

sideratum in astronomy," and that "photometry is yet in its infancy." The increasing interest taken in variable stars and the recent celestial phenomenon of the extraordinary increase of light exhibited in the year 1837 in a star of the constellation Argo, has made astronomers more sensible of the importance of obtaining certain determinations of light.

It is essential to distinguish between the mere arrangement of stars according to their luster, without numerical estimates of the intensity of light (an arrangement adopted by Sir John Herschel in his *Manual of Scientific Inquiry prepared for the Use of the Navy*), and classifications in which intensity of light is expressed by numbers, under the form of so-called relations of magnitude, or by more hazardous estimates of the quantities of radiated light.* The first numerical scale, based on estimates calculated with the naked eye, but improved by an ingenious elaboration of the materials† probably deserves the preference over any other approximative method practicable in the present imperfect condition of photometrical instruments, however much the exactness of the estimates must be endangered by the varying powers of individual observers—the serenity of the atmosphere—the different altitudes of widely-distant stars, which can only be compared by means of numerous intermediate stellar bodies—and above all by the unequal color of the light. Very brilliant stars of the first magnitude, such as Sirius and Canopus, α Centauri and Achernar, Deneb and Vega, on account of their white light, admit far less readily of comparison by the naked eye than fainter stars below the sixth and seventh magnitudes. Such a comparison is even more difficult when we attempt to contrast yellow stars of intense light, like Procyon, Capella, or Atair, with red ones, like Aldebaran, Arcturus, and Betelgeux.‡

* Compare, for the numerical data of the photometric results, four tables of Sir John Herschel's *Astr. Obs. at the Cape*, a), p. 341; b), p. 367-371; c), p. 440; and d), in his *Outlines of Astr.*, p. 522-525, 645-646. For a mere arrangement without numbers, see the *Manual of Scientific Inquiry prepared for the Use of the Navy*, 1849, p. 12. In order to improve the old conventional mode of classing the stars according to magnitudes, a scale of photometric magnitudes, consisting in the addition of 0.41, as explained more in detail in *Astr. Obs. at the Cape*, p. 370, has been added to the vulgar scale of magnitudes in the *Outlines of Astronomy*, p. 645, and these scales are subjoined to this portion of the present work, together with a list of northern and southern stars.

† Argelander, *Durchmusterung des nördl. Himmels zwischen 45° und 80° Decl.* 1846, s. xxiv.-xxvi.; Sir John Herschel, *Astr. Observ. at the Cape of Good Hope*, p. 327, 340, 365.

‡ *Op. cit.*, p. 304, and *Outl.* p. 522.