

# HOUSE....No. 218.

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## Commonwealth of Massachusetts.

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HOUSE OF REPRESENTATIVES, May 1, 1857.

The Joint Special Committee, to whom was referred the Order of Mr. Hyde, of Newton, have attended to the duty assigned to them, and respectfully submit the following

### REPORT:

By the terms of the Order, the Committee are directed "to visit the Hoosac Tunnel, and report, as soon as practicable, any information they may obtain which, in their opinion, will be useful in considering the measures now before the legislature proposing to alter the terms of the Loan Act of 1854 in aid of the Troy and Greenfield Railroad Company." It is apparent, therefore, from this recital, that the authority of your Committee is limited to a statement of facts.

In pursuance of the Order, your Committee state, that on Monday morning, and going by the way of Fitchburg and Greenfield, westerly through the valley of the Deerfield River, they reached the foot of the Hoosac Mountain, where the river makes a sharp bend northward, Tuesday morning. With the exception of Shelburne Falls, which is a small but growing manufacturing village, with an active and busy population, there is no place in

the Deerfield Valley between Greenfield and the Hoosac Mountain, which would be likely to furnish any considerable business to a railroad. From Shelburne Falls to Charlemont, a distance of eight or nine miles, the country is generally open and level along the line of the proposed railroad; but, from Charlemont to the Mountain, the country is, for the most part, exceedingly rough and hilly, becoming more and more rugged and mountainous as you approach the "Hoosac."

The mouth of the Tunnel, on the easterly side of the Mountain, is on the northerly side of a spur that shoots out at a point nearly opposite to where the Deerfield River makes a sudden turn to the north. The proposed railroad is located across the river at this place, and approaches the opening of the Tunnel, by a pretty sharp curve, cutting through a considerable amount of rock on one side, in order to prepare the way to the Tunnel. The entire distance from the extreme point where the rock cutting begins, to the mouth of the Tunnel, is three hundred and sixty feet. The cutting, however, is confined principally to the left side of the roadway as you approach the Tunnel, and was apparently accomplished without much difficulty.

The size of the Tunnel, at the easterly end, is eighteen feet high by fourteen feet wide, a width sufficient for a single track. It is completed for a distance of two hundred and seventy-four feet. They have penetrated into the heading, so called, which is the upper part of the Tunnel, two hundred and forty-seven feet, which, added to the two hundred and seventy-four feet, gives five hundred and twenty-one feet for the entire distance from the mouth to the furthest point in the Tunnel which has yet been reached. The heading is about six and a half feet high by ten feet wide.

The excavation is done now entirely by hand. There are eight men constantly employed in drilling and blasting upon the heading. Four holes are drilled at a time. The force now at work is well disciplined, and the heading has advanced this last month seventy-two feet. In the month of March, fifty-two feet of heading was accomplished, and in the month of February, forty-four feet.

The rock, through which the Tunnel penetrates, is mica slate, streaked here and there with veins of quartz, varying from an eighth of an inch to an inch in thickness. It is very uniform

in its character, firm and well set, so that there appears to be no need of arching to keep the roof from caving in. The inside, with the exception of a short distance where a little water comes trickling through from overhead, is perfectly dry.

The work goes on day and night. Each gang works for eight hours. In addition to the miners, there are a few men employed in removing the rock and attending to the tools, so that the whole number of men now engaged upon the Tunnel at the east end is about forty. The bottom part can be taken out with less difficulty and expense than the heading, and your Committee were informed by the mining engineer, that although the bottom part contained more cubic yards to the lineal foot than the heading, that a given number of men would accomplish, in a given time, a larger number of lineal feet of the bottom than they would of the heading.

The Tunnel, at the west side of the Mountain, your Committee found on examination, had been worked only in one section. The bottom part has not yet been commenced. The heading has been completed to the distance of one hundred and eighty-five feet. The material through which it passes consists of loose lime stone, and it has been found necessary, to keep it from falling in at the top, to support it with heavy timbers. The design is to secure it permanently hereafter with strong masonry of stone and brick. The rock at this end is gradually improving in its character, and the engineers are very confident that, after progressing a hundred or more feet further, they shall strike the mica slate, and proceed without arching, as they do on the eastern side.

The approach to the Tunnel on the westerly side consists of very heavy work. For a distance of one hundred and fifty feet there is a deep rock cutting, where large limestone boulders were closely imbedded, and were only broken up and removed with great labor and expense. The entire distance from the mouth of the Tunnel to where the excavation begins is about five hundred feet. The length of the road-bed at this end is about eleven hundred feet. The rate of progress on this side is about the same as on the east side. The limestone is rather harder than the mica slate, and does not drill quite so easily, but it blasts better, so that one end proceeds now about as rapidly as the other.

Your Committee have examined the section of the road from North Adams to the Vermont line, and they find that it is nearly ready for the superstructure. This piece is of about seven miles in length, and the graduation and masonry are nearly finished. There are some bridges to be built, and some excavation and embankment to be done, but your Committee are informed and believe, that an expenditure of five or six thousand dollars would prepare the road for the superstructure, which would cost, probably, rather more than fifty thousand dollars. The small tunnel in North Adams, which is four hundred and forty feet in length, is nearly finished. The heading is completed, and there only remains one hundred and eighty-five feet of bottom to be removed.

The work on the Hoosac Tunnel is now done entirely by hand, but the contractors rely with great confidence upon a machine which they have recently imported, and which has been successfully tried in California. The inventor says that it will penetrate the solid rock at the rate of two feet an hour. The cost of this machine is twenty-five thousand dollars. Your Committee are unable to describe it intelligibly, but if it can be operated successfully, it will very much reduce the cost of the Tunnel, and enable the contractors to complete it in about three years, supposing even that it should not cut more than six inches in an hour on each end.

In conclusion, your Committee are happy to state that the representations which have been made by the Troy and Greenfield Railroad Company, in relation to the condition and character of the work, are correct and trustworthy.

All of which is respectfully submitted.

By order of the Committee,

JAMES F. C. HYDE,

*Chairman on the part of the House.*