

small planetary masses in space is simpler, and, at the same time, more analogous with those entertained concerning the formation of other portions of the solar system.

It is very probable that a large number of these cosmical bodies traverse space undestroyed by the vicinity of our atmosphere, and revolve round the Sun without experiencing any alteration but a slight increase in the eccentricity of their orbits, occasioned by the attraction of the Earth's mass. We may, consequently, suppose the possibility of these bodies remaining invisible to us during many years and frequent revolutions. The supposed phenomenon of ascending shooting stars and fire-balls, which Chladni has unsuccessfully endeavored to explain on the hypothesis of the *reflection* of strongly compressed air, appears at first sight as the consequence of some unknown tangential force propelling bodies from the earth; but Bessel has shown by theoretical deductions, confirmed by Feldt's carefully-conducted calculations, that, owing to the absence of any proofs of the simultaneous occurrence of the observed disappearances, the assumption of an ascent of shooting stars was rendered wholly improbable, and inadmissible as a result of observation.\* The opinion advanced by Olbers that the explosion of shooting stars and ignited fire-balls not moving in straight lines may impel meteors upward in the manner of rockets, and influence the direction of their orbits, must be made the subject of future researches.

Shooting stars fall either separately and in inconsiderable numbers, that is, sporadically, or in swarms of many thou-

origin in the regions of space, as heavenly bodies which had long remained invisible. Respecting this last opinion, which is that of Diogenes of Apollonia, and entirely accords with that of the present day, see pages 124 and 125. It is worthy of remark, that in Syria, as I have been assured by a learned Orientalist, now resident at Smyrna, Andrea de Nericat, who instructed me in Persian, there is a popular belief that aërolites chiefly fall on clear moonlight nights. The ancients, on the contrary, especially looked for their fall during lunar eclipses. (See Pliny, xxxvii., 10, p. 164. Solinus, c. 37. Salm., *Exerc.*, p. 531; and the passages collected by Ukert, in his *Geogr. der Griechen und Römer*, th. ii., 1, s. 131, note 14.) On the improbability that meteoric masses are formed from metal-dissolving gases, which, according to Fusinieri, may exist in the highest strata of our atmosphere, and, previously diffused through an almost boundless space, may suddenly assume a solid condition, and on the penetration and miscibility of gases, see my *Relat. Hist.*, t. i., p. 525.

\* Bessel, in Schum., *Astr. Nachr.*, 1839, No 380 und 381, s. 222 und 346. At the conclusion of the Memoir there is a comparison of the Sun's longitudes with the epochs of the November phenomenon, from the period of the first observations in Cumana in 1799.