

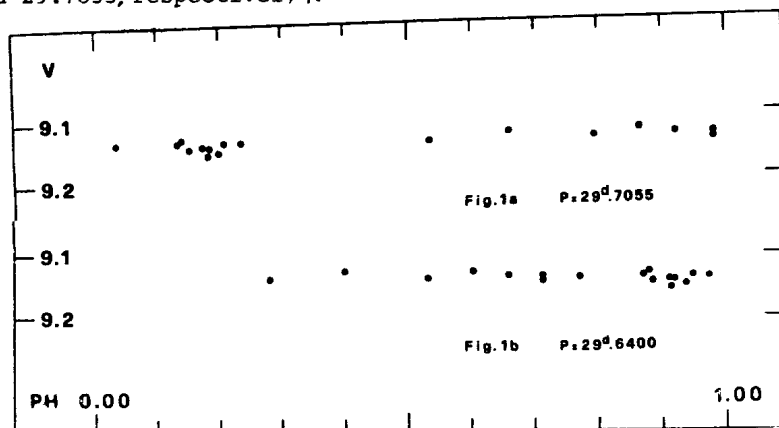
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ON THE BINARY SYSTEM CV Ser

CV Ser is a binary system involving a carbon Wolf-Rayet and an early type star. After the discovery as a spectroscopic binary by Hiltner (ApJ 102, 492, 1945), Gaposchkin (Per. Zv. 7, 36, 1949) found the star to be an eclipsing binary. In 1963 the photoelectric observations of Hjellming and Hiltner (ApJ 137, 1080, 1963) showed a $O^m.5$ deep minimum during at least 10 days, with a period $P=29^d.640$ ($T_0=2437887.76$). From that time no eclipse has been observed (Stepien Ac. Astr. 20, 13, 1970; Kuhl and Schweizer, ApJ 160, 185L, 1970) in either narrow bands ($\lambda > 5500 \text{ \AA}$) or in UVB photometry, except for the eclipses found by Tcherapaschuk (1969, AZ 509) in the strong CIII - CIV blend at $\lambda 4652$ (primary eclipse of $O^m.2$, secondary eclipse $\sim O^m.05$), but not in the nearby continuum. On the other hand, Cowley and Hiltner (Astr. Aph. 11, 407, 1971) give a new period $P=29^d.7055$ ($T_0=2440784.00$) that may explain the lack of eclipses in the observations of 1967-68-69.

In order to check the existence of the primary eclipse, photoelectric observations of CV Ser have been made from May to August 1971 with the 40 cm refractor of the Teramo Observatory. The observations were concentrated, whenever possible, in the phase range corresponding to the foreseen primary eclipse computed with both the old and the new period ($29^d.640$ and $29^d.7055$, respectively).



The measures have been made by comparison with BD-11^o4592, whose V magnitude has been obtained by means of standard stars. BD-11^o4590 has been used as check star. In the following table are listed the date (JD), the phase (either with the old and the new period) and the V magnitude of CV Ser.

Date	Phase	Phase	V ⁺
2441	(P=29 ^d .640)	(P=29 ^d .7055)	
080.527	0.718	0.982	9.135
.548	.719	.983	.142
085.609	.890	.153	.144
086.491	.919	.183	.153
.552	.921	.185	.141
108.473	.661	.923	.133
130.404	.401	.661	.128
134.400	.536	.796	.138
136.538	.608	.868	.127
141.430	.773	.033	.138
144.433	.874	.134	.133
146.406	.941	.200	.150
147.483	.977	.236	.137
156.426	.280	.537	.139
174.336	.883	.140	.129
175.337	.917	.174	.140
176.373	.952	.209	.136

⁺Each V magnitude is a mean value of some integrations.

With the period P=29^d.7055 the curve is filled enough by the observations (Fig. 1a), whose average results $\bar{V}=9.138 \pm 0.007$ (m.e.). The lack of eclipses, evident at first glance on the light curve, is emphasized by the smallness of the error. Considering a minimum lasting at least 10 days (Hiltner 1963), the average of the points which fall in the corresponding phase range is $\bar{V}_{\min}=9^m.135$, quite brighter than the average of the points out of this range ($\bar{V}_{\max}=9^m.140$). With the period P=29^d.640 half light curve (Fig. 1b) is covered by the observations, but again no eclipse is evident.

An attempt has been made using both half and double value of the period, but the light curves, which appear sufficiently filled by the observations, do not show any type of eclipse. Therefore, the disappearance of the eclipses is confirmed also in 1971 for the principal one; the disappearance of the secondary minimum can be considered almost certain.