

he first directed toward the mountainous parts of the moon, and showed how their summits might be measured, while he, like Leonardo da Vinci and Möstlin, ascribed the ash-colored light of the moon to the reflection of solar light from the earth to the moon. He observed with low magnifying powers the group of the Pleiades, the starry cluster in Cancer, the Milky Way, and the group of stars in the head of Orion. Then followed, in quick succession, the great discoveries of the four satellites of Jupiter, the two handles of Saturn (his indistinctly-seen rings, the form of which was not recognized), the solar spots, and crescent shape of Venus.

The moons of Jupiter, the first of all the secondary planets discovered by the telescope, were first seen, almost simultaneously and wholly independently, on the 29th of December, 1609, by Simon Marius at Ansbach, and on the 7th of January, 1610, by Galileo at Padua. In the publication of this discovery, Galileo, by the *Nuncius Siderius* (1610), preceded the *Mundus Jovialis* (1614) of Simon Marius,* who had

on our earth." The comparison is remarkable, since, according to Riccioli, very exaggerated ideas of the height of our mountains were then entertained, and one of the principal or most celebrated of these elevations, the Peak of Teneriffe, was first measured trigonometrically, with some degree of exactness, by Feuillée, in 1724. Galileo, like all other observers up to the close of the eighteenth century, believed in the existence of many seas and of a lunar atmosphere.

* I here again find occasion (*Cosmos*, vol. i., p. 185) to refer to the proposition laid down by Arago: "The only rational and just method of writing the history of science is to base it exclusively on works, the date of whose publication is certain. All beyond this must be confused and obscure." The singularly-delayed publication of the *Fränkische Kalender* or *Practica* (1612), and of the astronomically important memoir entitled "*Mundus Jovialis anno 1609 detectus ope perspicilli Belgici* (February, 1614)," may indeed have given occasion to the suspicion that Marius had drawn his materials from the *Nuncius Sidereus* of Galileo, the dedication of which is dated March, 1610, or even from earlier manuscript communications. Galileo, irritated by the still remembered lawsuit against Balthasar Capra, a pupil of Marius, calls him the usurper of the system of Jupiter, "Usurpatore del sistema di Giove," and he even accuses the heretical Protestant astronomer of Gunzenhausen of having founded his apparently earlier observation on a confusion between the calendars. "Tace il Mario di far cauto il lettore, come essendo egli separato della chiesa nostra, ne avendo accettato l'emendatione Gregoriana, il giorno 7 di gennaio del 1610, di noi Cattolici (the day on which Galileo discovered the satellites) è l'istesso, che il di 28 di Dicembre del 1609, di loro eretici, e questa è tutta la precedenza delle sue fiute osservationi" (Venturi, *Memoire e Lettere di G. Galilei*, 1818, Part i., p. 279; and Delambre, *Hist. de l'Astr. Mod.*, t. i., p. 696). According to a letter written by Galileo in 1614 to the *Accademia di Lincei*, it would appear that he attempted, somewhat unphilosophically, to direct his complaint against Marius to the Marchese