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"The construction of an aerial vehicle which could carry even a single man requires the discovery of some new metal or some new force".

He pointed out that as the scale of the dimensions was increased the volume and hence the weight increased more rapidly than did the sustaining surfaces. To illustrate this important point consider a specific example.

Suppose a machine weighs one 1b. and has a sustaining surface of one sq. ft. Now consider what happens when the dimensions are doubled. The length of the surface and the breadth of the surface both being doubled will give an area not twice but four times as great which would be four sq. ft. The weight however, depends upon all three dimensions, length, breadth, and thickness. If all these be doubled, as they are to increase the scale, the resultant weight will be eight times that of the half-sized model or 8 lbs. Thus the machine one the large scale, while it will have four times the surface of the smaller one, will weigh eight times as much.

The line of reasoning holds for similar designs in which the dimensions only are increased but it has been eleverly avoided by a system known as unit construction.

Br. Alexander Graham Bell brought out this important principle and developed a unit system which is new well known as tetrahedral construction.

In this unique construction the law of the squares and cubes does not apply as an increase in wight simply increases the number of unit surfaces employed so that the