braced suspension cable, which it is proposed to make of steel wire, stiffened by two parabolic trusses built upon them and meeting in the centre, as shown on plate III.

This is the only suspension system among the designs presented in which the stiffening members are so arranged as to provide for a rigid railway bridge. Although the plans are probably too defective to be admissible as they are, they yet present the excellent features of providing for a structure, the parts of which will work in harmony with each other, and in which there will be no doubt as to the resulting strains coming upon each member. To insure this, however, it seems to us that the cables should be hinged at the centre of the spans. The designer states that this is to be done, but the plans do not show how it is to be accomplished, and it seems to us difficult to apply this feature to a wire cable.

The details of the design, however, are so imperfect as to preclude us from recommending it. The great length of the back stays would produce a rise and fall of 4 3-10 feet at the centre of the span under changes of temperature, and not only has the dead weight of the structure been somewhat underestimated, but there are serious errors in the computations of strains, under certain conditions of load, the rectification of which would increase the quantities of materials required and the estimate of cost.

These errors and deficiencies, affecting important parts of the structure, vitiate the design to such an extent as to render it inadmissible under the specifications and circulars inviting plans.

IV. Mr. A. Lucius proposes a structure which conforms very closely to the existing types and practice for ordinary spans.

The approaches are on iron trestle-work, and the great spans are standard "Pratt" trusses, modified as suggested by their own dead weight, which becomes so great as not to require counter-bracing against the effects of the live load.

A sketch is shown on plate IV.

So far as we have checked them over, his calculations of strains and computations of quantities are correct, and the design fulfills all the conditions of the specifications as to stability, strains and provisions for thoroughfares.