

A laborious investigation which Peters has now completed at Königsberg, on the other hand, justifies it; as does also a similar one advanced by Schubert, the calculator for the North American *Nautical Almanac*.

The belief in the existence of non-luminous stars was diffused even among the ancient Greeks, and especially in the earliest ages of Christianity. It was assumed that among the fiery stars which are nourished by the celestial vapors, there revolve certain other earth-like bodies, which, however, remain invisible to us.* The total extinction of *new* stars, especially of those so carefully observed by Tycho Brahe and Kepler in Cassiopeia and Ophiuchus, appears to corroborate this opinion. Since it was at the time conjectured that the first of these stars had already twice appeared, and that, too, at intervals of nearly 300 years, the idea of *annihilation* and total extinction naturally gained little or no credit. The immortal author of the *Mécanique Céleste* bases his conviction of the existence of non-luminous masses in the universe on these same phenomena of 1572 and 1604: "These stars, that have become invisible after having surpassed the brilliancy of Jupiter, have not changed their place during the time of their being visible." (The luminous process in them has simply ceased.) "There exist, therefore, in celestial space dark bodies of equal magnitudes, and probably in as great numbers as the stars."† So also Mädler, in his *Untersuchungen über die Fixstern-Systeme*, says:‡ "A dark body might be a central body; it might, like our own sun, be surrounded in its immediate neighborhood only by dark bodies like our planets. The motions of Sirius and Procyon, pointed out by Bessel, force us to the assumption that there are cases where luminous bodies form the satellites of dark masses."§ It has been already remarked that the advocates of the emanation theory consider these masses as both invisible, and also as radiating light: invisible, since they are of such huge dimensions that the rays of light emitted by them (the molecules of light), being impeded by the force of attraction, are unable to pass beyond a certain limit.|| If, as

* Origen, in *Gronov. Thesaur.*, t. x., p. 271.

† Laplace, *Expos. du Syst. du Monde*, 1824, p. 395. Lambert, in his *Kosmologische Briefe*, shows remarkable tendency to adopt the hypothesis of large dark bodies.

‡ Mädler, *Untersuch. über die Fixstern-Systeme*, th. ii. (1848), s. 3; and his *Astronomy*, s. 416.

§ Vide note †, p. 186

|| Vide *supra*, p. 88, and note; Laplace, in *Zach's Allg. Geogr. Ephem.*, bd. iv., s. 1; Mädler, *Astr.*, s. 393.