

able by assuming the existence of an atmosphere partially condensed by strata of clouds, in which, however, the region resting upon the equator is free from vapor and diaphanous probably in consequence of the trade-winds. Since, as William Herschel already assumed in a treatise in the 83d vol. of the *Philosophical Transactions*, which appeared in 1793, the cloud-surface reflects a more intense light than the surface of the planet, so that part of the ground which we see through the clearer air must have less light (appear darker) than the strata of clouds reflecting large quantities of light. On that account gray (dark) and clear bands alternate with each other; the former appear so much the less dark-colored in proportion to the distance from the center, when, the visual radius of the observer being directed obliquely toward the edge of the planet, at a small angle, they are seen through a larger and thicker mass of atmosphere, reflecting more light.

observe dans les pays de montagnes quelque chose d'analogue : quand on se trouve près d'un forêt de sapin, elle paraît noire ; mais à mesure qu'on s'en éloigne, les couches d'atmosphère interposées deviennent de plus en plus épaisses et réfléchissent de la lumière. La différence de teinte entre la forêt et les objets voisins diminue de plus en plus, elle finit par se confondre avec eux, si l'on s'en éloigne d'une distance convenable." (From Arago's *Reports on Astronomy*, 1841.) "It is known that there exist above and below the equator of Jupiter two bands less brilliant than the general surface. If these are examined with a telescope, they appear less distinct in proportion as the distance from the center increases, and they even become quite invisible near the edges of the planet. All these appearances may be explained by admitting the existence of an atmosphere of clouds, interrupted near the equator by a transparent zone, produced, perhaps, by the trade-winds. The atmosphere of clouds reflects more light than the solid body of Jupiter. Those parts of him which are seen through the transparent zone would have less brightness than the remainder, and would form obscure bands. In proportion as the distance from the center increases, the visual ray of the observer traverses greater and greater thicknesses of the transparent zone, in such a way that to the light reflected by the solid body of the planet is added the light reflected by the denser zone. The bands would be, from this reason, less obscure the greater the distance from the center. Finally, at the very edges of the planet's disk, the light reflected by the zone, seen in its greatest thickness, would cause the difference of intensity which existed between the quantities of light reflected by the planet and by the atmosphere of clouds to disappear, and the bands which exist only in virtue of that difference would cease to be visible. Something analogous is observed in mountainous countries; in the neighborhood of a forest of fir-trees they appear black, but in proportion as the observer removes to a greater distance, the interposed atmospheric strata become thicker and thicker, and reflect light. The difference of tint between the forest and the objects near diminishes more and more, and ends by their being confounded together on removing to a sufficient distance."