

in proportion more considerable. No certain period of these oscillations has as yet been discovered. There are, however, indications of a period of 40 years, and another of 160.

The periods of variation in different stars vary as 1:250. The shortest period is unquestionably that exhibited by β Persei, being 68 hours and 49 minutes; so long, at least, as that of the polar star is not established at less than two days. Next to β Persei come δ Cephei (5d. 8h. 49m.), η Aquilæ (7d. 4h. 14m.), and ζ Geminorum (10d. 3h. 35m.). The longest periods are those of 30 Hydræ Hevelii, 495 days; χ Cygni, 406 days; Variabilis Aquarii, 388 days; Serpentis S., 367 days; and Mira Ceti, 332 days. In several of the variable stars it is well established that they increase in brilliancy more rapidly than they diminish. This phenomenon is the most remarkable in δ Cephei. Others, as, for instance, β Lyræ, have an equal period of augmentation and diminution of light. Occasionally, indeed, a difference is observed in this respect in the same stars, though at different epochs in their process of light. Generally Mira Ceti (as also δ Cephei) is more rapid in its augmentation than in its diminution; but in the former the contrary has also been observed.

Periods within periods have been distinctly observed in the case of Algol, of Mira Ceti, of β Lyræ, and with great probability also in χ Cygni. The decrease of the period of Algol is now unquestioned. Goodricke was unable to perceive it, but Argelander has since done so; in the year 1842 he was enabled to compare more than 100 trustworthy observations (comprising 7600 periods), of which the extremes differed from each other more than 58 years. (Schumacher's *Astron. Nachr.*, Nos. 472 and 624.) The decrease in the period is becoming more and more observable.* For the

* "If," says Argelander, "I take for the 0 epoch the minimum brightness of Algol, in 1800, on the 1st of January, at 18h. 1m. mean Paris time, I obtain the duration of the periods for

-1987,	2d. 20h. 48m.,	or	59s. 416 \pm 0s. 316
-1406,	"		58s. 737 \pm 0s. 094
- 825,	"		58s. 393 \pm 0s. 175
+ 751,	"		58s. 154 \pm 0s. 039
+2328,	"		58s. 193 \pm 0s. 096
+3885,	"		57s. 971 \pm 0s. 045
+5441,	"		55s. 182 \pm 0s. 348

"In this table the numbers have the following signification: if we designate the minimum epoch of the 1st of Jan., 1800, by 0, that immediately preceding by -1, and that immediately following by +1, and so on, then the duration between -1987 and -1986 would be exactly 2d. 20h. 48m. 59s. 416, but the duration between +5441 and +5442