

an aperture only two feet in diameter, with a focal length of twenty feet, has already been the means of discovering one satellite of Neptune, and an eighth of Saturn, besides which two satellites of Uranus have been again distinguished. The new colossal telescope of Lord Rosse has an aperture of six feet, and is fifty-three feet in length. It is mounted in the meridian between two walls, distant twelve feet on either side from the tube, and from forty-eight to fifty-six feet in height. Many nebulæ, which had been irresolvable by any previous instruments, have been resolved into stellar swarms by this noble telescope; while the forms of other nebulæ have now, for the first time, been recognized in their true outlines. A marvelous effulgence is poured forth from the speculum.

The idea of observing the stars by daylight with a telescope first occurred to Morin, who, with Gascoigne (about 1638, before Picard and Auzout), combined instruments of measurement with the telescope. Morin himself says,* "It was not Tycho's great observations in reference to the position of the fixed stars, when, in 1582, twenty-eight years before the invention of the telescope, he was led to compare Venus by day with the sun, and by night with the stars," but "the simple idea that Arcturus and other fixed stars might, like Venus, when once they had been fixed in the field of the telescope before sunrise, be followed through the heavens after the sun had risen, that led him to a discovery which might prove of importance for the determination of longitude at sea." No one was able before him to distinguish the fixed stars in the presence of the sun. Since the

mixing of the metal, the contrivances adopted for casting and polishing the specula and mounting the instruments.—*Abstr. of the Astr. Soc.*, vol. ix., No. 5, March, 1849. The effect of Lord Rosse's six feet metallic reflector is thus referred to (p. 120): "The astronomer royal, Mr. Airy, alluded to the impression made by the enormous light of the telescope; partly by the modifications produced in the appearances of nebulæ already figured, partly by the great number of stars seen even at a distance from the Milky Way, and partly from the prodigious brilliancy of *Saturn*. The account given by another astronomer of the appearance of *Jupiter* was, that it resembled a coach-lamp in the telescope; and this well expresses the blaze of light which is seen in the instrument." Compare also Sir John Herschel, *Outl. of Astr.*, § 870. "The sublimity of the spectacle afforded by the magnificent reflecting telescope constructed by Lord Rosse of some of the larger globular clusters of nebulæ, is declared by all who have witnessed it to be such as no words can express. This telescope has resolved or rendered resolvable multitudes of nebulæ which had resisted all inferior powers."

* Delambre, *Hist. de l'Astron. Moderne*, t. ii., p. 255.