Sir John Herschel has endeavored to determine the relation between the intensity of solar light and that of a star of the first magnitude by a photometric comparison of the moon with the double star *a* Centauri of the southern hemisphere, which is the third in brightness of all the stars. He thus fulfilled (as had been already done by Wollaston) a wish expressed by John Michell* as early as 1767. Sir John Herschel found from the mean of eleven measurements conducted with a prismatic apparatus, that the full moon was 27,408 times brighter than *a* Centauri. According to Wollaston, the light of the sun is 801,072 times brighter than the full moon ;† whence it follows that the light transmitted to us from the sun is to the light which we receive from *a* Centauri as 22,000 millions to 1. It seems, therefore, very probable, when, in accordance with its parallax, we take into account the distance of the star, that its (absolute) proper luminosity exceeds that of our sun by $2\frac{3}{10}$ times. Wollaston found the brightness of Sirius 20,000 million times fainter than that of the sun. From what we at present believe to be the parallax of Sirius (0·″230), its actual (absolute) intensity of light exceeds that of the sun 63 times.‡ Our sun therefore belongs, in reference to the intensity of its process of light, to the fainter fixed stars. Sir John Herschel estimates the intensity of the light of Sirius to be equal to the light of nearly

* *Philos. Transact.*, vol. lvii., for the year 1767, p. 234.

† Wollaston, in the *Philos. Transact.* for 1829, p. 27. Herschel's *Outlines*, p. 553. Wollaston's comparison of the light of the sun with that of the moon was made in 1799, and was based on observations of the shadows thrown by lighted wax tapers, while in the experiments made on Sirius in 1826 and 1827, images reflected from thermometer bulbs were employed. The earlier data of the intensity of the sun's light, compared with that of the moon, differ widely from the results here given. They were deduced by Michelo and Euler, from theoretical grounds, at 450,000 and 374,000, and by Bouguer, from measurements of the shadows of the light of wax tapers, at only 300,000. Lambert assumes Venus, in her greatest intensity of light, to be 3000 times fainter than the full moon. According to Steinheil, the sun must be 3,286,500 times further removed from the earth than it is, in order to appear like Arcturus to the inhabitants of our planet (Struve, *Stellarum Compositarum Mensuræ Micrometricæ*, p. clxiii.); and, according to Sir John Herschel, the light of Arcturus exhibits only half the intensity of Canopus.—Herschel, *Observ. at the Cape*, p. 34. All these conditions of intensity, more especially the important comparison of the brightness of the sun, the full moon, and of the ash-colored light of our satellite, which varies so greatly according to the different positions of the earth considered as a reflecting body, deserve further and serious investigation.

‡ *Outl. of Astr.*, p. 553 ; *Astr. Observ. at the Cape*, p. 363.