

I shall here close my account of the astronomical progress of the Greek School. My purpose is only to illustrate the principles on which the progress of science depends, and therefore I have not at all pretended to touch upon every part of the subject. Some portion of the ancient theories, as, for instance, the mode of accounting for the motions of the moon and planets in latitude, are sufficiently analogous to what has been explained, not to require any more especial notice. Other parts of Greek astronomical knowledge, as, for instance, their acquaintance with refraction, did not assume any clear or definite form, and can only be considered as the prelude to modern discoveries on the same subject. And before we can with propriety pass on to these, there is a long and remarkable, though unproductive interval, of which some account must be given.

Sect. 8.—Arabian Astronomy.

THE interval to which I have just alluded may be considered as extending from Ptolemy to Copernicus; we have no advance in Greek astronomy after the former; no signs of a revival of the power of discovery till the latter. During this interval of 1350 years,³⁹ the principal cultivators of astronomy were the Arabians, who adopted this science from the Greeks whom they conquered, and from whom the conquerors of western Europe again received back their treasure, when the love of science and the capacity for it had been awakened in their minds. In the intervening time, the precious deposit had undergone little change. The Arab astronomer had been the scrupulous but unprofitable servant, who kept his talent without apparent danger of loss, but also without prospect of increase. There is little in Ara-

cycle was to the Periodic Time of the Epicyclical Centre on the Deferent, as the *synodical* Revolution of the Planet to the *tropical* Revolution of the Earth above the Sun. For the three *superior* Planets, Mars, Jupiter, and Saturn, the Radius of the Deferent was equal to the Radius of the Planet's orbit, and the Radius of the Epicycle was equal to the Radius of the Earth's orbit; the Periodic Time on the Planet in its Epicycle was to the Periodic Time of the Epicyclical Centre on the Deferent, as the *synodical* Revolution of the Planet to the *tropical* Revolution of the same Planet.

Ptolemy might obviously have made the geometrical motions of *all* the Planets correspond with the observations by one of these two modes of construction; but he appears to have adopted this double form of the theory, in order that in the inferior, as well as in the superior Planets, he might give the smaller of the two Radii to the Epicycle: that is, in order that he might make the smaller circle move round the larger, not *vice versâ*.—*Littrow's Notes*.

³⁹ Ptolemy died about A. D. 150. Copernicus was living A. D. 1500.