When the draw is swung or unloaded, each tie carries the load between the end of the draw and the foot of the tie next inside. The strains and weights which then occur are given in the tables in Appendix G.

When the draw is closed and loaded, the pivot pier carries the entire weight from the centre to that point on each arm where the moment of flexure has the greatest positive value; this point is half way between the point of reversal of the moments and the end of the draw; it is nearer the centre when only one arm is loaded than when both arms are loaded. The strains in the ties which carry this load to the central pier should therefore be calculated with reference to the case in which the whole draw is loaded, and the strains in those ties which carry this load towards the ends, with reference to the case in which but one arm is loaded.

When both arms of the draw are loaded the general equation for the moment of flexure is

$$M = -620\, l^2 + 1660\, l\, x - 1040 x^2$$

l being the length of one arm and x the general abscissa. Differentiating:—

$$\frac{d\, M}{d\, x} = 1660\, x - 2080\, x^2$$

and the maximum value of M corresponds to

$$x = .79808\, l = 145.25.$$

The strains in the ties which carry this load towards the central post will therefore be calculated as if the centre of the truss was distant 145.25 feet from that post, making the equivalent length of span 290.5 feet.

The general equation of the strains in the web under the action of a moving load is

$$S = \frac{l^2\, w - x^2\, w'}{2\, l} - x\, w$$

in which l denotes the total length of span, w the dead load, and w' the moving load per foot. Substituting the values

$$(w = 480, — w' = 560, — \text{and } l = 290.5$$

this becomes

$$S = 69720 - .964\, x^2 - 480\, x$$