some cases, not exceeding the twentieth or twenty-fourth degree of telescopic magnitude. A portion of the nebulous vapor would probably be found resolvable into stars by more powerful optical instruments. As the retina retains a less vivid impression of separate than of infinitely near luminous points, less strongly marked photometric relations are excited in the latter case, as Arago has recently shown.* The definite or amorphous cosmical vapor so universally diffused, and which generates heat through condensation, probably modifies the transparency of the universal atmosphere, and diminishes that uniform intensity of light which, according to Halley and Olbers, should arise, if every point throughout the depths of space were filled by an infinite series of stars.† The assumption of such a distribution in space is, however, at variance with observation, which shows us large starless regions of space, *openings* in the heavens, as William Herschel terms them—one, four degrees in width, in Scorpio, and another in Serpentarius. In the vicinity of both, near their margin, we find unresolvable nebulæ, of which that on the western edge of the opening in Scorpio is one of the most richly thronged of the clusters of small stars by which the firmament is adorned. Herschel ascribes these openings or starless regions to the attractive and agglomerative forces of the marginal groups.‡ "They are parts of our starry stratum," says he, with his usual graceful animation of style, "that have experienced great devastation from time." If we picture to ourselves the telescopic stars lying behind one another as a starry canopy spread over the vault of heaven, these starless regions in Scorpio and Serpentarius may, I think, be regarded as tubes through which we may look into the remotest depths of space. Other stars may certainly lie in those parts where the strata forming the canopy are interrupted, but these are unattainable by our instruments. The aspect of fiery meteors had led the ancients likewise to the idea of clefts or openings (*chasmata*) in the vault of heaven. These openings were, however, only regarded as transient, while the reason of their being luminous and fiery, instead of obscure, was supposed to be owing to the

* Arago, in the *Annuaire*, 1842, p. 282–285, 409–411, and 439–442.

† Olbers, on the transparency of celestial space, in Bode's *Jahrb.*, 1826, s. 110–121.

‡ "An opening in the heavens," William Herschel, in the *Phil. Trans.* for 1785, vol. lxxv., Part i., p. 256. Le Français Lalande, in the *Connaiss. des Tems pour l'An.* VIII., p. 383. Arago, in the *Annuaire*, 1842, p. 425.