The thrust of the chord \( al \), equals the horizontal action of the 7 obliques connected with either end. Making then \( x = \frac{1}{3} W \), and \( h = bc = \frac{1}{3} bh \), it is obvious that each oblique carries weight equal to \( x \times \text{the number of panels not crossed by it} \), while its horizontal reach equals \( h \times \text{the number of panels it does cross} \). Hence, the horizontal action of each oblique, equals \( hx \times \text{the product of the numbers of panels at the right and left respectively, of the lower end of the oblique} \).

The compressive force acting from end to end, upon \( al \), then, must be equal to \( hx (7 + 2 \times 6 + 3 \times 5 + 4^2 + 5 \times 3 + 6 \times 2 + 7) = 84hx = 10 \frac{1}{2} W \times 0.833 = 8.75W \).

Multiplying stress by length, and substituting \( M \), we have \( 8.75 \times 6.66M = 58 \frac{1}{2} M \), material required in \( al \), at a given stress per square inch of cross-section; \( M \) being the amount required for a unit of length \( (ab) \), to sustain the unit of weight \( (W) \), at the same rate of stress.

Add 7\( M \) for two end posts, with length equal to 1 and bearing weight equal to 7\( W \), and we obtain \( 65 \frac{1}{2} M \) as a total for thrust material in long pieces, not including 7 intermediate uprights, not properly to be classified with other parts, as their action is merely incidental, except that of supporting the weight of upper chord.

The parts above considered, mainly determine the character of the truss as to economy of material.