

pair of stars, the close proximity of which precluded their separation by the naked eye (as in the case of Castor, α Lyræ, β Orionis, and α Centauri), this designation naturally comprised two classes of multiple stars: firstly, those which, from their incidental position in reference to the observer, appear in close proximity, though in reality widely distant and belonging to totally different strata; and, secondly, those which, from their actual proximity, are mutually dependent upon each other in mutual attraction and reciprocal action, and thus constitute a particular, isolated, sidereal system. The former have long been called *optically*, the latter *physically*, double stars. By reason of their great distance, and the slowness of their elliptical motion, many of the latter are frequently confounded with the former. As an illustration of this fact, Alcor (a star which had engaged the attention of many of the Arabian astronomers, because, when the air is very clear, and the organs of vision peculiarly sharp, this small star is visible to the naked eye together with ζ in the tail of Ursa Major) forms, in the fullest sense of the term, one of these *optical* combinations, without any closer physical connection.* In sections II. and III. I have already treated of the difficulty of separating by the naked eye adjacent stars, with the very unequal intensity of light, of the influence of the higher brilliancy and the *star's tails*, as well as of the organic defects which produce *indistinct* vision.

Galileo, without making the double stars an especial object of his telescopic observations (to which his low magnifying powers would have proved a serious obstacle), mentions (in a famous passage of the *Giornata terza* of his *Discourses*, which has already been pointed out by Arago) the use which astronomers might make of *optically* double stars (*quando si trovasse nel telescopio qualche picciolissima stella vicinissima ad alcuna delle maggiori*) for determining the *parallax of the fixed stars*.† As late as the middle of the last century, scarcely twenty double stars were set down in the stellar catalogues, if we exclude all those at a greater

* *Vide supra*. As a remarkable instance of acuteness of vision, we may further mention that Möstlin, Kepler's teacher, discovered with the naked eye fourteen, and some of the ancients nine, of the stars in the Pleiades. (Mädler, *Untersuch. über die Fixstern-Systeme*, th. ii., s. 36.)

† *Vide supra*. Dr. Gregory, of Edinburgh, also, in 1675 (consequently thirty-three years after Galileo's decease), recommended the same parallactic method. See Thomas Birch, *Hist. of the Royal Soc.*, vol. iii., 1757, p. 225. Bradley (1748) alludes to this method at the conclusion of his celebrated treatise on Nutation.