

REPORT

OF THE

ENGINEER

TO THE

DIRECTORS

OF THE

CLEVELAND AND WARREN RAIL ROAD COMPANY,

February 24, 1838.

[PUBLISHED BY ORDER OF THE DIRECTORS.]

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1838.

## REPORT.



TO THE PRESIDENT AND DIRECTORS OF THE  
CLEVELAND AND WARREN RAIL ROAD COMPANY.

*Gentlemen :—*

In compliance with your instructions, I have made a survey and location of the Cleveland and Warren Rail Road, and now have the honor to submit the following report, with the requisite maps and profiles, exhibiting the topographical features of the country through which the line of the road passes.

The City of Cleveland, the point where our field operations commenced, is situated on the south shore of Lake Erie, at the mouth of the Cuyahoga River, in a rich and fertile section of country, rapidly progressing in agriculture and manufactures.

Its commanding position on the lake—its superior harbor, and its other great commercial advantages, have given to it a rapid and unexampled growth, and placed it among the most important commercial cities of the west.

The Ohio Canal, after traversing the whole extent of the state, from the Ohio River north, passing through the richest agricultural districts, terminates at Cleveland—thereby securing to her the vast trade of the interior of the state, and the great Ohio valley.

The Ohio Rail Road—a great and important work, the construction of which is about to be commenced—will pass through the town longitudinally, and following the lake shore, connects with the Rail Roads of Michigan at the Maumee River, thus forming a safe and expeditious land communication with the rich and extensive regions of the west.

The city is pleasantly located on an extensive section of Table-ground, gently sloping towards the lake—commanding a view of the lake, the river, and the diversified scenery of the surrounding country.

The soil is composed of a mixture of sand and gravel, and a level and unbroken surface is presented east of the town the distance of two or three miles.

Thence, as we proceed on an easterly course, following the route of the Rail Road, the soil changes to a mixture of clay loam and gravel; at several points along the line clay predominates.

The country is of an undulating character, and rises gradually until we attain the more elevated district, dividing the waters which flow north and west into the great basin of Lake Erie, and those flowing southerly to that of the Ohio River.

The Cuyahoga and Chagrin Rivers, with their tributaries, drain the northern and north-western slope, and the Mahoning River and its branches conduct the drainage south and east, to the Ohio River.

The Cuyahoga River has its source in the southern portion of Geauga county, and flows westerly through the county of Portage to a point near its west boundary; thence it turns to the north, and passing nearly through the centre of Cuyahoga county, empties into Lake Erie at Cleveland.

The principal streams running into the Cuyahoga from the east, are Mill and Tinker's Creeks.

These last mentioned streams, with their tributaries, present generally favorable valleys for the location of the road; and our examinations were early directed to them as affording great

facilities not only in construction, but in accomplishing the ascent to the summit with moderate inclinations.

The more elevated portion of the route passes through four of the northern townships of Portage county, comprising an old and wealthy district.

It is essentially a grazing country; and the peculiar adaptation of the soil to that branch of agriculture is evident from the large amount of its exports, and the success which crowns the efforts of the inhabitants.

Thence we descend into the broad and beautiful valley of the Mahoning, distinguished for the richness of its soil and the variety and extent of its improvements.

The Pennsylvania and Ohio Canal, a work of importance and far advanced towards its completion, passes through the whole extent of the valley, connecting the Ohio Canal at Akron, with the Beaver division of the Pennsylvania Canals at New Castle. The Mahoning River affords durable and extensive hydraulic privileges, which are already considerably improved. The numerous villages that are growing up along its banks, and the general appearance of the country, bear ample evidence of the spirit and enterprise of the inhabitants, and the great resources of the Mahoning valley.

The flourishing village of Warren, the terminating point of our survey, is situated on the Mahoning, about midway between Lake Erie and the Ohio River, and is the seat of justice for Trumbull county. Several of the great thoroughfares leading from the different harbors on the Lake to Pittsburgh, and other towns in the Ohio valley, pass through this place.

The Pennsylvania and Ohio Canal is located through it, which, with other extensive improvements now in contemplation, will render Warren an important inland town.

With this general topographical view of the country over which our surveys have extended, we pass to a more definite description of the line, and consideration of the various subjects connected with the proposed work.

## DESCRIPTION OF THE LINE.

The line commences at the intersection of Erie and Kinsman streets, a point favorable for the erection of depot buildings; and from which branches may be extended in different directions through the town, to the Lake and River, for the purpose of conveying freight and passengers to and from the main stem of the road.

Thence the line follows the north side of Kinsman street, to a point where the roads branch leading to Warrensville and Edward's tavern; thence crossing the road, it passes through the tongue of land separating those roads, to station 138—distance  $2\frac{3}{10}$  miles.

The line is straight for this distance, and with the exception of a ravine at its southern extremity, no greater cutting or filling than three feet will be required.

Near this point, Stone-quarry Hill, a formation of grey sandstone, stretches obliquely across our course, forming the confines of the plain upon which Cleveland stands.

It ranges nearly north and south, and has generally a uniform surface, occasionally indented with small streams putting down from the interior into the Cuyahoga,—or, by a more northerly course, find their way into the lake north east of Cleveland. Most of these streams have a rapid descent, passing through deep gorges to the lake, and the low grounds skirting the river.

After a general examination of the country, it was believed that the most favorable line could be obtained following the sloping ground in the direction of the village of Newburgh; that by a slight cutting at that place we could attain the valley of Mill Creek, which is broad, and its general course direct, admitting of long straight lines and gentle slopes.

The line was therefore located along this side-hill to a point near Newburgh, thence it curves gradually to the east, passes through the village and enters Mill Creek valley.

Newburgh is situated on the Pittsburgh road,  $5\frac{3}{10}$  miles from the head of Erie-street, Cleveland. It is supplied with a

valuable water power, which will render it a place of growing importance.

From Newburgh, passing up the valley of Mill Creek, the uplands bounding the valley on either side are irregular. The slopes are sinuous and steep, and frequently broken by deep ravines, formed by small tributaries of Mill Creek.

The intervening valley is of considerable width, and composed of alluvial deposit, with occasional points of table-ground, moderately elevated above the creek.

The line occupies the flat nearly the whole length of the valley, and although it crosses a highly cultivated section of bottom lands, its position is such as to give almost general satisfaction to the land holders. To avoid crossing the creek at two or three points, a new channel will be formed, and the earth thus excavated will be carried into embankments.

The earth taken from side drains will form a principal part of the light embankment on this portion of the line.

In crossing from the head waters of Mill Creek to the valley of Tinker's Creek, the ground is broken, and the streams, though small, are considerably depressed below the general surface of the country, and run transversely to the course of the road. These irregularities in the surface of the ground, however, present no formidable obstacle in the way of construction, as will be seen by the estimate of this section of the road.

The curvatures are slight, and the grades are of moderate inclination.

The village of Bedford is situated at the point where the line enters Tinker's Creek valley, and enjoys the advantage of an extensive and highly valuable water power. The creek is large and durable, and has a gentle current until it arrives at this point, where it descends by a succession of rapids to the Cuyahoga River.

The line passing through the village has nearly a level grade, and the descent to the bottom grounds of Tinker's Creek is accomplished with a slight inclination.

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After passing Bedford, the line follows the valley of Tinker's Creek to the south west corner of the township of Solon, thence curving gently to the east, it is located near the south boundary of the last mentioned township, and the north line of Portage county, which it follows to Cranberry Pond. It here crosses the county line and enters the township of Aurora; thence following the moderately sloping ground forming the boundary of the valley of the Chagrin River on the west, it passes through the village of Aurora. The ground is generally favorable in the valley of Tinker's Creek, the work being light, and the curvatures and grades easy. The line is located on the north side of the creek. At one or two points the creek washes the base of steep side-hills, where slope wall will be necessary for a short distance, to protect the road from the effects of floods.

Near the point where we leave the valley, the creek has an abrupt turn, and with a view of obtaining a good line, and also to avoid a long and expensive excavation and embankment in passing through Solon, it was deemed advisable to cross the creek twice. The points selected for crossing are favorable, and the bridges will not be expensive.

Lines were run with the intention of continuing on the north side of the creek, and passing through Solon on a northerly route, but the result of these surveys proved conclusively, that no line could be traced in that direction with an inclination of less than 45 feet to the mile, without making a deep cut of about one mile in length, and a heavy embankment of nearly the same extent.

The line, as located, takes a southerly route, and is straight the distance of five miles, encountering but a few hundred feet excavation, and avoiding a large portion of the embankment.

The village of Aurora is located at the centre of the township of the same name, and is surrounded by a fertile and wealthy country. The ground, in approaching this place from either direction, and also passing through it, admits of a cheap and favorable location for the road. From Aurora the line follows an easterly course, through the south part of the townships of

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Mantua and Hiram, and passes over ground generally of a highly favorable character for the construction of the road.

The heaviest work on this portion of the route occurs in the vicinity of Pond brook, and crossing the west branch of Eagle creek. The Cuyahoga river is crossed at a favorable point near the south west corner of Mantua.

The line is so located that but a small amount of embankment is required on either side of the river, and a viaduct of 120 feet in length will permit the water to pass freely at every stage of the river.

In crossing the country from the Cuyahoga River to the valley of Eagle Creek, the grades are moderate, the ground smooth, and at no point is a greater cutting encountered than 3 feet. The embankments are light, and but a small number of culverts are necessary.

After attaining the valley of the last mentioned stream, we descend to the bottom grounds bordering the creek, which we follow to Garrettsville. At this place the creek has a rapid descent for half a mile, and affords great facilities for the erection of extensive manufacturing establishments.

The line occupies a portion of the main street of the village, thence it descends along the bank of the creek one mile, where the valley opens into a broad and level section of country.

Five miles east of Garrettsville we cross the north east corner of Windham and enter the county of Trumbull. From this point the line is straight to Duck creek, a distance of seven miles, requiring no other expense in grading than opening side drains, and elevating the road-bed from 1 to 3 feet above the general surface of the country.

The line is located on ground that is never flowed to any extent, and crosses the Mahoning river half a mile south of the mouth of Eagle creek, where a viaduct of 200 feet in length is required.

From Duck creek the line runs nearly parallel with the Pennsylvania and Ohio Canal to Warren, where it again crosses the Mahoning, and enters the town on South street.

The distance from Cleveland to Warren, by the line as now located, is 54 miles, and is undoubtedly the shortest distance that can be obtained between those points, with inclinations not exceeding the maximum we have adopted.

The country traversed by the line, is highly favorable in all its leading features, for the construction of a cheap and permanent road, and for the rapid transit of freight and passengers when the road shall have been completed.

The maximum inclination is 40 feet per mile, and occurs only in two instances, and that where the line is straight.

Grade lines are short and so arranged as to conform nearly to the general formation of the country; and the several inclinations are to be connected by vertical curves of large radii, which will give ease and regularity to the motion of the engine and train in passing from one grade to another.

A large portion of the road will be composed of straight lines, varying from two to seven miles in length.

The curves are easy, having radii from 2,000 to 11,000 feet, and are generally located on portions of the road where the inclinations are the least.

For further information relative to other minutiae, I refer to the accompanying estimates, maps, profiles, and Table of Grades.

TABLE OF GRADES.

No. of Grade.	Length in feet.	Inclination per Mile.		Total Elevation.		
		Ascending.	Descending.	For each grade.		Above Lake Erie
				Rise.	Fall.	
1	6,800	3		3,96		107,55
2	5,500		Level.			107,55
3	2,400	23		10,45		118,00
4	13,050	33		93,92		211,92
5	3,200		Level.			211,92
6	1,800	35		11,93		223,85
7	7,200	28		38,18		262,03
8	12,400	40		93,94		355,97
9	800		Level.			355,97
10	2,332		13		5,74	350,23
11	4,800	11		10,00		360,23
12	5,500		11		11,45	348,78
13	2,700		24		12,27	336,51
14	3,800	26		18,71		355,22
15	1,300		Level.			355,22
16	5,700	12		12,95		368,17
17	2,200		Level.			368,17
18	14,900	40		112,88		481,05
19	1,000		Level.			481,05
20	5,800		38		41,74	439,31
21	2,500	17		8,05		447,36
22	3,200		Level.			447,36
23	11,900	38		85,64		533,00
24	2,000		20		7,57	525,43
25	7,400	26		36,43		561,86
26	3,800		25		18,00	543,86
27	3,400	16		10,30		554,16
28	3,900	38		28,06		582,22
29	3,900	19		14,03		596,25
30	2,000		23		8,71	587,54
31	2,100	17		6,76		594,30
32	2,800		7		3,71	590,59
33	11,000		38		79,16	511,43
34	8,600		Level.			511,43
35	2,800	20		10,60		522,03
36	3,500	35		23,20		545,23
37	400		Level.			545,23
38	15,400		38		110,83	434,40
39	4,000		18		13,63	420,77
40	2,200		8		3,33	417,44
41	1,925		13		4,73	412,71
42	2,100	17		6,76		419,47
43	400		Level.			419,47
44	6,200		37		43,44	376,03
45	1,300		9		2,21	373,82
46	2,400		7		3,18	370,64
47	1,500	8		2,27		372,91
48	4,800		11		10,00	362,91
49	5,000	22		20,83		383,74
50	500		Level.			383,74
51	5,400		38		38,86	344,88

## GRADES. CONTINUED.

No. of Grade.	Length in feet.	Inclination per Mile.		Total Elevation.		
		Ascending.	Descending.	For each grade.		Above Lake Erie
				Rise.	Fall.	
52	3,000	20		11,36		356,24
53	4,300		26		21,17	335,07
54	2,300	20		8,71		343,78
55	2,500		19		9,00	334,78
56	2,400		Level.			334,78
57	3,200		14		8,48	326,30
58	3,700		Level.			326,30
59	1,600		13		3,93	322,37
60	4,800		Level.			322,37
61	2,300		6		2,61	319,76
62	3,600	19		12,95		332,71
63	2,900		20		10,98	321,73
64	2,100	18		7,16		323,89
65	2,500		6		3,18	325,71
66	3,500	17		11,26		336,97
67	1,000		Level.			336,97
68	4,300		20		16,28	320,69
69	2,800		32		16,96	303,73
70	400		Level.			303,73

In making the location of this line, I have been ably assisted by Messrs. T. W. Cook and T. Colden Ruggles, whose valuable services contributed much towards the early completion of the surveys, and to whom I am indebted for the neatness and skill of the drawings.

Our examinations have extended over a large section of country, and the length of line actually surveyed exceeds 135 miles. By a reference to the maps it will be observed, that for much of the distance two and three lines have been traced, sometimes near to each other and nearly parallel, and again more distant and following different routes.

Those of the most importance have been delineated on maps, on a large scale, showing at a glance their relative positions; and, where necessary, estimates in detail of the cost of each will be presented, to enable the Board to decide on the merits of the different lines.

There are several routes that we have not examined; nearly all which, however, were embraced in the preliminary survey of the country between Cleveland and Warren, made under the di-

rection of Col. S. Dodge, and the result laid before you in his report.

A route has been suggested, which is said to be favorable by persons familiar with the ground, which would diverge from the line on the north side of Cranberry pond, and crossing the Chagrin river on an easterly course; thence following near the north line of Portage county to a point near the Cuyahoga rapids, where it would intersect the north line surveyed by Col. Dodge.

## ESTIMATES.

The estimates of the cost of the road have been made with great care and reference to that capacity, which the great importance of the work demands.

The road-bed is to present a graduated surface of 25 feet width, with slopes in both excavation and embankment of one and a half base to one perpendicular. Side drains are to be formed through the excavations, and along other portions of the road where necessary, to give it a dry and permanent foundation. The excavations are generally light, and the earth taken from them is to be deposited in the embankments.

In places where the embankment requires more earth than is obtained from the cuttings, the deficiency is to be supplied by increasing the dimensions of the drains.

Where deep ravines or valleys are crossed, it is proposed to build wooden viaducts of a simple form, which will very much reduce the first cost of the work,—and at some subsequent period, when repairs may be necessary, the road will furnish every facility for the transportation of earth and stone, and enable the company to make permanent embankments and arches of masonry at an expense much below the present.

Timber and stone of superior quality, are found in great profusion on every part of the route.

Sawed timber, required for the superstructure, can be obtained on favorable terms; and in no instance have the proposals

of mill proprietors, for furnishing timber of the best quality for the road, exceeded six dollars per thousand, (B. M.) delivered on the line.

The proximity of saw-mills to the line, throughout the whole route, and the great abundance of oak, ~~and other~~ and other valuable timber, are favorable considerations for the construction of a permanent superstructure at much less expense than under ordinary circumstances.

The cost of land and fencing, it will be seen, is not embraced in the estimate. From the known liberality of the inhabitants along the line, and the friendly spirit universally manifested towards the work, it is believed, that in most cases, the land required for the road will be given, and the fences made by the land proprietors.

### SUPERSTRUCTURE.

The plan of superstructure I would recommend for this road, is that adopted on most of the important roads in New-York, and which long experience has demonstrated to be the cheapest and best.

It will consist of two parallel ranges of longitudinal sills 5 by 10 inches, imbedded in the road-grade even with its surface, upon which cross ties of white oak 8 feet long, will be spiked 3 feet from centre to centre, having the proper notches cut in them for the reception of the wooden rail.

The rails to be of the best white ~~oak~~, 6 by 7 inches, and from 18 to 24 feet long, secured in the notches of the cross ties by white oak wedges.

The upper surface of the rail is to be properly dressed, upon which the iron plate rail,  $2\frac{1}{4}$  inches wide by  $\frac{3}{8}$  of an inch thick, will be firmly spiked.

To prevent the ends of the bars from sinking into the rails, connecting plates will be inserted under each joint. For further particulars see plan and estimate.

### ESTIMATE.

#### SECTION 1.

*From Cleveland to Bedford—12 miles.*

Clearing and grubbing,.....	\$ 880 00
124,456 cub. yds. excavation at 11 cts.	13,690 16
218,339 " " embankment " 12 cts.	26,200 68
450 " " slope wall " \$1.00	450 00
Bridging,.....	16,000 00
Culverts,.....	3,832 00
Road crossings,.....	130 00
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	\$61,182 84

#### SECTION 2.

*From Bedford to Aurora—12 miles.*

Clearing and grubbing,.....	\$ 2,030 00
152,487 c. yds. excavation at 11 cts.	16,773 57
219,405 " " embankment " 12 cts.	26,328 60
300 " " slope wall " \$1.00	300 00
Bridging,.....	8,800 00
Culverts,.....	5,320 00
Road crossings,.....	70 00
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	\$59,622 17

#### SECTION 3.

*From Aurora to Garrettsville—15 miles.*

Clearing and grubbing,.....	\$ 1,900 00
152,227 c. yds. excavation at 11 cts.	16,744 97
265,468 " " embankment " 12 cts.	31,856 16
150 " " slope wall " \$1.00	150 00
Bridging,.....	9,500 00
Culverts,.....	8,240 00
Road crossings,.....	150 00
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	\$68,541 13

#### SECTION 4.

*From Garrettsville to Warren—15 miles.*

Clearing and grubbing,.....	\$ 2,190 00
104,891 c. yds. excavation at 11 cts.	11,538 00

2,200 " " rock " " 75 cts.	1,650 00
200,731 " " embankment " 12 cts.	24,087 72
Bridging.....	16,900 00
Culverts.....	2,575 00
Road crossings.....	110 00
	<u>\$59,050 72</u>

Total cost of grading, masonry, and bridging...\$248,396 86

*Estimate for one mile superstructure, single track.*

44,000 feet board measure of longitudinal sills at \$7 per M. ....	\$308 00
36,960 feet board measure white rails at \$8 per M.....	295 68
1,760 cross ties at 20 cts.....	352 00
3,520 oak wedges at \$4 per M.....	14 08
Splicing blocks.....	25 00
1,420 lbs. spikes at 10 cts. per lb.....	142 00
500 " connecting plates and small nails at 9 cts. per lb.....	45 00
22 tons iron plate rail at \$80.....	1,760 00
Workmanship, laying track, &c....	600 00
	<u>\$3,541 76</u>

54 miles superstructure at \$3,542.....\$191,268 00

Cost of grading, and a single track of superstructure, .....\$439,664 86

Average per mile, .....\$8,142 00

Cost of grading and superstructure for a double track,.....\$630,933 00

\*3 Locomotive Engines, each \$7,000.....\$ 21,000 00

10 Passenger Cars, " 1,000..... 10,000 00

\* It is important to remark, that when this road shall be connected with other roads now in contemplation, an additional number of Engines, Cars, &c. will be required, making a further expenditure of \$30,000 necessary, for machinery, which it is proposed to introduce from time to time as the business of the road may demand.

40 Freight Cars, " 250.....	10,000 00
Depot buildings, water stations, branches, &c....	20,000 00
	<u>\$500,664 86</u>

Add 10 per cent. for contingencies and engineering, 50,066 48

Total,.....\$550,731 34

Which gives as the average cost of the road per mile, graded for a double track; and a single track laid, with the requisite buildings, fixtures and machinery to commence operations, \$10,198

### GENERAL REMARKS.

The primary design of this work, is to form a direct rail-way communication between the cities of Cleveland and Pittsburgh, which shall be open at all seasons of the year, for the regular and rapid transportation of passengers, freight, and the public mail.

The charter of the Cleveland and Warren Rail Road Company authorises the construction of the road to the state line of Pennsylvania, and to connect with a road that may be extended to some point on the Ohio River, or to the city of Pittsburgh.

The survey and location of that part of the route which is the subject of this report, have been made in reference to that object, and to its becoming an important link in the great chain of public works connecting Philadelphia and Baltimore with Lake Erie and the "far west."

These are important considerations in favor of selecting the most direct feasible route, and waiving all other points of merely a local nature, for the paramount object in view.

Of the great importance of this work, in a commercial view, all will be fully impressed who are acquainted with the relative position of Philadelphia and Baltimore to the south-western

shore of Lake Erie, and the fertile regions bordering the great western lakes.

Great efforts have been made, and are still making, by the Atlantic states, to secure the trade of the west.

The western states are looking with much interest to the opening of a more direct, safe, and early channel of communication to the Atlantic cities, than they now possess.

That this road will effect the latter object, will, I believe, be readily admitted by all who may examine its advantages.

The navigation of the lake, from Detroit to Cleveland, is open several weeks earlier in the spring than the more northern portion of the lake, to Buffalo—and the navigation said to be less precarious at all seasons of the year. The Pennsylvania canals, from their more southern position, are open about four weeks earlier in the spring, and considerably later in the fall, than the New-York canals.

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Cleveland Ohio Future!

advantages and brilliant efforts in the cause of internal improvements, they are eminently entitled. With the advantage in distance to Cleveland of nearly two hundred miles—by the Canals and Rail Roads now in operation, and the projected road from Pittsburgh to Cleveland,—and the still greater advantage they will have, in point of distance, when complete lines of Rail Road communication shall have been extended to Pittsburgh, and thence to Lake Erie,—will enable them to compete, most successfully, with New-York for the trade of the west.

To the city of Pittsburgh, the “great manufacturing emporium of the union,” this road will open a new and extensive market, which will increase with the growth and population of the western states. Her vast manufactures will have ready access through this avenue, to the west; and her proximity to those regions, her unequalled advantages and boundless resources, will ensure to her, beyond competition, the trade of that extensive field which is now mostly supplied by eastern towns.

By the construction of this work, the commercial advantages of Cleveland will be incalculably increased. As it is now the first diverging point on the lake, of the trade going east—it will, on the completion of this road, become the concentrating point of the commerce of the upper lakes, and the vast trade of the rich and rapidly increasing territories surrounding them. With the advantage of the most southern position on the lake, and situated centrally on the direct line between the south-eastern and western states—commanding alike the trade of the east, the west, and the south, through her numerous and early channels of communication—she must unavoidably receive large accessions to her wealth and commerce.

The section of country through which the road will pass is celebrated for the native richness of its soil, and the extent of its resources; a large portion of which is now, in a measure, shut out from the privileges of intercommunication which other favored districts enjoy.

A full development of its great resources, and a rapid increase in the value of the lands situated along the line—nearly equal

to the cost of the construction of the road—will immediately follow its completion. Its immense and almost unlimited water power will be brought into full and active use; towns and villages will spring up, which will rival in importance those already in existence,—and a new impulse will be given to every department of industry.

In view of the important position the Cleveland, Warren and Pittsburgh Rail Road will maintain,—its connection with many of the great public works of the Union, and the very favorable character of the country for the cheap construction of a road, which shall follow the great natural water courses of the country nearly its whole extent—not a doubt can be entertained of its being one of the most useful and profitable roads yet projected.

There is another, and more extended view to be taken of the importance of this work.

The time is near at hand, when the city of Pittsburgh will be connected with Philadelphia and Baltimore, by an uninterrupted Rail Road communication.

From Cleveland west, along the lake shore, the Ohio Rail Road is projected; and the necessary surveys are made for the early commencement of the work the coming season. This road will connect with the great line of rail-way extending west across the state of Michigan, which is now in a course of construction—and also with the public works of Indiana, through the Maumee valley.

A further extension of this line of improvement is contemplated—for which the country is admirably adapted,—to Chicago, and to several points on the Mississippi River.

The Cleveland, Warren and Pittsburgh Rail Road will then form the important connecting link between that magnificent series of Canals and Rail Roads, extending from Pittsburgh east, to the Atlantic sea-board,—and the great chain of Rail Roads and inland navigation stretching west from Cleveland to the Mississippi River; presenting a continuous line of rail-way of unequalled extent—connecting the rich and fertile regions of

Illinois, Indiana, Michigan and Ohio, with the great commercial cities of the sea-board; and affording facilities of transportation throughout the year—commensurate with its magnitude and importance.

Respectfully submitted, by,

Gentlemen,

Your obedient servant,

A. C. MORTON,

*Engineer.*

~~ENGINEER'S OFFICE,  
Cleveland, Feb. 15th, 1838.~~ }