

while, every where around, the luminous asteroids proclaim the existence of one common material universe.

If we compare the volume of the innermost of Saturn's satellites, or that of Ceres, with the immense volume of the Sun, all relations of magnitude vanish from our minds. The extinction of suddenly resplendent stars in Cassiopeia, Cygnus, and Serpentarius have already led to the assumption of other and non-luminous cosmical bodies. We now know that the meteoric asteroids, spherically agglomerated into small masses, revolve round the Sun, intersect, like comets, the orbits of the luminous larger planets, and become ignited either in the vicinity of our atmosphere or in its upper strata.

The only media by which we are brought in connection with other planetary bodies, and with all portions of the universe beyond our atmosphere, are light and heat (the latter of which can scarcely be separated from the former),* and those mysterious powers of attraction exercised by remote masses, according to the quantity of their constituents, upon our globe, the ocean, and the strata of our atmosphere. Another and different kind of cosmical, or, rather, material mode of contact is, however, opened to us, if we admit falling stars and meteoric stones to be planetary asteroids. They not only act upon us merely from a distance by the excitement of luminous or calorific vibrations, or in obedience to the laws of mutual attraction, but they acquire an actual material existence for us, reaching our atmosphere from the remoter regions of universal space, and remaining on the earth itself. Meteoric stones are the only means by which we can be brought in possible contact with that which is foreign to our own planet. Accustomed to gain our knowledge of what is not telluric solely through measurement, calculations, and the deductions of reason, we experience a sentiment of astonishment at finding that we may examine, weigh, and analyze bodies that ap-

* The following remarkable passage on the radiation of heat from the fixed stars, and on their low combustion and vitality—one of Kepler's many aspirations—occurs in the *Paralipom. in Vitell. Astron. pars Optica*, 1604, Propos. xxxii., p. 25: "Lucis proprium est calor, sydera omnia calefaciunt. De syderum luce claritatis ratio testatur, calorem universorum in minori esse proportione ad calorem unius solis, quam ut ab homine, cujus est certa caloris mensura, uterque simul percipi et judicari possit. De cincindularum lucula tenuissima negare non potes, quin cum calore sit. Vivunt enim et moventur, hoc autem non sine calefactione perficitur. Sic neque putrescentium lignorum lux suo calore destituitur; nam ipsa puetredo quidam lentus ignis est. Inest et stirpibus suis calor." (Compare Kepler, *Epit. Astron. Copernicanæ*, 1618, t. i., lib. i., p. 35.)