

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 4125

Konkoly Observatory
Budapest

15 December 1994

HU ISSN 0374 – 0676

TEN NEW VARIABLE STARS IN HERCULES AND CORONA BOREALIS

Ten new variables were discovered using the positive-negative method in a field $10^\circ \times 10^\circ$ centered on η Her ($\alpha=16^h40^m$, $\delta=+39^\circ$, 2000).

Our study was based on Moscow collection plates taken with the 40 cm astrograph in Crimea.

Table 1 contains coordinates and GSC identifications of new variables (for GSC stars, the coordinates are taken from GSC). Table 2 presents for each star: number of observations and time interval covered (n and JD); maximum and minimum brightness (*B* band); type of variability and light elements. Magnitudes of comparison stars, presented in Table 3, were obtained using a standard near M13 (Arp and Johnson, 1955) with improved photometry from Forbes and Dawson (1986). Finding charts and light curves of the periodic variables are presented in Figures 1 and 2, respectively.

Sincere thanks are due to S.Yu. Shugarov for the software used for period determinations. This study was partially supported by the Russian Foundation for Fundamental Research through grant No. 93-62-17108.

Table 1

Star	$\alpha_{(2000)}$	GSC
Var 1	$16^h49^m44^s.2$	$39^\circ38'57''$
Var 2	16 35 33.9	41 06 50
Var 3	16 27 45.4	41 40 23 3066.0251
Var 4	16 25 16.3	40 53 49 3065.0704
Var 5	16 35 11.2	42 46 26
Var 6	16 16 59.5	39 38 37 3062.0786
Var 7	16 19 14.1	39 39 98 3062.0052
Var 8	17 02 38.3	39 32 27
Var 9	16 59 50.5	41 11 14 3075.0202
Var 10	16 59 36.7	41 57 25 3079.0534

Remarks for individual stars

Var 4. Period varies. The data from JD 2441750 to 45960 are used in Fig. 2 for Var 4.

Seven latest observations (2447027–48778) are not represented with the elements. $l=64^\circ.79$, $b=+44^\circ.35$, confirming the suggested CWA classification.

Var 7. Blazhko effect.

Var 9. Red on Palomar charts. Fragments of the light curve are given in Fig. 3. A brightness decrease during JD=2441782–41813 resembles an eclipse.

Var 10. A secondary minimum exists. $D=0^p.1$. Primary minima:

JD=2441565.28	41947.33	42217.43	42686.28	43017.38	43934.54	45580.30	47027.32
41570.28	41952.36	42309.24	42869.47	43659.43	45524.36	45585.34	47679.44
41840.42	42212.43	42365.16	42920.50	43807.20	45529.39	45911.39	

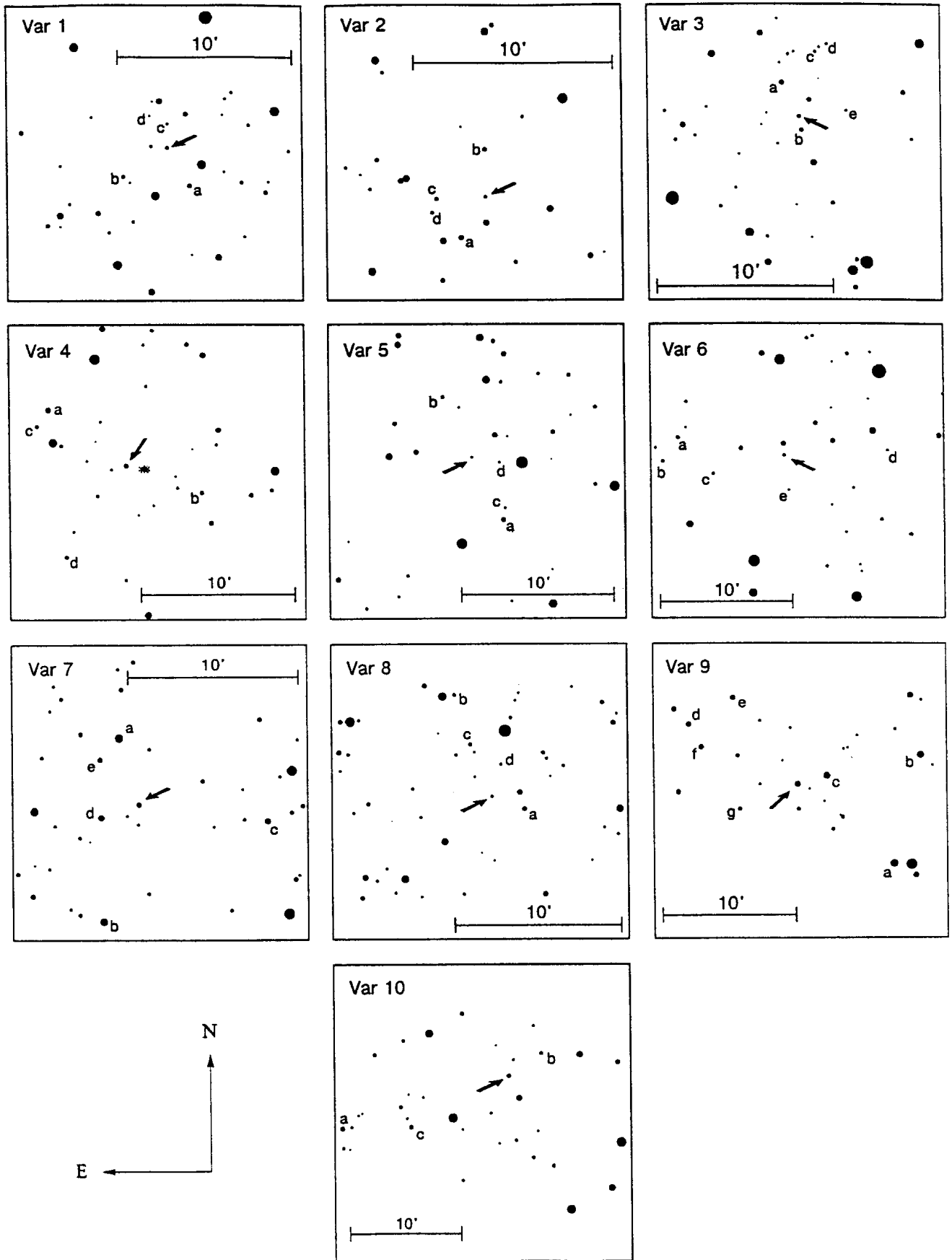


Figure 1

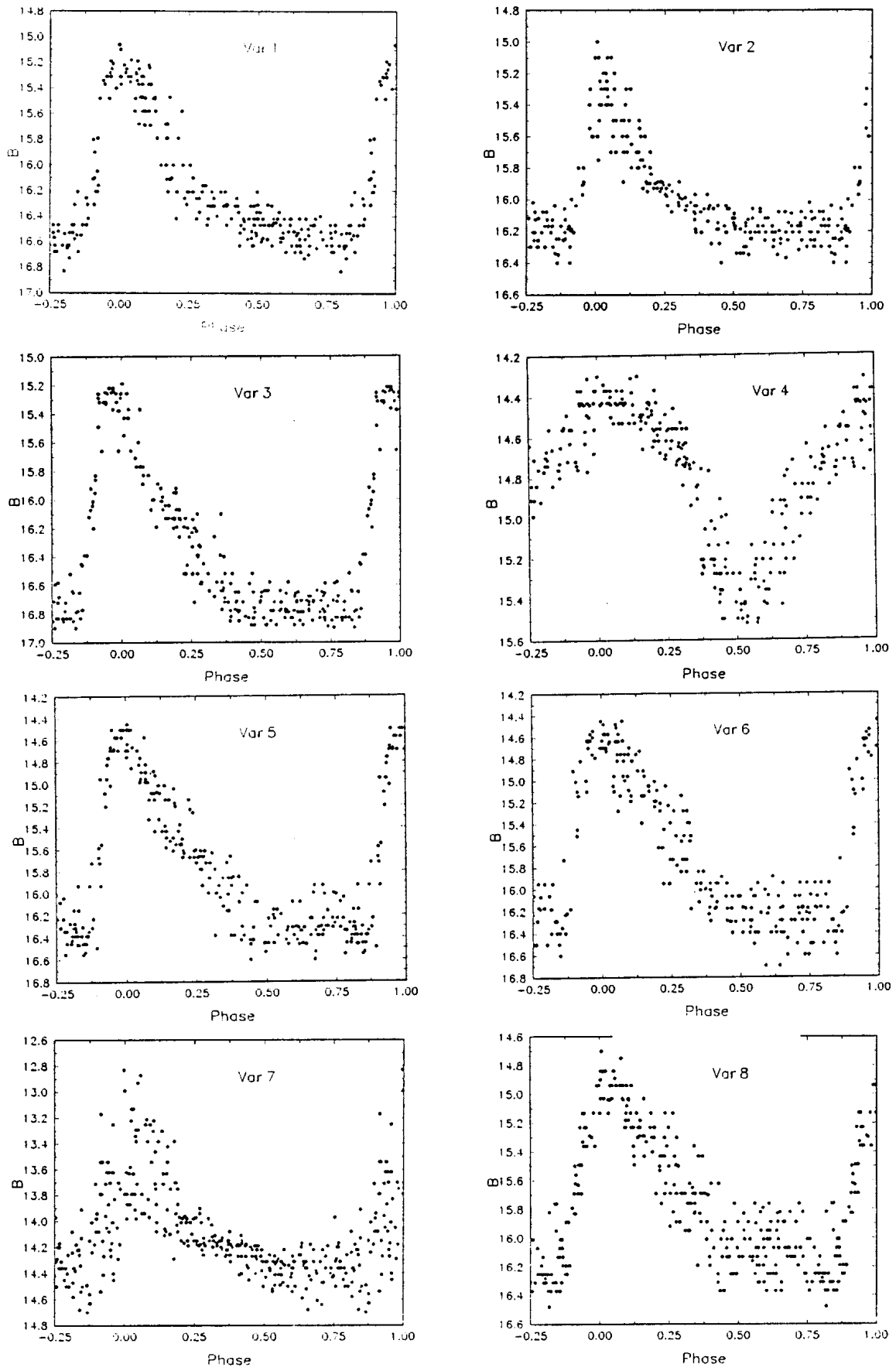


Figure 2

Table 2

Star	n	JD 24...	Type	B_{pgMAX}	B_{pgMIN}	Light elements
Var 1	240	41750–48778	RRab	15 ^m 1	16 ^m 8	$JD_{MAX}=2447296.48\pm 0^d.704545\times E$
Var 2	238	41750–48778	RRab	15.1	16.4	$JD_{MAX}=2441837.42\pm 0^d.532464\times E$
Var 3	239	41750–48778	RRab	15.2	16.9	$JD_{MAX}=2442363.20\pm 0^d.488907\times E$
Var 4	254	41750–48778	CWA	14.3	15.5	$JD_{MAX}=2445616.20\pm 15^d.501\times E$
Var 5	244	41750–48778	RRab	14.5	16.6	$JD_{MAX}=2443969.49\pm 0^d.502775\times E$
Var 6	229	41750–48778	RRab	14.5	16.7	$JD_{MAX}=2445588.35\pm 0^d.578174\times E$
Var 7	312	37080–48778	RRab	12.9	14.6	$JD_{MAX}=2442633.43\pm 0^d.480107\times E$
Var 8	299	37087–48778	RRab	14.8	16.4	$JD_{MAX}=2444849.30\pm 0^d.568397\times E$
Var 9	322	37087–48778	?	12.1	14.2	
Var 10	315	37087–48778	EA	12.95	14.1	$JD_{MIN}=2442217.42\pm 5^d.0952\times E$

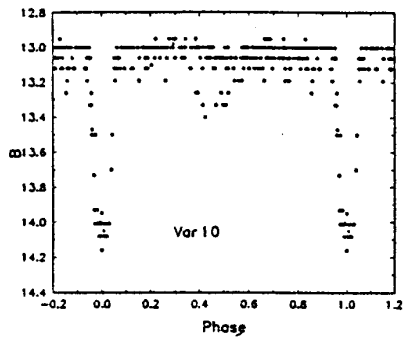


Table 3

Star	a	b	c	d	e	f	g
Var 1	14.75	15.37	16.42	16.94			
Var 2	14.90	15.89	16.08	16.52			
Var 3	14.88	15.26	15.83	16.13	16.78		
Var 4	14.00	14.62	14.77	15.50			
Var 5	14.57	15.20	15.78	16.53			
Var 6	14.20	14.82	15.28	16.40	17.50		
Var 7	12.43	12.05	13.87	14.22	14.68		
Var 8	14.26	15.23	15.89	16.48			
Var 9	11.80	12.21	12.32	12.84	13.34	13.49	14.42
Var 10	12.73	13.54	14.32				

Figure 2 (cont.)

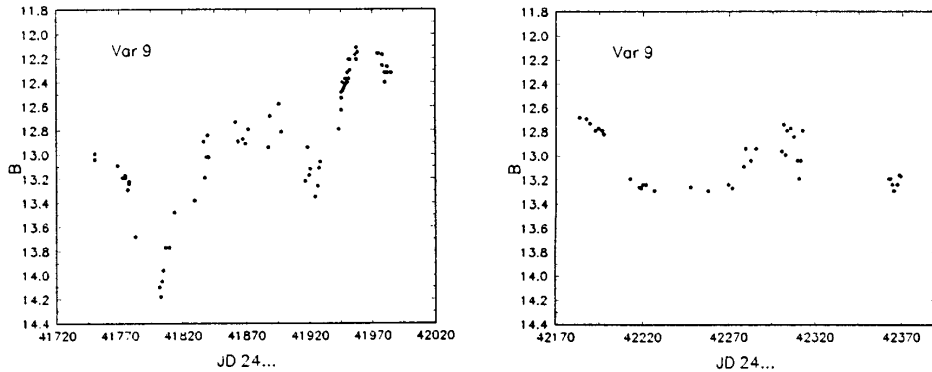


Figure 3

S. V. ANTIPIN
 Sternberg Astronomical Institute
 13, Universitetskij Prosp.
 Moscow 119899, Russia

References:

- Arp, H.C. and Johnson, H.L., 1955, ApJ, **122**, 171
 Forbes, D. and Dawson, P.C., 1986, PASP, **98**, 102