

num, in so far as its diminution of light does not proceed uniformly; but, after having been for some time tolerably rapid, it comes to a stand, or at least exhibits a very inconsiderable diminution, which suddenly becomes rapid again. In some stars it would almost appear as though the light were prevented from fully attaining a second maximum. In χ Cygni it is very probable that two periods of variability prevail—a longer one of 100 years, and a shorter one of $8\frac{1}{2}$.

The question whether, on the whole, there is greater regularity in variable stars of very short than in those of very long periods, is difficult to answer. The variations from a uniform period can only be taken relatively; *i. e.*, in parts of the period itself. To commence with long periods, χ Cygni, Mira Ceti, and 30 Hydræ must first of all be considered. In χ Cygni, on the supposition of a uniform variability, the deviations from a period of 406.0634 days (which is the most probable period) amount to 39.4 days. Even though a portion of these deviations may be owing to errors of observation, still at least 29 or 30 days remain beyond doubt; *i. e.*, one fourteenth of the whole period. In the case of Mira Ceti,* in a period of 331.340 days, the deviations amount to 55.5 days, even if we do not reckon the observations of David Fabricius. If, allowing for errors of observation, we limit the estimate to 40 days, we still obtain one eighth; consequently, as compared with χ Cygni, nearly twice as great a deviation. In the case of 30 Hydræ, which has a period of 495 days, it is still greater, probably one fifth. It is only during the last few years (since 1840, and still later) that the variable stars with very short periods have been observed steadily and with sufficient accuracy, so that the problem in question, when applied to them, is still more difficult of solution. From the observations, however, which have as yet been taken, less considerable deviations seem to occur. In the case of η Aquilæ (with a period of 7d. 4h.) they only amount to one sixteenth or one seventeenth of the whole period; in that of β Lyræ (period 12d. 21h.) to one twenty-seventh or one thirtieth; but the inquiry is still exposed to much uncertainty as regards the comparison of long and short periods. Of β Lyræ between 1700 and 1800 periods have been observed; of Mira Ceti, 279; of χ Cygni, only 145.

The question that has been mooted, whether stars which

* The work of Jacques Cassini (*Elémens d'Astronomie*, 1740, p. 66-69) belongs to the earliest systematic attempts to investigate the mean duration of the period of the variation of Mira Ceti.