plan of "Clark, Reeves & Co." is entitled to the award of "best," briefly submits the following reasons for his preference:

I.—Simplicity of design.

In this respect it is unrivalled. The arch is recognized as theoretically the form for bearing compressively a permanent load—the parabola, its proper trace, when the load is uniform. The combination in this bridge, while giving the arch as the permanent load-bearer, breaks it at the crown and skewbacks (by hinges) to avoid temperature strains. In this point of view the principle is again the most simple and elementary in bridge building—the juxtaposition from the opposite banks (when the span becomes too great for a single beam) of two struts meeting at an angle in the middle.

In short spans, where this simple triangle of parts first finds its application, the thrust is usually taken by a tie or chord. For large spans, if a tie be used, the deflection due to load is thereby doubled, since the tie is stretched as much as the arch member is compressed.

Hence the advantage claimed in this design of carrying the thrust direct to the ground by a short compression member (a continuation of the arch form) reaching from the abutment hinges to the ground. The two struts into which the arch is divided are stiffened each by a counter-arch, also parabolic, giving a "lunette" or lenticular form to these members almost exactly corresponding to that demanded by the maximum strains—a correspondence of which the ordinary "girder" (with parallel chords) is necessarily destitute, and for which the graduation of weight of metal in its parts is the imperfect substitute.

The resulting external form, an arch springing from the very shores, gives to the structure a singular beauty; a point by no means to be disregarded. It should be further stated in this connection, that while the design is called an invention, the word refers exclusively to the combination by which, for spans of extraordinary length, the same simple elements are made available as those which for ages have been in common use for the shortest. In this point of view there is nothing whatever "experimental," the action of every part is well known by experience.