lower, and the proportions may be such that it will fall exactly upon the lower chord, in which case the latter will sustain no portion whatever of the strain; as a consequence, the resistance of the system will not be equal to the sum of the resistances of its component parts.

The first step in the calculation must therefore be, to determine the areas of the resisting surfaces, and the position of the neutral axis.

DATA.

The height of truss, from middle of top to middle of bottom chord, is 17 feet.

From middle of bottom chord to middle of skew-back, $5\frac{1}{4}$ feet.

From middle of top chord to middle of arch at crown, $1\frac{1}{4}$ feet.

Resisting area of top chord, A, 410 square inches.

Resisting area of bottom chord, B, 270 square inches.

Resisting area of arch, at crown, C, 1044 square inches.

Resisting area of perpendicular of skew-back, D, 1051 square inches.

Let x = distance of neutral axis from C, $= x$.

Dist. of A from neutral axis, $x + 1{\cdot}25$.

" B " $17 - (x + 1{\cdot}25) = 15{\cdot}75 - x$.

" D " $15{\cdot}75 - x + 5{\cdot}25 = 21 - x$.

The pressures upon the resisting surfaces will be in proportion to their distances from the neutral axis, and if R represents the greatest strain per square inch upon the resisting surface, which is at the greatest distance from the axis, which in the present case is D, the pressure upon the other surfaces will be per square inch.

Upon the resisting surface A $\quad R \times \dfrac{x + 1{\cdot}25}{21 - x}$

" " B $\quad R \times \dfrac{15{\cdot}75 - x}{21 - x}$

" " C $\quad R \times \dfrac{x}{21 - x}$