the value of x for each tie being the assumed length of beam (290.5 feet) minus the distance from the centre post to the foot of the tie next inside. The strains in the ties and posts, calculated by this formula, are given in the tables in Appendix G. As the practical centre is distant 145.25 feet from the centre post only when both spans are fully loaded, the results thus obtained are excessive for all but the centre ties, the others being most intensely strained under a partial load when the practical centre will be nearer the centre post and the practical length of beam less.

When but one arm is loaded the general equation for the moment of flexure is

$$M = -480\, l^2 + 1520\, l x - 1040\, x^2$$

the maximum value of M corresponding to

$$x = .73077\, l = 133.$$

The strains in the ties which carry their load to the end posts will therefore be calculated as if the centre of the beam was distant 133 feet from the centre post, or 49 feet from the end post, the equivalent length of span being 98 feet. Substituting $l = 98$ in the general equation for the web strains, it becomes

$$S = 23520 - 2.857\, x^2 - 480\, x$$

the value of x for each tie being the assumed length of beam (98 feet) minus the distance from the end post to the foot of the next tie outside. The strain in the several ties and posts, calculated by this formula, are also given in Appendix G.*

The maximum strain on the centre post will be equal to the total dead and moving load between the points 145.25 feet on each side of that post, excepting the half panels adjoining, the weight of which is carried directly by the pivot. The strain is therefore

$$(290.5 - 15.5) \times 2080 = 572{,}000 \text{ pounds.}$$

In like manner the strain on each end post is found to be

$$(49 - 6.25) \times 2080 = 87{,}800 \text{ pounds.}$$

* The maximum web strains expressed in tons of 2,000 pounds are marked on the skeleton diagram on Plate XII. The practical centres used in calculating these strains are also designated on the same diagram.