

ors—the subjective colors, which, when united, form white.* It is a well known optical phenomenon that a faint white light appears green when a strong red light is brought near it, and that a white light becomes blue when the stronger surrounding light is yellowish. Arago, however, with his usual caution, has reminded us of the fact that even though the green or blue tint of the companion star is sometimes the result of contrast, still, on the whole, it is impossible to deny the actual existence of green or blue stars.† There are in-

* Two glasses, which exhibit complementary colors when placed one upon the other, are used to exhibit *white* images of the sun. During my long residence at the Observatory at Paris, my friend very successfully availed himself of this contrivance, instead of using shade glasses to observe the sun's disk. The colors to be chosen are red and green, yellow and blue, or green and violet. "Lorsqu'une lumière forte se trouve auprès d'une lumière faible, la dernière prend la teinte complémentaire de la première. C'est là le *contraste*; mais comme le rouge n'est presque jamais pur, on peut tout aussi bien dire que le rouge est *complémentaire* du bleu. Les couleurs voisines du spectre solaire se substituent." "When a strong light is brought into contact with a feeble one, the latter assumes the *complementary* color of the former. This is the effect of *contrast*; but as red is scarcely ever pure, it may as correctly be said that red is the complementary of blue: the colors nearest to the solar spectrum reciprocally change." (Arago, *MS. of 1847.*)

† Arago, in the *Connaissance des Temps pour l'an 1828*, p. 299-300; and in the *Annuaire pour 1834*, p. 246-250; *pour 1842*, p. 347-350: "Les exceptions que je cite, prouvent que j'avais bien en 1825 de n'introduire la notion physique du *contraste* dans la question des étoiles doubles qu'avec la plus grande réserve. Le bleu est la couleur réelle de certaines étoiles. Il résulte des observations recueillies jusqu'ici que le firmament est non seulement parsemé de soleils *rouges* et *jaunes*, comme le savaient les anciens, mais encore de soleils *bleus* et *verts*. C'est au tems et à des observations futures à nous apprendre si les étoiles vertes et bleues ne sont pas des soleils déjà en voie de décroissance; si les différentes nuances de ces astres n'indiquent pas que la combustion s'y opère à différens degrés; si la teinte, avec excès de rayons les plus réfrangibles, que présente souvent la petite étoile, ne tiendrait pas à la force absorbante d'une atmosphère que développerait l'action de l'étoile, ordinairement beaucoup plus brillante, qu'elle accompagne." "The exceptions I have named proved that in 1825 I was quite right in the cautious reservations with which I introduced the physical notion of *contrast* in connection with double stars. Blue is the real color of certain stars. The result of the observations hitherto made proves that the firmament is studded not only with *red* and *yellow* suns (as was known long ago to the ancients), but also with *blue* and *green* suns. Time and future observations must determine whether red and blue stars are not suns, the brightness of which is already on the wane; whether the varied appearances of these orbs do not indicate the degree of combustion at work within them; whether the color and the excess of the most refrangible rays often presented by the smaller of two stars be not owing to the absorbing force of an atmosphere devel