the test to a full sized structure, which would involve a great deal of labor and expense, the test may be applied to a model, made in the true proportions, upon any scale.

Now, it is obvious, that, with the same combination and proportions of parts, the acting forces, (whether producing positive, negative, or lateral stress upon the various parts or pieces,) will be in proportion, throughout, to the weight sustained, whatever be the *length* of pieces; such forces being determined by the positions and angles, and not by the lengths of pieces.

It is further manifest, that the ability of parts to withstand these forces, must be as the cross-sections of parts respectively, which, in *similar models* upon different scales, are as the square of the multiplier, by which one scale exceeds the other.

Moreover, the *weight* of each part, and of the whole combination, is as the *cube* of that multiplier.

Then, assuming two *similar* models, the larger of which, is on a scale m times as great as that of the other,—their relative abilities to sustain weight, are, obviously, as 1 to m^2, and their respective *weights*, as 1 to m^3; and, if the smaller model bear its own weeght n times, . . $1n$ may represent the capacity of this model, while $1nm^2$ will denote the capacity of the greater model. Then, dividing the capacity of each by its own weight, we find, that while one bears its own weight n times, the other bears *its* weight $nm^2 \div m^3$ times, $= n \div m$ times.