while, in accordance with another law, they influence the aërial space on which the fixed star is projected. The telescope, by separating, as it were, the illuminated particles of air surrounding the object-glass, darkens the field of view, and diminishes the intensity of its illumination. We are enabled to see, however, only by means of the difference between the light of the fixed star and of the aërial field or the mass of air which surrounds the star in the telescope. Planetary disks present very different relations from the simple ray of the image of a fixed star; since, like the aërial field (*l'air aërienne*), they lose in intensity of light by dilatation in the magnifying telescope. It must be further observed, that the apparent motion of the fixed star, as well as of the planetary disk, is increased by high magnifying powers. This circumstance may facilitate the recognition of objects by day, in instruments whose movements are not regulated paralactically by clock-work, so as to follow the diurnal motion of the heavens. Different points of the retina are successively excited. "Very faint shadows are not observed," Arago elsewhere remarks, "until we can give them motion."

In the cloudless sky of the tropics, during the driest season of the year, I have frequently been able to find the pale disk of Jupiter with one of Dollond's telescopes, of a magnifying power of only 95, when the sun was already from 15° to 18° above the horizon. The diminished intensity of the light of Jupiter and Saturn, when seen by day in the great Berlin refractor, especially when contrasted with the equally reflected light of the inferior planets, Venus and Mercury, frequently excited the astonishment of Dr. Galle. Jupiter's

delà de l'atmosphère, se trouve dans la direction de la lunette: son image ne sera visible qu'autant qu'elle augmentera de $\frac{1}{60}$, au moins, l'intensité de la portion de l'image focale *indéfinie* de l'atmosphère, sur laquelle sa propre image *limitée* ira se placer. Sans cela le champ visuel continuera a *paraître* partout de la même intensité."

"Experience has shown that, in ordinary vision, two illuminated and contiguous spaces can not be distinguished from each other unless their comparative intensities present a minimum difference of $\frac{1}{60}$th. When a telescope is directed toward the heavens, its field of view appears uniformly illumined: there then exists in a plane passing through the focus, and perpendicular to the axis of the object-glass, *an indefinite image* of the atmospheric region toward which the instrument is pointed. If we suppose a star, that is to say, an object very far beyond the atmosphere, situated in the direction of the telescope, its image will not be visible except it exceed, by at least $\frac{1}{60}$th, the intensity of that portion of the indefinite focal image of the atmosphere on which its *limited* proper image is thrown. Otherwise the visual field will continue to appear every where of the same intensity."