

its *apogee* precedes the summer solstice by  $24\frac{1}{2}$  degrees nearly, the zodiac containing 360."

The exactness of the Solar Tables, or *Canon*, which was founded on these data, was manifested, not only by the coincidence of the sun's calculated place with such observations as the Greek astronomers of this period were able to make (which were indeed very rude), but by its enabling them to calculate solar and lunar eclipses; phenomena which are a very precise and severe trial of the accuracy of such tables, inasmuch as a very minute change in the apparent place of the sun or moon would completely alter the obvious features of the eclipse. Though the tables of this period were by no means perfect, they bore with tolerable credit this trying and perpetually recurring test; and thus proved the soundness of the theory on which the tables were calculated.

*The Moon's Eccentric.*—The moon's motions have many irregularities; but when the hypothesis of an Eccentric or an Epicycle had sufficed in the case of the sun, it was natural to try to explain, in the same way, the motions of the moon; and it was shown by Hipparchus that such hypotheses would account for the more obvious anomalies. It is not very easy to describe the several ways in which these hypotheses were applied, for it is, in truth, very difficult to explain in words even the mere facts of the moon's motion. If she were to leave a visible bright line behind her in the heavens wherever she moved, the path thus exhibited would be of an extremely complex nature; the circle of each revolution slipping away from the preceding, and the traces of successive revolutions forming a sort of band of net-work running round the middle of the sky.<sup>2</sup> In each revolution, the motion in longitude is affected by an anomaly of the same nature as the sun's anomaly already spoken of; but besides this, the path of the moon deviates from the ecliptic to the north and to the south of the ecliptic, and thus she has a motion in latitude. This motion in latitude would be sufficiently known if we knew the period of its *restoration*, that is, the time which the moon occupies in moving from any latitude till she is restored to the same latitude; as, for instance, from the ecliptic on one side of the heavens to the ecliptic on the same side of the heavens again. But it is found that the period of the restoration of the latitude is not the same as the period of the restoration of the longitude, that is, as the period of the moon's revolution among the

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<sup>2</sup> The reader will find an attempt to make the nature of this path generally intelligible in the *Companion to the British Almanac* for 1814.