each case miniature systems entirely analogous in the general laws of their motions to the great system in which the Sun acts the part of the Primary, and the Planets of its Satellites. In each of those systems the laws of Kepler are obeyed without prejudice to the effect of perturbations, and of that small but not imperceptible connection which arises from the elliptic form of the central bodies; and in all of them it will be observed that the same remark respecting their proximity to their Primaries holds good, as in the case of our Moon, vith a similar reason for such close connection. In those Transits of the Satellites, which, with powerful Telescopes, may be observed with great precision, it often happens that the Satellite is discernible on the disc as a bright spot, if projected on a dark belt; but at times also as a dark spot of smaller dimensions This curious fact (observed by Schræter and than the shadow. Harding) has led to a conclusion that some of the Moons have, on their own bodies or in their atmospheres, obscure spots (as in the Planets) of vast extent; for the Satellites of Jupiter and of Saturn, small as they appear to us, are really bodies of great size, as we have before proved. The four Satellites of Jupiter cannot be eclipsed at one and the same time, for when the first is eclipsed, the other three must lie between the Sun and Planet, easting their shadow on his disc, and vice versa. One instance only is on record, when Jupiter has been observed without Satellites, viz.-by Molyneux, November 2d, O. S. 1681.

The final and conclusive establishment of the Copernican System, may be referred to the discovery of the motions and eclipses of the Satellites, in which the famous Laws of Kepler, and especially that Law which connects their periods and distances, were clearly traced and fully maintained. To this cause we also owe the grand discovery of the aberration of light, and the enormous velocity of that element. The Orbits of Jupiter's Satellites are but little eccentric ; their mutual action produces " perturbations" in them, similar to those of the Planets about the Sun, diligently investigated by the celebrated French Astronomer Laplace, and lately (as before said) with singular ability by Mrs. Somerville. By close observation it has been ascertained, that they are subject to marked fluctuations in respect to brightness, and that these fluctuations happen periodically, according to their positions with respect to the Sun. From this it has been fully concluded, that they revolve on their axis like our Moon, in periods equal to their siderial revolutions round their primaries.

We heretofore observed, that the Moons of Saturn require more attention than has hitherto been paid to them. He is certainly inferior in density to Jupiter, but his being as light as cork I deny; as in that case the "perturbations" arising from the action and attraction of Jupiter, would not only encumber his motions, but actually force him from his position in the sky.

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