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Konkoly Observatory
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ON THE PERIOD OF THE SECONDARY CYCLE IN XZ CYGNI

The amplitude of the RRab variable XZ Cygni changes periodically between 0.92 and 1.67 magnitudes in B, and between 0.67 and 1.35 in V (Kunchev, 1974). In the Table the moments for the maxima and minima of the amplitude have been compiled from all available data from 1906 to 1973. The majority of the moments were determined on the basis of the original observations.

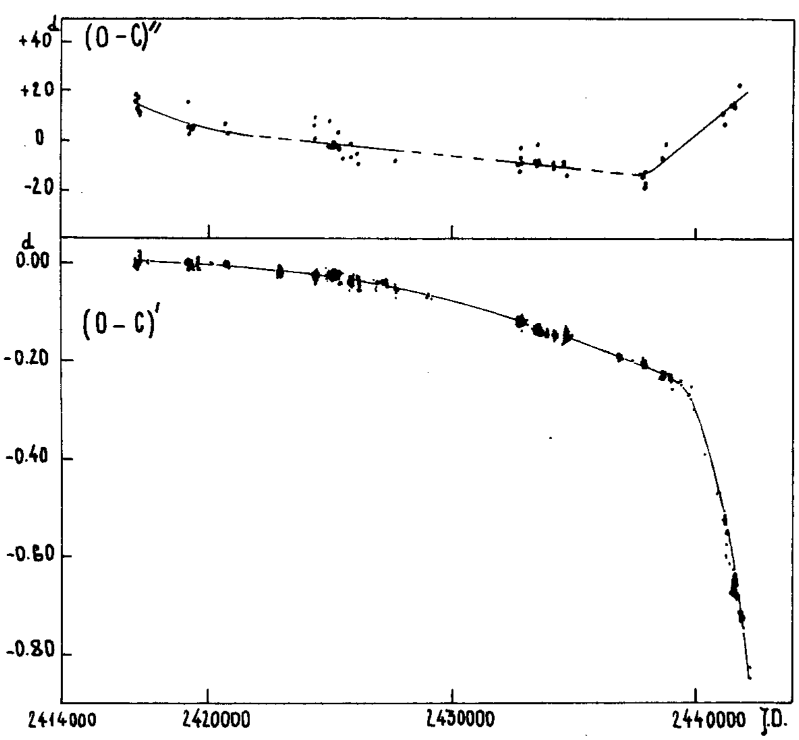
Max.Ampl. J.D.	(O-C)"	Min.Ampl. J.D.	(O-C)"	N	Observer
2417031:	$+16^d$	2417061	$+19^d$	-1	Blažko
17087	+13	17118:	+18	0	"
17199:	+12			2	"
17255	+10			3	Enebo
		19185	+16	36	Blažko
19204	+ 5	19228:	+ 2	37	"
		19290	+ 6	38	"
19319	+ 5	19346	+ 5	39	"
20701:	+ 8			63	Balanovski
20754	+ 3			64	Jordan
24378	+ 6	24400:	+ 1	127	Blažko
24439	+10			128	"
24944	- 3	24982	+ 8	137	Rybka
25116	- 3	25145	- 1	140	Zaharov
25174	- 3			141	"
25410	+ 3	25430	- 4	145	"
25456::	- 8			146	"
25865	- 1	25887	- 7	153	"
26148:	- 6	26172:	-11	158	"
27697:	- 9			185	Blažko
32693	-13	32723::	-10	272	Muller
		32788:	- 3	273	Klepicova
32814	- 7	32839:	- 9	274	Muller,Klepicova
33445	- 8	33471	-10	285	"
		33537	- 1	286	"
33560	- 8	33587	- 9	287	Klepicova
		34160	-10	297	Muller
34190	-10	34216	-12	298	Muller
		34621	- 9	305	Klepicova
34650	-10	34673	-15	306	"
37801:	-20	37834::	-15	361	Lange
37861:	-18	37893	-13	362	Saharov
38562	- 7			374	Fitch
38683:	- 1			376	"
41161	+ 6	41194::	+11	419	Bogdanov
		41541	+14	425	Kunchev
41571	+15	41599	+14	426	Kunchev
41810	+23			430	Firmanyuk

The following elements of the secondary period were determined:

Max.Ampl. J.D. = 2 417 072.35 + $57^d.477 \cdot N$

Min.Ampl. J.D. = 2 417 099.69 + $57^d.477 \cdot N$

(O - C)" values in the Table were calculated with these elements.



The Figure clearly shows the change of the secondary period of XZ Cygni (upper part). The change in the primary period P, obtained on the basis of the collected individual maxima is shown in the lower part of the Figure. The O - C's for the primary period were calculated with the elements:

Max. Hel. = 2 417 201.241 + $0^d.4665878 \cdot E$ (Klepicova,1959).

It is evident that after 1965 the basic period has considerably decreased and the length of the secondary period has increased.

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1975 May 22

FLARE STARS IN THE REGION OF NGC 7000. III.

During the year 1974 we have continued our observations in the region of Cygnus. The telescopes, the methods of observation and the examination of plates were the same as given in previous papers (1), (2).

The observational data are summarized in Table 1.

Table 1

Exp.time (min)	Teles-cope	Number of plates	Number of exp.	T_{eff}
10	40"	94	543	90^h30^m
	21"	110	610	101 40
5	40"	56	336	28 00
	21"	30	177	14 45

To the total effective observational time given in Table 1 2^h38^m should be added which correspond to four other multiple exposure plates (21") not included in this Table, because their exposure times differ from 5 and 10 minutes. Some of the plates form pairs obtained by both telescopes simultaneously ($t_{eff} = 35^h32^m$).

Our results are listed in Table 2 which contains the following data: Byurakan (B) or Tonantzintla (T) serial number, coordinates for 1950.0, brightness (pg or U) at minimum light, amplitude of flares (pg or U), date of flare-up, telescope used, length of each exposure on the multiple exposure plate on which the flare-up was found and the observer.

Table 2

Design.	RA. 1950.0	D.	m_{min} pg/U	m pg/U	Date of flare-up	Tele-scope	Exp. time (min)	Observer
B17	$20^h55^m.6$	$+44^o32'$	17.3U	1.0U	25.07.1973	40"	10	Tsvetkov
B18	53.7	43 23	20.5U	3.7U	2.08.1973	40	10	"
B19	41.0	41 11	16.2U	1.5U	19.08.1973	40	10	"
B17	55.6	44 32	17.3U	2.2U	27.08.1973	40	10	"
"	"	"	16.2pg	1.4pg	"	21	10	Erastova
B20	21 01.3	44 22	16.9U	1.6U	28.08.1973	40	10	Tsvetkov
B17	20 55.6	44 32	17.3U	0.7U	31.08.1973	40	10	"
B19	41.0	41 11	16.2U	1.3U	4.09.1973	40	10	Erastova
B21	21 01.6	40 59	20.5pg	4.3pg	22.05.1974	21	5	"
B22	20 50.6	42 48	19.5U	4.5U	17.06.1974	40	10	"
B19	41.0	41 11	16.2U	0.9U	18.06.1974	40	10	"
B23	21 02.3	43 24	21.5U	5.6U	20.06.1974	40	10	"
B24	20 55.5	40 53	19.7U	3.5U	24.06.1974	40	10	Tsvetkov
B17	55.6	44 32	17.3U	2.5U	26.06.1974	40	10	"
T1	21 00.7	42 08	18.0U	0.7U	27.06.1974	40	10	"
B19	20 41.0	41 11	16.2U	1.0U	28.06.1974	40	10	"
"	"	"	15.3pg	0.4pg	"	21	10	Erastova
B25	50.7	44 25	20.0U	3.8U	11.07.1974	40	10	Tsvetkov
B26	51.3	42 26	21.5U	6.5U	13.07.1974	40	10	"
"	"	"	20.5pg	5.1pg	"	21	10	Erastova
B27	41.7	43 08	16.3U	2.4U	13.07.1974	40	10	Tsvetkov
"	"	"	15.2pg	0.8pg	"	21	10	Erastova
B28	32.0	44 13	17.0pg	3.2pg	15.07.1974	21	10	"
B29	57.1	42 41	18.1U	1.9U	21.07.1974	40	5	Tsvetkov
B30	53.9	40 45	19.5U	3.2U	22.07.1974	40	10	"
B17	55.6	44 32	17.3U	2.3U	23.07.1974	40	10	"
B31	51.0	43 05	19.0U	3.6U	23.07.1974	40	10	"
B32	39.6	41 38	18.8pg	3.6pg	25.07.1974	21	10	Erastova
B33	51.1	41 45	18.9U	3.5U	25.07.1974	40	10	Tsvetkov
"	"	"	17.9pg	2.2pg	"	21	10	Erastova
B34	42.3	42 13	18.0U	1.5U	26.07.1974	40	5	Tsvetkov

Table 2 (continued)

Design.	RA. 1950.0	D.	m_{min} pg/U	m pg/U	Date of flare-up	Tele-scope	Exp. time (min)	Observer
B35	$20^h41^m.4$	$+40^o07'$	20.2pg	3.6pg	12.08.1974	21"	10	Erastova
B2	21 00.0	42 26	20.0U	3.8U	12.08.1974	40	5	Tsvetkov
B17	20 55.6	44 32	17.3U	2.3U	18.08.1974	40	5	"
"	"	"	no registered		"	21	10	Erastova
B19	41.0	41 11	16.2U	1.1U	19.08.1974	40	10	Tsvetkov
B17	55.6	44 32	17.3U	0.6U	8.09.1974	40	10	"
B36	48.7	43 15	16.6pg	0.8pg	10.10.1974	21	10	"
B17	55.6	44 32	17.3U	I.6U	16.10.1974	40	10	"
"	"	"	16.2pg	0.4pg	"	21	10	Tsvetkov
B37	54.5	42 49	18.0U	1.4U	18.10.1974	40	10	Tsvetkov
B17	55.6	44 32	17.3U	0.5U	18.10.1974	40	10	"
B38	41.4	44 08	19.0U	1.8U	18.10.1974	40	10	"
B39	47.2	42 10	20.7U	4.6U	18.10.1974	40	10	"
"	"	"	19.7pg	3.8pg	"	21	10	Erastova
B40	40.3	44 08	18.5pg	1.0pg	6.11.1974	21	20	"
B3	53.9	44 09	19.5U	3.6U	7.11.1974	40	10	"

We found the flare of B28 on a plate the centre of which was displaced for about 2^o to the West from our usual centre. A few other plates which have displaced centre were taken with the 21" telescope during this observational season as well.

Thus 22 new flare stars have been found in 1974 during 201^h40^m total effective time of observations. Among them the stars B17 and B19 have shown 6 and 3 flare-ups, respectively during the 1974 season.

Some flares given in the first part of Table 2 have been discovered after the re-examination of plates of earlier observational periods. It is very interesting to note that B17 and B19 had rather high flare activity.

Together with the 23 flare stars from previous lists (1), (2), (3) and L. Rosino's private communication the total number of observed flare stars in the region studied reaches 51.

According to Ambartsumian's formulae (4) the total number of flare stars in this region should be greater than 374. This estimate is somewhat higher than the previous one, obtained in the second article of this series (2).

It is necessary to stress once more that no conspicuous flare events have happened with stars known to have H_α line in emission (5), (6), (7).

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IMPROVED PERIOD OF THE Ap VARIABLE HR 5153

HR 5153 (=HD 119 213) is a Sr-Cr-Eu peculiar star of spectral type A1p which has been found photometrically variable in B and U lights by E.W. Burke and J.T. Howard (Ap.J. 178, 491, 1972). They derived the period of light variation P= 1.706 ± 0.001 days. The star was recently observed at Shemakha Observatory and also at Mauna Kea Observatory. The observations at Shemakha were made in ten colours during the summer 1974 (W. Schöneich et al., private communication). Hawaiian measurements (S.C. Wolff, N.D. Morrison: P.A.S.P., in press, 1975) were done in ubvy system during the spring 1973. From their data Schöneich et al. found the period P = 2.433 days, while Wolff and Morrison obtained P= 2.451 ± 0.010 days.

I have reexamined all sets of available photometric data. It turns out that the period suggested by Burke and Howard is definitely spurious. By combining the three sets of observations and accepting Wolff's and Morrison's basic epoch (maximum light in v colour) I have found the improved period:

$$JD_{hel}\,(v_{max}) = 2\,441\,450.74 + 2^{d}.45002\,E$$
$$\pm 18$$

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OPTICAL VARIATIONS OF Cen X-3

A recent report (Mauder, 1975) suggests that optical activity of Cen X-3 exists on a time scale of minutes or shorter. The existence of flickering would provide valuable insight into the rate of mass transfer in the system.

An observation of Cen X-3 was made on June 17, 1974 with the 100 cm telescope of the South African Astronomical Observatory at Sutherland, using the University of Cape Town high speed photometric system (Nather and Warner, 1971). Both seeing and photometric conditions were excellent, enabling a small focal plane aperture to be used thus excluding with certainty any of the close companion stars. One second integrations were made for 4100 seconds, at a time corresponding to orbital phases 165° to 173°. No filter was used.

No variations apart from those of a stochastic nature due to photon statistics were found, to a limit of 0.01 magnitude in 10 seconds. The data were also subjected to a power spectrum analysis which gave negative results, in agreement with Lasker (1974) and Peterson et al. (1975).

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Konkoly Observatory
Budapest
1975 June 9

ON THE PERIOD-LUMINOSITY RELATION OF THE DELTA SCUTI STARS

Taking into consideration 28 δ Scuti stars with known trigonometric or dynamic (or group) parallax the period-luminosity relation is discussed in this paper. This relation was obtained by Frolov (1969) on the basis of 6 δ Scuti stars with known trigonometric parallaxes for the first time.

A list of selected 28 δ Scuti stars is given in the Table which contains the name of the star, HD number, spectrum,mean <V> magnitude, logarithm of period P, trigonometric or dynamic (or group) parallax, observed absolute magnitude M_V with its mean error ε , weight estimated from the error ε of the observed absolute magnitude, absolute magnitude calculated from Eq. (1) and (2), subdivision and remark. The list was made using information included in papers given by Seeds and Yanchak (1972) , Baglin et al. (1973), Kukarkin et al. (1969, 1971, 1974), Broglia (1973), Jenkins (1952, 1963),Russell and Moore (1940). Only for two stars of this list, namely Y Cam and AB Cas, "photometric" parallaxes were determined using the new method which had been elaborated for the eclipsing binaries by one of us (Dworak 1974).

We discuss only such a sample of δ Scuti stars for which absolute magnitudes are known from geometric methods. We did not use absolute magnitudes obtained by Strömgren intermediate-band colours, Crawford's photoelectric H_β indices etc., because the absolute magnitudes determined in this way can be seriously erroneous for some δ Scuti stars with peculiar spectrum.

Table

Data for 28 selected δ Scuti Stars

Name	HD	Spectrum	<V>	log P	parallax		M_V obs.		weight	M_V cal.	subdiv.	Rem.
V1208 Aql	181333	F2 III (FO)	$5^m.55$	-0.803	0".002±	".007	$-2^M.9$	± $(7^M.6)$	0	$-0^M.23$	bright	
UV Ari	17093	A7 IV	5.18	-1.432	0.024	.006	2.08	0.55	2	2.07	faint	
KW Aur	33959	A9 V	5.02	-1.058	0.007	d	-0.75		1	0.13	bright	SB
γ Boo	127762	A7 III	3.05	-0.538	0.016	.005	-0.93	0.70	2	-0.60	bright	
κ^2 Boo	124675	A7 IV (A8 IV)	4.56	-1.161	0.014	.006	0.29	0.95	2	0.28	bright	DS
Y Cam		A7 Vm	10.45	-1.2000	‡		0.70	0.60	2	0.33	bright	EB
AO CVn	115604	FO II (FO IIIp)	4.74	-0.914	0.014	.005	0.47	0.80	2	-0.07	bright	
AB Cas		A3	10.2	-1.237	‡		2.10	0.30	3	1.91	faint	EB
β Cas	432	F2 IV	2.28	-0.982	0.072	.007	1.57	0.25	3	1.69	faint	
ε Cep	211336	FO IV	4.19	-1.376	0.037	.005	2.03	0.30	3	2.02	faint	
FM Com	107131	A7 V	6.44	-1.260	0.012	g	1.84		1	1.92	faint	
γ CrB	149436	AO IV (A1 V)	3.86	-1.523	0.026	.005	0.94	0.45	3	0.79	bright	SB
τ Cyg	202444	FO IV (F5 IV)	3.70	-0.854	0.046	.004	2.01	0.20	3	1.58	faint	SB
δ Del	197461	A7 IIIp (FO IV)	4.45	-0.8655	0.008	.006	-1.03	1.65	1	-0.14	bright	SB
CL Dra	143466	FO IV	4.97	-1.161	0.019	.006	1.36	0.70	2	1.84	faint	
S Eri	32045	FO IV	4.79	-	0.015	.011	0.67	1.60	1	-	-	
o^1 Eri	26574	F2 II-III (F2)	4.05	-1.097	0.028	.007	1.30	0.55	2	1.79	faint	

Table (concluded)

Name	HD	Spectrum	<V>	log P	parallax		M_V obs.		weight	M_V cal.	subdiv.	Rem.
HR 8666	215664	dA8	$5^m.76$	-1.284	0".018±	".007	$2^M.04$±	0.85	2	$1^M.95$	faint	Lac
V571 Mon	55057	A8n	5.46	-0.960	0.020	.005	1.96	0.55	2	1.67	faint	
τ Peg	220061	A5 IV (A5 V)	4.62	-1.252	0.031	.007	2.08	0.50	3	1.92	faint	
ρ Pup	67523	F6 IIp (F5 II)	2.75	-0.851	0.031	.007	0.21	0.50	3	-0.16	bright	DS
δ Sct	172748	F3 III-IV (F3)	4.72	-0.713	0.020	.005	1.22	0.55	2	1.46	faint	DS
δ Ser	138918	F0 IV (dF0)	4.27	-0.866	0.015	.005	0.15	0.75	2	-0.14	bright	DS
o Ser	160613	A2 V (A2 IV)	4.26	-1.276	0.003	.006	-3.35	(4.3)	0	0.44	bright	SB
V480 Tau	30780	dA5 (dF5)	5.11	-1.377	0.009	.006	-0.12	1.45	1	0.58	bright	
ν UMa	84999	F2 IV (F0 IV)	3.76	-0.877	0.036	.005	1.54	0.30	3	1.60	faint	DS
FZ Vel	77140	F0 III	5.18	-1.183	0.007	.009	-0.6	2.8	1	0.31	bright	DS
FG Vir	106384	dF3	6.55	-1.155	0.010	.011	1.56	2.4	1	1.83	faint	

Remarks: d - dynamic parallax, g - group parallax, * - photometric parallax, DS - double star,
EB - eclipsing binary, SB - spectroscopic binary, Lac - in Lacerta.

Looking carefully on the data gathered in the Table it is easy to notice that all the stars can be divided into two distinct groups as regards their absolute magnitudes. Both groups are being delimited by the 1^M line. Stars more luminous than 1^M, called "bright δ Scuti" or "ρ Puppis stars", are more scattered in the log P - M_V diagram than the "faint δ Scuti stars" with $M_V > 1^M$. The mean values of the absolute magnitudes for both groups together with the standard deviations are as follows: Bright δ Scuti stars: $\langle M_V \rangle = +0\overset{M}{.}12 \pm 0\overset{M}{.}64$ (we reject two stars, namely V1208 Aql and o Ser, with the greatest errors in M_V). Faint δ Scuti stars: $\langle M_V \rangle = +1\overset{M}{.}79 \pm 0\overset{M}{.}32$.

Taking this into consideration we tried to find the period--luminosity relation separately for both groups, especially that one of bright δ Scuti stars, ρ Puppis, does not confirm the Frolov's (1969, 1970) period-luminosity relation.

Using the method of least squares we calculated for the stars presented in the Table the coefficients of regression lines expressing the array means of M_V as a function of log P. These calculations were carried out taking the weights of the absolute magnitudes into consideration. The weight for each star was defined according to the arbitrary rules:

$$w = 0 \text{ if the error in } M_V \; \varepsilon > 3^M,$$
$$w = 1 \text{ if } 1^M < \varepsilon \leq 3^M,$$
$$w = 2 \text{ if } 0\overset{M}{.}5 < \varepsilon \leq 1^M,$$
$$w = 3 \text{ if } \varepsilon \leq 0\overset{M}{.}5.$$

Together with the parameters of the best regression lines we computed the areas of confidence overlapping the true regression line $M_V = a \log P + b$ with frequency 0.98 (see Fig.1).

As a result of our calculations we obtained the following regression lines:

Bright δ Scuti stars: $$M_V = -1\overset{M}{.}41 \underset{\pm .39}{} \log P - 1\overset{M}{.}36 \underset{\pm .43}{} \qquad (1)$$

Faint δ Scuti stars: $$M_V = -0\overset{M}{.}84 \underset{\pm .22}{} \log P + 0\overset{M}{.}86 \underset{\pm .25}{} \qquad (2)$$

The scantiness of data did not allow us to explain, what was the reason for the division into bright and faint δ Scuti stars. However, on the basis of the available information we can make conjectures that the bright or ρ Puppis stars are rather unusual variables. For the majority of them the spectra belong to the II, III and V class of luminosity and very often emission lines are appearing. On the other hand, the lack of overtones is very probable for these stars as well as the gaps in variability. Some of the bright δ Scuti stars, namely ρ Pup, γ Boo, γ CrB, Y Cam, were already called untypical or unusual variables.

On the contrary, the faint δ Scuti variables seem to be typical subgiant stars and may be called normal δ Scuti stars.

Our suggestion that the δ Scuti stars may be divided into two distinct groups is confirmed by Elliott (1974).

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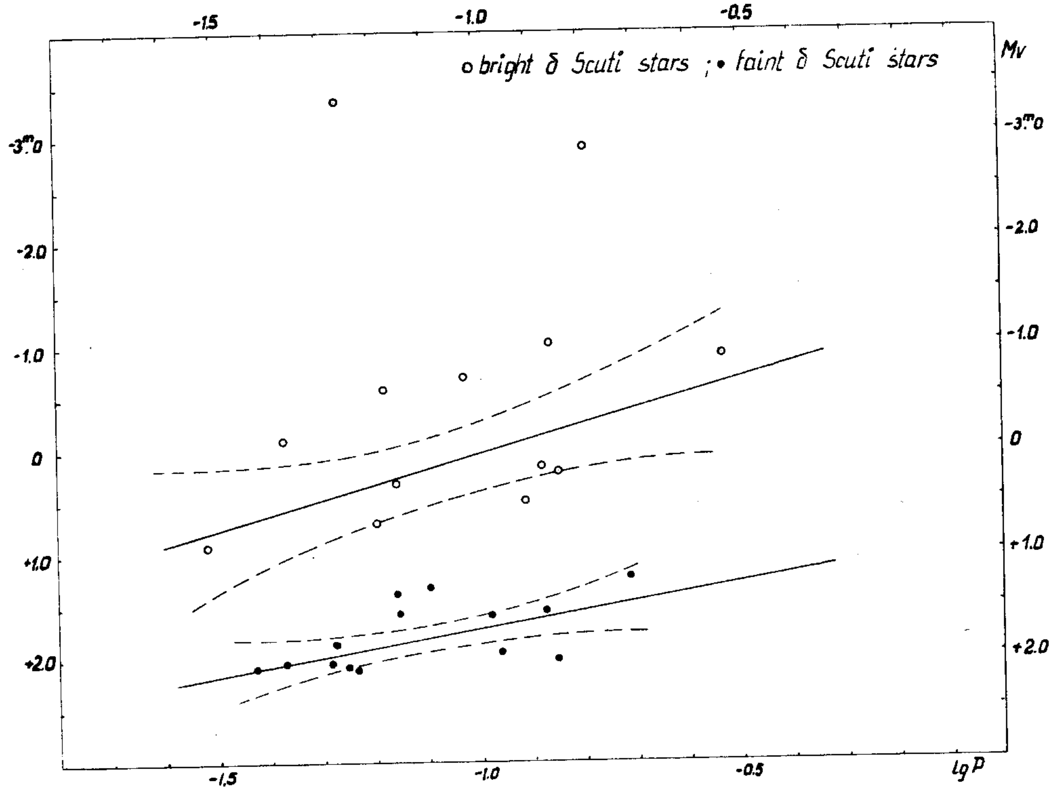

Fig. 1. The best regression lines together with their areas of confidence wich are to overlap the true regression lines with the frequency 98 % calculated for the δ Scuti stars.

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INFORMATION BULLETIN ON VARIABLE STARS

Number 1006

Konkoly Observatory
Budapest
1975 June 10

FLARE ACTIVITY ON UV CETI, 1975.01

We report observations in the U-band of flare activity on UV Ceti between January 3 and January 8, 1975. The observations were originally planned to provide concurrent optical coverage for an experiment to observe flares of UV Ceti with X-ray equipment aboard the ANS satellite (Grindlay, 1974).

Although cloudy weather permitted only 3.7 hours of monitoring, 17 events were recorded with a 60 cm reflector above a detection limit of $U_{det} = 15.0$ Data for individual flares are listed in Table 1, following a format used on earlier occasions (Kunkel 1968, 1973).

The level of activity is determined from the incidence statistic $\underline{U_o}$ in the event rate equation

$$R(U) = \exp[a(U-U_o)]\, hr^{-1}$$

the lower value of U_o indicating greater activity. Although the value of the coefficient $\underline{a}$ may be observed to vary from sample to sample, experience with observations reported so far (Kunkel 1975) is that a unique value of $\underline{a}$ applies to flare activity of all stars for the flares typically observed. This value is close to unity, and for a given sample of flares the estimate of $\underline{a}$ approaches this limit as the sample size increases. A simultaneous solution for both $\underline{a}$ and $\underline{U_o}$ yields $a = 0.8 \pm 0.2$ and $U_o = 13.0 \pm 0.2$, implying that stronger events dominate the sample. Solving for U_o alone, with $a = 1.06$, the value that best represents the $\overline{800}$ flares recorded for the years 1966-1971 (Kunkel, 1975) gives U_o 13.35 $\pm$ 0.20. This activity is nearly double that for the 1966-1971 period, for which $U_o = 14.0$.

TABLE 1

FLARE ABSTRACT

Monitoring times

Date	Intervals
75 01 05	$01^h21^m.4$ - $02^h11^m.0$
75 01 06	01 49.6 - 02 27.3
75 01 07	01 05.9 - 02 16.4
75 01 08	01 09.0 - 02 15.8

FLARES OBSERVED

Date	U.T.	Airmass	U (Peak)	Durations $T_{.5}$	$T_{.2}$	$T_{.1}$	Notes
75 01 05	$01^h26^m.95$	1.16	14.77	0.90	3.0	-	
	01 58.32	1.25	15.32	0.16	-		
75 01 06	01 50.5	1.23	12.16	0.26	4.3	6.8	
	01 56.3	1.26	13.97	0.06	-		
	02 04.81	1.29	14.80	0.8	-		
	02 09.26	1.31	14.78	0.11	0.45	-	
	02 13.30	1.32	14.08	0.47C	1.50C	-	
	02 14.81	1.33	14.71	0.07	0.20U	-	
	02 23.18	1.42	14.06	0.27C	0.40	-	
	02 24.54	1.42	<12.4	0.2 U	-	-	Peak lost
	02 25.02	1.42	13.18	0.32	1.16	1.19	
75 01 07	01 21.08	1.17	14.50	0.05	0.07	1.0U	
	01 39.66	1.22	14.73	0.18	0.08	-	
	01 55.53	1.26	15.21	0.30	1.00U	-	
	01 58.14	1.28	15.40	1.6	2.0	-	
	02 05.65	1.31	14.92	0.1	0.3	0.4	
	02 09.09	1.33	14.08	0.08	0.19	0.26	
75 01 08	01 17.56	1.17	< 9.9	6.80U	11.12U		Peak lost
	01 55.69	1.28	14.14	0.16C	0.18C	-	
	02 08.23	1.33	13.97	0.09	0.14	-	

Note: C signifies complex flare form
U signifies uncertainty greater than ten percent.

As the data of Table 1 show, the bulk of the flares here reported occurred on the nights of January 6 and January 7. On the remaining nights, which account for about half of the total observing time, only five flares were recorded. It seems probable, therefore, that the enhanced activity noted on two nights represents a sporadic fluctuation, and we feel that our data warrant no conclusion regarding possible long term changes in the level of flare activity in UV Ceti.

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Konkoly Observatory
Budapest
1975 June 12

BW BOOTIS - AN ALGOL TYPE ECLIPSING VARIABLE

The star BW Boo (HD 128661 = BD +36°2509) was reported by Jackisch (1968) and Harris (1969) to be probably an eclipsing variable. The solution of its spectroscopic orbit by Gorza (1971) gives P = $3^{d}.33284(2)$ $\Phi^{d}_{II} = 1^{d}.51$ where P is the period of radial velocity variation and Φ^{d}_{II} is the phase in days of the eccentric secondary minimum.

Photoelectric observations were made on 10 nights in yellow and on 3 nights in blue colours with the 20 cm Grubb f/12 refractor at the Cracow Astronomical Observatory Fort Skała. An uncooled photomultiplier FEU-17 manufactured in USSR (antimony - caesium cathode) together with the standard Schott filters for blue and yellow were used. In the reduction to Johnson's BV system the formulae derived by Dworak and Winiarski (1972) were adopted. The comparison and check stars were BD+36°2568 and BD +36°2530, respectively. No variation has been noticed between them.

Two times of primary minimum were determined and listed in Table I together with moments published by Jackisch and Harris. The O-C values were calculated with the new elements

$$\text{JD hel Min I} = 2440\ 362.9026 + 3^{d}.332821\ E.$$

Table II contains the observations in V and Table III gives the results of observations in B made on 2 nights near the primary minimum and on one night on the constant maximum. All measurements were corrected for differential extinction. ΔV and ΔB represent the corresponding brightnesses in magnitudes of the variable minus those of the comparison. The phases are calculated using recently derived elements.

The light curve in V is presented on the Figure 1.

BW Bootis seems to be an Algol type eclipsing system with the following properties:

range of light variation		
primary minimum	$\Delta V = 0^{m}.260$	$\Delta B = 0^{m}.290$
secondary minimum	$\Delta V = 0^{m}.035$	lack of data
total duration of minima		
primary	D I = $4^{h}40^{m}$	
secondary	D II = about $4^{h}50^{m}$	

deplacement of secondary
from the phase 0.5 about $-0\overset{d}{.}166$
phase of secondary $= 1\overset{d}{.}50$

Because of the uneven distribution of the phases of our observations a more detailed discussion of the period is not possible. Observations of BW Boo carried out at different geographical longitude are necessary to complete our knowledge on this variable.

Table I. Times of primary minima

JD hel	O-C	E	Observer
2438 906.4578	$-0\overset{d}{.}0020$	-437	Jackisch
40 362.9070	+0.0040	0	Harris
41 682.6960	-0.0037	+396	Kurpińska
42 152.626[illegible]	-0.0027	+537	Kurpińska

Table II. Observations in V

JD hel	ΔV	JD hel	ΔV	JD hel	ΔV
2441680.5806	-0.155	2441683.6411	-0.169	2441767.4901	-0.131
681.5416	-0.166	.6468	-0.151	.4984	-0.118
.5450	-0.155	.6490	-0.160	.5231	-0.132
.5540	-0.167	.6550	-0.148	.5283	-0.128
682.5781	-0.162	.6570	-0.161	.5301	-0.136
.5812	-0.130	.6820	-0.165	.5565	-0.125
.5866	-0.120	.6843	-0.167	.5589	-0.129
.5896	-0.140	.6907	-0.146	.5707	-0.144
.5959	-0.163	.6927	-0.163	.5815	-0.134
.6133	-0.101	.7147	-0.164	.5870	-0.142
.6192	-0.103	709.5907	-0.147	.5947	-0.152
.6264	-0.135	.6097	-0.149	.5970	-0.161
.6327	-0.052	.6117	-0.162	.6030	-0.149
.6472	-0.022	.6240	-0.153	.6058	-0.156
.6500	+0.002	.6259	-0.141	.6134	-0.146
.6575	+0.041	.6361	-0.163	.6155	-0.155
.6687	+0.020	.6386	-0.149	2442152.4969	-0.173
.6766	+0.092	.6490	-0.149	.4981	-0.143
.6798	+0.101	746.4860	-0.155	.5005	-0.158
.6894	+0.068	.4966	-0.144	.5024	-0.142
.6942	+0.084	.4992	-0.160	.5062	-0.153
.6995	+0.063	.5076	-0.164	.5075	-0.161
.7023	+0.098	.5098	-0.159	.5148	-0.147
.7096	+0.073	.5194	-0.161	.5161	-0.134
.7200	+0.061	.5256	-0.138	.5225	-0.134
.7230	+0.040	.5385	-0.144	.5239	-0.153
.7252	+0.022	758.4037	-0.157	.5300	-0.142
.7323	+0.024	.4177	-0.168	.5314	-0.159
683.6142	-0.171	.4205	-0.153	.5366	-0.134
.6162	-0.150	.5052	-0.162	.5378	-0.145
.6222	-0.157	.5166	-0.152	.5429	-0.103
.6247	-0.144	767.4454	-0.130	.5441	-0.096
.6302	-0.138	.4516	-0.138	.5511	-0.086
.6332	-0.148	.4648	-0.123	.5529	-0.108
.6399	-0.145	.4732	-0.130	.5572	-0.068

Table II cont.

JD hel	ΔV	JD hel	ΔV	JD hel	ΔV
2442152.5597	-0.096	2442493.5597	-0.147	2442493.5799	-0.146
.5691	-0.061	.5608	-0.158	.5812	-0.148
.5701	-0.059	.5630	-0.153	.5835	-0.155
.5723	-0.031	.5642	-0.148	.5845	-0.157
493.5483	-0.155	.5663	-0.154	.5869	-0.148
.5494	-0.146	.5674	-0.152	.5882	-0.153
.5519	-0.141	.5697	0.150	.5899	-0.154
.5532	-0.146	.5717	-0.160	.5911	-0.159
.5556	-0.156	.5752	-0.169	.5935	-0.148
.5567	-0.167	.5774	-0.154		

Table III. Observations in B

JD hel	ΔB	JD hel	ΔB	JD hel	ΔB
2441682.5781	-0.183	2442152.4981	-0.188	2442493.5494	-0.197
.5812	-0.220	.5005	-0.188	.5519	-0.188
.5866	-0.181	.5024	-0.183	.5532	-0.182
.5896	-0.186	.5062	-0.145	.5556	-0.190
.5959	-0.216	.5075	-0.170	.5567	-0.193
.6091	-0.150	.5148	-0.187	.5597	-0.185
.6133	-0.124	.5161	-0.179	.5608	-0.194
.6192	-0.114	.5226	-0.154	.5630	-0.182
.6327	-0.154	.5239	-0.164	.5642	-0.177
.6472	-0.038	.5300	-0.173	.5663	-0.179
.6500	-0.023	.5314	-0.176	.5674	-0.189
.6575	-0.034	.5366	-0.156	.5697	-0.184
.6590	+0.007	.5378	-0.172	.5717	-0.188
.6687	+0.097	.5429	-0.139	.5752	-0.177
.6690	+0.071	.5441	-0.124	.5774	-0.188
.6766	+0.090	.5511	-0.145	.5799	-0.177
.6798	+0.084	.5529	-0.116	.5812	-0.177
.6913	+0.106	.5572	-0.084	.5835	-0.171
.7023	+0.104	.5597	-0.104	.5845	-0.173
.7200	+0.019	.5691	-0.098	.5869	-0.181
.7230	+0.055	.5701	-0.081	.5882	-0.176
.7323	0.000	.5723	-0.046	.5899	-0.175
2442152.4969	-0.211	493.5483	-0.194	.5935	-0.179

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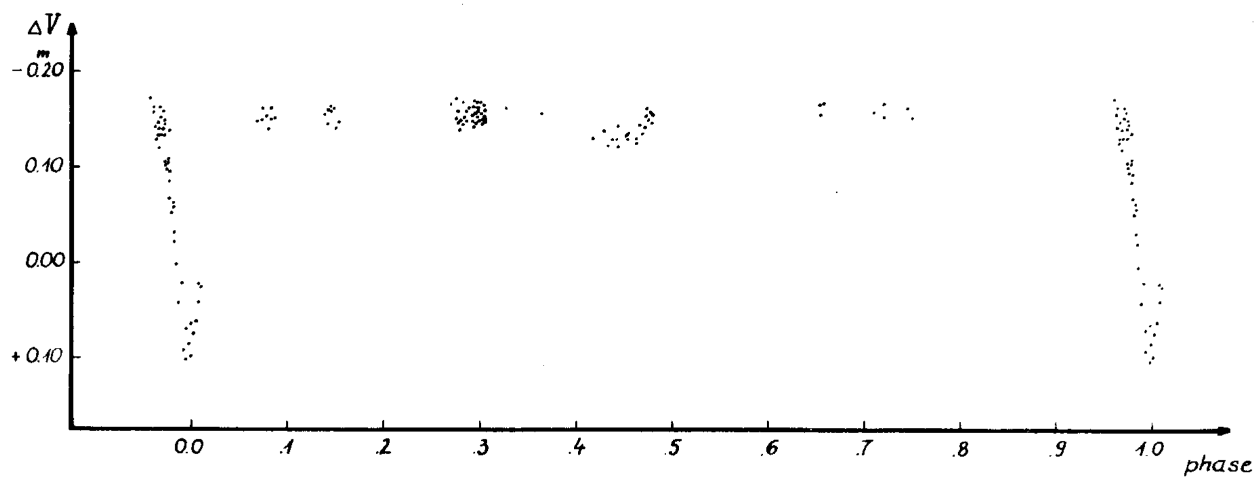

Fig. 1. Light curve of BW Bootis

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INFORMATION BULLETIN ON VARIABLE STARS
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Konkoly Observatory
Budapest
1975 June 17

NEW VARIABLE STARS IN A FIELD AROUND 38 o Per

For an investigation of the variable star content of the stellar association Per OB 2 a total of 76 blue patrol plates covering about 6 x 6 square degrees of the central part of the association have been obtained with the astrograph of Hoher List observatory (Sonnefeld four lens system, F = 1500 mm, F/5). The plates, taken between September 1969 and October 1973, are centered on 38 o Per, slightly north of the T-association Per T 1, which is a member of Per OB 2. About half the plates have a limiting magnitude of $17^m_.5$, on most plates of the rest it is about $16^m_.8$.

The search for variable stars resulted in the discovery of 6 new variables and the rediscovery of the suspected variable CSV 327=Ross 18 which has the number 3 in the Table below. The only note on this star is that of F.E. Ross (1927, Astron.Journal 37, 155), who supposed that this object may also be an asteroid.

The limits of variability of these seven objects were estimated with a number of selected comparison stars around each variable, which were calibrated with a secondary standard sequence near the center of the plate. This sequence itself has been derived by means of photographic transfer of a UBV-sequence in the galactic cluster NGC 1778 (Hoag,A A. et.al. 1961, Publ. US Naval Obs. Vol. 17 part 7).

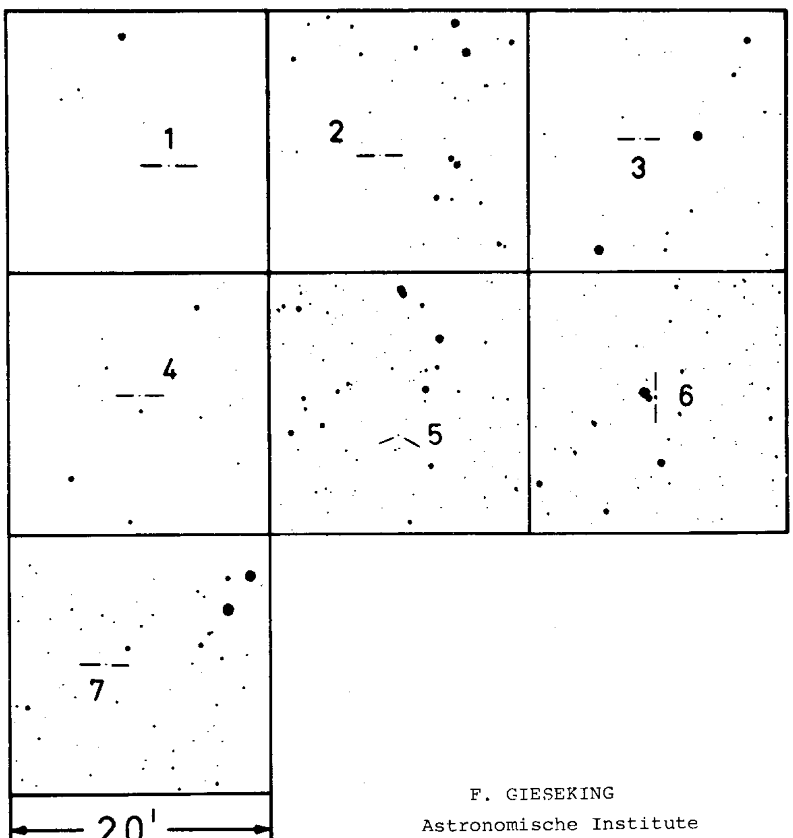
The position of each variable relative to at least 3 surrounding AGK_3-stars were measured with a Zeiss coordinate measuring machine. With these positions the corresponding coordinates were calculated using Schlesinger's dependences method.

Finally, an estimate of the colour of the variables on the blue and red print of the Palomar Sky Survey shows that except stars No. 1 and No. 6, which have approximately equal brightness on both prints, all stars are rather red objects.

The identification charts of the variables, which have north up and west to the right, are enlargements from two original plates and have a limiting magnitude of about $16^m_.5$.

Details will be published elsewhere.

No.	α (1950)	δ (1950)	Max	Min
1	$03^h28^m23^s.9$	+30°20'45"	$14^m.0$	$15^m.5$
2	03 35 18.3	+34 30 29	15.9	16.5
3	03 35 54.3	+32 42 45	14.7	(17.5
4	03 41 34.9	+33 05 51	14.9	15.9
5	03 42 30.3	+34 37 11	15.1	17.2
6	03 44 30.2	+34 51 30	13.9	14.7
7	03 49 54.0	+31 45 02	14.8	16.0



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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
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PHOTOGRAPHIC OBSERVATIONS OF EE CEPHEI AT THE 1969 MINIMUM

From 1968 to 1970 we observed photographically a field centred on EE Cep. It has been accepted that this star, discovered by Romano in 1952 to be a variable (1956, Coelum, 24,135), is an eclipsing binary having a period of 2049 days. Minima were observed by Romano (1956), by Weber (1956, Pubbl.Spec.Ariel, 4;1956,D.D.O.,9), by Romano and Perissinotto (1966,Mem.S.A.It.,37,255) and by Meinunger (1973, M.V.S.,6,89).

We give here our observations carried out at the "G.Horn D'Arturo" observatory at Bologna (Baldinelli,1972, Coelum,40, 175) during the 1969 minimum.

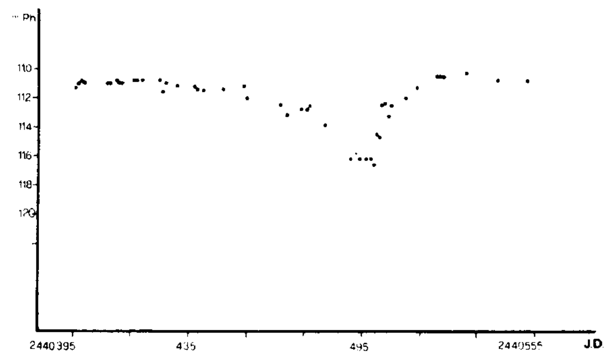
The photographs were taken at the prime focus of the 35 cm reflector of our observatory. The plates used were Ilford Zenith Astronomical with a 10 minutes exposure.

For the work the plates were estimated visually by two observers, the mean difference being 0.05 mag., and by using the magnitude comparison sequence given by Romano (1956).

The minimum was found to occur on J.D. 2440493 ± 1.

The following table gives our observations near the period of this minimum. We also give the light-curve for the same minimum.

J.D.	mag_{pg}	J.D.	mag_{pg}	J.D.	mag_{pg}	J.D.	mag_{pg}
2440397	11.13	2440425	11.08	2440469	11.32	2440502	11.25
398	11.10	426	11.16	474	11.28	503	11.24
399	11.08	427	11.10	476	11.28	504	11.33
400	11.10	431	11.12	477	11.25	505	11.25
407	11.10	437	11.12	482	11.38	510	11.20
408	11.10	438	11.14	491	11.62	514	11.13
410	11.08	439	11.25	494	11.62	522	11.05
411	11.10	440	11.15	496	11.62	523	11.05
412	11.11	447	11.14	498	11.62	524	11.05
416	11.08	454	11.12	499	11.65	532	11.04
417	11.08	455	11.20	500	11.45	543	11.08
419	11.08	467	11.25	501	11.47	553	11.08



EE Cephei minimum light curve (1969).

PHOTOGRAPHIC OBSERVATIONS OF EE CEPHEI AT THE 1975 MINIMUM

We give here our observations carried out at the "G.Horn D'Arturo" observatory at Bologna (Baldinelli, 1972, Coelum,40,175) during the 1975 minimum. The photographs were taken at the newtonian focus of the 35 cm reflector of our observatory. The plates were Ilford Zenith Astronomical with a 10 to 20 minutes exposure. The plates were estimated by using the magnitude comparison sequence given by Meinunger (1975, IBVS, 965).

The following table gives our observations near the period of this minimum.

J.D. 2442000+	$mag._{ph}$	No.of plates	J.D. 2442000+	$mag._{ph}$	No.of plates
525	11.1	1	543	12.6	6
530	11.3	2	547	12.6	4
531	11.2	4	548	12.2	6
532	11.2	3	549	12.2	4
533	11.2	2	550	12.0	7
534	11.3	4	551	11.8	2
535	11.3	2	552	11.5	2
542	12.6	3			

MINIMA OF ECLIPSING VARIABLES

The list below contains minima of eclipsing variables observed at the "G.Horn D'Arturo" observatory at Tizzano, near Bologna.

The observations were made with the 350 mm ϕ, f=180 cm newtonian reflector and an unrefrigerated photometer employing an 1P21 and V filter (UBV international system). The timings were reduced by the tracing paper method.

Star	J.D. hel. 2442....	O - C	N
W UMa	083.3801	-0.0060*	29
	121.4141	-0.0067*	25
	157.4480	-0.0058*	39
	158.4485	-0.0062*	35
U CrB	245.9227	0.0212**	***

* elements from SAC

** elements from GCVS

*** normal minimum

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A. R. HOGG'S UBV OBSERVATIONS OF U PEGASI

The late Dr.A.R. Hogg left a series of ubv observations of the W UMa star U Peg which he had made at Kitt Peak National Observatory in October 1964 with the 91 cm reflector. I have completed the reductions from the chart recordings and have made the corrections for differential extinction and heliocentric time. Using a 1P21 photomultiplier and standard Johnson filters he obtained about 250 observations in each color on October 21, 23, 24, 25, 27, 1964. In addition, on October 24 Hogg monitored U Peg between $0^{p}.84$ and $0^{p}.92$ for ultraviolet flares and found none. Owing partly to clouds, coverage of the minima was such that only one time of primary minimum and two times of secondary minimum could be determined by the least squares method described by Kwee and van Woerden:

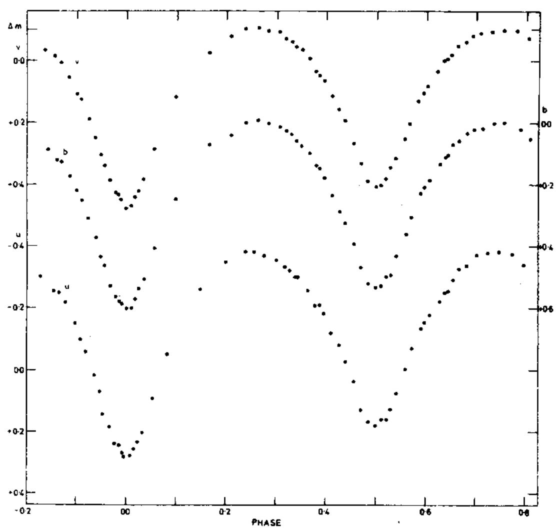
Minimum	JD hel	standard error
II	2438 689.7081	±0.00023
I	691.7693	0.00018
II	692.7072	0.00018

Min I occurred $0^{d}.0023$ earlier than predicted by Rigterink (A.J. 77, 319, 1972). Phases for the present series were computed from Hogg's epoch and Rigterink's period:

$$\text{Min I} = \text{JD } 2438\ 691.7693 + 0^{d}.37478133\ E.$$

The observations have been put on punched cards at the Mt. Stromlo Observatory, and print-outs have been prepared for the R.A.S. repository in London with a copy for the file in Odessa in accordance with IBVS No. 510. Fig. 1 gives the normal points of four observations each of the relative brightness of U Peg minus the comparison star BD+15°4912. In 1964 the two maxima were of nearly equal brightness. Max I appeared to be slightly brighter in b and v and the same in u, whereas it was fainter in 1949-50 and brighter in 1958, 1961, and 1970. By reflecting the phases of the normal points for secondary minimum, I find its midpoint to be $0^{d}.001$ after P/2, compared to $0^{d}.002$ found by Binnendijk in 1958 and Rigterink in 1970.

Hogg observed standard stars to transform the colors of U Peg and



the comparison star to the UBV system. Mean values and their standard errors are given below.

Star	u - b		b - v		U - B	B - V	V
U Peg Max	$+1^{m}.082$	± 0.003	$-0^{m}.431$	± 0.006	$+0^{m}.10$	$+0^{m}.64$	$+9^{m}.23$
U Peg Min I	+1.118	0.006	-0.390	0.015	+0.13	+0.68	+9.80
Min II	+1.085	0.010	-0.410	0.010	+0.10	+0.66	+9.74
BD +15°4912	+0.941	0.005	-0.542	0.003	-0.02	+0.50	+9.85±0.01

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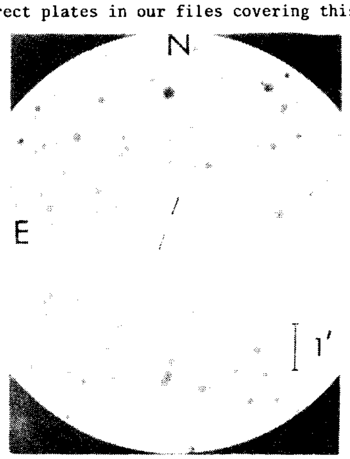
COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1011

Konkoly Observatory
Budapest
1975 June 20

NOVA AURIGAE 1964

Recently, while scanning an objective-prism plate (Kodak IIa-O, 580 Å mm^{-1} at Hγ) taken with the Burrell Schmidt telescope of the Warner and Swasey Observatory on November 4 (U.T.) 1964, we found the spectrum of a nova having approximate 1900 coordinates $\alpha = 5^h\ 22^m.1$, $\delta = +33°\ 14'$. At that time the star was near the 15th mag and showed in addition to hydrogen emission, strong [OIII] lines and N III λ 4640 indicating that it was in the advanced nebular stage of nova development, perhaps five or more magnitudes down from maximum light. Our identification chart, enlarged from Palomar Sky Survey chart O-1315, shows the candidate for the prenova which we estimate at $m_{pg} \sim 18$. Unfortunately, there are no additional spectral or direct plates in our files covering this event.



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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
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Konkoly Observatory
Budapest
1975 June 20

PHOTOELECTRIC OBSERVATIONS OF AD LEONIS, EV LACERTAE AND A SUSPECTED FLARE STAR NEAR HZ HERCULIS

Photoelectric observations of flare stars AD Leo, EV Lac and a suspected flare star near HZ Her were obtained on several nights during the past year. The 61 cm reflector of the Morehead Observatory was used in conjunction with an uncooled 1P21 photomultiplier tube which fed a DC amplifier (time constant 1 second) coupled to a strip chart recorder (speed 2 inches per minute).

The dates and times of the observations are noted in Table I. All interruptions in the observing which exceeded one minute are noted. No flares of AD Leo were observed, however, a flare of EV Lac was noted on 27 September 1974 at 3:05:49 (±2 sec.) UT. The flare, shown in Figure I, had a duration of 82 seconds and the ratio of the peak recorded intensity to the quiescent was 2.78 which corresponds to a magnitude change of 1.11 in the natural photometric system of the unfiltered tube. This is uncorrected for the light of the companion star which was monitored simultaneously with the flare star. The flare itself shows much structure on a time scale of one second or less and a rise time equal to or less than the time constant of the electronics.

Recently, Moffett and Vanden Bout (1973) reported the discovery of a flare star near HZ Her. They quote unpublished work of P.E.Boynton which shows the star to be about 10th magnitude and having colors consistent with a K-dwarf. As Table I shows a total of 20 hours of monitoring this star produced no definite flares. On 24 May, 1974 numerous randomly spaced, low amplitude "flashes" with average duration of 10 seconds were observed; however subsequent observations have failed to confirm this behaviour and a terrestrial source is strongly suspected.

The visual magnitude and color indices of this star were redetermined this spring with the results;

$$V = 10.00 \pm .02$$
$$B-V = 1.06 \pm .02$$
$$U-B = 0.86 \pm .04$$

These values are based on measurements made on two nights.The first night the star was observed in B and V with the 1P21 tube. On the second night the star was observed in U, B and V with an EMI 9789 tube.

If a luminosity class of V is assumed the above colors imply the star is a K4 dwarf. The General Catalogue of Variable Stars and its supplements (Kukarkin, 1969 - 1974) lists only one other UV Ceti star of type K4 and only four others of a slightly earlier type.

In light of the many hours of null observations, the low amplitude of the discovery flare, and the early spectral type it would seem that caution should be used in conclusively calling this star a UV Ceti type. However, as Moffett and Vanden Bout point out, if this is a UV Ceti star it is a very interesting one. The need for more observational work is obvious.

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References:

Moffett, T.J. and P.A. Vanden Bout 1973, IBVS No.833

Kukarkin, B.V., et al. 1969-1974, Gen.Cat.of Var.Stars,Academy of Sciences of the U.S.S.R.

TABLE I

Star	Date	Filter	Coverage (UT)	Notes
AD Leo	5/18/74	B	2:09 - 3:12	Poor sky conditions
	2/20/75	None	3:58 - 6:00	
	3/4/75	V	3:18 - 3:31	
			3:34 - 3:48	
			3:50 - 4:16	
EV Lac	9/27/74	None	0:38 - 3:14	Flare at 3:05:49
			3:16 - 4:03	
	10/13/74	None	2:23 - 4:45	
	11/5/74	None	2:25 - 3:04	
			3:07 - 3:43	
	11/8/74	None	1:09 - 4:45	
Suspected flare star	5/24/74	None	4:02 - 6:30	Sporadic "flashes" between 4:15 - 4:44
	5/28/74	None	8:05 - 8:26	
			8:29 - 8:47	
			8:49 - 9:00	
	5/31/74	None	3:13 - 3:46	Poor sky conditions
			3:49 - 3:57	
			4:00 - 4:09	
			4:14 - 4:23	
			4:26 - 4:29	
			4:33 - 4:36	
			4:38 - 5:30	
	6/4/74	None	2:44 - 3:43	
			5:08 - 5:58	
			6:03 - 6:59	
			7:02 - 8:01	
	6/7/74	None	3:02 - 3:15	
			3:18 - 4:21	
			4:25 - 4:38	
			5:25 - 5:43	
			5:47 - 8:30	
	6/26/74	None	6:23 - 6:32	
			6:36 - 6:55	
	7/1/74	None	2:04 - 2:28	
			2:38 - 7:42	
			7:45 - 8:30	
	4/4/75	B,V	7:25 - 7:37	Mag. and color measured
	5/20/75	U,B,V	4:36 - 4:48	Mag. and color measured

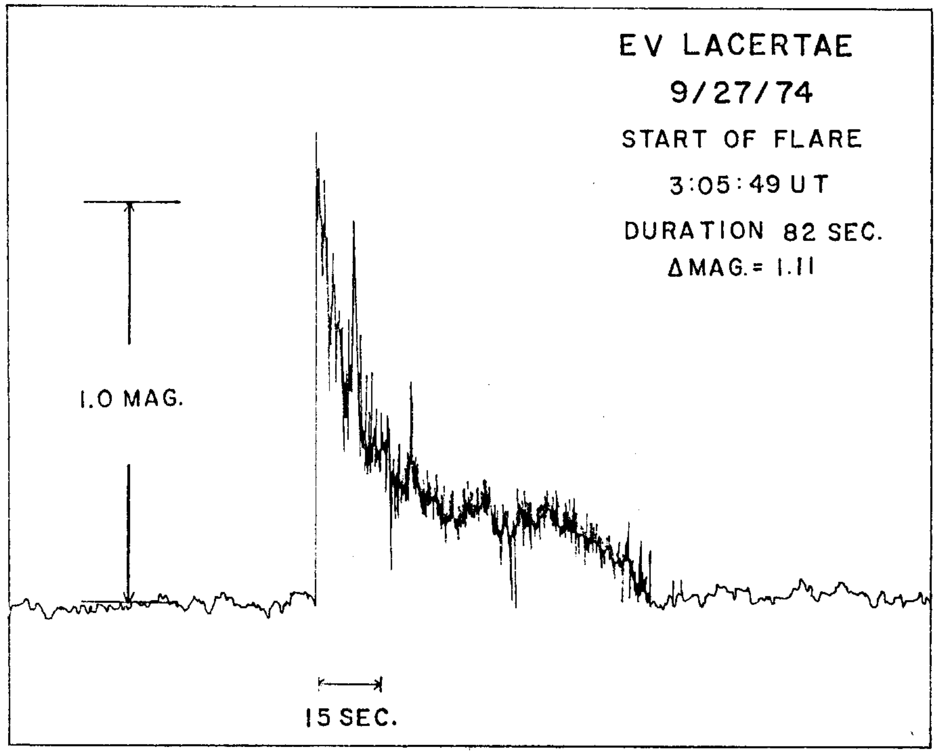
EV LACERTAE
9/27/74
START OF FLARE
3:05:49 UT
DURATION 82 SEC.
ΔMAG.= 1.11
1.0 MAG.
15 SEC.

FIGURE 1.

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Konkoly Observatory
Budapest
1975 June 23

TY Men - DETERMINATION OF NEW LIGHT ELEMENTS *

Three color differential photoelectric observations of the eclipsing variable TY Men (BV 457) were made by Austin between February 1972 and October 1974 at the Mount John University Observatory. These new observations, with scatter typically less than 0.02 magnitude (Fig.1), enabled us to refine the light elements quoted by Schöffel and Mauder (1).

The standard photoelectric reductions were made using a computer program developed by Schneider (2). A computer curve fitting technique was used to generate an improved period, from which a new epoch of symmetric primary minimum was determined. We find

$$JD_{min} = JD\ 244\ 1353.986 + 0^{d}.461667\ E$$

The residual for the epoch of minimum given by Schöffel and Mauder is 0.003 days. The evidence is insufficient for any study of a period change on these elements.

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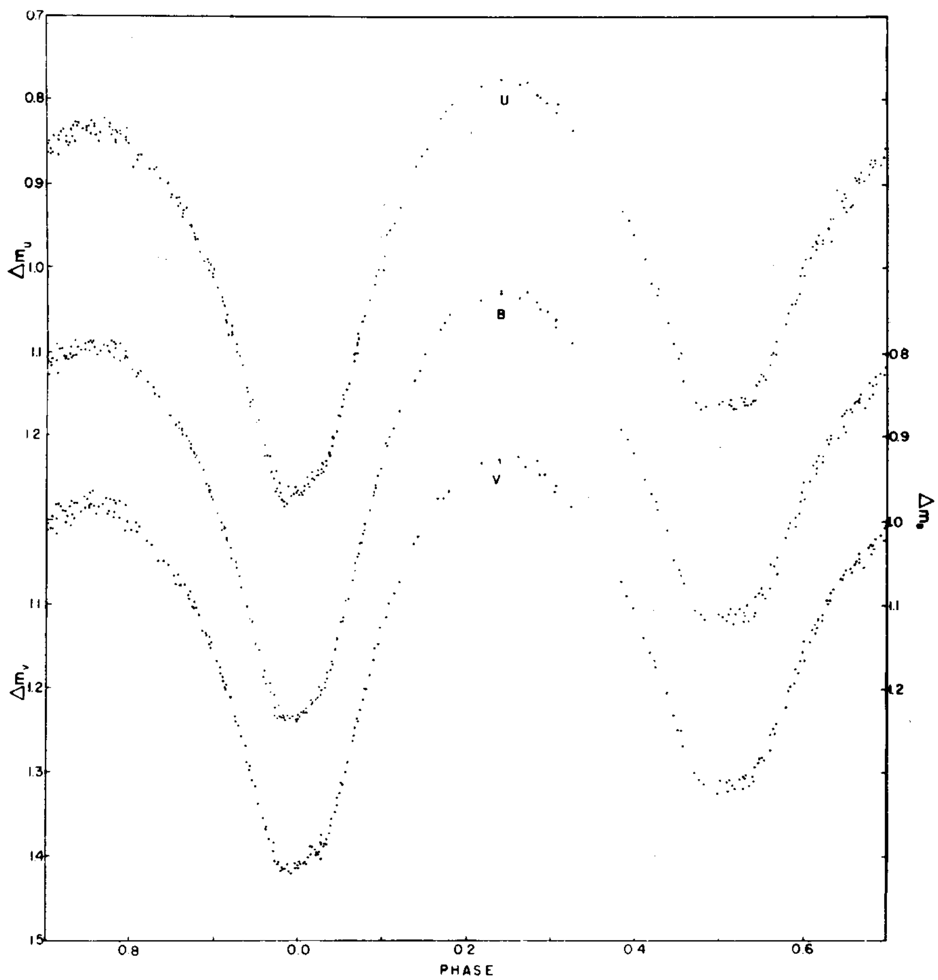
References:

(1) Schöffel, E., and Mauder, H., 1967 Veröff.Remeis-Sternw.Bamberg VII, 60

(2) Schneider, W.H., 1975, private communication

*Rosemary Hill Observatory Contribution, No. 58.

Fig. 1. UBV light curve of TY Men.



COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1014

Konkoly Observatory
Budapest
1975 July 1

1974 SPECTROPHOTOMETRY OF SIX RS CANUM VENATICORUM-TYPE BINARIES

Photoelectric spectrum scans of RS CVn, Z Her, AR Lac, LX Per, SZ Psc, and UX Ari were obtained during 1974. A preliminary analysis showed significant variations in the emission line intensities of the H and K lines of calcium and Hα (Weiler 1975). A closer inspection has now revealed a correlation between maximum emission intensity and phase in RS CVn, UX Ari, Z Her, and SZ Psc.

The phases of maximum emission for both Hα and H and K in RS CVn and UX Ari were also found to coincide with the minimum of the wave-like distortion observed in these two binaries (Catalano and Rodono 1974, Evans and Hall 1974, and Hall et al. 1975). In a paper by Hall (1972), the minimum of this wave was interpreted to be caused by large scale starspot activity on one hemisphere of the later type component in RS CVn. The current observations seem consistent with Hall's results as both Hα and H and K emission on the sun are associated with regions of sunspot activity.

At this time no definite conclusion can be drawn for Z Her, as the position of the wave of minimum during 1974 is not well known. Any light curves of this binary obtained in the period 1973 through 1975 would be most useful in fixing the position of the wave minimum and in providing a further test of the correlation observed in RS CVn and UX Ari.

In the case of SZ Psc, the problem is even more difficult, as the last reliable primary eclipse epoch was published over 17 years ago (Bakos and Heard, 1958). Bakos and Heard observed SZ Psc again in 1968, but could not rediscover primary minimum (Heard and Bakos, 1968). They did report period variation and intrinsic variation of the later type component. Before any correlations can be drawn for tha data on SZ Psc, a recent epoch is needed along with a light curve which might show a wave-like distortion outside of eclipse. Although this binary shows the same correlation between maximum emission intensity and orbital phase as the others, the position of this peak intensity cannot be reported at this time due to the lack of a recent primary eclipse epoch.

The observed phases of maximum emission intensity are listed in the table below. The phases of the wave minima for RS CVn and UX Ari were calculated for the midpoints of their respective observing seasons. Any migration of the waves during the 1974 spectrophotometric observations would be insignificant as both migration rates are relatively slow (Hall 1972, Evans and Hall 1975).

Binary	Phase of Maximum Emission	Minimum Phase of Wave
RS CVn	.30 ± .03	.39 ± .03
UX Ari	.16 ± .16	.09 ± .07
Z Her	.73 ± .01	?

The analysis of the 1974 data is continuing, and I encourage others to observe Z Her and especially SZ Psc as photometry of these two systems is needed to test the emission-wave correlation found for UX Ari and RS CVn.

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Bakos, G.A. and Heard, J.F. 1958, A.J. 63, 302

Catalano, S. and Rodono, M. 1974, P.A.S.P. 86, 390

Evans, C.R. and Hall, D.S. 1975, I.B.V.S. No. 945

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INFORMATION BULLETIN ON VARIABLE STARS
Number 1015

Konkoly Observatory
Budapest
1975 July 2

OBSERVATIONS OF THE PERIOD OF Y Leo

The eclipsing variable Y Leo was observed photographically by the writers in Bouzaréah Observatory (Algiers) with the normal astrograph (D=340 mm; F=344 cm), using ORWO ZU - 1 plates.

Twenty observations were obtained during three nights, from which a normal minimum has been determined: JD hel $2442514^{d}.4370 \pm 0^{d}.0003$. A study of minimum moments obtained by various observers in the interval JD 2418 050-2442540 suggests a sinusoidal variation of the period of Y Leo with $P_1 \approx 12400 \cdot P \approx 57\frac{1}{4}$ years, on which irregular (abrupt) variations were superposed.

The new light elements of Y Leo were obtained:

$$\text{Min I}_{hel} = \text{JD } 2433689^{d}.4726 + 1^{d}.6860807\ E + 0^{d}.0270 \sin 0^{\circ}.032258\,(E+7950).$$

If the presence of a third body in the system were the cause of the sinusoidal variation of the period, its mass should be $M_3 \approx 0.65 M_{\odot}$, assuming $M_1 = 1.6 M_{\odot}$; $M_2 = 0.55 M_{\odot}$; $i = 85^{\circ}.2$, according to the data of Svechnikov's catalogue (Publ.Ural.Univ.88, Ser.Astr. N5, 1969).

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1016

Konkoly Observatory
Budapest
1975 July 3

THREE REVISED PERIODS AND TWO NEW VARIABLE STARS

New observations on Nantucket plates have yielded periods for the five variable stars listed in the Table. Two are relatively minor revisions of periods already included in the GCVS; one is a period related by spurious-period formulae to the previously published value; and the last two are for recent discoveries by students working at the Maria Mitchell Observatory during the summer. Finder charts are given for the three in Cygnus. In each field, as an aid to identification, a BD star is marked with an A.

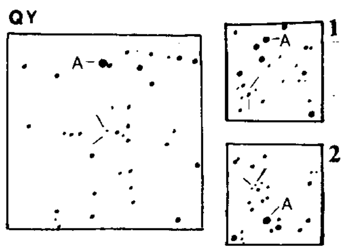
New or Revised Periods

Star	R.A.(1900) Dec.	Max pg	Min	Type	J.D.	Period Days
AB Com	$12^h13^m48^s+24^\circ12'$	15.	[17	M	42188.	194.7
CY Com	12 23 15 +25 30	15.	15.5	RR	42561.570	0.757881
QY Cyg	19 55 14 +37 22.5	14.9	15.8	Cep	42250.685	3.89188
1	19 24 34 +41 20.9	14.0	15.	EA	42309.622	3.72315
2	19 56 35 +43 25.3	14.0	14.8:	RR	41915.652	0.581147

AB Com. The published period of $201\overset{d}{.}3$ does not satisfy all of the observations acquired here, whereas $194\overset{d}{.}7$ does represent all of the Nantucket plates, three from Yale, eight scattered early Harvard plates, as well as the dates of discovery given by Hoffmeister and the epoch of maximum given in the GCVS. Although positive observations on this faint star were available for only 63 individual days, they span an interval of 93 epochs and include 12 observed maxima.

CY Com. The published period of $0\overset{d}{.}43113$ proves to be spurious. About 140 observations taken from 1964 through 1974 were equally well satisfied by a slight revision of the published period, by $0\overset{d}{.}759434$, and $0\overset{d}{.}7578801$. A long night-run of six plates obtained May 8-9. 1975, however, satisfies only the last. The various periods are inter-related through the common intervals between the observations. Most of the estimates of brightness were carried out by Sharon Beck, a student at Yale University.

QY Cyg. Some 600 Nantucket observations from 1920 to 1974 by Bonnie Buratti and D. Hoffleit indicate a moderate revision from the previously published period of $3^{d}.89175$. In the Figure the star A is BD +37°3708.



Var. 1. Discovered by Lucia Dexter in 1974, who estimated the brightness on 175 plates and obtained an approximate period of $3^{d}.72$. The period is now based on 1200 plates from J.D. 21038 to 42314, representing a span of 5715 epochs during which 35 minima were observed. The magnitudes given are only approximate. In the Figure star A is the bright variable TT Lyr, BD +41°3353.

Var. 2. Discovered by Bonnie Buratti in 1973, some 900 provisional estimates of brightness were carried out by Lucia Dexter in 1974. Her preliminary results were reported in the Journal of the A.A.V.S.O., Vol.3, p.59, 1974, where the position given inadvertently refers to another unpublished new variable star and should be corrected to the position given here. Star A in the Figure is BD +43°3442.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
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Konkoly Observatory
Budapest
1975 July 7

FLARES OBSERVED FROM UV CETI

During January 1975 the flare star UV Ceti [R.A.=$01^h37^m12^s$, Declination= $-18^o08'$ (1966.0), visual magnitude 12.9, spectral type dM5.5e] was monitored from Boyden Observatory, using the 41 cm aperture Nishimura Reflector. A Johnson B filter was used for these observations along with an uncooled EMI6256A photomultiplier tube.

The table gives details of the observations for a total monitoring time of $33^h59^m42^s$.

The level of activity over the period was very high, eight definite flares being recorded. Additionally the Table indicates others which were uncertain due to unfavourable observing conditions.

In all cases the flares showed the typical characteristic flash phase of UV Ceti type flare stars followed by a gradual decline in activity.

The flare peaking at $20^h02^m57^s$ on the 10-11th January was of particular interest in that it was confirmed visually at the Observatory.

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FLARE SUMMARY FOR UV CETI - JANUARY 1975

Date	Total hours	Rise	U.T. Max.	Ends	Comments	$\frac{I_{o+f}-I_o}{I_o}$	Air mass Max.
01-02	$1^h19^m00^s$	$20^h10^m48^s$	$20^h10^m50^s$	$20^h11^m06^s$	Noisy signal at end. Very probably a small flare	0.30 ± 0.08	1.3640
Monitoring Time: U.T.		$18^h53^m18^s$ - $20^h14^m18^s$					
02-03	$1^h38^m12^s$				No flares. Conditions windy with slight cloud		
Monitoring Time: U.T.		$19^h10^m42^s$ - $20^h40^m42^s$ 20 51 42 - 20 59 54					
03-04	$2^h15^m18^s$	$19^h47^m54^s$	$19^h47^m57^s$	$19^h48^m12^s$	Fairly noisy signal probably a precursor	0.38 ± 0.13	1.2973
		19 54 42	19 55 23	20 04 30	Flare	4.62 ± 0.16	1.3288
		19 56 12	19 56 24	-	Secondary Maximum?	0.3	1.3334
		20 25 19	20 25 30	20 26 12	Probably a flare, but noisy signal	0.27 ± 0.17	1.4877
Monitoring Time: U.T.		$19^h19^m42^s$ - $21^h35^m00^s$					
04-05	$2^h57^m00^s$				No flares		
Monitoring Time: U.T.		$19^h01^m30^s$ - $19^h13^m10^s$ 19 16 42 - 22 02 06					
05-06	$1^h08^m00^s$				No flares. Scattered cloud throughout observational period		
Monitoring Time: U.T.		$20^h10^m00^s$ - $20^h21^m06^s$ 20 31 54 - 21 17 48 21 19 06 - 21 35 36					

Date	Total hours	Rise	U.T. Max.	Ends	Comments	$\frac{I_{o+f}-I_o}{I_o}$	Air mass Max.
06-07	$3^h21^m48^s$	$20^h11^m18^s$	$20^h11^m20^s$	$20^h11^m48^s$	Possibly a flare but could be a spike. Noisy signal	0.47 ± 0.10	1.4731
		20 28 56	20 29 05	20 30 00	Flare. Dip in trace preceeds flare	0.92 ± 0.15	1.5934
Monitoring Time: U.T.		$18^h38^m24^s$ - $22^h00^m12^s$		Too windy to continue			
09-10	$3^h22^m24^s$	19 28 06	19 28 14	19 30 00	Flare	2.00 ± 0.22	1.3134
		20 15 06	20 15 12	20 16 24	This could be an electronic spike	3.22 ± 0.31	1.5779
		20 59 37	20 59 51	21 05 00	Flare. Sky brightness rising rapidly at end	2.17 ± 0.34	2.0254
Monitoring Time: U.T.		$18^h40^m24^s$ - $22^h02^m48^s$					
10-11	$3^h31^m24^s$	20 01 49	20 01 56		Complex spike	2.53 ± 0.15	1.5134
		20 02 22	20 02 40		Spike. Flat topped	4.74 ± 0.15	1.5183
		20 02 50	20 02 57		Spike. Flare visually confirmed	4.63 ± 0.15	1.5202
		20 05 24	20 06 42	20 25 00	Slow rising flare. Signal was very noisy towards end due to rise in sky brightness		1.5456
Monitoring Time: U.T.		$18^h32^m24^s$ - $22^h03^m48^s$					

Date	Total hours	Rise	U.T. Max.	Ends	Comments	$\frac{I_{o+f}-I_o}{I_o}$	Air mass Max.
11-12	$3^h23^m00^s$	$21^h20^m42^s$	$21^h20^m52^s$	$21^h21^m00^s$	Spike ?	0.67 ± 0.14	2.6147
		21 36 43	21 36 50	21 38 00	Precursor	1.17 ± 0.25	3.0620
Monitoring Time: U.T.		$18^h40^m00^s$ - $22^h03^m00^s$					
12-13	$3^h30^m42^s$	19 34 42	19 34 48	Lost in background measurements	Small slow flare?	0.19 ± 0.17	1.4001
		19 37 12	19 37 42	19 54 00	Slow flare	0.43 ± 0.20	1.4155
		21 14 24	21 14 42	Lost in noise	Slow flare	0.41 ± 0.33	2.4767
Monitoring Time: U.T.		$18^h32^m24^s$ - $22^h03^m06^s$					
15-16	$1^h20^m30^s$				Very cloudy. No flare distinguishable		
Monitoring Time: U.T.		$18^h39^m54^s$ - $20^h00^m24^s$					
16-17	$3^h02^m48^s$				Star very low in sky. No flare distinguishable above noise		
Monitoring Time: U.T.		$18^h55^m48^s$ - $21^h58^m54^s$					
18-19	$3^h09^m36^s$				No flare distinguishable above noise. Star setting at end of run. Some moon-lit clouds present		
Monitoring Time: U.T.		$18^h41^m00^s$ - $21^h50^m48^s$					

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Number 1018

Konkoly Observatory
Budapest
1975 July 7

FLARE PHOTOMETRY OF YZ CANIS MINORIS

During January 1975 the flare star YZ Canis Minoris [R.A.= 7^h42^m, declination=$3^o39'$ (1968.0), visual magnitude 11.6] was monitored at Boyden Observatory for a total time of $30^h02^m54^s$. The telescope used in this work was the 41 cm Nishimura Reflector fitted with a Johnson B filter. An uncooled EMI6256A photomultiplier tube was used as a detector.

From the following table it will be seen that there was one major flare and one minor flare. Other small flares are marked as questionable due to poor observing conditions with an ensuing noisy signal.

The flare of $\frac{I_{o+f}-I_o}{I_o}$ value = 9.06 at $22^h49^m35^s$ on the night of 10-11th January was confirmed visually.

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FLARE SUMMARY FOR YZ CMi - JANUARY 1975

Date	Total hours	Rise	Max. U.T.	Ends	Comments	$\frac{I_{o+f}-I_o}{I_o}$	Air mass Max.
03-04	$3^h18^m00^s$				No flares		
Monitoring Times: U.T.		$22^h43^m46^s$ - $22^h47^m48^s$ 23 56 30 - 02 10 18					
04-05	$3^h46^m48^s$				No flares discernable above noisy level		
Monitoring Times: U.T.		$22^h21^m00^s$ - $23^h53^m30^s$ 23 59 30 - 02 13 48					
05-06	$2^h45^m24^s$	$01^h11^m44^s$	$01^h11^m48^s$	$01^h13^m42^s$	Flare? Moonlit and some clouds	0.21 ± 0.10	1.4304
Monitoring Times: U.T.		$23^h23^m12^s$ - $00^h24^m00^s$ 00 31 00 - 02 15 48					
08-09	$1^h43^m30^s$	$00^h41^m48^s$	$00^h42^m06^s$	$00^h43^m18^s$	Slow flare? Moonlit high cloud present	0.26 ± 0.12	1.3615
		00 53 06	00 53 30	00 56 30	Flare. Moonlit high cloud present	0.32 ± 0.11	1.4035
Monitoring Time: U.T.		$00^h33^m12^s$ - $02^h16^m42^s$					
09-10	$3^h02^m54^s$	$22^h48^m24^s$	$22^h48^m54^s$	$22^h51^m00^s$	Could be a slow flare but noisy signal	0.17 ± 0.14	1.1857
		23 02 24	23 02 42	23 04 00	Could be a slow small flare but very doubtful	0.1 ± 0.1	1.1900
Monitoring Times: U.T.		$22^h20^m30^s$ - $00^h07^m24^s$ 00 12 36 - 00 47 12 00 56 48 - 02 18 12					

FLARE SUMMARY FOR YZ CMi - JANUARY 1975 cont.

Date	Total hours	Rise	Max. U.T.	Ends	Comments	$\frac{I_{o+f}-I_o}{I_o}$	Air mass Max.
10-11	$3^h56^m54^s$	$22^h47^m54^s$	$22^h49^m35^s$	$00^h54^m00^s$	Flare visually confirmed	9.06 ± 0.19	1.1866
Monitoring Times: U.T.		$22^h18^m48^s$ - $01^h06^m54^s$ 01 12 06 - 02 20 54					
11-12	$4^h00^m18^s$	$00^h02^m36^s$	$00^h02^m58^s$	$00^h18^m30^s$	Flare	1.11 ± 0.12	1.2925
Monitoring Times: U.T.		$22^h14^m36^s$ - $22^h44^m00^s$ 22 48 12 - 02 19 06					
12-13	$3^h19^m00^s$	$23^h49^m18^s$	$23^h49^m25^s$	$23^h49^m42^s$	Possibly a small flare, preceeded by a slight dip in trace	0.18 ± 0.07	1.2618
Monitoring Times: U.T.		$22^h14^m24^s$ - $22^h47^m06^s$ 22 53 48 - 01 40 06					
16-17	$4^h10^m06^s$				Nothing clearly greater than noise and sky variations Atmosphere was dusty		
Monitoring Time: U.T.		$22^h14^m30^s$ - $02^h24^m24^s$					

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Number 1019

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Budapest
1975 July 8

PHOTOELECTRIC TIMES OF MINIMA OF RZ CAS

Photoelectric observations of RZ Cassiopeiae were made in 1973 and 1974 with the 16-inch Boller and Chivens f/18 Cassegrain telescope operated by the University of Montana's Department of Physics and Astronomy on the 6500-foot peak of Blue Mountain near Missoula, Montana. The telescope is equipped with a Johnson-type single-channel photometer containing an EMI 6256B photomultiplier behind a Corning 3384 V-band filter. The photomultiplier signal is fed through a DC amplifier to a voltage-to-frequency converter, whose output is integrated by an electronic counter for ten seconds.

The stars SAO 12386 and HR 791 were used as the comparison and check stars, respectively. Each observation consisted of three ten-second integrations. Observations were made at the rate of about one per minute in the vicinity of minimum light. The heliocentric times of the observed minima determined by the chord bisection method are given in the table, along with the epoch numbers E, the O-C values computed from the GCVS(1969) ephemeris, and the duration of constant light (to $\pm 0\overset{m}{.}003$) during minimum light.

Hel. JD of Minimum	E	O-C	Duration of constant light
2,441,954.8561	4025	$-0\overset{d}{.}0025$	7 minutes
2,442,339.7265	4347	$-0\overset{d}{.}0017$	8 minutes

Further observations of this system are planned in conjunction with a dynamical analysis of the O-C curve. A preliminary analysis supports the hypothesis that RZ Cas has two dark companions with orbital revolution periods of about 23 years and 105 years (1975).

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PHOTOELECTRIC OBSERVATIONS OF THE STAR UV Cet IN 1972

Continuous photoelectric monitoring of the flare star UV Cet has been carried out at the Stephanion Observatory ($\lambda = -22^{\circ}49'44''$, $\phi = +37^{\circ}45'15''$) during the period of cooperative optical observations of this star proposed by the IAU Working Group on Flare Stars i.e. October 1-15, 1972 (Chugainov, 1971) using the 30-inch Cassegrain reflector of the Department of Geodetic Astronomy, University of Thessaloniki. Observations have been made with a Johnson dual channel photoelectric photometer in the B colour of the international UBV system. The telescope and photometer will be described elsewhere. Here we mention only that the transformation of our instrumental ubv system to the international UBV system is given by the following equations:

$$V = v_o + 0.018(b-v)_o + 1.788,$$
$$B-V = 0.814 + 0.930(b-v)_o,$$
$$U-B = -0.951 + 0.864(u-b)_o.$$

The monitoring intervals in UT as well as the total monitoring time for each night are given in Table I. Any interruption of more than one minute has been noted. In the fourth column of Table I the standard deviation of random noice fluctuation $\sigma(\text{mag}) = 2.5\log(I_o+\sigma)/I_o$ for different times (UT) of the corresponding monitoring interval is given.

During the 10.61 hours of monitoring time 7 flares were observed the characteristics of which are given in Table II. For each flare following characteristics (Andrews et al. 1969) are given: a) the date and universal time of flare maximum, b) the duration before and after maximum (t_b and t_a, respectively) as well as the total duration of the flare, c) the value of the ratio $(I_f-I_o)/I_o$ corresponding to flare maximum, where I_o is the intensity deflection less sky background of the quiet star and I_f is the total intensity deflection less sky background of the plus flare, d) the integrated intensity of the flare over its total duration, including pre-flares, if present, $P=\int(I_f-I_o)/I_o dt$,

e) the increase of the apparent magnitude of the star at flare maximum $\Delta m(b) = 2.5 \log(I_f/I_o)$, where b is the blue magnitude of the star in our instrumental system, f) the standard deviation of random noice fluctuation $\sigma(mag) = 2.5 \log(I_o+\sigma)/I_o$ during the quiet-state phase immediately preceding the beginning of the flare and g) the air mass at flare maximum. The light curves of the observed flares in the b colour are shown in Figs. 1-4.

Following remarks should be added:

1) The characteristics of flare No.5 given in Table II refer to the v colour instead of the b, because this flare occurred when the v magnitude of the star was measured. For the same reason the value of σ(mag) given for this flare in Table II is smaller than the values of σ(mag) given in Table I for the corresponding monitoring interval which also refer to the b colour.

2) Flare No. 7 has been also observed by B. Lovell using the Mk 1A radio telescope at Jodrell Bank working on a frequency of 408MHz. A joint discussion of both the radio and optical observations for this flare has been published already (Lovell et al. 1974).

3) During the time interval October 7, 1972 UT = $00^h50^m10^s$-$00^h50^m41^s$ an interruption of the monitoring at Stephanion was made, in order to check the position of the star in the field of view of the telescope. For this reason no confirmation of the small flare observed by Cristaldi and Rodono (1973) at October 7, 1972 UT = $00^h50^m39^s$ can be made.

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Lovell, B., Mavridis, L.N., Contadakis, M.E.: 1974, Nature 250, 124

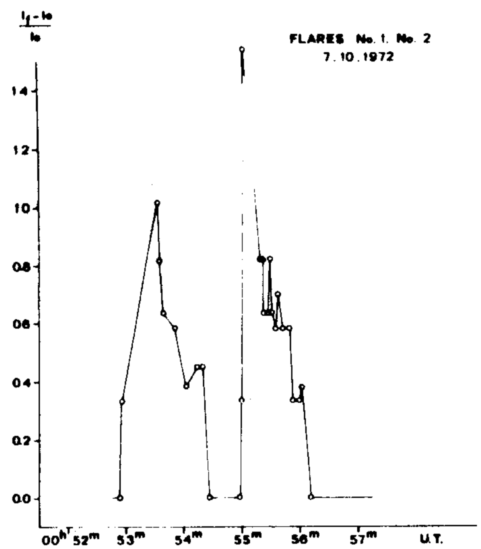
Table I

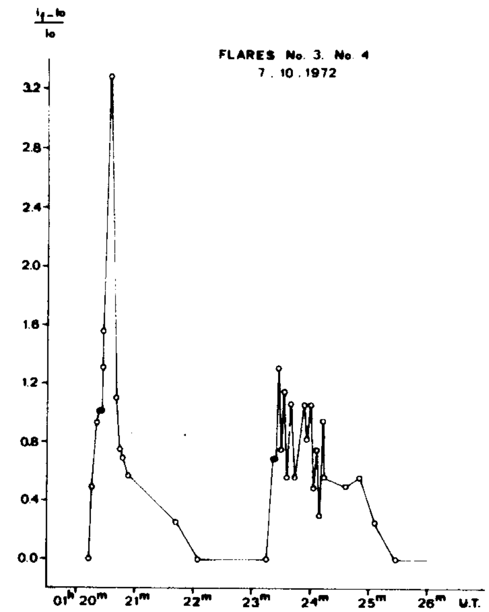
Date 1972 Oct.	Monitoring interval (U.T)	Total Monitoring Time	σ(U.T)
4	21^h31^m-21^h35^m, 2137-2147,2150-2158,	0^h55^m	0.11(21^h35^m)
	2200-2232.		0.13(22^h22^m)
6-7	2121-2132,2133-2148,2150-2208,		0.14(21^h25^m)
	2209-2229,2231-2247,2250-2309		0.11(22^h00^m),0.11 (22^h35^m)
	2320-2348,2349-0019,0021-0100,		
	0102-0116,0117-0131,0133-0146		0.13(24^h00^m),0.10(00^h30^m)
	0149-0202,0204-0213,0216-0224	4^h27^m	0.12(00^h55^m),0.11(01^h20^m)
			0.18(01^h58^m),0.27(2^h21^m)
10-11	2049-2102,2103-2125,2126-2131,2133-2150		0.14(20^h50^m),0.13(21^h30^m)
	2151-2206,2207-2222,2223-2243,2249-2302		0.12(22^h00^m),0.12(22^h30^m)
	2342-2348,0010-0022,0024-0034.	2^h28^m	0.10(23^h00^m),0.08(23^h40^m)
			0.12(00^h24^m)
11-12	2118-2128,2130-2136,2138-2232,2234-2243,		0.11(21^h20^m),0.14(22^h00^m)
	2244-2257,0049-0100,0103-0135.	2^h24^m	0.14(22^h45^m),0.14(00^h52^m)
			0.14(01^h23^m)
12	2320-2332,2335-2346	0^h23^m	0.10(21^h25^m).
	Total	$10^h\ 37^m$	

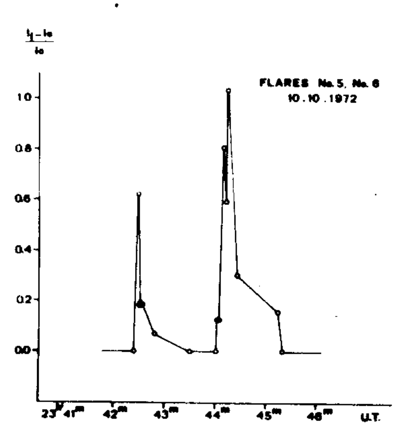
Table II

Characteristics of the Flares Observed

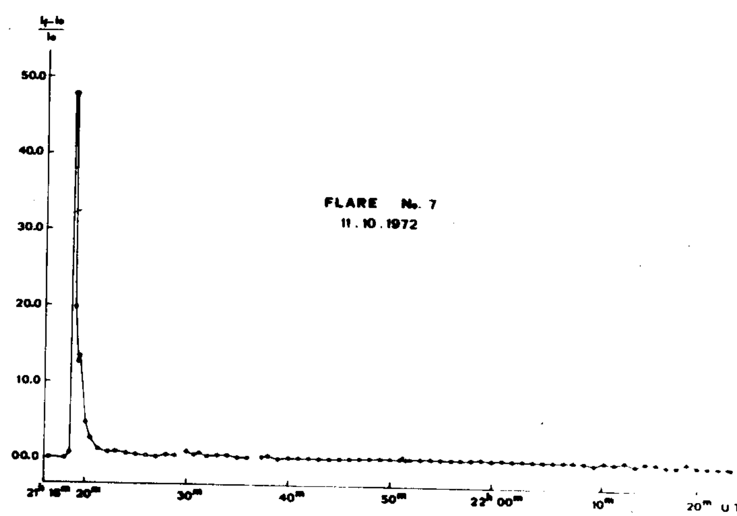
Flare No.	Date 1972 Oct.	U.T. max.	t_b min.	t_a min.	Duration min.	$(I_f-I_o)/I_o$ max.	P min.	Δm mag	σ mag	Air mass.
1	7	$00^h53^m32^s.4$	0.64	0.80	1.44	1.02	0.65	0.76	0.12	2.10
2	7	00 55 1.0	0.08	1.14	1.22	1.53	0.59	1.01	0.12	2.10
3	7	01 20 32.8	0.32	1.58	1.90	3.28	1.57	1.58	0.11	2.32
4	7	01 23 27.0	0.20	2.00	2.20	1.30	0.90	1.33	0.11	2.33
5	10	23 42 27.0	0.05	1.00	1.05	0.62	0.05	0.53	0.07	1.85
6	10	23 44 13.3	0.16	1.08	1.24	1.03	0.46	0.77	0.08	1.85
7	11	21 18 53.3	0.67	65.11	65.78	>47.78	>29.46	>4.55	0.11	1.95


FLARES No. 1. No. 2
7. 10. 1972
$\frac{I_f - I_o}{I_o}$
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
$00^h\ 52^m$
53^m
54^m
55^m
56^m
57^m
U.T.


FLARES No. 3. No. 4
7. 10. 1972
$\frac{I_f - I_o}{I_o}$
3.2
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0.0
$01^h\ 20^m$
21^m
22^m
23^m
24^m
25^m
26^m
U.T.



FLARES No. 5, No. 6
10.10.1972
$\frac{I_f - I_o}{I_o}$
1.0
0.8
0.6
0.4
0.2
0.0
23h 41m
42m
43m
44m
45m
46m
U.T.



FLARE No. 7
11.10.1972
$\frac{I_f - I_o}{I_o}$
50.0
40.0
30.0
20.0
10.0
00.0
21h 18m
20m
30m
40m
50m
22h 00m
10m
20m
U T

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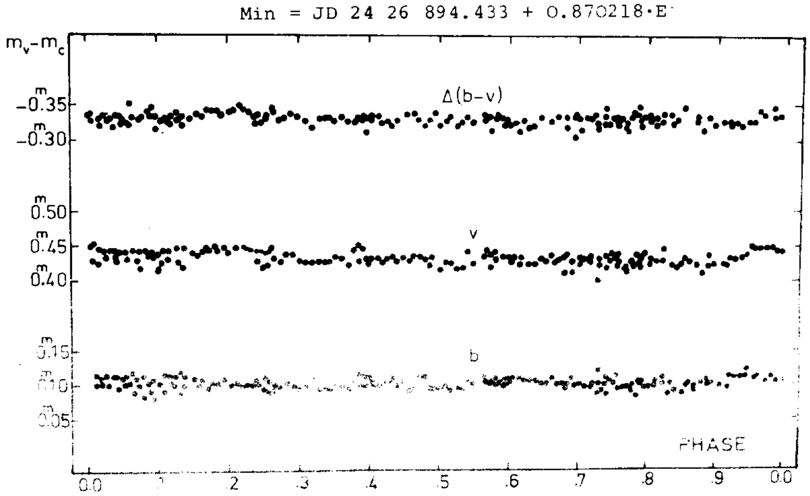
ABOUT THE VARIABILITY OF THE ECLIPSING VARIABLE STAR NQ HERCULIS

The eclipsing variable star NQ Her was observed photoelectrically from May to July in 1972, for 8 nights in blue and yellow light. The observations were made with the 48 cm Cassegrain telescope of Ege University Observatory. The telescope was equipped with an unrefrigerated 1P21 photomultiplier and with the b and v filters which are close to the standard UBV system.

BD+18°3580 ($7^{m}_{.}9$, A0) was used as a comparison star. During the observational period the magnitude differences, between the variable and comparison star, did not show any variability either with the period of $0^{d}_{.}870218$ or with the period of $20^{d}_{.}815$. The individual observations are plotted against the phases in Figure 1. The phases were computed with the elements of General Catalogue of Variable Stars (1970):

$$\text{Min} = \text{JD } 24\ 26\ 894.433 + 0.870218 \cdot E$$



The individual blue and yellow observations and colour of NQ Her.

It is clearly seen that there is no any variability in the brightness of NQ Her and our observations confirm the results obtained by Popovici (1971) and Blanco (1971).

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Blanco, C. 1971, ibid No. 571

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Budapest
1975 July 23

MINIMA OF THE ECLIPSING VARIABLE U SAGITTAE

Three heliocentric times of minimum light of the eclipsing variable U Sagittae have been observed in the ubvy photometric system in the years 1972-1973. BD+19°3976 (7.9,A0) was employed as the comparison star. The observed epochs of minimum light were obtained by "folding" the photometric observations on the descending branch onto the observations of the ascending branch of the light curve. The observations normally covered about half the light curve of primary minimum (i.e., halfway between first and second contact to halfway between third and fourth contact).

The following table lists the observed minima:

Minima (hel.) vby	Minima (hel.) u	$T_u - T_{vby}$
JD 2441514.8172	JD 2441514.8179	+0.0007
1896.8270	1896.8274	+0.0004
2207.8444	2207.8447	+0.0003

Column one lists the average minima observed in the violet, blue, and yellow filters (vby). In all these minima the times of minimum determined from observations in the three colours were in good agreement. A typical residual is $\pm 0\overset{d}{.}0001$. The light minima observed in the ultraviolet (u), however, were always found to occur later (column two). The differences between the time of the observed minimum in the ultraviolet (T_u) and the mean time observed in the other three colours (T_{vby}) are given in the last column. The average difference, $0\overset{d}{.}0005$, corresponds to a delay of about 43 seconds. Although this time delay is small, we are confident that it is real because the c_1 index ($c_1=(u-v)-(b-v)$), which involves the u observations, exhibits a different behaviour at second contact compared to third contact. This difference is not observed in the m_1 index ($m_1=(v-b)-(b-v)$) which does not include the u magnitude in its definition. There appears to be more ultraviolet light on the descending branch of the light curve than on the ascending branch at comparable phases (as determined from the observed time of minimum from the visual, blue, and violet observations).

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A CRITICAL REMARK ABOUT THE DETERMINATION OF MINIMUM TIMES

While investigating the period changes of the W UMa star 44i Boo, I looked through more than 25 years of photoelectric minimum time determinations. A closer inspection of the material revealed an increasing scatter in the more recent O-C data, and it seems very likely that this effect is not an intrinsic property of the star, whose small amplitude ($\Delta m \approx 0^m.15$) makes it a difficult object, but originates from a changing approach on the observer's part.

Fig. 1 illustrates this effect. The data have been compiled from various sources (Schneller 1965, Svechnikov and Surkova 1973, IBVS 530, 647, 789, 884, and 937). The following light elements, which satisfy the observations very well, have been used for the determination of the O-C values:

2438513.4166 + 0.2678143 • E (1947 - 1967) (Pohl 1967)
2439852.4903 + 0.2678159 • E (1968 - 1973)

Each point of the diagram gives the standard deviation, derived from five O-C values, which are so closely spaced that the period variation during this time interval can be neglected. Around 1964, the scatter of the data increased from about 0.0009 to 0.0022 days.

A possible explanation of this general trend is, that the early observers were interested in the complete light curve and measured always large parts of it, while the more recent observations are "only" used for minimum time determinations, with probably short observing runs and only a few data points for each minimum.

The accuracy of $0^d.0022$ equals that of a visually determined minimum time of a typical Algol variable (Duerbeck 1975), and Herczeg and Frieboes-Conde (1974) have shown that this accuracy is not sufficient to draw any conclusion about the character of the period changes.

I therefore strongly request that the observers of minimum times
1. increase the accuracy by using more observations, and
2. apply methods for the determination of minimum times which include the derivation of errors (e.g., Kwee and van Woerden 1956, Breinhorst et al. 1973), so that the compiler can judge the quality of the material.

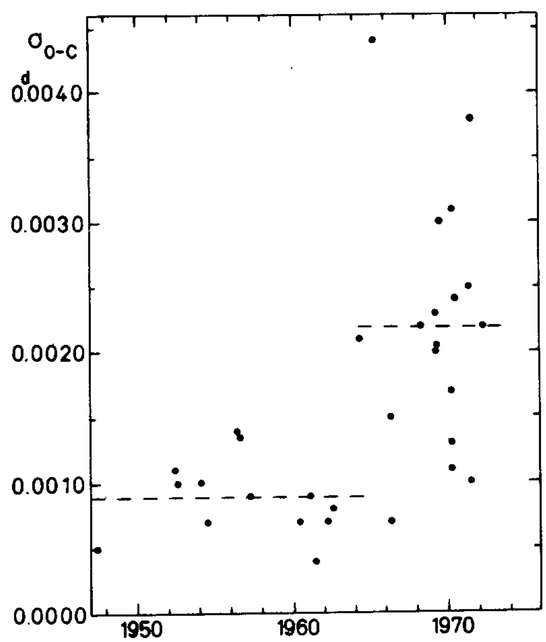

Fig. 1. Standard deviation of the O-C values of 44i Boo.

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H β-PHOTOMETRY OF HR 8024 AND HR 8102

HR 8012 (1900 : $\alpha = 21^h6^m.2$; $\delta = -14^\circ53'$) was classified by Cowley et al. (1969) as a suspected δ Del-type variable. In order to investigate the possible variability of this star, it was observed extensively at the Mt. John University Observatory, Lake Tekapo, N.Z. in 1972 and at the Kitt Peak National Observatory in 1973 on the uvby system. Because of the close proximity of this star to HR 8024 ($\alpha = 20^h53^m.2$; $\delta = -14^\circ52'$; FO IV), the latter was also included on our observing program. Both stars are now identified as short period variables with amplitudes of the order of $0^m.1$ and periods less than 3 hours according to our preliminary reductions. Extensive uvby analyses of these stars are presently being pursued.

Photoelectric H β observations of these stars were collected on September 4, 1973 using the No. 4 40-cm telescope of Kitt Peak National Observatory. A 1P21 photomultiplier tube and H β filters nos. 493 and 494 were used in this investigation. SAO 164013 (1950: $\alpha = 20^h54^m.9$; $\delta = -16^\circ13'.5$; A3) was used as a comparison star. The observations were obtained according to the following routine. Three 10-second integrations were obtained for each narrow- and wide-band filter and two 10-second integrations of background were recorded with each filter. The H β index thus obtained was put on the standard system using 10 A/F standards from Crawford and Mander (1966). For the variables the probable error for one β -index is $\pm 0^m.003$. The mean H β index computed for SAO 164013 is 2.855 $\pm$0.002.

Table 1 gives the observational data on the standard H β system for both stars. The first column lists the U.T. of observation and columns 2 and 3 give the H β indices for HR 8024 and HR 8102, respectively. The H β indices show peak-to-peak scatters of

$0^m.015$ for HR 8024 and $0^m.020$ for HR 8102 and thus there are no H β index variations comparable to those observed in uvby photometry. No periodic variations were noticed during the whole observing run which lasted nearly two pulsation cycles. Average β - indices of 2.799 ± 0.003 and 2.757 ± 0.004 were derived for HR 8024 and HR 8102, respectively. For A/F stars the β index may be a more reliable and useful temperature indicator than is the (b-y) index. Our results suggest that there may be no large temperature variations for these stars during the pulsational cycles or that the stars could have been quiescent at the time of observation. At the present time, the former conclusion seems more likely. The absolute visual magnitudes of these stars were computed using the calibrations given by Crawford (1975) and have yielded M_V = + 1.85 for each of these stars. The absolute visual magnitudes thus derived and the preliminary periods identifies these stars as members of the normal δ -Scuti group according to the classification given by Dworak and Zieba (1975).

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Table I. H β OBSERVATIONS OF HR 8024 AND HR 8102

	U.T. (non-hel.)	HR 8024	HR 8102
1973 Sept. 4.	01^h51^m	2.805	
	56		2,776
	02 08	2.814	
	12		2.760
	16	2.798	
	20		2.764
	28	2.800	
	30		2.747
	35	2.817	
	43		2.749
	52	2.816	
	57		2.775
	03 01	2.800	
	04		2.758
	14	2.804	
	18		2.776
	21	2.800	
	25		2.752
	34	2.801	
	37		2.771
	41	2.782	
	45		2.764
	57	2.809	
	04 01		2.754
	05	2.782	
	09		2.762
	17	2.800	
	21		2.752
	25	2.795	
	30		2.749
	37	2.803	
	41		2.753
	46	2.792	
	51		2.761
	05 00	2.815	
	03		2.743
	08	2.786	
	12		2.754
	19	2.797	
	23		2.751
	27	2.821	
	32		2.754
	44	2.787	
	49		2.752

Table 1 (cont.)

U.T. (non-hel.)	HR 8024	HR 8102
05^h53^m	2.792	
56		2.746
06 04	2.801	
09		2.738
14	2.801	
18		2.754
25	2.796	
30		2.752
34	2.780	
38		2.752
49	2.788	
06 53		2.763

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS

Number 1025

Konkoly Observatory
Budapest
1975 July 31

ON THE VARIABILITY OF θ^1 Ori A

The announcement of E. Lohse in the Information Bulletin No. 988 of the variability of θ^1 Ori A resulted in a search for observed minima among the material of multiple exposure plates taken of θ^1 Orionis between 1959 and 1965 with the visual refractors of the Dearborn, Lowell and U.S. Naval Observatories. The plates were taken for the purpose of determining the relative positions of the four components of the Trapezium.

Plates taken within 2 days of the minima as determined from the Lohse period of 196.25 $\pm$0.1 days were examined for possible observations of such events. Among these plates 2 Flagstaff plates taken by O. Franz on 21 October 1959 showed the star in question diminished in brightness by 0.7 magnitude at $10^h\ 58^m$ UT. The first plate was taken with an objective grating providing a magnitude difference of two between central image and first order spectra, allowing fairly close estimate of a ΔV = 2.2 between components A and C. The second plate, taken without a grating at $11^h\ 18^m$ UT., shows component A even fainter, making ΔV = 2.5.

The MJD for this observation is $36862^d.470$ while the MJD for Lohse's observation on 11 October 1973 is 41966.229, assuming a UT of $5^h\ 30^m$ for ΔV = 2.5 on his light curve. On the basis of these data, we obtain a period of 196.298$\pm$0.002 days, based upon an estimated uncertainty in the Flagstaff ΔV value.

A plate taken at the Dearborn Observatory on 2 March 1954 might have covered the secondary minimum based upon the Lohse period. No decrease in magnitude was observed and the revised period makes that event occur 1.8 days earlier.

On the basis of the period derived here the next eclipse minimum will take place on 1975 Dec. 5.484 ($11^h 37^m$ UT), beginning approximately 12 hours earlier if the duration of the minimum is 24 hours.

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References:

K. Aa. Strand 1954, Dearborn Observatory Annuals, 7, Part 2.
K. Aa. Strand 1969, Publ. U.S. Naval Observatory, 18, Part 5.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS

Number 1026

Konkoly Observatory
Budapest
1975 August 1

SPECTROSCOPIC OBSERVATIONS OF NOVA SCUTI 1975

Nova Scuti 1975 was observed on July 9.0 and 10.0, 1975 with the 340/500/1375 mm Schmidt telescope of the Hoher List Observatory. The spectrograms were obtained on Kodak 127-05 plates and have dispersions of 645 Å/mm at Hγ and 2200 Å/mm at Hα. Tracings of the spectra together with line identifications are shown in Fig. 1. Some uncertainty in line identification occurred around Hε where it is possible that the broad blend includes N III 3999,4004.

An additional Kodak I-N plate taken on July 15.0, 1975 shows the following emissions in the infrared region: He I 7281; [O II] 7219,30; O I 7772-75; N I 8185-8242; O I 8446,47; N I 8680-8747.

On the above dates the nova seems to be well within the "4640" stage - Q6, according to Vorontsov-Velyaminov - and thus about 3 magnitudes below maximum. Though the object was obviously discovered after maximum it must still be classified as a very fast nova, a finding which is supported by the high Balmer line velocities, averaging -2300 km·sec^{-1}, as obtained from the low-dispersion spectrograms. The lower than average velocity of H8 is explained as resulting predominantly from the He I 3889 absorption, which seems to be very strong and - as always - indicative of an extended atmosphere.

Lines Hβ to H 10 have two emission peaks. A higher dispersion spectrogram (88 Å/mm) of Nova Scuti obtained on June 26.9, 1975 shows a detailed structure of Hα. The violet edge corresponds to a velocity of -600 km·sec^{-1}, the center to +240 km·sec^{-1}, a strong red peak to +720 km·sec^{-1} and the red edge to +1180 km·sec^{-1}. The observed double structures of Hβ to H 10 on the low-dispersion spectrograms obtained on July 9.0 and 10.0, 1975 suggest a reversal of the R/V intensities resulting in a markedly stronger violet peak. The mean separation of the two peaks of 910 km·sec^{-1} measured on the low-dispersion spectrograms is in good agreement with the above assumption.

The very hight velocity derived from the absorption attributed to N III 4640 may be erroneous. We hope that this value as well as the other statements made in this communication can be verified (or rejected) by other observers on the basis of high-dispersion spectrograms, since all measurements and interpretations made from such low-dispersion spectrograms carry some degree of uncertainty. Should the results be verified will this be another indication of the great usefulness of low-dispersion spectrograms, a finding which is expected on account of other work of the Bonn observatory carried out at very low dispersions.

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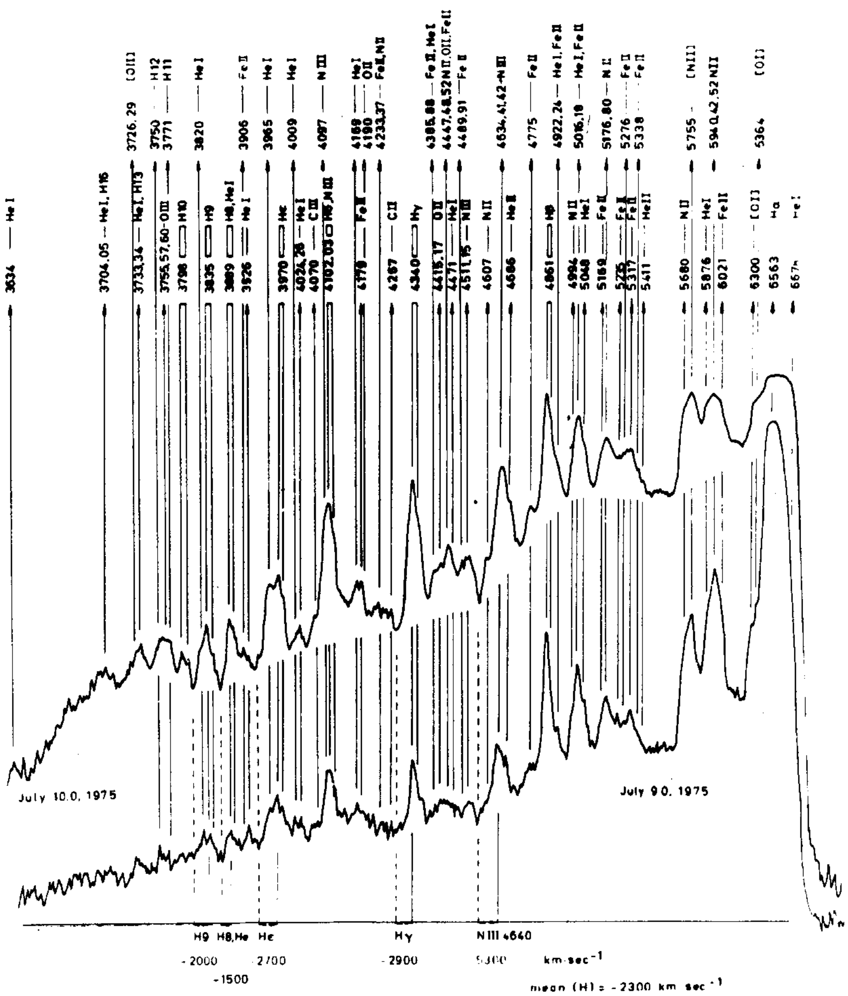

Fig.1. Spectral tracings of Nova Scuti 1975.

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Number 1027

Konkoly Observatory
Budapest
1975 August 4

PHOTOELECTRIC OBSERVATIONS OF UV Cas

The variability of UV Cas (26.1913) was first detected by D'Esterre (1913) who gave photographic magnitudes of $12^{m}.3$ at maximum and $16^{m}.5$ at minimum light of the star. According to these observations Ludendorf (1919) included UV Cas in a list of R CrB stars. Gitz (1935) using plates taken from 1896 to 1907 and from 1933 to the beginning of 1935 obtained a $13^{m}.4$ (mpg) minimum and a nearly constant $11^{m}.8$ maximum. Payne-Gaposchkin and Gaposchkin (1938) questioned Lunderdorf's classification and placed the star in the doubtful R CrB stars list. Floria (1946) quoted the maximum from Gitz and the minimum from D'Esterre. Petit's (1960) visual observations (32 points during 706 days) show a constant brightness of $10^{m}.8$. Weber (1966) observed UV Cas from 1945 to 1959 and from 1964 to 1965; his results show a steady light curve at about 11.7 mpg with a maximum of $11^{m}.4$ (in 1964, one night) and a minimum of $12^{m}.0$ (in 1956 one night; in 1958 two successive nights). Isles (1973) communicated three visual estimates of 10.9, 11.2, 11.5 mv.

The plot in Figure 1 shows all observations mentioned above.

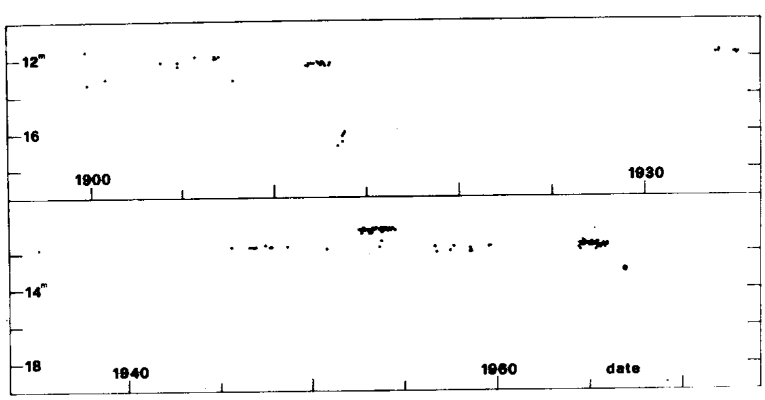

Fig. 1

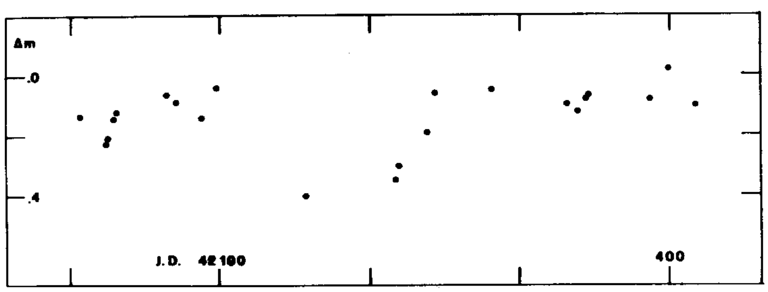

Fig. 2

J.D. 2442000+	Δm	J.D. 2442000+	Δm	J.D. 2442000+	Δm
006	.13	087	.14	281	.05
022	.22	097	.04	331	.10
023	.21	157	.40	338	.12
028	.14	217	.35	344	.08
030	.12	219	.30	345	.09
064	.06	238	.19	386	.08
070	.09	243	.06	399	-.02
				417	.10

Photoelectric observations in V light, from November 1973 to January 1975, carried out using the 40 cm refractor of the Teramo Observatory are given in Figure 2 and in the Table; a 0.4 magn. deep minimum occurred in April 19, 1974.

Finding chart (from Weber) with comparison (a) and check (b) stars is given in Figure 3.

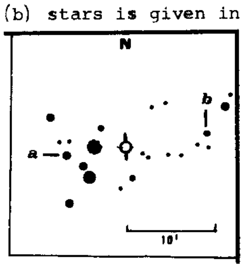

Fig. 3

Some doubts about the classification of UV Cas as R CrB star arise analizing the data; during 69 years of observations only one deep minimum (based on 4 nights in 1913) is known. Spectroscopic observations are necessary to classify this star properly.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1028

Konkoly Observatory
Budapest
1975 August 5

PHOTOELECTRIC MINIMA OF ER Ori AND AW Cam

Four minima of two eclipsing binaries are listed in the following table.

	J.D. hel. (2400000.+)	m.e.	N	E	(O-C)
ER Ori	41990.54294	±0^{d}00003	29	12947.0	-0^{d}0136
AW Cam	41990.4479	.0001	31	4216.0	- .0032
	42344.4962	.0002	33	4675.0	- .0032
	42417.3887	.0001	24	4769.5	- .0030

The photoelectric observations in V light were carried out by the 40 cm refractor of the Teramo Observatory. The heliocentric times of the minima and the mean errors were obtained by the Kwee-Van Woerden method. The secondary minimum of AW Cam was computed by the Chiara method (Guarnieri, 1975). The number of observations (N) is given in the fourth column.
The comparison and check stars of ER Ori are BD - 8°1051 and BD - 8°1056, respectively, while the comparison star of AW Cam is BD + 70°419.
(O-C) 's were computed with the elements of "1975 Rocznik Astronomiczny" for ER Ori and with the elements of Tempesti (1967) for AW Cam.

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References:
Guarnieri, A., 1975, private communication
Tempesti, P., 1967 Mem.Soc.Astron.Ital., 38, 1

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1029

Konkoly Observatory
Budapest
1975 August 7

PHOTOELECTRIC PHOTOMETRY OF WY CANCRI

WY Cancri was discovered to be variable by Hoffmeister in 1948 and recognized as an Algol-type eclipsing binary by Kippenhahn in 1953. Chambliss (Astron.J. vol.70, p. 741, 1965) published the first photoelectric investigation of this system. When his observations, which were made in 1964-65, were combined with earlier ones the following ephemeris was obtained:

$$\text{Hel. Min I} = \text{JD } 2426352.3895 + 0^{\text{d}}.82937122 \cdot E$$
$$\pm 22 \qquad \pm 16 \text{ p.e.}$$

Subsequently Ahnert (MVS Sonneberg vol. 6, p. 107, 1973) obtained a similar ephemeris and noted that the period of WY Cancri has remained constant for the past 40 years.

In January, 1975 the author obtained one additional time of minimum light using a 16-inch telescope at Kitt Peak National Observatory . When this time is combined with those previously published, the following ephemeris is obtained:

$$\text{Hel. Min I} = \text{JD } 2426352.3888 + 0^{\text{d}}.82937126 \cdot E$$
$$\pm 17 \qquad \pm 11 \text{ p.e.}$$

This ephemeris is essentially identical with the one previously given as the differences between them are much smaller than their respective probable errors.

Observed times of minimum light of WY Cancri are listed in the following table. Observations made on the same night have been averaged.

Hel. JD	E	Method	Wt.	O-C
2426352.392	0	pg	1	$+0^{\text{d}}.0032$
396.352	53	pg	1	+0.0066
608.644	309	pg	1	-0.0205
7898.341	1864	pg	1	+0.0042
8607.463	2719	pg	1	+0.0138
8622.377	2737	pg	1	-0.0009
2436612.534	12371	pg	1	-0.0066
7346.533	13256	v	3	-0.0012
352.341	13263	v	3	+0.0012
356.485	13268	v	3	-0.0017
366.439	13280	v	3	-0.0001
376.393	13292	v	3	+0.0014
667.504	13643	v	1	+0.0031

Hel. JD	E	Method	Wt.	O-C
2437707.310	13691	v	1	$-0^d.0007$
731.362	13720	v	1	-0.0005
8091.309	14154	v	1	-0.0006
739.8779	14936	pe	10	0.0000
788.8111	14995	pe	10	+0.0003
794.6169	15002	pe	10	+0.0005
847.6959	15066	pe	10	-0.0003
854.325	15074	v	1	-0.0062
9223.401	15519	v	1	-0.0004
238.314	15537	v	1	-0.0160
490.461	15841	v	1	+0.0021
932.518	16374	v	1	+0.0042
2440988.308	17647	v	1	+0.0046
1041.384	17711	v	1	+0.0008
1055.484	17728	v	1	+0.0015
1765.4225	18584	pg	3	-0.0018
2433.8985	19390	pe	10	+0.0010

The star BD + 27°1701 was used as a comparison, while BD + 28°1672 was used as a check star. The magnitudes and colors obtained for these stars are as follows:

	V	B-V	U-B
WY Cancri (max.)	9.51	+0.72	+0.17
WY Cancri (pri.)	10.14	+0.79	+0.23
BD + 27°1701	10.00	+0.64	+0.15
BD + 28°1672	9.61	+0.98	+0.88

The depths of the primary minimum are $0^m.63$, $0^m.70$ and $0^m.76$ in yellow, blue, and ultraviolet,respectively.

A faint star is observed about 20"N of WY Cancri. The approximate magnitudes and colors of this star are V = 12.8, B-V = + 0.6,and U-B = +0.1. The colors and magnitudes given for WY Cancri exclude any contribution from this star, but all of the observations made by this investigator in 1964-65 include it as a 72" diaphragm was used at that time.

Additional U,B,V photoelectric observations of WY Cancri are planned.

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INFORMATION BULLETIN ON VARIABLE STARS
Number 1030

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Budapest
1975 August 7

REVISED ELEMENTS OF ECLIPSING STARS

WW Cancri:	Min.J.D. 242 7133.459 + $1^{d}.1159843 \cdot E$ Observations from 1933 to 1974, period constant.
EG Cephei:	Min.J.D. 243 7821.865 + $0^{d}.5446215 \cdot E$ Precise observations only since 1963.
V 477 Cygni:	Min.J.D. 243 7317.280 + $2^{d}.3469876 \cdot E$ From observations since 1961; rotation of the apsidal line, period probably about 550 years.
TZ Draconis:	Min.J.D. 243 3852.330 + $0^{d}.8660347 \cdot E$ Observations from 1951 to 1974, period probably constant.
RW Tauri:	Min.J.D. 243 7164.4860 + $2^{d}.7688480 \cdot E$ (1960 to 1968) Min.J.D. 243 9916.7163 + $2^{d}.7688575 \cdot E$ (Since 1968) Period strongly and irregularly variable, last large change about 1960 (+$0^{d}.0000271$ = + $2^{s}.3$)
VV Ursae Maioris:	Min.J.D. 243 9245.408 + $0^{d}.6873709 \cdot E$ Change of period about 1966
BU Vulpeculae:	Min.J.D. 243 3533.683 + $0^{d}.5689930 \cdot E$ Observations 1950 to 1974, period constant since 1950.

•

PHOTOGRAPHIC MINIMA OF ECLIPSING STARS

OO Aql: J.D. 244 2607.4755, $O-C_K=+0^{d}.0096$, $O-C_M=+0^{d}.2220$ (!) n=26
Normal minimum from 2602, 2607 and 2609

TZ Dra:	2546.454, $O-C_{K,M}=+0^{d}.009$, $O-C_A=+0^{d}.002$
W UMa:	2454.389, $O-C_K=-0^{d}.003$, $O-C_M=+0^{d}.005$
VV UMa:	2534.473, $O-C_K=+0^{d}.028$, $O-C_M=+0^{d}.063$, $O-C_A=-0^{d}.005$

C_K=C according Krakow, C_M according GCVS Moscow, C_A according Ahnert.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1031

Konkoly Observatory
Budapest
1975 August 12

TWO POSSIBLE NEAR-BY FLARE STARS IN CANCER

During our regular search for flare stars in the field of the Praesepe cluster (approximately 20 sq. degrees) , we have found two dMe stars that undoubtedly form a physical system and certainly do not belong to the Praesepe cluster but are relatively near-by flare stars.

The stars referred to appear in the "Lowell Proper Motion Survey (Northern Hemisphere), the G Numbered Stars" (1971). The separation between the stars is of the order of 12 seconds of arc. In the Table we give the corresponding Tonantzintla serial number for the flare stars found in the Praesepe region, the G Lowell number, the right ascension and declination, the visual magnitudes, the spectral types, and the number of flare-ups detected in each star during 298 hours of effective observation in the near ultraviolet; in the last column of this table, we are giving the ΔmU corresponding to the minimum and maximum amplitudes of the outbursts observed.

The spectral types were derived from red and near infrared objective prism plates taken with our Tonantzintla Schmidt camera. Because of the overlapping of the two spectral images, the Hα emission line in the fainter component of the pair is doubtful.

It will be of importance to determine more accurate spectral types, magnitudes and colors and the distance of this physical pair of flare stars. In the near future, we will publish the photographic reproductions of some of the different flare-ups in these stars together with the list of new flare stars found at the Tonantzintla Observatory in the Praesepe cluster region during the last years.

Flare Star Number	Star G number	RA 1950	Dec.	v mag.	Spectral type	No.of* flare-ups detected	ΔmU
T12	G 009-008	$8^h28^m46^s$	$+19^\circ34'\!.0$	12.2	M5e	6	0.9-3.0
T13	G 040-026	8 28 46	+19 34.0	13.4	M5e?	6	0.5-4.0

*Although six different flare-ups have been detected in each star, in no case the outburst in the two stars coincide in time.

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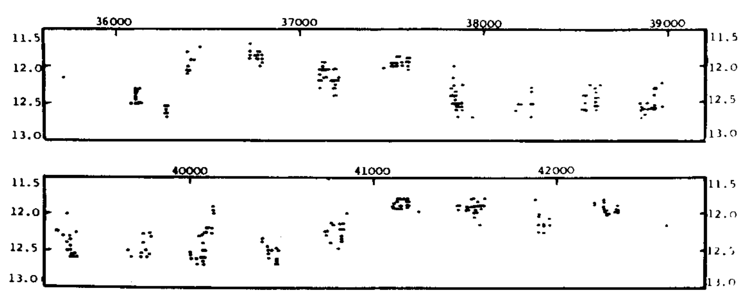
COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1032

Konkoly Observatory
Budapest
1975 August 12

V3804 Sgr

The accompanying light curve for V 3804 Sgr (Z And type?) has been derived from approximately 400 plates taken with the 7.5 inch Cooke triplet at the Maria Mitchell Observatory from 1956 to 1975. G.H. Herbig (1969) reports this variable as probably symbiotic.

This work was done under the guidance of Dr.D. Hoffleit and funded in part by Exploration Expeditions International.



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Reference:

Herbig, G.H., (1969),Contribution of the Lick Observatory, No.299

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1033

Konkoly Observatory
Budapest
1975 August 13

THE ECLIPSING BINARY SYSTEM X Tri

Three-colour photoelectric observations of the star X Tri in the system close to U,B,V have been carried out by the telescope A3T-14 during 1969-1972.

On the basis of these observations corrected elements were obtained:

$$Min_{\odot} = 2437572.2149 + 0.9715288 \cdot E,$$

which were applied for the mean light curves' calculations.

The mean light curves' rectifications followed Russell-Merrill's technique. Photometric elements were calculated on the computer "Nairi" after the programme of Lavrov's direct method. The elements thus obtained are given in the Table.

	yellow	blue	uv
k	0.870	0.861	0.865
r_1	0.329	0.328	0.327
r_2	0.286	0.283	0.283
i	90	90	89
L_1	0.145	0.099	0.127
L_2	0.855	0.901	0.873
J_2/J_1	7.8	12.2	9.9
x_1	0.5	0.5	0.5
x_2	0.5	0.5	0.5

The absolute parameters derived in yellow light are:

A	r_1	r_2	m_1	m_2	T_1	R_1	R_2	M_{b1}	M_{b2}	q
5.91	1.94	1.69	1.05	1.89	5344	1.95	2.55	3.59	1.58	0.56

The Roche model constructed exhibits that the sub-giant component fills its Roche lobe. The X Tri proves an example of a typical semi-detached system, the cool component losing its mass.

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Abastumani Astrophysical
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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1034

Konkoly Observatory
Budapest
1975 August 13

VARIABILITY OF THE δ SCUTI STAR 38 CANCRI

The variability of 38 Cnc was detected by Breger (ApJ 162,597,1970) observing photoelectrically all the stars in the Praesepe Cluster in or near the instability strip. Then Gupta and Bhatnagar (IBVS No.908, 1974) measured the star through B filter only and they determined the period P = $0^{d}.108$ and the amplitude $\Delta m = 0^{m}.07$.
38 Cnc was observed at the Merate Observatory through B filter during two consecutive nights and through V and U filters during one night, respectively. The light amplitudes are as follow:

J.D.	Colour	Δm
42468.	B	$0^{m}.055$
42469.	B	.025
42471.	V	.040
42497.	U	.050

The mean period determined using all the light curves is $P=0^{d}.102$ approximately. The observations in B light show clearly notable variations of the light amplitude from night to night; this is usual for δ Scuti stars.
Further observations are in progress.

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INFORMATION BULLETIN ON VARIABLE STARS
Number 1035

Konkoly Observatory
Budapest
1975 August 14

CSV 100778: A VARIABLE CARBON STAR
PROBABLY IDENTICAL WITH AS 137

We recently noted that the extremely red carbon star Case 610 (No. 606 in the catalog of Stephenson, 1973) is identical with the suspected variable CSV 100778 first detected by Hetzler (1937). Although the positions given in these two sources are not in exact agreement, the identification is confirmed by a comparison of Hetzler's identification chart with objective-prism plates from the files of the Warner and Swasey Observatory. The 1900 coordinates, $\alpha = 6^h\ 48^m.1$, $\delta = -12°\ 02'.6$, closely coincide with those of the Hα-emission-line star AS 137 listed by Merrill and Burwell (1950). On a Kodak 103a-F objective-prism plate taken with the Curtis Schmidt telescope at Cerro Tololo on March 1, 1968, one does not see Hα in emission in CSV 100778. Since there are not other emission-line stars observed near this position, it appears likely that this is a long-period variable in which the hydrogen emission emerges near maximum light. This is consistent with the fact that Merrill and Burwell list AS 137 as being of the 9th visual magnitude when the emission was observed as compared with Stephenson's estimate of V = 12.1 on the above-mentioned objective-prism plate taken on March 1, 1968.

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References:

Hetzler, C. 1937, Astrophys. J., 86, 509.

Merrill, P.W., and Burwell, C. 1950, Astrophys. J., 112, 72.

Stephenson, C.B. 1973, A General Catalog of Cool Carbon Stars, Pub. of the Warner and Swasey Obs., Vol. 1, No. 4.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1036

Konkoly Observatory
Budapest
1975 August 14

PHOTOGRAPHIC OBSERVATIONS OF UV CASSIOPEIAE

Soon after the announcement by the Telegram Bureau of the I.A.U. that the R CrB star UV Cassiopeiae was fading (Isles, 1973) I took with the 20 cm astrograph of the Teramo Observatory some plates of the field which had been patrolled from end 1965 to 1971 with the same instrument. On the 89 available plates the magnitude of the star has been determined with a Zeiss G2 Schnellphotometer, using the following comparison stars:

	m_{pg}
a	11.1
b	11.7
b′	11.8
c	12.4

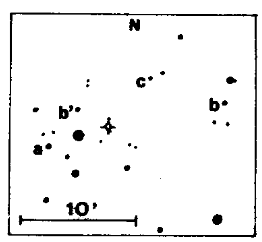

Fig.1. The comparison stars; the brightest star is BD+58°2533

The stars a, b and c are the same used by Weber (1966) and I have retained the magnitudes assumed by this author, except a correction of $-0\overset{m}{.}1$ to the star a which appeared necessary to adjust the magnitude sequence of the four stars.

The result is given in the Table and in Fig.2. From the end of 1965 to the end of 1971 (J.D. 39126 to 41301) UV Cas has been always observed near its maximum brightness at about 11.6 magn., with some possible fadings to 11.8. The minimum announced by the I.A.U. Circular is clearly apparent: from November 17 to November 24, 1973 (J.D. 42004 to 42011) the star underwent a fast decline, reaching the magnitude 12.6 at the last date. When the field was photographed again on February 1974 the star recovered the magnitude 12.1. So the amplitude of the light variation was at least 1^m; according the quoted I.A.U. information, the decline began between J.D. 41977 and 41986: the deep minimum lasted therefore about 100 days.

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Weber, R. 1966, Bull.Stat.Astroph.Mainterne N.9

J.D.	m_{pg}	J.D.	m_{pg}	J.D.	m_{pg}	J.D.	m_{pg}
2439		2439		2439		2439	
126.3	11.75	323.4	11.45	417.4	11.85	827.3	11.85
140.3	11.75	324.4	11.65	417.6	11.70	830.3	11.75
140.3	11.70	343.4	11.70	435.3	11.85	2440	
267.5	11.60	346.4	11.70	474.3	11.70	088.5	11.70
267.5	11.40	348.3	11.80	476.3	11.80	089.5	11.65
268.5	11.55	350.4	11.60	478.5	11.60	090.4	11.75
268.5	11.70	351.5	11.60	492.3	11.60	125.6	11.65
269.6	11.40	353.4	11.55	501.3	11.75	126.5	11.85
270.5	11.60	355.4	11.55	504.4	11.65	2441	
270.5	11.60	375.3	11.70	505.3	11.80	183.4	11.60
271.5	11.45	376.3	11.40	641.5	11.60	192.4	11.75
272.5	11.60	377.3	11.60	673.5	11.65	221.4	11.65
294.5	11.60	378.3	11.60	675.5	11.55	244.3	11.45
295.5	11.65	379.3	11.55	684.4	11.60	248.3	11.55
298.5	11.70	379.5	11.70	707.5	11.60	249.3	11.70
299.4	11.60	382.4	11.65	708.4	11.55	273.3	11.65
300.4	11.75	384.6	11.85	727.3	11.70	301.4	11.50
301.5	11.70	385.4	11.75	734.5	11.70	2442	
317.4	11.65	391.5	11.80	740.4	11.55	004.5	12.50
318.5	11.60	393.6	11.95	760.3	11.65	006.3	12.30
319.5	11.70	412.5	11.80	761.4	11.60	007.3	12.35
320.4	11.55	413.5	11.85	767.4	11.65	011.3	12.55
321.4	11.70	414.5	11.80	771.4	11.85	089.3	12.15

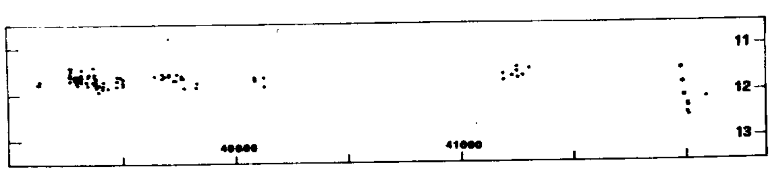


Fig.2 The photographic observations of UV Cas performed at Teramo from the end of 1965 to the beginning of 1974. The three circles show the visual observations reported in the I.A.U. Circular 2591 reduced to photographic magnitudes assuming a colour index of +0.6 as a typical one for an R CrB star near maximum.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1037

Konkoly Observatory
Budapest
1975 August 22

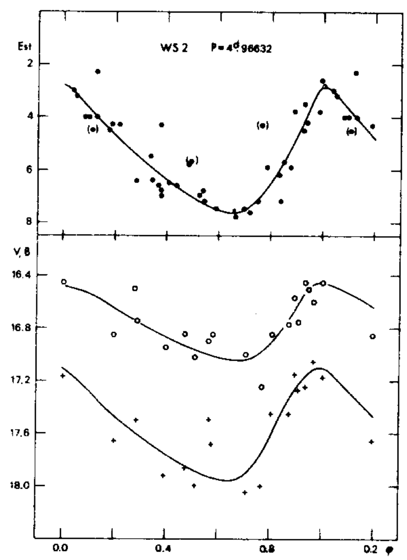
A REVISED PERIOD FOR ONE OF THE WESSELINK-SHUTTLEWORTH SMC VARIABLES

Amongst the 44 faint pulsating variables in the SMC discussed by Wesselink and Shuttleworth (MNRAS 130, 443, 1965), five stars were of special interest because of their periods smaller than 1 day. Also in view of the shape of their light-curves they resemble the RR Lyrae stars, only with that difference that their absolute magnitudes must be brighter than -1. It has been suggested more than once (e.a. Landi Dessy, PASP 71, 435, 1959) that these variables are the extension towards shorter periods of the population I Cepheids of the Magellanic Clouds.

For one of them, viz. WS 2, a period of $0^{d}.807774$ was derived. This period however did not fit photographic B and V (of the UBV system) observations (van Genderen, BAN Suppl. 3, 221, 1969). A slightly different period viz. $0^{d}.8327$ gave a reasonable representation of these observations, but not for those of Wesselink and Shuttleworth. Also in view of its large deviation in the period-luminosity relation and the H-R diagram for nearly a hundred SMC Cepheids (van Genderen, ibid), such a short period was suspected. A period of several days would be more plausible.

A new investigation of both series of observations revealed a more acceptable period viz. $4^{d}.96632 \pm {}^{d}.00050$ (e.e.). The reciprocals of this period and the two shorter ones differ nearly by one. Fig. 1. shows the light-curves. The top one represents brightness estimates with the Argelander step method, by Wesselink and Shuttleworth (ibid) and the two lower ones are the photographic V(circles) and B (crosses) observations mentioned above. Uncertain estimates are between brackets. Phases have been computed with the formula:

$$\frac{JD - 2433895.495}{4.96632}$$



A few observations seem to be standing off suspiciously from the mean light-curves, but this is a feature present in more light-curves shown in both papers, especially the photographic ones are subject to the disturbing influence of many adjacent stars. We therefore suggest that the new period is probably the right one.

I am very grateful to Dr. A. J. Wesselink for his kindness to allow me to use his unpublished observations.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1038

Konkoly Observatory
Budapest
1975 August 22

OBSERVATIONS DE N Per 1974

Nova Persei 1974 a été observée à l'Observatoire astronomique d'Alger du 19 novembre 1974 au 7 février 1975 avec l'astrographe normal (D=34 cm, F/10). On a utilisé l'émulsion ORWO ZU2 16x16 cm.

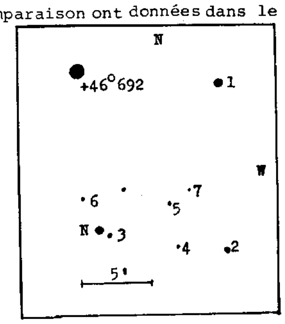
Les 7 clichés obtenus ont été mesurés avec microphotomètre d'iris de l'Observatoire astronomique d'Engelhardt.

Sur la plaque No 79 on a photographié N Per 1974 et l'amas stellaire NGC 1245 dans les distances égales du centre optique de la plaque. Les magnitudes des étoiles de cet amas(Hoag et al,1961) ont été utilisées pour la détermination des magnitudes des étoiles de comparaison.

Dans la figure 1 on donne le voisinage de Nova Persei 1974. Les magnitudes des étoiles de comparaison ont données dans le Tableau I.

Tableau I. Magnitudes des étoiles de comparaison.

No	m_{pg}
1	9.22
2	11.48
3	12.50
4	12.61
5	12.90
6	13.16
7	13.54



On donne les résultats des observations de N Per 1974 dans le Tableau II:

Tableau II.
Magnitudes de N Per 1974

No de plaque	1974/75	UT	JD 2442	m_{pg}
71	19 nov.	19^h50^m	371.326	10.74
72	19 nov.	20 37	371.359	10.68:
73	8 déc.	19 01	390.292	10.90
76	14 déc.	21 05	396.378	10.97
79	6 jan.	22 20	419.430	11.72
82	5 fév.	19 28	449.311	12.60
85	7 fév.	19 18	450.304	12.66

L'erreur quadratique moyenne de mesure est de 0.06 magnitude.

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Observatoire d'Engelhardt
(Kazan, USSR)
Observatoire d'Alger

A.A.Hoag,H.L.Johnson,B.Iriarte,R.I.Mitchell,K.L.Hallam and S.Sharpless, 1961, Publ.U.S.Naval Obs.,Second Series,XVII-Part VII.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1039

Konkoly Observatory
Budapest
1975 August 28

AN URSAE MAJORIS IS PROBABLY EXNOVA ?

The star AN Ursae Majoris has the spectrum very similar to those of V Sagittae - well known novalike variable. AN UMa was examined by S. Shugarov on many Moscow plates. Apart from irregular fluctuations the star is an eclipsing binary with very short period

$$\text{Min. J.D. hel.} = 2442502.285 + 0.15950 \cdot E$$

It is characteristic of exnovae.

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Moscow University

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1040

Konkoly Observatory
Budapest
1975 August 28

PERIOD FOR BV 1634

The discovery of BV 1634 was reported by B.S. Carter in IBVS 994, where the type of variation was still undetermined. This star occurs at an extreme corner of the Maria Mitchell Observatory plates on a Sagittarius region. We havc made estimates of its brightness on over 500 plates taken with the 7.5-inch Cooke triplet between 1957 and 1975. The variable appears to be a typical Mira type, but it presumably has an unresolved companion of about $13^{m}.5$ pg.

The composite light curve shown in the Figure is based on the elements

$$\text{Max} = \text{JD } 2436420+254 \text{ n.}$$

This represents 27 cycles with 9 observed maxima on the Nantucket plates taken from JD 35695 through 42574, and one early maximum found on a Harvard plate taken with the 8-inch Bache telescope on JD 29811.

MARIENNE HIBBERT
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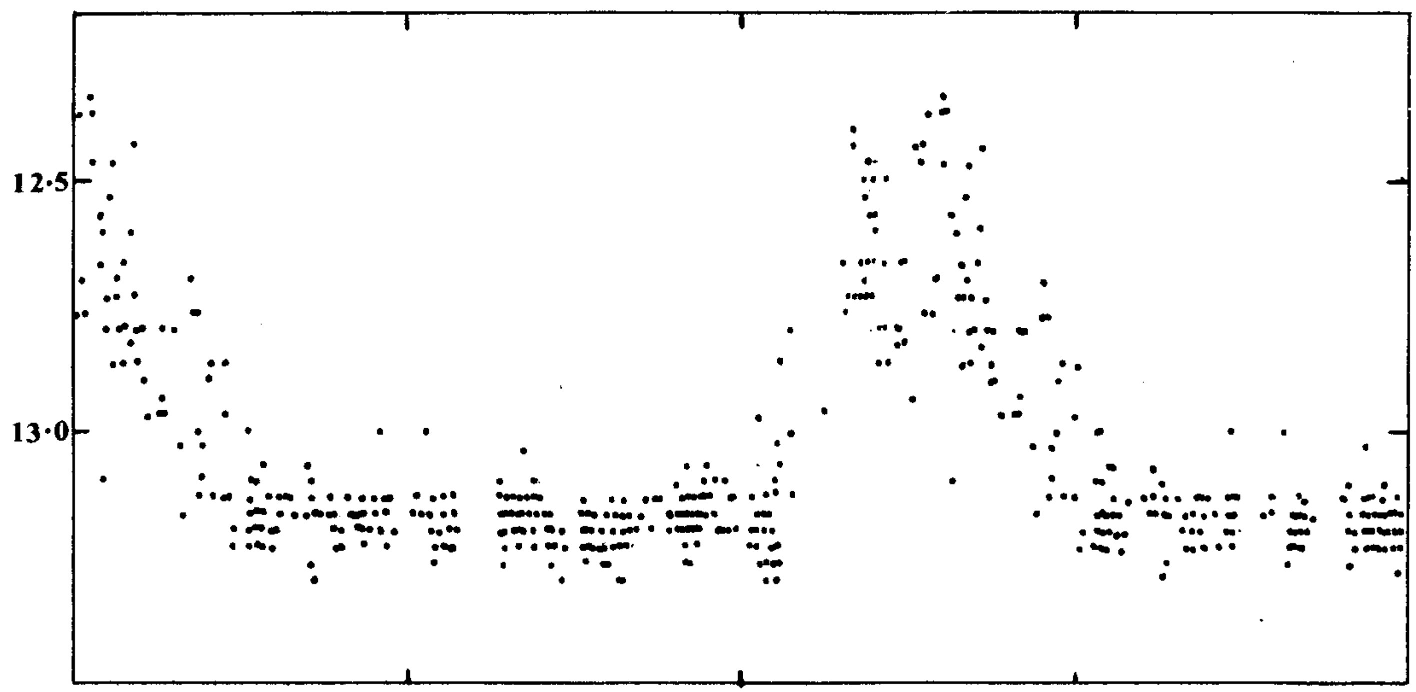
12·5
13·0

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1041

Konkoly Observatory
Budapest
1975 September 2

HD 173198, A β LYRAE TYPE STAR

Photoelectric observations have been made of the star HD 173198 (8.1 mag, BlV). As a comparison star was taken the star AGK $-1^{o}2247$ (8.5 mag, B5). The star HD 173198 is mentioned in volume III of the third edition of Kukarkin's General Catalogue of Variable Stars, with the 1900 coordinates: $\alpha=18^{h}39^{m}02^{s}$; $\delta=-1^{o}38'.5$.

The observations were made with the Walraven simultaneous five-colour photometer (Walraven and Walraven, 1960 Bull.Astron. Inst.Netherl.15, 67; Rijf, Tinbergen and Walraven, 1969 Bull. Astron,Inst.Netherl.20, 279) attached to the 90 cm light-collector of the Leiden Southern Station at the SAAO annex in South Africa, from June 16, 1975 to August 10, 1975. The observations will be continued until the second week of September.

A preliminary reduction from the data of 21 nights showed that HD 173198 is a β Lyrae type star, with a period of $1^{d}.363\pm$ $\pm$ 0.001 e.e.. The primary minimum is 0.318 mag. deep.

The figure shows the log intensity relative to the comparison star for the Walraven B band (4260 A). The phases have been computed with the formula:

$$(JD - 2442610.070) \times 1.363^{-1}$$

It is a pleasure to thank Dr. A.M. van Genderen for his advices and for handing me over some observing time.

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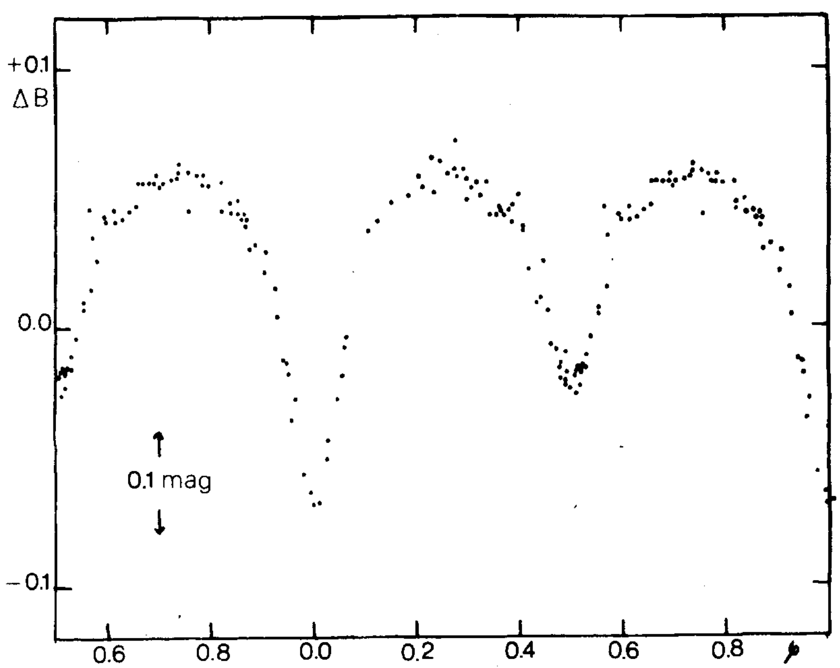
+0.1
ΔB
0.0
−0.1
0.1 mag
0.6
0.8
0.0
0.2
0.4
0.6
0.8

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1042

Konkoly Observatory
Budapest
1975 September 5

NOVA AURIGAE 1964

Dr. G.A. Richter called my attention to this nova, which was discovered by Sanduleak (see IBVS No. 1011). According to Sanduleak the approximate 1900 coordinates are $\alpha=5^h22^m.1, \delta=+33^\circ14'$. This nova could be confirmed on plates of the Sonneberg 40 cm astrograph (taken by H. Gessner) and of the sky patrol (taken by H. Huth). The following outburst was observed:

J.D.	mpg
243 8411...8414	$\approx 17^m$
8440	$6^m.0$ (nearly as bright as BD $+33^\circ1000$, mpg = 5.8)

Before 8440 the magnitude was possibly even larger. The decline of the light curve was observed on 13 plates until J.D. 243 8671 ($15^m.0$).
The light curve and the further details will be published in Mitt. Veränd. Sterne.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1043

Konkoly Observatory
Budapest
1975 September 9

ECLIPSE TIMINGS OF CATACLYSMIC VARIABLES

The following heliocentric times of mid-eclipse of the cataclysmic variables EM Cyg, U Gem, DQ Her, and EX Hya are based on observations made at Kitt Peak National Observatory.

I) EM Cyg

JD hel 2442000 +	O-C
515.8789	-0.0041

The residual is with respect to the elements given by Mumford (1969). Pringle (1975) has indicated that the period of this system is decreasing. This single observation is consistent with that conclusion.

II) U Gem

JD hel 2442000 +	O-C
511.7073	+0.0070
513.6535	+0.0072
514.7151	+0.0074
516.6610	+0.0073

O-C values are with respect to the elements given by Krzeminski (1965). These results in combination with previously published times of minima, when analyzed in the manner suggested by Pringle (1975), indicate a statistically significant deviation from a linear relation and lead to the conclusion that the period of the system is increasing. However, Pringle (private communication) reports that this result is not so clear-cut when additional, currently unpublished times of minima are included in the analysis. For now, Pringle's (1975) linear solution provides the best ephemeris for this system.

III) DQ Her

JD hel 2442000 +	O-C
513.9039	+0.0004
514.8722	+0.0006
515.8405	+0.0008

The O-C values are with respect to new linear elements given by Pringle (1975). At this time there is little or no evidence for a period change.

IV) EX Hya

JD hel 2442000 +	O-C
511.7921	-0.0001
513.7707	-0.0003
513.8390	-0.0002
515.7488	-0.0010
515.8174	-0.0006
516.7720	-0.0013
516.8415	0.0000

The O-C values are with respect to the elements given by Mumford (1967). Considerable flaring took place near the times of minima with the three large residuals.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1044

Konkoly Observatory
Budapest
1975 September 9

CONFIRMATION OF THE PERIODICITY AND THE PERIOD (ABOUT 30 YEARS) OF THE SHELL OF OMICRON ANDROMEDAE

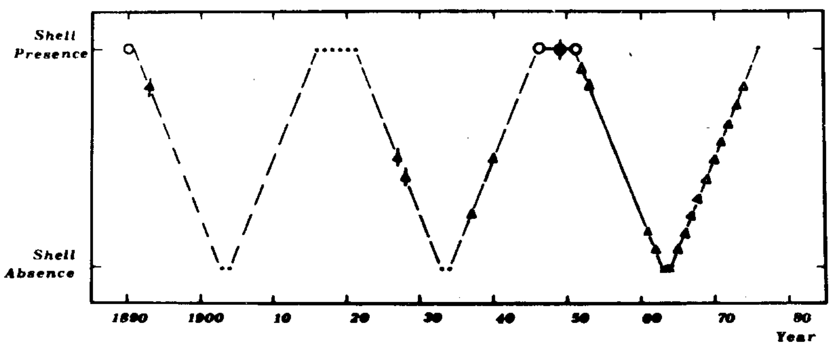
The reappearance of the new shell of o And, reported in IAUC n. 2802, 2810, 2814, confirms the periodicity of the shell of o And, and the period suggested by Schmidt (1959) and by Pasinetti (1967, 1968).

o And was observed at Merate Observatory each year from 1961 to 1975. During this time, the Balmer lines showed sharp absorption cores, indicating a thin shell. The intensity of the cores and the number of Balmer lines in which they appeared, were variable; sometimes the cores appeared from Hα to H_8. In the years 1963, 1964 the hydrogen-absorption cores completely disappeared. The figure shows the situation of the shell (presence or absence) of o And versus time. We constructed this graph with the simple assumption that the time interval (about 11-12 years) between the last presence of the shell spectrum (1951) and the complete disappearance of the hydrogen-absorption cores (1963), may be nearly equal to the time interval between the observed absence of cores and the reappearance of a new shell. Hence we suggest that the new large shell should reappear about in 1976.

The reported diagram has only a qualitative character, for the observational material at our disposal presence, intensity, number of the Balmer absorption cores does not allow us to construct an ordinate scale.

From the figure we can deduce that the shell of o And has a period of about 30 years. Our diagram is similar to that reported by Schmidt (p.261, Fig.10); unfortunately this author does not explain the meaning of the ordinate scale of his graph.

Two spectrograms of o And obtained on July 23.966 UT 1975 in the Hα-Hε region with Zeiss prism-spectrograph (dispersion 35Å/mm at Hγ) of the 137 cm reflector, show: Balmer absorption cores



——— Phase surely determined; ··· - - - ··· assumed periodicity; ▲ B-type spectrum with sharp hydrogen absorption cores; X normal B-type spectrum, absence of Balmer cores; ♦ B-type spectrum, the presence of the Balmer cores has not been reported in the literature; O shell spectrum: metallic absorption lines, sharp and deep Balmer absorption cores, emission at Hα; ♦ shell spectrum, no emission at Hα.

similar to those observed in the preceding years (the cores visible in September 1974 are sharper and deeper than those observed in July 1975); Hα has a week absorption feature partly masked from the emission dispersion at Hα ~ 200 Å/mm ; weak metallic absorption lines.

The probable duplicity of o And has not been confirmed by our diagrams of radial velocities (Galeotti and Pasinetti, 1968a,1968b) obtained with the photoelectric period proposed by Schmidt (1959). No periodicity of radial velocities has been found also considering the period proposed by Olsen (1972). The duplicity of o And was questioned by Detre (1966) (see Pasinetti, 1968).

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1045

Konkoly Observatory
Budapest
1975 September 10

PHOTOELECTRIC OBSERVATIONS OF DO CEPHEI

I. The Observations

A total of 57.4 hours of actual monitoring time was recorded for DO Cephei in the 1970 and 1972-73 observing seasons.The charts in Figures 1 and 2 give graphically the photoelectric coverage in the two seasons.

The 60-cm Cassegrain telescope of Mt. Cuba Observatory was used at f/16 equipped with a single-channel photoelectric photom - eter. An uncooled EMI 6256 S photomultiplier was used with a stand ard U filter (Corning 7-54) of the Johnson three-color system. No attempt, however, was made to transform the data to standard U magnitudes.

Owing to the relatively small separation of the components of the Kruger 60 system, the photometry here presented includes the monitoring of both members. Thus, the flares listed in Table 1 and those shown in Figures 3 and 4 are changes in the ultraviolet flux of the Kruger 60 system as a whole. All such changes were measured against two comparison stars: BD +56°2777 was used as a primary comparison star with BD +56°2788 used as a secondary.

II. The Flares

Table 1 gives observed parameters for the flares detected. Presented in the Table for each flare is U_C, the total apparent difference in the ultraviolet magnitude of the Kruger 60 system at peak light and the primary comparison star. Since Petit (1961) indicates the existence of long term, aperiodic secondary variations of flare stars, referring peak flare light to the preceding quiescent level was avoided (Kunkel 1975). However, U_S gives the total apparent change in the ultraviolet magnitude of the Kruger 60 system relative to its just previous non-flaring level.

Maximum light and time of maximum light were determined by first visually drawing a curve through the signal, smoothing the noise. The point of maximum deflection of this smoothed signal was used to determine time of peak light and its intensity. Tic marks on the flares in Figures 3 and 4 indicate where maximum light was determined to be. Correction to the position of maximum light due to instrumental features was not applied.

As noted in Table 1, flares 8 and 14 required the upper portions of their light curves to be extrapolated. This was due to the fact that their fast rate of rise did not permit scale changes to be made.

Also presented in Table 1 are the total rise times, T_R, and decay times, T_D, estimated for each flare. Also given is $T_{0.5}$, the time in minutes of the interval from peak light to half maximum intensity (Kunkel 1973).

Table 1

NO.	DATE	U.T.	U_C	U_S	T_R	T_D	$T_{0.5}$	P	U_N
1	6 AUG 1970	6:01.1	.08	.25	.2	.5	.3	.08	.10
2	6 AUG 1970	6:02.6	- .20	.53	.6	4.	.8	.59	.10
3	6 AUG 1970	7:02.4	.09	.19	.4	.4	.3	.18	.10
4	2 SEP 1970	6:23.3	.06	.20	1.8	1.7	1.2	.42	.05
5	2 SEP 1970	6:25.3	- .21	.46	.2	12.	.7	.97	.05
6	29 SEP 1970	7:03.2	- .05	.33	.2	.3	.2	.36	.04
7	29 SEP 1970	7:06.0	- .35	.58	.5	5.2	1.3	1.17	.04
8	29 SEP 1970	7:39.0	(-1.5)	(1.9)	.4	12.	.3	3.7	.04
9	2 OCT 1970	6:30.7	- .60	.91	.1	5.3	.1	.64	.04
10	5 OCT 1970	3:56.2	.16	.13	.2	.8	.4	.10	.04
11	5 OCT 1970	4:06.8	.11	.51	.4	1.2	.4	.44	.04
12	5 OCT 1970	4:08.3	.18	.12	.4	.8	.3	.11	.04
13	5 OCT 1970	4:21.1	.18	.10	.3	2.2	.6	.09	.04
14	5 OCT 1970	4:58.1	(-2.0)	(2.3)	2.1	8.	1.3	9.2	.04
15	7 OCT 1970	5:55.1	- .61	.87	.3	.4	.1	.6	.04
16	7 OCT 1970	5:55.8	- .35	.61	.3	.6	.3	1.64	.04
17	8 OCT 1970	5:42.2	- .41	.55	.1	1.2	.1	.26	.05
18	9 OCT 1972	3:47.1	.10	.16	.1	2.9	.2	.18	.06
19	9 OCT 1972	4:15.4	.17	.12	.4	1.	.2	.03	.06
20	9 OCT 1972	4:45.6	.14	.15	.2	.3	.1	.04	.06
21	9 OCT 1972	4:47.0	- .21	.50	.2	4.	.3	.42	.06
22	10 OCT 1972	1:57.1	.31	.33	.1	1.9	.4	.20	.06

Observed and computed characteristics of the flares detected. Note that peak light of flares 8 and 14 was lost. Thus, quantities associated with these flares were extrapolated.

The integrated intensity, P, described in IBVS No. 326 is given for each flare (Andrews, et al. 1969).

An estimate of the magnitude of the noise is given by U_N, the magnitude difference corresponding to one standard deviation from the mean signal.

A few observers have noted that flares occur in a set or ensemble. Indeed, the present series of observations shows this same feature. We note that 54% of the flares detected occurred within 5 minutes of another flare, 64% within 15 minutes, 73% within 30 minutes, and 86% within one hour. This indicates, as was pointed out by many previous observers, that these events are associated with some active region on the star.

Inspection of Figure 4 shows that between the pair of near events there is a time where the signal is elevated above its quiescent level. This region of increased brightness between each two flares is very probably an intrinsic elevation in luminosity associated with the active region on DO Cep which produced the flares. The elevated portion of the signal corresponds to the stillstands reported by Roques (1961).

III. Secondary Variations

As stated earlier, Petit indicated the existence of aperiodic secondary variations of flare stars. Solomon (1966) gives rates of rise for these slower variations to be 0.002 to 0.005 mag/sec as compared to 0.02 to 0.25 mag/sec for flares. This behaviour has been confirmed in the case of DO Cep. The slow symmetric brightening just before flare 5 in Figure 3 has a rate of rise of 0.0018 mag/sec. This also substantiates the earlier observation of Herr and Brcich (1969) which detected a similar event with respect to change in magnitude, duration, and rate of rise. In their report, however, they mark this flare's reality to be less certain than others detected in their series of observations. Since the event depicted in Figure 3 is associated with an unmistakable flare, this weak event is also judged to be a flare.

No variation in the quiescent magnitude of the Kruger 60 system greater than 0.1 magnitudes was observed in either observing season.

IV. Acknowledgements

I am most grateful to R.B. Herr, M. Simmons, D. Monet, and D. Wyatt for their contributions of data and to S.E. Ferguson for assistance in the reductions and preparation of the figures. I also extend my thanks to H.L. Shipman, H.C. Vernon, and L.G. Glassner whose suggestions and comments for the preparation of this paper are deeply appreciated.

ANTHONY JOSEPH NICASTRO

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and The University of Delaware

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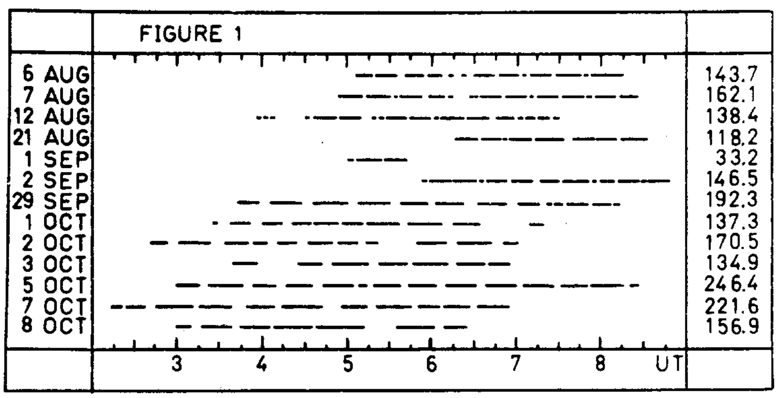
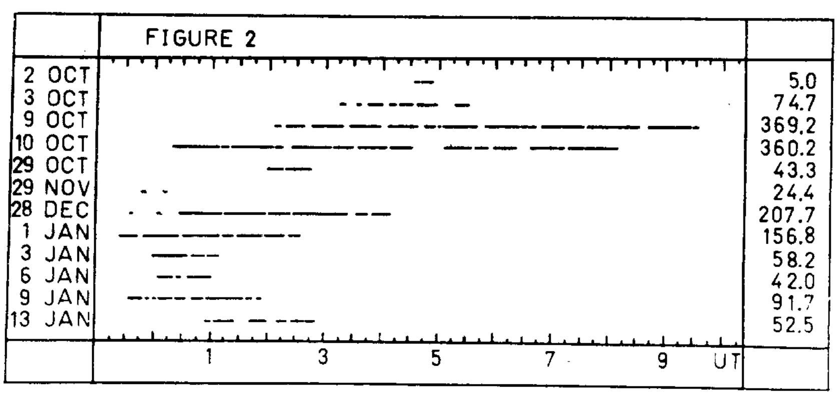
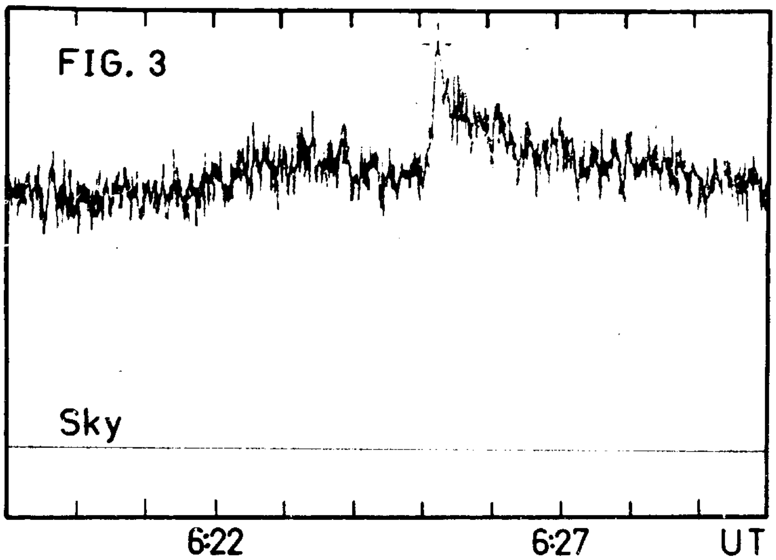


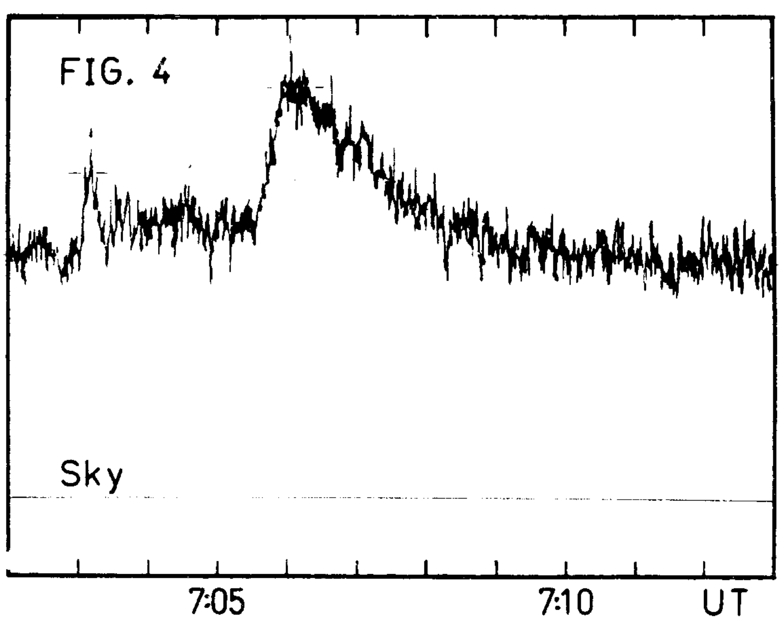
Photoelectric coverage of DO Cephei in 1970. The far left column gives the UT date of the beginning of the observing night. Nightly total monitoring time in minutes is given in the far right column. The total observing time in 1970 is 2002.0 min.



Photoelectric coverage of DO Cep in 1972-73. The total monitoring time in 1972-73 is 1442.4 min.



Flares 4 and 5. Tracing from original record.



Flares 6 and 7. Tracing from original record.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1046

Konkoly Observatory
Budapest
1975 September 24

PHOTOGRAPHIC OBSERVATIONS OF SUPERNOVA 1971-g IN NGC 4165

This supernova was discovered by Rosino (1971) on April 15, 1971.

Photographic observations of the supernova in B (Kodak OA-O+ +CC 5 and A-600 + CC 5) and V (A-600 + ZhS 18) colours have been obtained at Engelhardt Observatory with the 120-35 cm Maksutov telescope from April 28 to May 27, 1971.

The eye estimates have been made with the Nijland-Blazhko method. The comparison sequence of Barbon et al. (1973) was used.

The observations of SN 1971-g in NGC 4165 are reported in the Table:

No	Date 1971	UT	B	V
1104	28 Apr.	20^h45^m	$15\overset{m}{.}2$	-
1105	30 Apr.	20 05	15.2	-
1107	13 May	22 04	>16.5	-
1113	17 May	20 51	>16.5	-
1116	21 May	20 52	17 :	-
1117	21 May	21 09	-	15.8
1118	21 May	21 28	-	15.8
1120	22 May	20 27	>17	-
1126	26 May	21 13		>17
1127	27 May	20 53		>17

S.K. FOMIN
L.A. URASIN
Engelhardt Astronomical
Observatory

References:

Barbon, R., Ciatti, F., and Rosino, L., 1973, Memorie della Societa Astronomica, Vol. 44, No 1, 65-85

Rosino, L., 1971, IAU Circ. No 2321

ERRATA-CORRIGE

In the third page of the IBVS 1009 the O-C of the U CrB is -0.0212**, and not positive as published.

LUIGI BALDINELLI

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1047

Konkoly Observatory
Budapest
1975 September 26

PHOTOELECTRIC MAXIMA OF RZ CEPHEI

This report continues the one in IBVS 915 and contains 3 maxima observed in V light in Cluj-Napoca (1974) and 6 maxima observed in V and B light in Trieste (1975).

Having in view the varying shape of the light-curve around the maximum of RZ Cep, Pogson's method and "mean" light-curve were used in order to determine the heliocentric times of maxima. The number of the used observations is given under "n".

The O-C differences were computed by using the linear elements:

$$\text{Max. hel.} = \text{JD } 2419313.240 + 0^{d}.3086731 \cdot E$$

In order to have a general picture of the period variation we have constructed the diagram O-C = f(E) for normal maxima. In the case of RZ Cephei the problem of the period variation is very complex and yearly some observed maxima are needed.

From the diagram (Fig.1) it seems that, at present day, a variation may occur in length of the period.

Max.hel. 2442000	n	O-C	E
255.409	26	$+0^{d}.041$	74325
309.422	28	.036	74500
340.290	44	.037	74600
631.363	10	.031	75543
634.456	37	.037	75553
635.375	12	.030	75556
639.388	26	.031	75569
645.563	10	.032	75589
646.491	34	+0.034	75592

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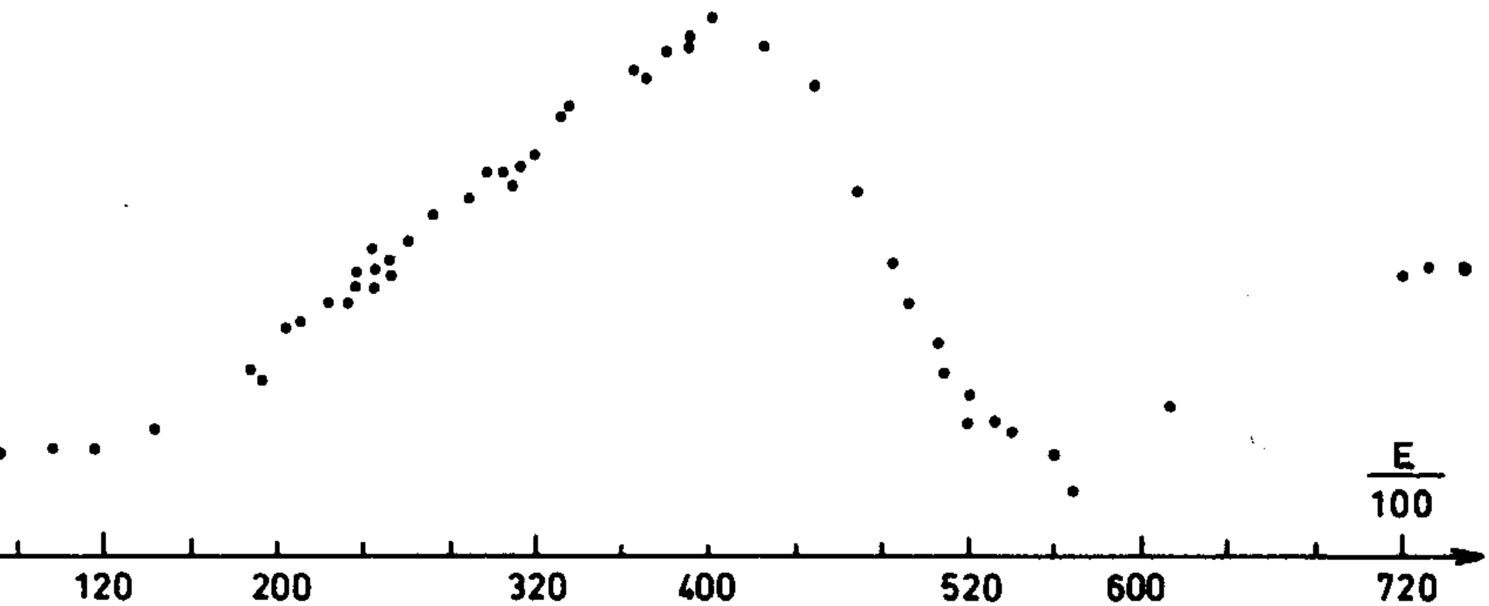
Fig. 1



COMMISSION 27 OF THE I. A. U.
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Number 1048

Konkoly Observatory
Budapest
1975 October 3

A PRELIMINARY REPORT ON THE LIGHT VARIATION OF THE EXTREME A-SUPERGIANT CD-33°12119 (=3U1727-33?)

1. Introduction

The extreme A2 supergiant CD-33°12119 (m_V=10.2 mag, A2Ia) has been suggested to be the optical counterpart of the compact X-ray source 3U1727-33 (Krzeminski and Garrison, 1973; Hensberge and Zuiderwijk, 1975). In this note we present a preliminary reduction of photoelectric observations of this star, which have been made with the Walraven five-colour simultaneous photometer, attached to the 90-cm Light-Collector of the Leiden Southern Station (at the SAAO-Annexe, formerly the Republic Observatory Annexe) Hartebeestpoortdam, South Africa. A description of the photometer and the photometric system has been given by Walraven and Walraven (1960) and by Rijf, Tinbergen and Walraven (1969). We only give here a light-curve in the V-passband.

2. The Observations

The observations were made in the period May 10 - August 13, 1975. The comparison star used was a 9.2 mag. B-star HD 208883. The integration time for one observation was 0.5 or 1 min. Fig.1 shows the brightness of CD-33°12119 minus comparison star in log intensity for the V-passband. The observational error is about 0.005 in log intensity. The observations reveal that there is a variation on a long time-scale. This variation appears like a double wave on a time-scale of about 75 days and might indicate that we are possibly dealing here with a binary system. We will continue our observations of the star to study this variation in more detail.

Unfortunately, the present observations are contaminated with a few percent extra light due to straylight of a 13 mag. companion star (at a distance of about 15 seconds of arc). This was due to a sudden shift of the diaphragm with respect to the grid in the oculair, over a distance of a few seconds of arc into the direction of this faint companion. Dr. P.R. Warren who could not confirm the supposed flare activity of this star (van Genderen, 1975), suggested to us the possibility of a faint companion star in or near the diaphragm (Warren, 1975).

3. Discussion of the Results

We derive for CD-33°12119 the following mean brightness and colour index in the Johnson UBV-system: $V_J \cong 10^{m}.25$ and $(B-V)_J \cong 1^{m}.9$, in good agreement with the results of Krzeminski and Garrison (1973).

Assuming the star to be a normal A2 supergiant, we calculate a blue (interstellar) absorption of $A_{BJ} \cong 8.5$ mag. from the Walraven V-B/B-U diagram of standard stars. For the comparison star HD 208883 we derive $A_{BJ} \cong 1.3$ mag. The reddening of CD-33°12119 may be partly of interstellar and partly of circumstellar origin (e.g. due to circumstellar dust). Taking this reddening into account, the star is much more luminous in the Walraven L-passband than normal A-supergiants. This might be due to the fact that the hydrogen absorption lines and the Ca II (K and H) lines are less deep than in normal A-stars (Hammerschlag-Hensberge et al., 1975), due to partial filling in by emission at the red side of these lines. Assuming that the A-supergiant has a mass of 25 $M_{\odot}$ and a radius of 1 AU (cf. Wolf, 1972, 1973; Lamers, 1974), we derive a lower limit for the orbital period of a possible companion star of $P \geqslant 73$ days. This might support our suggestion that the long term variation (over 75 - 80 days) observed in the light-curve, is due to gravitational deformation of the A-supergiant by a compact companion star.

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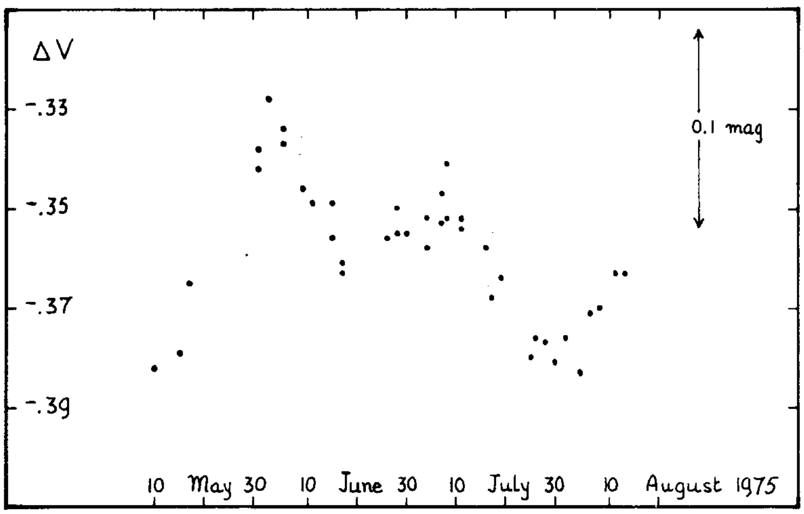

Fig. 1. The brightness of CD-33°12119 (=3U1727-33?) minus comparison star (in log intensity) plotted against the South African calendar dates for the V-passband.

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COMMISSION 27 OF THE I. A. U.
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Number 1049

Konkoly Observatory
Budapest
1975 October 6

Veröffentlichungen der Dr. Remeis-Sternwarte Bamberg
Astronomisches Institut der Universität Erlangen-Nürnberg
Vol.X, No.113

LIGHT CHANGES OF T TAURI STARS IN THE CHAMAELEON ASSOCIATION

During a stay at the Boyden Observatory a star field around ε Cha, which included Hoffmeister's T Association, was photographed as often as possible. The instrument used was the 10" Metcalf refractor of the Boyden Observatory, the exposures were taken on Gevaert 67A50 plates. A total of 102 plates on 31 nights could be obtained. All stars classified as T Tau stars which were not too faint were included, the photographic magnitude of all stars was obtained by the Argelander method. On three of the best plates the numerous comparison stars neededwere measured, together with standard sequence stars of the selected area SA 203, with the Iris Photometer of the Remeis Observatory, Bamberg. The period of $3^d.2$ is clearly found for T Cha. For SY Cha the times of maximum and minimum light are well represented with a period of $6^d.2$; somewhat less pronounced is a period of 7^d in VZ Cha. In the latter case a phase shift may have happened around J.D. 244 1398. There is also some indication of a period of 8^d in TW Cha, but in this case the observations are too poor. In the meantime the starsSY Cha, VZ Cha and TW Cha were observed photoelectrically in UBV at the ESO Observatory, La Silla. The preliminary reduction of the data shows clearly light and colour changes which are in full agreement with the photographically derived quasiperiodic changes.

A grant of the "Deutsche Forschungsgemeinschaft", which enabled one of us (H.M.) to do the observations at Boyden, is gratefully acknowledged.

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Dr.Remeis-Sternwarte Bamberg

J.D. 244....	T Cha	ST Cha	SW Cha	SX Cha	SY Cha	SZ Cha	TW Cha	UV Cha	VW Cha	VZ Cha	WW Cha	WY Cha	BC Cha
1299.48	-	$14^{m}37$	$14^{m}06$	$15^{m}74$	$13^{m}30$	$13^{m}49$	$14^{m}52$	$14^{m}69$	$13^{m}68$	$12^{m}57$	$15^{m}19$	$14^{m}96$	-
1300.48	$13^{m}04$	13.94	14.06	-	12.51	14.48	14.22	15.31	13.79	12.57	15.59	14.96	-
.51	12.95	13.99	14.43	15.98	12.44	14.60	14.22	14.91	13.76	12.36	15.09	15.01	-
.53	12.86	14.10	14.35	15.74	12.64	14.09	14.12	15.16	13.72	12.77	15.09	14.36	-
1306.48	13.35	13.89	14.35	15.23	13.00	13.42	13.83	14.82	13.58	14.17	15.51	14.85	-
.51	13.35	13.89	14.50	15.38	12.94	13.35	13.83	14.82	13.65	13.80	-	14.85	-
.53	13.47	14.12	14.06	15.40	12.89	13.35	14.12	14.91	13.50	13.84	15.51	14.84	-
.55	13.04	14.20	14.35	14.91	12.89	13.49	13.83	15.31	13.65	13.73	-	14.84	-
1307.42	11.50	14.17	14.35	14.35	12.64	14.01	14.02	14.91	13.76	13.80	15.51	14.96	-
.44	11.52	14.37	14.35	14.25	12.64	14.01	14.02	15.31	13.76	13.73	15.09	14.84	-
.46	11.50	14.67	14.50	14.25	12.89	14.09	13.83	14.91	13.96	13.80	15.04	14.96	-
.48	11.50	14.67	14.35	14.67	12.89	14.17	14.02	14.91	13.79	13.54	15.19	14.84	-
1308.44	11.50	13.99	14.18	15.74	13.00	13.49	14.12	14.91	13.72	13.29	14.99	14.71	-
.46	11.50	13.99	14.35	15.63	12.89	13.49	14.02	15.31	13.65	13.55	15.04	14.78	-
.48	11.52	13.89	14.35	15.50	13.00	13.49	14.12	14.91	13.72	13.54	15.27	14.99	-
1339.38	-	14.20	14.35	15.26	13.00	13.62	14.73	15.31	14.25	14.11	14.73	14.96	$15^{m}68$
.40	15.19	14.59	14.50	15.19	13.00	13.63	14.93	15.47	14.25	14.23	14.56	15.06	15.89
.42	15.19	14.68	14.06	15.63	13.00	13.66	14.73	15.46	14.06	13.80	14.88	14.86	15.68
.44	15.19	14.68	14.66	14.67	13.00	13.49	14.52	15.16	14.25	13.80	14.88	14.82	-
.48	15.19	14.10	14.50	15.51	13.68	13.49	14.73	14.91	14.35	13.84	14.52	14.64	15.89
1340.38	12.86	13.89	14.50	15.74	14.39	12.93	14.22	14.91	13.96	14.97	15.04	15.04	15.49
.40	12.86	13.94	14.50	15.51	14.94	13.35	14.12	14.91	14.35	14.81	14.59	15.01	15.89
.42	13.04	13.77	14.06	15.74	14.73	13.20	14.12	14.91	13.76	14.81	14.73	15.13	15.49
.44	12.34	13.99	14.50	-	14.39	12.93	14.22	14.82	14.06	14.81	14.88	15.14	15.49
.46	12.77	13.99	14.35	-	14.39	12.93	14.02	14.68	13.79	14.89	14.61	15.12	15.68
.48	12.69	14.17	14.50	15.63	14.39	13.29	14.52	14.91	13.79	14.81	14.88	15.27	15.52
.50	12.66	14.19	14.06	15.74	14.39	13.06	14.12	14.91	13.79	14.89	14.75	15.13	15.56
.52	13.04	14.10	14.43	15.98	14.49	13.22	14.07	15.16	13.76	14.81	14.70	15.29	15.49
1351.31	13.04	13.89	14.50	16.46	13.30	13.42	14.93	15.16	13.72	13.80	15.04	15.12	-
1352.37	13.98	14.10	14.81	-	14.39	13.35	14.31	14.70	13.68	13.73	14.70	15.27	-
1353.35	13.35	14.12	14.50	15.21	14.19	12.93	14.93	14.91	14.35	14.11	15.27	15.24	15.82
.37	13.65	14.52	14.06	15.19	14.29	12.93	14.93	14.70	14.35	13.87	15.09	-	15.49
1354.36	15.26	13.99	14.35	15.03	13.86	13.00	14.52	15.31	13.83	14.29	15.04	15.27	15.05
.38	15.26	13.99	14.35	14.91	13.91	13.06	14.22	14.91	14.06	14.29	14.99	15.06	15.03
.40	15.11	13.77	14.50	14.67	14.19	12.59	14.12	15.31	14.01	14.29	15.09	15.19	15.08
1355.36	13.85	14.45	14.50	15.63	13.95	13.35	14.02	14.69	13.79	13.54	14.99	15.27	15.79
.38	13.92	14.19	14.81	15.74	13.91	13.35	13.83	14.91	13.79	13.54	15.04	15.29	15.61

J.D. 244....	T Cha	ST Cha	SW Cha	SX Cha	SY Cha	SZ Cha	TW Cha	UV Cha	VW Cha	VZ Cha	WW Cha	WY Cha	BC Cha
1355.40	$13^{m}.85$	$14^{m}.20$	$14^{m}.43$	$15^{m}.74$	$13^{m}.68$	$13^{m}.35$	$14^{m}.02$	$14^{m}.91$	$13^{m}.79$	$13^{m}.56$	$15^{m}.04$	$15^{m}.19$	$15^{m}.89$
1356.38	12.71	14.10	14.35	15.86	13.00	13.06	14.12	15.31	13.76	12.99	-	15.27	15.96
.41	12.86	13.89	14.06	15.98	12.94	13.06	14.22	15.31	13.76	12.78	15.89	15.32	15.68
.43	12.42	13.94	14.43	15.74	13.00	13.06	14.22	14.91	13.76	12.95	15.43	15.14	15.49
.45	12.86	14.11	14.35	16.46	13.00	12.93	-	15.42	13.72	12.95	15.51	15.12	15.19
1357.37	13.85	14.52	14.35	15.98	13.58	13.49	14.22	14.82	13.65	12.36	-	15.13	15.49
.39	13.93	14.68	14.35	16.23	13.91	13.49	14.22	14.70	13.61	12.77	15.89	15.13	15.24
.42	13.98	14.67	14.35	15.74	13.58	13.49	14.12	14.91	13.58	12.90	15.51	15.12	15.29
.44	13.98	14.19	14.43	16.23	-	-	-	-	13.61	-	-	-	15.23
1358.37	13.41	13.99	14.43	16.23	14.62	13.42	14.31	14.91	13.58	13.07	15.51	14.92	-
.39	13.41	13.77	14.50	15.98	14.62	13.67	14.22	14.91	13.65	12.99	15.59	14.68	15.75
.41	13.04	13.94	14.35	15.74	14.83	13.49	14.22	-	13.79	-	-	-	15.42
.43	12.86	13.99	14.58	15.98	14.83	13.49	14.12	15.01	13.79	12.82	15.04	14.84	15.49
1359.34	11.77	14.20	14.50	-	15.04	13.13	13.36	14.91	13.76	12.80	-	14.71	15.08
.36	11.98	14.20	14.50	16.46	14.59	13.22	13.50	15.16	14.25	12.80	15.51	14.81	15.29
.49	11.50	14.10	14.35	15.74	15.04	13.49	13.50	15.31	13.96	13.03	15.04	14.86	14.81
1360.43	13.65	14.10	14.50	16.23	14.29	13.35	13.50	14.82	13.96	13.14	14.88	14.86	14.69
.45	13.93	14.12	14.50	15.63	14.19	13.35	13.83	14.68	13.68	13.22	14.99	14.85	14.69
1361.34	14.23	14.20	14.35	15.74	13.49	13.55	14.22	14.91	14.25	13.80	14.73	14.92	14.69
1382.26	13.04	14.11	14.50	-	13.58	13.49	14.52	14.82	14.15	14.11	15.09	15.12	15.28
.28	13.47	14.19	14.35	15.74	13.49	13.55	14.52	14.68	14.25	14.17	14.56	15.11	15.23
.30	13.21	14.12	14.50	15.63	13.49	13.35	14.52	14.82	13.76	14.29	15.09	15.01	15.28
1383.25	-	14.10	14.50	15.63	14.39	13.35	14.31	14.91	14.25	13.73	15.51	15.24	15.10
.27	-	14.12	14.27	-	14.39	13.49	14.22	14.91	14.30	14.17	15.14	14.96	14.86
1391.35	-	-	-	-	13.58	13.55	14.12	-	13.71	-	-	-	-
1393.42	14.34	14.12	14.50	-	12.22	13.49	14.07	-	14.25	-	-	-	14.01
1394.26	-	-	-	-	12.30	-	-	-	-	-	-	-	-
1396.28	12.58	14.52	14.50	-	13.68	13.49	14.07	-	14.06	14.29	-	-	14.72
1397.24	13.47	14.17	14.35	-	13.58	13.29	13.50	14.69	14.35	12.86	15.04	15.29	-
.26	13.47	13.99	14.50	15.50	13.49	13.13	13.73	15.24	14.35	12.90	14.74	15.11	15.68
.28	13.30	13.99	14.43	-	13.68	12.93	14.07	14.72	14.35	12.81	15.09	15.13	-
.30	13.35	14.52	14.50	15.63	13.91	13.06	13.50	14.91	14.35	12.90	15.51	14.86	15.52
.35	13.47	14.67	14.66	-	14.19	13.06	13.73	15.16	14.25	12.90	15.09	15.01	15.68
.37	13.35	14.37	14.50	-	14.29	13.06	14.07	14.91	14.35	12.90	14.75	14.86	-
.49	13.35	-	-	-	-	13.06	14.07	-	-	12.86	-	-	-
.51	13.04	-	-	-	-	12.93	-	-	-	12.90	-	-	-
1398.32	11.53	13.89	14.06	-	12.78	13.35	14.22	14.69	14.35	12.90	14.94	14.81	-

J.D. 244....	T Cha	ST Cha	SW Cha	SX Cha	SY Cha	SZ Cha	TW Cha	UV Cha	VW Cha	VZ Cha	WW Cha	WY Cha	BC Cha
1398.35	$11^m.29$	$13^m.99$	$14^m.35$	$15^m.63$	$12^m.89$	$13^m.49$	$14^m.12$	$15^m.16$	$14^m.35$	$12^m.99$	$14^m.56$	$14^m.96$	$15^m.75$
.37	11.52	13.89	14.50	-	12.64	13.42	14.22	14.91	13.83	12.99	14.59	15.12	-
.39	11.52	13.94	14.12	-	12.89	13.49	14.22	15.24	14.25	12.99	14.88	15.19	-
1399.36	11.98	14.52	14.50	-	12.89	13.67	14.93	14.72	13.96	14.28	14.73	15.01	15.61
.38	12.34	14.37	14.35	15.50	12.89	13.55	14.83	14.87	14.25	13.80	14.74	15.14	15.44
.40	11.98	13.99	14.50	-	12.64	13.42	14.93	14.69	13.79	14.29	14.53	15.01	15.37
1412.29	15.11	13.99	14.66	15.50	13.58	13.42	13.50	14.27	13.79	14.29	14.80	14.99	14.35
.31	15.11	13.94	14.35	15.03	13.68	13.49	13.50	14.69	14.06	14.35	14.88	14.84	14.35
1416.23	12.18	14.10	14.50	15.26	13.68	13.35	14.93	14.69	13.50	13.56	14.99	14.94	14.24
.25	12.34	14.17	14.43	15.50	13.91	13.42	14.93	14.70	13.50	13.80	15.04	14.84	14.12
.27	12.50	14.17	14.50	15.50	13.91	13.29	15.14	14.67	13.50	14.05	14.53	15.14	14.12
.29	11.98	13.77	14.35	-	13.68	13.35	14.73	14.91	13.58	13.84	14.74	14.86	14.06
.31	11.98	13.89	14.35	15.50	13.40	13.35	14.93	14.91	13.65	13.80	14.59	14.71	14.24
.33	11.98	13.77	14.50	15.74	13.68	13.49	15.35	14.72	13.72	13.77	14.53	14.85	14.06
1419.36	14.17	14.11	14.12	-	13.30	13.49	14.02	14.69	14.35	13.77	-	14.99	14.41
1423.24	14.46	13.99	14.50	-	12.78	13.92	14.93	14.69	14.45	12.90	14.75	14.85	15.42
.26	13.85	13.99	14.50	15.63	12.64	13.66	15.14	14.67	14.45	12.78	14.69	15.01	14.81
.28	13.74	14.37	14.50	15.50	12.64	13.49	14.93	14.91	14.45	12.77	14.99	14.86	14.81
.30	14.23	14.20	14.43	15.50	12.64	13.49	14.73	14.69	14.35	12.36	14.59	14.96	15.05
.32	14.23	14.67	14.50	-	12.78	13.62	14.93	14.91	14.45	12.58	14.61	14.94	14.81
.34	13.98	14.66	14.43	15.19	12.64	13.49	14.93	14.67	14.65	12.77	14.74	14.85	15.05

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Konkoly Observatory
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A NEW RED SEMIREGULAR VARIABLE STAR: BD +18°4590

During the course of photoelectric photometry of Nova HR Delphini, performed with the 40 cm refractor of the Teramo Observatory,it was noticed that the star BD +18°4590, used as comparison star in 1970, is variable. It was possible to obtain the magnitudes reported in Table 2 (for the years 1970, 1971 and 1972) by means either of the check stars or of other comparison stars sometimes observed together with BD +18°4590; these magnitudes showed the existence of a brightness variation having an amplitude of about $0^m_{.}2$ in V light and a period of 30 days overlapping a much longer wave in the mean brightness.

In 1973 and 1974 the star was observed using for comparison the anonimous star labeled c in Fig, 1; the assumed magnitude and colour are given in Table 1.

Table 1

	V max	V min	B-V	Short period cycle amplitude	Short period cycle period
BD +18°4590	8.75	9.25	+1.76	$0^m_{.}2$	30^d
c	10.35		+1.50		

The observations are reported in Table 2; the data of 1970 and 1973 are also plotted in Fig.2 (in the remaining years the observations are too scanty to allow a useful graphic representation).The magnitudes of 1973, obtained with the usual technique of the variable stars photometry, are evidently more accurate than the magnitudes of 1970 fortunately recovered by means of the check stars:the mean error of a magnitude is ±0.01 for 1973 and 1974; ±0.03 for the other years. The characteristic photometric data for this star, that is listed neither in the General Catalogue of Variable Stars nor in its Special Supplement containing the suspected variables, are given in Table 1. The spectrum is classified in the Draper Catalogue as Map and the presence of bright lines is suspected.This new variable star appears to belong to the semiregular red variables classified in the G.C.V.S. as SRa. The period of 30 days, fairly well respected in 1970, appears less sharply defined in 1973,when pronounced irregularities in the light curve are present.

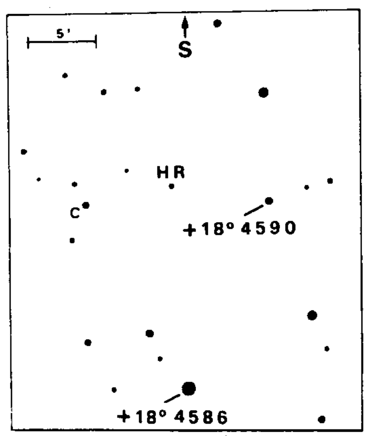

Fig. 1. Finding chart for the comparison star c.

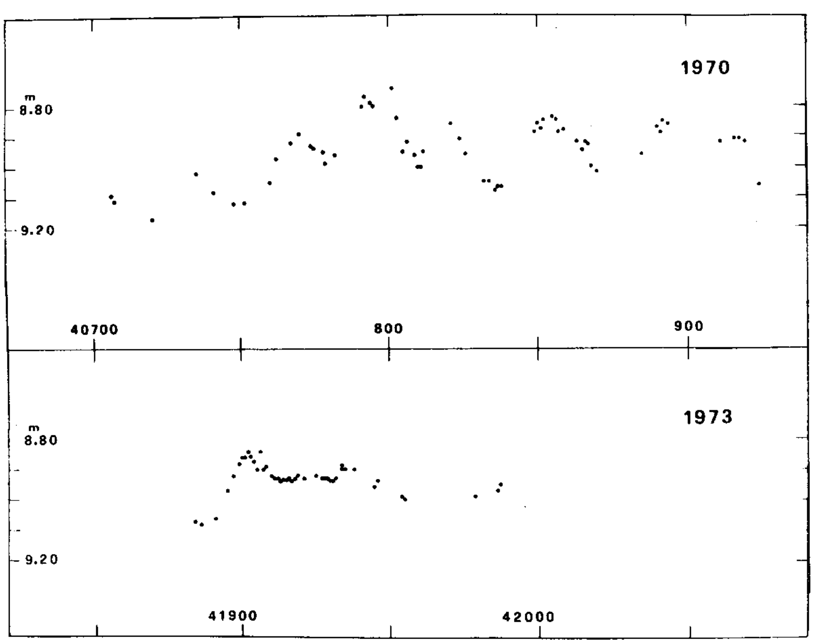

Fig. 2. Photoelectric V lightcurve of BD +18° 4590

Table 2

Date	V	Date	V	Date	V	Date	V	Date	V
1970						1973			
J. D.		J. D.		J. D.		J. D.		J. D.	
2440		2440		2440		2441		2441	
675.614	9.00	821.376	8.86	917.418	8.91	884.393	9.07	928.411	8.93
706.574	9.09	824.382	8.91	919.226	8.92	886.412	9.08	929.430	8.93
707.600	9.11	826.353	8.96	924.240	9.06	891.514	9.06	930.336	8.94
720.572	9.17	832.334	9.05			895.484	8.97	931.344	8.94
735.575	9.02	834.378	9.05	1971		897.451	8.92	932.331	8.93
741.571	9.08	836.375	9.08	J. D.		899.477	8.88	934.408	8.90
748.495	9.12	837.349	9.07			900.494	8.86	.421	8.89
751.567	9.12	838.377	9.07	2441		901.531	8.86	935.403	8.90
760.444	9.05	849.322	8.89	033.641	8.96	902.522	8.84	938.412	8.90
762.582	8.97	850.303	8.86	056.618	9.00	903.494	8.86	945.438	8.96
767.471	8.92	851.304	8.88	089.548	9.02	904.379	8.88	946.378	8.94
770.562	8.89	852.301	8.85	097.564	8.87	.475	8.87	954.394	8.99
774.422	8.93	855.320	8.84	134.548	9.09	905.399	8.90	955.359	9.00
775.447	8.94	856.378	8.85	144.388	9.02	906.500	8.84	979.259	8.99
778.442	8.95	857.421	8.89			907.450	8.90	986.252	8.97
779.444	8.99	859.285	8.88	1972		908.466	8.89	987.286	8.95
782.526	8.96	863.442	8.93			910.407	8.92		
791.381	8.80	865.267	8.95	J. D.		911.400	8.93		
792.376	8.77	866.272	8.92	517.477	9.03	912.398	8.93	1974	
794.396	8.79	867.292	8.93	543.355	8.86	913.359	8.94	J. D.	
795.475	8.80	868.267	9.00	544.481	8.86	914.341	8.93	2442	
801.367	8.75	870.452	9.02	545.435	8.84	915.368	8.93	224.493	8.97
803.405	8.84	885.274	8.96	568.535	9.04	916.465	8.93	241.454	9.10
805.445	8.95	890.254	8.87	625.240	9.13	917.454	8.94	270.408	8.91
807.370	8.92	891.246	8.89	626.239	9.14	918.514	8.93	272.385	8.89
809.390	8.96	892.303	8.85	628.246	9.18	919.475	8.92	276.402	8.91
810.406	9.00	894.270	8.86	634.233	9.26	921.421	8.93		
811.427	9.01	911.266	8.92	659.224	8.92	925.340	8.92		
812.381	8.95	916.282	8.91	661.251	8.92	927.394	8.93		

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PHOTOELECTRIC TIMES OF MAXIMA OF BW Vul

Photoelectric V-band observations of BW Vulpeculae were made in 1974 and 1975 with a 40 cm Cassegrain reflector and single-channel photoelectric photometer equipped with an EMI 6256B photomultiplier. Each observation consisted of the average of three ten-second integrations. The starsSAO 70596, 89134 and 89135 were used as the comparison and check stars.

The heliocentric Julian dates of the observed maxima, along with the O-C values resulting from Huffer's ephemeris (1937) with period $P = 0\overset{d}{.}20103$ and from our revised period $P = 0\overset{d}{.}201032$ using Huffer's initial epoch are given in the table below.

Heliocentric JD of Maximum	O-C ($P = 0\overset{d}{.}20103$)	O-C ($P = 0\overset{d}{.}201032$)
2,442,350.7854	$+0\overset{d}{.}102$	$-0\overset{d}{.}033$
2,442,356.8112	+0.097	-0.038
2,442,678.8780	+0.113	-0.025

The revised period $P = 0\overset{d}{.}201032$ also reduces by a factor of ten the O-C values of the times of maxima observed by Walker (1954). The following new ephemeris is suggested for this star's times of maxima:

$$\text{Hel. JD (max)} = \text{JD } 2,442,678.8780 + 0\overset{d}{.}201032 \cdot E$$

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References:
Huffer, C.M., 1937, Astrophysical Journal, 87, 76
Walker, M.F., 1954, Astrophysical Journal, 119, 631

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Budapest
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A SHORT PERIOD LIGHT VARIATION IN NOVA CYGNI 1975

As already announced (Tempesti 1975) photoelectric monitoring of Nova Cygni 1975 performed on September 9 with the 40 cm refractor of the Teramo Observatory showed the existence of periodic brightness fluctuations having an amplitude of $0^m.15$ in V light and a period estimated at first glance at 3.2 hours. The observations carried out during subsequent nights have shown the persistence of the fluctuations and confirmed their periodic character; the accurate elaboration of all the observational material will take several months: here only a short report is given, based on a preliminary coarse reduction.

Fig. 1a and 1c show the light-curves obtained during the nights September 9/10 and 14/15, respectively. BD $+47^o3348$, with the assumed V magnitude 6.46 (Ljunggren and Oja 1964), has been used as comparison star; the star BD $+47^o3340$ has been measured each night alternatively with the comparison star along all the night runs: in Fig. 1b and 1d the magnitude differences between these two stars (check minus comparison) are plotted.

On September 9/10 the amplitude resulted at least $0^m.15$ (not all the observations are reported in Fig. 1a); on September 14/15 the amplitude seems to be decreased to $0^m.12$ and also the shape of the light-curve appears notably different from that one of September 9. On the other hand the period is fairly well kept: the four minima of Fig.1 allow to derive the value $P = 0^d.137$ and a preliminary computation with the times of these minima gives residuals not exceeding $0^P.007$. The minimum of September 15.00 appears $0^m.03$ deeper than the preceding one; whereas the second observed minimum of September 9/10 appears only $0^m.01$ deeper than the preceding one; considering the 3-hours wave as a distinct phenomenon overlapping the steady decline of the nova, the two minima of September 9/10 are of equal depth, because the magnitude difference roughly equals the light decay of the nova, at that epoch, in 0.14 days.

I have ascribed the slight decrease of ΔV which is noticeable in Fig. 1b to a brightening of the check star; if, however, the trend of the ΔV is due to a fading of the comparison star, then in reality the depth of the two minima differs in magnitude by 0^m03 like the two minima of September 14/15. I hope that a closer examination of the observational material will allow to settle the question.

The observational program is still going on: a detailed account will be submitted for publication to the European Journal Astronomy and Astrophysics.

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References:

Ljunggren, B., Oja, T. 1964, Arkiv för Astronomi 3, 439
Tempesti, P. 1975, I.A.U. Circ. 2834

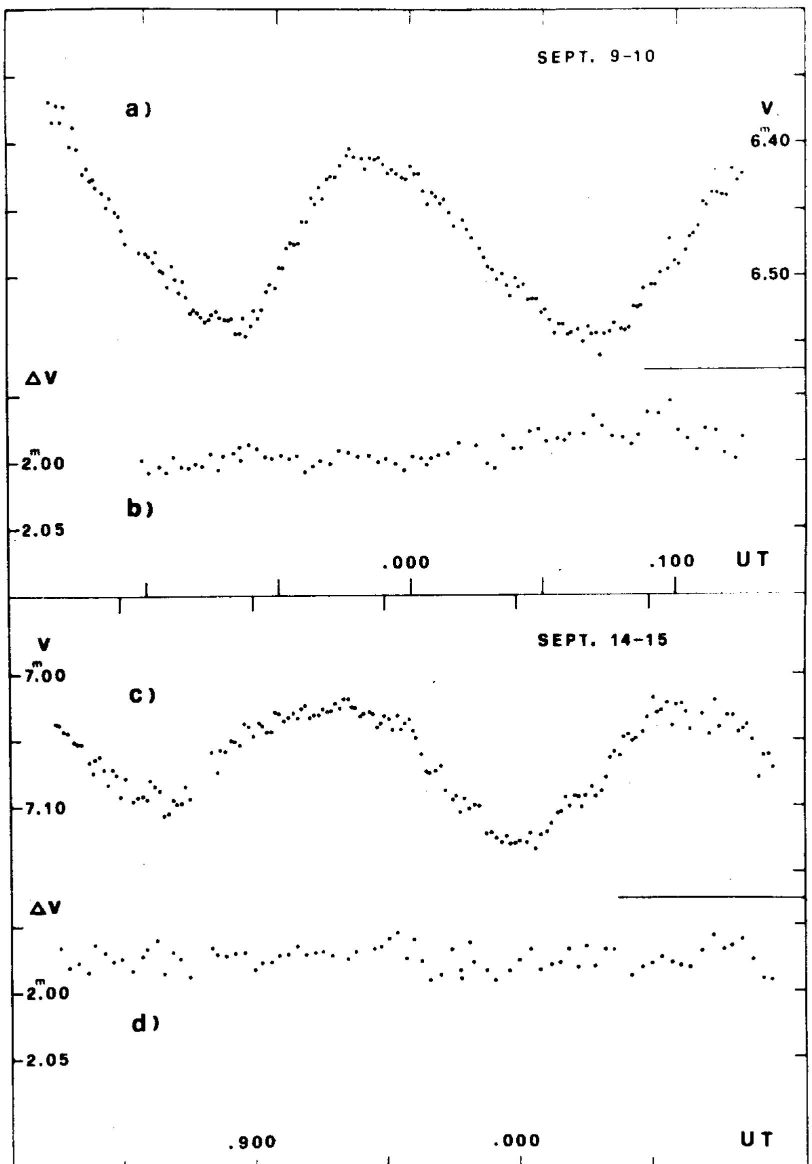

Fig. 1. A) and c): light-curves of the nova. B) and d): magnitude differences between check and comparison stars (check minus comparison). All the plotted data are corrected for extinction.

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PHOTOELECTRIC MINIMA OF ECLIPSING BINARIES

The following Table gives photoelectric minima obtained during the year 1974 at the Ege University Observatory, Izmir (Turkey) and the Nürnberg Observatory (Germany). Minima of eclipsing binaries observed at both observatories 1960-1973 were published in Astr.Nachr. 288, 69 (1964); 289, 191 (1966); 291, 111 (1968); IBVS 456 (1970), 530 (1971), 647 (1972) and 937 (1974).

The Table gives besides the heliocentric minima three different O-C's, the type of filter (UBV), the abbreviations of the names of the observers and the type of the instruments used (Izmir: 48 cm Cassegrain, Nürnberg: 34 cm Cassegrain, both with phototube 1P21).

Remarks:

O-C (I) : GCVS, Moscow 1969/70 or First or Second Supplement to the Third Edition of the GCVS, Moscow 1971 and 1974.

O-C (II) : SAC 46, Krakow 1974

O-C (III) : i Boo IBVS 209 (1967) Pohl
RZ Cas Scientific Reports of the Faculty of Science, Ege University No. 120, Astronomy No. 12 (1971), A.Kizilirmak

The (O-C)'s for secondary minima (Min II) were calculated on the supposition that they are symmetric between primary minima (if not special data are given).

m: only the elements I or the elements II give secondary minimum.

The sign=between O-C (I) and O-C (II) indicates, that the elements (I) and (II) are equal.

The sign : means that the time of minimum is uncertain.

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Star	Min.hel.	O-C (I)	O-C (II)	O-C (III)	Filt.	Obs.	Instr. cm	Rem
	2442							
RY Aqr	303.3012	-0.0159	-0.0255		B	Gl/An/Sr	48	
	303.3015	-0.0156	-0.0252		V	Gl/An/Sr	"	
KO Aql	245.4798	+0.0960	-0.0037		B,V	Gd/Ek	"	
OO Aql	247.4023	-0.0004	+0.0084(m)		B,V	Gd	"	
	252.4697	-0.0009	+0.0080(m)		B	Gd/Ek	"	
	252.4704	-0.0002	+0.0087(m)		V	Gd/Ek	"	
805 Aql	324.2660	+0.0201 =	+0.0201		B	Er/Hn	"	
	324.2663	+0.0204 =	+0.0204		V	Er/Hn	"	
SX Aur	132.3431	+0.0189	+0.0154		B,V	Ib/An/Hn	48	
	403.4045	+0.0230	+0.0195			Ar/Be/Gr	34	
XY Boo	183.400 :	-0.028 :			B,V	Od/Hn	"	
i Boo	095.454 :	+0.024 :	+0.029 :	+0.021 :	V	Sc/Sh/Vo	34	
	122.371 :	+0.025 :	+0.031 :	+0.023 :	V	Gr/Sc	"	MinII
	187.440 :	+0.015 :	+0.021 :	+0.013 :	V	Eb/Gr	"	MinII
	219.447	+0.019	+0.025	+0.016	B,V	Gl	48	
	268.323	+0.019	+0.025	+0.016	B	Gl/Hn	"	MinII
	268.324	+0.020	+0.026	+0.017	V	Gl/Hn	"	MinII
SV Cam	366.281 :	-0.009	-0.005		B,V	Gl/Tn/Sr	"	
RZ Cas	289.5308	+0.0030	-0.0049	+0.0031		Sc/We	34	
	300.2881	+0.0031	-0.0049	+0.0033	B	Ib/Hn/Er	48	
	300.2884	+0.0034	-0.0046	+0.0036	V	Ib/Hn/Er	"	
	325.3889	+0.0037	-0.0044	+0.0042	B,V	Er/By	"	
TV Cas	289.582 :	-0.013	-0.005		B,V	Er/Hn/Sr	"	
TW Cas	265.4822	+0.0026	-0.0207		B	Ib/Gl/Sr	"	
	265.4836	+0.0040	-0.0193		V	Ib/Gl/Sr	"	
DO Cas	405.3628	+0.0024 =	+0.0024			Ar/Eb/We	34	
VW Cep	146.461 :	+0.016 : =	+0.016 :			Gp/Sb	"	MinII
	261.3962	+0.0078 =	+0.0078		V	Tn/Er/Hn	48	MinII
	261.5351	+0.0075 =	+0.0075		V	Tn/Er/Hn	"	
	263.4812	+0.0054 =	+0.0054			Eb/We	34	
	364.376 :	+0.011:=	+0.011:		V	Ki/Sr	48	MinII
	385.386	+0.009 =	+0.009		V	Ki/Er/Ek	"	

Star	Min.hel.	O-C (I)	O-C (II)	O-C (III)	Filt.	Obs.	Instr. cm	Rem
	2442							
KR Cyg	221.4741	-0.0127	+0.0073			Eb	34	
MY Cyg	276.5320	+0.0107 =	+0.0107			Eb/We	"	
548 Cyg	279.3841	+0.0065	-0.0126		B,V	Ib/Er/Hn	48	
1034 Cyg	223.350 :	+0.030 :	-0.002 :		B	Ib/Hn	"	
	223.348 :	+0.028 :	-0.004 :		V	Ib/Hn	"	
TW Dra	258.5032 :	-0.0351 :	+0.0009 :			Eb/Sb/We	34	
AI Dra	283.4262	+0.0002	+0.0076		B	Er/Hn	48	
	283.4267	+0.0007	+0.0081			Eb/We	34	
	283.4269	+0.0009	+0.0083		V	Er/Hn	48	
BS Dra	302.4277	-0.0567	-0.0567		B	Er/Ek	"	
	302.4280	-0.0570	-0.0570		V	Er/Ek	"	
	371.3907	-0.0567(m)	-0.0567			Eb/Sc	34	
TT Her	190.364 :	-0.014 :=	-0.014 :		B	Od/Hn	48	
	190.362 :	-0.016 :=	-0.016 :		V	Od/Hn	"	
TẊ Her	279.303 :	-0.006 :	+0.003 :		B,V	Ib/Er/Hn	"	MinII
	280.3332	-0.0060	+0.0036		B,V	Gd	"	
AK Her	186.4592	+0.0007	-0.0216			Eb/Gp	34	
	240.4135	0.0000	-0.0225		B	Gd	48	
	240.4142	+0.0007	-0.0218		V	Gd	"	
UV Leo	147.4502:	-0.0054:	+0.0072:			Eb/Hu	34	
FL Lyr	194.5042	-0.0019	+0.0047			Eb/Gr	"	
U Oph	217.3754	-0.0048	-0.0021		B,V	Ki/Gd	48	
451 Oph	286.3136	-0.0022	-0.0019		B,V	Ib/An	"	
456 Oph	239.410	+0.167			B,V	Od/By/Ek	"	MinII
566 Oph	193.4828	+0.0176 =	+0.0176			Bo/Mi	34	
	251.4448:	+0.0154:=	0.0154 :			Be/Sb	"	MinII
	268.4480	+0.0185 =	+0.0185		B	Gl	48	
	268.4474	+0.0179 =	+0.0179		V	Gl	"	

Star	Min.hel.	O-C (I)	O-C (II)	O-C (III)	Filt.	Obs.	Instr. cm	Rem
	2442							
FT Ori	095.334 :	+0.016 :	+0.027 :			Pf/Sc	34	
DI Peg	289.429	-0.002	-0.010		B	Od/Er/Sr	48	
	289.428	-0.003	-0.011		V	Od/Er/Sr	"	
AG Per	096.386	-0.012	+0.007			Eb/We	34	MinII
IZ Per	324.4202	+0.0163 =	+0.0163		B,V	Er/Hn	48	
U Sge	275.4572	-0.0045	-0.0045			Be/Sc/We	34	
CC Ser	251.400 :	+0.001 :=	+0.001 :		B	Od/Hn	48	
	251.401 :	+0.002 :=	+0.002 :		V	Od/Hn	"	
471 Tau	006.3140	-0.0007			B	Ib	"	
	387.301 :	+0.001 :			B	Ib	"	
W UMa	089.3858	-0.0889	-0.0058			Pf/We	34	
TX UMa	201.4143:	-0.0003:	-0.0001:			Ar/Gr/Sc	"	
Z Vul	267.4608	+0.0106 =	+0.0106			Eb/We	"	
DR Vul	281.380	+0.010				Eb/We	"	

Abbreviations of the observers' names:

An = H. Alkan
Ar = G. Arneth
Be = G. Besold
Bo = G. Bode
By = C. Baygün
Eb = J. Ebersberger
Ek = S. Ertükel
Er = A.Y.Ertan
Gd = N. Güdür
Gl = Ö. Gülmen
Gp = G. Grampp
Gr = R. Gröbel
Hn = H. Halicinarli
Hu = R. Hufnagel
Ib = C. Ibanoglu
Ki = A. Kizilirmak
Mi = P. Mittermeier
Od = O. Demircan
Pf = T. Pfeiffer
Sb = R. Sendelbeck
Sc = H. Schellemann
Sh = T. Scharold
Sr = C. Sezer
Tn = Z. Tunca
Vo = H. Vogel
We = Th. Weber

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HR6611: AN INTERESTING NEW ECLIPSING BINARY

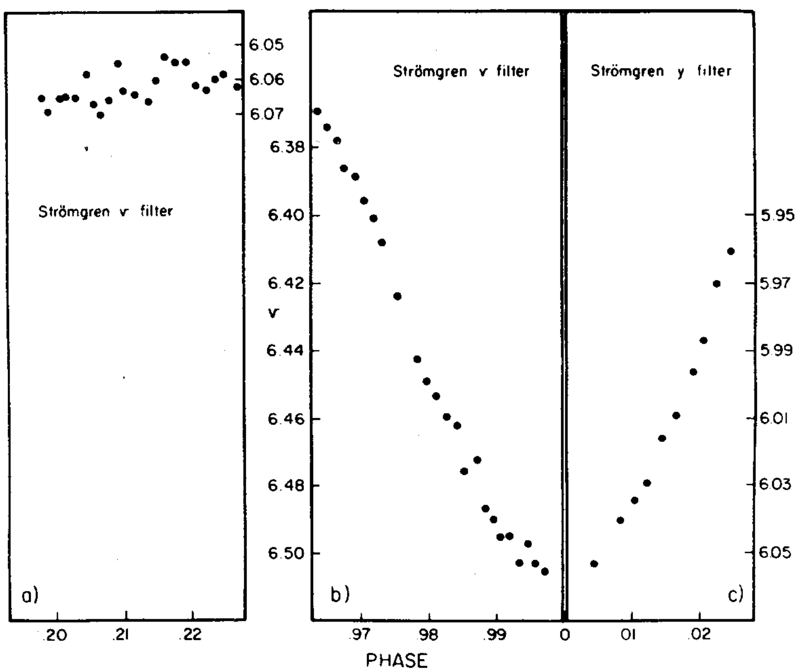
HR6611 is an A3m: star (Cowley et al., 1969) which was discovered to be eclipsing while being tested for pulsational light variability. Figure 1 is a plot of the observations obtained using the photoelectric Volksphotometer on the McDonald Observatory 92cm telescope. The descending branch of the light curve was obtained on June 22, 1975UT in the Strömgren v filter and the ascending branch was obtained four days later in Strömgren y. They were pieced together assuming that the spectroscopic period, P=3.894 days(Petrie, 1928), applies. The epoch derived is T_O = JD 2442585.940 ± 0.005. Strömgren v magnitudes are shown outside of eclipse in Figure 1a from which we derive an eclipse depth of 0.45 mag in v. All of the light curves are relative to two comparison stars.

HR6611 is potentially a very interesting system. Although Cowley et al. (1969) classify it as A3m:, Bidelman (Abt and Bidelman, 1969) classifies it as "definitely Am". uvbyβ photometric indices indicate that the primary is more than a magnitude above the main sequence making it one of the most luminous Am stars known. Petrie (1928) derived a mass ratio of 0.89 from the radial velocity curve but noted that the primary lines were twice as strong as those of the secondary. He also derived (Petrie, 1950) a magnitude difference between the two components of 0.99 mag. and spectral types of A4 and A7 for the primary and secondary, respectively. Abt (1975) gives <u>v sin i</u> of 30 and 25 km sec^{-1}, respectively.

How do Am abundances increase with increasing luminosity (age)? HR6611 is composed of two slowly rotating A stars of different mass and luminosity hence probably different evolutionary states. In addition, it is one of the most luminous Am stars known and consequently may provide much information concerning the above question.

We plan to obtain high dispersion spectra during eclipse when one component will be partially hidden in order to obtain relatively uncontaminated abundances. In addition, we plan to obtain a complete light curve and uvbyβ photometry during eclipse to derive individual temperatures and surface gravities for both components. This, coupled with a new radial velocity curve which will yield individual masses, should be useful in constraining theoretical evolutionary models.

I would like to thank Dr. Michel Breger's summer observing class for obtaining the eclipse egress on June 26, 1975UT.



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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1055

Konkoly Observatory
Budapest
1975 October 27

PHOTOELECTRIC PHOTOMETRY OF CW Ser

The RR_s-star CW Ser was observed photoelectrically in two successive nights in June, 1975. It was observed because no photoelectric data of this star have been published so far. The third edition of the GCVS (Kukarkin et al., 1970) gives a photographic magnitude variation between 11^m and 12^m.
Our differential measurements in B and V are listed in Table 1. Comparison star was a 10^{th} magnitude star 2′ south and 39^s east of CW Ser. Each value in Table 1 is a normal point corresponding to a total integration time of 160 sec.
The light curves are shown in Fig.1. The measurements of June 11 have been plotted as circles, those of June 12 as crosses. The larger scatter of the observations of June 12 is caused by minor weather conditions. Two times of maximum have been determined. They are

$$\text{Max.} = JD_{\odot}\ 2442575.500 \pm 1$$

and

$$\text{Max.} = JD_{\odot}\ 2442576.443 \pm 1$$

According to these values and the epoch given in the GCVS the period has to be slightly increased by 4 units on the eighth digit. The improved period value is

$$P = 0^d18915054 \pm 1$$

The amplitudes in B and V are

$$\Delta B = 0^m75 \pm 0^m05$$
$$\Delta V = 0^m50 \pm 0^m05$$

The time for the rising branch is 0.32 periods, confirming the value given in the GCVS. The photographic amplitude, however, is smaller than the value given in the GCVS.
Comparison of the observations of the two different nights suggests that an amplitude variation may occur in CW Ser, as it is observed for many other RR_s-stars.

Table 1

$JD_{\odot}2442000+$	ΔB	$JD_{\odot}2442000+$	ΔV
575.4299	1.00	575.4350	1.50
.4368	0.94	.4369	1.46
.4455	.89	.4442	1.47
.4526	.79	.4492	1.42
.4593	.71	.4556	1.36
.4659	.64	.4613	1.27
.4716	.56	.4677	1.25
.4780	.43	.4752	1.05
.4855	.34	.4823	1.06
.4906	.28	.4884	1.05
.4958	.19	.4936	1.02
.5013	.21	.4988	0.97
.5072	.23	.5047	0.98
.5135	.26	.5107	0.98
.5190	.38	.5165	1.06
.5250	.42	.5219	1.11
.5310	.43	.5286	1.12
.5363	.46	576.4096	1.31
576.4104	.66	.4156	1.25
.4169	.54	.4188	1.18
.4238	.39	.4274	1.07
.4353	.22	.4360	0.99
.4410	.24	.4408	1.00
.4476	.23	.4471	0.97
.4599	.34	.4589	1.03
.4648	.37	.4641	1.06
.4691	.38	.4686	1.06
.4764	.41	.4759	1.05
.5106	.62	.4811	1.07
.5160	.68	.4889	1.06
.5224	.69	.4939	1.12
.5325	.67	.4997	1.16
.5413	.69	.5077	1.17
.5486	.77	.5134	1.22
.5564	.78	.5182	1.26
.5610	0.90	.5254	1.29
		.5349	1.33
		.5439	1.31
		.5514	1.33
		.5585	1.34
		.5616	1.36

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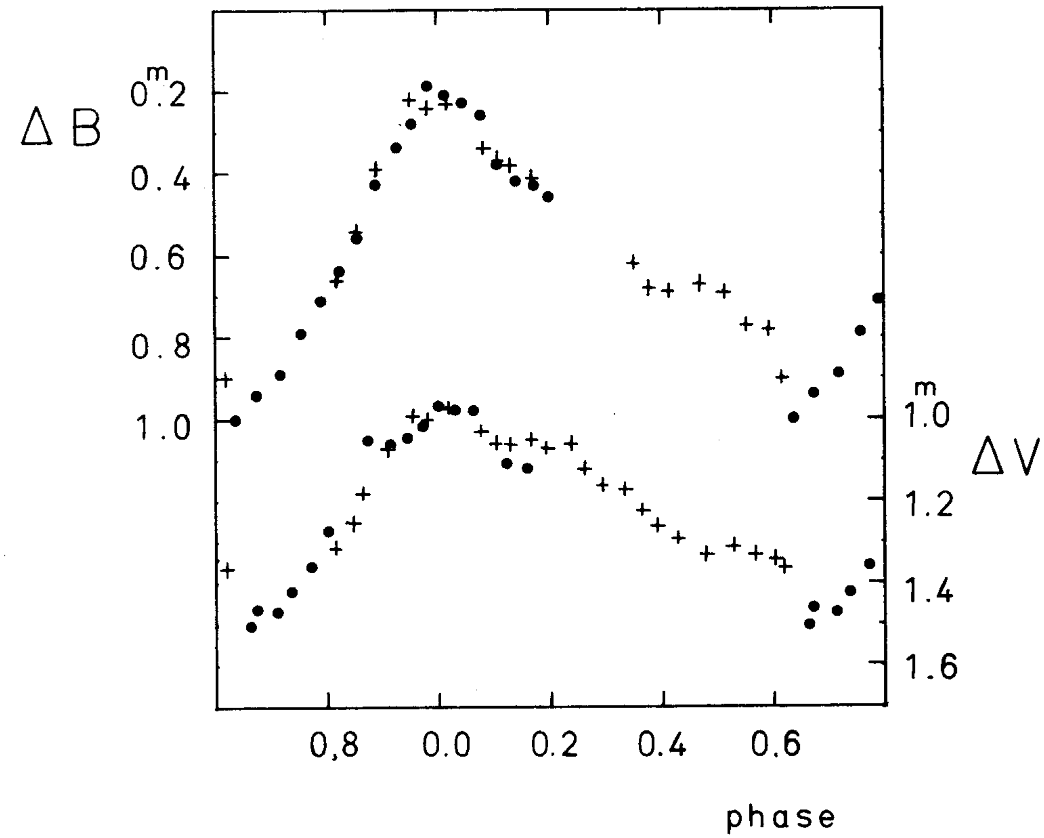
Fig. 1



COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1056

Konkoly Observatory
Budapest
1975 November 4

ETOILES NAINES ROUGES VARIABLES

A trois reprises (Petit 1953, 1968, 1970) j'ai signalé des naines rouges pour lesquelles des discordances importantes dans les magnitudes données par divers catalogues font penser à une variabilité possible. Pour plusieurs d'entre elles, cette variabilité a été vérifiée.

Voici 15 autres étoiles dont la variabilité est possible. La première colonne donne la numérotation du "Catalogue of nearby stars" de Gliese (1969) d'où sont extraits aussi les valeurs de V, B-V et le spectre; Δ est l'importance des discordances observées.

Gl	Design.	AR 1950	Dec	V	B-V	Sp	Δ
148	+3°515	$3^h38^m34^s$	+ 3°27'3	9.72	1.43	dM0p	0.2V
165	Ross 29	4 09 27	+50 24 2	13.5		dM5	1.5pg
281	+2°1729	7 36 48	+ 2 18 2	9.66	1.38	dM0	0.2V
479	-51°6859	12 35 11	-51 43 6	10.25	1.47	dM3	0.14V
499	+21°2486	13 03 49	+20 59 7	12.8		M	1.7pg
536	-1°2892	13 58 31	+ 2 25 3	9.8		dM0	0.5pg
546	+30°2512	14 19 48	+29 51 7	8.54	1.26	K8V	0.5pg
553	-7°3856	14 28 12	- 8 25 3	9.40	1.41	K7V	0.6pg
579	+25°2874	15 05 16	+25 07 2	9.94	1.36	K7V	0.2V
649	+25°3173	16 56 07	+25 49 6	9.72	1.50	dM2	0.1V
682	-44°11909	17 33 28	-44 16 6	11.2		dM5	0.5pg
686	L1278-24	17 35 39	+18 36 4	9.62	1.53	dM1	0.2V
701	-3°4233	18 02 28	- 3 01 9	9.38	1.52	dM2	0.5pg
730	Ross 142	18 47 31	+ 3 02 1	10.72	1.49	dM2	0.15V
876	-15°6290	22 50 35	-14 31 2	10.1		dM5	0.1V

Remarques

165 Couple serré (0"75) noté de pmg globale 14.0 (van Maanen) 15.4 (Giclas) 15.5 (Luyten)

479 Notée variable par Gliese (1969)

499 Le compagnon semble varier de mpg 13.2 à 14.9

553 Couple écarté (50") peu connu

649 Binaire spectroscopique probable

730 Variations nettes de l'indice B-V

La réobservation de ces étoiles s'impose, particulièrement celle de Gl 479, dont la variabilité semble très probable,et celle des étoiles Gl 148, 281, 499, 546, 649 et 730, dont les spectres montrent les raies d'émission de CaII.

MICHEL PETIT
Drancy

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1057

Konkoly Observatory
Budapest
1975 November 4

V1057 CYGNI

Photographic observations of this star made on 28 Sept.1975 with the Uppsala-Kvistaberg Schmidt telescope have given the following magnitudes (with probable errors of the order less than $\pm$0.10 mag.):

V = 10.45 B = 12.20 U = 13.00

When comparing these magnitudes with those given earlier, e.g., by Schwartz and Snow (Astrophys.J. 177, L85, 1972), it appears that the rate of brightness decrease (Gieseking,Astron. Astrophys. 31, 117, 1974) has diminished, or even come to an end. There is, however, an excess decrease in B. Although this maybe should not be taken too seriously (due to the rapid variations of about one or two tenths of a magnitude observed during the general decrease, cf. Gieseking, op. cit.) , it might be compared to the small decrease in photographic magnitude observed in FU Orionis around the time when this star developed a G-type shell (Wachmann, Zeitschr. f. Astrophys. 35, 74, 1954). Recent objective-prism spectra (unfortunately of a rather poor quality) suggest that the spectral type has not changed appreciably since the observations by Schwartz and Snow. There seem, however, to have appeared absorption features around $\lambda\lambda$ 4200, 4270 and 4390 Å, which may point to the development of a shell. It is hoped that further observations will settle this issue.

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ERRATA-CORRIGE

Correction to IBVS No. 1045

A.J. Nicastro: PHOTOELECTRIC OBSERVATIONS OF DO CEPHEI

The seventh paragraph under the section II. The Flares should read:

A few observers have noted that flares occur in a set or ensemble. Indeed, the present series of observations show this same feature. We note that 54% of the flares detected occurred within 5 minutes of another flare, 64% within 15 minutes, 73% within 30 minutes, and 86% within one hour. This indicates, as was pointed out by many previous observers, that these events are associated with some active region on the star.

A.J. NICASTRO

Correction to IBVS No. 1052

P. Tempesti: A SHORT PERIOD LIGHT VARIATION IN NOVA CYGNI 1975

At page 1, lines 18-20 instead of

"On September 9/10 the amplitudes resulted at least $0\overset{m}{.}15$ (not all the observations are reported in Fig. 1a); on September 14/15 the amplitude seems to be decreased to"

Must be read:

"On September 9/10 the amplitude resulted at least $0\overset{m}{.}16$; on September 14/15 the amplitude seems to be lowered to..."

P. TEMPESTI

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1058

Konkoly Observatory
Budapest
1975 November 5

SHORT PERIOD VARIABILITY OF NOVA CYGNI 1975

Short period variability of Nova Cygni 1975 was reported by Tempesti (1975a,b) and Koch and Ambruster (1975a,b).

Nova Cygni was monitored photoelectrically for about 3 hours in B and V on September 8 and for about 6 hours in V on September 18, 1975. The observations were carried out with the aid of the 60 cm reflector of the Ostrowik station of the Warsaw University Observatory. The star BD $+47^{o}3322$ was used as the comparison on the first date and BD $+47^{o}3340$ on the second date.

The differences ΔV and ΔB (in instrumental system) between the Nova and the corresponding comparison star are plotted in Figure 1. Full dots in Figure 1 denote yellow observations, the open circles correspond to blue observations. The amplitude of light variations was about 0.16 mag. in blue and 0.14 mag. in yellow on September 8 and 0.06 mag. in yellow on September 18.

The times of minima determined on basis of the present observations are $JD_{\odot}$ 2442664.302, 2442674.308 and 2442674.453 and the times of maxima are 2442664.359 and 2442674.359.

Figure 2 shows O-C diagram obtained on basis of the present times of minima and maxima and those given by Koch and Ambruster (1975a,b). The times of minima in the Figure 2 are marked with full dots, the times of maxima with open circles. The O-C residuals were calculated with the preliminary ephemeris Min = = 2442664.302 + 0.1410E, Max = 2442664.359 + 0.1410E.

The O-C diagram seems to indicate change of period.

Thanks are due to Miss J.Wołczyk for help in observations.

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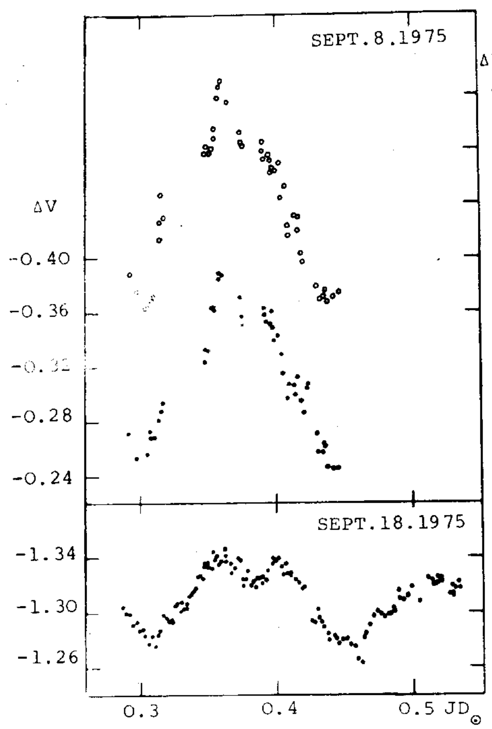
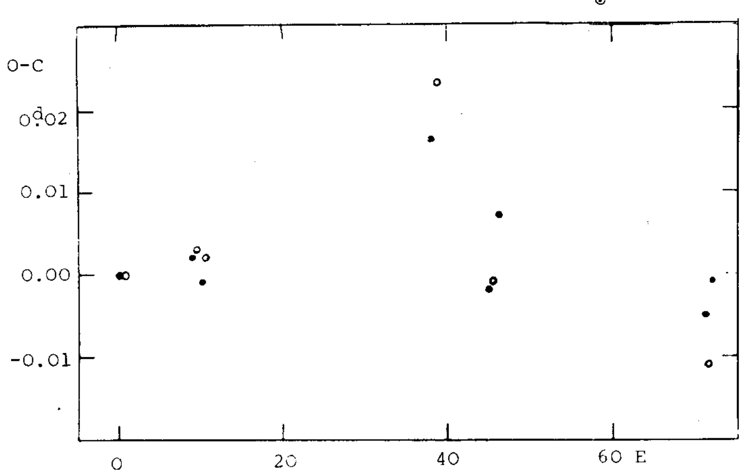
1975b, ibid., 2839

Tempesti, P. 1975a, ibid., 2834
1975b, ibid., 2842



SEPT.8.1975
ΔB
0.10
0.14
0.18
0.22
0.26
ΔV
-0.40
-0.36
-0.28
-0.24
SEPT.18.1975
-1.34
-1.30
-1.26
0.3
0.4
0.5 JD⊙

Fig.1



O-C
0.02
0.01
0.00
-0.01
0
20
40
60 E

Fig.2

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Number 1059

Konkoly Observatory
Budapest
1975 November 5

NON-VARIABILITY OF NQ Her.

Further to the observations of NQ Her in 1965 by Blanco (1), in 1968 by Popovici (2) and Bozkurt, et al. (3) in 1972 the star was observed by us photoelectrically on 11 nights during the five-year interval May 1970 - May 1975. Our observations through U,B,V filters (see Fig.1) confirm these and earlier results of non-variability of the star at least since 1963. The plots in Fig.1 are based on the ephemeris Pr.Min. = J.D. 2426894.433 + $0^d.870218 \cdot E$ mentioned by Kukarkin, et al. (4). BD + $18^{\circ}3580$ was used as a comparison star. Considering the above behaviour of the star, it need no longer be considered a variable.

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1) Blanco, C., 1971, I.B.V.S. No. 571
2) Popovici, C., 1971, I.B.V.S. No. 509
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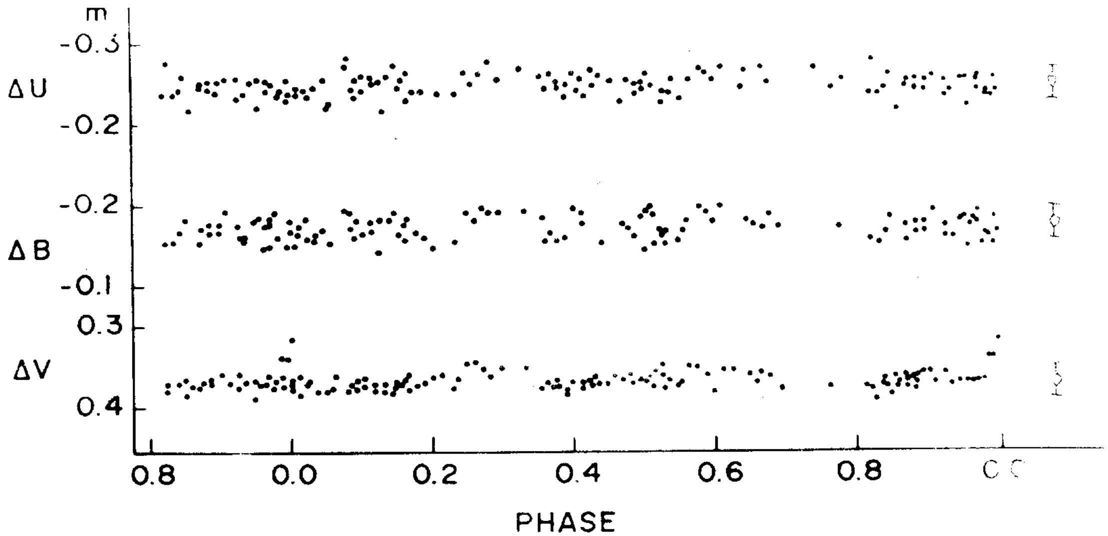

Fig. 1. Light Curves of NQ Her
The differential magnitudes are in the sense Variable minus Comparison.
The $\pm 2\sigma$ error bars for the Comparison Star are indicated along the side.

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INFORMATION BULLETIN ON VARIABLE STARS
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Konkoly Observatory
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ABOUT THE INTRINSIC POLARIZATION OF AW UMa

Polarimetric observations of the W UMa-type eclipsing binary AW UMa were made on five nights in March and April 1974. The observations were carried out using the polarimeter and reduction methods described by Piirola (1973, 1975). The polarimeter was attached to the 60 cm Ritchey-Chrétien telescope of the University of Helsinki. With a 40 s effective integration at each of eight position angles, the time for one observation was about 12 min. To obtain as good signal-to-noise ratio as possible, no light filters were used. The effective wavelength was about 4900 Å.

In Fig. 1 the observed normalized Stokes parameters of linear polarization, P_x and P_y, are plotted as a function of phase. Each point represents a single observation. The changes in observed polarization are very small and no clear systematic effects depending on orbital phase can be found. When the Stokes parameters were plotted against hour angle, to check for any systematic changes in instrumental polarization, no correlation between observed polarization and hour angle could be detected. Instrumental polarization was found to be very small and stable also by observations of nearby stars (Piirola 1975).

The mean values of the observed normalized Stokes parameters with their standard errors are given in Table 1 for each night. It can be seen that the mean values are practically zero, i.e. no significant intrinsic polarization is present. Also interstellar polarization is negligible, due to the short distance and high galactic latitude of the object.

Table 1 also gives the standard deviations of the normalized Stokes parameters around the mean values, σ_x and σ_y, and the quadratic means of the internal standard errors, $\overline{\sigma_{int.}}$. Internal standard errors are calculated from the measurements made at the eight position angles of the polarimeter. The deviations are not larger than is expected from photon noise.

Table 1

Mean values of normalized Stokes parameters for AW UMa. 1 mean value of P_x with standard error of the mean; 2 standard deviation of P_x; 3 mean value of P_y with standard error of the mean; 4 standard deviation of P_y; 5 quadratic mean of internal standard errors; 6 number of observations.

Date 1974	1 P_x (%)	2 σ_x (%)	3 P_y (%)	4 σ_y (%)	5 $\overline{\sigma_{int}}$ (%)	6 n
Mar 09	-.002±.007	±.026	.016±.006	±.033	±.026	35
Mar 26	-.005 .009	.039	-.005 .010	.037	.026	18
Apr 09	.008 .006	.022	.006 .007	.025	.019	12
Apr 11	.006 .006	.026	.019 .008	.033	.023	18
Apr 28	.013 .007	.023	.004 .008	.028	.022	14
mean	.003±.002		.011±.004			

It is clear that the changes in polarization of AW UMa were very small in the spring 1974, and no evidence for significant gaseous streams or disks could be found. Thus we can state that if the rather strong variable polarization of AW UMa observed by Oshchepkov in the spring 1972 (Oshchepkov 1974) is real, the mechanism producing the polarization has disappeared between the spring 1972 and the spring 1974.

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Acknowledgement

These observations are part of a work supported by Suomen Kulttuurirahasto (Finnish Cultural Foundation).

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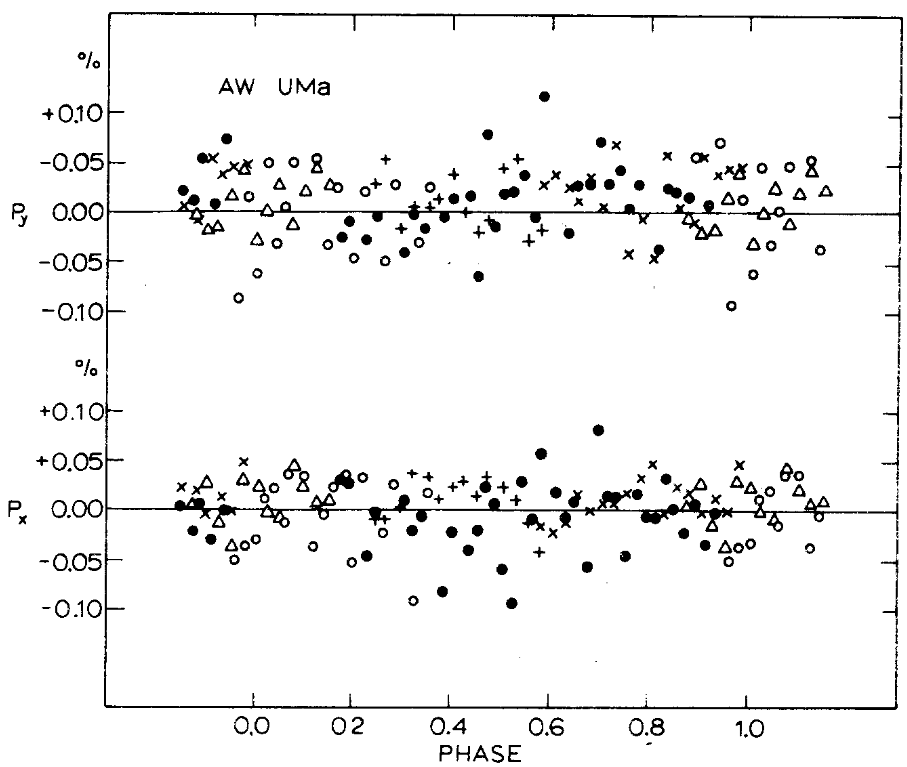

Fig. 1. The polarization parameters P_x and P_y, plotted as a function of phase for AW UMa. The symbols refer to the following dates: • 1974 March 09, o 1974 March 26, Δ 1974 April 09, × 1974 April 11, + 1974 April 28.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1061

Konkoly Observatory
Budapest
1975 November 14

POLARIMETRIC OBSERVATIONS OF U CEPHEI DURING THE PRIMARY ECLIPSE

Polarimetric observations of U Cephei were made during six primary eclipses from Oct. 1972 to Oct. 1975. The observations were carried out using the polarimeter and reduction methods described by Piirola (1973, 1975). The polarimeter was attached to the 60 cm Ritchey-Chrétien telescope of the University of Helsinki. A standard B-filter and an integration time of 20 s at each of eight position angles of the instrument were used.

The observed degree of linear polarization P and position angle θ in equatorial coordinates are plotted as a function of phase in Figs. 1 and 2. Each point represents a single observation. The error bars correspond to internal standard errors, computed from measurements made at the eight position angles of the polarimeter. Internal errors are mainly due to photon noise. The phases were calculated according to the ephemeris

$$\text{Min.I: J.D.} = 2441938.8476 + 2^{d}.4930822 \cdot E,$$

derived from observations of Baldwin (Scarfe et al. 1973).

From Fig. 1 we can see that on 1975 Sept. 08 the degree of polarization P increased during the eclipse and reached a maximum near third contact. Also the position angle θ changed near second contact. On 1972 Dec. 27 some increase of polarization occurred both near second and third contact and the position angle varied during the total eclipse. On 1973 Feb. 10 changes were small both in the degree and the position angle of polarization.

From Fig. 2 we can see that on 1975 Sept. 18 and Oct. 03 the degree of polarization reached two maxima, one near second and the other near third contact. Changes in the position angle were similar to those on 1975 Sept. 08 (Fig. 1).

In Fig. 3 the positions of the primary component, with respect to the secondary component at second and third contact, are presented. The geometrical dimensions are taken from Hall and Walter (1974a).

The increase of polarization and the changes in position angle near second contact can be explained by circumstellar matter surrounding the primary. The outer radius of the circumstellar matter can be estimated from the decrease of polarization after second contact. As also the position angle changes, the matter is not strictly confined to the orbital plane. The increase of polarization near third contact can be explained by circumstellar matter in the vicinity of the preceding hemisphere of the primary component, appearing soon after mid-eclipse and thus having greater extension than that at the trailing side of the primary component. This is what is also predicted from the theoretical investigations of Prendergast and Taam (1974), and what also has been suggested as an explanation of increasing intensity during the total eclipse, found from photometric observations (see e.g. Hall and Walter 1974a, Walter 1975).

The change in position angle near third contact should be opposite to that observed near second contact (see Fig. 3). In Fig. 2 we can see that such a change really exists. However, the change is smaller, and almost absent in Fig. 1. This indicates that the matter in the vicinity of the preceding hemisphere of the primary component, having greater extension, is also more strongly confined to the orbital plane and the position angle of the polarization of the light scattered in the matter remains approximately perpendicular to the orbital plane. Consequently, the position angle of polarization observed after third contact ($\theta \approx 95^{\circ}$) gives the direction of the orbital plane projected on the celestial sphere ($\theta - 90^{\circ} \approx 5^{\circ}$, Fig.3).

Since the position angle remains close to 95° also outside the eclipses, most of the polarization seems to be intrinsic. The minimum value of polarization, $P \approx 0.10$ %, observed after first contact when the matter at the preceding hemisphere of the primary is eclipsed, shows that interstellar polarization should be less than 0.10 %. If the position angle of interstellar polarization, $\theta_{int} \neq 95^{\circ}$, the upper limit is still smaller.

As the increase of polarization is not similar during each eclipse and sometimes very small (Fig.1), the circumstellar matter is not permanent. This is indicated also by the polarimetric observations of Coyne, made in September 1973, which did not show increase of polarization during the primary eclipse (Coyne 1974, Batten 1974).

One interesting feature seen in Figs. 1 and 2 is that on 1975 Sept. 08 the increase of polarization near second contact was small, but on 1975 Sept. 18 and Oct. 03 as large as near third contact. Thus the amount of matter in the vicinity of the trailing hemisphere of the primary component was about three times larger on 1975 Sept.18 than 10 days earlier. This would indicate changes in the mass transfer from the secondary component, which is filling its Roche lobe, to the primary, i.e. changes in the stream from the inner Lagrangian point to the trailing side of the primary. Further, polarization near third contact was on 1975 Oct. 03 larger than on 1975 Sept. 18. Accordingly, more matter was accumulated above the preceding side of the primary component, when part of the stream circulated around the primary component.

A more detailed description of the observations and interpretation of the results will be given elsewhere.

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Acknowledgement

These observations are part of a work supported by Suomen Kulttuurirahasto (Finnish Cultural Foundation).

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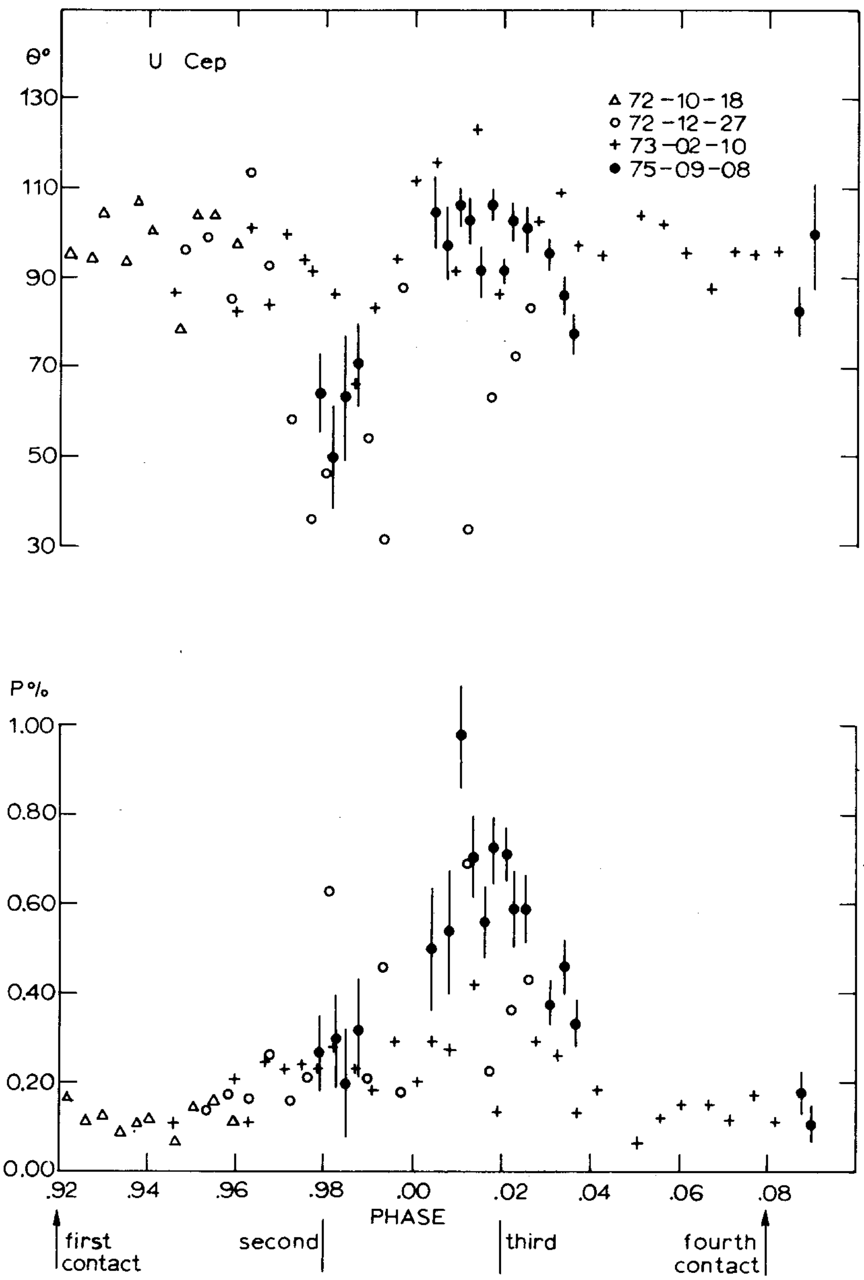

Fig.1. Polarimetric observations of U Cep during four primary eclipses from October 1972 to September 1975, plotted as a function of phase.

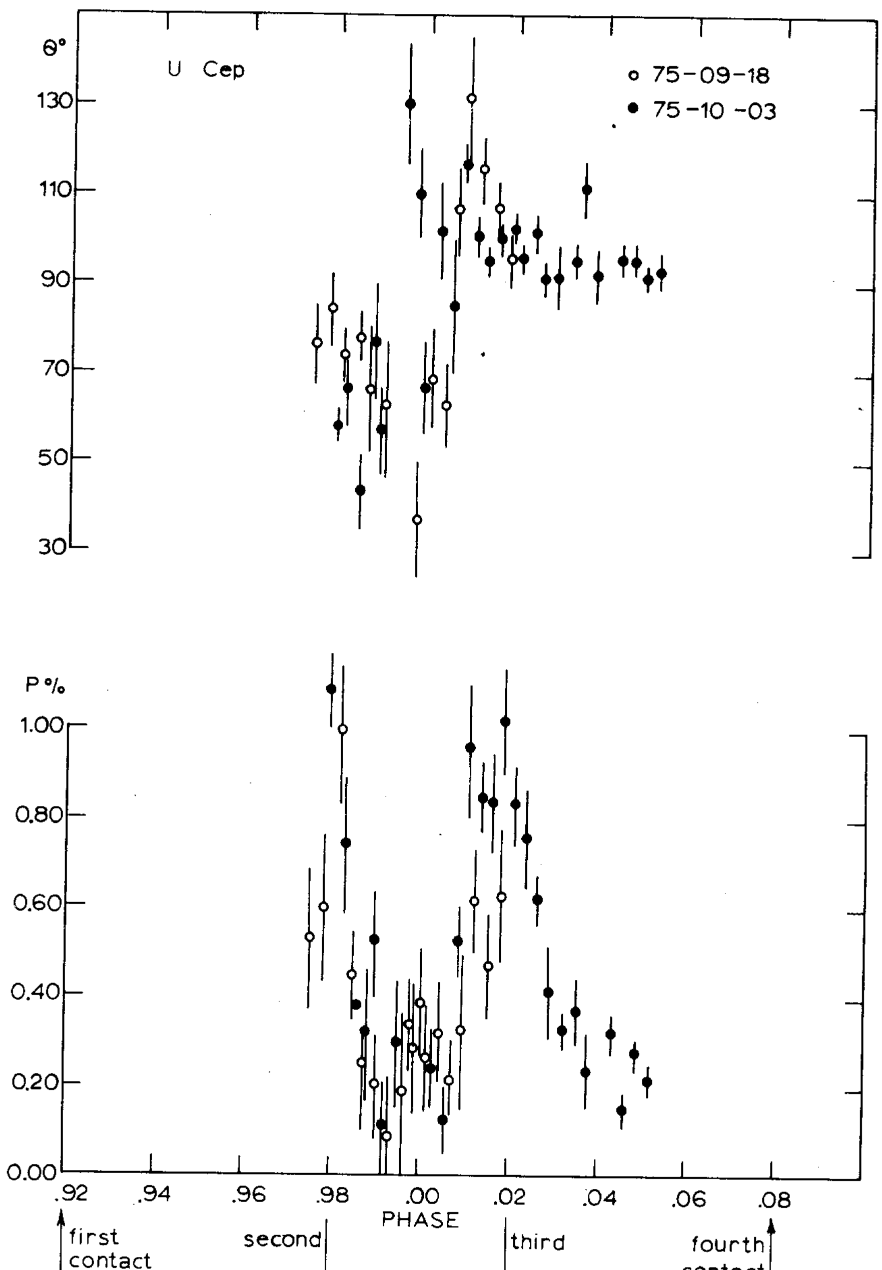

Fig.2. Polarimetric observations of U Cep during two primary eclipses in September and October 1975, plotted as a function of phase.

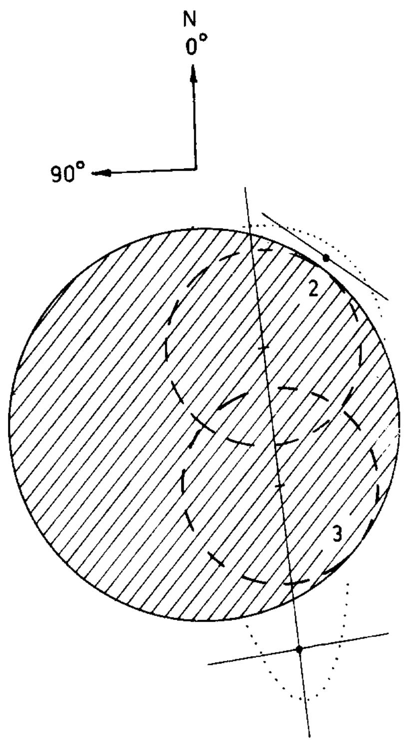

Fig.3. The position of the primary (smaller but much brighter) component and the circumstellar matter, with respect to the secondary component, at second and third contact during the primary eclipse. The approximate position angle of the polarization, produced by light from the primary scattered in the circumstellar matter, is given by the bars. Near third contact and outside the eclipses the direction of polarization is approximately perpendicular to the orbital plane, thus giving the direction of the orbital plane projected on celestial sphere.

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1062

Konkoly Observatory
Budapest
1975 November 17

PHOTOGRAPHIC OBSERVATIONS OF THE SUPERNOVA 1970-j IN NGC 7619

Photographic observations of the supernova Rosino 1970-j in NGC 7619 were carried out in October 1970 at the observing station in Tien-Shan mountains by a Schmidt telescope (38/52/93 cm). The observations were made in the instrumental photometric system that was close to the Johnson's UBV-system. The plates were reduced with the iris photometer of the Engelhardt Astronomical Observatory.The plate background was automatically taken into account. The B and V magnitudes of the comparison stars around the supernova were taken from the paper of R. Barbon et al.(Mem.Soc,Astr.Italiana,44,No.1,65, 1973). For determining the u magnitudes the stars in NGC 6866 and NGC 7062 taken from the paper of Johnson et al.(Publ.U.S.Naval Obs., Second Ser.,XVII-Part VII,1961) were used.

In Table 1 are listed the number of plate, date, UT, and u, b,v magnitudes of the supernova in the system of our Schmidt telescope. The error of one observation does not exceed 0,1 magn. The uncertain results are marked by colons.

Table 1

NN	Date 1970	UT	u	b	v
1232	7 Oct.	$17^h49^m37^s$	$14^m.50$	-	-
1235	8	16 41 31	14.60	-	-
1236	8	17 15 31	-	14.30	-
1237	8	17 37 31	-	14.15	-
1243	22	14 00 56	-	15.20	-
1245	22	15 33 26	15.40	-	-
1248	23	14 29 49	-	15.30	-
1249	23	15 03 49	-	-	14.80:
1250	23	15 48 49	15.50	-	-
1253	24	15 00 42	-	15.50	-
1254	24	15 57 12	-	-	15.45:
1255	24	16 59 42	15.50	-	-
1259	25	14 32 34	-	-	15.50:
1260	25	16 17 34	-	15.70	-
1261	25	17 34 04	15.60:	-	-

Engelhardt Astronomical
Observatory

INGA DUBJAGO
S.S. TOKHTAS'EV

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1063

Konkoly Observatory
Budapest
1975 November 17

TWO PECULIAR VARIABLE STARS: OX Cyg AND GR 128

OX Cygni (Figure 1) was discovered by W. Baade in 1933 who considered it as being a rapidly varying star of unknown type, varying between 15.6 and 16.2 pg. In the summer of 1973 Bonnie Buratti rediscovered this star and made step estimates of its brightness on about a thousand Nantucket plates. I have converted her estimates into approximate magnitudes, re-checked all the extreme observations and extended them to the more recent plates. From Figure 2 it appears that rapid variations are superposed over a slow, long period variation, somewhat similar to the behaviour of several symbiotic stars. We have been unsuccessful in finding a period for the rapid changes.

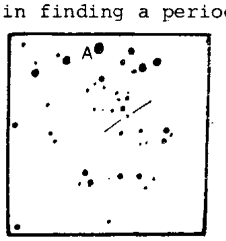

Figure 1. Finder chart for OX Cyg. Star A is BD+39°3952.

GR 128 in Coma Berenices, discovered in 1973 by Pinto and Romano, has been examined at the request of Howard E. Bond, who points out that the originally published position is in error and gives the revised position as $11^h59^m36^s$ $+28^{\circ}27'.6$ (1900). Figure 3 shows the Nantucket observations, covering the years 1964-1975. The curve is taken from the Pinto-Romano paper. For the earlier Nantucket observations the agreement is excellent; the later observations appear to be systematically about 0.5 mag. fainter than those previously published. The star is close to the edge of the Nantucket plates.

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References:
Baade, W. 1933, A.N. 249, 269
Pinto, G. and Romano, R. 1973, Padova Pub. No. 164

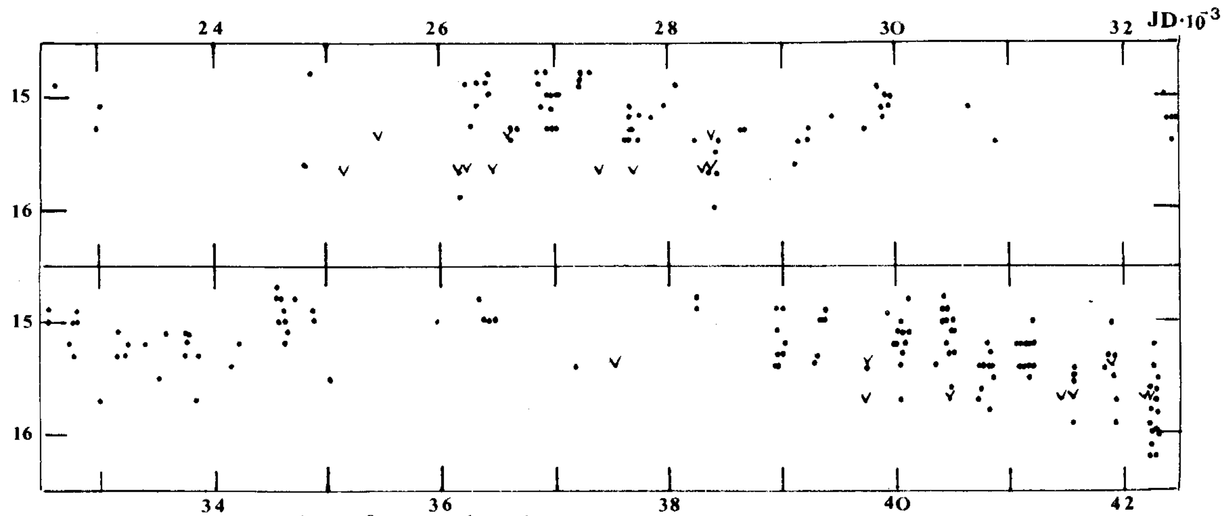

Figure 2. Nantucket observations of OX Cyg for 1920-1974.

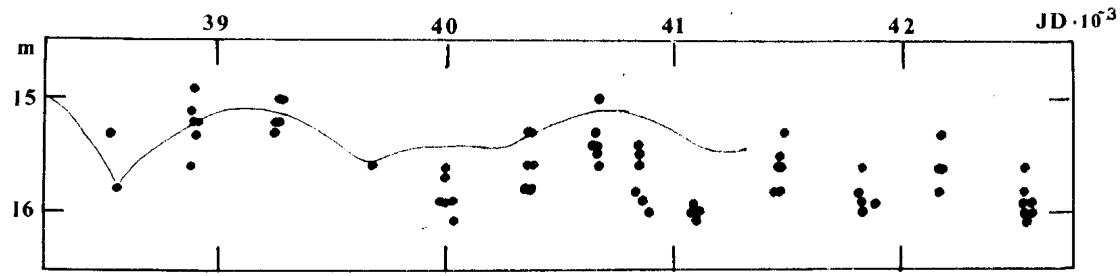

Figure 3. Nantucket observations of GR 128 compared with mean curve for Pinto-Romano observations.

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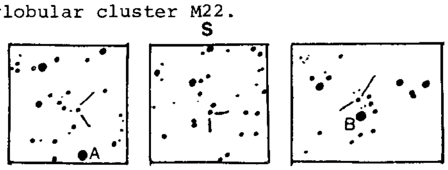
THREE LONG-PERIOD VARIABLES IN SAGITTARIUS

On the basis of over 500 observations on Nantucket plates taken between 1956 and 1975, the periods of two new variables have been determined and the period for one previously known one slightly revised. The last two columns of the Table give the initials of the person who discovered the variable followed by the initials of the one who determined the period: MB, Mary Brewster; DC, Deborah Carmichael; DH, D. Hoffleit; and PO, Pamela Owensby. In the finder charts for the new variables the bright star A is CoD $-29^{\circ}14752$ and B is CoD $-24^{\circ}14640$. The middle chart (approximately $10' \times 10'$) is for V1701 Sgr which is approximately $20'$ following and $33'$ South of the center of the globular cluster M22.



	R.A. (1900)	Dec.	Max	min	JD	Period	Disc.	Comp.
Var 1	$18^{h}10'17^{s}$	$-30^{\circ}02'.0$	13:	(15	41930	217	PO	MB
V1701 Sgr	31 43	-24 32.6	13.6	(16.0	41950	252.3	DH	DH
Var 2	38 00	-24 50.0	13.7	14.7	38615	146	PO	DC

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Budapest
1975 November 18

PHOTOELECTRIC MINIMA OF ECLIPSING VARIABLES

The list below contains photoelectric minima of eclipsing variables observed with the 60 cm reflector of the Konkoly Observatory. The observations were made with an EMI 9502B type unrefrigerated photomultiplier tube combined with 2mm UG1; 1mm BG12+2mm GG13 and 2mm GG11 filters. The colour is reported in the last column.

Linear elements given in the 1969 General Catalogue of Variable Stars and its Supplements were used for computing the O-C values. N denotes the number of observations (each consisting of six individual measurements).

Star	J.D. hel (2400000 +)	O-C	N	colour
AI Dra	41 869.4263	+0.0011	27	U;B;V
	42 187.5218	+0.0011	51	U;B;V
TW Cas	41 988.3895	+0.0041	54	U;B;V
	41 991.2455	+0.0034	48	U;B;V
	42 008.3850	+0.0031	58	U;B;V
SW Lyn	42 091.4975	+0.0144	20	B;V
RT Per	42 398.3881	+0.0011	28	B;V
U CrB	42 532.4610	-0.0158	58	U;B;V
VW Cep	42 662.4519	+0.0129	54	U;B;V
	42 666.4844	+0.0099	28	B;V

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Number 1066

Konkoly Observatory
Budapest
1975 November 19

IMPROVED ELEMENTS OF THE NEW ECLIPSING BINARY BD +60°2289

In IAU I.B.V.S. No.980 (1975) F. Gieseking announced BD+60°2289 ($9^m_.3$) to be an eclipsing variable of the EB-type and published the following preliminary elements:

$$\mathrm{Min._{hel}} = \mathrm{JD}\ 2441130.51 \underset{\pm 1}{} + 2^d_.10438 \underset{\pm 2}{} \cdot E$$

The plate archive of the Lippert-Astrograph contains about 150 plates taken with the Triplet K(300/1500) for faint variables in this Cepheus field. Though the exposure time of 30 minutes is relatively long for such a bright star - limit magnitude about 17^m - excluding Iris-photometer measurements, estimations by Pickering's method fix one pronounced minimum (4 plates in one night) and 5 near-minimum dates (1 or 2 plates). They are shown in the following table adding 6 near-minimum values of Gieseking.

min.	N	Obs.	E	O-C
2429598.291	1	Wa	- 680	$-0^d_.023$
2430021.280	2	Wa	- 479	- .022
0591.600	2	Wa	- 208	+ .001
0930.434	1	Wa	- 47	+ .024
1029.317	4	Wa	0	- .001
2119.440	1	Wa	+ 518	+ .034
9533.268	1	Gi	+ 4041	± .000
2440425.551	1	Gi	+ 4465	+ .010
0444.526	1	Gi	+ 4474	+ .045
1071.560	1	Gi	+ 4772	- .037
1130.506	1	Gi	+ 4800	- .015
1149.491	1	Gi	+ 4809	+ .030
1151.526	1	Gi	+ 4810	- .039

A weighted least-square solution yields the following improved elements:

$$\mathrm{Min._{hel}} = \mathrm{JD}\ 2431029.318 \underset{\pm 8}{} + 2^d_.1044173 \underset{\pm 26}{} \cdot E$$

This relatively bright BD variable recommends itself for further photoelectric observation.

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Number 1067

Konkoly Observatory
Budapest
1975 November 26

PHOTOMETRY OF THE ECLIPSING BINARY U OPHIUCHI AND OF NOVA CYGNI 1975

During May and June of 1972 and April and May of 1973 photoelectric observations of the eclipsing binary U Ophiuchi were made with the 46-cm Cassegrain reflector of the Kutztown State College Observatory. The photomultiplier used was an unrefrigerated EMI 6256 SA(S-13 surface). The comparison star was HR 6412 (spectral type A0).

Four times of minimum light were obtained. Corrected for light time, these are as follows:

JD 2441450.8271	I
461.7332	II
466.7653	II
476.8293	II

The depth of the primary minimum was found to be $0^m_.67$ in visual light and $0^m_.71$ in blue light. For the secondary minimum the depths were $0^m_.62$ in V and $0^m_.58$ in B. The phase angle of external tangency was found to be $30^\circ_.2$ for both eclipses.

At maximum light U Ophiuchi is $0^m_.32$ brighter than HR 6412 in V and $0^m_.47$ brighter in B. Using the values of V = 6.16 and B-V = +0.22 obtained by Cousins for HR 6412 one obtains V = 5.84 and B-V = +0.07 for U Ophiuchi at maximum light. As the spectral types of the components of U Ophiuchi are estimated as B4 and B5, it appears that the system is substantially reddened.

All observations of U Ophiuchi included the 12th magnitude visual companion, which is about 20" distant from the eclipsing pair. The contribution of this star to the light of the system, however, is negligible.

During the autumn of 1975 photographs were taken of Nova Cygni and the surrounding field in Cygnus. A 135 mm lens at f/2.8 was used. The exposures ranged from 2 min. to 30 min., and the film used was Plus-X Pan. The times and estimated photographic magnitudes are as follows:

UT			UT	
1975 Sep. 10.2	6.4		1975 Oct. 4.1	8.0
14.2	6.7		15.1	8.4
29.1	7.5		23.0	8.6

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS

Number 1068

Konkoly Observatory
Budapest
1975 November 27

61st NAME - LIST OF VARIABLE STARS

The present 61st Name-list of variable stars has been compiled in accordance with the rules established in the 56th list. It contains all necessary identifications for 200 new variable stars designated in 1975.

In different catalogues and atlases the o^2 Cyg designation refers to different stars. To prevent in future possible misidentifications we designate the variable o^2 Cyg as V1488 Cyg in this list.

In the square brackets the reference number is given for the work where (not always firstly) the information on discovery of the variable had been published. This reference number accompanies designation or number of the star given for it in the cited work. Name of the discoverer is mentioned only in the cases when it does not coincide with the name of the author of the cited work.

Reference numbers 0001-5216 correspond to the numbers from literature list published in the first volume of the 3rd edition of General Catalogue of Variable Stars (pages A42 - A121). The numbers 5217-5824 correspond to the supplementary list published in the First supplement to the Catalogue (pages 279-289). The numbers 5825-6828 correspond to the supplementary list published in the Second supplement to the Catalogue (pages 361-380). The numbers 6829-6913 are published in the 60th Name-list (IBVS No. 961, 1975), pages 13-14. At last the numbers 6976-7513 correspond to the list given in the present edition (pages

We are grateful to T.A.Krasyuk for the help in compiling of this list.

B. V. Kukarkin, P. N. Kholopov
N. P. Kukarkina

Moscow Bureau of Variable Stars,
Astronomical Council of the
USSR Academy of Sciences,
Sternberg Astronomical Institute

Moscow, October, 1975

HI And = СПЗ 1989 [7433].
HK And = BSD 20, 623 [7494] = КЗП 100063.
HL And = $0^h49^m56^s$ +37°40′ (1855) [7495] = Wr 5 = КЗП 5881.
HM And = VB 3 [1325, *Horn-d'Arturo*] = = КЗП 5891.
HN And = BD + 42°293 (6.5) = SAO 037177 = = HD 8441 (AOp) = Babcock 3 [4170] = КЗП 5917.
LV Aps = S 5534 [4001] = КЗП 7232.
LW Aps = S 5592 [4001] = КЗП 7377.
V1301 Aql = $19^h15^m26.^s9$+04°41′44″3 (1950) [7451] = Nova Aql 1975.
V1302 Aql = S 8102 [4341] = IRC + 10420.
V1303 Aql = СПЗ 1990 [7438].
V1304 Aql = СПЗ 1991 [7438].
V1305 Aql = СПЗ 1992 [7438].
V1306 Aql = СПЗ 1993 [7438].
V1307 Aql = СПЗ 1995 [7438].
V1308 Aql = СПЗ 2001 [7439].
V1309 Aql = СПЗ 2000 [7439].
V1310 Aql = СПЗ 1996 [7438].
V1311 Aql = СПЗ 1997 [7438].
V1312 Aql = СПЗ 1998 [7438].
V642 Ara = S 5834 [4001] = КЗП 7412.
V643 Ara = S 5837 [4001] = КЗП 7415.
V644 Ara = S 5840 [4001] = КЗП 7422.
V645 Ara = S 5841 [4001] = КЗП 7423.
V646 Ara = S 5843 [4001] = КЗП 7424.
V647 Ara = S 5842 [4001] = КЗП 7425.
V648 Ara = S 5852 [4001] = КЗП 7433.
V649 Ara = S 5855 [4001] = КЗП 7435.
V650 Ara = S 5862 [4001] = КЗП 7440.
V651 Ara = S 5864 [4001] = КЗП 7442.
V652 Ara = S 5873 [4001] = КЗП 7448.
V653 Ara = S 5877 [4001] = КЗП 7450.
V654 Ara = S 5879 [4001] = КЗП 7451.
V655 Ara = S 5880 [4001] = КЗП 7453.
V656 Ara = S 5882 [4001] = КЗП 7454.
V657 Ara = S 5885 [4001] = КЗП 7456.
V658 Ara = S 5883 [4001] = КЗП 7457.
V659 Ara = S 5884 [4001] = КЗП 7458.
V660 Ara = S 5890 [4001] = КЗП 7459.
V661 Ara = S 5891 [4001] = КЗП 7460.
V662 Ara = S 5892 [4001] = BV 1434 [6031] = КЗП 7462.
V663 Ara = S 5893 [4001] = КЗП 7465.
V664 Ara = S 5896 [4001] = КЗП 7468.
V665 Ara = S 5899 [4001] = КЗП 7471.
V666 Ara = S 5897 [4001] = КЗП 7472.
V667 Ara = S 5905 [4001] = КЗП 7476.
V668 Ara = S 5909 [4001] = КЗП 7483.
V669 Ara = S 5914 [4001] = КЗП 7485.
V670 Ara = S 5915 [4001] = КЗП 7487.
V671 Ara = S 5924 [4001] = КЗП 7491.
V672 Ara = S 5927 [4001] = КЗП 7492.
V673 Ara = S 5937 [4001] = КЗП 7498.
V674 Ara = S 5939 [4001] = КЗП 7500.
NZ Aur = 1 [7036] = СПЗ 2135.
OO Aur = 5 [7036] = СПЗ 2137.
OP Aur = 15 [7036] = СПЗ 2138.
OQ Aur = 16 [7036] = СПЗ 2139.
OR Aur = 19 [7036] = СПЗ 2140.
OS Aur = 20 [7036] = СПЗ 2141.
OT Aur = 21 [7036] = СПЗ 2142.
OU Aur = 22 [7036] = СПЗ 2143.
OV Aur = 23 [7036] = СПЗ 2144.
OW Aur = 23 [7036] = СПЗ 2145.
OX Aur = 59 Aur = HR 2539 [3946] = = BD + 39°1771 (6.3) = SAO 059571 = ADS 5534 = HD 50018 (F2).
CE Boo = BD + 16°2708 (9.5) [7440] = = DO 15122 (M2).
BC Cam = 49 Cam [7441] = HR 2977 = = BD + 63°733 (7.0) = SAO 014322 = HD 62140 (A5).
BZ Cnc = By 8 [7442]. In the Praesepe region.
CC Cnc = 8^h33^m4 + 21°31.5 (1950) [7443].
CD Cnc = By 1 [7442]. In the Praesepe region.
CE Cnc = By 9 [7442]. In the Praesepe region.
CF Cnc = K3 [7442]. In the Praesepe region.
CG Cnc = By 10 [7442]. In the Praesepe region.
CH Cnc = K2 [7442]. In the Praesepe region.
CI Cnc = By 14 [7442]. In the Praesepe region.
CK Cnc = By 15 = K4 [7442]. In the Praesepe region.

CL Cnc = By 4 [7442]. In the Praesepe region.
CM Cnc = K5 [7442]. In the Praesepe region.
CN Cnc = By 5 [7442]. In the Praesepe region.
CO Cnc = By 11 [7442]. In the Praesepe region.
CP Cnc = By 2 [7442]. In the Praesepe region.
CQ Cnc = СПЗ 2146 [7333].
CR Cnc = By 7 [7442]. In the Praesepe region.
CS Cnc = By 13 [7442]. In the Praesepe region.
AS CVc = Var. 20 [7445, *Bonnell*].
GI CMa = S 3773 [4455] = BV 1619 [7446] = = КЗП 873.
V354 Car = 15 [7447].
V534 Cas = GR 11 [2668] = КЗП 5842.
V535 Cas = BD + 51°42 (9.2) = HD 1519 (Ma) = BV 293 [4015] = = КЗП 5848.
V536 Cas = S 10143 [3903].
V537 Cas = GR 88 [4440] = КЗП 5887.
V538 Cas = BD + 60°201 (8.0) = SAO 011682 = HD 7681 (K5) = = DO 24195 (K5) = Wr 54 [4067] = КЗП 5904.
V539 Cas = BD + 62°281 (9.1) [7315] = = SAO 011877 = DO 24535 (M2) = IRC + 60058 [6005].
V540 Cas = BD + 68°144 (8.0) = SAO 012098 = HD 12288 (AOp) [6257].
V541 Cas = GR 75 [4321] = КЗП 5990.
V542 Cas = K 369 [7341] = СПЗ 2053.
V543 Cas = WS 692 [6566] = СПЗ 2054.
V777 Cen = CoD–50°5778 (9.9) = CPD –50°4038 (9.8) = BV 1582 [6847].
V778 Cen = 2 [7452].
V779 Cen = Cen X–3 [7453].
V780 Cen = 6 [7452].
V781 Cen = 11 [7452].
V782 Cen = 23 [7452].
NZ Cep = WS 239 [6566] = СПЗ 1907 = = СПЗ 2050.
OO Cep = WS 260 [6566] = СПЗ 2051.
OP Cep = WS 262 [6566] = СПЗ 2052.
OQ Cep = Ross 95 [4436] = P2385 = = DO 42697 (M7) = КЗП 5686.
GQ Com = GR 128 [5494].
GR Com = GR 129 [5494].
GS Com = GR 260 [7011].
GT Com = Var 23 [7445].
GU Com = СПЗ 1973 [7457].
SW Crv = СПЗ 2148 [7458].
SX Crv = BD–18°3437 (8.7) [7026] = = SAO 157434 = HD 110139 (F8).
V1485 Cyg = 118.1906 [4815] = Zi 1760 = = КЗП 4759.
V1486 Cyg = $19^h49^m37^s.0 + 43°50.4$ (1900) [7118].
V1487 Cyg = WS 308 [7341] = СПЗ 2047.
V1488 Cyg = o^2 Cyg = 32 Cyg = HR 7751 = = BD + 47°3059 (5.0) = HD 192909/10 (K0 + A3) = = IRC + 50322.
V1489 Cyg = NML Cyg [7513] = IRC + 40448.
V1490 Cyg = S 7818 [4771, 7115] = = КЗП 8588.
V1491 Cyg = LkHα 149 [6859] = S7813 [4771, 7115] = КЗП 8589.
V1492 Cyg = S 7819 [4771, 7115] = = КЗП 8590.
V1493 Cyg = S 7814 [4771, 7115] = = КЗП 8597.
V1494 Cyg = 6 [7463].
V1495 Cyg = 7 [7463].
V1496 Cyg = 2 [7463] = T2 [7498].
V1497 Cyg = 5 [7463].
V1498 Cyg = 3 [7463].
V1499 Cyg = 4 [7463].
V1500 Cyg = Nova Cyg 1975 [7500, *Osada*].
V1501 Cyg = $21^h48^m.4 + 54°40$ (1900) [7341] = СПЗ 2048.
V1502 Cyg = WS 237 [6566] = СПЗ 1906 = = СПЗ 2049.
IQ Hya = MSB 57 [7465] = IRC–20184?
IR Hya = 867.1936 [4579] = HV 8401 = P 3517 = КЗП 1799.
IS Hya = СПЗ 2149 [7467].
V350 Lac = HR 8575 = BD + 48°3747 (7.0) = SAO 052073 = = HD 213389 (K0) [7468].

G Leo = 20 Leo = HR 3889 [3946] = BD +21°2113 (6.9) = SAO 081035 = = HD 85040 (F0).
ST Lep = Ross 351 [1873] = BV 1609 [7446] = = P 182 = КЗП 544.
SU Lep = BV 1610 [7446].
SV Lep = BV 1613 [7446].
V457 Lyr = 86.1905 [5191] = Zi 1563 = = КЗП 4466.
V458 Lyr = 91.1906 [4815] = Zi 1661 = = КЗП 4616.
V615 Mon = СПЗ 1895 [7501] = 1 [7129].
V616 Mon = Nova Mon 1975 = A 0620 – – 00 [7502].
V617 Mon = СПЗ 1896 [7501] = 3 [7129].
V618 Mon = СПЗ 1897 [7501] = 4 [7129].
V619 Mon = СПЗ 1898 [7501] = 5 [7129].
V620 Mon = СПЗ 1899 [7501] = 6 [7129].
V621 Mon = СПЗ 1900 [7501] = 8 [7129].
V622 Mon = СПЗ 1901 [7501] = 9 [7129].
V623 Mon = СПЗ 1902 [7501] = 12 [7129].
V624 Mon = СПЗ 1903 [7501] = 13 [7129].
V625 Mon = СПЗ 1904 [7501] = 14 [7129].
V626 Mon = СПЗ 1905 [7501] = 16 [7129].
PQ Nor = CoD–56°6375 (7.6) = CPD –56°7703 (7.4) = SAO 243840 = = HD 148013 (A0) = BV 1556 [6871].
V2054 Oph = 771.1933 [5155] = P1247 = = КЗП 3163.
V2055 Oph = 773.1933 [5155] = P 1260 = = КЗП 3260.
V2056 Oph = S 4172 [4455] = КЗП 3374.
V2057 Oph = DO 4478 (M5) = IRC 00316 = = СПЗ 579 [0552] = P4405 = = КЗП 3395.
V1005 Ori = Gliese 182 [7472; 7503, *Torres*] = СПЗ 2122.
V1006 Ori = П 1267 [6371].
V1007 Ori = 8 [2849] = П 1946 [4073] = = КЗП 6264.
CO Pav = S 6931 [4001] = КЗП 7979.
III Peg = GR 261 [7474].
V399 Per = S 9729 [3903].
V400 Per = Nova Per 1974 [7504, *Sanduleak*].
YZ Psc = GR 262 [7474].
ZZ Psc = G 29–38 [7505] = СПЗ 2123
TW PsA = HR 8721 (6.5) = CoD –32°17321 (6.8) = CPD–32°6550 (7.0) = = SAO 214197 = HD 216803 (K.5) [7478].
NT Pup = BV 1574 [6847].
V3888 Sgr = Nova Sgr 1974 [7506, *Kuwano*].
V3889 Sgr = Nova Sgr 1975 [7507, *Kuwano*].
V3890 Sgr = Nova Sgr 1962 [7481].
V3891 Sgr = 1240 [5869].
V886 Sco = 1 [7482].
V887 Sco = 2 [7482].
V888 Sco = 3 [7482].
V889 Sco = CoD–44°11194 (10) = = CPD–44°8065 (9.6) = = BV 1559 [6871].
V373 Sct = Nova Sct 1975 [7508, *Wild*].
V700 Tau = T 56 b [7328].
V701 Tau = СПЗ 1972 [7484].
V702 Tau = K30 [7485].
V703 Tau = T 57 b [7328].
V704 Tau = K 28 [7485].
V705 Tau = K 24 [7485].
V706 Tau = K 26 [7485].
V707 Tau = P3 [7486].
V708 Tau = K 27 [7485].
V709 Tau = K 29 [7485].
V710 Tau = СПЗ 1357 [7510].
SV Tri = СПЗ 1976 [6976].
IV TrA = S 5848 [4001] = КЗП 7432.
IW TrA = S 5859 [4001] = КЗП 7436.
BT Tuc = $0^h59^m.0$ – 72°54 (1960) [7511, *Butler*].
GT Vel = CoD – 42°5032 (9.8) = CPD – 42°3425 (8.8) = SAO 220921 = HD 79101 (A2) = = BV 1579 [6847].
FT Vir = HR 4746 [6363] = BD – 3°3298 (6.5) = SAO 138798 = HD 108506 (F2).
FU Vir = СПЗ 1974 [7457].
FV Vir = СПЗ 1986 [7490].
MY Vul = 90.1906 [0532] = Zi 1656 = = КЗП 4612.
MZ Vul = 98.1906 [0532] = Zi 1679 = = КЗП 4648.
NN Vul = 107.1906 [0532] = Zi 1715 = = КЗП 4694.
NO Vul = СПЗ 1988 [7491] = TTV – 7.
NP Vul = СПЗ 1987 [7491] = TTV–6.

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Budapest
1975 November 27

GS ANDROMEDAE

The UV Ceti type star GS And has been discovered by A.K. Alksnis and A.S. Sharov on Moscow plates. A maximum of B = 16.40 has been observed by the two Authors on November 30, 1969 (A.C.600, 7,1970). At minimum the magnitude is B = 18.26.

I have examined a number of plates (138) taken with the 67 cm Schmidt telescope of Asiago Observatory between September 1965 and December 1974.

B and V magnitudes of the comparison stars have been determined with the iris photometer, using Arp's sequence of Field IV in M31 (Baade and Swope, A.J.68,435,1963).

At the minimum GS And shows fluctuations between 17.56 and 18.54 (more frequent magnitude: 18.35). The total time of observation has been 69 hours (4141 minutes).

A flare of GS And was noted on a photograph taken on December 12, 1971. At UT 18^h50^m the B magnitude of GS And was 17.20. Since the exposure was relatively long (30 minutes), the star probably was brighter at maximum.

The colour index at minimum is B - V = + 1.84 (five determinations).

An Asiago plate was taken on November 30, 1969 at UT 18^h04^m just two hours after the occurrence of the flare observed in the same night by Alksnis and Sharov; the B magnitude of the star was 18.54.

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Budapest
1975 November 29

ON THE PERIOD AND ORBIT OF THE ECLIPSING BINARY θ^1 Ori A

Information Bulletin No. 988 by E. Lohsen announced the variability of θ^1 Ori A, with a period of 196.25 days and a one magnitude drop during eclipse which lasted not more than 24 hours. Lohsen mentioned the possibility of a period 1/3 or 1/2 of the above value. Subsequently, Strand confirmed the period to be 196.298 days (I.A.U. Information Bulletin No. 1025), based on Dearborn, Lowell and U. S. Naval Observatories data, but was unable to find a shorter period or secondary minimum at $\pm$ 1 day from the mid-point of the 196.298 day period.

Following these announcements, some 60 Allegheny plates taken with the 76cm refractor between 1963 and 1969 were searched for variability. Visual inspection showed that on 3 nights θ^1 Ori A was fainter than θ^1 Ori D. Variability of θ^1 Ori A was then confirmed by means of an ANTECH TV-Densitometer and by measuring image diameters with a Gaertner machine. The relevant data for θ^1 Ori A and θ^1 Ori D are:

Jan 3-4, 1966	$\Delta m = 0\overset{m}{.}8 \pm 0.1$
Jan 4-5, 1966	$\Delta m = 0\overset{m}{.}4 \pm 0.1$
Jan 30-31, 1967	$\Delta m = 0\overset{m}{.}8 \pm 0.1$

These data are interpreted as secondary minima that are wider and probably shallower than the primary minima, occurring about 9 days after the mid-point of the 196.298 day period and explain why they were not found by Strand. The displaced, wider secondary minima strongly suggest an eccentric orbit for θ^1 Ori A.

Lohsen and Strand predict the next (primary) minimum to occur on Dec. 5, 1975 and to last for ~24 hours. The next secondary minimum should occur near March 20, 1976 and should be observable for at least 2 nights.

Observations of θ^1 Ori A, including radial velocities, for a duration of at least a week centered on these dates appear desirable.

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Number 1071

Konkoly Observatory
Budapest
1975 November 29

A NEW BRIGHT ECLIPSING STAR 71 Dra

While testing a new photometer I found that the star 71 Dra = HD 193 964 (B9, m_V = 5.6) is probably an eclipsing star. The observations were made in four spectral regions, defined by

	λ	$\Delta\lambda$
P	374 nm	20 nm
Y	466 nm	"
V	543 nm	"
MR	700 nm	"

The descent of the brightness on 1975 Aug. 6/7 (JD 2 442 631) is shown by the diagram. In all colours the magnitude differences with respect to the normal brightness are given. The three comparison stars are

I	2 Cep	= HD 195 725
III	68 Dra	= HD 192 455
IV	66 Dra	= HD 191 277

Within the following time intervals no deviations greater than $0^m.01$ from the normal brightness are detectable:

JD 2 442 628.44 ... 628.58
630.43 ... 630.51
632.41 ... 632.48
634.41 ... 634.49
635.45 ... 635.49
637.41 ... 637.45
638.39 ... 638.45
639.39 ... 639.46
653.35 ... 653.43

The star is a spectroscopic binary (Wilson, General Catalogue of Stellar Radial Velocities, star 12 707; see also Abt and Biggs, Bibliography of Stellar Radial Velocities, 1972).
This new variable receives the provisional designation S 10 796.

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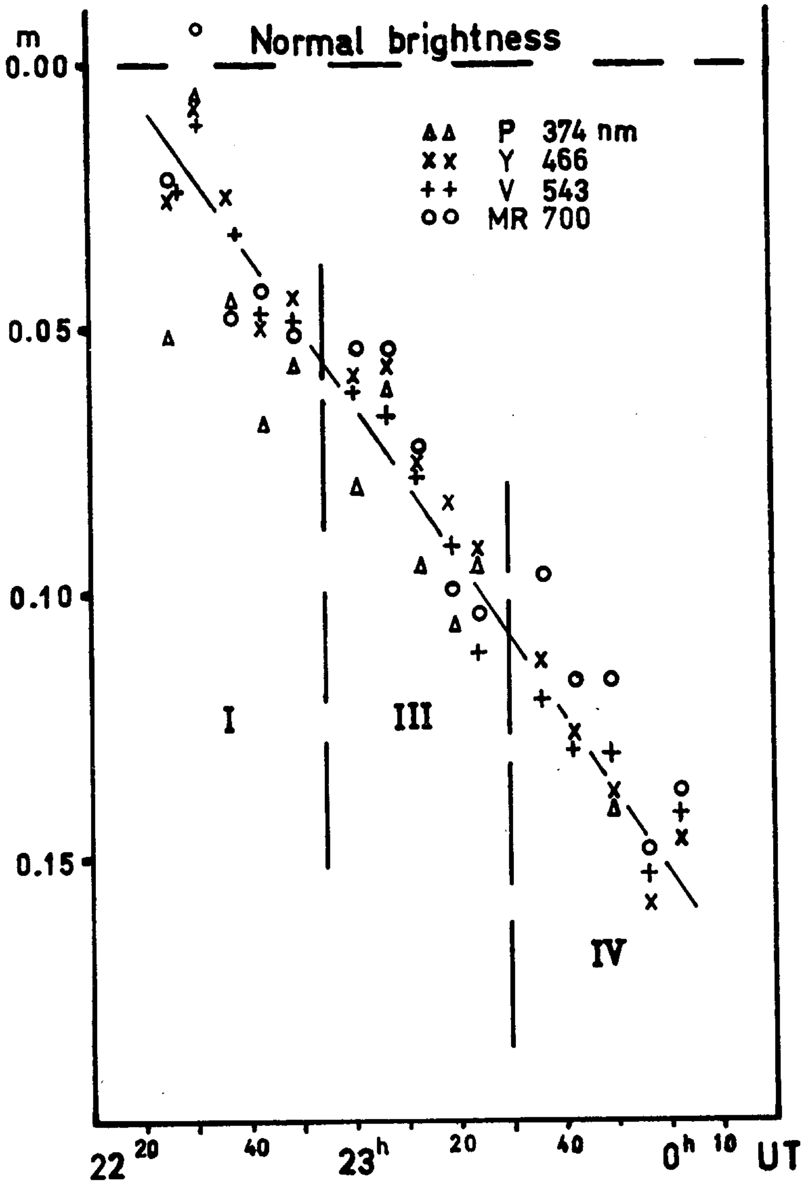

m
0.00
0.05
0.10
0.15
Normal brightness
ΔΔ P 374 nm
xx Y 466
++ V 543
oo MR 700
I
III
IV
22 20
40
23h
20
40
0h 10
UT

1975 Aug 6/7

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Budapest
1975 November 30

OBSERVATIONS OF NOVA CYGNI 1975 AT THE TORUN OBSERVATORY

The spectroscopic observations of Nova Cygni 1975 started at the Torun Observatory on August 29,88 UT immediately after a telephone call from two young Polish discoverers of this star,Baranowski and Garbacz. Between August 29 and October 12, 1975 Prof. Iwanowska, Dr. Burnicki, Mr. Tylenda and ourselves have taken more than 200 spectra of N Cyg with the Canadian Copernicus grating spectrograph attached to the 90 cm Schmidt-Cassegrain telescope of Torun. Their dispersion is 28 A/mm and their spectral range λ 3560-5050 A.

Nova Cygni 1975 is a very unusual nova. The amplitude of its explosion was about 14 mag. The pre-nova is not present on the blue Palomar Sky Survey print having a limiting photographic mag.21,but between August 5 and 13 the visual mag. was about 16 according to the soviet astronomer's observations (IAUC 2826, 2839). The light curve of N Cyg from the photoelectric observations published in IAU Circulars Nos 2826-2849 is shown in Figure 1. It is really a very fast nova: the rate of the decrease of its brightness in the early decline phase was about 1 mag/day. From the rate of decay G. de Vaucouleurs (IAUC 2839) found the absolute visual magnitude at maximum M_V = -10,25 mag. Taking in consideration the absorption from the intensity measurements of the interstellar lines he found for the distance of the Nova the value 1,3 ± 0,2 kpc.

We have succeeded to make a plot of the colour excesses E_{B-V} against the distance modulus ($V-M_V$) for about 20 stars found in the Blanco Photometric Catalogue (Blanco et al., 1968) in the field of three degrees in diameter around Nova.

Assuming γ=3,5 in the formula $A_V=\gamma E_{B-V}$, we estimated the interstellar absorption in the direction of Nova ranging from 1,75 to 2,45 mag. For the maximum visual brightness of N Cyg equal 1,8 mag, we obtain a distance of 0,83 to 1,1 kpc with an average value of 1 kpc.

Figure 2 synthetically shows the results of our spectroscopic observations. The first six weeks of the spectacular evolution of Nova Cygni are illustrated there by the time dependent set of the microphotometric density tracings. The first spectra taken on the evening of August 29, 1975 revealed only the fine interstellar H and K absorption lines and a very strong continuum. The spectra taken later the same night show the apparition of the hydrogen Balmer lines of P Cygni profile with very shallow absorptions and broad emission components. The intensity of the emission components of these lines was growing from hour to hour while the continuum became weaker. The measurements of the absorption components of four hydrogen lines give us for the expansion velocity of the envelope values going from about 1000 km/s for the first spectra to 2600 km/s for the spectra taken on September 4. These measurements are shown in Figure 3. Owing to the growing intensity of the emission components and the weakening of the continuum further measurements of the radial velocity of the absorption components were practically impossible. The half-width of the emission lines was 3000-3400 km/s.

In this early stage of Nova evolution we were able to distinguish the following strong emissions: the Balmer H I lines from $H\beta$ to H_{10}, H and K lines of Ca II, Fe II lines at λ 5018,4924,4296,4233 and 4197 A as well as Fe II λ 4385 A partly blended with $H\gamma$.A very broad emission feature about λ 4570 seems to be a blend of Fe II λ 4630, 4584, 4549 and 4520 A lines.

The lines of ionized iron and calcium have been rapidly growing up in strength to reach their maximum on September 2 followed by a fast decline. This is clearly visible in the Fe II lines λ4179,4233, 4296 A, about λ 4570 A and in the K line of Ca II. The lines Fe II λ 5018 and 4924 A have a slower rate of decline justified by the probable overlapping with the helium lines λ 5015 and 4922 A. The presence of helium emissions at λ3888, 4471 and 4686 A is indeed obvious on our spectra since September 5. The emission K line of Ca II disappeared on September 7 and the Fe II lines seem to disappear on September 9 excepted Fe II λ 4924 A line which was detectable until September 18. The weakening of the continuum and the Fe II and Ca II lines with a simultaneous increasing of the Balmer H I emission lines and an emission feature about λ 4650 are the most striking marks of the evolution of the spectrum of Nova Cygni between September 2 and 10. The feature at λ 4650 A is due to the emission of N III at λ 4641 A (stronger) and H II emission at λ 4686 A (weaker),A contribution of C III λ 4650 A is also possible.

The line of N III appears on September 3-4 and becomes one of the strongest lines in the spectrum on September 10 beside the Balmer lines.

Beginning from September 1, 1975 for Hβ and the next day for the other lines, the emissions reveal a four components structure. The relative intensity of these components varies with the time. Beside the occasional variations in the short time scale systematic variations seem to occur: in the beginning the stronger were the blue components, later the red ones to become equal at the end.Their average radial velocities are the following:

E_1	E_2	E_3	E_4
- 1060	- 540	+ 170	+ 720 km/s

and seem to be rather stable with the time. The early evolution of that structure for the three Balmer lines is shown in Figure 4.

The first feature of the nebular stage of Nova Cygni, the forbidden lines of [O III] λ 5007, 4959, 4363 and [Ne III], λ 3967, 3869 A appeared about September 8. Their intensities steadily increased until the last day of our observations. A little earlier on the blue wing of Hδ appears the forbidden emission of [S II]. Since about September 10 the forbidden lines of [Ne III] are present. Their intensity is growing so rapidly that, since September 16, the blend of H_8 + He I +[Ne III] at λ3870 A is dominated by [Ne III]. Near the violet end of our spectra at about λ 3750 A, later than September 10, appeared an enhancing bump formed by the forbidden dublet [O II] about λ 3727 A and O III about λ 3760 A with the probable contribution of [Fe VII] λ 3760 A. The intensity of this emission is slowly but steadily growing.

The second half of September till the end of our observations we have noted the presence of the following additional lines: O II λ 4190, CII λ 4267, He I λ 4471 and N III λ 4515 A.

Owing to the very large width of the emissions the continuum can be observed probably only at about λ 4800 A and possibly at λ 3920 A. In the apparently free of emission space between Hδ and Hε, the He I λ 4026 A line is present. The intensity of Hβ relative to the continuum has reached 2.7 mag on September 4, 1975 and seems to stay at this level till the end of our observations.

Now the Nova Cygni 1975 is too weak (more precisely its continuum is too weak) for our slit spectrograph, so we continue its observations with the help of an objective prism.

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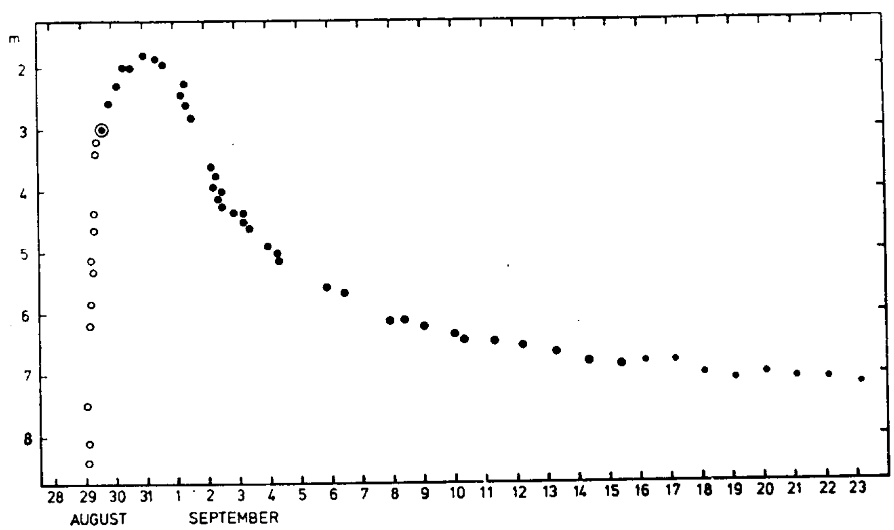

Figure 1. The light curve of N Cygni 1975 based on IAUC 2826-2849. The bigger points - photoelectric V observations;the smaller points (after September 16,1975)-visual observations; the circles - photographic observations of the pre-nova; the point in the circle - discovery observation.

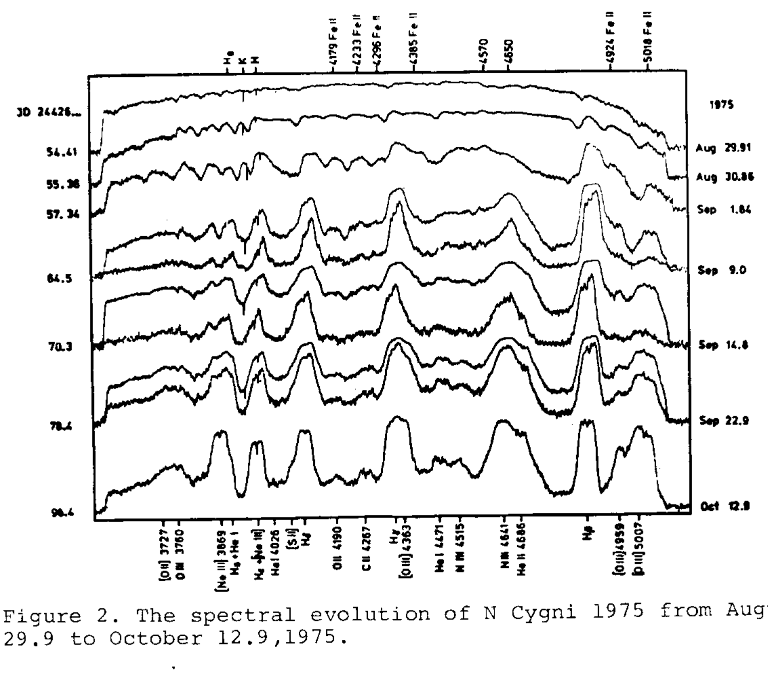

Figure 2. The spectral evolution of N Cygni 1975 from August 29.9 to October 12.9,1975.

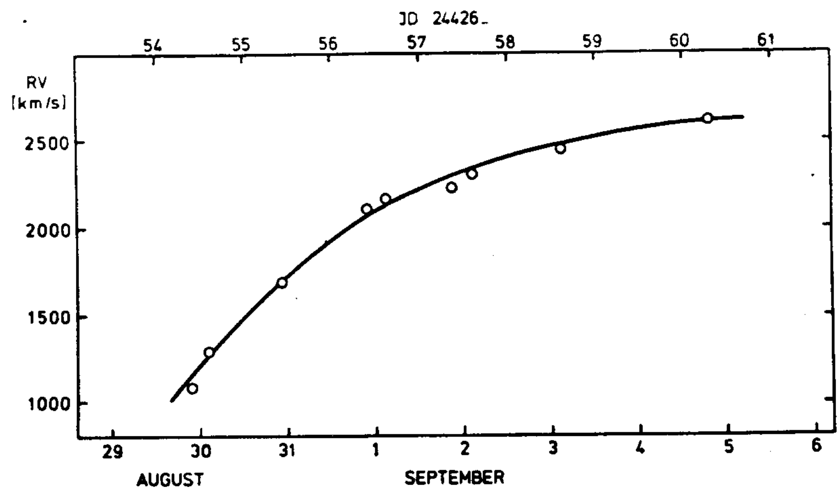

Figure 3. The growth of the envelope expansion velocity in the early stage of the N Cygni evolution.

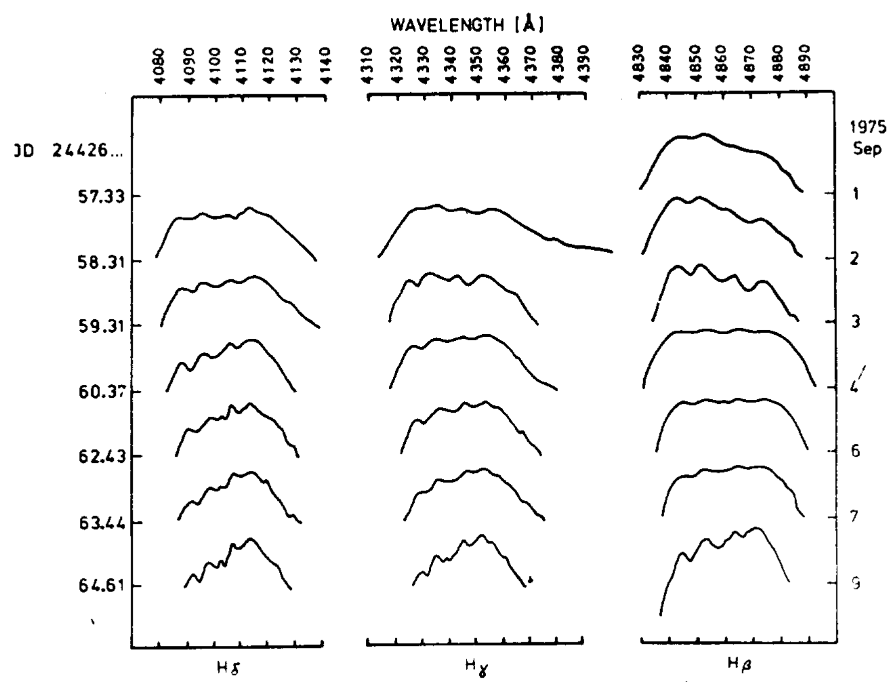

Figure 4. The early evolution of the structure of 3 Balmer emission lines of N Cygni 1975.

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DOUBLE MODE CEPHEID V367 Sct IN OPEN CLUSTER NGC 6649

Some years ago we found for V367 Sct the period $6^{d}.2930$ and suggested that the scatter on its light curve is caused by secondary period (1). The problem is very important because V367 Sct is the cepheid member of the open cluster NGC 6649 (2).

Our conclusions were disputed by Tammann (3) who obtained the period $5^{d}.118$ and somewhat peculiar light curve and recently by Madore and van den Bergh(4) who found the period $5^{d}.2551$ rejecting a number of observations. However, both periods contradict to the 320 photographic observations of V367 Sct which are at our disposal. The plates were obtained during JD 2418529-42303.

Using the photoelectric observations published in (2,3,4) we have searched for secondary period of V367 Sct. Periodicity in the set of residuals relative to a mean curve corresponding to the period $6^{d}.2930$ (Fig.1a) was searched for, the computer programme X-3a (5) being used. In the interval $1^{d}.5-10^{d}$ only two possible periods, $4^{d}.3802$ and $4^{d}.3849$, were found. It were the photographic observations that permitted to ascertain that the secondary period is $4^{d}.3849$. The period ratio 0.696 is close to that for all beat cepheids and we believe that the period $6^{d}.2930$ is the fundamental one whereas the period $4^{d}.3849$ corresponds to the first overtone. The photoelectric light curves (Figs.1b and 1c) were derived by Stobie's iterative technique (6).

The star has the longest period among double mode cepheids and it is the only beat cepheid in open clusters. The membership of V367 Sct in a young cluster and its position in the colour-magnitude diagram indicate that beat cepheids are classical ones. The star is, however not essentially brighter than cluster main sequence stars as cepheids usually do. The Fig. 1 from (7) indicates the pulsational mass 2 - 2.5 in solar units whereas evolutionary mass of a six-day cepheid is about 6 $M_{\odot}$, and the star conforms to period-luminosity and period-age relations for classical cepheids. There is probably something wrong in determinations of pulsation mass of beat cepheids.

The membership of V367 Sct in a cluster implies the star is a clue to the nature of beat cepheids and deserves exceptional attention.

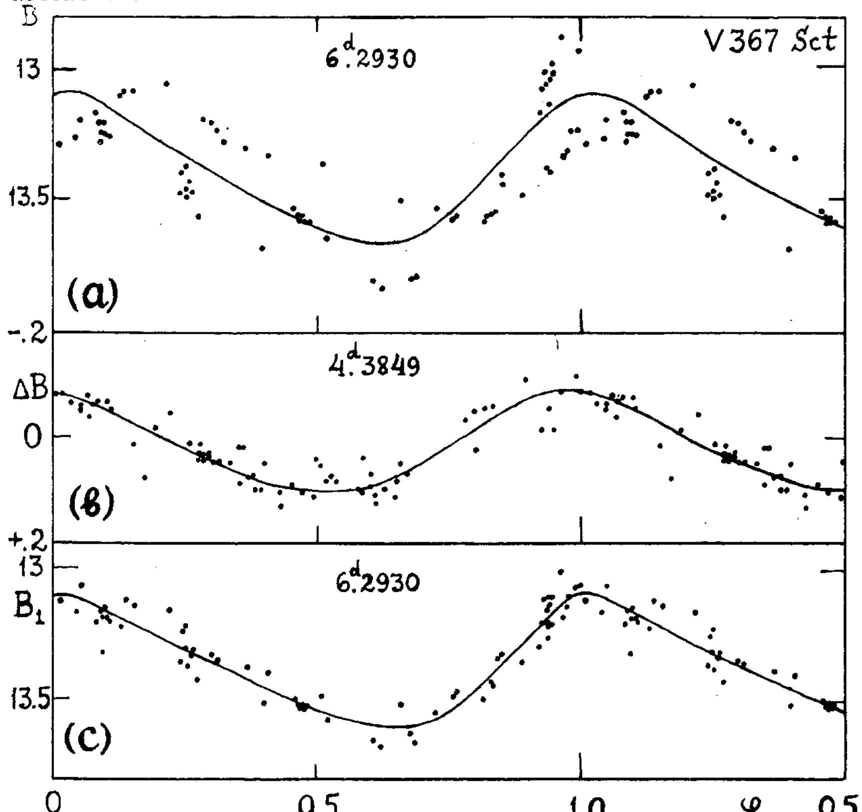

Figure 1

YU.N. EFREMOV

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Budapest
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UBV OBSERVATIONS OF NOVA CYGNI 1975

UBV observations of Nova Cygni 1975 (V1500 Cyg) have been made during its maximum and early decline with the Lund Observatory 61-cm Cassegrain-Nasmyth reflector. The results are shown in Table 1. The comparison stars and their adopted magnitudes are also given. Observations of less weight are indicated by a colon. To avoid photomultiplier saturation a mask was placed in front of the telescope aperture on the nights prior to Sept.4.

Small scale light variations were detected during the transition stage. Thus a local maximum was catched on Sept. 7.873 UT.

Comparison star	UT
γ Cyg	
2.23 0.67 0.54	30.830-2.049
π^2 Cyg	
4.24 -0.12 -0.71	2.833-3.113
HD 204411	
5.29 0.08 0.16	4.815-10.904
HD 204918	
6.78 0.31 0.15	15.936
HD 204710	
6.94 0.26 -0.24	16.910-18.009

Table 1

UT	V	B-V	U-B
Aug 30.830	1.86	0.64	-0.10
.835	1.90	0.61	-0.10
.840	1.85	0.63	-0.11
.846	1.83	0.65	-0.12
.851	1.85	0.63	-0.08
.857	1.87	0.66	-0.10
.865	1.83	0.66	-0.13
.871	1.86	0.61	-0.08
.877	1.85	0.64	-0.09
.882	1.86	0.65	-0.11
.888	1.85	0.65	-0.10
.900	1.84	0.66	-0.10
31.076	1.80:	0.70:	-0.06:
.082	1.77:	0.68:	-0.07:
.109	1.81:	0.70:	-0.09:
.115	1.83:	0.68:	-0.08:
.121	1.80:	0.69:	-0.08:
31.854	2.22	0.69	-0.22
.857	2.22	0.69	-0.22
.866	2.22	0.69	-0.21
.871	2.22	0.71	-0.22
.875	2.23	0.69	-0.22
.881	2.23	0.69	-0.22
Sept 1.899	3.41	0.42	-0.43
.905	3.36	0.44	-0.49
.911	3.39	0.43	-0.40
.917	3.39	0.43	-0.44
.927	3.38	0.41	-0.42
.933	3.42	0.40	-0.43
.940	3.43	0.41	-0.42
.945	3.40	0.42	-0.44
.959	3.40	0.47	-0.50
.989	3.45	0.42	-0.47
.995	3.47	0.39	-0.45
2.001	3.45	0.39	-0.47
.006	3.41	0.42	-0.51
.013	3.41	0.43	-0.50
.024	3.47	0.39	-0.44
.032	3.47	0.40	-0.45
.038	3.44	0.37	-0.46
.049	3.47	0.39	-0.45

UT	V	B-V	U-B
2.833	4.31	0.31	-0.58
.838	4.30	0.31	-0.57
.843	4.30	0.32	-0.58
.848	4.32	0.31	-0.57
.853	4.31	0.31	-0.57
.859	4.34	0.30	-0.54
.866	4.31	0.32	-0.59
.881	4.33	0.32	-0.59
.894	4.37:	0.29:	-0.55:
3.058	4.48	0.31	-0.53
.065	4.49	0.33	-0.57
.069	4.51	0.33	-0.58
.074	4.51	0.32	-0.56
.080	4.48	0.33	-0.56
.087	4.51	0.30	-0.55
.094	4.54	0.31	-0.53
.107	4.53	0.33	-0.57
.113	4.56	0.33	-0.54
4.815	5.42	0.32	-0.66
.856	5.39	0.28	-0.59
.862	5.39	0.30	-0.64
.867	5.38	0.31	-0.64
.872	5.43:	0.28:	-0.57:
.877	5.36	0.30	-0.59
.882	5.38	0.28	-0.59
.887	5.39	0.27	-0.59
5.038	5.40	0.31	-0.63
.042	5.52:	0.23:	-0.60:
.049	5.37	0.30	-0.54
.053	5.37	0.25	-0.48
5.920	5.66	0.25	-0.57
.925	5.64	0.24	-0.57
.930	5.66	0.25	-0.56
.934	5.67	0.26	-0.59
.944	5.68	0.24	-0.57
.948	5.70	0.25	-0.59
.959	5.73	0.25	-0.57
.964	5.73	0.26	-0.57
.969	5.74	0.25	-0.55
.980	5.77	0.26	-0.55

Table 1 (cont.)

UT	V	B-V	U-B	UT	V	B-V	U-B
7.821	6.20	0.22	-0.63	10.904	6.68	0.12	-0.57
.827	6.19	0.22	-0.63				
.831	6.19	0.22	-0.63	15.936	7.18	-0.05	-0.46
.836	6.17	0.22	-0.64				
.841	6.15	0.22	-0.63	16.910	7.25	-0.07	-0.49
.846	6.14	0.21	-0.63				
.856	6.11	0.22	-0.63	17.947	7.41	-0.10	-0.49
.861	6.10	0.22	-0.62	.952	7.42	-0.09	-0.49
.871	6.09	0.22	-0.61	.958	7.42	-0.10	-0.48
.880	6.10	0.22	-0.62	.964	7.41	-0.11	-0.48
.890	6.09	0.22	-0.61	.975	7.38	-0.09	-0.49
.895	6.11	0.21	-0.61	.986	7.37	-0.09	-0.48
.907	6.14	0.21	-0.60	.993	7.38	-0.10	-0.47
.912	6.16	0.21	-0.61	18.003	7.35	-0.11	-0.45
.922	6.18	0.22	-0.61	.009	7.38	-0.10	-0.47
.932	6.21	0.22	-0.61				
8.078	6.24	0.20	-0.57				
.083	6.26	0.20	-0.58				
.089	6.26	0.21	-0.58				
.095	6.28	0.21	-0.58				
.099	6.27	0.21	-0.58				
.111	6.26	0.22	-0.58				

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V624 Her

The "New Eclipsing Binary" reported by Kurtz in IBVS 1054 is V624 Her (3rd Supp. to GCVS; IBVS 378; A.J. 77,610, 1972).

As the author indicates, this star deserves further attention. Also, the period may need revision, for the epochs of minimum given by Kurtz and in the GCVS are not compatible if both refer to the primary minimum.

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Budapest
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Hα SPECTROSCOPY OF THE RS CVn STAR UX Ari (HD 21242)

Following the report (Weiler 1975a) of variations in Hα and the Ca II H and K lines in several RS CVn type systems, we have begun observations of the Hα region in UX Ari.

Nine spectrograms (dispersion 36 Å/mm) have been obtained of the region λλ5700-6800 with the Ritter Observatory 1m reflector and Cassegrain spectrograph. Hα is in emission on all our spectrograms, but the intensity is highly variable. Our preliminary results are summarized in the table below. The phases have been computed from the orbital elements of Carlos and Popper (1971).

DATE (UT) 1975	HJD 2440000+	PHASE	EW (Hα) (Å)
5 Oct.	2690.893	0.199	0.54
16 Oct.	2701.812	0.895	0.36
6 Nov.	2722.746	0.147	1.53
11 Nov.	2727.699	0.916	0.54
11 Nov.	2727.788	0.930	0.57
17 Nov.	2733.600	0.833	0.86
18 Nov.	2734.664	0.998	0.19
20 Nov.	2736.649	0.306	0.95
20 Nov.	2736.770	0.325	0.92

The equivalent width of the Hα emission varies by nearly a factor of ten over the interval of our observations. It is too early to tell if this variability is strictly phase dependent; conceivably some part of it could be erratic and connected with the radio outbursts seen in this star (Gibson, Hjellming, and Owen 1975). There is the suggestion, however, that emission maximum occurs near phase 0.15, substantially in agreement with Weiler's (1975b) spectrophotometry.

Radial velocity measures show the cooler (K0 IV) component to be the origin of the Hα emission. The hotter component (G5V) does have absorption lines visible in the red, though they are difficult to resolve at our dispersion. Three spectra near phase 0.9 show the Hα absorption of the G5 star to the red of the emission, mimicking an inverse P-Cygni profile. Some of the equivalent width variations may be due to this spectral overlapping.

Additional spectroscopy of UX Ari and other RS CVn systems is in progress.

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Budapest
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NOTE ON THE PERIOD VARIATION IN THE WHITE-DWARF ECLIPSING BINARY BD + $16^{o}516$

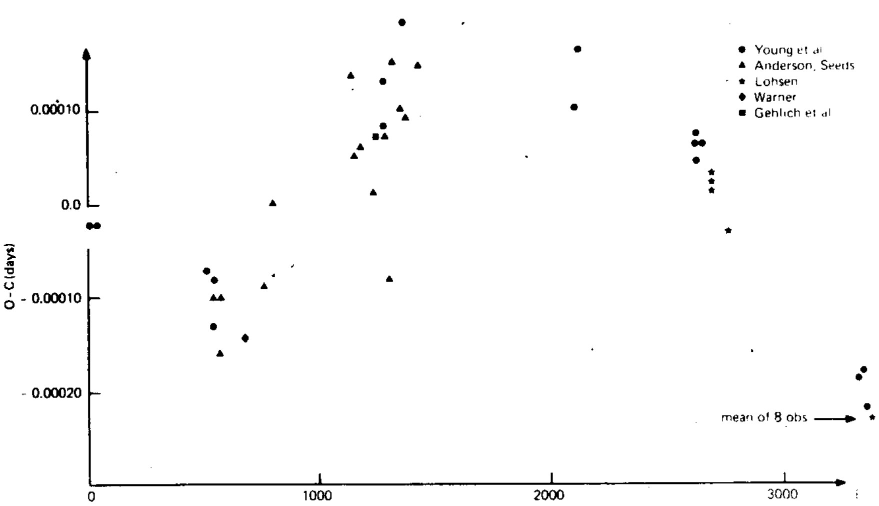
Since the discovery of eclipses in this remarkable system in December 1969 by Nelson and Young (1970) sufficient photometric material has been collected to allow a discussion of the period variations (Young and Lanning 1975). The following remarks have the intention to widen the basis of possible interpretations. Before embarking on speculations concerning the nature of interaction between the components, based on the observed time residuals (O-C values), we should explore possible alternative explanations, too.

Residuals for all minima with both ingress and egress well observed are shown in Fig.1. These eclipses allow an unusually good timing, accurate to a few seconds, or in case of the later determinations even better. The pertinent data we extricated from the papers by Young and Lanning, Andersen and Seeds (1972) and Lohsen (1974); the O-C values are calculated with Young's and Lanning's formula: Min hel.= JD 2440610.06490 + $0.^{d}52118346$E.

We should like to emphasize two points. (1) As a glance at Fig. 1 shows, it is very hard to tell from the published observations whether the period change around E = 600 occurred gradually or discontinuously. (2) There has been manifestly an increase and later an apparently gradual decrease in the eclipsing period; statements like this: "Future observations might reveal that what we have termed increases and decreases were variations in the rate of increase only" are not correct. The length of the period was, for instance, about $0.^{d}52118386$ near E = 1000 (June 1971) and $0.^{d}52118310$ near E = 3000 (May 1974); a period decrease between these dates of 0.065 ± 0.005 sec is "definitive". Transformations of the 0-C diagram by using other mean periods would alter the corresponding slopes but not their difference, i.e. value and sign of the period variation over these 2000 epochs will remain the same.

It is obviously not easy to interpret these alternating changes of the period in terms of mass transfer; we also have to bear in mind that the system is clearly detached, that there are no emission lines suggesting a ring or disk around the white-dwarf component and repeated search for rapid flickering activity failed to reveal any (Warner et al. 1971, Nather 1973). The possible "chromospheric event" in April 1971 (see Young and Nelson 1972) is the only sign of activity discovered hitherto and it may or may not have triggered the period increase. It is then worth looking into possibly continuous changes of the period, caused by geometric effects. The "curve" of residuals is certainly compatible with such a hypothesis.

Apsidal motion was put forward tentatively in a conference lecture, in July 1975, by the present writer. The catalog value of the orbital eccentricity (0.02 ± 0.008) may well be spurious and both the required small eccentricity of 0.001 and the resulting apsidal motion coefficient of log k = -1.9 are well acceptable. Nevertheless, the 0-C values in Fig. 1 suggest rather a distorted sine curve, corresponding perhaps to a light-time effect in an eccentric orbit, with a third body in the system. This possibility, mentioned earlier in the literature, was dismissed somewhat too easily. Higher eccentricities of the large orbit in triple systems are quite usual and it is also clear that an orientation of the periastron nearly toward us cannot rule out the light-time hypothesis. (Probability arguments to this point would be strongly objectionable.) Assuming for a moment the presence of a third body, the combination of a small light-time amplitude (about 30 lightseconds) and an orbital period around 5 years is, indeed, worth noting. These data lead to a very small mass-function of the order of $10^{-5}M_{\odot}$; which again means that for any reasonable value of the third mass, the orbit is nearly perpendicular to the line of sight. With M_3 between $0.2M_{\odot}$ and $0.7M_{\odot}$, for instance, we find inclinations between $i = 8.°1$ and $2.°8$, respectively. The two orbits in the triple system with $P = 0.52$ days and $P' \approx 5$ years, would be nearly perpendicular to each other — a rare but not unprecedented case.



Calculation of an orbit is certainly premature at the time being, since the shape of the time-delay curve depends too strongly on the mean value of the period accepted for the calculation of the O-C values. However, the maximum angular separation AB-C turns out to be of the order of 0."10 or perhaps 0."12, for all masses in question. This would make an eventual visual detection of the third component very difficult though not entirely impossible.

All these considerations remain, of course, highly hypothetical. Observations made during the current season may already contribute to the clarification of the situation.

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COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1077

Konkoly Observatory
Budapest
1975 December 23

VARIABLE STARS IN THE GLOBULAR CLUSTER NGC 5286

NGC 5286 is a globular cluster of the southern hemisphere whose coordinates are A.R.=$13^h43^m.0$; Dec.=$-51^o07'$.

During several years 31 plates in B (103a-O+GG 13) and 30 plates in V (103a-D+GG11) were taken with the 1.54 m telescope of the Astrophysical Station of Bosque Alegre, Córdoba,Argentina.

Eight variable stars had been discovered (C.R.Fourcade and J.R.Laborde, 1966, "Atlas y Catálogo de Estrellas Variables en Cúmulos Globulares al Sur de -29^o") to which 5 new ones have recently been added by the authors.

In this paper 6 of these stars were studied in blue and their periods were determined up to four exact decimals. All the variables are of RR Lyrae type and their light curves are shown in Figure 1.

Simultaneously with the study of the variables, C.R.Fourcade, J.R.Laborde and J.C.Arias, 1975 established a colour-magnitude diagram of the globular cluster NGC 5286, which has not yet been published.

Figure 2 shows the mean magnitudes of the variables in both B and V colours. As it was expected, all these variables are within the RR Lyrae gap.

Due to the morphological characteristics of the colour-magnitude diagram (diagram representative of Halo clusters) it is expected that NGC 5286 contains more variables than those discovered up to now. The authors will continue their search of variables in this cluster.

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JOSÉ RAUL LABORDE
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FIGURE 1

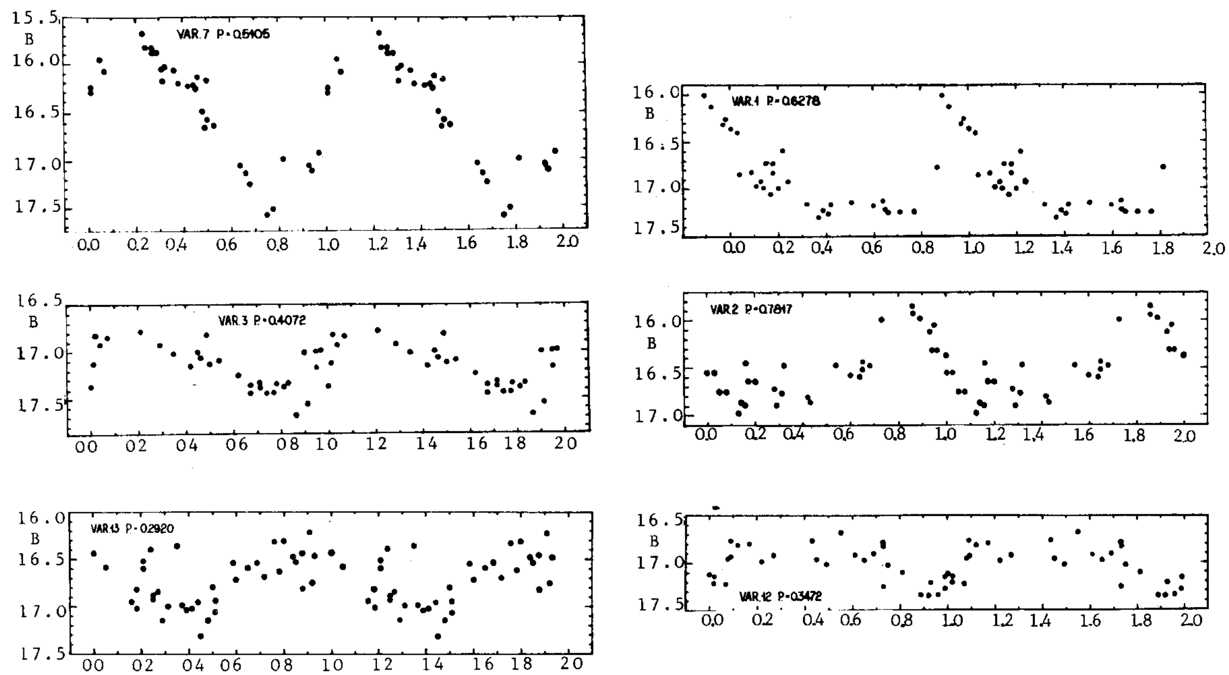
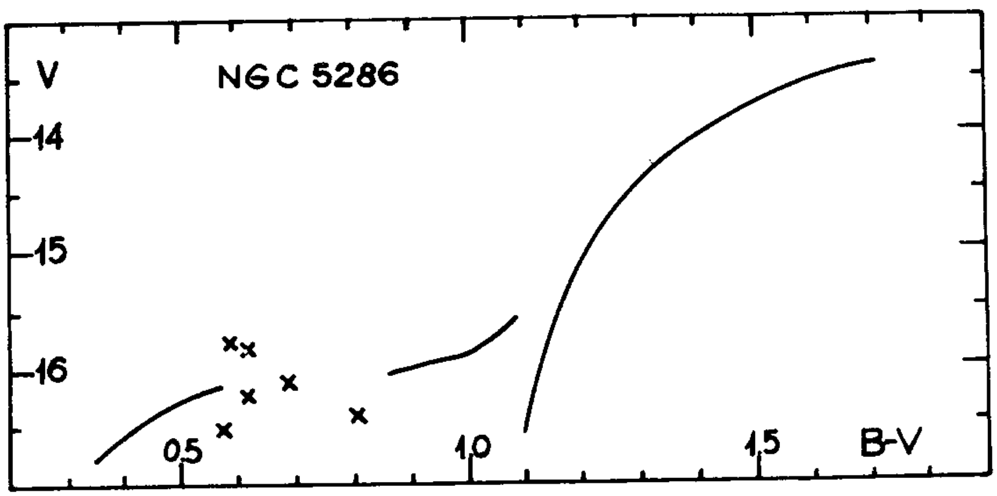

VAR 7 P=0.5105
VAR 1 P=0.6278
VAR 3 P=0.4072
VAR 2 P=0.7817
VAR 13 P=0.2920
VAR 12 P=0.3472
B

FIGURE 2



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Konkoly Observatory
Budapest
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PHOTOELECTRIC OBSERVATIONS OF VZ Cnc (HD 73857)

The observations were made during four nights in 1967/68 by Klement and Sterzinger with the 24" refractor of the University Observatory in Vienna. Measurements in the blue and yellow spectral region were obtained around maximum light. In 1974, UBV-observations over two cycles were obtained during two nights by Hahn and Lustig with the 60 cm photometric reflector of the Observatoire de Haute Provence (OHP). From the light-curves we determined the maxima and the moment of occurrence of the median magnitude on the ascending branch $T(\bar{m}), \bar{m} = 0.5\ (m_{max} + m_{min})$. The reduction of the data brought no changes of either the primary or the beat period. It would be necessary to get long runs over two or three primary cycles to be able to detect a possible variation of the beat period ($P_p = 0^d.17836376$, $P_b = 0^d.716292$, ref. W.S.Fitch, Ap.J. 121, 690, 1955).

The observational data are summarized in the following table.

Date of Observations	T_{max} JD hel	$T_{(\bar{m})}$ JD hel	Amplitude	Observers
1967.12.28/29	243 9852^d.6396	243 9852^d.6347	0^m.67	Klement, Sterzinger
1968.01.22/23	9878.5006	9878.4962	0.55	Klement, Sterzinger
1968.01.23/24	9879.3958	9879.3896	0.43	Klement, Sterzinger
1968.02.16/17	9903.4730			Klement, Sterzinger
1974.02.20/21	244 2099.5045	244 2099.4851	0.67	Hahn,Lustig
1974.02.21/22	2100.3915		0.49	Hahn,Lustig

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Konkoly Observatory
Budapest
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THE NEW PHOTOMETRIC ELEMENTS OF BS DRACONIS

During 1972-1974, 813 photoelectric observations of BS Dra were carried out at the Astronomical Observatory of the University of Cluj-Napoca.

The observations were made in V and B light with a 50 cm Newton reflector, a photometer employing an unrefrigerated 1 P 21 photomultiplier tube and Corning 3384 and BG 12 + GG 13 filters, respectively.

Table 1 contains the observed times of minima. Using the minima published by Oburka (1971, 1972), Kizilirmak and Pohl (1974) as well as those from Table 1, the following elements have been determined: Min I = J.D.hel.2426444.5834 + $3^{d}.363988 \cdot E$

Table 1

Min.hel. J.D.24...	n	E	O-C	Obs.
41498.4290	49	4475.0	-0.0009	I. Todoran
41508.5199	43	4478.0	-0.0018	I. Todoran
41631.3123	62	4514.5	+0.0056	V. Pop
41772.5934	67	4556.5	-0.0013	V. Pop
41794.4600	34	4563.0	-0.0007	I. Todoran

The real period is twice as long as the value published in G.C.V.S. (1969).

The O-C differences calculated with the new elements are also given in Table 1.

The general picture of the mean light curve in V is plotted in Figure 1, whence we can see that the secondary minimum occurs at the phase $0^{p}.5$. The computation of the orbital elements is in course of preparation, and they will be published elsewhere.

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Kizilirmak, A., Pohl, P. I.B.V.S. 937, 1974

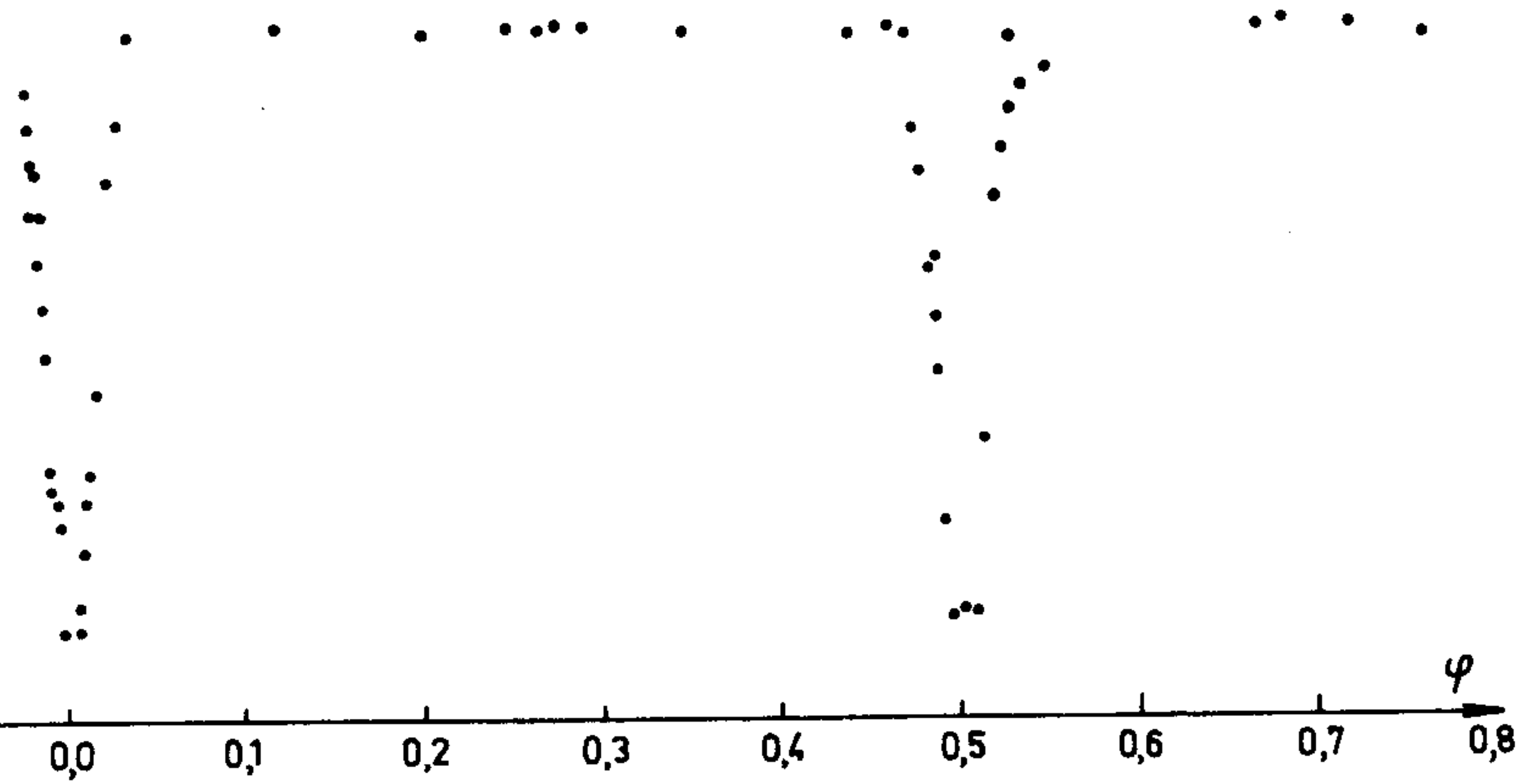

Fig. 1

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OBSERVATIONS OF THE MINIMUM OF θ^1 Ori A

At the Lick Observatory, an attempt was made by the writer to observe the predicted minimum of θ^1 Ori A near 1975 Dec 5.3 or 5.48 (UT) (IVBS 988 and 1025), using the 24-inch reflector and a photometer employing a 1P21 photomultiplier. Unfortunately, the night of Dec 4/5 was overcast, and only two observations of somewhat uncertain quality were obtained through the clouds. These observations, and a single observation through clouds on the following night, are listed in the accompanying table. These observations were made in yellow light, through a Corning 3384 filter and using a focal plane diaphragm 11" in diameter. θ^1 Ori D was used as the comparison star, and the magnitude differences in the table are given in the sense θ^1 Ori A minus θ^1 Ori D.

Date 1975 UT	Δ V mag
Dec 05.442	+1.07
05.450	1.10
06.316	+0.04

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Budapest
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PHOTOELECTRIC MINIMA OF ECLIPSING BINARIES

The list below contains minima of eclipsing binaries observed photoelectrically at the Fort Skala Observatory in Cracow. The times of minima and limits of errors were obtained by the tracing-paper method of Kordylewski (Szafraniec 1948). The consecutive columns of the list contain the name of the star, instrument used (Grubb, ϕ = 20 cm; R tel, ϕ = 50 cm), filter used, heliocentric time of minimum, limit of error and O - C.

Star	inst.	filter	JD hel 2440000+	lim.er.	O - C
o And	Grubb	B	2319.4309	$\mp 0^d.0035$	$+0^d.0162$
IM Aur	R tel	B	2749.4431	0.0015	-0.0105
		V	2749.4436	0.0010	-0.0100
GK Cep	R tel	V	2685.5421	0.0025	-0.0015

For o And the value of O-C is obtained according to the elements given by Schmidt (1959). Olsen (1972) suggests that the changes of light may be explained also by intrinsic variations of a single shell star with the following elements:

$$\text{Min I JD hel} = 2439470.628 + 1^d.0185\ E.$$

In this case $O - C = +0^d.0584$.

For IM Aur and CK Cep the values of O-C are obtained according to elements given by Dworak (1974, 1975).

From the shape of the light curve IM Aur seems to be an Algol-type star (Dworak 1974, Kondo 1966, Margoni et al. 1966), but in the First Suppl. to the Third Ed. of the GCVS (Kukarkin et al. 1971) it is classified as a β Lyrae-type variable.

From the morphological point of view the star IM Aur may be "an intermediate type between Algol-system and β Lyrae-system", similarly as the star GK Cep is "an intermediate type between a β Lyrae and W Ursae Maioris-system" (Dworak 1975). The case of IM Aur and GK Cep is a good example for the non-adequatness of the classical division of eclipsing binaries.

Further observations of these three interesting variable stars are very needed.

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INFORMATION BULLETIN ON VARIABLE STARS

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Konkoly Observatory
Budapest
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INACTIVE STATE OF HZ Her

At Sonneberg Observatory there exist a number of 40 cm astrograph plates of the inactive state of Her X-1 = HZ Her in the time intervals 1934 April 15 to August 7 (J.D. 242 7543 ...7657) and 1937 April 3 to 1940 June 8 (J.D. 242 8630...9789). This communication includes the results of a more thorough investigation of that state, than has been given in Mitt. Veränd. Sterne Sonneberg 6, p. 61 ff, because it had turned out in the meanwhile that those plates are the only material which can lead to a rather precise light curve of the inactive state (this is the state in which HZ Her exhibits brightness variations of only small amplitude, unlike to the "normal" active state where a reflection effect of large amplitude is present). HZ Her has been in an active state for the past 17 years.

From our material we find that the light curve of the inactive state is a pure eclipsing one, reflection effect or ellipsoidal variations being completely absent. The amplitude of this eclipsing light curve is $m_{pg} = 14\overset{m}{.}60 - 15\overset{m}{.}15$; in the normally active state the range is roughly $12\overset{m}{.}90 - 14\overset{m}{.}80$ and depends on the 35 day cycle phase.

Primary and secondary minima of the inactive curve are of nearly equal depth, but the secondary minimum is very broad, $0\overset{P}{.}3$, as compared with the primary one ($0\overset{P}{.}1$). This is an evidence for the existence of absorbing matter - the accretion disk - around the X-ray star, the disk being not self-luminous, but absorbing.

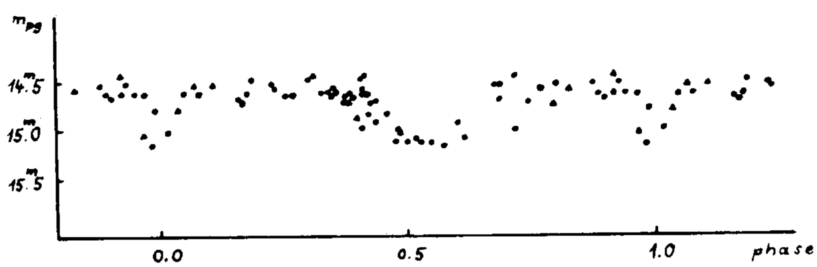
Our inactive light curve shows an asymmetry:
The center of the secondary minimum is situated approximately at phase 0.56 of the $1\overset{d}{.}7$ variation. This asymmetry can be explained by either an asymmetric shape of that absorbing accretion disk or by an excentric orbit of the system.

Processing of the series of observations on Sonneberg astrographic plates yields the following most probable elements:

$$\text{Primary min.} = 244\ 1397.584 + 1^{d}.700175\ .\ E$$

The inactive light curve does not show any evidence for the 35^d X-ray cycle, shape and amplitude of the light curve being independent of the 35^d phase, unlike the variations in the normal active state.

The change from the inactive to the active curve and vice versa occurs in the course of a few days.



The inactive state light curve of HZ Her:

Δ - J.D. 242 7543 ... 7657

o - J.D. 242 8630 ... 9789

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Number 1083

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CLOSE BINARIES WITH H AND K EMISSION

In 1970 a list was published (1) of 22 close binaries showing H and K emission outside eclipse in at least one component and with the primary (hotter) star a main-sequence or subgiant star. Since that time 5 more binaries have been found to belong to this group, and sufficient spectroscopic material, published and unpublished, is on hand to obtain provisional minimum masses for 21 of them. Each of these systems that has been investigated adequately shows irregularities in its light curve. Hα emission is absent or weakly present with variable intensity. AR Lac and RS CVn may be considered prototypes of this group of close binaries.

The purpose of this Bulletin is to inform interested persons of the present state of knowledge, as it is known to me, of this group of systems. The accompanying Table gives a summary of pertinent data. While most of the entries in the Table (except almost all of the periods) are from my own material, data published by others have been included without bibliographical references. With the exceptions of WW Dra and AR Lac, the provisional minimum masses are based on my spectrographic material obtained at the Mount Wilson and (primarily) Lick Observatories. The minimum masses should approximate the actual values in all cases except UX Ari. The spectrographic observations are continuing, and I expect to obtain minimum masses of moderate accuracy for all the systems listed except WY Cnc, for which no lines of the secondary component have been found. The more recent spectrographic material has been concentrated in the region of the D lines, made accessible with relatively short exposure times by the use of an electrostatically focussed Varo image tube at the focus of the 50 mm camera of the coude spectrograph attached to the 3 m Lick reflector.

While all the systems for which provisional radii are available are detached systems, photometry is required to establish the status of the others. UX Ari is a non-eclipsing member of this group. Another bright potential non-eclipsing member, in the southern sky, is HD 155555. UX Ari, AR Lac, and RT Lac have been detected as variable radio emitters. RS CVn is the system best studied photometrically. Light curves at one or two epochs have been published for several other systems, but a great deal more photometry is needed. Unpublished observations obtained at Kitt Peak show that UX Com and LX Per should be added to the list of systems with complete (total and annular) eclipses.

It will be noted that, in most of the systems, the more massive component appears to be the more evolved one in the conventional sense, as is expected in detached systems. There are, on the other hand, several exceptions, at least one of which, Z Her, is typical of members of the group in other respects. A suggestion on a possible mode of evolution of these systems has been presented (2). In the framework of this suggestion, TY Pyx, with two equal components, not subgiants, yet somewhat evolved, would be considered a system in transition between its main-sequence phase and the phase of typical members of the group, such as AR Lac and LX Per.

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System	V_{max}	P	Emission pri. or sec.	Sp. type pri.	B-V or sp. type sec.	$M_{pri.} \geq$	$M_{sec.} \geq$	$R_{pri.}$	$R_{sec.}$
UX Ari*	$6^{m}.5$	$6^{d}.4$	sec	G5		0.63	0.71		
CQ Aur	9.0	10.6	sec?	G0					
SS Boo	10.3	7.6	sec	G2	+1.01	1.00	1.00		
SS Cam	10.0	4.8	sec	G2	+1.0				
RU Cnc	10.1	10.2	sec	F8	+1.01				
WY Cnc	9.6	0.83	pri	G5					
RS CVn	8.4	4.8	sec	F4	+0.91	1.35	1.40	1.7:	4.0:
AD Cap	9.8	3.0	both	G5		0.5:	1.1:		
UX Com	10.0	3.6	sec	G2	+1.04	0.95	1.12		
RT CrB	10.2	5.1	sec	G0		1.27	1.34		
WW Dra	8.8	4.6	sec	G2	+1.0	1.4	1.4	2.3:	3.9:
RZ Eri	7.7	39.3	sec	Am	G8	2.2	1.7		
Z Her	7.3	4.0	sec	F4	+0.91	1.22	1.10	1.6	2.6
AW Her	9.7	8.8	sec	G0	K2	1.38	1.36		
MM Her	9.5	8.0	sec	G2-5		1.20	1.24	1.5:	2.8:
PW Her	9.9	2.9	sec	G0		1.4	1.6		
GK Hya	9.4	3.6	sec	G0	+0.81	1.2:	1.3:		
RT Lac	10.0	5.1	both	G8	K1	0.6	1.5		
AR Lac	6.9	2.0	both	G2	+0.93	1.30	1.30	1.8	3.1
RV Lib	9.0	10.7	both	G2-5		2.2	0.4		
VV Mon	9.4	6.0	sec	G2					
LX Per	8.1	8.0	sec	G2	+0.93	1.23	1.32	1.6:	2.8:
SZ Psc	7.3	4.0	sec	F8	K1	1.33	1.65	1.6:	4.0:
UV Psc	9.1	0.86	both	G2	+0.91	1.2	0.9		
TY Pyx	6.9	3.2	both	G2-5	+0.69	1.20	1.22	1.6:	1.6:
RW UMa	10.2	7.3	sec	F8	+1.08	1.50	1.45	2.0:	3.8:
RS UMi	10.1	6.2	sec	F8					

*Not eclipsing

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SIMULTANEOUS TWO CHANNEL PHOTOELECTRIC OBSERVATIONS OF EV Lac

The flare star EV Lac has been observed photoelectrically with the 30 cm reflector at the Oslo Solar Observatory, ($\lambda=0^h43^m02^s$, $\varphi=+60^o12'30''$, h=585 m). The observations were carried out in the period from October 7 to October 12, giving a total coverage of 685 minutes. The detailed coverage is given in Table 1.

The monitoring was done with a simultaneous two channel photoelectric photometer. The light is split by a dichroic mirror, wavelenghts shorter than 5000 Å are registered by an EMI 9698 BG cell wavelenghts longer are measured with a RCA C31034 cell. The blue measurements were performed through a Schott BG12 filter (see Andersen and Pettersen 1975 for further description). Combined with a Schott RG630 filter the red cell gives a flat spectral response from 6400 Å to 8600 Å. Thus it includes both Hα and the Ca II triplet at 8500 Å.

During the monitoring two definite and one suspected event were observed, the physical properties of the definite events are given in Table 2.

In flare no.1 there are several interesting details to be noted. In the blue channel it seems as if the postflare intensity has dropped below the preflare level. It does not reach the original level during the rest of this night. Furthermore there is a decrease (dip) in the intensity below the preflare level in the red channel immediately before the outburst. This dip in the red channel is associated with a decrease in the blue channel. Both the previously mentioned properties can possibly be explained if there is a significant contribution to the total intensity in both channels from line features.

The postflare decrease is then caused by an overall decrease in the blue emission lines, (Balmer and Ca II lines). The preflare dips must be caused by a short time overpopulation of the lower levels in the dominating transitions. These dips and the following outbursts may be caused by the passage of a shock front through the emitting medium.

In flare no.2 it worth noting that there is no detectable increase in the red channel during the outburst in the blue one.

The suspected outburst occurred October 10 approximately 20^h37^m, the maximum intensity in blue was less than 0.1.

Table 1. Detailed Coverage of EV Lac

7/10-1975
1851-1858 (σ_b=.1,σ_r=.02), 1903-1931 (σ_b=.08,σ_r=.02)
1933-1948 (σ_b=.08,σ_r=.02),2005-2020 (σ_b=.09,σ_r=.02)
8/10
1850-1910 (σ_b=.06,σ_r=.01),1913-1944 (σ_b=.05,σ_r<.01)
10/10
1928-1951 (σ_b=.07,σ_r=.02),1958-2019 (σ_b=.05,σ_r=.01)
2028-2050 (σ_b=.06,σ_r=.01),2103-2232 (σ_b=.06,σ_r=.01)
11/10
1914-2018 (σ_b=.08,σ_r=.02),2022-2043 (σ_b=.08,σ_r=.02)
2047-2051 (σ_b=.09,σ_r=.02),2108-2126 (σ_b=.08,σ_r=.02)
2158-2332 (σ_b=.05,σ_r=.02)
12/10
1847-1852 (σ_b=.10,σ_r=.03),1900-1954 (σ_b=.10,σ_r=.02)
2022-2036 (σ_b=.06,σ_r=.01),2100-2122 (σ_b=.08,σ_r=.02)
2124-2220 (σ_b=.07,σ_r<.01),2226-2252 (σ_b=.07,σ_r=.01)
2256-2300 (σ_b=.05,σ_r=.01)

Table 2. Flare Characteristics

Flare no.	Colour	Date 1975	t_{start}	t_{max}	t_{end}	$\frac{I_{O+f}-I_O}{I_O}$	P sec.	σ/I_O
1	b	7/10	1923	192507	1933	>0.8	75	0.07
	r		1925	192507	1928	>0.07	6	0.02
2	b	11/10	2206	220707	2209	0.24	14	0.05
	r		-	-	-	<0.02	-	0.02

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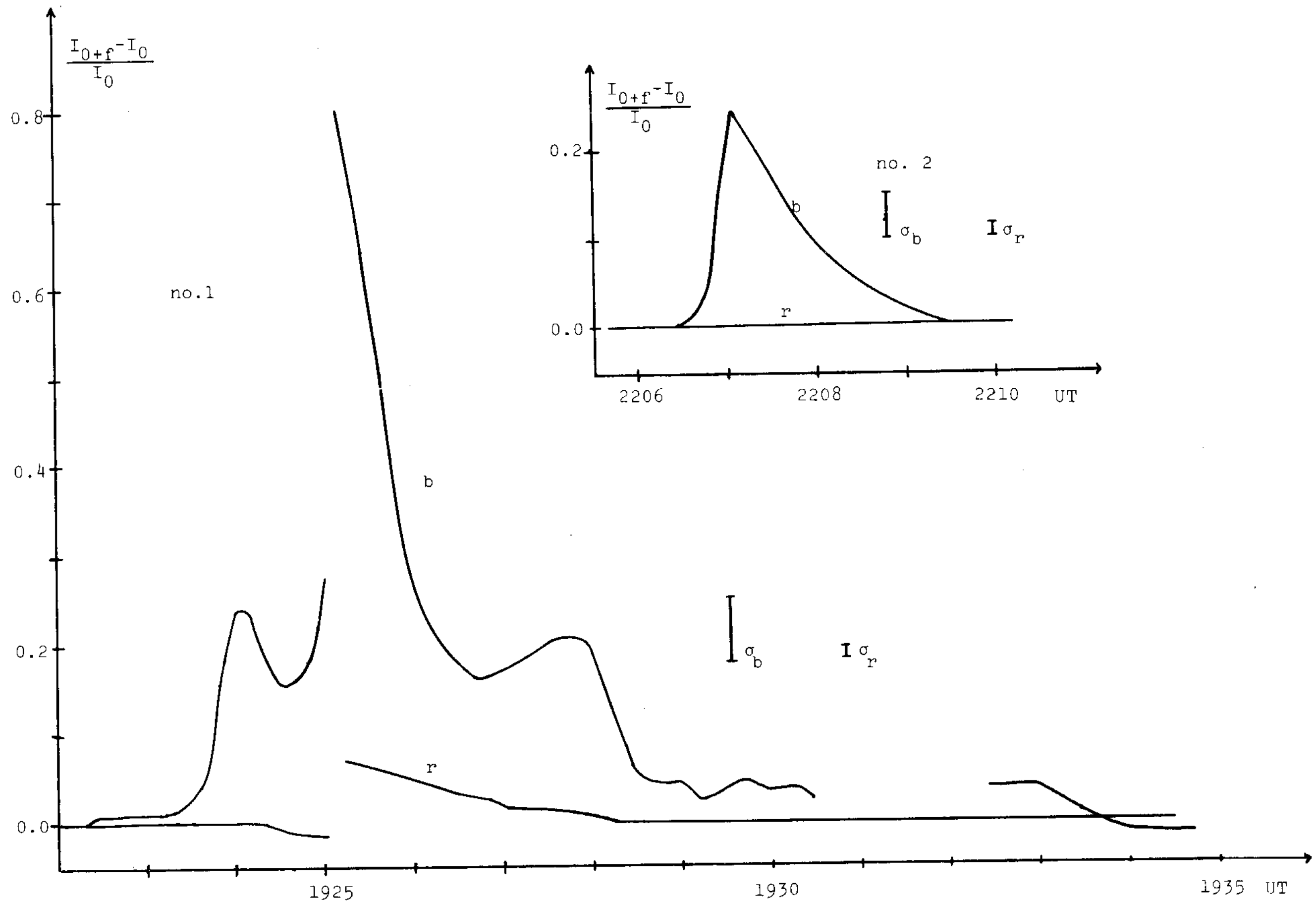

$\frac{I_{0+f}-I_0}{I_0}$
0.8
0.6
0.4
0.2
0.0
no.1
b
r
σ_b
σ_r
1925
1930
1935 UT
no. 2
0.2
0.0
2206
2208
2210
UT

COMMISSION 27 OF THE I. A. U.
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Number 1085

Konkoly Observatory
Budapest
1976 January 24

STAR ON POSITION OF PKS 1925-524 VARIABLE

The radio source PKS 1925-524 (α_{1950} $19^h25^m46^s$, δ_{1950} $-52^o26'19"$) was identified by Wall and Cannon (1973) with "a bright star ($V \approx 12^m$) on position". Since no finding chart was published, an identification was made using ESO Sky Survey print 232 of the B series and the accompanying overlay grids. Table 1 gives V magnitudes and colours for comparison stars in the finding chart (Fig. 1).

Table 1 COMPARISON STARS

Star	V	B-V	U-B
1	10.144	.643	.198
2	10.596	1.087	.914
3	11.833	.604	.041
5	11.695	.446	.049
8	11.262	.408	-.045

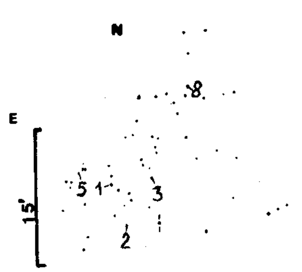


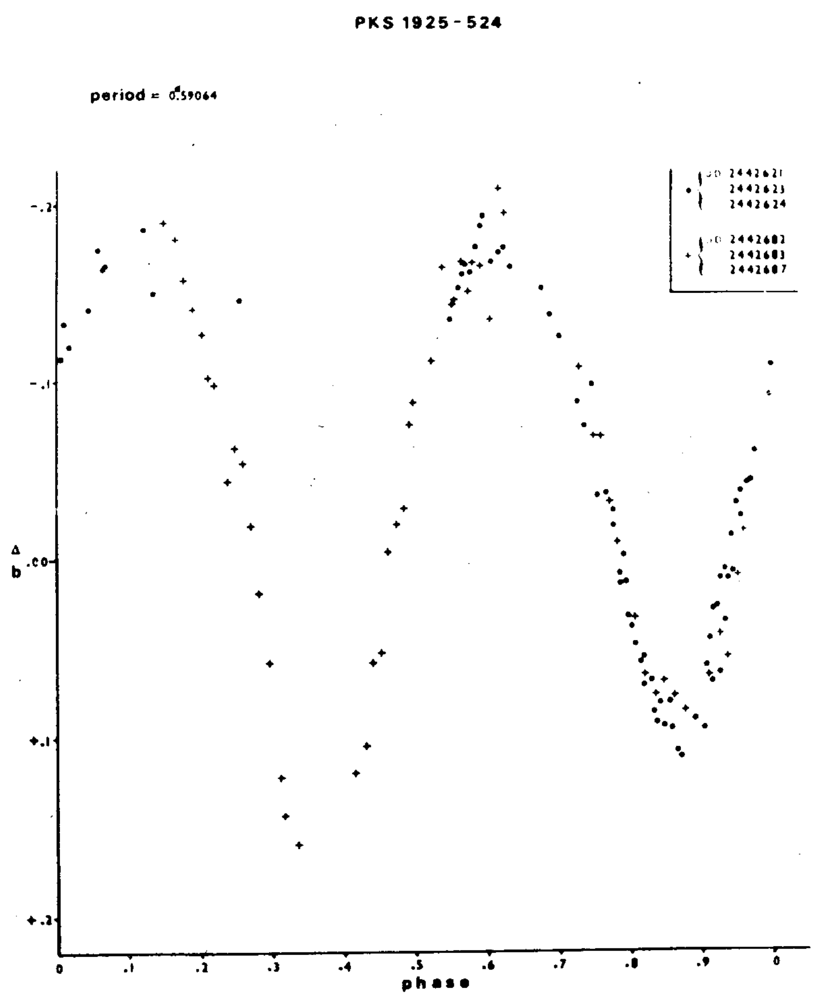
Fig. 1
Finding chart for PKS 1925-524 (vertical bars) showing comparison stars.

UBV observations were obtained in July 1975 with the 61 cm telescope of Bochum University located on La Silla. A description of this telescope and photometric equipment has been made by Schmidt-Kaler and Dachs (1968). A second set of UBV measurements was made two months later with the 61 cm telescope of the University of Toronto located on Las Campanas (Carnegie Southern Observatory).

All observations were made with star 8 as comparison and stars 2, 3 and 5 used as a check. Initial observations were mainly in B, so that this set of data was used for a period determination. The combined observations in instrumental b magnitudes are shown in Fig. 2 assuming a period of $0^d.59064 \pm 0001$.

Fig. 2

Combined observations in instrumental b magnitudes
using star 8 as comparison



This period was derived using the method of Lafler and Kinman (1965). For secondary minimum the epoch is HJD 2442621.77477.

The mean range is 11.08 - 11.45 (B) with a secondary minimum at 11.35. The mean B-V remains virtually unchanged when going through secondary minimum; mean B-V at normal light is +.386 and +.384 in secondary minimum. At primary minimum B-V is about +.46, though this is based on rather limited data.

Several image tube spectra were obtained at 86 Å/mm with the 1.52 m telescope on La Silla. These, and additional ones with the 61 cm telescope on Las Campanas at 112 Å/mm, indicate a spectral type of late F. Tracings of the Hβ absorption profile show rapid variations of possibly suppressed emission. One hour of Hβ photometry also shows these fluctuations on a short time scale (~5 minutes).

It would seem that these data are indicative of a W UMa system. Further spectroscopic and photometric observations are planned for the coming year.

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INFORMATION BULLETIN ON VARIABLE STARS

Number 1086

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PHOTOELECTRIC LIGHT-CURVES AND MINIMA OF TZ BOOTIS

The eclipsing binary TZ Boo (BD + $40^{\circ}2857$) was observed photoelectrically between March 8 and June 15, 1972 on six nights with the 48 cm Cassegrain telescope of the Ege University Observatory. A total of 132 observations were obtained in yellow and blue light. A RCA 1P21 photomultiplier and B, V filters, which are close to the standard UBV system, were used.

Its variability in brightness was discovered by Guthnick and Prager (1927) and the system was classified as an eclipsing variable. The radial velocity of the star was observed by Chang (1948) and found that has no variability. Chang also explained that only absorption lines of the bright component can be seen in their spectra. Eggen (1967) observed the system spectroscopically and classified it as a G9 type. The photoelectric photometry and the solution of the light curve was made Binnendijk (1969). His light elements are

$$\text{Hel.Min.} = \text{JD } 24\ 39\ 632.8418 + 0^{d}.29716070 \cdot E.$$

According to Binnendijk first and second maxima are not equal; secondary minimum shows a total eclipse, brightness is not constant and rise continuously during the eclipse. All of these are complex problems of this system. Therefore Binnendijk suggested to reobserve the star photoelectrically.

The system was also observed by Carr (1971) photoelectrically. The new light elements, based on all known primary minima, were given as follow:

$$\text{Hel.Min.} = \text{JD } 24\ 40\ 335.7705 + 0^{d}.29716023 \cdot E.$$

But according to these light elements, Binnendijk's and our primary minima become secondary and viceversa. We have also obtained three primary and five secondary minima. The O-C values which were calculated with the elements of Binnendijk appear to be a little large. Therefore, the light elements given by Binnendijk were recorrected using the primary minima of Binnendijk and obtained by us with the method of least squares.

The new elements are:

$$\text{Hel.Min.} = \text{JD } 24\ 39\ 632.8415 + 0^{d}.29716174 \cdot E.$$
$$\pm 1 \qquad \pm 5$$

The new minima in the yellow band and O-C values are given in the following Table. C(I), C(II) and C(III) values obtained with the elements of Carr, Binnendijk and the authors, respectively.

Table

JD Hel.	Min	O-C(I)	O-C(II)	O-C(III)
24 41 356.5284	II	+0.0125	+0.0060	+0.0002
392.484	II	.012	.005	- .001
443.4479	I	.0126	.0060	- .0001
450.428	II	.009	.003	- .003
453.397	II	.007	.000	- .006
462.313	II	.008	.001	- .005
465.436	I	.011	.004	- .002
484.4574	I	.0140	.0073	+ .0011

The light and colour curves are shown in the Figure where the individual magnitude differences between the variable and the comparison star BD+40°2859 have been plotted against the phases which were calculated with the new elements.

The new light curves are similar to those of Binnendijk. The complications in the system mentioned above are also seen in the new light curves.

This study is a part of research project No. 76 supported by the Scientific and Technical Research Council of Turkey.

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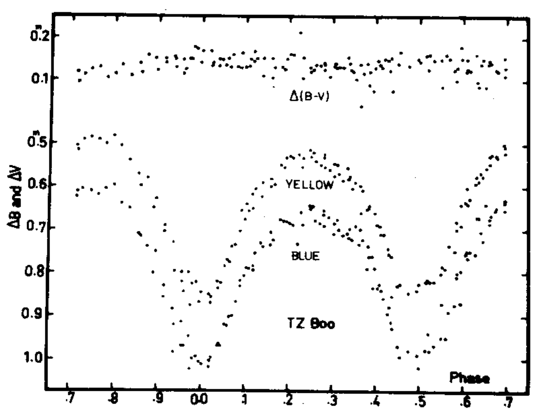

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INFORMATION BULLETIN ON VARIABLE STARS

Number 1087

Konkoly Observatory
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PHOTOELECTRIC LIGHT CURVES OF CN And

The eclipsing binary CN And (BD + 39°0059) was observed photoelectrically between July 13 and September 12, 1972 on four nights with the 48 cm Cassegrain telescope of the Ege University Observatory. R C A 1P21 photomultiplier and the B, V filters, which are close to the standard system, were used.

The first photographic observations of the system were made by Tsesevich (1956) and the light elements obtained as follow:

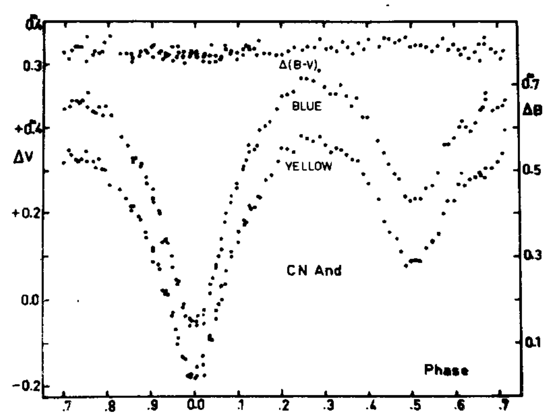
$$\text{Hel.Min.} = \text{JD } 2\ 433\ 913.386 + 2^{d}.2599\ .\ E.$$

In 1960 Löchel reobserved the star and calculated the light elements and found as,

$$\text{Hel.Min.} = \text{JD } 2\ 433\ 570.465 + 0^{d}.46\ 2798\ .\ E.$$

At the same time Löchel classified the system as a W UMa type close binary.

Our minimum times do not confirm the light elements of Tsesevich, but are in agreement with those of Löchel. However there is a difference of 56 minutes with the later elements.



The Table gives our minimum times:

Min.Hel	$O-C_I$	$O-C_{II}$	Color	Min.
2 441 509.4954	-0.0379	+0.0009	B	II
509.4930	-0.0403	-0.0015	V	II
512.5049	-0.0366	+0.0023	B	I
512.5044	-0.0371	+0.0018	V	I
567.5761	-0.0383	+0.0005	B	I
567.5746	-0.0398	-0.0010	V	I
568.5016	-0.0384	+0.0004	B	I
568.5012	-0.0388	0.0000	V	I
577.5282	-0.0364	+0.0024	B	II
577.5278	-0.0368	+0.0020	V	II

$O-C_I$ according to Löchel (1960)

$O-C_{II}$ according to our elements (this paper).

We couldn't find any published minimum times for this star and we have no enough minima for correctng the light elements. Therefore one of the times of minimum was chosen as T_o. The phases of the individual observations were calculated with the following light elements:

$$\text{Hel.Min.} = \text{JD } 2\ 441\ 568.5012 + 0^d.462798 \cdot E.$$

The light and color curves are shown in the Figure where the magnitude differences between the variable and the comparison star (BD + 39°0051) have been plotted against the phases. The star varies about $0^m.565$ and $0^m.550$ at the primary minimum, $0^m.285$ and $0^m.265$ at the secondary minimum in blue and yellow, respectively. Indeed the light curves are similar to a W UMa type as classified by Löchel.

This study is a part of research project No.76 supported by the Scientific and Technical Research Council of Turkey.

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INFORMATION BULLETIN ON VARIABLE STARS

Number 1088

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NEW OBSERVATIONS OF THE WHITE DWARF ECLIPSING BINARY V 471 TAURI

The eclipsing nature of the V 471 Tau (BD + 16°516) was announced by Nelson and Young (1970). They have shown that it is an eclipsing binary consisting of a K0V star and a white dwarf. Hills (1971) calculated the temperature and luminosity of the white dwarf companion. In 1972, Vauclair investigated the evidence of mass loss from the system and the mass transfer between the components, and also showed that the system is a member of the Hyades cluster. Later on, a detailed analysis were made by Young and Nelson (1972).

We have observed this interesting close binary system during ten nights between 1973 and 1975 with the 48 cm Cassegrain telescope of the Ege University Observatory. A RCA 1P21 photomultiplier was used with B and V filters of the UBV system in these observations.

Four times of primary minima were obtained in blue light and are given in the following Table:

Min (hel.)	O - C
2 442 006.3140	0.0000
387.301	+ .002
720.334	- .001
723.464	+ .002

The O - C values and the phases of the observations were calculated with the following elements given by Warner et al. (1971):

$$\text{Min JD } 2\,440\,970.723705 + 0\overset{d}{.}52118286 \cdot E.$$

The star BD + 16°515 was chosen as a comparison, BD + 16°524 and HD 24040 as check stars. The comparison star was observed with the check stars two or more times in each night. No variations in the brightness of the comparison star were observed. All the observations were corrected for differential extinction.

The light curves of the system are shown in Figures 1, 2, 3 and 4. The light curves, obtained in 1973, are similar with those of Nelson and Young (1970). Only, the difference in brightness between the maximum and mid-primary minimum is decreased about $0^{m}.1$ in two colors. The 1974 and January 1975 light curves are disappointing. The shape of the curves is distorted and the shift in the phases is clearly seen. On the other hand the system is brighter on the order of $0.^{m}14$ in 1974 and $0.^{m}07$ in January 1975 than in the year 1973. The November 1975 light curves show many characteristics of an instrinsic variable. The brightness of the system at the occultation of the hot companion is not constant, a steady decline has appeared. Following the primary minimum there is a constant light about 0.2 phase interval. The brightness of the system reaches a minimum approximately at phase 0.45. Thereafter a steady brightening is seen.

A succesful model to explain the variations in shape and the shape of such a light curve of the system is not yet known. Only the intrinsic variability of the KOV star may be suggested.

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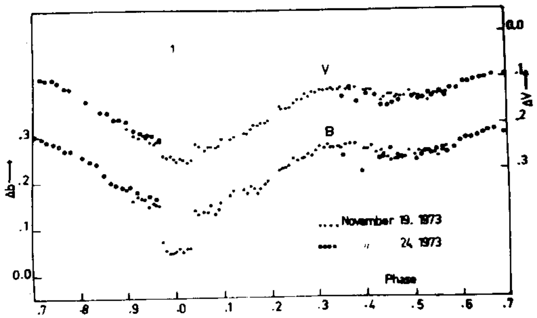

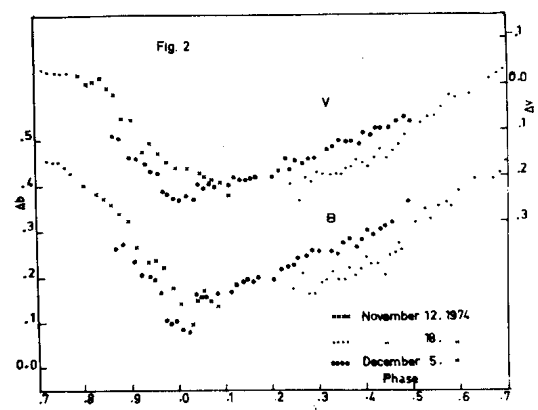

Fig. 2

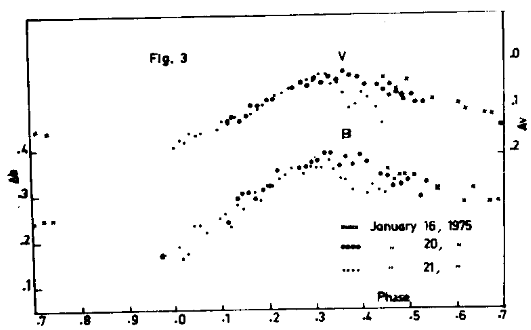

Fig. 3

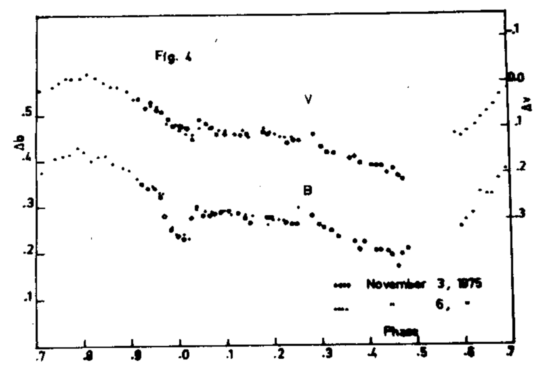

Fig. 4

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Number 1089

Konkoly Observatory
Budapest
1976 February 1

PHOTOELECTRIC R,I OBSERVATIONS OF NOVA CYGNI 1975

While observing with the Bochum 61 cm telescope at La Silla (E.S.O.) Chile on the night of August 29, 1975, Dr. H.W.Duerbeck called the attention of one of us (P.S.T.) to an I.A.U. telegram about the discovery of a Nova in Cygnus. The Nova is actually too far north for observing from La Silla (Geographic Latitude = $-29^{\circ}15'25\overset{''}{.}80$), but considering the fact that we are working in the long wavelength regions of the spectrum and that in these regions the atmospheric extinction is comparatively low, it was decided to observe this object. From August 30.15 UT to September 15.1 UT, with a break on September 10 and 11 UT due to bad weather, the Nova was observed every night. Generally five subsequent observations per night, with integration times of 20 sec, were made.

The Bochum telescope is equipped with a coldbox which is housing an ITT FW 118 photomultiplier. The filters used for the R,I measurements are borrowed from Dr. Westerlund. Together with the ITT-tube they are reproducing Kron's R,I-photometric system very well. In general the method explained by Hardie (1962) is followed in the reductions of our measurements.

Photometric measurements of novae are very filter dependent because of the appearance of strong emission lines after maximum luminosity. Especially in the red region of the spectrum due to the very strong and broad Hα-emission. It is therefore important to mention here the transmission of the red and near-infrared filter used in our photometry. The red filter has an almost constant 82.2% transmittancy from 6100 Å to 7800 Å; outside this region the filter is completely opaque. The near infrared filter has an increase of transmittancy from about 7500 Å to 8500 Å, after which it remains constant at 90%. The sensitivity of the ITT FW 118 tube determines the cut off on the longer wavelength side of the I measurements.

At culmination the Nova is close to the horizon; the value of sec z is then about 4. In our reductions we have therefore taken great care in the determination of the air mass through which the light of the Nova has travelled. The method of correction as suggested by Hardie (1962) for large values of sec z has been followed.

Care has also been taken in the determination of the extinction coefficients. We have taken the weighted mean of these coefficients determined every night for our final reductions, since these mean values are closer to the reality than the nightly ones, especially at La Silla. Kron's standard stars used for the determination of the extinction and transformation coefficients are chosen from Table 5 published by Johnson (1963).

In the table below the results of the reductions of the Nova measurements are given. The last column gives the number of observations of the Nova at the corresponding night. The accuracy of R and R-I, as determined every night from the 4 to 6 measurements, lies between $\pm$ $0^{m}_{.}01$ and $\pm$ $0^{m}_{.}02$ (s.d.).

In Figure 1 the R magnitudes are plotted as function of UT. In this figure the compilation of photoelectric visual magnitudes by Woszczyk et al. (1975) is indicated by the full drawn line. It seems that around Sept. 2 UT the Hα-emission begins to appear. The R curve deviates more and more from the V curve as the Hα-emission line becomes stronger. It is not possible to compare our R,I-data with those published in I.A.U.-telegrams, because usually no mention is made about the characteristics of the filters and photomultiplier used by the authors for their R,I-measurements. In Figure 1 the change of the R-I colour-index is also shown as function of UT. During the rise to maximum luminosity the Nova becomes redder, after which the influence of the broad Hα-emission line is more dominant and the R-I values become smaller again.

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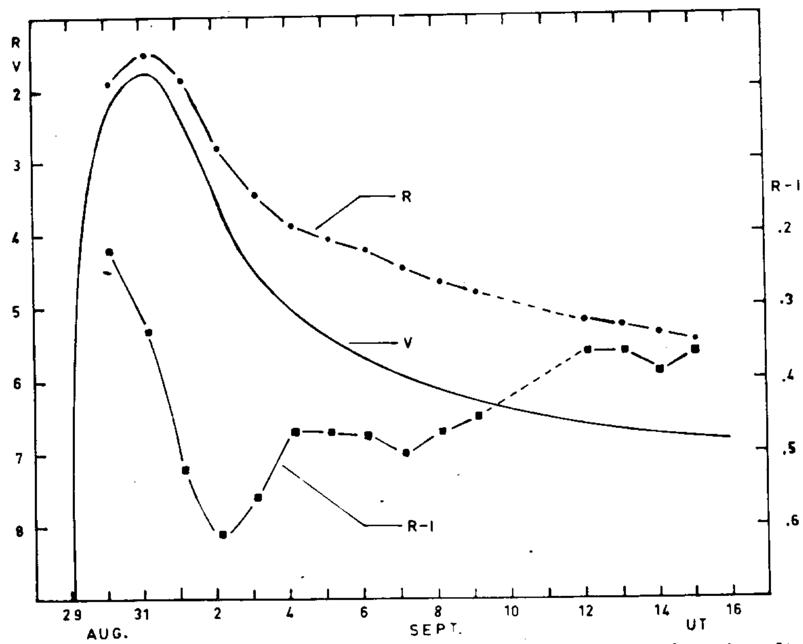

In this figure the full drawn line represents the visual photoelectric measurements as compiled by Woszczyk et al.(1975). The R magnitudes and R-I colour-indices are also shown as function of UT.

1975	UT	R	R-I	n
Aug.	30.154	1.91	+ 0.22	4
	31.143	1.50	.33	5
Sept.	1.144	1.84	.52	6
	2.131	2.81	.61	5
	3.127	3.44	.56	5
	4.123	3.87	.47	5
	5.119	4.05	.47	5
	6.113	4.23	.47	5
	7.116	4.48	.50	5
	8.120	4.67	.47	5
	9.108	4.79	.45	5
	12.094	5.18	.36	5
	13.091	5.24	.36	5
	14.090	5.37	.39	5
	15.087	5.48	.36	5

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INFORMATION BULLETIN ON VARIABLE STARS
Number 1090

Konkoly Observatory
Budapest
1976 February 2

PHOTOELECTRIC LIGHT CURVES OF AS Cam

The eclipsing nature of the star AS Cam was announced by Strohmeier (1959). Later on the orbital period and photographic light curve of the system were published by Strohmeier and Knigge (1960). The system was observed photoelectrically between January 1968 and January 1970 by Hilditch (1972a). In 1969 the light elements were calculated by Hilditch using the old photographic and six photoelectric minima. These elements are

$$\text{Hel.Min. JD } 2440\ 204.5137 + 3^{d}.4309714 \cdot E.$$

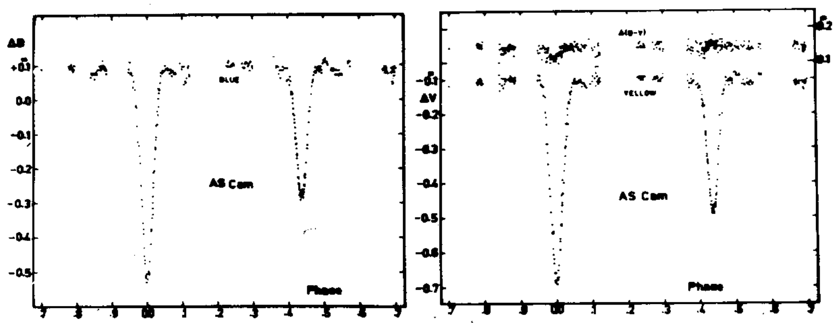
This period is twice of that given by Strohmeier. The light curves were observed and analyzed by Hilditch in three-colour. The spectroscopic orbit of the system was also obtained by Hilditch (1972b).

The system was photoelectrically observed on 19 nights with the 48 cm Cassegrain telescope of the Ege University Observatory using an RCA 1P21 photomultiplier and B,V filters.

Two secondary and a primary minimum times were obtained and are given in the following table.

Hel.Min.	Min.	O-C	filter
2441 547.5273	II	-.2117	B
.5282	II	-.2108	V
578.4065	II	-.2112	B,V
580.3330	I	-.0002	B
.3338	I	+.0006	V

The light and colour curves are presented in the Figures, where the magnitude differences between the variable and the comparison star (BD+69°317) have been plotted against the phases. The phases were calculated with the above light elements.The star varies about $0^{m}.625$ and $0^{m}.595$ at the primary, $0^{m}.385$ and $0^{m}.390$ at the secondary minimum in blue and yellow light, respectively. It is clearly seen that the brightness at the outside eclipses is variable. The magnitude of these variations are about $0^{m}.03$ in yellow and $0^{m}.05$ in blue light. On the other hand the epoch of secondary minimum is displaced from phase 0.5 to 0.4384. It is difficult to say anything about the apsidal motion with the available observations.Further photoelectric minimum times should be obtained for this purpose.



This study is a part of Research Project No.76 supported by Scientific and Technical Research Council of Turkey.

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CORRECTION TO IBVS No. 1083

In the Table for the note on "Close Binaries with H and K Emission" there is an error in the magnitude of RT Lac. It should be 9.0 rather than 10.0.

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VZ Dor IS VW Dor

In the course of an extensive photoelectric observing programme of southern cepheids, I have observed a star indicated as VZ Dor at the chart position given by Schoffel (1). The star is fainter than expected, varying from 11.2 to 12.1 in V, and does not satisfy Schoffel's period of 1.3338 days.

According to GCVS (2) an RR Lyrae of 12th magnitude, VW Dor, is 2' north of VZ Dor. The star marked VZ Dor on Schoffel's chart occupies the same position as VW Dor in the Hodge-Wright Atlas (3). This atlas does not mention VZ Dor. The brighter star at the expected relative position for VZ Dor was also observed and found to be non-variable (V=10.32, B-V=0.53). Thus VW Dor and VZ Dor are apparently the same star.

The reciprocals of the periods of VZ Dor and VW Dor (0.7497 and 1.7527) differ by nearly an integer. Wrong periods are often found for variables which are only observed once a night. See e.g. Dean (4). Schoffel gives epochs of maxima; these satisfy both his period and the period of 0.57056 days given by McKibben Nail (5) for VW Dor (HV12250). (Table 2). The data observed at SAAO (Table 1) satisfies only McKibben Nail's period (Figure). This occurs since several observations were made twice a night, in order to avoid ambiguities in the period.

Thus the period of VZ Dor alias VW Dor is 0.57056 days.

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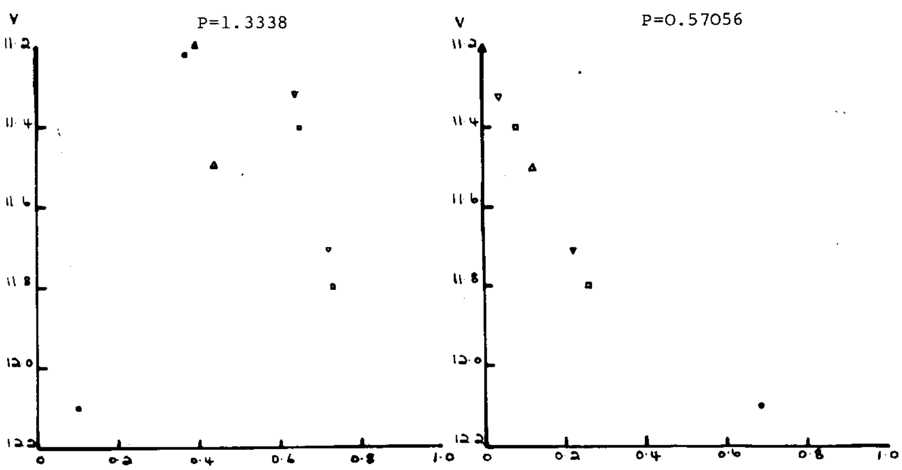

Phase

Light curve of VW Dor. SAAO data.Phase relative to 2440000.

Table 1: Observations of VW Dor at SAAO

H.J.D.	$\phi_{1.33}$	$\phi_{0.57}$	V	B-V	V-I
244 2465.385	.39	.99	11.21	.19	.36
465.455	.44	.12	11.49	.29	.47
473.362	.37	.97	11.22	.20	.35
474.339	.10	.69	12.11	.49	.74
708.471	.64	.04	11.32	.22	.39
708.575	.72	.22	11.71	.39	
712.487	.65	.08	11.41	.26	
712.592	.73	.26	11.80	.38	.58

Table 2: Schoffel's Epochs of Maxima

EPOCH	PHASE RELATIVE TO FIRST MAXIMUM	
	P = 1.3338	P = 0.57056
243 8379.453	0	0
707.550	.99	.04
739.506	.95	.05
798.279	.01	.06
810.272	0	.08

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Veröffentlichung der Remeis-Sternwarte Bamberg
Astronomisches Institut der Universität Erlangen-Nürnberg
Vol. X, No. 117, 1976

PERIOD AND PERIOD CHANGE OF THE ECLIPSING BINARY BV 549 SCORPII

The variability of BV 549=CoD $-34^{\circ}12293(9^{m}.0)$=HD 163302 (AO) was discovered by Strohmeier, Knigge and Ott (1964). Later Bauernfeind (1968) determined its period from Harvard and Bamberg sky patrol plates to $P=1^{d}.888$ and derived a nearly sinusoidal curve for the O-C values as function of time with an amplitude of about 0.8 days, indicating a pronounced change of period.

With a larger number of plates taken at Boyden Observatory, South Africa, and Mount John Observatory, New Zealand, as well as photoelectric observations made in April and May 1975 with the ESO 50 cm photometric telescope in La Silla, Chile, the following elements could be derived:

$$\text{Minimum} = \text{JD } 241\ 4862.585 + 3^{d}.776277\ E$$
$$\pm 0.012 \pm 0.000003\ \text{(m.e.)}.$$

The Table gives the Julian Date (JD) of the observed minima, the weight (G) of the observations, epoch (E), and the difference O-C between observed and calculated time of minimum in days. The last two points have been determined from photoelectric measurements; in both cases only opposite halves of the minimum have been covered.

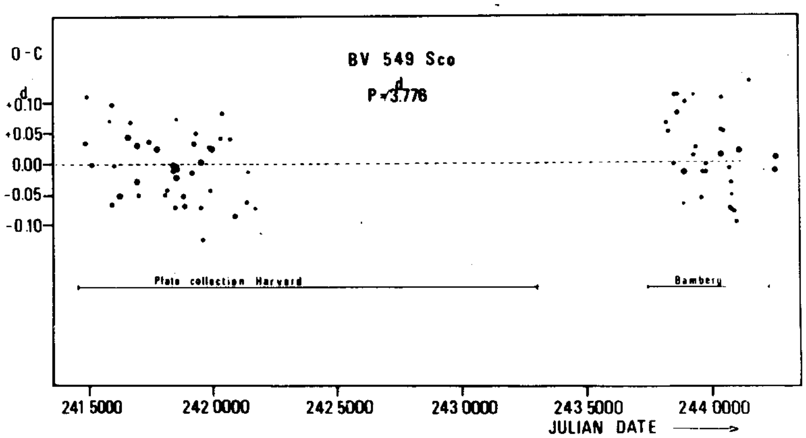
In the Figure the O-C values are given as function of Julian Date; their mean dispersion is about $\pm 0^{d}.06$. The size of the dots is a measure of the weight (scale 1 to 4) of the observed minima. The two solid lines indicate the time intervals covered by the Harvard and Bamberg plate collections. Between JD 242 2500 and 243 3000 no minima could be detected. The sine-shaped course found by Bauernfeind (1968) could not be confirmed. His period was incorrect by half a cycle of the period $3^{d}.776$ in about 25000 days.

BV 549 Sco = CoD-34°12293 ($9^m_.0$) = HD 163302 (A0)

$$\text{Min} = \text{JD } 241\ 4862.585 + 3^d_.776277\ E$$
$$\pm.012 \qquad \pm.000003\ (\text{m.e.})$$

M i n i m a

JD	G	E	O - C
2414862.622	3	.0	.037
14898.571	2	9.5	.111
15198.671	3	89.0	-.003
15872.810	1	267.5	.070
15925.704	3	281.5	.098
15940.646	3	285.5	-.065
16010.569	2	304.0	-.004
16208.776	4	356.5	-.052
16582.724	4	455.5	.044
16650.720	2	473.5	.068
16933.843	4	548.5	-.029
16935.791	4	549.0	.031
17037.670	2	576.0	-.051
17394.618	3	670.5	.039
17728.804	4	759.0	.024
18098.805	2	857.0	-.049
18119.581	2	862.5	-.042
18427.378	3	944.0	-.012
18436.830	4	946.5	-.001
18440.537	2	947.5	-.070
18453.802	4	951.0	-.022
18457.676	1	952.0	.075
18472.699	3	956.0	-.007
18506.687	3	965.0	-.005
18825.737	3	1049.5	-.051
18859.705	3	1058.5	-.069
19233.664	3	1157.5	.038
19250.603	3	1162.0	-.016
19303.537	2	1176.0	.050
19516.772	2	1232.5	-.073
19518.738	4	1233.0	.004
19550.708	2	1241.5	-.125
19888.835	2	1331.0	.026
19922.754	2	1340.0	-.042
19922.821	4	1340.0	.025
20330.675	2	1448.0	.041
20366.590	2	1457.5	.081
20755.506	2	1560.5	.040
20932.863	3	1607.5	-.087
21391.707	2	1729.0	-.061
2421427.627	1	1738.5	-.016
21867.503	1	1855.0	-.075
38228.365	2	6187.5	.067
38264.224	2	6197.0	.051
38528.513	2	6267.0	.000
38530.513	2	6267.5	.112
38583.381	2	6281.5	.112
38636.219	3	6295.5	.082
38917.454	3	6370.0	-.015
38934.396	1	6374.5	-.067
38972.330	2	6384.5	.104
39289.447	2	6468.5	.014
39291.433	1	6469.0	.113
39325.335	2	6478.0	.027
39683.999	2	6573.0	-.055
39684.042	2	6573.0	-.012
39702.922	2	6578.0	-.012
39702.938	2	6578.0	.002
40393.940	2	6761.0	-.054
40394.010	4	6761.0	.017
40412.820	2	6766.0	-.055
40412.983	2	6766.0	.107
40711.127	2	6845.0	-.073
40711.193	2	6845.0	-.007
40746.999	2	6854.5	-.076
40747.023	1	6854.5	-.053
40763.992	2	6859.0	-.076
40764.039	2	6859.0	-.030
41066.077	2	6939.0	-.094
41066.194	4	6939.0	.023
41528.899	2	7061.5	.135
42538.909	4	7329.0	-.010
42542.710	4	7330.0	.014



The photoelectric measurements show a depth of primary minimum of about $0\overset{m}{.}6$. The light stays nearly constant during maximum; due to bad weather conditions, the secondary minimum could not be observed but the number of photographic secondary minima indicates about equal depth of both minima.

We are grateful to the European Southern Observatory for providing observing time to one of us (J.R.) at the 50 cm photoelectric telescope in Chile.

JÜRGEN RAHE
EBERHARD SCHÖFFEL
Remeis-Observatory Bamberg

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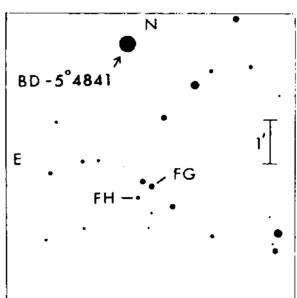
Konkoly Observatory
Budapest
1976 February 4

THE EMISSION-LINE STARS FG AND FH AQUILAE

The stars FG Aql (m_p=14.1-15.5) and FH Aql (m_p=14.1-16)are provisionally classified as rapid, irregular variables in the GCVS. These stars are located at 1900 coordinates $\alpha=18^h57^m.0$, $\delta=-05^\circ45'$, $\ell=29^\circ.2$, $b=-05^\circ.0$, and are separated by only about twenty arc seconds (see identification chart).



We recently determined that these variables are identical with two faint Hα-emission-line stars first noted by C.B.Stephenson (unpublished) on an objective-prism plate taken with the University of Michigan's Curtis Schmidt telescope on July 4 (U.T.), 1959. The emission on that date was found to be moderately strong in both stars. Unfortunately, because of faintness, spectral types cannot be derived from objective-prism plates available in the files of the Warner and Swasey Observatory.

Inspection of the National Geographic Society-Palomar Sky Survey shows that the stars lie at the eastern edge of a small dark nebula i.e. Barnard 130. The presence of hydrogen emission, the irregular light variations, and the apparent association with dark material suggest that these stars belong to the Orion population of variables as defined by Herbig and Rao (Ap.J.174,401,1972). There appear to be no other faint emission-line stars in the immediate vicinity of this pair.

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Budapest
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PHOTOELECTRIC OBSERVATIONS OF CI CYGNI DURING THE OUTBURSTS OF 1971 AND 1973

As a contribution to the knowledge of the photometric behaviour of the symbiotic star CI Cygni, I report here the results of photoelectric observations performed in V light with the 40 cm refractor of the Teramo Observatory from 1971 to 1974.

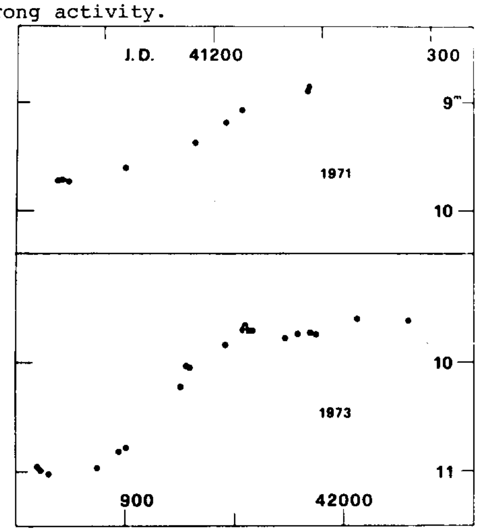
The star usually varies between the visual magnitudes about 11.2 and 11.9 (Greenstein,1937; Himpel, 1940; Miller, 1967; Hoffleit, 1971) but in 1911 and in 1937 outbursts were observed during which the star brightened up respectively to 10.0 and 10.9. The observations listed in the accompanying table began soon after the announcing by the Central Bureau for Astronomical Telegrams that a major outburst was in progress (Lowder, 1971). As comparison star was used BD +35^{o}3834 with the photometric values

$$V = 9.45, \qquad B-V = +1.03$$

determined by means of many Johnson's standard stars; its constancy was checked every night by comparison with an anonymous 9th magnitude nearby star.

In 1971 CI Cygni rose at least to the magnitude V = 8.9; in 1972 no photoelectric observations were accomplished but according to the AAVSO observers during that year it faded steadily from 9.3 to 11.0. The star was found at this last magnitude by Belyakina (1974) at mid June 1973 and by the writer when his photoelectric monitoring was resumed on June 26, but at the beginning of August began to flare up again reaching two months later the magnitude V = 9.7; at the end of its seasonal appearance in the sky CI Cygni was still as bright as 9.6. The few colour determinations listed in the Table show, as already noted in the preceding outbursts and in full agreement with the results of Belyakina, that the increase in brightness is accompanied by a decrease of the colour index, the star becoming much bluer at maximum.

The occurrence of two outbursts within such a short lapse of time and the raising to a brightness higher than never before observed indicate that the star has undergone in 1971-73 a phase of unpreceded strong activity.



V light-curve of CI Cygni in 1971 and 1973

Photoelectric observations of CI Cygni from 1971 to 1974

J.D.	V	B-V	J.D.	V	B-V	J.D.	V	B-V
41			41			41		
129.49	9.72		865.43	11.02		958.32	9.71	
131.38	9.71	+0.80	887.44	10.97		973.31	9.77	
134.43	9.73	+0.85	897.51	10.82		979.36	9.73	
160.57	9.60		900.51	10.78		985.30	9.72	
193.58	9.37		925.49	10.22		987.27	9.74	
206.38	9.18		928.51	10.03		42		
213.38	9.07		929.40	10.04	+.096	006.27	9.60	
243.34	8.89		946.40	9.84		030.24	9.62	
244.31	8.86	+0.45	954.34	9.70	+0.84	277.39	10.50	
860.49	10.95		955.33	9.67	+0.83	281.43	10.53	
861.56	10.99		956.42	9.71		306.34	10.53	

P. TEMPESTI

Osservatorio astronomico di Teramo
Italy

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COMMISSION 27 OF THE I. A. U.
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Number 1C95

Konkoly Observatory
Budapest
1976 February 6

THE PHOTOMETRIC ACTIVITY OF o And FROM OCTOBER '75 TO JANUARY '76

The shell star o And ejected a new shell in July 1975 (I.A.U. Circ.No.2802). From that time the star's spectrum has shown a remarkable activity. Following that, we decided to monitor photoelectrically this star.

We observed it from October 1975 to January 1976 for 28 nights in the U,B,V system. For 13 nights we made uninterrupted observations for several hours. The comparison star was 2 And.

The star showed brightness variations on timescales of about one day. The times of maxima and minima suggested us a probable quasi-period of about 0.77 days, but the shape and the amplitude of the light curves are different from cycle to cycle.

The U, B, V curves have the same phase, but while in B and V the largest amplitude is of about 0.09 mag., in U is about 0.03 mag. larger. As example in Fig. from 1 to 6 are plotted the differences of magnitudes (comparison star minus variable star) obtained in the V light for 6 consecutive nights.

It will be interesting to see if these variations are correlated with the spectral variations reported by Bolton and Gulliver (I.A.U.Circ.No.2899).

Moreover oAnd displays light variations on longer timescales; these are represented in Fig. 7, where the V observations are plotted for all the nights (the dots represent the mean of the normals of the same night and the bar the range in magnitudes covered by these when they are spanned over a time interval longer than one hour). Also for these variations the behaviour in the three colours is similar.

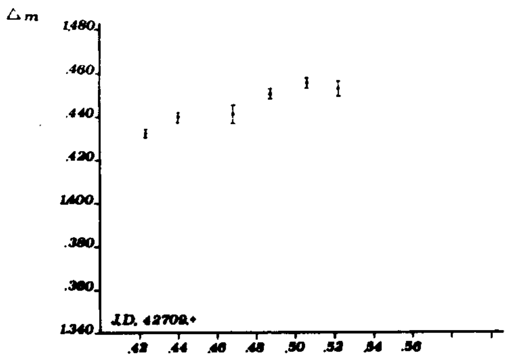

Fig. 1

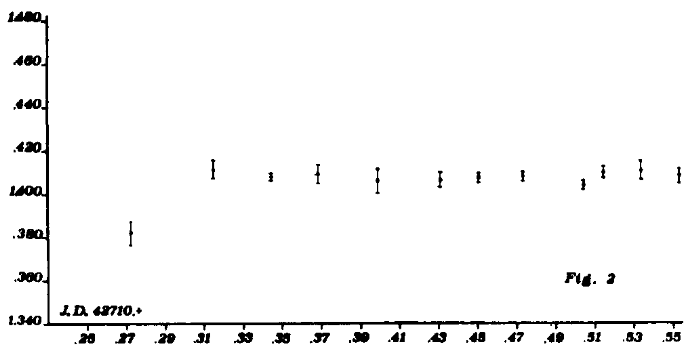

Fig. 2

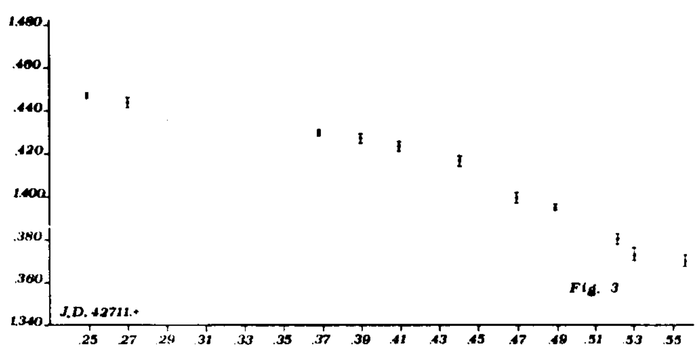

Fig. 3

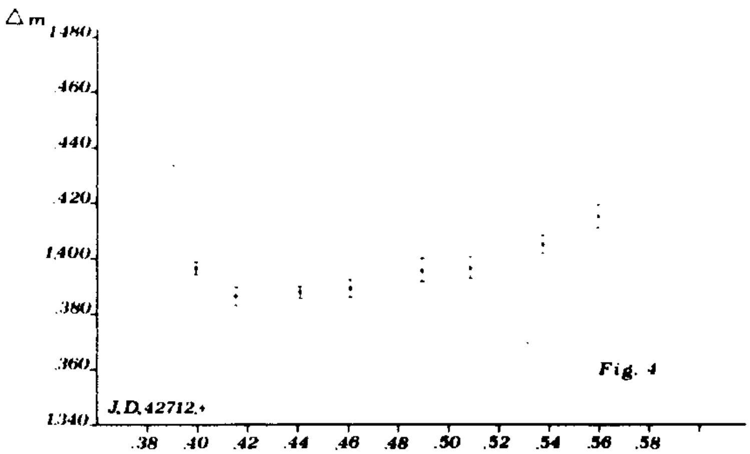

Fig. 4

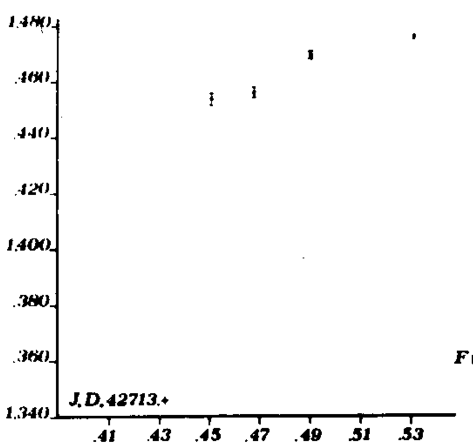

Fig. 5

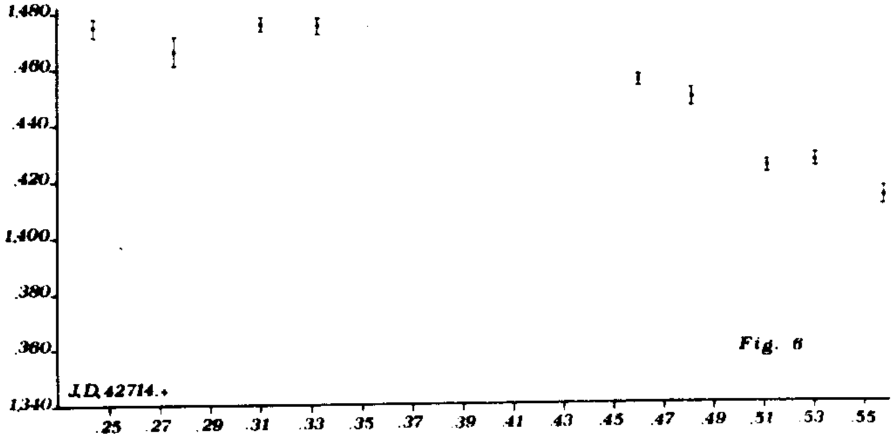

Fig. 6

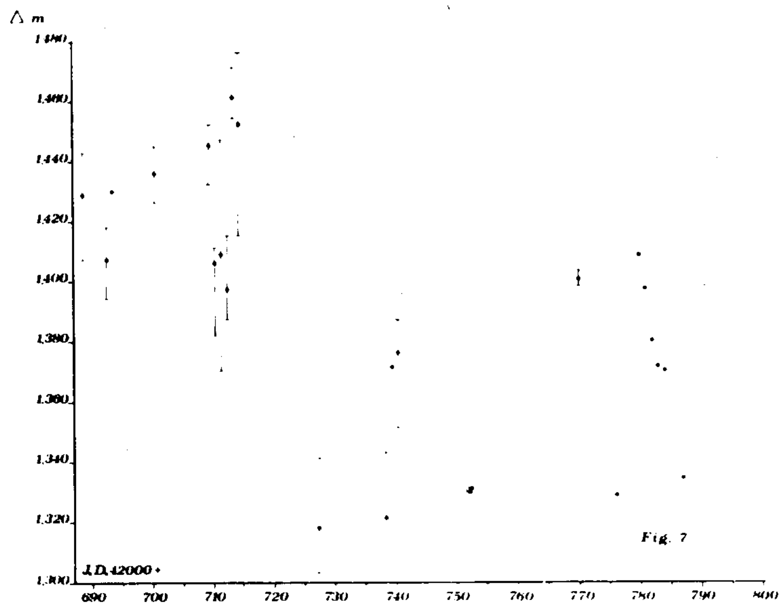

Fig. 7

Remarkable is the sudden decrease of about 0.1 mag. occurred between Oct. 29 and Nov. 10, which apparently is not correlated with spectral variations, since there are not communications concerning them. Likewise there are not remarkable light variations connected with the spectral ones reported by Fracassini and Pasinetti (I.A.U.Circ.No.2881).

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ON PERIOD-SPECTRUM RELATION FOR DELTA SCUTI STARS AND DWARF CEPHEIDS

To investigate the question on possible differences between Delta Scuti variables and Dwarf Cepheids we show below (Fig.1) the period-mean spectral type (hydrogen lines) diagram for these stars. The data are taken from different sources. Crosses and circled crosses denote Delta Scuti stars in galactic field and in open clusters, respectively (BS 1611, maybe, has P>0^d.2); open circles denote Dwarf Cepheids, for which extremal limits of spectral type variations are designed by vertical lines and their short GCVS-names are given, too (SX Phe, CY Aqr, ZZ Mic, DY Peg, EH Lib, AI Vel, V 703 Sco, AD CMi, RS Gru, DY Her, V 567 Oph, VZ Cnc, and BS Aqr in order of their period lengthes). On this diagram only those stars are shown for which two-dimensional MK-types are available. Two stars in NGC 2264 are ignored.

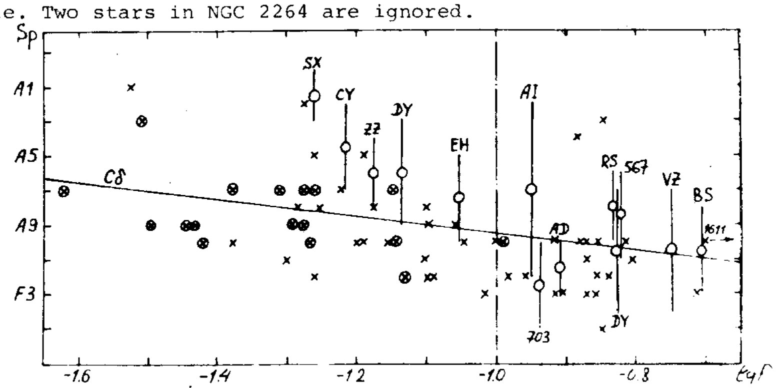

Fig.1

There exists a real difference between Delta Scuti stars (either in galactic field or in clusters) and Dwarf Cepheids with periods shorter than 0^d.1: Dwarf Cepheids have systematically earlier spectral types or lie just on the high border line of Delta

Scuti-region. One can hardly confirm the same for stars with longer periods. A similar picture can be seen on β_1 - P diagram, as well (Jones, 1973, Fig. 7, p. 500).

Only the Delta Scuti stars having periods shorter than $0^d.1$ agree with extrapolated P-Sp relation for Cepheids (straight line on Fig 1). This confirms the idea that Delta Scuti stars (but only with $P<0^d.1$) are shortperiodic analogues of Cepheids.

Different "spectral pictures" for Delta Scuti stars and Dwarf Cepheids with different periods are in accordance with their other features (Frolov, 1974), in particular with ΔV versus log P diagram (Fig. 2) for all ultrashortperiodic A-F stars without any splitting on types of variability (crosses denote photoelectric measurements). Fig. 2 was already discussed earlier by the author (Frolov, 1974).

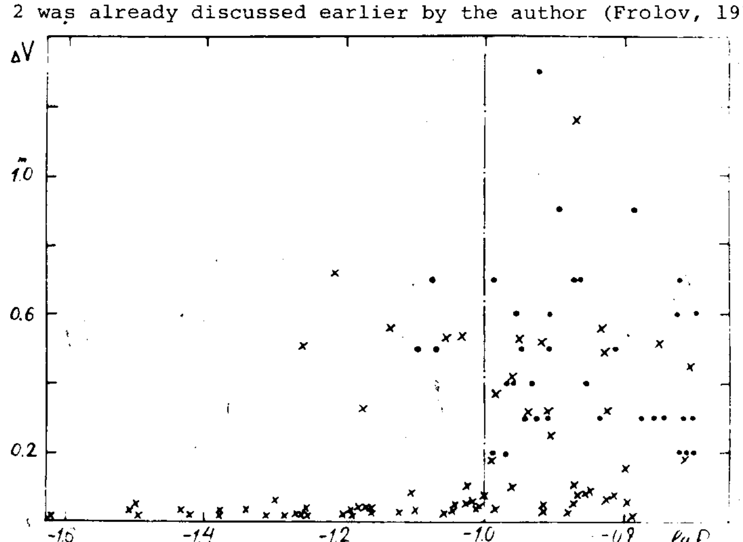

Fig.2.

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of the USSR Academy of Sciences

References:

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Jones, D.H.P., 1973, Astrophys.J. Suppl. 25, 487.

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Budapest
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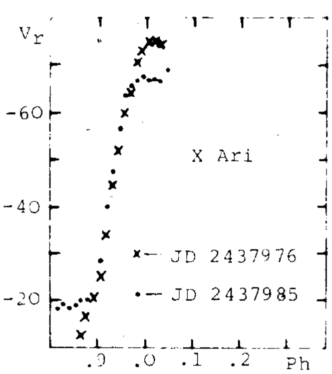
"ULTRA-VIOLET" BLAZHKO-EFFECT OF X Ari

The RRab star X Ari ($P=0^d.651$) was observed photoelectrically in UBV-system (ascending branches of light and colour curves)and simultaneously spectroscopically (descending branches of velocity curves) by Preston and Paczynski (1964).

During the analysis of metallic lines velocities we have discovered that velocity amplitudes are extremely different on JD 2437985 (50 km/sec) and on JD 2437976 (more than 63 km/sec) as one can see from the Figure. Observations during JD 2437918 repeat the velocity curve with maximal amplitude and those during JD 2438010 show the curve having intermediate amplitude (nearer to maximal one). One can suspect the Blazhko-effect for X Ari from these observations.

Nevertheless there is no correlation between B, V and B-V curves and metallic velocity curve variation. These light and colour curves have almost the same amplitudes (to several hundredth of a magnitude) during all nights.

However, we find some differences between U-B curves on different nights, though these differences are not large. It is possible to divide all U-B curves into two distinct groups by using four criteria: according to phases U-B colours equal to +0.03 and +0.05 mag. on ascending branches, +0.15 mag. on descending ones and U-B values at phase 0.0. We have found that the U-B curves corresponding to large and to small amplitude metallic velocity curves always belong to different groups. In particular, U-B curves on the nights JD 2437918 and JD 2437976 (large metallic velocity amplitudes) belong to the same group, whatever the criterion is. The U-B curve on JD 2438010 (intermediate velocity curve range) also belongs to the "large metallic ΔV_r group" but one on JD 2438017 (no velocity observations available) belongs to the opposite "small metallic ΔV_r group" where we also find the U-B curve on JD 2437985 (small metallic velocity range directly from spectroscopic observations). One can see that amplitudes



are the smallest ones on JD 2437985 and JD 2438017 due to systematically bluer U-B values around the phase 0.0.

It is interesting to note that just on JD 2437985 (metallic ΔV_r the smallest) and on JD 2438017 we found the brightest maxima of U light curves (9.45 and 9.47 mag.,respectively). On JD 2437918 and JD 2437976 (metallic ΔV_r the largest) we found weaker U maxima (9.49 mag., the same as in the cases of JD 2437916 and JD 2438010).

Consequently, we can suppose we have three "moments" of large metallic ΔV_r (JD 2437918, 2437976, 2438010) and two "moments" of small amplitudes (JD 2437985, 2438017). Then, we can determine the intervals between these dates: 58, 34, 32 days. One can consider JD 2437945 as the "moment" of large metallic ΔV_r (three U-B criteria of four, and U=9.53 mag. in light maximum). If it is so, we obtain two intervals instead of one equal to 58 days: 27^d (JD 2437918-2437945) and 31^d (JD 2437945 - 2437976); these interval values are in accordance with the already obtained ones: 34^d and 32^d. So, now we can determine approximate value of the period of Blazhko-effect of X Ari: 31 days as mean from four values (27,31, 34,32 days).

Thus, we discovered the existence of unusual Blazhko-effect for X Ari which influences only U and U-B curves. So we can suppose the existence of some high temperature processes (for example shortwave recombination radiation produced by a shock wave in higher layers of stellar atmosphere) whose effectiveness is modulated with the period of about 31 days. We want to note that hydrogen velocities which are strongly influenced by shock wave kinematics in a higher stellar layers of X Ari, show the highest velocities of star contraction just on JD 2437985 (the smallest metallic ΔV_r). We can find only one determination of the hydrogen velocity of expansion on this night but it is the highest one, too, for this phase among all nights.

Prof. B.V. Kukarkin kindly communicated to me his idea that the coincidence of the existence of unusual Blazhko-effect and the very low metal abundance of X Ari may not be casual.

Astronomical Council of the
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Konkoly Observatory
Budapest
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ON THE SHORT PERIOD LIGHT VARIATION OF NOVA CYGNI 1975 (V 1500 Cyg)

The photoelectric observations of the short period light variation detected in Nova Cygni 1975 (Tempesti, 1975a; Koch and Ambruster, 1975a), pursued at the Teramo Observatory till the beginning of October, showed a steady decrease of the amplitude from $0^m.15$ to $0^m.03$ in V light. However on October 27 Marcocci et al. observed an amplitude as great as $0^m.26$ (Marcocci et al., 1975); therefore the range of the fluctuation appears to be highly variable. Also the shape of the light curve results strongly variable from one cycle to the other, with differences even greater than those appearing among the light curves already shown in this Bulletin (Tempesti, 1975b; Semeniuk, 1975).

The period on the contrary shows only small variations around a mean value of about $0^d.139$. The Teramo observations allowed to secure light minima at J.D.$_\odot$ 42665.438, 665.572, 667.409, 667.552, 670.368, 670.503 and 688.440; maxima at J.D.$_\odot$ 665.483, 667.463, 670.437, 670.564, 681.377 and 688.383. These determinations, together with other published times (Koch and Ambruster, 1975a and b; Semeniuk, 1975; Lindgren and Lindegren, 1975),, give indication of a continuous variation of the period length which ranges from $0^d.137$ to $0^d.141$ with an O-C period, if any, of the order of 20 days, although the possibility that abrupt changes have occurred cannot be ruled out.

From the available material no conclusive evidence could be drawn about the existence of two kinds of maxima or minima which should alternate yielding a value $0^d.28$ for the period.

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Budapest
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SPECIAL ISSUE OF SOVIET ASTRONOMICAL JOURNAL WILL COLLECT INVESTIGATION OF NOVA Cyg 1975

Dear Colleagues,

The outburst of Nova Cyg 1975 (V 1500 Cyg) is evidently a unique event. Full light amplitude of this star certainly exceeds nineteen magnitudes while the highest one among all Novae known up to date was seventeen magnitudes (CP Pup). Moreover, other parameters of V 1500 Cyg show its extraordinarity, too (slow brightening up to 16th magnitude, some peculiarity of the pre-maximum spectrum). High maximum brightness of this Nova makes it an easy object to investigate by many different methods.

Results of investigations of Novae usually are published in many diverse journals and sometimes in those ones which one can't easily get. Moscow Bureau of Variable Stars of the USSR Academy of Sciences and Editors of Soviet Astronomical Journal address you with the proposal to take part in the special issue of our Journal which will collect investigation of V 1500 Cyg. You know of course that our Journal is being doubled in English in USA and consequently published papers can be read by astronomers over the world.

We propose to you and your co-workers to send all the materials on V 1500 Cyg for publication in this special issue of Soviet Astronomical Journal.

Please send your materials ordered according to usual rules of our Journal to:

Editors of Astronomical Journal
Kuznetzky Most Street, 9/10
103031 Moscow K-31,USSR

The deadline for sending manuscripts will be August 31,1976.

PROF. B.V. KUKARKIN
President of Moscow Variable Stars Bureau
PROF. E.R. MUSTEL
Chief Editor of the Astronomical Journal of the USSR

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Budapest
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PHOTOELECTRIC MINIMA AND LIGHT CURVES OF BS DRACONIS

The variability of the system was discovered by Strohmeier (1962). The light elements were obtained by him as follow:

$$\text{Hel.Min.J.D. } 2426\ 444.475+1^{d}.682\ 000\cdot E.$$

The first spectroscopic observations were made and analyzed by Fitzgerald (1964). The system shows double line spectra. Both of the components have the same spectral type and line intensities. Fitzgerald also showed that the period of the system should be twice that of given by Strohmeier.

Photoelectric observations of BS Dra in B,V, colours were made with the 48 cm Cassegrain telescope at the Ege University Observatory on 21 nights between May 1972 and May 1973. The photometer was furnished with a 1P21 photomultiplier tube and standard Johnson B,V filters. In the observations BD +73°881 was used as comparison star. Four primary and three secondary minima were obtained and are given in the following Table.

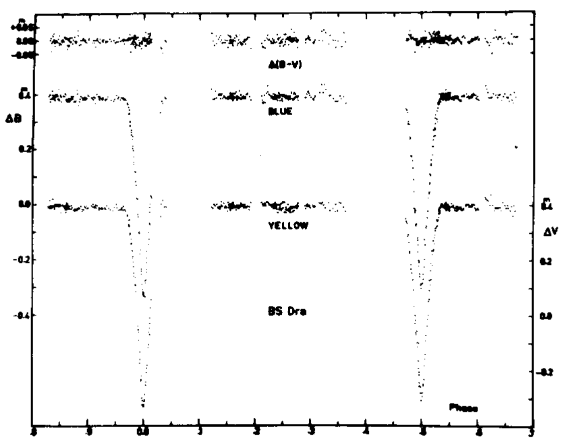
Times of Minima

Hel.Min.	Min.	$O-C_I$	$O-C_{II}$	Filter
2441 461.4252	I	+.0542	+.0010	B,V
471.5166	I	+.0536	+.0004	B
.5163	I	+.0533	+,0001	V
488.3335	I	+.0505	-.0028	B
.3345	I	+.0515	-.0018	V
493.3817	II	+.0527	-.0006	B
.3838	II	+.0548	+.0015	V
594.304	II	+.055	+.001	B,V
826.4196	II	+.0546	-.0002	B,V
42 302.4277	I	+.0567	-.0001	B
.4280	I	+.0570	+.0002	V

C_I and C_{II} values were obtained with the elements of Strohmeier and the new elements obtained by us:

$$\text{Hel.Min.J.D. } 2441\ 461.4242\underset{\pm 2}{} + 3^{d}.36\,40145\underset{\pm 21}{}\cdot E.$$

The light and colour curves are shown in the Figure. The phases of the observations were calculated with the above new light elements. All the observations were corrected for differential extinction. The star varies about $0^m.720$ at the primary and $0^m.700$ at the secondary minimum in both colour. A detailed analysis of this system will be published elsewhere.



This study is a part of research project No.76 supported by the Scientific and Technical Research Council of Turkey.

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