

did.* Thus the bar has been moved forward by its exact length *in the air*, as it were, without touching anything. Arrived at the end of the base, a dot is made and adjusted under the terminal microscope on a gold or platina plate let into a solid block of stone already prepared—the starting point having been a similar one similarly fixed at the other end.

(II.) The base measured, the “*Triangulation*” commences. This is founded on the universally known fact that when two angles of a triangle are known, a knowledge of the length of the side between them leads by exact rules of calculation to that of the other two; accordingly, at the two extremities of the base, and centrally over the dots which mark them, are placed delicately divided instruments called theodolites, competent to the measurement of angles to an extreme nicety. The telescopes of these being pointed so as to look down the throats of each other, it is clear that both must be directed along the base line, and if then turned on some one object at a distance considerably greater from either than they are from each other, that object becomes the summit of a triangle, the inclinations of whose sides to the base is measured. Its distance from either end of the base then can be calculated. Thenceforward either of those sides becomes available as a new and longer base. And thus the survey may go on, throwing out

* In actual practice the procedure is a little more complex, but the principle is the same; and it is only intended here to convey to the uninitiated a general notion of the sort of niceties which have to be attended to.