

the Planets from the Sun; nor does any theory yet devised give such reason. But an empirical formula proposed by the Astronomer Bode of Berlin, gives a law of these distances (*Bode's Law*), which, to make it coherent, requires a planet between Mars and Jupiter. With such an addition, the distance of Mercury, Venus, Earth, Mars, the Missing Planet, Jupiter, Saturn, and Uranus, are nearly as the numbers

4, 7, 10, 16, 28, 52, 100, 196,

in which the excesses of each number above the preceding are the series

3, 3, 6, 12, 24, 48, 96.

On the strength of this law the Germans wrote *on the long-expected Planet*, and formed themselves into associations for the discovery of it.

Not only did this law stimulate the inquiries for the Missing Planet, and thus lead to the discovery of the Minor Planets, but it had also a share in the discovery of Neptune. According to the law, a planet beyond Uranus may be expected to be at the distance represented by 388. Mr. Adams and M. Le Verrier both of them began by assuming a distance of nearly this magnitude for the Planet which they sought; that is, a distance more than 38 times the earth's distance. It was found afterwards that the distance of Neptune is only 30 times that of the earth; yet the assumption was of essential use in obtaining the result: and Mr. Airy remarks that the history of the discovery shows the importance of using any received theory as far as it will go, even if the theory can claim no higher merit than that of being plausible.⁴

The discovery of Minor Planets in a certain region of the interval between Mars and Jupiter has gone on to such an extent, that their number makes them assume in a peculiar manner the character of representatives of a Missing Planet. At first, as I have said in the text, it was supposed that all these portions must pass through or near a common node; this opinion being founded on the very bold doctrine, that the portions must at one time have been united in one Planet, and must then have separated. At this node, as I have stated, Olbers lay in wait for them, as for a hostile army at a defile. Ceres, Pallas, and Juno had been discovered in this way in the period from 1801 to 1804; and Vesta was caught in 1807. For a time the chase for new planets in this region seemed to have exhausted the stock. But after thirty-eight years, to the astonishment of astronomers, they began to be again detected in extraordinary numbers. In 1845, M. Hencke of

⁴ Account of the Discovery of Neptune, &c., *Mem. Ast. Soc.*, vol. xvi. p. 414.