern sections of Wolford, Oxford, South Gower and Mountain.

Spencer's Station will be situated 1.15 mile West of the Mills, on the new Macadamized Road leading to Prescott. From its close proximity to the "Front," there will probably be less business done here than at any other Station on the route.

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## Characteristics of the Road.

### Distance.

The length of the Line from the West end of McTaggart Street (Bytown), directly above the Ottawa, to where it strikes the St. Lawrence below Prescott, is 53.12 miles—being nearly 10 per



cent. longer than an air line between these points ; this increase of length is chiefly occasioned by the 'detour' necessary to reach Kemptville,—notwithstanding which the per-centage of increase is small compared to many of the most important Roads in the United States, where the actual distances traversed often exceed air-lines between the Termini by from 30 to 60 per cent.

The whole length of Rail upon your Road, measuring from the above named point in Bytown to Frazer's wharf, within the Town of Prescott, will be 53.75 miles.

**Linear Features.**

About 88 per cent of the above distance will be in straight lines, and, excepting close to the 'Termini, there will be no curves of less radius than 5730 feet ; the least radius anywhere being 2865 feet.

**Summary of Tangents and Curves.**

Straight Line,	47.47		
Curves of 2865 feet Radius,		1.19	
“ 5730 “		2.53	
“ 7640 “		1.08	
“ 10000 “ and over.		1.48	
Miles straight.....	47.47		
Miles curved.....		6.28	
Total.....			53.75

There are six tangent lines varying in length from  $4\frac{1}{2}$  to  $6\frac{1}{2}$  miles each.

**Gradients.**

There is no gradient on the Route exceeding 30 feet to the mile, and of planes of that degree of elevation there are in all but  $4\frac{1}{2}$  miles—seventy-five per cent of the whole Line being either level or in inclines of less than twenty feet to the mile.

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### Summary of Grades.

Level and under 11 feet to the mile,.....	25.73 miles.
From 11 feet to 22 feet " " .....	16.64 "
From 22 feet to 30 feet " " .....	14.86 "
Total,.....	<u>53.75</u> "

Attached to this Report is a detailed table of Grades, showing the number of Planes on the Route—their lengths, elevations, and the order in which they occur. (Appendix "B.")

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With two exceptions, the public highways will all cross the Track at "Grade"—the cheapest of any of the modes that must be resorted to for Railway "crossings." The highway at Prescott must be passed *underneath* the Track, involving the construction of a viaduct of some considerable cost; and the Osgoode road, where cut by the Line at Cunningham's in Gloucester, must be carried *over* the Railway by means of a bridge.

In these Northern latitudes the labor of keeping the Track clear of snow during winter adds not a little to the ordinary expenses attending the maintenance of Railways. Roads having a North and South direction, as yours will, would, in this section of the country, be especially subject to this disadvantage, the *drifts* being, almost universally, East and West. As an offset to this difficulty, however, your Road will present one very favorable feature; which is, that for more than two-thirds of its length it will stand *above* the surface of the ground, generally not less than four feet when "ballasted up." This will insure all that portion of the way from ever being seriously obstructed in the manner referred to, because the sweep of the wind over the elevated surface will be certain to keep it free from any inconvenient accumulation of snow.

At some points of the Line, especially in the Townships of Edwardsburgh and Oxford, it will be necessary to have recourse to temporary structures of wood, such as "Trestlework" and "Piling,"

to convey the Track across hollows where material for making embankments is not at hand, and through Swamps having deep coverings of vegetable soil unsuited to the formation of a Road-bed ; such places can all be filled in and the permanent way completed, by aid of the Locomotive and Rail-cars, long before the timber will have decayed. The great abundance of timber along the Route will admit of all work of the above description being constructed at minimum cost

Material for "Ballasting" will be somewhat difficult to be obtained in Gloucester and portions of Oxford—elsewhere throughout the Line it will be found either in the necessary excavations for the Road-bed, or in such close proximity to it as to allow of the cost of this branch of construction being kept within economical limits.

#### **Estimate.**

The Estimate has been prepared with care ; the quantities of excavation and other items, coming under the general head of "Grading," having been ascertained by careful calculations and such prices affixed to them as should allow of a fair proportion of the payments being taken, by Contractors, in the Company's Stock, at par. The great quantity of Tamarac, Cedar, Hemlock, and other suitable kinds of Timber, on, or in close contiguity to the Line should enable you to obtain all wooden materials at a low rate and, to a considerable extent, for Stock. I have estimated the Iron at the price at which it could now be obtained, and beg leave to remind you how important it is that early contracts be entered into for this essential article. The amount set down for Land-Damages may appear high, but I have estimated that item with a view to your securing more ground within the Town limits of Bytown and Prescott, where, property will never be lower in value than at present, than your first requirements may demand. A want of forecast in providing room at the Termini to accommodate the inevitable growth of Railway business has proved an ultimate source of expense and inconvenience, to innumerable Companies.

**Estimate cost of one mile of Superstructure.**

30.000 ft. B. M. Hemlock plank at 27s. 6d.....	£ 41	5	0
2.200 Ties 10d.....	91	13	4
15.000 lbs. Castings 1½.....	109	7	6
6.000 lbs. Spikes 2.....	50	0	0
100 Tons Iron £9.....	900	0	0
Laying Track per mile.....	75	0	0
Hauling and distributing material.....	60	0	0
Forging Iron and other contingencies—say.....	22	14	2
	<hr/>		
Total cost per mile.....	£1350	0	0

The system of Superstructure for which the above Estimate is designed will be understood from the subjoined brief specification.

The Rail is to be of the “inverted T” pattern and to weigh sixty pounds to the yard. It is to rest on, and be firmly spiked to, cross-ties—which are to be laid thirty one inches apart from centre to centre. The ties to be of Tamarac or Cedar, seven by nine inches and seven and a half feet long. Wherever the road-bed can be ballasted previous to the Track being laid the ties will simply be bedded in the ballast—which will be of coarse sand or gravel—two feet in depth; but where, from the absence of such material, the Track will have to be laid at “Sub-grade” the ties will lie on two sills of Hemlock plank—ten by three inches. The position of these “subsills” beneath the tie corresponding to that of the rails above it. The Rails are to be secured, where they join, by cast iron chairs, of about twenty pounds weight.

The width of Track for which my Estimates are intended is that known as the “Narrow Gauge,”—4 feet 8½ inches between the Rails.

The subject of the Gauge,—one which has given rise to much discussion both on this continent and in Great Britain—is at present, I believe, engaging the attention of the Railway Committee of the House of Assembly.

The Commercial advantages to which the narrow gauge, especially as regards Canada, can lay just claim, so far out-weigh, in my judgment, the alleged—but not yet proven—mechanical superiority

of a wider track, that I feel satisfied it will be adopted as the gauge for this Province—and certainly nothing short of Legislative enactment to the contrary could induce me to recommend any other for your Road.

**Estimated Cost of Grading and otherwise  
completing the Road-bed.**

830,000 yards Earth excavation, 11½d.....	£39,770	16	8
28,000 " Rock " 4s.....	5,600	0	0
20,000 Rods Grubbing, 5s.....	5,000	0	0
440 acres Clearing, £5.....	2,260	0	0
25 " Close Cutting, £6 10s.....	160	0	0
3,000 yards Bridge Masonry, 30s.....	4,500	0	0
8,000 " Culvert " 11s. 3d.....	4,500	0	0
520 feet Bridge Superstructure, £6 5s...	3,250	0	0
Foundations for Bridges,.....	800	0	0
53 Mls. Fences & Farm crossings, £100	5,300	0	0
57 Road crossings, £15.....	855	0	0
Trestle-work and Piling,.....	4,500	0	0
Wharfing, &c.,.....	5,000	0	0
Land Damages,.....	6,000	0	0
Total,.....	£87,438	6	8
Per mile cost of 53¾ miles—say,.....	£1,626	0	0

For the above sum, one-fifth of which should be payable in the Stock of the Company, at par, you can have a very perfect Road-way,—completely drained, graded, and bridged,—including the purchase and fencing in of Lands.

The estimate contemplates a single Track, with "sidings" at intervals of from five to nine miles. The cuts are to be twenty four feet wide on the bottom, and the embankments to finish fifteen feet on top. The Culverts and Bridge abutments are to be of permanent and durable Masonry, and the superstructure of the Bridges of the most approved combinations of Wood and Iron.

The ballasting of the Road-bed, which will be a charge in addition to the above estimate of about £250 per mile, will be partly done during the progress of the grading, where material adapted to the purpose is at hand, elsewhere this portion of the work must remain incomplete until after the Road is in operation,—when, by aid of the Cars, it can be finished without preventing the legitimate business of the Railway from being carried on.

### Summary of Estimate of Construction.

Grading, Bridging, &c.,	53½ miles at	£1,626	£87,398	0	0
Ballasting,	" "	250	13,438	0	0
Superstructure (including Sidings)	56 "	1,350	75,600	0	0
Station Buildings, Wood Sheds, &c.,	53½ "	200	10,750	0	0
Engineering and Contingencies, 4½ per cent,—say,			7,814	0	0
Total cost of construction.....			£165,000	0	0
Average cost per mile,.....			£ 3,628	0	0

Thus for the sum of One Hundred and Ninety-five Thousand Pounds you can have, in less than two years from this date, a first class Railroad, possessing highly favorable characteristics, whereby the St. Lawrence can be reached from Bytown, in one and a half hour—a journey, which at present, occupies from twelve to fifteen hours.

The per mile cost, you will perceive, is but £3,628—Fourteen Thousand Five Hundred and Twelve Dollars,—embracing everything save the "Rolling Stock," and falling very far short of the average cost of such undertakings on this Continent

The State of Massachusetts, with a population of 865,000 souls, has now about 1200 miles of Railway, constructed at an average outlay of nearly Fifty Thousand Dollars per mile; and owing to which such has been the increase of wealth and prosperity within the State that, dating from the commencement of Railway enterprise, the city of Boston has more than doubled its population.

The States of New York and Pennsylvania have each from 1000 to 1200 miles of Railway, of which the average cost may be taken

at Thirty-five Thousand Dollars per mile. In those, as in the New England States, prosperity seems to have kept pace with the Locomotive; for since the dawning of the Railway era we find that Towns and Villages have become Cities, whilst the Cities, that were Cities before, have increased in size a hundred fold.

The following Table, showing what has been the increase of population during the past twenty years in some of the leading Towns and cities in the Union, which are peculiarly under Railway influences, may serve to illustrate what are the practical results accruing from the facilities for social and commercial intercourse presented by the Rail:—

NAME OF CITY, &c.	POPULATION.		Increase in 20 years.
	in 1830.	in 1850.	
Albany.....	24,238	49,000	24,762
Buffalo.....	8,653	40,000	31,347
Boston.....	61,398	150,000	88,602
Brooklyn.....	12,041	80,000	67,959
Baltimore.....	80,625	140,000	69,375
New York.....	203,000	480,000	276,993
Newark.....	10,953	31,000	20,047
Philadelphia.....	203,000	340,000	137,000
Providence.....	16,832	31,000	14,168
Rochester.....	6,474	40,000	33,526
Troy.....	11,401	25,000	13,599

It is worthy of remark that in the majority of the instances here quoted, by far the larger portion of the increase took place in the ten years immediately preceding 1850. With a position unsurpassed by that of any inland Town in Canada, and endowed with an unrivalled water power, why should not Bytown, with its projected Railway completed, number, in fifteen years from now, its twenty thousand inhabitants?

In addition to the sum above stated as necessary for the *construction* of the road a further amount would still be required for its *equipment* with Locomotives and Cars—under this heading you will not be

able to do a paying business on a less outlay than detailed in the subjoined :—

### Estimate of Rolling Stock.

2 Passenger Engines, 1st Class,	£1,750	£3,500	0	0
2 Freight “ “	“	3,500	0	0
2 Service Engines, 2nd Class,	£1,500	3,000	0	0
2 Passenger Cars,	500	1,000	0	0
40 Box Freight Cars,	165	6,600	0	0
30 Platform “ “	140	4,200	0	0
35 Gravel Cars,	70	2,450	0	0
		<hr/>		
		£24,250	0	0

You may open your road with a smaller outfit, but it is to be hoped that ere it has been six months in existence its requirements will exceed rather than fall short of the above Estimate.

For the information of the inhabitants along the route, I have made an approximate Estimate of the amount which the construction of the road will cause to be expended, for labor and material, in each Township through which it passes. In round numbers it is as follows:—

In Gloucester (including Bytown),.....	£29,000	0	0
“ Osgoode,.....	12,500	0	0
“ Gower,.....	6,500	0	0
“ Oxford,.....	21,000	0	0
“ Edwardsburgh, (including Prescott),.....	41,000	0	0
	<hr/>		
	£110,000	0	0

The immediate benefit to be derived to the farming community, in the vicinity of the Line, from the expenditure amongst them of such large sums of money, must be obvious to any thinking man—and the prospect of so considerable an influx of capital should alone be sufficient to silence the too general opposition of the Rate-payers to consenting to their Municipalities taking Stock in the undertaking.



I have had the Line divided into Sections—averaging in length about two miles each, and “Test-pits” have been sunk wherever cuttings are required, so as to enable those desirous of contracting for the work to judge correctly of the kind of material they will have to deal with.

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### Statistics—Sources of Revenue—General Remarks.

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Those familiar with the geography and physical characteristics of that Section of the Province known as the “Ottawa Country” cannot fail to have been impressed with the magnitude of its resources, whilst a glance at the map will be sufficient to show that, as regards that district, Bytown holds a most commanding position, warranting at no very far off date to render her the populous Capital of an immense extent of country, richly endowed with all the natural elements of Agricultural and Commercial prosperity.

The portion of the valley of the Ottawa which, without looking to a too distant future, may be considered as likely to come under the influences of the Railway which is the subject of this Report embraces an area of 10,000 square miles; extending from Grenville, 58 miles *below*, to the head of “Les Allumettes” Island, 120 miles *above* Bytown; this merely supposes such of that region as is likely to be early amenable to complete civilization, without taking into account the more partial improvements certain to be going forward contemporaneously, on the yet unsurveyed lands beyond the extreme North Western limits above given.

That Section of the River Ottawa, traversing as much of the above described territory as lies below Bytown, affords an uninterrupted Steamboat navigation of close upon sixty miles—in which distance it receives seven large tributaries—the principal of which, the “Gatineau,” falling in one mile below the Town, is supposed to have a course of upwards of 400 miles in length, is ascertained to be 1000 feet wide at 200 miles from its mouth, and may be said to drain an area of 1200 square miles—a country abounding in

valuable timber, rich in Iron ore and other minerals and possessing large tracts of land that can be made subservient to the purposes of Agriculture.

North West from Bytown lies the vast region of the "Upper Ottawa," displaying thriving settlements, on each side of the River, for a distance of 120 miles. This, like the Lower Ottawa, is also fed by many tributaries, some of them streams of very considerable magnitude. Beyond, and in the rear of the settlements are inexhaustible forests of Pine and other timber, and the soil generally as far as explored, is deemed well adapted for the support of an Agricultural population.

At Bytown, the navigation of the River is intercepted by the "Chaudieres" Falls and Rapids; round which is a "portage" of eight miles—over a fine macadamized road, to the flourishing village of Aylmer. Thence there are 30 miles of Steamboat navigation to the "Chats" Rapids, at which point there occurs a "portage" of three miles, by *Railway*. From the "Chats" to "Portage du Fort"—30 miles—is also navigable, and here, at 70 miles above Bytown and 200 miles from its junction with the St. Lawrence, below Montreal, we find commodious Steamboats plying on the spacious bosom of this noble River. Ascending further towards its still far distant, sources, and interrupted but by one inconsiderable Rapid, there are not less than 90 miles of navigable water; reaching from the "Calumet" Falls, 7 miles above "Portage du Fort," to the head of the "Deep River," 168 miles above Bytown. Doubtless the time is at hand when the placid surface of those distant waters, over which, as yet, has only skimmed the frail canoe, will be ruffled by the paddle wheels of the busy Steamer, carrying into these almost unexplored regions the immense supplies annually required by the "Trapper," the "Voyageur" and the "Lumberman"—those Canadian "Arabs"—whose numbers are now counted by thousands and whose unfixed abodes are in the ever-receding forests beyond.

The streams above referred to, as tributary to the Ottawa—sectioned by frequent Falls and Rapids—are all peculiarly favorable for being turned to account for manufacturing purposes. The amount of Water-power that could thus be made available, even

within a moderate circuit of Bytown, is beyond all calculation—whilst within the very precincts of the Town itself, the main River, precipitated over the “Chaudiere” Falls, presents a power, almost ready made, to the extent and capacity of the whole volume of this mighty stream. In this instance alone Nature, anticipating Art, has done more towards constructing a motive power for machinery than has been effected at an outlay of hundreds of thousands of dollars by the enterprising men to whom Lowell, Lawrence, and Hadley, and other great manufacturing towns of New England, owe their existence.

The population of the “Ottawa Country,” as above laid down, may be taken at 65,000—in the following proportion to each territorial division:—

County of Ottawa,.....	18,000
“ Prescott and Russel, (in part).....	5,000
“ Carleton,.....	22,000
“ Lanark and Renfrew, (in part).....	23,000
Town of Bytown,.....	7,000
Settlers on unsurveyed Lands—say,.....	5,000
Floating Population in Lumber region,—say.....	5,000
	85,000

That portion of the valley of the St. Lawrence through which the Line is located, consisting of the County of Grenville, contains about 20,000 inhabitants; so that there is a total present population of 105,000, to whose industry and requirements the projected Railway would have to look for its support. Of this number probably 65,000 would contribute to the “through business,” and 40,000 to the “way-traffic” of the Road. Even with this population and the known fertility and resources of the Country, the enterprise cannot prove otherwise than a *safe* one to those embarking in it: whilst counting on the rapid increase certain to take place under Railway impulses (unless yours should prove an exception to all similar undertakings,) and on the greatly enhanced value of real estate, throughout the length and breadth of the circum-jacent district, it cannot fail, within a brief period from its completion, to be a most remunerative one.

I have already (page 40) quoted some instances of the amazing growth of towns, under the fostering influence of Railways, in the neighboring States: not one of the inland towns or cities there cited possesses natural advantages equal to those with which Bytown is so liberally endowed; nor is any one of them surrounded by a territory of greater capabilities than the Counties of Carleton and Grenville.

I refer you to Appendix C for details of population, assessed value of property, &c., &c., on, and in connexion with the Route.

To render apparent what must be the advantages derivable to the "Ottawa Country" and the Townships on either side of the line of road from the opening of such a channel of communication with the avenues to the sea-board, I must again point to the Map of this section of Canada.

The Road will connect Bytown,—the Capital of sixty miles of country below and one hundred and fifty miles above it,—with the River St. Lawrence, at the most favorable point possible, to wit. :—The foot of Lake navigation, and where a Ferry of scarce a mile in width, gives a connection with the Ogdensburgh Rail, and through it, an unbroken communication with the Cities of New York, Boston and Montreal, and the entire chain of Railroads in the New England States, and the Southern section of the State of New York. From present appearances it is, at least, probable that the "Main Trunk Line of Canada," will be laid not very far from the St. Lawrence. I would consider this as advantageous to your interests, because all the traffic, whether passenger or freight, destined for Montreal—from the Ottawa—and which would be immense—would then have to pass over three fourths of your Rail, and would contribute to your revenue nearly as much as so much "through" business.

You will thus have a choice of Markets: by means of a well arranged system of "Ferriage" at Prescott, you can have access throughout the year to the two best that this Continent can boast—Boston and New York—and, awaiting the construction of the Trunk Road, you will be able to reach Montreal by Rail, via Rouse's Point and St. John's, at all seasons.

The following Table shows the distance from Bytown to the principal Cities and Towns where the business of her Merchants is likely to call them, and the time it will take to reach them :--

NAMES OF PLACES.	Miles from Bytown.	TIME.	
		Hours.	Minutes.
Ogdensburgh, .....	54	1	40
Burlington, .....	212	7	30
Boston— <i>via</i> Vermont Central Railroad, .....	460	16	—
New York—per Railway or Troy Steamers, .....	562	21	—
Montreal— <i>via</i> Rouse's Point and St. John's, ...	212	7	30
Kingston—per Steamer from Prescott, .....	114	6	40
Oswego, " " " .....	184	11	—
Toronto " " " .....	295	18	—

With your existing modes of travelling, it requires as much time to reach the St. Lawrence, at Montreal or Prescott, as with a Railway from Bytown to Prescott, would be sufficient to carry you half way to New York, or three fourths of the way to Boston. The journey to Kingston, which now occupies twenty-four hours through the tedious windings of the Rideau Canal, could then be accomplished in less than one third of the time, and in the same way—and time—the “Rome and Cape Vincent” Railroad Terminus could also be reached. In the summer trip from Bytown to Montreal, a saving in time of five hours could be effected by taking the Circuitous Railway Route; whilst the winter journey could be performed in less time by at least eight hours than the best “*sleighing*” could admit of.

The manifold advantages which the commercial and travelling community, generally, throughout your section of the country would derive from these increased facilities of intercourse with the larger towns of Canada, and the Atlantic Cities of the Union need no comment.

Railway Traffic may generally be classed under three heads.

1. Through Freight business.
2. Way do. do.
3. Passenger do.

I will touch as briefly as possible on what I consider to be the legitimate expectations of your undertaking from each of the above sources.

Taking the cost of construction and equipment at £220,000, and the expenses of operating and maintaining the Road at 50 per cent of the gross earnings—a large proportion in view of its favorable characteristics—it would be necessary to do a business to the amount of £26,400 per annum, before six per cent on their investments could be divided amongst the Shareholders. If for the first two years from the completion of the Road, its earnings should only be sufficient to meet current expenses, and the interest on whatever amount of bonds you may have to issue, the Stockholders would not, I think, under those circumstances, have any reason to be apprehensive of the successful results of their undertaking, because the certain increase of trade, under its influences, would ensure its becoming, from that time forward, a remunerative investment. That an amount of business sufficient to defray expenses and interest would accrue to the Road at once on its coming into operation, can hardly be doubted, and I incline to believe, even, that the earnings of the second year would be nearly, if not quite, equal to the sum required for expenses, interest, and a six per cent dividend. I predicate my Estimate of the

#### **Through Business,**

to be looked forward to, mainly on the great Staple of the Ottawa,—Lumber. In the article of "Sawed Lumber," a very large trade has, within a short period, sprung up between the Ottawa country and some parts of the United States. The exportations last year reached as high as twenty millions of feet—board measure. The Saw Mills at present in operation on the Ottawa, and its tributaries, are capable of manufacturing five times that quantity—and yet the water powers of that region are scarcely more than "tapped." The demand in the United States for this article of commerce, is yearly increasing, while the means of supply within her own Territories are as rapidly on the decline. The transportation from Bytown is now effected by water, and the time required to reach Lake Champlain, through the circuitous route of the Chambly Canal, about

ten days. The Lumber required for the Eastern Market is then transferred to the Rail at Burlington, that for the South proceeds by Canal to Troy. With your Railway in operation, Sawed Lumber could be laid down at almost any point in Vermont, New Hampshire or Massachusetts, in four days from Bytown, with but one trans-shipment, (at Prescott.) Southern New York is fast stretching out her iron arms to connect with the Ogdensburgh road at Rouse's Point. With this junction effected, your Lumber could also be delivered in Troy or Albany in half the time it now takes to reach Whitehall. The tariff on sawed lumber over the Ogdensburgh Road is \$2.50 per M. feet, board measure, allowing for your Road \$1.50, including the trans-shipment at Prescott, would make the through freight from Bytown to Lake Champlain \$4 per 1000 feet, at which rate, in the article of *Seasoned Clear Lumber* at least, you could very well compete with the water route. The facilities for bringing Lumber to the St. Lawrence should open to you other channels for this branch of trade than those to which it is now confined. Oswego would be likely to take large quantities to be sent through the Erie Canal for the supply of the numberless fishing towns along that great commercial highway. I deem it not impossible, even, that an important trade in this line might be established with the towns upon Lake Erie, and even further West. The Schooners bearing the products of the Western States to the Ogdensburgh Railroad, have generally to return in "ballast"—and are therefore glad to get any kind of heavy freight to take back at almost any rates that will pay cost. In this way the sand stone from the Potsdam quarries, in the vicinity of the Ogdensburgh Road, is sent in such quantities to Cleveland, Chicago and elsewhere on the upper Lakes, for *flagging*, as to form quite an important item of way-trade to the Railway. This stone has been carried to Cleveland, in its manufactured state, for 75 cents the ton. Why might not the Lumber of the Ottawa be sent in the same way, to contribute to the growth of these ever increasing cities of the Far West?

In view of all these probabilities of a vast and rapid increase in this branch of Commerce, it is hardly presuming too much to suppose that the annual exports to the United States will in three years from now have reached to forty millions feet, board measure; and assuming that but one half of this quantity—twenty millions—is

carried by rail to the St. Lawrence, at the rate of \$1.25 per 1000 feet—your road would reap from this source an income of £6250 10s. From the various and numerous other shaped articles in wood, such as Lath, Shingle, Staves, Hoops, &c., I would assume an income of £1500—making the whole revenue from the products of the forest, amount to £7750. The country North and North West of Bytown, will have a surplus produce to send out, consisting of the coarser kinds of grain—Rye, Barley, Oats, &c., also potatoes in large quantities, Ashes, and Cattle. Judging from the present products of the country, it is safe to count on £1500, as the amount of freight on such exports as the above; and which, with the revenue from Lumber, &c., make up a sum of £9250 for the whole “through freight” receipts, on outward bound articles.

Your imports will consist of Provisions, such as Flour, Pork, &c., for the support of the population engaged in the Lumber trade, whose numbers will average annually nearly 11,000—and whose consumption has been estimated at 30,000 barrels of Flour—27,000 barrels of Pork—2,700 chests Tea—besides Spirits, Clothing, Tobacco, &c.

Nearly all the Pork, and much of the Flour, is brought from abroad—either from the United States or from the Western sections of Canada, and would be certain to reach Bytown by way of Rail from Prescott. Those imports, with all their accessories, for the support of the non-producing population, may be set down as adding £1500 to the receipts of your road.

Many of the principal merchants of Toronto, Hamilton, and other rising Towns in Western Canada, are beginning to import their goods by way of Boston, bringing them through, in “Bond,” over the Ogdensburgh road. The quantity of “Debenture Goods” that have been brought, and are now under contract to come, over that road, is enormous. With but one break in the Railway connection between them and Boston, or New York, the merchants of Bytown will assuredly find themselves equally in a condition with their brethren in the West to act as their own importers. It is not unreasonable to expect that, by the time the road could be opened to the public, the demands of the Ottawa Country for British and For-



eign Goods would amount to 2000 tons, on which you would receive £1000. There are forwarding Houses in Boston now making contracts with merchants in Toronto, and elsewhere in Western Canada, to deliver goods direct from England at £5 per ton—or if brought per mail Steamers, as "*Express Goods*," for £8 per ton, to be delivered in Toronto in 16 days from Liverpool.

The heavier articles of Canadian or American manufacture, such as Stoves and other Castings—Iron, Nails, Plaster, Salt, Machinery, Furniture, &c., &c., will form a large source of income, which I venture to put down at £800. From *Imports*, therefore, you should derive a revenue of £3,300, making a gross amount of receipts on "through business" of £12,550.

For the number and capacity of Saw Mills now in operation on the Ottawa and its tributaries, and the number of hands employed in working them, see Appendix D.

### **Way Business.**

The Way-Trade to which your road may look forward, will be one of its chief sources of profit. The demand in the Eastern States for all description of produce for which the soil and climate of this Section of the Country are best adapted, such as Oats, Potatoes, &c., &c., is yearly on the increase. The farming community on and contiguous to the proposed line of Railway, have already sensibly felt the benefits of the market created by the Ogdensburgh Railroad. Appended to this Report you will find a comparative statement (*vide* Appendix E.) of Entries, from Canada, at the Ogdensburgh Custom House, in the year 1850, and the half year ending 30th June, 1851. The increase there shown is enormous, but does not convey a perfect idea of what this trade has been, because very large quantities of grain and potatoes, owing to the want of facilities—since perfected—for crossing Lake Champlain, at Rouse's Point, were sent round by water to Burlington. I know one trader who shipped 20,000 bushels in this way. The nucleus of a trade has thus been established, which, with Railway conveniences of your own, might be nurtured into one of sufficient magnitude to support

a Railroad, unaided from any other source. The pioneers in this trade have been a few stray Americans, from Boston and the vicinity, who, not deterred by bad roads, and, it must be confessed, rather uninviting appearance of the country immediately in rear of Prescott, have penetrated as far North, perhaps, as Kempville; their transactions, last winter, may have reached to the extent of 70,000 bushels, chiefly Potatoes and Oats, picked up in small lots; the mere "waifs" of the products of the country. In the apparently insignificant article of Eggs, I find, in the Canadian entries at Ogdensburgh, against one hundred and forty dozen in 1850, upwards of fifteen thousand dozen in the first six months of 1851.

The produce in potatoes, oats, barley, maize, &c., of the Counties of Carleton and Grenville, and such parts of Lanark, Renfrew, Russell and Dundas, as would contribute to the way-trade of the road, amounted last year to nearly 1,225,000 bushels; with a certain market to depend upon, there can be no doubt but that a *surplus* quantity equal to the above would be raised, and disposed of to foreign purchasers. From the products of the field, therefore, with those of the dairy and the poultry yard, which will be attracted to the road at all the way-stations—you may count upon a revenue of £6000.

At two points convenient to the road, the Rideau Canal presents fine, but neglected, water power. Under the new state of things, consequent on railway influences, these will, doubtless, be made subservient to manufacturing purposes, and through their agency a portion of the products of the forest will be shaped into marketable articles and sent over the Railway, from the nearest station, to find a ready sale on the banks of the St. Lawrence. Another portion of the products will be disposed of in the forms of cordwood, railway ties, bark, ashes, &c., and the whole trade from this source—the forest—should be of sufficient magnitude to add £800 to your receipts—the imports of "store goods" for Kempville, and to be dispersed throughout the villages right and left of the line, with all the heavier articles of importation, enumerated under "through business," may be put down as likely to yield you £800 more.

You would thus derive from the way-business of your road a revenue of £7600.

That I have not overrated the probable value of this portion of your prospective trade, I feel convinced, from the results that I know to have taken place on the Ogdensburgh Railway—a work constructed through a country of attributes strikingly similar to those of the country between the Ottawa and the St. Lawrence, on the line of your road—abounding with lumber, and with great agricultural and manufacturing resources, as yet scarcely developed. The local traffic on that road has surpassed the most sanguine expectations of its projectors, and large sums of money are now being expended to increase the accommodations at way-stations. The sum I have put down as likely to accrue to your annual revenue from local traffic hardly amounts to two months average receipts from way-business on the Ogdensburgh road. There are two stations on that route, those of Potsdam and Madrid, which *each* do as much business annually, as I have assumed for your whole income from local sources. The Townships in which the Stations referred to are situated, and those flanking them, are perhaps more populous than your best Townships by about one third, but possess no natural advantages over yours, either in an agricultural or commercial point of view. At other stations along that road, situated in Townships inferior in population and fertility to the average of yours, I find the monthly receipts running from £200 to £400—exclusive of passenger business.

With such facts before me, I feel satisfied that I am within bounds in estimating your second year's income from way-business at £7600.

### **Passenger Business.**

The data for arriving at a fair estimate of the number of passengers likely to pass over your road annually, are necessarily imperfect—owing to so large a proportion of the present travel being accomplished by means of private conveyances.

(Taking into account the numbers that now travel to and from Bytown, and its surrounding country, *via* the Ottawa, to Montreal,

and the Rideau Canal, to Kingston—during the season of navigation—and by stages or private or hired conveyances in winter, and between Bytown and Prescott at all seasons, coupled with the rapidly increasing intercourse with the United States, and a newly created desire amongst the home community to “see the world”—a desire invariably attendant on Railway conveniences for travelling—I do not think I estimate too high in assuming that in three years from now, there will be travel enough between the Ottawa country and the outer world, to afford 12 passengers daily—each way—over the road—bringing into your coffers an annual amount of, say..... £3000 0 0 to which I would add for “way passengers”..... 1700 0 0 which only premises, under the latter heading, the average receipts per month, at each station, at about £18. At the stations above quoted, on the Ogdensburgh road, I find that the tickets *purchased at the stations*, by the travellers outward bound, only amount to from forty to one hundred pounds per month.

### Recapitulation of Items of Revenue,

as above detailed, stands as follows:—

Through freight business,.....	£12,550	0	0
Way “ “ .....	7,600	0	0
Passenger “ “ .....	4,700	0	0
Mails,.....	150	0	0

Total assumed receipts for second year's operations, £25,000 0 0

allowing, as before stated, 50 per cent. of the gross receipts for the expenses of operating the road, there would remain a balance sufficient, within a few hundred pounds, to pay a dividend of 6 per cent. on the estimated amount of capital required to complete and stock the road. Whilst such results, obtained within so short a period from the accomplishment of the work, should satisfy those embarked in it of the safety of their investments—those most skeptical as to the project being carried out, or as to its beneficial results if com-

pleted, will, I think, admit that the above estimate of revenue is predicated on reasonable grounds; most of the items assumed being based on the present capabilities of the country, without allowing for the certain increase of population, and consequent enlarged demands of trade, which must annually take place—Railway or no Railway.

The *indirect* benefits to the whole region interested in this project would very far surpass in importance the most favorable estimate of *direct* results—as above touched upon. Its accomplishment would place Bytown in a position second in commercial importance to that of no town in Upper Canada:—Prescott would at once be elevated into a place of consideration, as the trans-shipping point and depot of a large and growing trade, whilst the wide extent of country beyond the Northern terminus, and on either side of the line, would feel the vivifying effects of Railway communication in the enhanced value of property, in the stimulus given to its agricultural and manufacturing capabilities, by the opening of new markets, and the influx of foreign capital; and lastly, in the cheap and speedy facilities for travelling, which, whilst inviting the stranger to visit the country of the Ottawa, will place within reach of the many—among its inhabitants—the means of visiting, in turn, the more advanced and flourishing sections of the Province, and the neighboring States.

By taking advantage of the remaining portion of the present season, in making a vigorous commencement of the work—to wit—in clearing the whole of the wood-land portions of the route, and entering on the grading at the points where the excavations will be of the greatest magnitude—the Bytown and Prescott Railway can be ushered into existence, as a public highway, in May, 1853,—and in concluding this report, I would express an earnest hope that no untoward event may intervene to mar the timely completion of a project fraught with benefits to so important—though hitherto not too well known—a portion of this noble Province—a project, the accomplishment of which, I believe to be within your grasp; for, after all, it is but a pigmy one compared to many that might be instanced on this continent—successfully achieved, in the face of truly great difficulties, by communities possessed, comparatively speaking, of

no more extensive resources—and with no higher interests at stake  
—than your own—proving to the world how great obstacles can be  
vanquished, and how much public good compassed by well directed  
energy and *union*.

I remain,

Gentlemen,

Your obedient servant,

W. SHANLY.

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# APPENDIX.

## APPENDIX A.

TABLE OF LINEAR ARRANGEMENT OF ROUTE.

STATIONS.		Straight Line.	CURVES.					Total No. of miles.	REMARKS.
From	To		Radius 2,865 feet.	Radius 5,730 feet.	Radius 7,640 feet.	Radius 10,000 feet.	Radius 11,640 feet.		
		Miles.	Miles.	Miles.	Miles.	Miles.			
0	28	0.53						Bytown.	
28	5070		0.43						
5070	7560	0.47							
7560	10860		0.63						
10860	165	1.06						Billing's.	
165	19548			0.58					
19548	243	0.90							
243	267								
267	27850	0.22				0.46			
27850	30950			0.58					
30950	565	4.84							
565	582			0.32					
582	847	5.02							
847	86550			0.35					
86550	930	1.22						Kempville	
930	951			0.40					
951	124164	5.51							
124164	126930				0.52				
126930	162265	6.70							
162265	165233				0.56				
165233	188537	4.41							
188537	189628					0.21			
189628	2247	6.64							
2247	226561					0.35			
226561	260101	6.35						Prescott.	
260101	262544					0.46			
262544	2774	2.82	0.13	0.30					
2774	2797								
2797	2838	0.78							
		47.47	1.19	2.53	1.08	1.02	0.46	53.75	



## APPENDIX B—Table of Grades.

No. Plane.	STATIONS.		LEVEL.	ASCENDING.			DESCENDING.			Height above St. Lawrence.	Height above Ottawa.		
	From	To		Length in Feet.	Rate per Mile.	Length in Feet.	Rise.	Rate per Mile.	Length in Feet.				Fall.
1	0	7 <sup>25</sup>	725							-54.40	64.00	Bytown.	
2	7 <sup>25</sup>	18						13 <sup>30</sup>	1.025	268	-57.08	61.32	
3	18	28	1.000								"	"	Rideau River.
4	28	49 <sup>50</sup>						10 <sup>56</sup>	1.075	4 <sup>30</sup>	-61.38	57.02	
5	49 <sup>50</sup>	90	4.050								"	"	
6	90	120		18 <sup>48</sup>	3.000	10 <sup>50</sup>					-50.88	67.52	
7	120	175		3 <sup>96</sup>	5.500	4 <sup>13</sup>					-46.75	71.65	
8	175	328		30 <sup>36</sup>	15.300	3 <sup>708</sup>					41.23	159.63	
9	328	334	600								"	"	
10	334	364 <sup>50</sup>						18 <sup>48</sup>	3.050	10 <sup>67</sup>	30.56	148.96	
11	364 <sup>50</sup>	453		30 <sup>36</sup>	8.850	50 <sup>80</sup>					81.45	199.85	
12	453	560		6 <sup>60</sup>	10.700	13 <sup>38</sup>					94.83	213.23	
13	560	600		26 <sup>40</sup>	4.000	20 <sup>00</sup>					114.83	233.23	Summit.
14	600	640						23 <sup>70</sup>	4.000	18 <sup>00</sup>	96.83	215.23	(Cunningham's)
15	640	656	1.600								"	"	
16	656	681		26 <sup>40</sup>	2.500	12 <sup>50</sup>					109.33	227.73	Spratt's Ridge
17	681	735						29 <sup>04</sup>	5.400	29 <sup>70</sup>	79.63	198.03	
18	735	761		10 <sup>56</sup>	2.600	5 <sup>20</sup>					84.83	203.23	
19	761	878	11.700								"	"	
20	878	940						21 <sup>12</sup>	6.200	24 <sup>80</sup>	60.03	178.43	
21	940	969	2.900								"	"	
22	969	1003						13 <sup>30</sup>	3.400	8 <sup>50</sup>	51.53	169.93	
23	1003	1064	6.100								"	"	
24	1064	1090						13 <sup>30</sup>	2.600	6 <sup>50</sup>	45.03	163.43	
25	1090	1150	6.000								"	"	
26	1150	1196		21 <sup>12</sup>	4.600	18 <sup>40</sup>					63.43	181.83	
27	1196	1259						3 <sup>96</sup>	6.300	4 <sup>72</sup>	58.71	177.11	Garlicks.
28	1259	1287						15 <sup>84</sup>	2.800	8 <sup>40</sup>	50.31	198.71	
29	1287	1372						5 <sup>28</sup>	8.500	8 <sup>50</sup>	41.1	160.21	
30	1372	1505	13.300								"	"	
31	1505	1619		6 <sup>60</sup>	11.400	14 <sup>25</sup>					56.06	174.46	
32	1619	1647	2.800								"	"	Kemptville.
33	1647	1717		26 <sup>40</sup>	7.000	35 <sup>00</sup>					91.06	209.46	
34	1717	1742						15 <sup>84</sup>	2.500	7 <sup>50</sup>	83.56	201.96	
35	1742	1787		29 <sup>04</sup>	4.500	24 <sup>75</sup>					104.31	226.71	
36	1787	1805	1.800								"	"	
37	1805	1857						15 <sup>84</sup>	5.200	15 <sup>60</sup>	92.71	211.11	
38	1857	1912	5.500								"	"	
39	1912	1947		29 <sup>04</sup>	3.500	19 <sup>25</sup>					111.96	230.36	Saunderson's.
40	1947	2002						29 <sup>04</sup>	5.500	30 <sup>25</sup>	81.71	200.11	
41	2002	2105		26 <sup>4</sup>	10.300	5 <sup>15</sup>					86.86	205.26	
42	2105	2147		29 <sup>04</sup>	4.200	23 <sup>10</sup>					109.96	228.36	
43	2147	2192						26 <sup>40</sup>	4.500	22 <sup>50</sup>	87.46	205.86	
44	2192	2222 <sup>22</sup>		13 <sup>30</sup>	3.022	7 <sup>55</sup>					95.01	213.41	
45	2222 <sup>22</sup>	2262 <sup>70</sup>						21 <sup>12</sup>	4.848	16 <sup>18</sup>	78.83	197.23	
46	2262 <sup>70</sup>	2316		11 <sup>616</sup>	5.330	11 <sup>72</sup>					90.55	208.95	
47	2316	2381	4.500					23 <sup>76</sup>	6.500	29 <sup>25</sup>	61.30	179.70	Nation River.
48	2381	2426									"	"	
49	2426	2450		13 <sup>30</sup>	2.400	6 <sup>00</sup>					67.30	185.70	
50	2450	2502						13 <sup>30</sup>	5.200	13 <sup>00</sup>	54.30	172.70	
51	2502	2632		6 <sup>336</sup>	13.000	15 <sup>60</sup>					69.90	188.30	
52	2632	2716						18 <sup>48</sup>	8.400	29 <sup>40</sup>	40.50	158.90	
53	2716	2753		10 <sup>56</sup>	3.700	7 <sup>40</sup>					47.90	166.30	
54	2753	2829 <sup>19</sup>						29 <sup>04</sup>	7.619	41 <sup>90</sup>	6.00	124.40	
55	2829 <sup>19</sup>	2841	1.181								"	"	Prescott.
			62.956				125.402				95.742		



## APPENDIX D.

STATEMENT of the number and capacity of Saw Mills on the Ottawa and its Tributaries, which are cutting for exportation only.

NAME OF ESTABLISHMENTS.	Where Situated.	No. of Saws.	Logs Cut.	Pieces of Stand'rd Deals.	Feet Board measure.	Average No. men employed in getting logs, sawing, rafting and bringing to market.
Hawksbury Mills,.....	on the Ottawa, ..	110	75,000	540,000	14,850,000	300
Bowman's Mills,.....	on the LeLievre, ..	32	40,000	288,000	7,920,000	180
Bigelow's Mills, .....	on the LeLievre, ..	32	40,000	288,000	7,920,000	180
Gilmour's Mills, .....	on the Gathneau, ..	45	50,000	360,000	9,900,000	180
Wright's Mills,.....	on the Gathneau, ..	32	40,000	288,000	7,920,000	180
McKay & McKinnon's Mills, at Bytown,.....		30	20,000	144,000	3,960,000	90
Blasdell's Mills,.....	at Bytown,.....	29	25,000	180,000	4,950,000	90
Egan's Mills,.....	on the LeCullon, ..	10	30,000	210,000	5,940,000	135
Cook's Mills,.....	on S. Naton R. ..	16	30,000	210,000	5,940,000	135
McMartin's Mills,.....	on S. Naton R. ..	16	20,000	144,000	3,960,000	90
Perkins' Mills,.....	on Upper Blanche	16	20,000	144,000	3,960,000	90
Willson's Mills,.....	on Lower Blanche	22	20,000	144,000	3,960,000	90
Chrysler's Mills,.....	on S. Naton R. ..	12	20,000	144,000	3,960,000	90
Blasdell's Mills,.....	on S. Naton R. ..	12	20,000	144,000	3,960,000	90
Costlegrove's Mills,.....	on S. Naton R. ..	12	20,000	144,000	3,960,000	90
		432	470,000	3,384,000	93,060,000	2010

N. B.—The above Table is borrowed from a Bytown publication of 1849. Improvements and increase of capabilities have since taken place in many of the establishments.

## APPENDIX E.

COMPARATIVE STATEMENT of principal Entries of Canadian Produce at Ogdensburgh Custom House, for the year ending 31st December, 1850, and half year ending 30th June, 1851.

DESCRIPTION OF ARTICLE.	Year ending 31st December, 1850.	Half year ending 30th June, 1851.	Annual Ratio of Increase.
Oats, bushels.....	7,051	21,934	620 per cent
Potatoes, bushels .....	517	11,635	4500 " "
Barley, bushels .....	.....	2,552	25000 " "
Eggs, dozen .....	140	15,137	22000 " "
Butter, lbs.....	52,033	36,182	40 " "
Cattle (neat) No.....	2,875	1,753	25 " "
Swine, No.....	185	353	380 " "
Wool, lbs.....	6,879	5,549	62 " "
Rags, lbs.....	7,055	14,015	400 " "
Sawed Lumber, feet B. M.....	195,573	230,735	240 " "
Undressed Skins, value.....	\$113	\$203	360 " "

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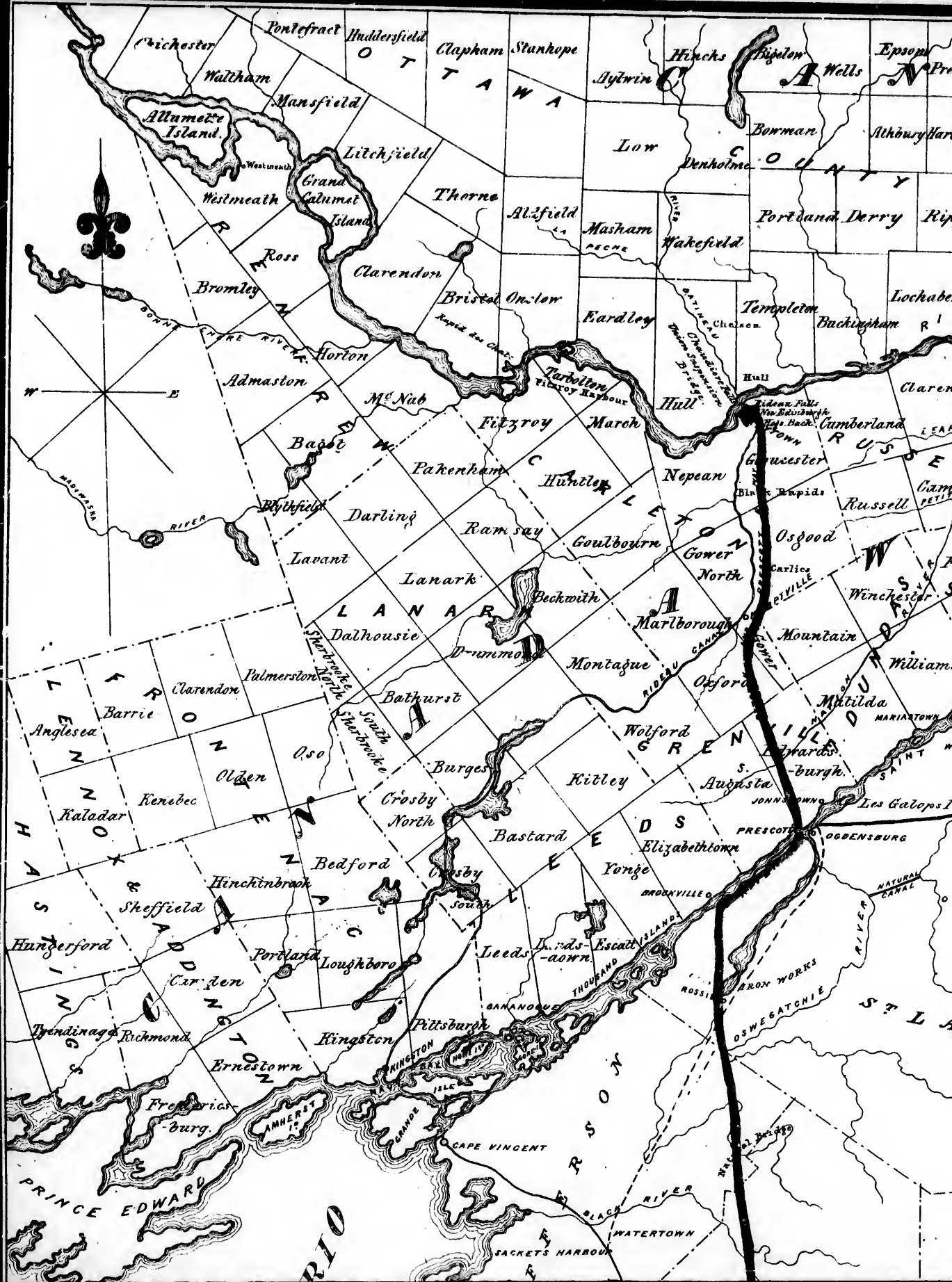
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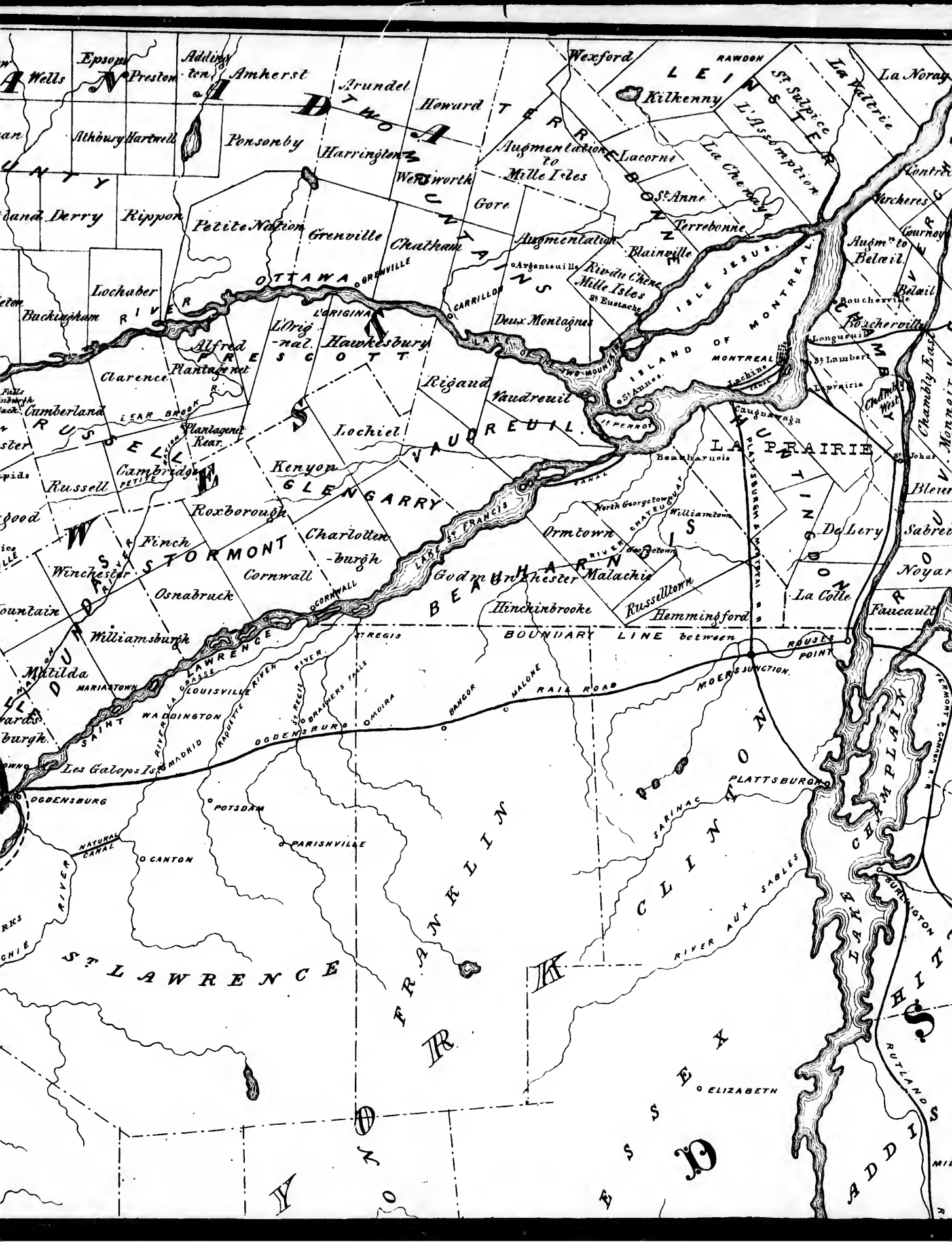
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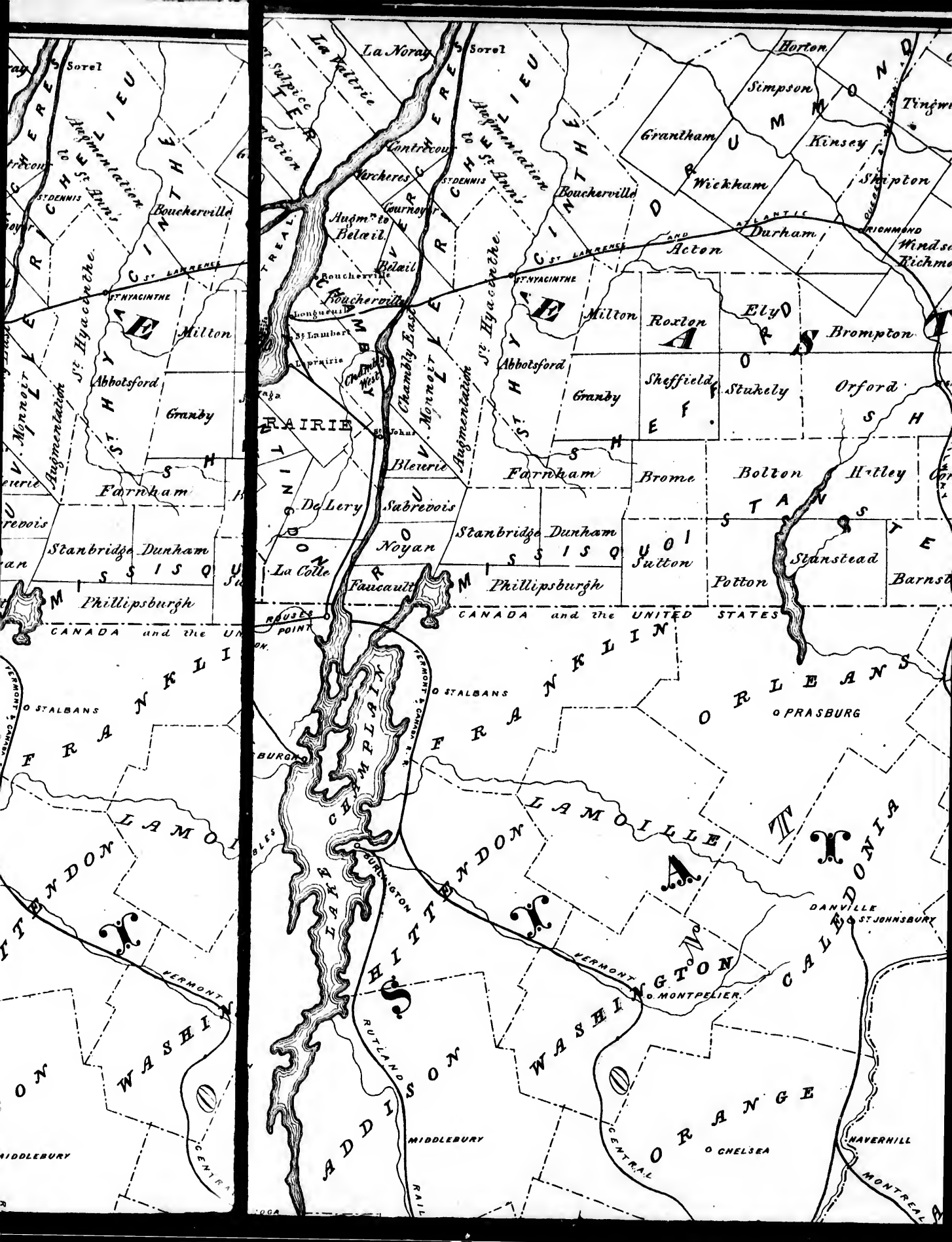
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La Noroy  
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St. Lambert  
Chambly East  
Bleuville  
Sabrevois  
Noyan  
La Colle  
Toucault  
Phillipsburgh  
St. Albans  
Burlington  
Rutland  
Middlebury

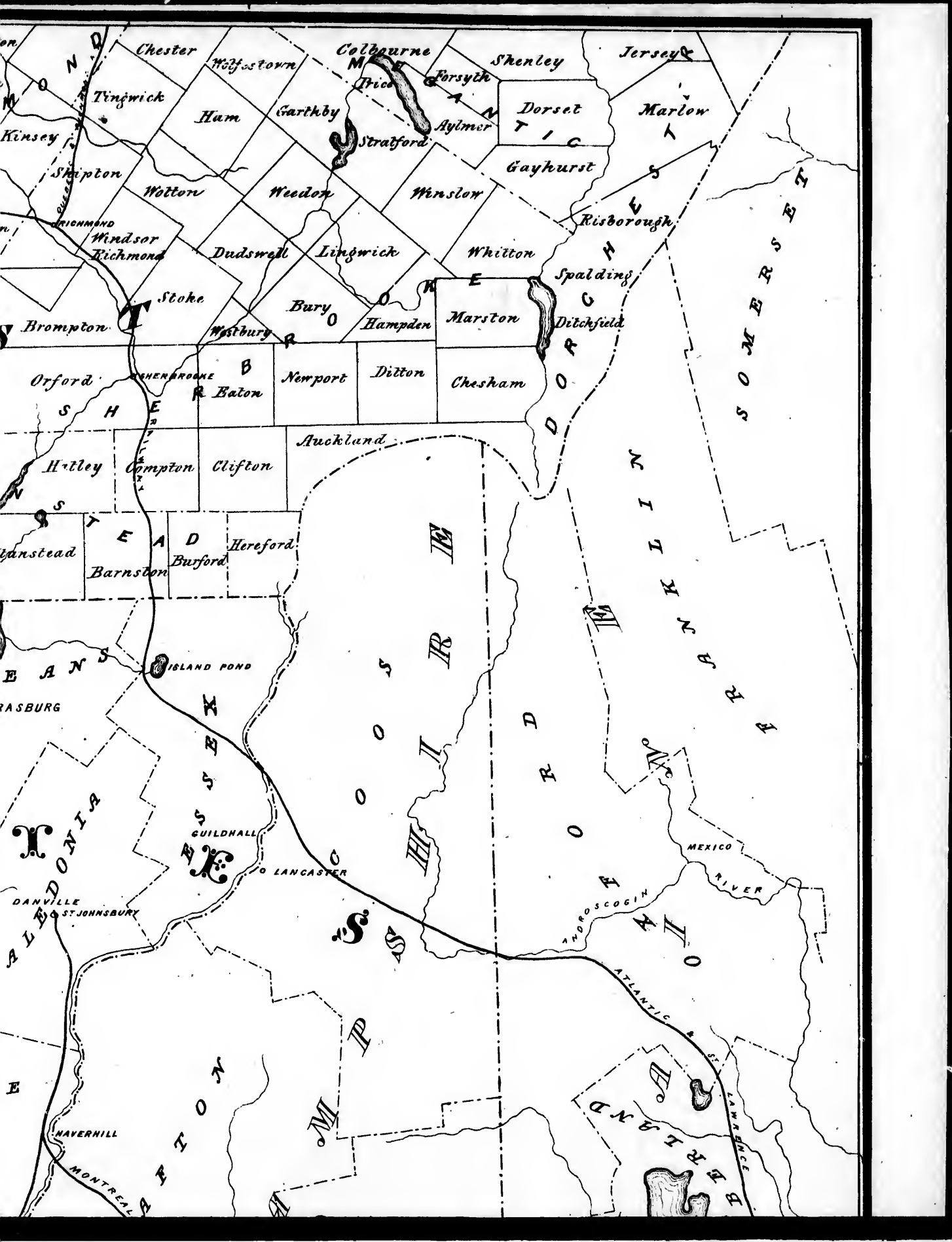
Franklin  
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Addison  
Washington  
Caledonia  
St. Albans  
Prasburg  
Lamoille  
Montpelier  
Champlain  
Franklin  
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Addison  
Washington  
Caledonia  
St. Albans  
Prasburg  
Lamoille  
Montpelier  
Champlain

Sorel  
Boucherville  
Belair  
Boucherville  
St. Lambert  
Chambly East  
Bleuville  
Sabrevois  
Noyan  
La Colle  
Toucault  
Phillipsburgh  
St. Albans  
Burlington  
Rutland  
Middlebury

CANADA and the UNITED STATES

CANADA and the UNITED STATES

FRANKLIN  
ORLEANS  
ADDISON  
WASHINGTON  
CALLEDONIA  
ST. ALBANS  
PRASBURG  
LAMOILLE  
MONTPELIER  
CHAMPLAIN  
FRANKLIN  
ORLEANS  
ADDISON  
WASHINGTON  
CALLEDONIA  
ST. ALBANS  
PRASBURG  
LAMOILLE  
MONTPELIER  
CHAMPLAIN



Chester

Winochee

Colbourne

Shenley

Jersey

Tingwick

Ham

Garthby

Stratford

Aylmer

Dorset

Marlow

Kinsey

Shipton

Wotton

Weedon

Winstow

Gayhurst

Risborough

Windsor

Dudswell

Lingwick

Whitton

Spalding

Brompton

Stoke

Bury

Hampden

Marston

Ditchfield

Orford

Baton

Newport

Dilton

Chesham

Auckland

Hitley

Compton

Clifton

Wanstead

Barnston

Burford

Hereford

WASBURG

ISLAND POND

GUILDHALL

LANCASTER

DANVILLE

ST. JOHNSBURY

NAVERHILL

MEXICO

RIVER

ANDROSCOGIN

ATLANTIC

SEA

MONTREAL

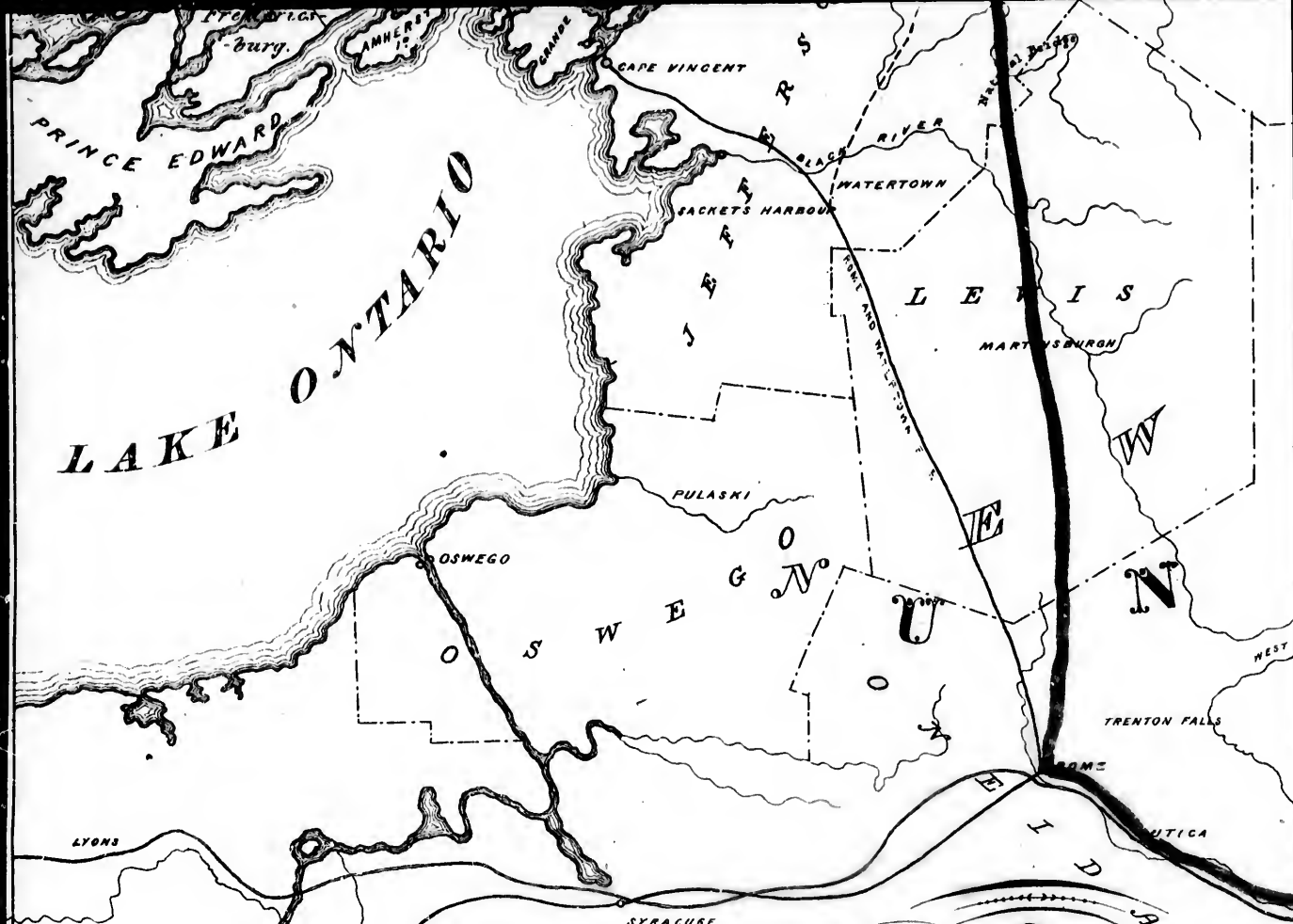
FERRISBURGH

ST. LAWRENCE

LAKE CHAMPLAIN

RIVER



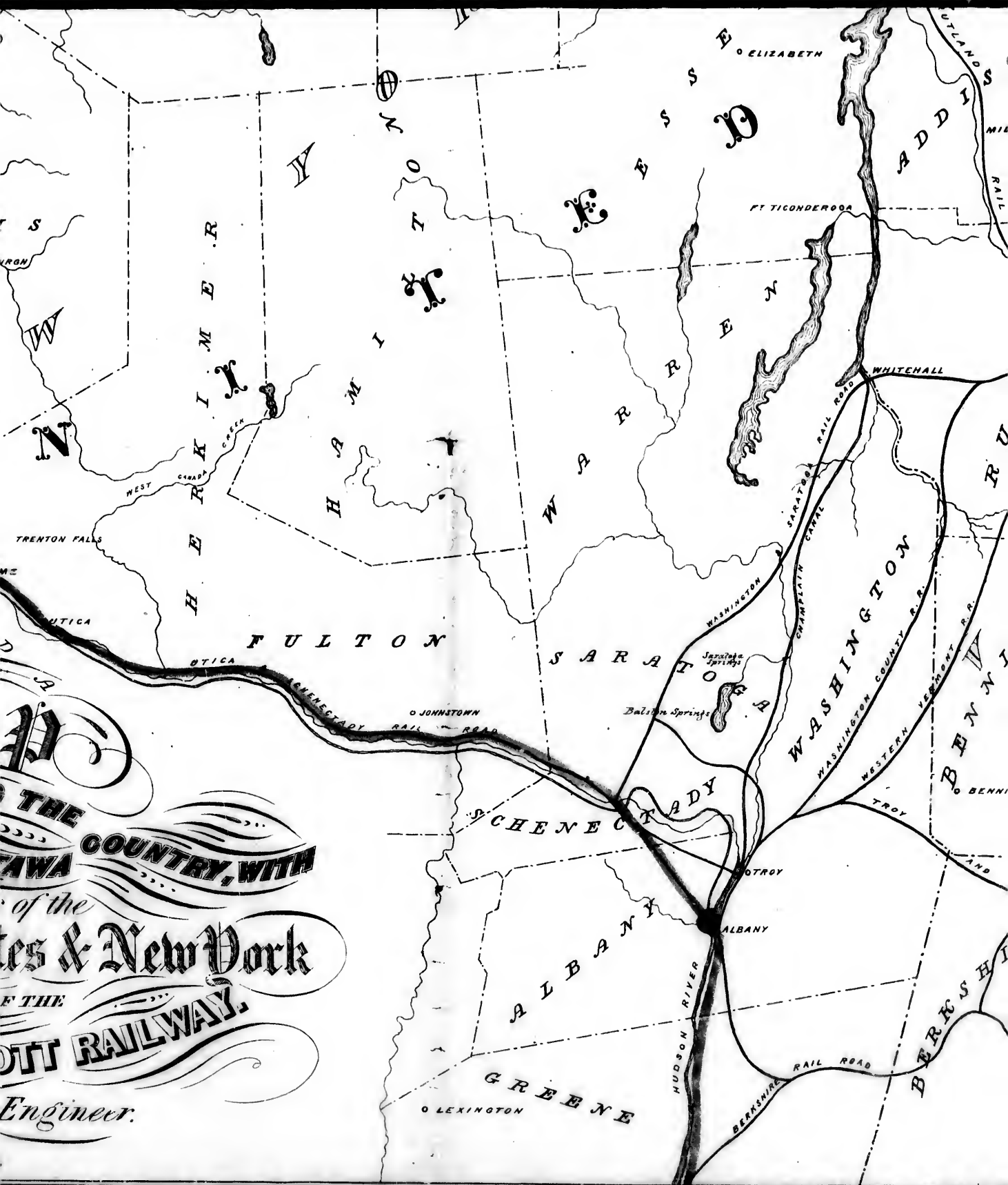


**MAP**  
SHEWING THE  
CONNECTION OF THE OTTAWA COUNTY  
the Seaports of the  
**New England States & New York**  
BY MEANS OF THE  
**BYTOWN & PRESCOTT RAILROAD**

*Walter Shanly, Engineer.*

**1851.**

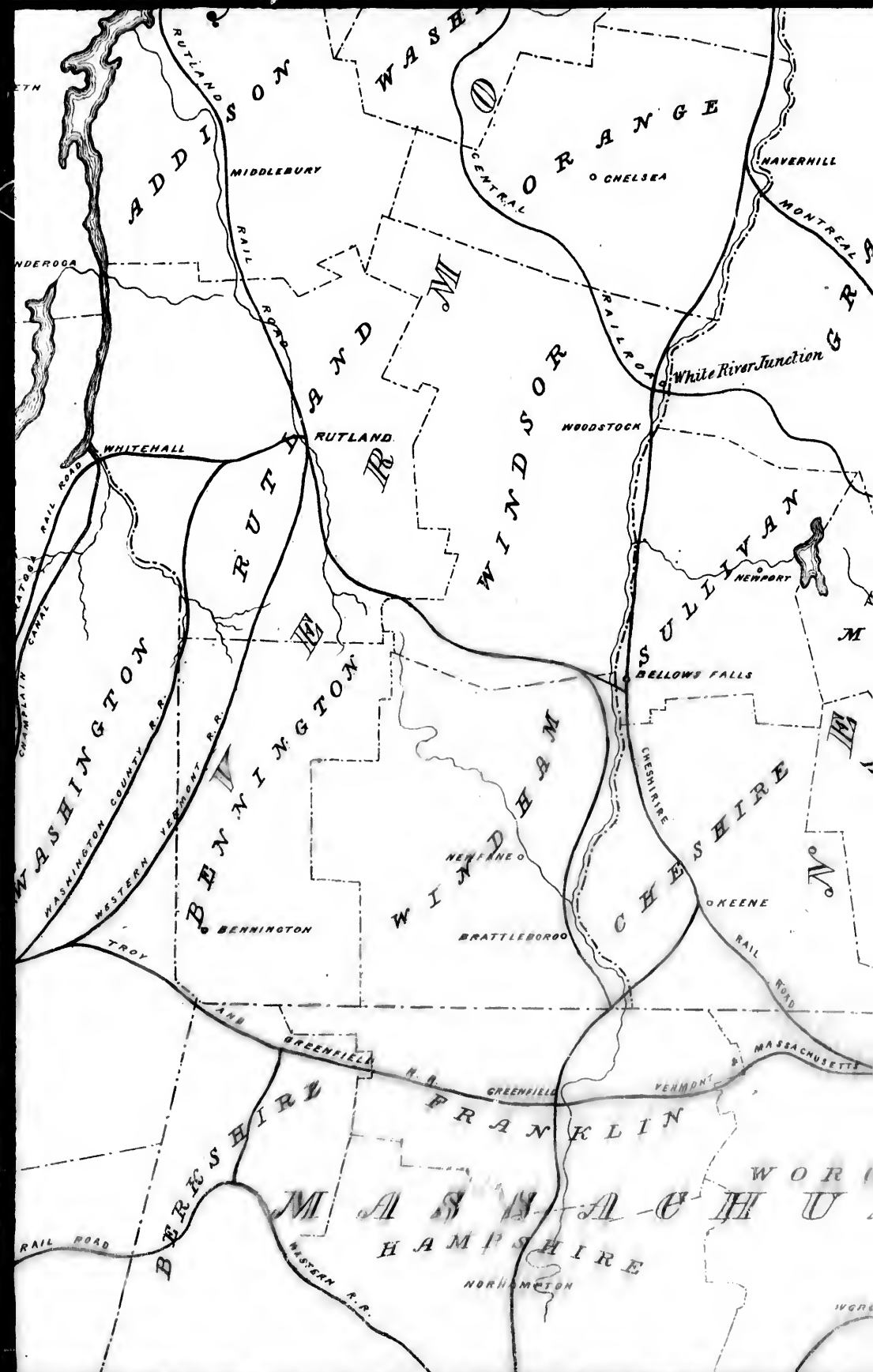
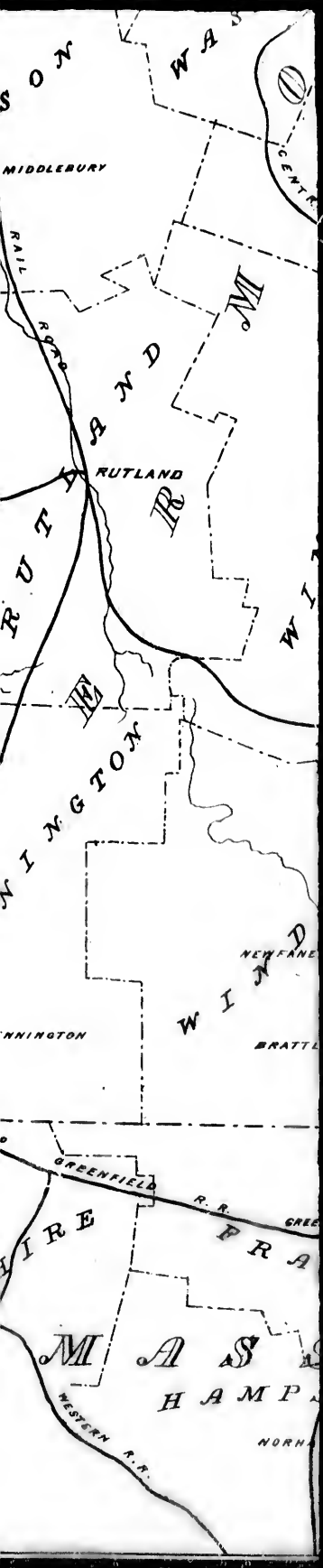
*Matthews' Lith. Montreal.*

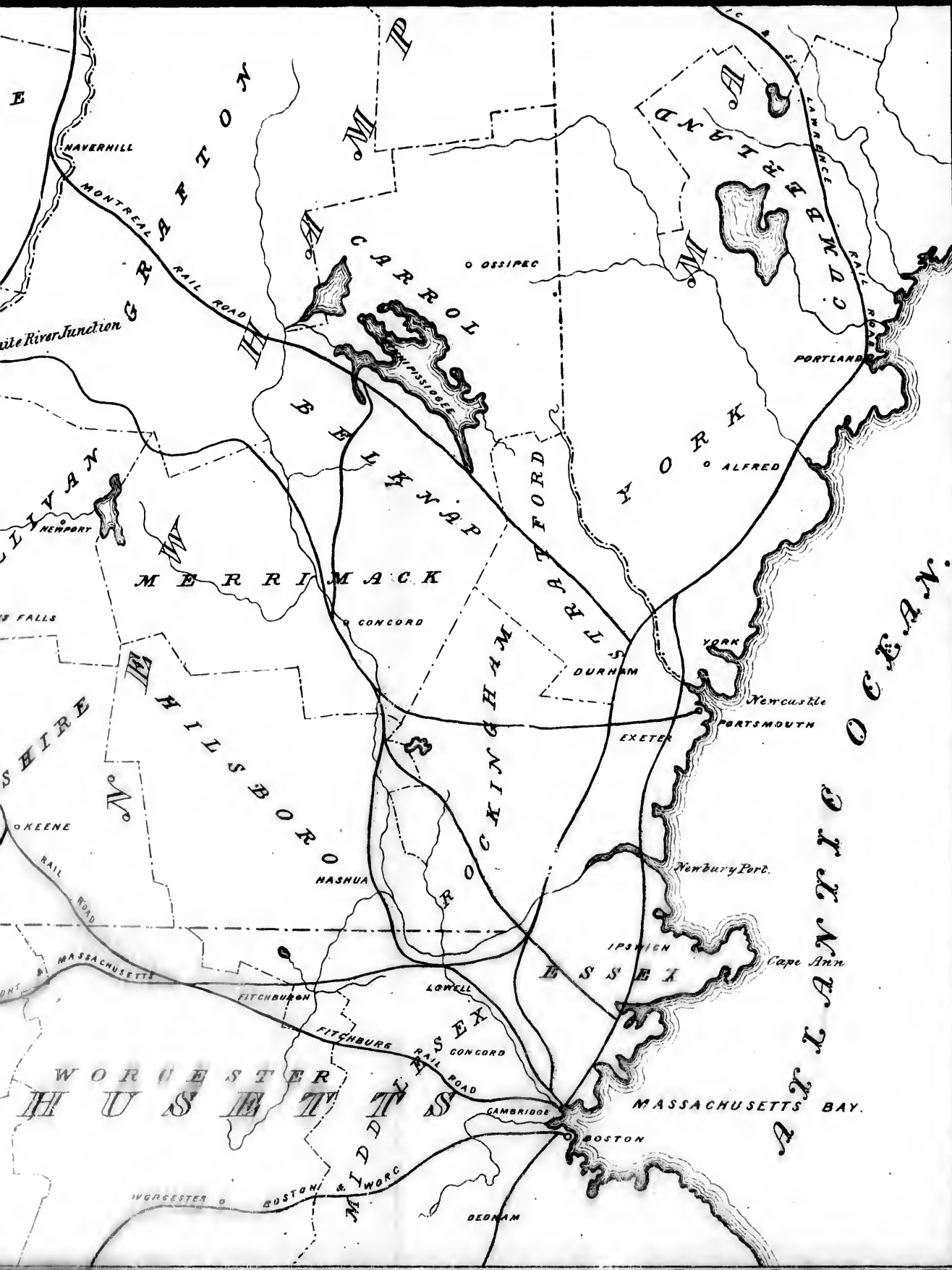


**THE**  
**ADIRONDACK**  
**RAILWAY**  
 OF THE  
**STATE OF NEW YORK**  
**ENGINEER.**

**THE**  
**ADIRONDACK**  
**RAILWAY**  
**OF THE**  
**STATE OF NEW YORK**  
**ENGINEER.**

**ENGINEER.**





NAVERHILL  
MONTREAL  
GRAND RIVER  
RAIL ROAD  
Mile River Junction

LYMAN  
NEPORT

SHIRE  
KEENE  
RAIL ROAD

MASSACHUSETTS  
FITCHBURGH  
LOWELL

WORCESTER  
H U S T I S  
M I D D L E S  
BOSTON  
W O R C

WORCESTER  
BOSTON

MONTPELIER  
CARROL  
MISSISSOGUE

BELLYNAP  
MERRIMACK  
CONCORD

HILLSBORO  
ROCKINGHAM  
DURHAM  
EXETER  
NEWBURYPORT

ESSEX  
CONCORD  
CAMBRIDGE  
BOSTON  
BEDFORD

ALFRED  
PORTLAND  
CUMBERLAND  
RAIL ROAD

YORK  
Newcastle  
PORTSMOUTH

IPSWICH  
Cape Ann

MASSACHUSETTS BAY.  
BOSTON

ATLANTIC OCEAN.

