

with a needle in a card, and I have myself frequently observed both Canopus and Sirius in this manner. The same thing occurs in telescopic vision through powerful instruments, when the stars appear either as intensely luminous points, or as exceedingly small disks. Although the fainter scintillation of the fixed stars in the tropics conveys a certain impression of repose, a total absence of stellar radiation would, in my opinion, impart a desolate aspect to the firmament, as seen by the naked eye. Illusion of the senses, optical illusion, and indistinct vision, probably tend to augment the splendor of the luminous canopy of heaven. Arago long since proposed the question why fixed stars of the first magnitude, notwithstanding their great intensity of light, can not be seen when rising above the horizon in the same manner as under similar circumstances we see the outer margin of the moon's disk.*

Even the most perfect optical instruments, and those having the highest magnifying powers, give to the fixed stars spurious disks (*diamètres factices*); "the greater aperture," according to Sir John Herschel, "even with the same magnifying power, giving the smaller disk."† Occultations of the stars by the moon's disk show that the period occupied in the immersion and emersion is so transient that it can not be estimated at a fraction of a second of time. The frequent occurrence of the so-called adhesion of the immersed star to the moon's disk is a phenomenon depending on inflection of light in no way connected with the question of the spurious diameter of the star. We have already seen that Sir William Herschel, with a magnifying power of 6500, found the diameter of Vega $0''\cdot36$. The image of Arcturus was so diminished in a dense mist that the disk was below $0''\cdot2$. It is worthy of notice that, in consequence of the illusion occasioned by stellar radiation, Kepler and Tycho, before the invention of the telescope, respectively ascribed to Sirius‡ a diameter of $4'$ and of $2' 20''$.

* I found an opinion prevalent among the sailors of the Spanish ships of the Pacific, that the age of the moon might be determined before the first quarter by looking at it through a piece of silk and counting the multiplied images. Here we have a phenomenon of *diffraction* observed through fine slits.

† *Outlines*, § 816. Arago has caused the spurious diameter of Aldebaran to increase from $4''$ to $15''$ in the instrument by diminishing the object-glass.

‡ Delambre, *Hist. de l'Astr. Moderne*, tom. i., p. 193; Arago, *Annuaire*, 1842, p. 366.