and cost, in the ratio of the increase in height, especially, taking into account the additional lateral support the high trusses will require.

Upon this assumption, since the horizontal parts diminish with increase of height, and the verticals and diagonals increase in expense in the same ratio to their respective amounts, the minimum expense of material would occur when the height were such that the horizontal parts be equal to all the others.

But in Art. 12, we found that for truss 7, in which the height is equal to $\frac{1}{7}$ the length, the representative quantities for horizontals were to those of the other parts, about as 56 to 40 or as 7 to 5. Therefore if we add $\frac{1}{6}$ to the height, it becomes $\frac{1}{7}+\frac{1}{42}=\frac{1}{6}$ of the length. Then diminishing the horizontals by $\frac{1}{6}$ we have $56-\frac{56}{6}=46\frac{2}{3}$, and increasing the other parts by $\frac{1}{6}$ we have $40+\frac{40}{6}=46\frac{2}{3}$.—Hence it would seem that the height should be $\frac{1}{6}$ of the length.

XXX. This, of course, is not given as a rigorously demonstrated point. A formula might be deduced, perhaps, by a more elaborate process, which, when comprehended, would be more satisfactory. But to introduce all the considerations by which the question is affected, would render any formulas upon the subject necessarily very complicated, and of comparatively little value in practice. There are considerations which go to render it quite improbable, that any simple ratio of the height to the length would be applicable with advantage in all circumstances.

In short spans, where great strength is required, it would often be found advantageous to carry the height to $\frac{1}{4}$ the length, a proportion almost impracticable, and certainly not advisable, in long spans, from the fact that they would become top-heavy, be more affected by wind, and other lateral influences and tendencies.

Again, in stretches of moderate length, where less strength is required, a less height, even as low as $\frac{1}{10}$ or $\frac{1}{12}$ the length, might be preferable, as having a better appear-