skeleton diagram large enough to contain all the stresses and sections. It is not necessary that the diagram be drawn to scale; but the ratio of panel length to depth of truss on the diagram, for the sake of appearance, should not vary too greatly from the ratio of the actual values of these dimensions. A panel length of an inch and a half, and a depth of two inches and a half, are about as small dimensions as will be found convenient.

At each lower panel point write lightly in pencil, so that it can be afterwards erased, the number of the panel point, beginning with zero at the right-hand end of the span.

It is well known, and will be accepted here without proof, that the greatest stresses in the chords and batter braces occur when the bridge is entirely covered by the moving load; that the greatest stress in any diagonal exists when the live load extends to its foot from that end of the bridge towards which the diagonal points in a *downward* direction; that the greatest stress in any post occurs when the main diagonal (or, if there be none, when the heaviest counter) attached to its upper end receives its greatest stress; and that the two diagonals of a panel cannot at the same time be subjected to the same kind of stress, excepting, of course, the initial tension.

It is apparent that when the greatest stresses in all the diagonals sloping upward in one direction, and in all the posts and chord panels on one side of the central plane, are found, the greatest stresses in the diagonals sloping in the opposite direction, and in the posts and chord panels on the other side of the central plane, can be immediately written. This fact is so well known, that, in making a diagram of stresses, it is usual to write the stresses on only one-half of the members of the truss.

First let us take a single-intersection through-bridge.

The greatest stress in any diagonal sloping upward from right to left can be found by the formula

$$T = \frac{n'}{2}(n'+1)\frac{w}{n}\sec\theta + \left(n' - \frac{n-1}{2}\right)W_1\sec\theta,$$

where $n'$ is the number of the panel point at the foot of the diagonal. This formula is applicable to counters as well as to