periods of the maximum of Mira (including the maximum of brightness observed by Fabricius in 1596), a formula* has been established by Argelander, from which all the maxima can be so deduced that the *probable error* in a long period of variability, extending to 331d. 8h., does not in the mean exceed 7 days, while, on the hypothesis of a uniform period, it would be 15 days.

The double maximum and minimum of β Lyræ, in each of its periods of nearly 13 days, was from the first correctly ascertained by its discoverer, Goodricke (1784); but it has been placed still more beyond doubt† by very recent observations. It is remarkable that this star attains to the same brightness in both its maxima, but in its principal minimum it is about half a magnitude fainter than in the other. Since the discovery of the variability of β Lyræ, *the period in a period* has probably been on the increase. At first the variability was more rapid, then it became gradually slower; and this decrease in the length of time reached its limit between the years 1840 and 1844. During that time its period was nearly invariable; at present it is again decidedly on the decrease. Something similar to the double maximum of β Lyræ occurs in δ Cephei. There is a tendency to a second maxi-

would be 2d. 20h. 48m. 55s.·182; the former applies to the year **1784**, the latter to the year 1842.

"The numbers which follow the signs $\pm$ are the probable errors. That the diminution becomes more and more rapid is shown as well by the last number as by all my observations since 1847."

* Argelander's formula for representing all observations of the maxima of Mira Ceti is, as communicated by himself, as follows:

1751, Sep., 9·76 $+$331d.·3363 E.

$+$10d.·5, sin. ($\frac{360}{11}°$ E. $+$86° 23') $+$18d.·2, sin. ($\frac{45}{11}°$ E. $+$231° 42')

$+$33d.·9, sin. ($\frac{45}{22}°$ E. $+$170° 19') $+$65d.·3, sin. ($\frac{15}{11}°$ E. $+$6° 37')

where E. represents the number of maxima which have occurred since Sept. 9, 1751, and the co-efficients are given in days. Therefore, for the current year (E. being $=$109), the following is the maximum:

1751, Sep., 9·76$+$36115d.·65$+$8d.·44$-$12d.·24.

$+$18d.·59$+$27d.·34$=$1850, Sep., 8d.·54.

"The strongest evidence in favor of this formula is, that it represents even the maximum of 1596 (*Cosmos*, vol. ii., p. 330), which, on the supposition of a uniform period, would deviate more than 100 days. However, the laws of the variation of the light of this star appear so complicated, that in *particular cases*—*e. g.*, for the accurately observed maximum of 1840—the formula was wrong by many days (nearly twenty-five)."

† Compare Argelander's essay, written on the occasion of the centenary jubilee of the Königsberg University, and entitled *De Stella β Lyræ Variabili*, 1844.