larger train. When in the center, the result is only a flattening of the camber, but when near the towers, where the grade forms nearly a straight line, the depression is from 3 to 4 inches. A longer train of greater weight in proportion, disturbs the equilibrium less, as it covers a greater extent. Passenger trains of 15 long cars, which frequently cross the Bridge, make little impression observable by the eye. While the severe action of trains upon common arch and truss bridges, causes great wear and tear, I am persuaded that the woodwork of the Niagara Bridge will suffer much less. My observations during the last month have not caused me to change this view, which I have always expressed.

The *tubular* or *box* plan of the Bridge has added much to its stiffness, vertically as well as horizontally. There is an entire freedom from all lateral motions during the passage of a train. It is a surprising fact, that half a dozen heavy teams on the lower floor produce a more perceptible horizontal motion, and a much greater jar and trembling, than is caused by a train of cars, moving at the stipulated speed of 5 miles an hour. The smoothness, evenness, and perfect level condition of the Rail Road tracks, partly accounts for this. While teams on the lower floor generally move forward *outside* of the center of the Bridge, the trains are exactly poised in the center. The great *horizontal* stability of the work is mainly owing to the powerful lateral bracing of the upper cables, which are suspended in a very considerable inclination. There is no reason to suppose that the durability of the woodwork of this Bridge will be less than that of a common Suspension Bridge, serving for ordinary travel alone.