

elucidating the nature of these remarkable planetary vaporous disks! Although there is considerable difficulty in acquiring a clear conception of the complicated dynamic conditions under which, in a globular or spheroidally flattened stellar cluster, the rotating crowded suns, whose specific density is greater toward the center, constitute a system of equilibrium;* this difficulty increases still more in those circular, well-defined, planetary nebulous disks which exhibit a perfectly uniform brightness, without any increase of intensity toward the center. Such a condition seems to depend less upon sphericity of form (the state of aggregation of many thousand small stars) than on the existence of a gaseous photosphere, which is supposed, as in our Sun, to be covered with a thin, untransparent, or very faintly illuminated stratum of vapor. Does the light in the planetary nebulous disk appear to be thus uniformly diffused simply in consequence of the great distance, which causes the difference between the center and the margins to disappear?

The fourth and last order of *regular* nebulae comprises Sir William Herschel's *nebulous stars, i. e.*, true stars surrounded by a milky nebula, which is very probably connected with, and dependent upon, the central star. Very different opinions exist as to whether the nebula, which, according to Lord Rosse and Mr. Stoney, appears to be perfectly annular in some of these groups (*Philos. Transact.* for 1850, pl. xxxviii., figs. 15 and 16), is self-luminous, forming a photosphere like our Sun, or whether (which, however, is less probable) it is simply illumined by the central Sun. It was the opinion of Derham, and to some extent also of Lacaille, who discovered many nebulous stars at the Cape of Good Hope, that the stars were situated far from the nebulae on which they were projected. Mairan appears (1731) first to have expressed the view that nebulous stars are surrounded by an atmosphere of light appertaining to them.† We even find that some of the larger stars (of the 7th magnitude, for instance, as No. 675

* On the development of the dynamic relations manifested in the partial attractions in the interior of a globular cluster of stars, which appears in a telescope of weak power as a round nebula increasing in density toward the center, see Sir John Herschel, in *Outlines of Astronomy*, § 866 and 872; *Observations at the Cape*, § 44, 111 to 113; *Philos. Transact.* for 1833, p. 501; *Address of the President in the Report of the Fifteenth Meeting of the British Association*, 1845, p. xxxvii.

† Mairan, *Traité de l'Aurore Boréale*, p. 263; Arago, in the *Annuaire* for 1842, p. 403-413.