

bodies took origin, and during condensation developed heat and light. If a star has planets associated with it, as in the case of our sun, the origin of these planets is, according to Faye, to be traced to the original slow, whirling movement of some part of universal matter.

Considerable masses of primitive matter unite in the form of flattened rings, originally surrounding an empty centre of gravitation. The rings are gradually disrupted into a number of rotating masses, whirling with the same direction as the parent ring, greater masses attract smaller, absorb them, and finally a spherical body is formed. The planets originate in this way, those planets forming first whose component rings are relatively nearer the centre of gravitation. Meantime, finely divided fragments of matter meet in the centre of such a system, and begin to give origin to a sun. It is impossible here to enter further into these new conceptions of cosmogony so recently advanced by Faye.

*The Sun.*—The first information about the physical constitution of the sun was obtained by the use of the telescope.

David Fabricius, the son of a pastor in East Frisia, discovered in the year 1610 movable spots on the sun, and his observations were confirmed a few months later by the Bavarian Jesuit Scheiner, by the Englishman Harriot, and the Italian Galilei. Fabricius explained the sun-spots as slaggy separations from the inner incandescent nucleus of the sun; Scheiner regarded them as foreign masses circulating round the sun; Galilei thought them clouds occurring in the sun's atmosphere.

From the variability in the position of the sun-spots Scheiner drew for the first time the important conclusion that the sun rotated.

The significance of the sun-spots is still a matter of discussion among astronomers. Herschel suggested in the early years of last century that the sun-spots were cavities in the glowing atmosphere, through which the dark body of the sun was visible. This suggestion found much acceptance, until it was disproved by the spectroscopical researches of Kirchhoff.

Kirchhoff in 1861 showed that the white-hot sun's mass was surrounded by a photosphere in which numerous substances familiar to us in the earth's constitution were present in a