

(III.)

A TRANSIT OF MERCURY.

MAY 6TH, 1878.

Transits of Mercury occur more frequently than those of Venus by reason of the planet's greater velocity. The longitudes of Mercury's nodes are about 46° and 226° , and the Earth arrives at these points about the 10th of November and the 7th May, transits of this planet may therefore be expected at or near these dates, those at the ascending node in November, and at the descending node in May.

Mercury revolves round the Sun in 87.9693 days, and the Earth in 365.256 days. The converging fractions approximating

$$\text{to } \frac{87.9693}{365.256} \text{ are } \frac{7}{29}, \frac{13}{54}, \frac{33}{137}, \text{ \&c,}$$

Therefore when a transit has occurred at one node another may be expected after an interval of 13 or 33 years, at the end of which time Mercury and the Earth will occupy nearly the same position in the heavens.

Sometimes, however, transits occur at the same node at intervals of 7 years, and one at either node is generally preceded or followed by one at the other node, at an interval of $3\frac{1}{2}$ years.

The last transit at the descending node occurred in May, 1845, and the last at the ascending node in November, 1868. Hence the transits for the 19th century will occur, at the descending node May 6th, 1878; May 9th, 1891; and at the descending node November 7th, 1881, and November 10th, 1894.

COMPUTATION OF THE TRANSIT OF 1878.

From the tables* of the planet we obtain the following heliocentric positions :—

* Tables of Mercury, by Joseph Winlock, Prof. Mathematics U. S. Navy, Washington, 1864.