

test of the power of vision." Notwithstanding the low position of the Great Bear under the tropics, I have very distinctly seen Alcor, evening after evening, with the naked eye, on the rainless shores of Cumana, and on the plateaux of the Cordilleras, which are elevated nearly 13,000 feet above the level of the sea, while I have seen it less frequently and less distinctly in Europe and in the dry atmosphere of the Steppes of Northern Asia. The limits within which the naked eye is unable to separate two very contiguous objects in the heavens depend, as Mädler has justly observed, on the relative brilliancy of the stars. The two stars of the third and fourth magnitudes, marked as α Capricorni, which are distant from each other six and a half minutes, can with ease be recognized as separate. Galle thinks that ϵ and δ Lyræ, being both stars of the fourth magnitude, may be distinguished in a very clear atmosphere by the naked eye, although situated at a distance of only three and a half minutes from each other.

The preponderating effect of the rays of the neighboring planet is also the principal cause of Jupiter's satellites remaining invisible to the naked eye; they are not all, however, as has frequently been maintained, equal in brightness to stars of the fifth magnitude. My friend, Dr. Galle, has found from recent estimates, and by a comparison with neighboring stars, that the third and brightest satellite is probably of the fifth or sixth magnitude, while the others, which are of various degrees of brightness, are all of the sixth or seventh magnitude. There are only few cases on record in which persons of extraordinarily acute vision—that is to say, capable of clearly distinguishing with the naked eye image of the neighboring object b is projected. This last image must therefore either wholly disappear or be dimmed. By day two causes contribute to weaken the light of the stars; one is the distinct image of that portion of the atmosphere included in the direction of the star (the aerial field interposed between the eye and the star), and on which the image of the star is formed, while the other is the light diffused by the dispersion which the defects of the cornea impress on the rays emanating from all points of the visible atmosphere. *At night*, the strata of air interposed between the eye and the star to which we direct the instrument, exert no disturbing action; each star in the firmament forms a more perfect image, but a portion of the light of the stars is dispersed in consequence of the imperfect transparency of the cornea. The same reasoning applies to a second, a third, or a thousandth star. The retina, then, is entirely illumined by a diffused light, proportionate to the number of the stars and to their brilliancy. Hence we may imagine that the aggregate of this diffused light must either weaken, or entirely obliterate the image of the star toward which the eye is directed."