had no other effect than to sink the bolt heads and their washers into the chords, and no change of camber was produced whatever.

The large plate accompanying this paper represents one span of a single-track through bridge, now being built by the writer, for the Perkiomen Railroad Company, over the Schuylkill River near Phoenixville. All the parts are proportioned to resist the strains, as represented in Fig. 8, and particularly in the braces, is a large margin added above the requirements for safety. It will also be noticed that the connections over the pier and the anchorage involve a considerable expenditure of material beyond what is generally called for in the best railroad bridges. This has been added as a measure of safety, and while in all ordinary cases this item of expense might be dispensed with, the increased feeling of safety in the reduction of the effective span twenty feet, and the perfect immunity from the action of wind, will fully compensate for the increased expenditure of material.

The several isometrical sketches will serve to illustrate the arrangement of braces and ties, counter braces and counter ties. The angle block is believed to combine advantages over either the original oak block or the later cast-iron Howe, in insuring a uniform bearing over the entire chord without the danger of fracture, as in cast-iron, or of rapid decay, as in the simple oak bearing. We have proposed locust as the best material for the filling of this block, but there are many other species of wood which would answer almost as well; circumstances of convenience had much to do with its selection in this case.

The connection of the diagonal rods with the bottom chord by means of a 2" pin directly through the centre of the chord, admits of a considerable saving of material in the bearings, and the application is only rendered possible by the reduced strain involved in this system. It would, of course, be out of the question to admit of attachments of this kind in either the Howe or Whipple, unless the chords were considerably increased beyond the requirements for horizontal strain. A similar remark might be extended