and in the brief space of one month, become one of the greatest thoroughfares on this continent. I cannot do so without drawing a comparison with other works, and without pointing out the defects which caused the destruction of the Wheeling bridge, and on the other hand explaining the means of safety, which have been employed in the Niagara Bridge.

The Wheeling bridge formed a span of 1010 ft. from center to center of towers; the floor was 960 ft. long, and 26 ft. wide outside of railings, its weight including cables was about 440 tons. The number of cables was 12, containing in all 6600 wires of No. 10. With the exception of two small stays under the floor at each tower, which appeared to be put up after the completion of the work, and were in a loose and ineffective condition at the time I examined it, there was no provision in the whole structure aside from the inherent stiffness of the floor, which could have had an effect in checking vibrations. Owing to the provisions made for resting the cables on the towers by means of large rollers, and to the wire being arranged in a number of small cables in place of one large one, is to be attributed the fact of the ready communication of vibratory motion from the suspension cables to the land cables. The motion caused by the transit of a single team, was readily communicated to the land cables. In consequence of this sensitiveness the great force to which the suspension cables were subjected on the 17th of May, was fully transferred to their connection with the anchor chains: the result was their failure on the Wheeling side. A competent eye witness stated, that the waves of the floor, caused by the wind, rose to a height of over 20 feet.