

sides are found to be, each about thirty-eight times the length of the base, and the resulting distance of the moon from the earth's centre about thirty diameters of the latter, or more exactly sixty times and a quarter its radius, that is to say, 238,100 (say 240,000) miles, which is rather under a quarter of a million—so that, speaking roughly, we may consider the moon's orbit round the earth as a circle about half a million of miles across. In the case of the sun, however, it is otherwise. The sides of our triangle *are* here what may be called extravagantly out of proportion to its base: and the result of the calculation is found to assign to the sun a distance very little short of four hundred times that already found for the moon—being in effect no less than 23,984 (in round numbers 24,000) radii, or 12,000 diameters of the earth, or in miles 94,880,700 or about 95,000,000.\*

(9.) When so vast a disproportion exists between the distance of an object and the base employed to measure it, a very trifling error in the measured angles produces a great one in the result. Happily, however, there exists another and a very much more precise method, though far more refined in principle, by which this most important element can be determined; viz., by observations of the planet Venus, at the time of its "transit" (or visible passage) across the sun's disc. It would lead us too far aside from our purpose to explain this, however, at

\* These numbers and all the subsequent statements in miles are too large by about 1 mile in 31. See Lecture III. on Comets, § 9.