

connecting the whole as securely as though they were absolutely united by a tangible substance ; and that influence is the attraction of gravitation.

Four of the planets, Venus, Mars, Jupiter, and Saturn, are not only visible to the naked eye, but may almost be distinguished by their remarkable brilliancy. Uranus can scarcely be seen without a telescope, and Mercury, though visible as a large star, is only occasionally in view, on account of its nearness to the sun, in the splendour of whose beams it is lost. Its greatest angular distance from the source of light is about 29° , and it is either seen as a morning or an evening star. When it is to the east of the sun, and is sufficiently distant from it not to be lost in its retiring glory, Mercury may be seen in the western horizon ; when to the west, in the eastern horizon, shining with peculiar brilliancy, as the harbinger of its lord. Ceres, Pallas, Vesta, and Juno, are never seen by the naked eye, to which circumstance we may perhaps trace their comparatively recent discovery.

It is not our business at the present time to examine the peculiarities and varied appearances of the planetary bodies, but the following table may be useful to the reader, as giving the most important particulars in relation to their orbits and dimensions : the planets are placed in the order of their proximity to the sun.

| Planet's name | Mean distance from the sun, or semi-axis. | Mean Sidereal period in mean Solar days. | Equatorial diameter, the sun being 111.454. |
|---------------|---|--|---|
| Mercury . . . | 0.3870981 | 87.9692580 | 0.398 |
| Venus . . . | 0.7233316 | 224.7007869 | 0.975 |
| Earth . . . | 1.0000000 | 365.2563612 | 1.000 |
| Mars . . . | 1.5236923 | 686.9796458 | 0.517 |
| Vesta . . . | 2.3678700 | 1325.7431000 | |
| Juno . . . | 2.6690090 | 1592.6608000 | |
| Ceres . . . | 2.7672450 | 1681.3931000 | |
| Pallas . . . | 2.7728860 | 1686.5388000 | |
| Jupiter . . . | 5.2027760 | 4332.5848212 | 10.860 |
| Saturn . . . | 9.5387861 | 10759.2198174 | 9.987 |
| Uranus . . . | 19.1823900 | 30686.8208296 | 4.332 |

Instruments called orreries are sometimes introduced in public lectures, to explain the order, size, and relative positions of the planetary bodies, or, as we might more properly