The sizes of the parts of the cross bearer will depend on the length and distance asunder. For a single track rail road bridge, they should be from 14 to 15 feet long from centre to centre of trusses. The cast iron part should be about 4 inches broad and deep, and contain about 6 square inches area of cross section, if 12 feet apart, and more or less, as the distance is greater or less than 12 feet. The cast iron brace to give lateral support to the main trusses, should have a cross section of $2\frac{1}{2}$ or 3 square inches. The chord chain should contain 2 square inches cross section for cross bearers of 3 feet depth and 12 feet apart, and more, as the depth is less or the distance asunder greater, and vice versa. The vertical bolts of the cross bearer should be about $1\frac{1}{2}$ inches diameter for 12 feet apart. The diagonals should be about $\frac{3}{4}$ inch in diameter.

LVII. The lateral support necessary to be provided for the trusses, can not be exactly estimated. It depends essentially upon the force of the wind (which can not be very severe, as so little surface is exposed in an iron bridge,) and upon the centre of resistance in the arch, not being exactly in the same vertical plane with the centre of thrust, whereby is produced a tendency to lateral flexure. If we suppose the distance of the axis of thrust from the axis of resistance, in the middle of the arch, to be $\frac{1}{2}$ the diameter of the arch cylinder, and that the axis of resistance have a circular curve from end to end, which is probably more than would ever be true in practice, the tendency to flexure laterally would not exceed the 75th part of the thrust of the arch, say for a 100 feet truss, about 1,600 lbs. distributed through the whole length of the truss. A 100 feet truss should have about 8 verticals, and if each of these possess sufficient stiffness, and be so braced as to afford 200 lbs. of lateral support to the arch, a failure in that respect would be quite improbable, if not absolutely impossible. In using wrought iron braces,