

among the planetary orbits of our solar system, which they intersect. But when separated from the controlling nucleus, this substance ceases to be perceptibly luminous. Newton even considered it possible that *vapores ex sole et stellis fixis et caudis cometarum*, "vapors from the sun, the stars, and the tails of comets," might blend with our terrestrial atmosphere.\* No telescope has as yet indicated any sidereal character in the vaporous, rotating, and flattened ring of the zodiacal light. Whether the particles of which this ring consists, and which, according to some, are conceived to rotate upon themselves in obedience to dynamic conditions, and, according to others, merely to revolve round the Sun, are illumined or self-luminous, like many kinds of terrestrial vapors,† is a question as yet undecided. Dominique Cassini believed them to be small planetary bodies.‡ It seems as if it were a requirement of the human intellect to seek in all fluid bodies for discrete molecular particles,§ similar to the full or hollow vesicles of which clouds are formed; while the gradations in the decrease of density in our planetary system, from Mercury to Saturn and Neptune (from 1.12 to 0.14; the Earth being =1), leads the mind to the consideration of comets, through the external layers of whose nuclei even a faint star continues visible, and finally to that of discrete particles, so deficient in density that their solidity, either within large or small dimensions, can scarcely be characterized, except by the limits which bound them. It was by such considerations as to the constitution of the apparently vaporous zodiacal light that Cassini, long before the discovery of the so-called smaller planets between Mars and Jupiter, and prior to all conjectures regarding meteor-asteroids, was led to the idea that there exist cosmical bodies of all dimensions and all degrees of density. We here almost involuntarily touch upon the old metaphysical controversy regarding matter of primitive fluidity and that composed of discrete molecular particles, and therefore more amenable to mathematical treatment. From hence we turn the more readily to our former consideration of the purely objective part of the phenomenon.

In the 3926 (2451 + 1475) positions which belong, *a.* to the portion of the firmament visible at Slough, and which we shall here, for the sake of brevity, term the *northern* heavens, according to the three catalogues of Sir William Herschel

\* Newton, *Philos. Nat. Principia Mathematica*, 1760, tom. iii., p. 671

† *Cosmos*, vol. i., p. 141.

‡ *Ibid.*, p. 140

§ *Observations at the Cape*, § 109-111.