that it would make the middle portion of the spans so flexible that its parts would be unduly strained if trains run over (as they should) at full speed.

The designers propose an ingenious arrangement for insuring the working in unison of the main chains and of the stays under changes of temperature. They propose to suspend a lever from the saddles over the towers and to attach the stays to a series of pivots placed on the line of this lever, so placed that its movements shall compensate for the different contractions and expansions of the chains and stays under the changes of temperature. We are not prepared to say that this would or would not prove efficient. If it were certain that all the various members of the bridge would always be equally exposed to the sun and equally heated and cooled, and that the vertical motion due to the expansion and contraction of the cable and stiffening girder would take place regularly, instead of conforming to a curve, the radius of which changes with the temperature, the result expected by the designers would doubtless follow. Further study, however, would be necessary before we could venture to recommend the adoption of a method which, however ingenious, is yet an untried experiment.

It will be noticed that none of the designs which have been submitted for suspension bridges meet the requirements of the case or of the specifications. This arises partly from deficiencies in the designs and partly from the difficulty of adapting this system to the necessities of the traffic to be accommodated, which require a rigid structure. Suspension bridges with stiffening girders have been largely and successfully erected for carriage roads, over which the rolling loads are light and proceed at low speed, thus giving a flexible structure time to adjust itself to the changing position of the weights to be carried. When, however, the heavy, concentrated loads of railway engines and trains are to pass at high speed (as they ought in a bridge two miles in length, so costly as to require the profits on a large business to pay interest on the capital invested) the structure should be so rigid as not to be disturbed and racked under the effects of the live load. This indispensable rigidity may be conferred, it is believed, by an auxiliary truss, but the very rigidity of the truss, if continuous, prevents its working in harmony in varying states of temperature with the cable, if, as