sounds of aërolites traversing our atmosphere and becoming ignited within its confines, impart a new stimulus, for a certain time, to the general interest in problems, which appear to the people at large even more mysterious than to the dogmatizing physicist.

My reason for more particularly naming Kepler in these remarks on the influence of direct sensuous contemplation has been to point out how, in this great and highly-gifted man, a taste for imaginative combinations was combined with a remarkable talent for observation, an earnest and severe method of induction, a courageous and almost unparalleled perseverance in calculation, and a mathematical profoundness of mind, which, revealed in his *Stereometria Doliorum*, exercised a happy influence on Fermat, and, through him, on the invention of the theory of the infinitesimal calculus.* A man endowed with such a mind was pre-eminently qualified by the richness and mobility of his ideas,† and by the bold cosmical conjectures which he advanced, to animate and augment the movement which led the seventeenth century uninterruptedly forward to the exalted object presented in an extended contemplation of the universe.

The many comets visible to the naked eye from 1577 to the appearance of Halley's comet in 1607 (eight in number), and the sudden apparition already alluded to of three stars almost at the same period, gave rise to speculations on the origin of these heavenly bodies from a cosmical vapor filling the regions of space. Kepler, like Tycho Brahe, believed that the new stars had been conglomerated from this vapor, and that they were again dissolved in it.‡ Comets to which,

* Laplace says of Kepler's theory of the measurement of casks (*Stereometria Doliorum*), 1615, "which, like the sand-reckoning of Archimedes, develops elevated ideas on a subject of little importance;" "Kepler présente dans cet ouvrage des vues sur l'infini qui ont influé sur la révolution que la Géométrie a éprouvée à la fin du 17me siècle; et Fermat, que l'on doit regarder comme le véritable inventeur du calcul différentiel, a fondé sur elles sa belle méthode *de maximis et minimis*. (*Précis de l'Hist. de l'Astronomie*, 1821, p. 95.)" On the geometrical power manifested by Kepler in the five books of his *Harmonices Mundi*, see Chasles, *Aperçu Hist. des Méthodes en Géométrie*, 1837, p. 482–487.

† Sir David Brewster elegantly remarks, in the account of Kepler's method of investigating truth, that "the influence of imagination as an instrument of research has been much overlooked by those who have ventured to give laws to philosophy. This faculty is of greatest value in physical inquiries; if we use it as a guide and confide in its indications, it will infallibly deceive us; but if we employ it as an auxiliary, it will afford us the most invaluable aid" (*Martyrs of Science*, p. 215).

‡ Arago, in the *Annuaire*, 1842, p. 434 (*De la Transformation des*