square inches in all for the end rods. In general practice there are six rods in the last panels, or three for each truss. Dividing twenty-eight by six we have $4\frac{7}{10}$ square inches for each, or 2\\$$.44 diameter for round iron. The strain upon the braces will of course be increased by the ratio of the diagonal to the perpendicular; but these members being in wood, do not oppose the same practical difficulties to an increase of section as in the case of the vertical rods. Round iron of this size 2\\$$.44 in diameter, is practically quite as large as it is desirable to employ; and any increase in the span, carrying with it as it does an increased demand for resisting material, makes it necessary to introduce expensive appliances for the purpose of increasing the number rather than the diameter of end members.

It may be insisted that the assumed rolling load of one and a half tons per lineal foot is excessive, and in justification of the objection reference might be made to exceptional cases wherein the Howe truss had been used for railroad purposes, on somewhat greater spans and much less dimension of rods; but we are compelled to adopt this seemingly high limit, from a practical knowledge of the extreme load which is sometimes brought to bear on the bridges of the Philadelphia and Reading Railroad, and from a desire to maintain the practice of bridge building fully up to the requirements of the age. In order to overcome the difficulties above mentioned, what was called an improvement in the Howe truss was effected by falling back upon the discarded arch of the Burr in combination with the Howe; and this new arrangement has been attended with a measure of success; but that there are serious objections to the combination of the arch and truss for railroad purposes no practical bridge builder will deny; and it is only because no better system presents itself that the Improved Howe retains the field. This is written with a somewhat intimate knowledge of the peculiarities of other wooden bridges, which, in theory, may possibly lay claim to merit. For example, the McCallum Inflexible Arch Truss, as explained and illustrated by the inventor, is one of the most beautiful of wooden-bridge combinations, and