

of Encke's Comet, or they mix with the old cosmical matter which has not aggregated into spheres, or condensed into the rings, and which appears to us as the zodiacal light. We see, as it were, before our eyes, material particles disappear, and can scarcely conjecture where they again collect. However probable may be the *condensation*, in the neighborhood of the central body of our system, of a gaseous fluid filling space, still, in the case of the comets, whose nuclei, according to Valz, *diminish* in the perihelion, this fluid, condensed there, can scarcely be looked upon as pressing upon a vesicular vapory envelope.* Although in the streamers of the comets the outlines of the reflecting portion of the vapory envelope is generally very indefinite, the circumstance that, in some individuals (for example, Halley's Comet at the 2d of January, 1836, at the Cape of Good Hope), a sharpness of outline has been observed on the anterior parabolic part of the body, such as our masses of clouds seldom present, is so much the more striking and instructive as to the molecular condition of these bodies. The celebrated observer at the Cape compared the unusual appearance, testifying to the intensity of the mutual attraction of the particles, with that of an alabaster vessel strongly illuminated in the interior.†

Since the appearance of the astronomical part of my *Delineation of Nature*, the cometary world has presented a phenomenon whose mere possibility could scarcely have been suspected beforehand. Biela's Comet, an *interior* one of short period, $6\frac{2}{5}$ years in its revolution, has separated into two comets of similar figure though unequal dimensions, both having a head and tail. So long as they could be observed, they did not unite again, and proceeded on their course separately, almost parallel with each other. Hind heads on the

* Valz, *Essai sur la Détermination de la Densité de l'Éther dans l'espace Planétaire*, 1830, p. 2; and *Cosmos*, vol. i., p. 106. The so-carefully observing and always unprejudiced Hevelius had also directed attention to the increase in the size of the cometary nuclei, with increased distance from the Sun. (Pingré, *Cométographie*, tom. ii., p. 193.) The determinations of the diameter of Encke's Comet in the perihelion is very difficult, if accuracy is desired. The comet is a nebulous mass, in which the center, or one point of it, is the brightest, even prominently bright. From this point, which, however, presents no appearance of a disk, and can not be called a *comet-head*, the light decreases very rapidly all around, and at the same time the vapor elongates toward one disk, so that this elongation appears as a tail. The measurements, therefore, refer to this mass of vapor, whose circumference, without having really definite boundaries, decreases in perihelion.

† Sir John Herschel, *Results of Astronomical Observations at the Cape of Good Hope*, 1847, § 366, pl. xv. and xvi.