Now, supposing all parts of the upper and lower chords to be uniformly contracted & extended, according to the forces they are respectively liable to; this does not necessarily imply any appreciable difference in lengths of diagonals, for the small alteration supposed in lengths of chords. But, the stress upon chords being produced by the action of diagonals, the latter, when, as here supposed, acting by tension, necessarily undergo extension, by which means the panels, (except the centre one,) are changed from their original form of rectangles, to that of oblique trapezoids. For instance; the figure $gikm$, becomes longer diagonally from $g$ to $k$ than from $m$ to $i$, whence the point $g$ falls lower than if the diagonal suffered no extension.

Suppose, then, the truss to be fully loaded, & $hh$, $jk$, & $fl$, to be each exposed to the same stress per square inch of cross-section. In that case, $hk$ & $jk$ will suffer extension proportionally to their respective lengths, thereby causing depression of the points $h$ & $i$ respectively as the squares of those lengths.* Hence, the point $h$ is depressed more than the point $i$ by the extension of diagonals, in the ratio of 8 to 5. The panel $gl$ must therefore be oblique, and the distance $gl$, greater than $mh$.

Again; the point $f$, suffering the same depression from the extension of $fl$, as the point $g$ suffers from that of $jk$, and a still further depression from the compression of $lh$ and the extension of $hk$, it

* See Note, foot of next page.