whole strain, and no assistance whatever can be derived from the resistance of the masonry. When the roadway is on the top chord, the masonry is usually carried up to the level of the road with an offset for the bottom chord to rest upon. And it is never necessary in this case that the lower chord should bear the whole strain. By placing a wall-plate behind the ends of the lower chords, and driving wedges between it and the chords, a pressure is thrown upon the abutment, which takes off precisely an equal amount from the strain upon the chord. The assistance to be derived from this arrangement is very great, and should never be neglected where circumstances admit of its being employed. It is not safe to depend entirely upon the resistance of the abutment, or, in continuous spans, upon the counterbalancing thrust of one arch against the next, for the loss of one span in this case would insure the destruction of the whole.

It is seldom, however, that when one span of a bridge is carried away the next to it is loaded with much more than its own weight, and, consequently, the true minimum of the size of the lower chords should be such as would render it more than sufficient to sustain the tension arising from the weight of the bridge. It will be safe to depend upon the mutual assistance of the spans and of the abutments to sustain the greater proportion of the thrust arising from the variable load. In the present case, as the spans are so short that the lower chord can be made without joints, there is a greater resisting power than is required to sustain the loaded bridge, since we have seen that the strain was less than 600 pounds per square inch.

The present calculation will be made upon the supposition that the chords are keyed at the ends next to the abutments, and in close contact over the pins, which is equivalent to doubling the resisting area. The following are the data for calculation in this case:

From middle of upper to middle of lower chord, 10 feet.
From middle of upper chord to middle of arch, 8 feet.
Middle of skew-back and middle of lower chord on same horizontal line.