

and reaches 31° . All the hitherto discovered *interior* comets have, like the principal and secondary planets of the entire solar system, a *direct* motion (from west to east, proceeding in their orbits). Sir John Herschel has directed attention to the great rarity of *retrograde* motion of comets *having a slight inclination to the plane of the ecliptic*.* This opposite direction of motion, which occurs only with a certain class of planetary bodies, is of great importance in reference to the very universally prevailing opinion as to the formation of the planetary bodies belonging to one system, and as to the primitive, impulsive, and projectile force. It shows us the *cometary world*, although subject even at the remotest distances to the attraction of the central body, in greater individuality and independence. Such a mode of viewing the subject has led to the idea of considering the comets as older† than the planets—as it were primitive forms of the loosely aggregating matter in space. Under these presuppositions, it becomes a question whether, notwithstanding the enormous distance of the nearest fixed stars, whose parallax we know from the aphelion of the Comet of 1680, some of the comets which appear in the heavens may not be merely *wanderers through* our solar system, moving from one Sun to another?

Next in order to the group of comets, I shall speak of the ring of the *zodiacal light*, as with great probability belonging to our solar region, and after that of the *swarms of meteoric asteroids* which sometimes fall upon our earth, and with regard to whose existence, as bodies in space, by no means unanimous opinions prevail. As, in accordance with the course adopted by Chladni, Olbers, Laplace, Arago, Sir John Herschel, and Bessel, I consider the *aërolites* to be of decidedly extra-terrestrial cosmical origin, I may venture, at the conclusion of the section upon the planets, confidently to express the expectation that, by continued accuracy in the observation of *aërolites*, fire-balls, and shooting-stars, the opposite opinion will disappear in the same way that the opin-

* *Outlines*, § 601.

† Laplace, *Expos. du Système du Monde*, p. 396 and 414. The special view of Laplace as to the comets being “wandering nebulae” (*petites nébuleuses errantes de systèmes en systèmes solaires*), “stands in opposition to the progress which has been made since the death of the great man, in the *resolvability* of so many nebulous spots into crowded heaps of stars; the circumstance, also, that the comets have a portion of *reflected polarized* light, which the self-luminous bodies are destitute of. Compare *Cosmos*, vol. iii., p. 142; vol. iv., p. 22.