

that stars might occasionally be seen from caverns and cisterns, as through tubes. Pliny alludes to the same circumstance, and mentions the stars that have been most distinctly recognized during solar eclipses. While practically engaged in mining operations, I was in the habit, during many years, of passing a great portion of the day in mines where I could see the sky through deep shafts, yet I never was able to observe a star; nor did I ever meet with any individual in the Mexican, Peruvian, or Siberian mines who had heard of stars having been seen by daylight; although in the many latitudes, in both hemispheres, in which I have visited deep mines, a sufficiently large number of stars must have passed the zenith to have afforded a favorable opportunity for their being seen. Considering this negative evidence, I am the more struck by the highly credible testimony of a celebrated optician, who in his youth saw stars by daylight through the shaft of a chimney.* Phenomena, whose manifestation depends on the accidental concurrence of favoring circumstances, ought not to be disbelieved on account of their rarity

The same principle must, I think, be applied to the assertion of the profound investigator Saussure, that stars have been seen with the naked eye in bright daylight, on the declivity of Mont Blanc, and at an elevation of 12,757 feet "Quelques-uns des guides m'ont assuré avoir vu des étoiles en plein jour; pour moi je n'y songeais pas, en sorte que je n'ai point été le témoin de ce phénomène; mais l'assertion uniforme des guides ne me laisse aucun doute sur la réalité. Il faut d'ailleurs être entièrement à l'ombre d'une épaisseur considérable, sans quoi l'air trop fortement éclairé fait évanouir la faible clarté des étoiles." "Several of the guides assured me," says this distinguished Alpine inquirer, "that

cogit minores videri stellas; affixas cœlo solis fulgor interdiu non cerni, quum æque ac noctu luceant; idque manifestum fiat defectu solis et præaltis puteis." Cleomedes (*Cycl. Theor.*, p. 83, Bæke) does not speak of stars seen by day, but asserts "that the sun, when observed from deep cisterns, appears larger, on account of the darkness and the damp air."

* "We have ourselves heard it stated by a celebrated optician that the earliest circumstance which drew his attention to astronomy was the regular appearance, at a certain hour, for several successive days, of a considerable star, through the shaft of a chimney."—John Herschel, *Outlines of Astr.*, § 61. The chimney-sweepers whom I have questioned agree tolerably well in the statement that "they have never seen stars by day, but that, when observed at night, through deep shafts, the sky appeared quite near, and the stars larger." I will not enter upon any discussion regarding the connection between these two illusions.