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Rail-Road News.

European and American Railway.

We have received the able Report of the survey of the European and North American Railway, made under the authority of the State of Maine, by A. C. Morton, C. E. This enterprise is one of great moment, having for its object a railway through the Eastern States, New Brunswick, and Nova Scotia, to Halifax, which is intended to be made the Mail Port, having a line of steamers running to Galway, in Ireland, thence by railroad to the Channel, then across to Wales by steamboat, and off to London by Railroad. By this route, if it goes into operation, a saving of three days' time in carrying the mails to Europe, and *vice versa*, would no doubt be saved. The report is a very valuable one, and contains much important information about the population, trade, and travel on the line. The whole route has been found practicable on a distance of 420 miles, and it can be put in operation for about $13,000,000. He estimates that the annual income of the road would be about $2,000,000 per annum. We think it would amount to as much in the course of a few years, say ten. It is our opinion that Halifax will yet become such a port as Southampton is in England, and the sooner this railroad is completed, so much the sooner will this result be brought about. Railroads benefit the countries through which they pass, consequently Maine, New Brunswick, and Nova Scotia, would be greatly benefitted by this road. We say, "go ahead with your improvements."

Longest Railroad.

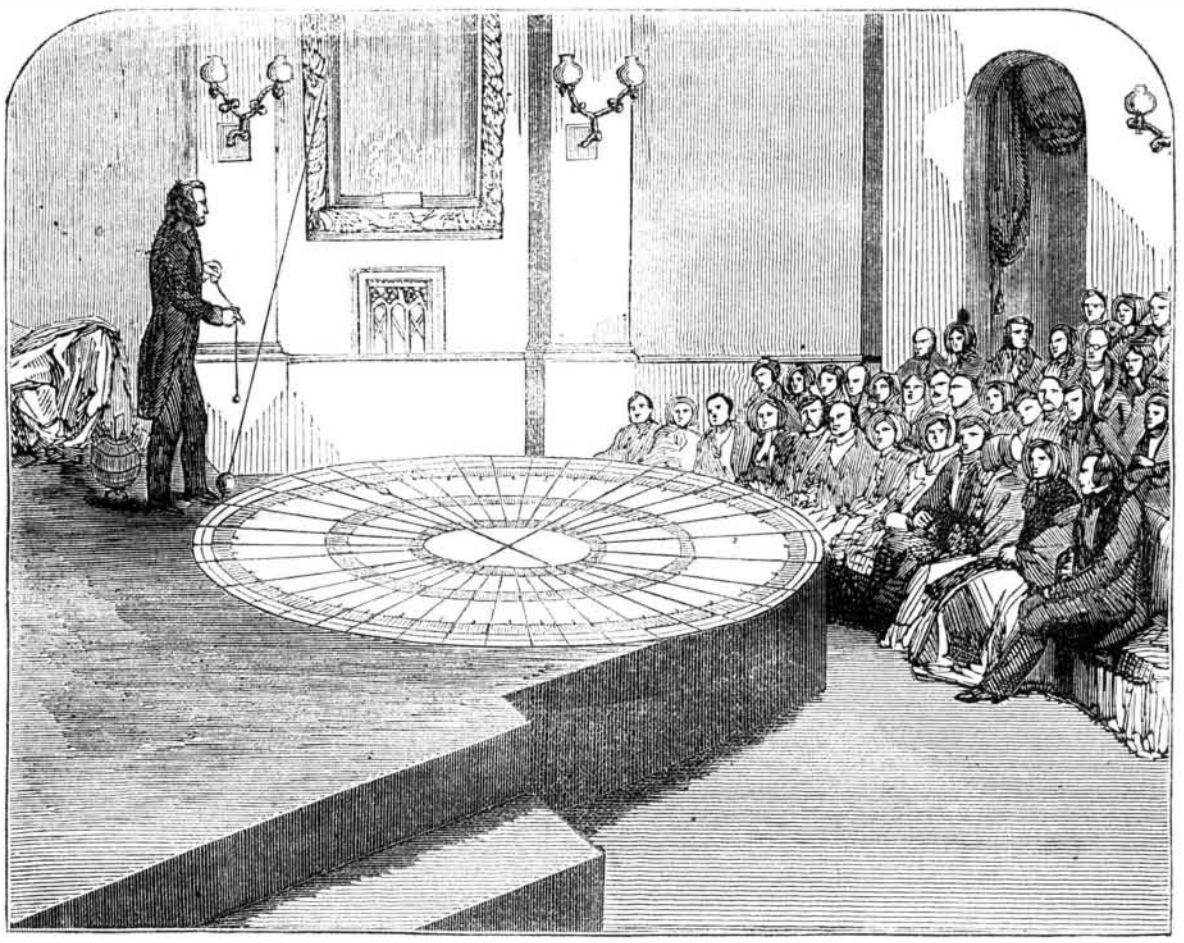
The Erie Road is the longest in the world—467 miles. That between Moscow and St. Petersburg, in Russia, is next in length, being 420 miles. The Russian government is about beginning a road from Warsaw to St. Petersburg, a distance of more than 700 miles, of which T. S. Brown, late of the Erie road, will be Chief Engineer. It is noteworthy that the American great enterprise is by a private company; the Russian is built by Government.

Great French Tunnel.

This great work, three miles in length, is on the railroad between Marseilles and Avignon. Its height is 30 feet, and width 24 fet, and its depth below the surface of the ground six hundred feet. The cost of tunneling was $2,040-000.

A petition has been presented to the Common Council, of our city for a railroad on the Second Avenue, on which it is proposed to lay a double track from One Hundred and Twenty-fifth st. to Christie st., through Christie to Grand, through Grand to Bowery, through Bowery to Chatham st., through Chatham to William, through William to Hanover-square; return single track from Hanover-square to Pearl st., through Pearl st. to Chatham st.

DEMONSTRATION OF THE EARTH'S ROTATION.



The accompanying engraving exhibits Dr. Bachhoffner, of London, at the Polytechnic Institution, London, explaining the experiment of M. Foucault, for demonstrating the rotation our globe.

Fixed to the floor is a circular table divided into 360 degrees, and of 16 feet diameter north and south, supposed to rotate with the earth; while a ball 28 lb. weight, depending from an iron girder by a wire 45 feet long, vibrates over its surface. The plane of vibration apparently never changes; but the rotation of the table is visible by the alteration of the degrees, and the removal of small portions in the centre of the table by the point of the ball in its transit. Dr. Bachhoffner professes to conduct the experiment after the manner employed at the Pantheon at Paris, and on the principles laid down by the French mathematicians, adhering strictly to the definitions of M. Foucault.

The proposition assumed in the experiment is, that a pendulum properly suspended and put in motion will vibrate always in the same absolute plane, notwithstanding the shifting of the point of suspension; whence it follows, that at the poles a complete revolution will be made in 24 hours, and that at the equator the the plane of vibration will never alter at all with respect to the meridian.

The experiment is now the subject of much controversy in England, some are stating that it is fallacious, others proving it to be the reverse. We have not had an opportunity yet of seeing or trying the experiment. We must counsel strict observation in those who are now making, or are intending to make the experiment. See that magnetism on the movable and immovable parts, has the same influence. The best account of this experiment that has been published is the communication of Prof. Horsford, of Cambridge, Mass., on page 280, Scientific American.—We have been informed that it has been voted by the directors of the Bunker Hill Monument Association to permit the interior of the monument to be used for the purpose of repeating the experiment of Foucault, with a pendulum, to demonstrate the Rotation of the earth on its axis. The privilege was granted on the application of the Massachusetts Charitable Mechanic Association, and the experiment to be made under the superintendence of Mr. Bond of the Cambridge Observatory and Prof. Horsford of the Scientific School. The pendulum to be used in this experiment will be about 216 feet in length.

The monument, from its firm and substantial character and the protection it will afford from all extraneous influences, is probably the best place in the country for repeating this curious and interesting experiment. The weight to be suspended is a cannon ball which was fired from one of the British ships during the battle of 17th June 1785, and dug up in this city some years since. The ball is to be fixed in a brass setting, with adjusting screws and a marking point—to indicate the variation, and thus render perceptible to the eye the rotation of the earth.—Any of our farmers may try the experiment in their barns. Take a wire about 30 feet long and suspend it in the way described as follows by a correspondent:

"An ordinary 50 lb. weight, suspended by means of a small wire from the rafter of a barn, formed my pendulum. It was 30 feet long, and consequently made 21 vibrations per minute. In order that it might move with as little friction as possible, and also turn freely in a horizontal direction, I took a small file, and having had one end turned up at right angles to its length, and well hardened, I made the point sharp and smooth. This I drove into the rafter, and on the point suspended a hardened ring, which had a small indentation on the inside to keep it from slipping off the point. To this ring the wire of the pendulum was fastened.

That the vibrations might be the more readily traced along the floor, a small pointed rod was attached to the centre of the underside of the weight, nearly in a line with a wire, and long enough to reach within an eighth of an inch of the floor. The point on the floor immediately under the pendulum when at rest was then ascertained, and twelve straight lines drawn through it, making with each other, angles 15 degrees each. The pendulum was now set to vibrating along one of these lines; for a short time the point of the rod seemed to be tracing the line backwards and forwards; but in less than 15 minutes it had deviated perceptibly to the left of the end next the observer. I tried it successively along several other lines running in various directions, and found in every instance that it deviated to left, and that the amount of deviation varied nearly as the time, that is, the longer the time the greater the deviation. To-day I repeated the experiment. At 11 o'clock I set it vibrating along a line running nearly east and west, and now at 2 o'clock, three hours, after, I find it moving N. W. and S. E.

According to a well known law of motion, a body once put in motion by any force, will continue to move in the direction in which that force is impressed, until acted upon by some other force tending to move it in a different direction. Now in the present instance, as we know of no force tending to change the pendulum's motion, it seems fair to infer that it still vibrates in the same absolute direction that it did three hours ago. If this be true, the barn floor must have been turning round to the eastward, making, during these three hours, one eighth of a revolution; and as the barn has the same relative position to all external objects on the surface of the earth around it, we must conclude that it is the earth that is turning round at this rate, and that it will make a complete revolution in 24 hours." The objection to these conclusions, by common practical men, is, if the point of suspension is immovable, so is the circle below