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PHOTOELECTRIC OBSERVATION OF V 836 CYGNI

The variability and eclipsing character of this system (BD +35° 4496 = HD 203470) was discovered by Strohmeier, Kippenhahn and Geyer (1956) who gave it the temporary designation BV 143.

From the photographic light curve, Schmidt (1956) classified it as an Algol type variable. BV 143 was observed photoelectrically by Deinzer and Geyer (1959). According to these investigators the system was of Beta Lyrae type. Their light curve was very asymmetric in both minima and the second maximum was much brighter than the first maximum. In 1960 BV 143 was named as V 836 Cygni by Kukarkin, Efremov and Kholopov. Later the system was observed by Cester (1963) and Harris (1964, 1968). Cester and Harris analyzed the light curve using the Russell-Merrill method and gave the light elements. According to Harris (1968) the light elements are:

$$\begin{aligned} \text{Min I} &= \text{JD(HeI)} 24 26 547.5229 + 0^d65 3410818 \cdot E \\ &\quad \pm 13 \quad \quad \quad \pm 81 \text{ p.e.} \end{aligned}$$

We observed the system photoelectrically on six nights in 1981 with the 48 cm Cassegrain reflector at the Ege University Observatory using EMI 9781A photomultiplier and standard B, V filters.

BD +35° 4461 and BD +35° 4460 were used as comparison and check stars, respectively. A total of 235 observational points were obtained in each colour. All the differential observations (comparison minus variable) were corrected for differential extinction with the conventional method. During the observations we obtained four primary and two secondary minima which are given in Table I. The O-C diagram of the system is given in Figure 1 using the light elements given in GCVS (1969). It can be seen from Figure 1 that the period of the system has started showing a decrease nearly since 1967. The first twelve points in Figure 1 are plotted from photographic and the others from photoelectric minima. All these points represent the primary minima. We assume that the period had no variation till 1967 so that the corrections in

the light elements were done only with the photoelectric minima obtained after 1967. The revised light elements,

$$\text{JD Hel Min I} = 24\ 44\ 853.4903 + 0.6534122 \cdot E$$

$$\pm 2 \qquad \pm 1$$

have been derived by the least squares method.

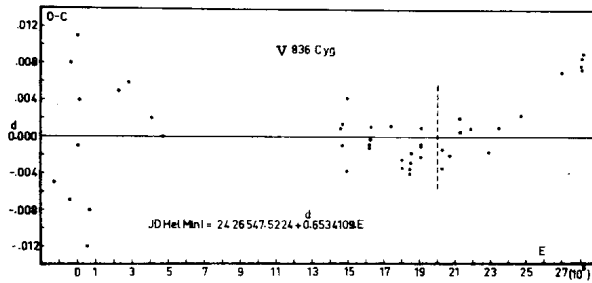


Figure 1

Table I: Times of minima of V 836 Cyg

Hel.Min.	Min.	O-C <sub>1</sub>	O-C <sub>2</sub>	Filter
24 44 853.4904	I	+0.0082	+0.0001	B
853.4900	I	+0.0078	-0.0003	V
874.3997	I	+0.0084	+0.0002	B
874.4001	I	+0.0088	+0.0006	V
879.3013	II	+0.0094	+0.0012	B,V
894.3340	II	+0.0136	+0.0054	B
894.3305	II	+0.0101	+0.0019	V
895.3097	I	+0.0092	+0.0010	B
895.3076	I	+0.0071	-0.0011	V
929.2879	I	+0.0100	+0.0018	B
929.2875	I	+0.0097	+0.0014	V

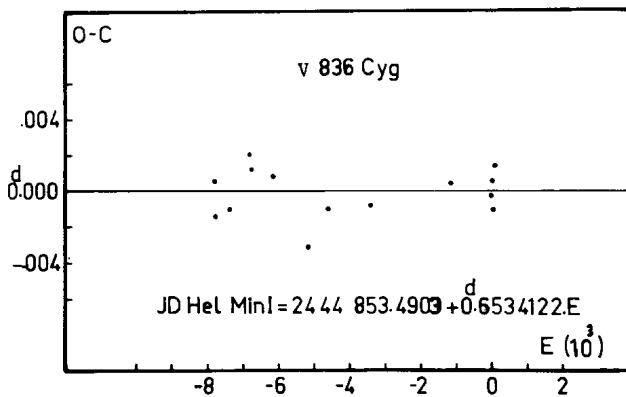


Figure 2

The  $O-C_1$  values in Table I are calculated with the light elements of GCVS (1969) and the  $O-C_2$  values with the above-revised elements. The O-C diagram which is plotted with the revised elements is given in Figure 2.

The light and colour curves are presented in Figure 3 where the phases have been calculated with the revised light elements. The shape of the light curve is similar to a Beta Lyrae type. The depth of secondary minima changes from night to night while the primary shows no variation. At the present time the light curves are not complete and more observations are needed.

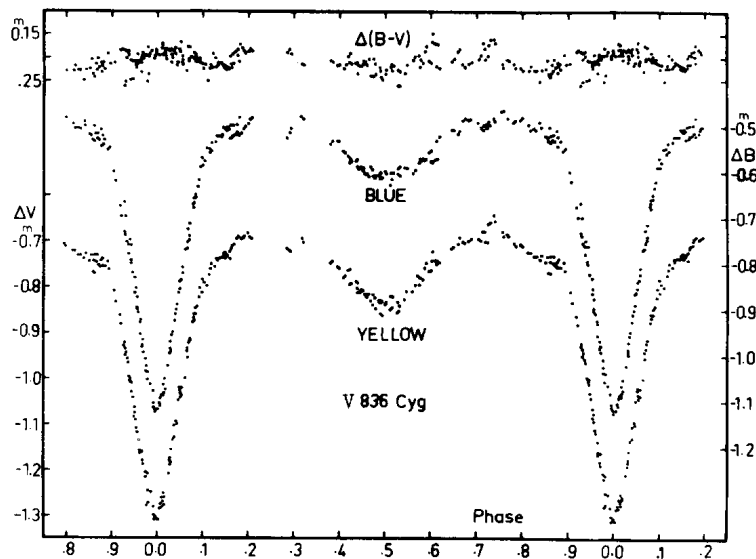


Figure 3

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## ERRATUM

A label in the paper "Observations of Early-type Ultra-short Period Variables" by L.A. Balona (I.B.V.S. No. 2120) is in error. This occurs in the figures where the star labeled HR 3462 should read HR 3467.