

to the student, that every place on the earth's surface might alike be considered as the centre of the celestial motions. But if this was true with respect to the motions of the fixed stars, was it also true with regard to those of the sun and moon? The displacement of the sun by parallax is so small, that the best observers among the ancients could never be sure of its existence; but with respect to the moon, the case is different. She may be displaced by this cause to the amount of twice her own breadth, a quantity easily noticed by the rudest process of instrumental observation. The law of the displacement thus produced is easily obtained by theory, the globular form of the earth being supposed known; but the amount of the displacement depends upon the distance of the moon from the earth, and requires at least one good observation to determine it. Ptolemy has given a table of the effects of parallax, calculated according to the apparent altitude of the moon, assuming certain supposed distances; these distances, however, do not follow the real law of the moon's distances, in consequence of their being founded upon the Hypothesis of the Eccentric and Epicycle.

In fact this Hypothesis, though a very close representation of the truth, so far as the *positions* of the luminaries are concerned, fails altogether when we apply it to their *distances*. The radius of the epicycle, or the eccentricity of the eccentric, are determined so as to satisfy the observations of the apparent *motions* of the bodies; but, inasmuch as the hypothetical motions are different altogether from the real motions, the Hypothesis does not, at the same time, satisfy the observations of the *distances* of the bodies, if we are able to make any such observations.

Parallax is one method by which the distances of the moon, at different times, may be compared; her Apparent Diameters afford another method. Neither of these modes, however, is easily capable of such accuracy as to overturn at once the Hypothesis of epicycles; and, accordingly, the Hypothesis continued to be entertained in spite of such measures; the measures being, indeed, in some degree falsified in consequence of the reigning opinion. In fact, however, the imperfection of the methods of measuring parallax and magnitude, which were in use at this period, was such, their results could not lead to any degree of conviction deserving to be set in opposition to a theory which was so satisfactory with regard to the more certain observations, namely, those of the motions.

The Eccentricity, or the Radius of the Epicycle, which would satisfy