

ON THE VISUAL LIGHT CURVE OF RT. ERIDANI

THE long-period variable RT. Eridani was first announced as variable in Harvard Circular 135, and the elements were derived by Zinner¹ based on observations made between the years 1912-1920 as

Max. J.D 2420060 \pm 380 days.

Miss Dwyer² from a study of Harvard plates taken between 1897 and 1928, an interval during which time she was able to obtain 27 maxima, finds an abrupt change in the period of this star since 1918. Her elements are

1897-1918 Max. J.D 2414900 \pm 366 days.

1918-1928 Max. J.D 2418562 \pm 378 days.

The star was on the regular variable star programme of the Nizamiah Observatory, Hyderabad, from 1924 onwards, and since then 242 observations were made till 1944, with the aid of the fifteen-inch Grubb Equatorial and three-inch finder. The elements derived from 4 fairly well observed maxima and 8 minima are

Max. J.D 2424217 \pm 368 days.

The period obtained from observations extending from 1924 to 1944 is thus 368 days. Taking into account Miss Dwyer's period of 378 days derived from the observations covering the interval 1918-1928, the variable seems to have recovered nearly its former period.

The individual light curves show that the maxima vary between 8.6 m. and 9.9 m., and that the minima are broader than the maxima; the minima also fluctuate between 12.2 m. and 12.8 m. The star therefore varies over a range of about four magnitudes.

The mean light curve (Fig. 1) indicates a hump on the way to maximum. The rate of ascent is greater than that of descent, the ratio of ascent to descent being 0.72. The star can therefore be considered to be of Type Cd

(Campbell's classification of Long-Period Variables).³

The lack of observations on the descending branch is due to the fact that the period is nearly a year. By the time the variable reaches the maximum, its proximity to the sun, and later the onset of monsoons, prevent any observations being made on the descending branch, for this part of the period.

According to Miss Dwyer the interval between maximum phase to minimum phase is about 200 days. From an examination of the individual light curves of the variable, the

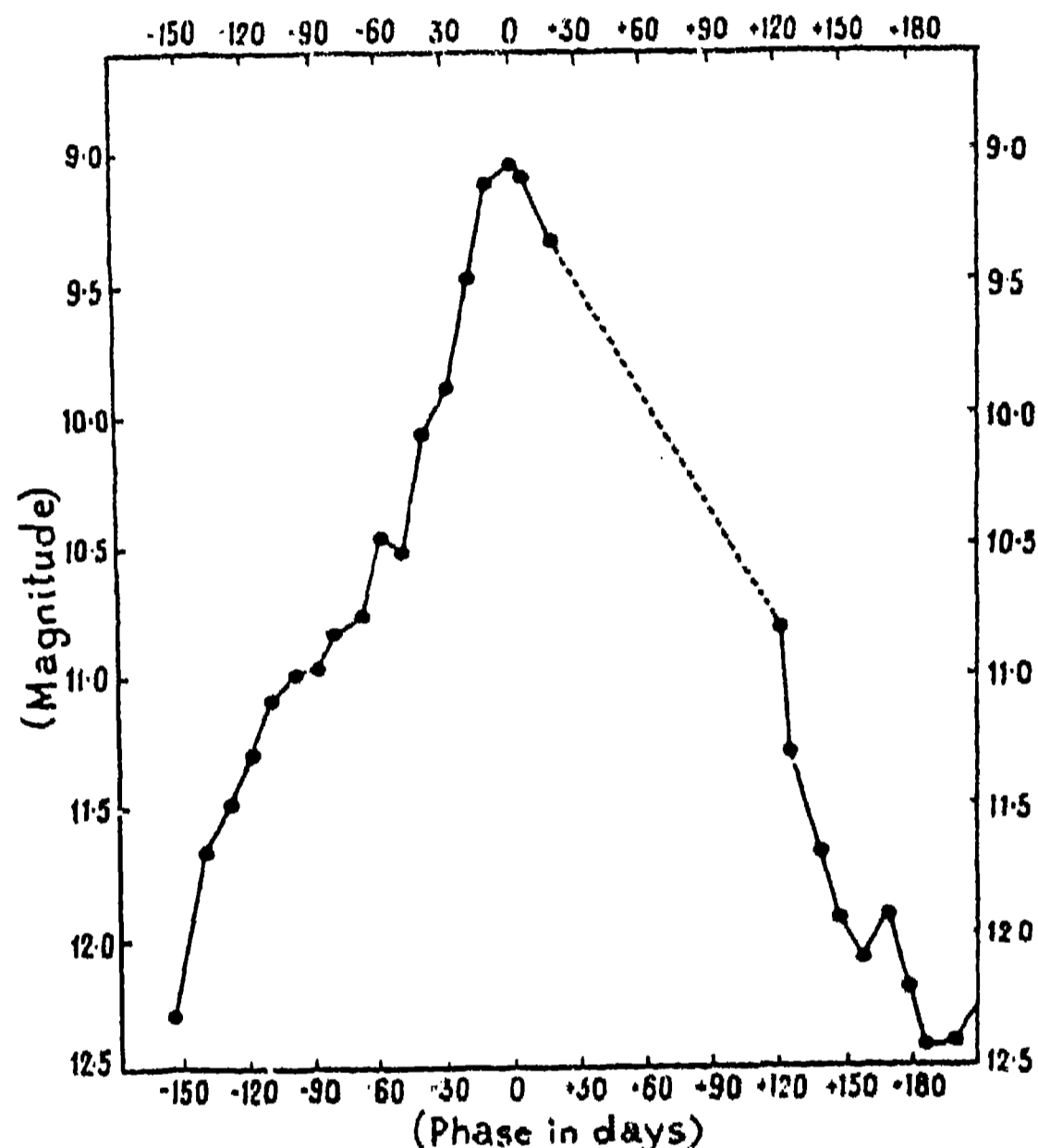


FIG. 1. — Mean light curves of RT. Eridani.

minima have been seen to follow the maxima roughly between 210 and 218 days. The humps in the light curves also fluctuate between 9.5 and 11.7 magnitudes. An interesting correlation has been noticed between the maximum magnitude of the hump and the corresponding maximum of the star, which is diagrammatically shown in Fig. 2.

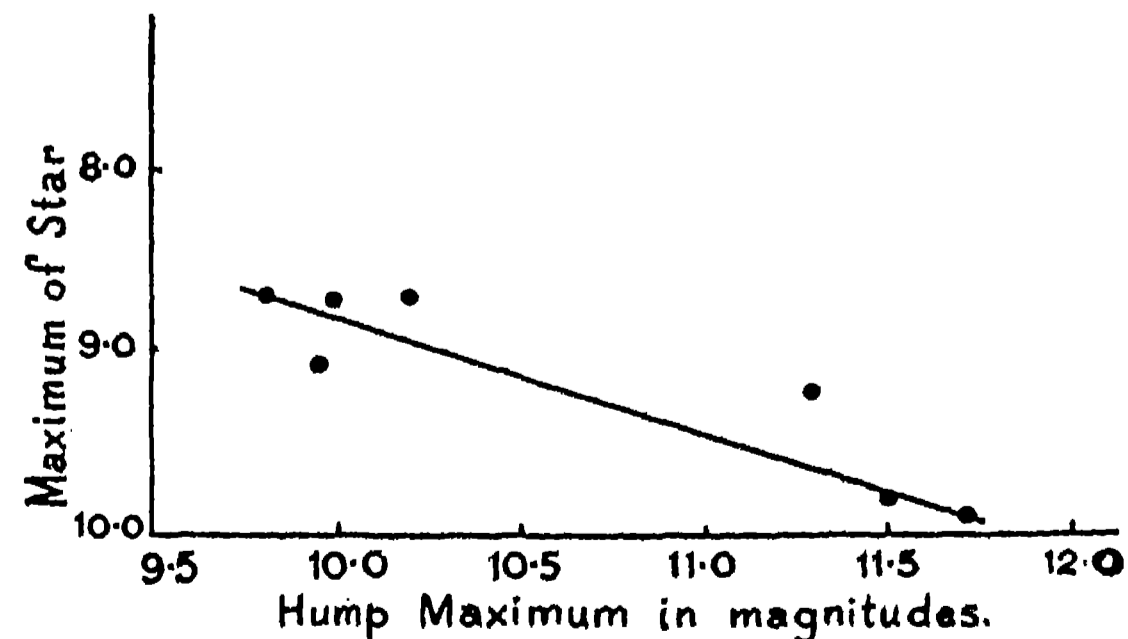


FIG. 2

Details regarding observations, etc., will be published elsewhere.

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1. Zinner, *V.J.S.*, 51, 260, 270. 2. Miss Dwyer, *Har. Bull.*, 868. 3. Campbell, H. A., 1907, 57, 1.
