and stiffness, which, as was at the time reasoned by the Profession generally, could not be obtained. But some non-professional men saw much clearer than professional men, and so the thing was done. A good deal of the same sort of reasoning, which was made use of against Aqueducts, was equally directed against Railway Bridges, but with no better success, as the result shows.

Professional and public opinion having been adverse to Suspended Railway Bridges, the question now turns up, what means have been used in the Niagara Bridge, to make it answer for Railway traffic? The means employed are; Weight, Girders, Trusses and Stays. With these any degree of stiffness can be insured, to resist either the action of trains, or the violence of storms, or even hurricanes; and in any locality, no matter whether there is a chance of applying stays from below or not. And I will here observe, that no Suspension Bridge is safe without some of these appliances. The catalogue of disastrous failures is now large enough to warn against light fabrics, suspended to be blown down, as it were, in defiance of the elements. A number of such fairy creations are still hovering about the country, only waiting for a rough blow to be demolished.

Weight is a most essential condition, where stiffness is a great object, provided it is properly used in connection with other means. If relied upon alone, as was the case in the plan of the Wheeling Bridge, it may become the very means of its destruction. That Bridge was destroyed by the momentum acquired by its own dead weight, when swayed up and down by the force of the wind. The weight of a Suspension Bridge should not bear too small a proportion to the transient