then, it would be proper to make them of 1 to $1\frac{1}{2}$ inch iron, according to the length.

The depth of the cross bearer from the arch piece to the chord tie, should be from 2 to 4 feet; not less than 3 feet when there is sufficient space for such a depth.

LVIII. The lateral swing of the road way, is another tendency to be guarded against, and this, like the lateral tendency of the arch, can not be exactly estimated. The best means of counteracting it is, by horizontal diagonal tie braces of wrought iron from $\frac{3}{4}$ to $1\frac{1}{4}$ inch diameter, for 100 feet span, between each two cross bearers, and these, like the vertical diagonals in the main trusses, should be larger towards the ends, and smaller in the middle of the span.

These should be furnished with swivel nuts for adjustment, (see Fig. 19, Pl. 3,) and may be formed as seen at *a*, having a head and swivel at one end, and a screw at the other, with an angle and a hole from one to two feet from the screw end. Thus formed, it may be interposed between the cross bearer and the chain pin, so that the hole may receive the vertical of the main truss, after it has passed through the foot of the cross bearer, as before described.

String timbers to support the iron rail may be placed over the upright bolt of the cross bearer. Or, truss-work resting on the uppermost nut at the lower end of said bolt, and of such height as to carry the track over the top of the cross bearer, may be employed, which will give more stiffness to the track.

The height of the truss for a rail road bridge, should be from $\frac{1}{8}$ to $\frac{1}{7}$ the length of span, and no cambre to the chord chains.

For a span from 40 to 100 feet, (affording from 4 to 8 bearing points, or cross bearers,) this plan is little if any inferior to any that can be adopted.