

tedious but impracticable, except on a carefully-levelled plain free from all obstructions. Nevertheless, when the object is to measure any large tract of country, or to construct a chart of a territory by what is called a "*Trigonometrical Survey*," it is indispensable to lay down and measure, no matter at what cost of time and labour, some one such very long line, as a "*base line*;" and to mark its two extremities in some very distinct and permanent manner: so that their linear distance (a large multiple of the original standard unit) shall not only be exactly known, but shall be capable of being appealed to for all future time, or at least till the whole work is completed, as a new and larger unit, "*the length of the base*," to which all other distances in the survey are temporarily referred. These, being subsequently reduced by calculation to multiples and fractions of the original unit, all the dimensions of the territory become finally known in yards, feet, and inches. For the purpose of measuring such a base, the ground must be cleared and reduced to perfect horizontality (or any slight inclination exactly taken account of), and the intended base line *allineated* by placing a telescope a little beyond one of its proposed extremities, so as to command them both, and as it were to fore-shorten its whole length into one point, the intersection of two wires in its focus. Anything seen in the telescope to the right or left of this point, or above or below it, is out of the line.

(10.) Whenever lengths are to be added by the repetition of one and the same unit, there is always a possibility of error arising from imperfect juxtapositions.