

telescopii inventore (1655). If the claim of priority be determined by the periods at which offers were made to the General States, the honor belongs to Hans Lippershey ; for, on the 2d of October, 1608, he offered to the government three instruments " by which one might see objects at a distance." The offer of Metius was made on the 17th of October of the same year ; but he expressly says " that he has already, for two years, constructed similar instruments, through industry and thought." Zacharias Jansen (who, like Lippershey, was a spectacle maker at Middleburg) invented, in conjunction with his father Hans Jansen, toward the end of the sixteenth century, and probably after 1590, the *compound microscope*, the eye-piece of which is a concave lens ; but, as we learn from the ambassador Boreel, it was not until 1610 that he discovered the telescope, which he and his friends directed to distant terrestrial, but not toward celestial objects. The influence which has been exercised by the microscope in giving us a more profound knowledge of the conformation and movement of the separate parts of all organic bodies, and by the telescope in suddenly opening to us the regions of space, has been so immeasurably great, that it seems requisite to enter somewhat circumstantially into the history of these discoveries.

When, in May, 1609, the news of the discovery made in Holland of telescopic vision reached Venice, Galileo, who was accidentally there, conjectured at once what must be the essential points in the construction of a telescope, and immediately completed one for himself at Padua.* This instrument

* The above-named physician and mathematician of the Margravate of Ansbach, Simon Marius, after receiving a description of the action of a Dutch telescope, is likewise believed to have constructed one himself as early as the year 1608. On Galileo's earliest observation of the mountainous regions in the moon, to which I have referred in the text, compare Nelli, *Vita di Galilei*, vol. i., p. 200-206 ; Galilei, *Opere*, 1744, t. ii., p. 60, 403, and *Lettera al Padre Cristoforo Grienberger, in materia delle Montuosità della Luna*, p. 409-424. Galileo found in the moon some circular districts, surrounded on all sides by mountains similar to the form of Bohemia. " Eundem facit aspectum Lunæ locus quidam, ac faceret in terris regio consimilis Boemiæ, si montibus altissimis, inque peripheriam perfecti circuli dispositis occluderetur undique" (t. ii., p. 8). The measurements of the mountains were made by the method of the tangents of the solar ray. Galileo, as Helvetius did still later, measured the distance of the summit of the mountains from the boundary of the illuminated portion, at the moment when the mountain summit was first struck by the solar ray. I find no observation of the lengths of the shadows of the mountains. He found the summits "in-circa miglia quattro" in height, and "much higher than the mountains