earnings have been \$612,117.31—being about eleven per cent. on the cost of the road, with its present equipments—whilst more than half of this cost is represented by bonds, bearing seven per cent. interest and having a long time to run.

“The Board think that the Stockholders have great reason to be satisfied with the regularity, safety, and success with which the road has been worked, and with the amount of its earnings during the past year.”

For the Journal of the Franklin Institute.

Railroad Crossing of the Hudson River at Albany. By EDWARD W. SERRELL, Civ. Eng.

For many years past the difficulties that have been experienced at this point, to the great lines of travel that centre here, have called loudly for some more adequate and suitable method of crossing than has existed.

If perpetual summer reigned, the annoyances would be but trifling, comparatively; but the changes of the seasons bring so many conditions that are burthensome, that it has long been considered as of the utmost importance to the traveling and commercial public, that some method should be adopted and brought into use, by which this break of the lines should be avoided.

Various plans have been suggested, and from time to time the legislature has been petitioned for a charter authorizing the construction of bridges of different descriptions.

The New York Central Railroad, and the Boston and Albany Railroads descend into the Valley of the Hudson at this point more or less abruptly, and the Hudson River Railroad lies near the level of the stream.

The banks on either side are moderately steep, but if the interests of the communities above Albany on the river, would agree to it, the physical obstacles in the way of bridging could readily be overcome, and at such cost as would be very remunerative.

Even in the summer time very great delay is experienced at the ferry, both to passengers and the mails—freight is diverted, and ascends the stream, crossing the river at Troy, and descends on the easterly side towards Boston or New York—but in the Spring of the year, during floods, and before the ice has formed sufficiently at the commencement of winter, and very frequently during the periods of thaws, the river opposite Albany is for days, and sometimes weeks together, quite impassable.

But the question arises, what plan can be adopted that shall supply the requisite facilities without interfering with the navigation, and shall not encroach upon the vested rights of the people living upon the upper waters of the stream?

Drawbridges of several kinds have been planned, but none, so far, seem unobjectionable, at least the legislature has not authorized any of them to be built as proposed. Either the height above the water, the insufficiency of the passage way, the obstruction to the stream, the sedimentary deposits which it has been supposed would be formed, or the ice jams that were feared, or the effects of wind currents produced, or some other real

or imaginary difficulties have thus far, together with local prejudices and personal interests, which no doubt have had their weight, prevented the execution of any plan whatever.

It has been proposed to *tunnel* under the bed of the river, and such a project may be feasible, but this plan is, also, surrounded with difficulties.

The contiguity of the steep slopes of the valley to the river, makes it more than questionable, whether such *lines* can be obtained that in other respects would be desirable or even admissible, upon which suitable *gradients* can be had for entering and leaving such a work.

The great cost of tunneling in the material here met with, and under the existing physical circumstances, cannot be doubted; but even this might be no more than the business to be done would warrant, if other things were favorable.

Cannot some one suggest a plan that shall meet all the requirements and be free from all objections? Is there not engineering talent enough in the country to devise means that shall give to the railroads a suitable crossing without interfering with the navigation of the river? Cannot a plan be presented in such a plain and positive manner that all will agree to it? Surely it can be.

It must be conceded on all sides that this is by far the most important place upon any line in America, that admits of an unbroken connexion; local prejudices would doubtless give way before an adequate device. Some plan must, sooner or later, be adopted; this is a good field for enterprising talent.

Passage of the first Locomotive over the Suspension Bridge over the Falls of Niagara.

To the Committee on Publications.

The First Locomotive passed over the Niagara Suspension Bridge yesterday, at a moderate speed. This engine, weighing 23 tons, caused a slight depression of the superstructure, which, in the centre, measured $3\frac{1}{2}$ inches, but produced no vibration whatever. The experiment was repeated to-day with two other engines, making separate trips at a speed of 8 miles per hour. One of these weighing 34 tons, and with a well filled passenger car attached, caused a depression in the centre of $5\frac{1}{2}$ inches.

Considering the unfinished state of the work, the above results, and the total absence of vibration, are highly gratifying. The success of the work may be considered as established. The strongest gales have no effect on it. The Bridge will be open for the regular passage of trains in about eight days.

JOHN A. ROEBLING.

March 9, 1855.