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1840.

A

REPORT

OF THE SURVEY OF A

RAIL ROAD ROUTE

FROM

PORTLAND

TO

LAKE CHAMPLAIN,

WHICH IS INCLUDED WITHIN THE

STATE OF MAINE.

By WILLIAM L. DEARBORN, Civil Engineer.

AUGUSTA:
Wm. R. SMITH & Co., PRINTERS TO THE STATE.

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Printed by order of the Board of Internal Improvements.

PORTLAND, February 18, 1840.

His Excellency JOHN FAIRFIELD, *President of the Board of Internal Improvements.*

SIR,—I have the honor of transmitting a Report, on the survey of that portion of the route of a Rail road from Portland to Lake Champlain, which is included within the State of Maine, that was commenced in conformity to your instructions, on the twenty-eighth day of August, and completed on the eighth of November last, and also the Plans illustrative thereof, which are numbered from one to six.

I was assisted in this work by R. Douglas and and L. L. Cummings, and consider it due to them to state, that they faithfully and efficiently performed the very arduous duties which devolved upon them.

The aid rendered by the Hon. John Webb, who acted as Commissary to the Corps, was of very great importance, as it was thereby enabled to advance more rapidly and economically with the survey.

Very essential assistance was also afforded by many of the persons who reside on the line which was followed, as they were intimately aequainted with the local features of the country, and were ever ready to impart such intelligence as it was in their power to communicate.

It is likewise proper that I should state that they expressed great anxiety that the project should be promptly carried into effect, as it was universally considered that such an avenue of communication would be of incalculable advantage to this State.

With the highest respect,
I have the honor to be
Your most obedient servant,
W. L. DEARBORN.

REPORT.

PORTLAND, February 18, 1840.

His Excellency JOHN FAIRFIELD, *President of the Board of Internal Improvements.*

SIR,—That portion of the route for a Rail Road from Portland to Lake Champlain, which is included within the State of Maine, and was selected by your Board to be surveyed, was that which was designated as the northern, in the Report which I had the honor of submitting last June, on a reconnoissance of the whole line.

Commencing at Portland, it passes through the towns of Westbrook, Windham, Raymond, Otisfield, Norway, Waterford, Albany, Bethel and Gilead, to Shelburne in the State of New Hampshire.

On a more exact examination, it was deemed advisable to deviate, at some point, from the route which had been recommended in the Report, as it was ascertained that the line which was ultimately surveyed, presented less obstacles to be encountered, diminished the number of curves, as well as the cost of construction, and would, in all respects better

subserve the great purposes for which it was intended.

The principal deviation was in Raymond and Otisfield. It had been formerly proposed to enter the valley of Crooked river in Raymond, and follow it up to Songo pond; but as the river was found to be more sinuous and difficult of access than had been anticipated, it was considered expedient to take a more direct course, which extended east and parallel to the river valley, and the meadow road leading to Otisfield, and enters the former in the northern part of Otisfield, about fifteen miles beyond the point which had been originally suggested. Several experimental lines were also run, that were from ten and a half to one and a half miles in length, which left the main line at various points and again intersected it, and which will be particularly described in their proper order.

Two termini were selected in Portland, from whence to commence the survey.

The first is on the harbor side of the City, at Walker's wharf, which is situated at the south-eastern end of State street, that being the most eligible site for ware-houses where heavy articles of merchandize could be best deposited, which were destined to be shipped to other ports, and landed from vessels for transportation into the interior.

The second is at the northwestern end of Preble street, being the most convenient position for a pas-

senger depot, as it is very easy of access, and the land well adapted for Engine and Car houses, and the various other edifices which will be required for such an establishment, can be there obtained in sufficient quantity.

That portion of the State which is traversed by the Rail Road line, is remarkably characterized by the numerous ponds, streams and hills by which its topography is diversified. Of the former, Sebago pond is much the largest, being in fact of sufficient magnitude to be designated as a lake; it is the source of Presumpscot river, and supplies most of the water for the Cumberland and Oxford Canal; connected with it by a considerable outlet, is Panther pond in Raymond. In Otisfield are Pleasant and Parker ponds, which discharge their waters into Crooked river; and in Albany is Songo pond, which is its source. The other ponds of any considerable extent, are Moose and Saturday, whose outlets fall into the Little Androscoggin river. Crooked river has many falls and rapids, and after a meandering course in a southeasterly direction, of nearly fifty miles, debouches into Sebago pond. The Presumpscot river has a very devious channel, with abrupt banks and numerous falls and rapids, which afford excellent hydraulic powers for mills and manufactories, many of which have already been established; passing in an easterly direction through Standish, Gorham, Westbrook, Windham

and Falmouth, it falls into Casco bay. Androscoggin river is one of the largest in the State, and having as its capacious fountains, lakes Umbagog and Mooseetocmguntick, first sweeps westward through a portion of New Hampshire, then, taking an easterly direction, traverses the counties of Oxford, Cumberland, Kennebec and Lincoln, and unites with the Kennebec river in Merrymeeting bay.

The only mountains near the line of the survey in Maine, is the Rattlesnake range, which extends through Raymond in an easterly direction.

The first line commences at Walker's wharf, $2\frac{7}{10}$ feet above high water mark, and passing near the shore of Fore river, crosses the Cumberland and Oxford canal twice within the distance of one mile. And it will be advisable to move the bed of the canal at these points, south of the road, which can be done at an inconsiderable expense; thence it extends west of Bramhall's hill and south of Libby's tavern in Westbrook, to a point near Graves's tannery; distance 2 miles 3440 feet from Portland, and $54\frac{46}{100}$ feet above high water mark.

The second line commences at A, on sheet No. 1, at the western end of Preble street, and crossing the southern part of Buck cove, and passes east of James Deering's house, and intersects the first line at Graves's tannery, distant 1 mile 4220 feet from Portland; making a difference in favor of this line,

of 4500 feet. The line then continues west of Larrabee's hill, and crosses the Presumpscot river about half a mile east of the village of Saccarappa, and will require a bridge 140 feet in length. The distance to this river is 6 miles 200 feet, and the elevation above high water mark $33\frac{1}{10}$ feet. There was a line run commencing at a point 3 miles 4960 feet from Portland, which passes east of Larrabee's hill and crosses the Presumpscot river east of the first line, and which it intersects 920 feet beyond the river. This line, which is delineated on sheet No. 1, V V, increases the distances 336 feet. The main line then passes up a valley, east of McLellan's house in Westbrook, and crossing the road to Horsebeef falls, and proceeding west of Anderson's house in Windham, reaches a point near the northwest end of Canada hill, distant 10 miles, 3000 feet from Portland, and $192\frac{3}{10}$ feet above high water mark; thence east of Greenough's tavern in Windham, to Pleasant river, which will require a bridge 40 feet in length; the distance is 15 miles 2100 feet, and the elevation above high water mark, $175\frac{6}{10}$ feet; thence it passes on the southern side of Windham plains, south of Boody's tavern, to turtle pond in Windham, crossing the southwestern side of it, distant 19 miles 2080 feet, above tide $300\frac{94}{100}$ feet; thence to a point, distant 21 miles 3920 feet, from whence two lines were run, one crossing Panther stream and passing east of Sawyer's tavern and west of Pan-

ther pond; the other, T T, on sheet No. 2, crosses Panther stream, passes west of Sawyer's tavern, and intersects the first line at a point near Panther pond, distance 23 miles 3360 feet from Portland, and $239\frac{4}{100}$ feet above high water mark. The length of the second line was 1 mile 4,549 feet, being 171 feet shorter than the first; thence passing east of the meadow road leading to Otisfield and west of Rattlesnake mountain, the line continues to Parker pond, distance 29 miles, 1480 feet, and elevation $426\frac{41}{100}$; thence crossing a cove at the east end of Parker pond, which is 1300 feet wide, and passing along the eastern shore of the pond, west of Mayberry hill, east of Pleasant pond and the Meeting-house hill in Otisfield to Saturday pond, distance 37 miles, 3,840 feet, and the elevation $522\frac{53}{100}$ feet; thence near the eastern shore of Saturday pond, and crossing its northeast end, and the southeastern end of Moose pond, to the northern shore, the distance is 38 miles, 4760 feet, and the elevation $512\frac{46}{100}$ feet; thence keeping on the northern slope of Rocky hill, and east of Mud pond, it enters the valley of Crooked river, which it then crosses at a point, where it is 75 feet wide, and 43 miles 4160 feet from Portland, and has an elevation of $391\frac{89}{100}$ feet, thence it passes up the valley of the river, on its western side, to the eddy of Pierce's mill pond, distant 45 miles 4600 feet from Portland, with an elevation of $435\frac{2}{100}$ feet; thence crossing the southern end of the mill pond it

continues on its eastern side for a short distance and then passes up the valley of the river, which is crossed a number of times, to the summit level between the Androscoggin river and Portland, which is distant 62 miles 1040 feet from Portland, and is $668\frac{5}{100}$ feet above high water mark; thence the line continues on the western side of Songo pond to the Androscoggin, in Bethel, distance 68 miles 560 feet, and elevation $692\frac{50}{100}$ feet; thence to White's corner, distance 69 miles 4280 feet, with an elevation of $659\frac{29}{100}$ feet; thence on the western bank of the Androscoggin river, to Pleasant river, distance 70 miles 3400 feet from Portland, and elevation $631\frac{70}{100}$ feet; thence to Wild river, distance 75 miles 5000 feet, and the elevation $661\frac{10}{100}$ feet; thence crossing Wild river, which is 150 feet wide, the line terminates at Shelburne on the boundary line between New Hampshire and Maine; distant from Portland, 78 miles 4 feet, and at an elevation above high water mark, of $674\frac{34}{100}$ feet.

The bank of the Androscoggin river presents two routes, one on the lower intervale by which it is generally bordered, and another on the more elevated bank, or second intervale. The first is often overflowed in freshets, and if a Rail Road was located thereon, it might be subjected to injury, even if elevated on an artificial embankment. It is therefore probable, that an intermediate line would be established by taking advantage of the highest intervale,

to a certain extent, so as to keep above the vernal and other occasional floods; and thus be preferable to the line which has been assumed; but it requires more exact information than I have as yet been able to obtain as to the maximum rise of the river, to decide on the precise line best adapted for the actual location of the road in that portion of the route.

A route (S S, on sheets No. 1 and 2) was surveyed, which commences at a point north of the village of Saccarappa, 7 miles 2840 feet from Portland, and $70\frac{56}{100}$ feet above high water mark, which extends up the valley of Presumpscot river, which would accommodate the manufacturing establishments and mills that now are in operation, or may be erected on the sites of the extensive water powers, which that river affords.

The line passes up the eastern bank and near the shore of the river, to the mouth of Ink-horn brook, distance 1000 feet and 73 feet above high water mark; thence pursuing the sinuosities of the river as was indispensably necessary in several portions of the line, to Coleright's brook, at a distance of two miles 3,240 feet, with an elevation of $74\frac{7}{10}$ feet, the route continues to a point near Horsebeef falls, distant 3 miles 1560 feet; elevation 101 feet; thence east of the Cumberland factory falls to Pleasant river, distant 5 miles 3600 feet, and elevated 128 feet; and then leaving the immediate shore of the river, but keeping in its valley, the line continues to

a point opposite the great falls, distant 8 miles 2360 feet, with an elevation of 221 feet; from thence it extends to near Boody's tavern in Windham, where it intersects the first line, which is distant from Portland by this line, 18 miles 3210 feet, and has an elevation of $297\frac{69}{100}$ feet; but by the first line the distance to the same point is only 17 miles 424 feet, making a difference in its favor of 4250 feet.

As to which of these lines the preference should be given, is a question which cannot be satisfactorily determined at this time, and may with propriety be left for consideration until the time arrives for making the definite location, when all such facts as relate to the peculiar advantages of each route, will have been carefully collected, and thus render a solution not only less difficult, but more correct than can possibly be made from the incomplete data which are now afforded; but so far as I am able to determine, from the examinations which have been made, and the elements which have been obtained, the first line appears to be the most eligible, it being the shortest, the least curved, has fewer and less elevated acclivities, and admits of the construction of a Railway, at a diminished expense; besides it would pass sufficiently near the river, at several points, to accommodate some of the sites for mills and factories; but still it is possible that there are advantages to be secured from the establishment of the second line,

which may more than balance those which have been suggested as pertaining to the first.

As to the general direction of the whole line which has been surveyed, although unwearied pains were taken to ascertain the most favorable route, it is not improbable that deviations could be made, by which the extent and number of the curves might be diminished, at some points, and the grades rendered less abrupt in others; for, in running an experimental line, for such a distance, through a country chiefly covered with a dense forest, and whose surface is so broken into steep hills and irregular valleys, it is impossible to determine, whether the best line has been obtained, by such preliminary surveys and explorations as have now been completed, that could be selected, after repeated examinations of the topographical features of the adjacent region, on both sides of the delineated route, shall have been made. Still it is believed that the extent of straight line compared with the curved, is greater than is usually obtained in trial surveys of equal distance, through the New England States, there being 58 miles 1004 feet of the former on the main route, and but 19 miles 4280 feet of the latter. The maximum curvature has a radius of 900 feet, and that for a distance of only 400 feet, while the remainder have a radius of from 1146 to 11460 feet. The total amount of lines of deflection are 17 miles 1526 feet,

of which 13 miles 1460 feet are straight, leaving only 4 miles 66 feet of curved line. For statement of straight and curved lines, see tables in appendix.

The grades have been arranged so that they shall, as much as possible, be descending towards Portland, believing that the preponderance of transportation will be in that direction. The maximum grade is 48 feet per mile, which, in comparison with those on other Rail Roads, taking into consideration the improvements which have been made in locomotive engines, are not considered so objectionable as formerly, to the attainment of high rates of speed, or the transportation of heavy trains of merchandize. I have given in the annexed table, the grades of the main line, and the length of each, in their respective order.

Length of Plane in feet	Denomination.	Total rise & fall of plane.	Ratio.	Grade per mile.	Length of Plane in feet.	Denomination.	Total rise& fall of plane	Ratio.	Grade per mile.
14,400	Ascent	60	$\frac{1}{240}$	22	12,200	Descent	70	$\frac{1}{174 \cdot 3}$	30.29
18,000	Level				9,000	Ascent	8	$\frac{1}{112 \cdot 2}$	4.71
31,200	Ascent	150	$\frac{1}{208}$	25.38	6,000	Do.	32	$\frac{1}{187 \cdot 5}$	28.06
16,400	Do.	20	$\frac{1}{820}$	6.44	14,000	Level			
12,200	Do.	70	$\frac{1}{174 \cdot 3}$	30.29	4,200	Ascent	20	$\frac{1}{210}$	25.14
17,000	Do.	35	$\frac{1}{485 \cdot 7}$	10.66	8,400	Level			
8,600	Descent	40	$\frac{1}{215}$	24.55	16,400	Ascent	70	$\frac{1}{234 \cdot 3}$	22.10
14,600	Level				17,200	Do.	20	$\frac{1}{860}$	6.14
4,800	Ascent	40	$\frac{1}{120}$	44	12,200	Do.	50	$\frac{1}{244}$	21.72
12,000	Do.	110	$\frac{1}{109 \cdot 9}$	48.40	10,200	Do.	20	$\frac{1}{510}$	10.36
21,600	Do.	40	$\frac{1}{540}$	10.73	46,200	Level			
14,800	Do.	65	$\frac{1}{227 \cdot 6}$	26.04	9,600	Ascent	40	$\frac{1}{240}$	.22
21,400	Descent	50	$\frac{1}{428}$	12.31	28,200	Descent	10	$\frac{1}{2820}$	1.87

Average grade per mile for the whole length, viz: 78 miles 8 feet and $\frac{29}{39}$.

The following is a practicable table of the power of traction of locomotive engines upon railways, exhibiting the gross load in tons, including the tender, at different rates of speed, and upon inclinations varying from a level to an ascent of one hundred feet per mile, deduced from the formula of De Pambour, one of the ablest writers on the subject.

Weight of engine, 13 tons; evaporating power, 55 cubic feet; cylinder 1.16 feet diameter.

Ascent in feet per mile.	Velocity in miles per hour.								
	$10\frac{3}{5}$	$12\frac{1}{2}$	15	$17\frac{1}{2}$	20	$22\frac{1}{2}$	25	$27\frac{1}{2}$	30
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons	Tons	Tons.
Level.	375	299	228	177	138	108	85	66	49
10	240	190	144	111	86	66	51	39	28
20	174	138	104	79	61	46	35	26	18
30	136	108	81	62	46	34	26	18	12
40	111	87	65	48	36	26	19	13	8
50	93	71	52	39	29	21	15	9	
60	80	63	46	34	24	17	12	7	
70	69	53	38	28	20	13	9		
80	61	47	34	24	17	12	7		
90	54	42	29	21	14	9			
100	49	36	27	18	12				

Total pressure of steam to the square inch in the boiler, 70 lbs.; diameter of driving wheels, 4′ 5; length of stroke in feet, 1′ 33″; friction of engine, 14 lbs. per ton; friction of carriages, and additional friction upon engine from load drawn, 8 lbs. per ton. The ton employed equals 2000 lbs.; the wheels of the engines are supposed to be coupled, if necessary.

when drawing the maximum load, or otherwise so arranged as to bring the weight of the tender upon the driving wheels.

Weight of Engine, 10 tons; evaporating power, 42 cubic feet; cylinder 1 foot diameter.

Ascent in feet per mile.	Velocity in miles per hour.								
	$10\frac{3}{5}$	$12\frac{1}{2}$	15	$17\frac{1}{2}$	20	$22\frac{1}{2}$	25	$27\frac{1}{2}$	30
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Level.	277	230	175	137	108	85	67	52	40
10	177	148	113	87	68	53	41	32	23
20	129	106	80	61	47	37	28	20	14
30	100	82	63	47	36	28	20	14	10
40	81	67	50	37	28	21	15	10	6
50	70	55	40	30	22	16	11	7	
60	60	48	35	26	19	13	9		
70	51	41	29	21	15	11	7		
80	45	36	25	19	13	9			
90	40	32	23	16	11	7			
100	35	29	21	14	9	6			

There was a trial line of a level run from the State line in Shelburne, to the summit level in New Hampshire, near Bowman's tavern in Randolph, to ascertain the practicability of carrying the road across the White mountain range, which there has a direction at almost right angles to the line of the survey. The summit was found to be elevated $798\frac{504}{1000}$ feet above the termination of the line in Shelburne, and $1{,}472\frac{847}{1000}$ feet above high water mark. On arriving at the summit we were met by a number of gentlemen from Lancaster, who feeling a deep interest in the proposed work, desired that the

level might be continued to the Connecticut river at Lancaster bridge, which was accordingly done, and the river at that point found to be 630^{500} feet below the summit, and 836^{907} feet above high water mark. The estimated distance from the line in Maine to the summit in New Hampshire, is 18 miles, making the average grade per mile, $44\frac{30}{100}$ feet; and the distance from the summit to the Connecticut river at Lancaster bridge, 15 miles; making the average grade $42\frac{36}{100}$ feet per mile; so that it is confidently believed that the line could be located with a maximum grade of 50 or 60 feet per mile, which is much less than those on some parts of the western road of Massachusetts; and not so steep but that locomotive engines can be used with perfect ease and safety; for the engines now made are capable of ascending much steeper declivities than formerly. From the great perfection which has been reached in the construction of locomotive engines, and the accuracy under ordinary circumstances, with which their time of transit, and the arrival of the various trains at the several turnouts and depots, can be timed, it is believed that a single track, with a proper number of turnouts, would not only be sufficient, for all the transportation on this route for a very considerable period, but would very much diminish the cost of construction.

This plan has been adopted on the Rail Roads from Worcester to the New York line, and those

from Boston to Portsmouth, and from the Lowell road to Exeter. The estimates, therefore, for this route, have been based upon a single track with a road bed sixteen feet wide; the slopes to be one and a half feet horizontal to one foot perpendicular rise, except in rock formation, where the cut can be nearly perpendicular.

It is respectfully, yet urgently recommended, that the Rail Road should pass, either sufficiently high over, or so deeply under all other roads, as to give to the travel of each a free and uninterrupted passage. This will effectually prevent those numerous and disastrous accidents, which are so unavoidable, where the intersections of the rail and common road, are on the same level, as has been illustrated where every possible precaution has been taken, to prevent collisions and other fatal consequences.

The grade line of the road has been laid high, as it is now considered absolutely necessary to do this, in sections of the country subject to such severe and deep snows as the portion of the State through which this line runs, to prevent the obstructions that would otherwise occur, and also to give the road a good drainage, so that the road bed shall not be saturated with water in the fall, and having no chance to escape, freeze, and throw the superstructure of the road out of its proper position.

The superstructure recommended is that described in the former Report. I have also made an esti-

mate, based upon an iron plate rail for superstructure, two and a half inches wide, and three fourths of an inch thick, laid on longitudinal sills of wood, eight inches square, and secured to them by spikes or bolts. The sills to be placed on sleepers or cross ties seven inches square and arranged three feet apart from centre to centre. But it is proper to state that I do not recommend this mode of construction; for although it is much cheaper in the first instance, it is not so durable, requiring frequent repairs, and the engines would not be able to perform the same amount of work, as on a road of the construction first named.

The abutments and piers of the bridges, and the culverts to be built of stone, but not laid in mortar. The stone materials required for the construction of the piers and abutments, and timber for the bridges, sills and sleepers of the road, can be obtained, of a superior quality, near to, and throughout nearly the whole extent of the route, at a cheap rate.

Commencing at Portland, the excavations will principally be made through, and the embankments composed of, the following geological formations:

Sand and loose rock, . .	2 miles.
Clay, gravel and some ledge, .	8 "
Sand, gravel and loose rock, .	8 "
Granite loose rock, clay and portions of ledge, . . .	10 "
Ledge, loose rock, gravel and sand,	42 "
	78 miles.

The ledge cutting is principally through granite and mica slate, but there are portions of the route where green stone and trap rock occur.

The estimated cost of one mile of superstructure of a single track and of H rail, is as follows:

1. H Rail 36 1-2 tons, 55 lbs. per yard, at $70 per ton,	6,055	
2. 704 cast iron chairs or splicing plates, at 50 cts.,	352	
3. 616 lbs. of spikes, at 6 cts. per lb.,	36	96
4. 29500 feet of hemlock long sills 8 by 3, at 11cts,	324	50
5. 1760 white cedar sleepers, at 20 cts. each,	352	
Laying rails, including digging trenches, notching and straitening rails, at $2 50 per running rod, the iron delivered on the road,	800	
	$7,920	46
Cost of one mile of superstructure of plate Rail Road,	$5,230	00

The line having been divided into sections, for the purpose of equalizing the excavations and embankments as much as possible, the following estimate has been made of the expense of grading, bridging, clearing, and the superstructure of the road, exclusive of the right of way, offices, engines, &c., as they more properly belong to the report on the location of the line.

SECTION No. 1.

Distance, 6 miles 720 feet.

2 1-4 acres of clearing, as $18,	40	50
6,236 cubic yards of rock excavation, at 75 cts.,	4,677	
65,632 cubic yds. of earth excavation, at 13 cts.,	8,532	16
34,108 cubic yds. of earth excavation, at 20 cts.,	6,821	60
357,730 cubic yards embankment, at 15 cts.,	53,659	50
136 feet of bridging, masonry included,	5,592	
260 cubic yards of masonry for culverts,	520	
7 road bridges and crossings, every thing included,	3,705	
1 farm crossing,	35	
Total cost of grading section No. 1,	$83,582	76

SECTION No. 2.

Distance, 6 miles 4,560 feet.

3 1-2 acres of clearing, at $20,	70	
2,880 cubic yards of rock excavation, at 80 cts.,	2,304	
451,190 cubic yards of earth excavation, at 18cts.,	81,214	20
51,960 cubic yards of embankment, at 15 cts.,	7,794	
615 cubic yards of masonry for culverts,	1,230	
6 road bridges, every thing included,	4,661	
2 farm crossings, at $35,	70	
Total cost of grading section No. 2.	$97,343	20

SECTION No. 3.

Distance, 5 miles 5,200 feet.

8 acres of clearing, at $18,	144	
2 acres of grubbing, at $100,	200	
21,745 cubic yards of earth excavation, at 20 cts.,	4,349	
280,844 cubic yards of earth excavation, at 13 1-2 cts.,	37,913	94
400,967 cubic yards of embankment, at 14 cts,	56,135	38
50 feet of bridging, every thing included,	2,915	
1,044 cubic yards of masonry for culverts,	2,088	
5 road bridges, every thing included,	3,695	
3 farm crossings, at $35,	105	
Total cost of grading section No. 3,	$107,545	32

SECTION No. 4.

Distance, 7 miles 40 feet.

14 3-4 acres of clearing, at $18,	265	50
5 acres of grubbing, at $110,	550	
123,930 cubic yds. of earth excavation, at 14 cts.,	17,350	20
284,021 cubic yards of embankment, at 12 cts.,	34,082	52
30 feet of bridging, every thing included,	1,100	
210 cubic yards of masonry for culverts,	420	
6 road bridges, every thing included,	4,157	
2 farm crossings, at 35,	70	
Total cost of grading section No. 4,	$57,995	22

SECTION No. 5.

Distance, 5 miles 3,400 feet.

17 1-2 acres of clearing, at $19,	352	50
6 acres of grubbing, at $116,	696	
18,056 cubic yards of rock excavation at 70 cts.,	12,639	20
300,010 cubic yards of earth excavation at 10 cts.,	30,001	
56,200 cubic yards of earth excavation at 15 cts.,	8,430	
626 cubic yards of masonry for culverts,	1,252	
2 farm crossings at $35,	70	
Total cost of grading section No. 5,	$53,440	70

SECTION No. 6.

Distance, 5 miles 2,600 feet.

12 1-2 acres of clearing, at $18,	225	
2 acres of grubbing, at $110,	220	
222,258 cubic yards of earth excavation at 12 cts.,	26,670	96
215,320 cubic yards of earth excavation at 16 cts.,	34,451	20
167,869 cubic yards of embankment at 15 cts.,	25,180	35
200 cubic yards of masonry for culverts,	400	
1 road bridge, every thing included,	1,140	
2 farm crossings, at $35,	70	
Total cost of grading section No. 6,	$88,357	51

SECTION No. 7.

Distance, 5 miles 4,600 feet.

7 1-2 acres of clearing, at $20,	150	
4 acres of grubbing at $120,	480	
320,158 cubic yards of earth excavation, at 15cts.,	48,023	70
120,132 cubic yards of earth excavation, at 12cts.,	14,415	84
40 feet of bridging, every thing included,	1,400	
69 cubic yards of masonry for culverts,	138	
1 farm crossing,	35	
Total cost of grading section No. 7,	$74,642	54

SECTION No. 8.

Distance, 5 miles 200 feet.

13 1-4 acres of clearing, at $19,	351	75
4 acres of grubbing, at $110,	440	
17,682 cubic yards of rock excavation, at 80 cts.,	14,145	60
197,924 cubic yards of earth excavation, at 13cts.,	25,730	12
78,431 cubic yards of embankment, at 14 cts.,	3,137	24
748 feet of bridging, every thing included,	21,205	
20 cubic yards of masonry, for culverts,	40	
2 farm crossings, at $35,	70	
Total cost of grading section No. 8,	$66,119	71

SECTION No. 9.

Distance, 5 miles 2,984 feet.

8 acres of clearing, at $18,	144	
5 acres of grubbing, at $120,	600	
141,602 cubic yards of excavation, (earth,) at 17 cts.,	24,072	34
20,646 cubic yards of embankment, at 14 cents,	2,890	44
125 feet of bridging, every thing included,	5,144	67
4 road bridges, every thing included,	2,890	
2 farm crossings, at $35,	70	
Total cost of grading section No. 9,	$35,811	45

SECTION No. 10.

Distance, 5 miles 1,800 feet.

22 1-2 acres of clearing, at $20,	450	
10 acres of grubbing, at $117,	1,170	
325 cubic yards of rock excavation, at $1,	325	
100,978 cubic yards of earth excavation, at 12cts.,	12,117	36
95,562 cubic yards of embankment, at 14 cts.,	13,378	68
195 feet of bridging, every thing included,	8,624	
3 road bridges, every thing included,	2,520	
1 farm crossing, at $35,	35	
Total cost of grading section No. 10,	$38,620	04

SECTION No. 11.

Distance, 6 miles 3,820 feet.

15 acres of clearing, at $18,	270	
4 acres of grubbing, at $110,	440	
65,529 cubic yds. of earth excavation, at 12 cts.,	7,503	48
210,638 cubic yds. of earth excavation, at 14 cts.,	29,489	32
175 feet of bridging, every thing included,	5,720	
40 cubic yards of masonry for culverts,	80	
7 road bridges, every thing included,	5,670	
2 farm crossings, $35,	70	
Total cost of grading section No. 11,	$49,242	80

SECTION No. 12.

Distance, 6 miles 1,120 feet.

5 1-2 acres of clearing, at $19,	104	50
1 acre of grubbing at $100,	100	
5,563 cubic yds. of rock excavation, at 75 cts.,	4,172	25
312,037 cubic yds. of earth excavation, at 10 cts.,	31,203	70
313,272 cubic yds. of ea th excavation, at 12 cts.,	37,592	64
60 feet of bridging, every thing included,	2,052	50
50 cubic yards of masonry for culverts,	100	
5 road bridges, every thing included,	3,807	
1 farm crossing,	35	
Total cost of grading section No. 12,	$119,167	59

SECTION No. 13.

Distance, 5 miles 300 feet.

1 2-3 acres of clearing, at $18,	30	
1 acre of grubbing, at $100,	100	
1,259 cubic yards of rock excavation, at 65 cts.,	818	35
290,354 cubic yds. of earth excavation, at 13 cts.,	37,746	02
51,063 cubic yards of embankment, at 14 cts.,	7,148	82
175 feet of bridging, every thing included,	8,746	
64 cubic yards of masonry for culverts,	128	
1 road bridge, every thing included,	448	00
2 farm crossings, at $35,	70	
Total cost of grading section No. 13,	$55,235	19

RECAPITULATION.

Total cost of grading, &c., section No. 1,	$83,582	76
" " 2,	97,343	20
" " 3,	107,545	32
" " 4,	57,995	22
" " 5,	53,440	70
" " 6,	88,357	51
" " 7,	74,642	54
" " 8,	66,119	71
" " 9,	35,811	45
" " 10,	38,620	04
" " 11,	49,242	80
" " 12,	119,167	59
" " 13,	55,285	19
Total cost of grading, &c., main line,	$927,103	93
Superstructure, 78 miles, at $7,920 46 per mile,	617,795	88
Add for turnouts and contingencies, 10 per ct.,	154,499	98
Total cost,	1,699,389	79

Giving an average cost per mile, exclusive of the right of way, of $21,785 76 1-2.

Estimated cost of the line up the valley of the Presumpscot,

with a maximum grade of 54 feet per mile, including grading, bridging, clearing, &c., and excluding the right of way:

Length of line, 11 miles 370 feet. Total cost,	$204,428 50
Estimated cost of that part of the main line embraced between the commencing and terminating points of the former,—Length, 10 miles 1400 feet,	202,929 15
Difference in favor of main line of	$1,498 35
Estimated cost of the line west of Longley's, including grading, &c., and excluding the right of way,—Length 1 mile 4720 feet,	20,448 66
Estimated cost of that portion of the main line included between the commencing and terminating points of the former,—Length 1 mile 4549 feet,	18,247 28
Difference in favor of main line,	$2,201 38

From the information which was obtained and presented in the Report which I had the honor of submitting last June, on the various routes which were explored between Portland and Lake Champlain; and the facts which have been ascertained by the survey that has been made of that portion of the line situated within the bounds of Maine, and the trial level that was run from thence to the Connecticut river, it is manifest, that so far from there being any insuperable difficulty in the construction of a Rail Road, between the two important extreme termini, it can be done without encountering acclivities as great as those which have been adopted in the grades of several of the established lines that

have been completed in other States, and at an expense which will be much less, than has been there incurred. From these preliminary and indispensable elements, there cannot be a doubt of its being practicable to open a line of intercommunication between the commercial emporium of Maine and the vast region of the great Lakes, which is commensurate with the grandeur and cost of such a work.

The importance of establishing greater facilities of intercourse between the distant points of a State, as well as with other States, by roads, canals, railways, and the improvement of the navigation of rivers, has been so universally conceded and illustrated in the examples of not only the ancient and modern nations on the eastern continent, but by every State in the Union, that it may seem to be an act of supererogation to enter, at this time, into investigations for the purpose of confirming the correctness of a position which has been so generally assumed as correct, by the most enlightened governments which have ever existed, and which has been for the last half century, and now is, so zealously acted upon.

The unexampled prosperity of Great Britain since the close of the war of our revolution, in agriculture, navigation, commerce, manufactures, and all other branches of industry, is to be mainly attributed to the construction of the very best roads which exist in the world, cutting canals, laying down Railways,

and rendering the natural water courses and havens more accessible and safe for the transit of vessels and boats of all kinds. And this has been done in such extensive and diversified directions, that the whole Island has been traversed and intersected in such an ample manner as to afford every city, town, hamlet, and estate, as well as the proprietors of the innumerable iron, coal, copper, tin, and other mines, the means of a safe, cheap and rapid transportation of persons and an interchange of products of all kinds, both of a foreign and domestic character.

Although the area of the Island of Great Britain is only about a third greater than that of the States of New England, the aggregate length of the canals and Rail Roads of that Kingdom is 4,240 miles, while that of the immense number of well constructed roads, on which the science, talents and genius of a Telford, McAdam, and other eminent engineers, were exhausted with the increased extent of navigation, given to the numerous rivers, by the removal of obstructions, and other modes of rendering their capacities available for the purpose of transportation, is more than decuple that vast extent of line of artificial conveyance.

In the reign of Queen Elizabeth, there was not an Englishman in London who followed the exclusive business of an importer and exporter. That trade was almost entirely prosecuted by foreigners,

and even the coasting vessels were manned by foreign sailors; but so great has been the change, that the commercial fleet of Great Britain now amounts to over 25,000 sail; and in 1835 there entered the single port of London, 4,837; which with their cargoes were estimated at 1,261,447,500 dollars. As late as 1739, just one century from this time, not only all the linen and silk fabrics consumed in England, were imported from France, Holland and Germany, but nearly all the bar iron used was brought from Sweden, Denmark and Russia; and now there is one establishment in Wales, owned by a single individual by the name of Crozier, and who appropriately is called the iron king, where 75,000 tons of iron are annually made; and the whole product of the island has augmented to 1,400,000 tons.

If France has not evinced as much energy in the construction of like works of internal improvements, when the extent of her territory, and the large amount of her population are taken into consideration, still, since the reign of Louis XIV. down to the present period, their importance has never been lost of, by the government; and during the last thirty years, such has been the effort to equal, in this particular, the flourishing and long rival Kingdom on the other side of the channel, that the length of the canals and Rail Roads has increased to 3134 miles; and so many works of both kinds have been pro-

jected, and are being prosecuted, as will involve an annual expenditure of nearly twenty millions of dollars for the next twenty-five years.

But the number of miles of canals and Rail Roads in the United Sates, most of which have been constructed within the last ten years, is nearly equal to that of all Europe, the latter being only 9,300 and the former 9,150 miles, and have cost 180 millions of dollars. Notwithstanding the example of foreign nations, and the wonderful success with which these grand and highly interesting works have been prosecuted in almost every State in the Union, the government of Maine has not as yet exhibited that determination for the actual commencement of those invaluable channels of intercourse, which the large area of her rich and diversified territory for agriculture, manufacturing and commercial purposes, require, and which a large majority of the people cannot long fail of demanding. But the first step, which is ever the most important on all great occasions, has been taken by directing the explorations and surveys which have been executed for ascertaining facts; and the next decisive movement, it may be confidently expected, will soon be made.

The navigation of Maine amounts to over 270,000 tons, which is one eighth of that of the whole United States, and nearly half as much as that of the Kingdom of France. The products of the vessels employed in the fisheries alone, amounts to

at least three millions of dollars, and much the largest portion of which are sent to the western country, from New York, Philadelphia, Baltimore and New Orleans, to which places they are transported coastwise. To this valuable, perpetual and inexhaustible source of wealth, is to be added the cotton, woolen, iron, leather and other manufactured articles, which are now very considerable, and may and will be speedily augmented, from the facility for founding such establishments, which the extensive water power of the numerous rivers and streams so abundantly afford. But all the articles of foreign origin required for the interior, can be as abundantly and profitably imported by the merchants of Maine, and sent by the proposed route, as directly and cheaply as from any other part of the sea coast.

The interesting facts in relation to the other natural resources of Maine which have been developed by the very able, scientific and instructive Geological Report of Dr. Jackson, are well deserving of the most profound consideration, as connected with the subject of Internal Improvements, and the prosperity of the people, and cannot fail of attracting universal interest, from the quantity and variety of the rich mineral deposits, which are so abundantly scattered over the State.

Besides the numerous marble, granite and lime quarries, whose materials are so indispensable for the various architectural, agricultural and other

important purposes to which they are applicable, and which can be so advantageously and extensively wrought, both for home consumption and distant supply, there are innumerable mines of the best varieties of iron ore; many deposits of roofing slates, of a superior quality to those imported in such vast quantities from Wales, as well as of hydraulic lime and of manganese, which is so valuable and necessary for the cotton bleaching of the country.

A distinguished French author has truly remarked, in a recent work on the natural resources of that country, that *iron* and *fire* were the two grand elements of human industry; the first of these, Maine possesses in an eminent degree, as has been conclusively shown by the accomplished geologist who has lately completed his survey of the State in such a highly commendable manner; and the coal for creating the other, can be furnished to an indefinite extent, from the vast primeval forests, if it should not be found in a mineral form under the earth: but on the very bounds of the State, and near some of the most abundant and extensive mines of iron ore, bituminous coal of a good quality and inexhaustible quantities exists. It is only required to open facilities of transportation between these prolific sources of wealth and the towns situated on the navigable rivers and harbors of the sea-coast, to put them all into active and profitable operation. This would give immediate activity to ship-building and com-

mercial enterprise in all their various departments; and in proportion as the number of persons increased in the multiplied employment of the foreign and coasting trades, the fisheries, manufactures and mechanic arts, agriculture would be extended, and thus every kind of industry find an enlarged field of action, and new causes of encouragement, from the same cheering results which would be inevitably obtained.

The most important great line of Rail Road can be so easily extended to Lake Champlain, and will open such an immense channel for all the products of labor, and give such vastly increased employment to all such other structures as will be found expedient and advisable, for the double purposes of travel, and the transportation of the natural and artificial indigenous articles of merchandize, that it is confidently believed, that the period is not very distant, when not only that primary and chief avenue, but such a number of a subordinate character, will be zealously commenced, so as to afford every portion of the State those indispensable facilities of intercourse, which are so extensively enjoyed, in other States, whose resources and population are not comparable to those of Maine.

From the peculiarly propitious character of the physical geography of Maine, it is certainly destined to become one of the most distinguished in the Republic; but to give the required stimulus to the

productive labor of every class of citizens, and promote their exertions for the full developement of all the remarkable and bounteous natural resources of the country, the means of transportation must be multiplied and improved in the same liberal manner, and undertaken with the same confidence and ardor which have produced such glorious results in Massachusetts, New York, Pennsylvania, Ohio and many other portions of the United States.

The mighty creations, which are the most certain for facilitating, hastening and consolidating the progress of material amelioration, are those of intercommunication by land and water which approximate men and places, and the industrial and natural products of each. This is no longer a theoretical axiom, but a practically illustrated truth, in the certainty of which the whole civilized world has acquiesced, and which is now being verified by facts, as indisputable and numerous, as they are gratifying and momentous.

The measures which are in progress, in the State of New York, for extending the numerous lines of canals and Rail Roads that have already been constructed, are based upon such enlarged, generous and patriotic views as respects the wants and interests of the entire population, that but a few years will have elapsed, before a route will be opened by either a Rail Road or canal, and more probably by both modes of communication, between Ogdensburg

on the river St. Lawrence, and Plattsburg or some other point on Lake Champlain. This having been accomplished, an immense entrepot will most assuredly be established, from the vast amount of products of the boundless interior which will be there accumulated for transportation to the Atlantic cities of New England and New York, and those of foreign and domestic origin which will be transhipped westward, to meet the increasing demand of the accumulated millions of inhabitants, which throng the luxuriant agricultural region, now including seven States, and two Territories which will soon become States, beyond the bounds of Vermont, besides the whole extent of Upper Canada. In the great and profitable trade which will be thus opened to the east, there is not one of the maritime States which can command so much of it as shall take the direction of Lake Champlain, as Maine.

The expenditures required for securing to Maine a large proportion of the annually increasing commerce of the west, are not like those for the ordinary purposes of the State; they will not be mere payments for services rendered, as in the civil or military departments of the government, which are absolute absorptions, and the utter extinguishment of so much revenue, but real and judicious investments, which will constitute a perpetual and productive capital of wealth, which will afford the means of not only the liquidation of such loans as may be found

requisite, but become a never failing and accumulating fund, for like beneficial and desirable objects. It will in fact be the actual creation of an immense amount of lucrative property, from the mere application of that intelligence for which the citizens of Maine, have ever been conspicuous in their multifarious pursuits, and the wise and energetic exercise of that legislative power which can be so beneficiently and successfully employed.

With sentiments of the highest respect,

I have the honor to be

Your Excellency's

most obedient servant,

W. L. DEARBORN.

Annexed are tables of curves and straight lines, showing in their respective order, the degrees of curvation, radius, length of curved and length of straight line, for all the lines that were surveyed.

FOR THE MAIN LINE.

Amount of straight line in feet.

1000	1600	200	1400	800	1600	800	400	600	400	3200	800	800	1000	800
1000	1200	400	1000	800	1800	600	1800	600	400	1100	200	2000	200	844
400	200	600	200	1800	1200	400	1800	200	200	1000	800	2800	1000	400
400	400	2800	1000	1600	800	2000	600	2000	600	1800	400	600	1400	600
400	1400	600	200	400	1200	1000	1200	600	1800	600	2200	400	800	1600
2600	400	1200	400	600	3200	400	200	200	600	1400	600	800	400	1200
400	6000	200	200	600	1400	400	400	400	2200	3200	800	600	1200	400
4600	1200	4800	600	2000	600	800	400	2200	600	400	2400	1200	1200	1200
4000	1800	2200	400	2000	1400	2600	600	600	1200	800	600	400	5000	400
1400	1200	1400	1000	4200	5000	1200	1400	1000	800	1200	600	1200	1600	400
600	200	3600	1200	1200	16200	400	1800	2000	1200	800	2600	400	400	600
1200	9000	1000	200	2200	800	600	3000	600	1200	1200	3000	6200	400	600
1400	1200	2800	400	600	800	800	1000	1000	800	400	1000	400	600	1000
3200	5000	2200	400	2600	600	600	[illegible]	1000	280	400	7200	200	400	4800
4200	800	4000	600	1600	1400	200	400	600	800	1800	1400	800	400	400

Total, 58 miles 1,004 feet.

TABLE OF CURVES FOR THE MAIN LINE.

Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.
2°30'	4584	200	1°	11460	200	2°	5730	200	4°	2865	600	1°30'	7640	200
10	1146	200	2 30'	4584	200	5	2292	200	4	"	600	4	2865	600
5	2292	400	5	2292	400	5	"	1000	4	"	200	5	2292	200
5	"	200	5	"	200	1	11460	200	4	"	200	3	3820	200
5	"	200	5	"	20.	2	5730	600	8	1432	200	3	"	200
5	"	400	2	5730	200	2	"	200	10	1146	400	3	"	800
5 30	2082.16	200	1 30	7640	200	2	"	400	2	5730	200	2 30	4584	200
11	1041.08	800	3	3820	400	3	3820	200	2 30	4584	200	5	2292	1200
30	22920	20	2	5730	200	6	1910	400	5	2292	1000	2 30	4584	200
1	11460	1400	1	11460	200	5	2292	200	5	"	200	5	2292	600
2	5730	200	2	5730	1600	5	"	400	5	"	400	1	11460	200
3	3820	200	5	2292	400	5	"	200	2	5730	200	5	2292	200
3	"	400	1 30	7640	200	6	1910	200	2 30	4584	200	5	"	600
30	22920	200	3	3820	800	3	3820	400	5	2292	200	5	"	200
1	11460	1000	3	"	200	3	"	200	4	2865	200	5	"	200
1 30	7640	200	3	"	200	3	"	200	5	2292	400	5	"	200
3	3820	600	1	11460	200	3	"	200	2 30	4584	200	5	"	400
2 30	4584	200	2	5730	600	3	"	200	5	2292	400	5	"	200
5	2292	1600	2	"	1400	3	"	200	5	"	600	5	"	600
5	"	400	4	2865	200	1 30	7640	200	4	2865	200	2 30	4584	20
1 30	7640	200	2	5730	200	1 30	"	200	4	"	1400	5	2292	800
3	3820	400	2	"	600	3	3820	800	4	"	200	10	1146	400

TABLE OF CURVES FOR THE MAIN LINE, (CONTINUED.)

Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.	Degrees of Curvature.	Radius of Curve.	Length of Curve.
3°	3820	600	5°	2292	200	3°	3820	200	5°	2292	200	5°	2292	200
6	1916	"	1	11460	"	3	"	1200	2	5730	"	5	"	"
10	1146	400	2	5730	1000	3	"	200	5	2292	"	3	3820	"
5	2292	200	3	3820	400	3	"	"	3	3820	800	5	2292	800
2 30	4584	"	2	5730	200	3	"	"	2	5730	200	5	"	600
5	2292	"	4	2865	800	3	"	"	3	3820	400	5	"	200
5	"	800	6	1910	200	4	2865	"	6	1910	200	6	1910	400
5	"	200	6	"	"	8	1432.05	"	6	"	"	6	"	200
5	"	"	6	"	"	8	"	200	2	5730	"	3	3820	"
5	"	"	2	5730	"	8	"	1200	4	2865	"	4	2865	"
6	1910	1400	3	3820	"	6	1910	1200	3	3820	400	3	3820	"
3	3820	200	10	1146	1400	6	"	200	6	1910	200	8	1432.05	1200
4	2865	"	10	"	200	8	1432.05	"	6	"	"	8	"	400
4	"	1000	3	3820	"	8	"	1200	6	"	600			
4	"	400	4	2865	"	8	"	1200	4	2865	200			
4	"	80	8	1432.05	"	8	"	200	6	1910	400			
8	1432	1000	6	1910	400	6	1910	400	6	"	200			
5	2292	200	6	"	"	2	5730	200	6	"	"			
10	1146	400	12	955	"	4	2865	"	10	1146	400			
8	1432	200	6	1910	"	8	1432.05	400	12	955	"			
10	1146	400	6	"	200	4	2865	200	5	2292	200			
5	2292	600	6	"	"	5	2292	"	5	"	600			

5°	2292	200	5°	2292	200	4°	2865	400	10°	1146	400
4	2865	“	5	“	“	6	1910	200	6	1910	800
4	“	1400	6	1910	1000	6	“	1200	3	3820	200
6	1910	1000	5	2292	400	6	“	600	6	1910	“
6	“	400	6	1910	800	8	1432.05	200	6	“	“
3	3820	200	6	“	400	3	3820	“	6	“	“
6	1910	400	3	3820	200	3	“	“	1	11460	“
6	“	800	2	5730	“	4	2865	“	6	1910	“
6	“	200	10	1146	400	4	“	400	3	3820	“
6	“	“	5	2292	200	8	1432.05	200	6	1910	“
6	“	“	5	“	“	4	2865	“	4	2865	“
4	2865	“	5	“	“	4	“	“	8	1432.05	600
5	2292	800	5	“	400	4	“	“	6	1910	200
3	3820	200	6	1910	600	4	“	“	6	“	“
6	1910	400	3	3820	200	12	955	600	3	3820	“
6	“	600	8	1432.05	1000	6	1910	400	3	“	“

PRESUMPSCOT RIVER LINE.

Amount of straight line, in feet.					
1400	400	600	400	1800	600
400	600	200	2200	2600	1200
1200	1400	800	3600	9800	1000
800	600	1200	1200	1600	3200
600	600	200	3000	600	1800

Total, 8 miles 3,360 feet.

TABLE OF CURVES.

Degree of Curvature.	Radius.	Length.	Degree of Curvature	Radius.	Length.	Degree of Curvature.	Radius.	Length.	Degree of Curvature.	Radius.	Length.
10°	1146	600	4°	2865	400	8°	1432	600	2°	5730	200
10	"	200	8	1432	400	5	2292	650	4	2865	200
5	2292	200	5	2292	400	5	"	400	1	11460	200
5	"	200	10	1146	200	5	"	400	4 30	2546	200
10	1146	400	2	5730	200	5	"	200	2 30	4584	200
10	"	1000	4	2865	200	5	"	200	2 30	"	200
5	2292	200	8	1432	300	2	5730	200	5	2292	200
10	1146	800	5	2292	200	5	2292	200	5	"	200
5	2292	200	10	1146	200	5	"	200			
2	5730	200	5	2292	200	6	1910	200			
10	1146	600	4	2865	200	5	2292	200			

Total, 2 miles 2,290 feet.

Whole length of line, 11 miles 370 feet.

STATE OF MAINE.

In Board of Internal Improvements, }
February, 1840. }

Read, and ordered that the Secretary of said Board procure the printing of 1000 copies.

Attest: P. C. JOHNSON, *Secretary.*

ERRATUM. In a part of the copies of the foregoing Report, page 30, 6th line from bottom, after the word "lost," insert *sight*.