

remunerative dividends, the task of the American Engineer is to lay down thousands of miles with extensive bridging, at a cost which would barely suffice in Great Britain to cover the expenses of preliminary proceedings.

The work which you did me the honor to entrust to my charge, has cost less than \$400,000. The same object accomplished in Europe would have cost 4 millions without serving a better purpose, or insuring greater safety. The mixed application of timber and iron in connection with wire, render it possible to put up so large a work at so small a cost. When hereafter, by reason of greater wealth and increased traffic, we can afford to expend more on such Public Works, we shall construct them entirely of iron, omitting all perishable materials. We may then see Railway Bridges suspended of 2000 feet span, which will admit of the passage of trains at the highest speed.

As regards the success of your work, more has been accomplished than was promised. The idea of a perfectly rigid structure, such as a tubular bridge, was never held out. The Niagara Bridge possesses all the stiffness that is wanted, and much more than is actually needed for the *safe* passage of trains. It is gratifying to notice the entire absence of all such vibrations as would easily be noticed, or would eventually prove a source of destruction. There is no Bridge in the world, neither of stone, cast or wrought iron, which is free from *all* vibrations. The effect of the concussions of a fast moving train may be sensibly felt miles off through the solid earth, while buildings of brick in the immediate vicinity of a Rail Road are very perceptibly shaken. Sitting upon a saddle on top of one of the