One does have the impression—perhaps, no more than an impression—that the star is rather faint. As we have remarked in our first note, the most striking thing about HD 199757 is the absence of any striking peculiarities. If the star is a dwarf, then its average colour of +0·22 gives it a visual absolute magnitude of about +2·5 (Evans, Menzies and Stoy[5]), a temperature of the order of those already mentioned, and a radius possibly two or three times as large as the Sun's. This is, of course, quite adequate to meet the condition that the observed radius change is negligible. Such a position for this star on the Hertzsprung-Russell diagram would correspond to a position on the period-luminosity diagram corresponding, not to the RR Lyrae line, but to an extrapolation of the Type II Cepheid curve. Ideas of this kind are not new. They have been discussed in connection with such stars as AI Vel and SX Phe (Woltjer[6]; Evans, Menzies and Stoy[5]), but the observational data are, so far, extremely limited in quantity, and determinations of absolute magnitude are either indirect, or dependent on trigonometrical parallaxes numerically too small to have much significance.

We are indebted to Messrs. G. A. Harding and A. Menzies, who obtained the spectra.

1961 November 3

References

(1) J. Churms and David S. Evans, *The Observatory*, **81**, 25, 1961.
(2) P. A. Wayman, *R. O. Bulletins*, No. 48, 393, 1961.
(3) P. C. Keenan and W. W. Morgan, *Astrophysics*, ed. Hynek (McGraw-Hill), p. 20, 1951.
(4) H. L. Johnson, *Lowell Obs. Bull.*, No. 90, 1958.
(5) David S. Evans, A. Menzies and R. H. Stoy, *M.N.*, **117**, 534, 1957.
(6) L. Woltjer, *B A N.*, **470**, 62, 1956.

A Note on the Period Variation of CY Aquarii

By N. B. Sanwal
Uttar Pradesh State Observatory, Naini Tal

Since its discovery by Hoffmeister[1] in 1934, the cluster-type variable CY Aquarii has been observed quite regularly to date. The period determinations during 1934–40, 1934–43 and 1944–49 from visual and photographic observations have been summarised by Wesselink[2], Lange and Nekrasova[3] and by Ashbrook[4] respectively. The results obtained by these authors are included in Table 2. Ashbrook has noted that while the period in 1944–49 was substantially the same as in 1934–43, a phase jump of $+0^{d}\cdot0028$ appears to have occurred. The period given by Ashbrook has been adopted in the General Catalogue of Variable Stars[5] and observers have found it satisfactory to represent their observations ranging over small intervals of time, although small phase jumps with respect to Ashbrook's epoch were reported. An example of this is a photoelectric study by Smith[6] who found that his observations yielded an average $(O-C)$ of $-0^{d}\cdot00092$ with respect to Ashbrook's epoch.

The present paper reports the times of maxima observed for the star during the years 1958 to 1961. Observations on the star were made on

twenty-five nights with a photoelectric photometer mounted on the 10-inch Cooke refractor. The heliocentric times of thirty-nine maxima obtained by the method of bisection are given in Table I. Column 4 of this table

TABLE I

Observed Maxima of CY Aquarii, 1958–61

JD of Maximum	$O-C_1$ d	$O-C_2$ d	*Weight*
2436487·1936	−0·0070	+0·0004	4
6490·1231	·0073	+0·0001	4
6490·1837	·0078	−0·0004	6
6490·3068	·0068	+0·0006	2
6491·2216	·0065	−0·0001	6
6491·2831	·0071	+0·0003	2
6492·1979	·0078	−0·0004	6
6492·2595	·0073	+0·0001	4
6492·3201	·0077	−0·0003	2
6546·0949	·0078	−0·0003	4
6546·1555	·0083	−0·0007	4
6549·0860	·0076	−0·0001	6
6549·1472	·0075	+0·0001	4
6568·0690	·0076	0·0000	6
6569·0457	·0075	+0·0001	2
6569·1069	·0073	+0·0002	6
6570·0834	·0075	+0·0001	6
6871·1246	·0081	+0·0002	4
6928·0728	·0088	−0·0003	1
6928·1343	·0083	+0·0001	4
6929·0511	·0071	+0·0013	1
6929·1105	·0087	−0·0003	2
7198·2906	·0083	+0·0007	4
7202·1968	·0086	+0·0005	4
7204·1506	·0080	+0·0010	4
7222·1557	·0095	−0·0002	4
7222·2165	·0095	−0·0004	4
7224·2303	·0100	−0·0009	4
7226·1231	·0094	−0·0003	4
7250·1112	·0094	−0·0002	4
7253·1013	·0102	−0·0010	2
7255·1161	·0097	−0·0005	4
7257·1307	·0093	−0·0001	4
7279·1041	·0098	−0·0005	4
7578·1311	·0103	−0·0004	4
7578·1930	·0095	+0·0005	4
7578·2539	·0096	+0·0004	4
7583·1360	·0106	−0·0006	4
7583·1980	−0·0096	+0·0003	4

gives the respective weights ascribed on the basis of the reliability of the measures. The difference between the observed and the calculated times of maxima ($O-C_1$) with respect to Ashbrook's elements are given in column 2.

It is at once apparent that these elements are no longer applicable. A least-squares solution of the tabulated maxima yields the following elements with their standard errors:—

$$\text{JD } 2437487{\cdot}19315 + 0^{d}{\cdot}061038342E$$
$$\pm 0{\cdot}00010 \quad \pm 0{\cdot}000000011.$$

Column 3 of Table I gives the difference between the observed and computed maxima ($O-C_2$) with respect to these elements. Comparing the period derived above with those obtained by earlier observers, collected in Table II, one finds that the period of the star has decreased significantly since

TABLE II

Epochs and Periods of CY Aquarii, 1934–61

Author	*Normal Maxima* JD	*Period*	$O-C$ d
Lange and Nekrasova[3]	2427658·4089	0·061038476	−0·0144
Wesselink[2]	2428725·4219	0·0610384798	−0·0137
Ashbrook[4]	2432180·3862	0·061038484	−0·0026
Smith[6]	2434308·43099	—	+0·0005
Sanwal	2436487·19315	0·061038342	0·0000

earlier observations, all of which seem to conform to a uniform period during the interval 1934–54. The difference between the observed and computed normal maxima with respect to the elements derived above are also given in Table II and these also indicate that a change in the period of the star has occurred since Smith's observations. In view of the period change detected above, the observations of the times of maxima should be continued in order to establish the nature of period variation in the star and ascertain the cause of this variation with any definiteness.

The author wishes to thank Dr. M. K. Vainu Bappu and Dr. S. D. Sinvhal for their helpful suggestions.

1961 October 27

References

(1) C. Hoffmeister, *B.Z.*, No. 25, 1934.
(2) A. J. Wesselink, *B.A.N.*, **9**, 217, 1941.
(3) G. Lange and S. Nekrasova, *Astr. Circ. Acad. Sci., U.S.S.R.*, No. 23, 1943.
(4) J. Ashbrook, *A.J.*, **59**, 6, 1954.
(5) B. V. Kukarkin, P. P. Parenago, Yu. I. Efremov and P. N. Kholopov, *General Catalogue of Variable Stars* (Academy of Sciences of U.S.S.R.), 1958.
(6) H. J. Smith, *Thesis* (Harvard University), 1955.

THE PULSATING VARIABLE α LUPI

By A. W. Rodgers and R. A. Bell
Mount Stromlo Observatory

In a search for southern β Canis Majoris stars Pagel[1] found the radial velocity of α Lupi to vary in a period of 6 hours 14 minutes. Photometric observations of the star showed that the light was constant within $0^{m}{\cdot}005$. This fact inhibited Pagel from classing the star as a bona-fide β C Ma variable although he did suggest the obvious restrictions which the period