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PHOTOELECTRIC OBSERVATIONS OF THE SYMBIOTIC
VARIABLE STAR EG ANDROMEDAE

The symbiotic star EG And (HD 4174), already known as magnetic variable (Babcock, 1958), was recognized as photometric variable by Jarzebowski (1964) who from photoelectric observations performed in 1961-63 found semiregular light variations having the amplitude $0^m.21$ in a system not far from the visual one and the mean period $40^d.5$ with significant deviations.

The photoelectric observations here reported have been made with the 40-cm refractor of the Teramo Observatory from November 1968 to November 1970. BD +39° 158 was used as comparison star; its constancy, already resulting from the observations of Jarzebowski, has been confirmed by the check star BD 40° 158 and the photometric values, obtained by means of several comparisons with Johnson's standard stars, are given in Table 2.

The V magnitudes listed in Table 1, where n is the number of measures, have the mean error $\pm 0^m.01$. The light curve shows semiregular fluctuations which were particularly evident from JD 40500 to 40640 when the amplitude reached $0^m.27$, whereas at other times the oscillations appear noticeably damped. The 40-days wave is recognizable in spite of remarkable irregularities both in length and shape, but the whole of the observations is better fitted by a period of the order of 80 days with brighter and fainter maxima alternating in each cycle.

The mean V magnitude results 7.20; a comparison with the mean brightness observed in 1961-63 required the reduction of the magnitude differences given by Jarzebowski in his instru-

Table 1
Photoelectric Observations of EG And

J.D. 2440	V	n	J.D. 2440	V	N	J.D. 2440	V	n	J.D. 2440	V	n
181.35	7.155	2	504.36	7.175	5	559.26	7.355	8	811.55	7.245	2
189.47	7.140	2	505.42	7.180	4	560.45	7.355	4	824.42	7.195	3
208.41	7.135	3	506.38	7.175	4	562.27	7.31	1	826.44	7.185	5
220.27	7.180	3	507.38	7.200	3	568.25	7.205	5	832.38	7.195	5
232.43	7.180	3	510.43	7.200	3	570.31	7.180	5	834.42	7.200	4
233.24	7.170	5	514.39	7.220	4	573.24	7.190	5	835.50	7.205	4
244.25	7.155	4	515.50	7.225	3	577.46	7.215	4	836.45	7.215	2
246.30	7.160	3	523.40	7.285	3	578.21	7.19	1	837.40	7.200	4
264.29	7.205	2	524.25	7.285	6	586.25	7.255	2	841.40	7.195	4
416.57	7.110	2	525.26	7.280	3	589.24	7.205	5	850.33	7.170	2
420.58	7.110	2	526.26	7.290	6	590.24	7.225	5	851.33	7.170	3
430.57	7.160	2	527.32	7.295	6	605.24	7.250	6	855.37	7.190	2
453.50	7.105	2	528.24	7.290	2	606.22	7.250	9	859.43	7.225	2
454.40	7.110	3	529.28	7.290	5	610.31	7.255	3	863.66	7.270	4
473.43	7.200	3	530.58	7.290	2	614.23	7.245	8	879.46	7.180	4
474.51	7.205	4	536.33	7.165	7	622.27	7.170	4	883.37	7.195	4
477.49	7.175	4	537.24	7.150	5	626.24	7.140	6	885.33	7.215	3
478.51	7.165	2	538.24	7.140	6	630.28	7.135	3	887.43	7.220	3
479.37	7.170	2	541.24	7.095	6	631.24	7.150	5	890.27	7.225	5
480.49	7.180	3	542.30	7.090	3	635.24	7.215	5	900.26	7.165	6
485.49	7.170	3	543.28	7.085	2	639.26	7.280	6	902.24	7.155	3
486.44	7.170	2	.46	7.080	4	.27	7.265	6	903.25	7.140	3
498.47	7.225	3	545.29	7.100	5	640.26	7.305	3	911.28	7.170	5
499.42	7.205	2	550.22	7.180	8	782.58	7.145	3	916.26	7.225	2
.64	7.215	3	553.29	7.265	4	805.59	7.250	3	918.28	7.240	5
500.44	7.200	3									

Table 2
Photometric Values for EG And, Comparison Star and
Check Star.

EG And:		BD +39°158 :	
Brighter V magnitude	7.08	V	7.00 ± 0.006
Fainter "	"	B-V	+0.44 ± 0.01
Mean "	"	BD +40°158 :	
B-V	+1.69 ± 0.01		
Mean period ~40 days (80 days?)		V	7.55 ± 0.010
		B-V	+0.47 ± 0.01

mental system ($\lambda_{\text{eff}} \sim 5000 \text{ \AA}$) to the V system. With the here obtained magnitudes for the comparison stars, the mean Jarzebowski's instrumental magnitude results 7.54; assuming the spectral class M2III for EG And and F5 for both BD +39^o158 and BD +40^o158, the mean V magnitude in 1961-63 may be retained 7.24: no remarkable variation in the mean brightness has therefore occurred between 1961-63 and 1968-70. The "explicitly smaller luminosity" found by Jarzebowski in 1961 (V as faint as 7.36) and considered by him as an indication of a long term variation, appears now to correspond to the brightness of a deep minimum in the 40-days wave. Furthermore 21 visual magnitude determinations made with the Pickering's meridian photometer from 1880 to 1896 have been found in the catalogues assembled for the Revised Harvard Photometry: the magnitudes range from 7.3 to 7.6 and therefore the amplitude has not undergone noticeable change in the course of 90 years. The statement of a slight increasing of the mean brightness of the star from 7.^m4 to 7.^m2 in the same lapse of time would require a careful study of the zero point of the Harvard system.

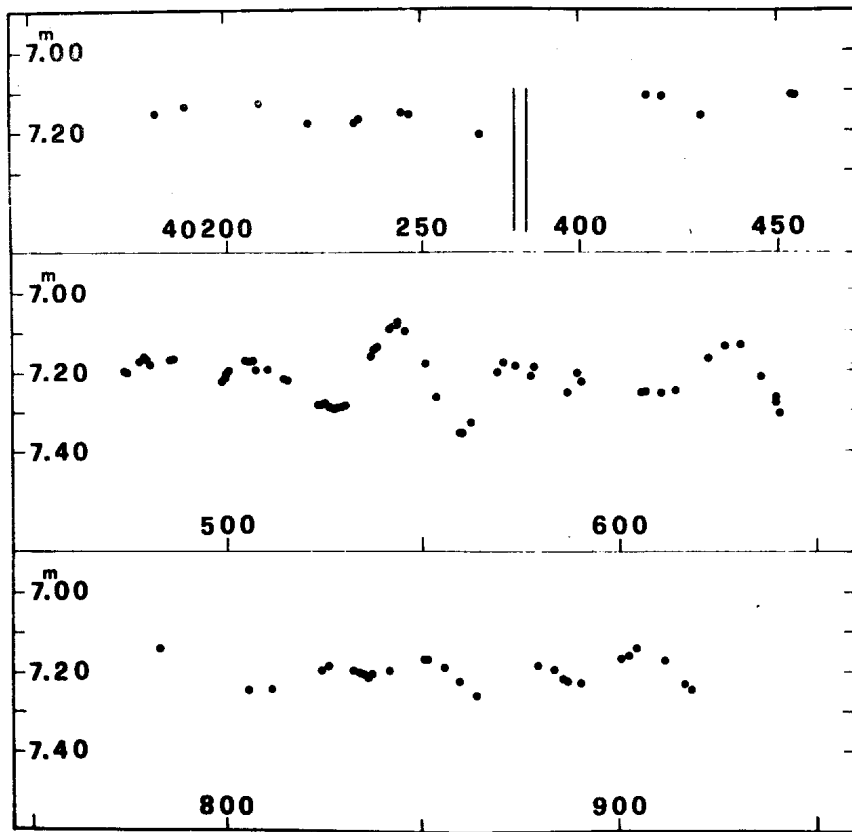
The B-V colour, measured in 27 nights spread along the two years covered by the present observations, shows no appreciable variation. All the obtained photometric data are collected in Table 2.

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References:

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The V light curve of EG And from November 1968 to November 1970.