ous, self-luminous envelope. We thus possess a material physical analysis of the photosphere.

The same instrument has, however, also led to the conclusion that the intensity of the light of the Sun is not greater in the center of the disk than at its margins. When the two complementary colored images of the Sun—the red and blue—are so arranged that the margin of the one image falls on the center of the other, perfect white will be produced. If the intensity of the light were not the same in the different parts of the Sun's disk—if, for example, the center were more luminous than the margin, then the partial covering of the images in the common segments of the blue and red disk would not exhibit a pure white, but a pale red, because the blue rays would only be able to neutralize a portion of the more numerous red rays. If, moreover, we remember that in the gaseous photosphere of the Sun, in opposition to that which occurs in solid or liquid bodies, the smallness of the angle at which the rays of light emanate does not cause their number to diminish at the margins, and as the same angle of vision embraces a larger number of luminous points at the margins than in the center of the disk, we could not here reckon upon that *compensation* which, were the Sun a luminous iron globe, and consequently a solid body, would take place between the opposite effects of the smallness of the angle of radiation and the comprehension of a larger number of luminous points at the same visual angle. The self-luminous *gaseous* envelope, *i. e.*, the solar disk visible to us, must therefore (in opposition to the indications of the polariscope, which shows the margin and the center to be of equal intensity) appear more luminous in the center than at the margin. The cause of this discrepancy has been ascribed to the outermost and less transparent vaporous envelope surrounding the photosphere, which diminishes the light from the center less than that of the marginal rays on its long passage through the vaporous envelope.* Bouguer, Laplace, Airy, and Sir

* Arago, in the *Mémoires des Sciences Mathém. et Phys. de l'Institut de France*, année 1811, partie i., p. 118; Matthieu, in Delambre, *Hist. de l'Astr. au dix-huitième siècle*, p. 351, 652; Fourrier, *Eloge de William Herschel*, in the *Mém. de l'Institut*, tom. vi., année 1823 (Par., 1827), p. lxxii. It is alike remarkable and corroborative of the great uniformity of character in the light of the Sun, whether emanating from its center or its margins, that, according to an ingenious experiment made by Forbes, during a solar eclipse in 1836, a spectrum formed from the circumferential rays alone was identical both in reference to the number and position of the dark lines or stripes intersecting it, with the spec-