the structure, and directly as the weight of the transient load, also directly as the deflection of the cables. The flatter the cables are, the stiffer they will be, but also less able to support a load.

In depending upon *weight* as guarding against a disturbance of equilibrium, such element should also serve to increase the stiffness of the structure *mechanically* and not only *statically*. I object to weight, put on simply as *loose* weight.

In those discussions, which took place in Great Britain on the subject of Suspension Bridges, previous to the adoption of the tubular plan, for crossing the Menai Straits, a more thorough investigation of the subject would have led to the conclusion, that there is no *inherent* defect in the suspension principle, and that by simply adding to its weight, without providing any other means of stiffness, its adaptness to Railway traffic would have become clear.

The idea of absolute rigidity must be abandoned, when considering the practicability of Suspension Railway Bridges. We can only obtain a *comparative* degree of rigidity in *any* kind of structure, no matter whether it is a stone or cast-iron arch, iron or wooden truss, or a hollow wrought-iron beam. Such being the case, the next question is: what degree of rigidity is necessary for the safe passage of trains at certain speeds? *Flexibility* in a bridge is no objection, provided it offers no obstruction to its use, and is compatible with safety and durability. *The* Conway tube of 400 feet span, deflects 3 inches under a weight of 300 tons, placed in the center. How much would a tube of 800 feet span deflect under the same load, provided such