

they could hardly avoid discovering the anomaly or unequal motion of the moon; for in every revolution, her daily progression in the heavens varies from about twenty-two to twenty-six times her own diameter. But there is not, in their knowledge of this Period, any evidence that they had measured the amount of this variation; and Delambre⁶ is probably right in attributing all such observations to the Greeks.

The sun's motion would also be seen to be irregular as soon as men had any exact mode of determining the lengths of the four seasons, by means of the passage of the sun through the equinoctial and solstitial points. For spring, summer, autumn, and winter, which would each consist of an equal number of days if the motions were uniform, are, in fact, found to be unequal in length.

It was not very difficult to see that the mechanism of epicycles might be applied so as to explain irregularities of this kind. A wheel travelling round the earth, while it revolved upon its centre, might produce the effect of making the sun or moon fixed in its rim go sometimes faster and sometimes slower in appearance, just in the same way as the same suppositions would account for a planet going sometimes forwards and sometimes backwards: the epicycles of the sun and moon would, for this purpose, be less than those of the planets. Accordingly, it is probable that, at the time of Plato and Aristotle, philosophers were already endeavoring to apply the hypothesis to these cases, though it does not appear that any one fully succeeded before Hipparchus.

The problem which was thus present to the minds of astronomers, and which Plato is said to have proposed to them in a distinct form, was, "To reconcile the celestial phenomena by the combination of equable circular motions." That the circular motions should be equable as well as circular, was a condition, which, if it had been merely tried at first, as the most simple and definite conjecture, would have deserved praise. But this condition, which is, in reality, inconsistent with nature, was, in the sequel, adhered to with a pertinacity which introduced endless complexity into the system. The history of this assumption is one of the most marked instances of that love of simplicity and symmetry which is the source of all general truths, though it so often produces and perpetuates error. At present we can easily see how fancifully the notion of simplicity and perfection was interpreted, in the arguments by which the opinion was defended, that the

⁶ *Astronomie Ancienne*, i. 212.