

BRITISH ASTRONOMICAL ASSOCIATION

VARIABLE STAR SECTION

CIRCULAR No. 34

1978 JANUARY

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1975

1. The first part of the report is devoted to a general description of the project and its objectives.

2. The second part of the report describes the methodology used in the study, including the selection of subjects and the procedures used for data collection and analysis.

3. The third part of the report presents the results of the study, which are discussed in detail in the following sections.

4. The fourth part of the report discusses the implications of the findings for future research and for the development of educational programs.

5. The fifth part of the report contains a summary of the main findings and conclusions of the study.

6. The sixth part of the report contains a list of references to the literature cited in the study.

7. The seventh part of the report contains a list of appendices, which include additional data and information related to the study.

8. The eighth part of the report contains a list of tables and figures, which are used to present the results of the study in a more detailed and organized manner.

9. The ninth part of the report contains a list of footnotes, which provide additional information and references for the reader.

10. The tenth part of the report contains a list of acknowledgments, which recognize the contributions of the individuals and organizations that supported the study.

1977 Results Observers who have not already submitted their 1977 results are reminded that they should do so WITHOUT DELAY if full use is to be made of their estimates. Results for main programme stars (see list in VSSC 33) should be sent to Doug Saw, for eclipsing binaries to Peter Hornby, and for other binocular variables to Alan Forno. Addresses are given on the cover.

Charts Preliminary charts for DZ And, UV Cas and SU Lac were distributed to selected observers in recent months; could those involved who have not yet done so please send any remarks on the sequences to the Director as soon as possible. We hope to be able to announce general availability of charts for the above stars in the next Circular.

X Per This bright early-type emission line star is of particular interest because of its probable identification with the X-ray source 3U 0352+30 (lead lens caps are not required for binocular observation!). Hutchings (Mon. Not. R. astr. Soc. 181, 619 [1977]) has refined the 580^d spectroscopic period found earlier by him, and discusses the possibilities that it is an orbital or apsidal motion period. He concludes that "the interpretation of the data in terms of an X-ray binary is thus still not established".

In the same issue of Monthly Notices P. Persi (no relation?) et al. discuss photometry of X Per, and suggest that the brightness changes are due to a variation in the size of the atmospheric envelope which affects both the X-ray emission and infrared excess.

Kalv presents recent B & V photometry in IBVS 1359. He finds no variations larger than $\sim 0^m.005$ on a time-scale of minutes in Dec '73 - Jan '74; a probable continuous brightening between late '73 and early '77; and variations more pronounced in V than B.

From the Southern Hemisphere In volume 20 of the N.Z. Journal of Science, Frank Bateson presents the second Memoir of the RAS NZ VSS, 'Light-curve of the Dwarf Nova VW Hydri'. 21 000 visual observations are presented, covering the interval 2 434 604 - 2 442 600. A mean interval of 27.33 days is found between successive maxima, which are of two types: supermaxima, with a mean magnitude of 8.64, when the variable remains above mag 9.5 for longer than 6 days; and normal maxima, with a mean magnitude of 9.45, when the star is brighter than 10.5 for 3 days at most, and usually for under 2 days. 292 outbursts were observed, of which 44 were supermaxima, the mean interval between successive outbursts of this type being 179.4 days.

V1017 Sgr Reports that this recurrent nova has recently undergone an abrupt deep minimum may be unfounded. In RAS NZ VSS Circ. no. 77/9 observations of V1017 at 13.6 - 13.8 are reported, but there is apparently a star immediately NE of V1017 which is not shown on available charts. If the quoted observations are of this (apparently variable) object, then the earlier observations, by Cragg of V1017 at $\sim 16^m$ may merely reflect this star's current minimum magnitude, rather than a sudden fade.

Binocular Group The prevalent opinion of active observers is that the BG programme should remain much as it is, and that no sweeping cutbacks should be made. The continuing philosophy of the BG was well put by Alan Pickup in VSSC 19:

"In order to draw a satisfactory light-curve for a variable on our programme it is necessary to obtain a minimum number of observations, this minimum being dictated by the amplitude and period of variation. With so many stars on the BG programme we must accept that many of them will not attract enough observations to enable a complete analysis to be made. However, even a few observations of each star will enable useful conclusions to be drawn about the variation taking place, and may identify stars which are of potentially particular interest."

"We must ensure, though, that we obtain enough observations of certain variables to enable complete light-curves to be drawn. The brighter, more easily identified variables are the ones which appear to be most attractive to observers, and, other things being equal, we can expect that these would receive the greatest attention. Such stars are not necessarily those we should be observing most, since a comparatively difficult variable may prove more deserving."

A priority list of selected stars to which particular attention should be paid was therefore drawn up. This list is reproduced below, together with the dates of the latest revised charts according to Melvyn Taylor. If any observers are using earlier charts then they should take steps to obtain current sequence information. Some charts may carry more recent dates than those listed, but these are merely redraws rather than revisions. A number of binocular stars which are included in the main programme for administrative convenience or for historical reasons (e.g. XX Cam, W Cyg) as well as those Mira stars which become bright enough to observe in binoculars are omitted from the list below, although they should be regarded as priority targets.

V Aql	1973 Jul 14	CH Cyg	1975 Sep 07
UU Aur	72 Nov 11	V460 Cyg	74 Jul 28
CO Aur	73 May 17	U Del	71 Jan 23
RX Boo	?	EU Del	71 Jan 23
UV Boo	?	RY Dra	72 Nov 11
X Cnc	72 Sep 09	X Her	73 Jul 14
RS Cnc	71 May 09	IQ Her	71 Jul 13
V CVn	72 Aug 12	OP Her	72 Sep 16
Y CVn	72 Aug 12	g Her	73 Jul 14
TU CVn	72 Aug 12	Y Lyn	72 May 20
WZ Cas	72 Nov 11	BQ Ori	74 Nov 09
V377 Cas	72 Nov 11	AG Peg	73 Jul 14
V465 Cas	74 Jan 20	X Per	72 May 27
Wrl62 Cas	74 Jan 20	S Sct	73 Jul 14
W Cep	76 Jun 02	Y Tau	74 Nov 09
RW Cep	76 Jun 02	BU Tau	72 May 27
SS Cep	72 Nov 04	Z UMa	72 May 20
AR Cep	72 Jun 11	RY UMa	72 May 20
AF Cyg	73 Jul 14		

All active observers are urged to avail themselves of Melvyn's 'Chart and Sequence Notes', available from him in exchange for SAEs.

Help! For many BG stars, VSS results are now the most comprehensive available. A lot of work remains to be done on these results before they can be made generally available to a wide audience. Anyone who is numerate, writes legibly and has a little spare time, can help considerably by assisting in the work of checking the observations and listing them chronologically. Those interested are strongly urged to contact Alan Forno at the address given on the cover.

1976 Results

Alan Forno has provided the following breakdown of 1976 BG results by observer. Totals are disappointing, down about 25% on 1975 values. The Director hopes that observers will bear in mind that observations made now will be of lasting value, even if the results do not appear in print for some time.

	No.stars	No.obs.		No.stars	No.obs.
S.W.Albrighton	15	18	P.Lyon	2	4
B.J.Beasley	61	1518	R.M.MacLeod	4	79
D.Böhme	60	993	L.R.Matthews	57	172
T.Brelstaff	60	585	A.Maudsley	19	194
C.Brookham	2	11	I.Middlemist	69	1863
J.Bullivant	60	1319	R.Pickard	1	2
A.Cook	6	166	D.A.Rothery	50	226
R.W.Cripps	11	82	H.W.Smith	2	2
S.Dunlop	17	17	S.R.Sowden	3	33
R.Fraser	40	165	D.M.Swain	54	1802
A.J.Hollis	49	381	P.J.Swift	14	126
D.Hufton	123	1319	M.D.Taylor	148	1777
G.M.Hurst	102	269	G.Winstanley	6	27
J.E.Isles	2	5	N.Zaccaria	1	32
G.J.Kirby	40	171			

1978 LPV Predictions

Below we give approximate dates and magnitudes for maxima and minima of selected Mira stars on the VSS programme. Observers with access to large apertures are especially commended to the fainter minima.

Members list

A current members list is enclosed with this issue of the Circular. Any errors or changes should be notified to Storm Dunlop as soon as possible.

Corrections to Circ.33

Some of the Greek letters did not reproduce properly in the paragraph relating to changes in the Rho Cas sequence. These should have been: A = Zeta Cas, B = Kappa Cas, C = Theta Cas, D = Lamda Cas and E = Sigma Cas. F (now deleted) = Tau Cas. In the listing of Main Programme stars BW Tau was given without the asterisk indicating that it has been removed from the current programme.

Contributions to Circulars

The Director will be pleased to receive any notes and comments concerning stars or techniques, or any other material, for possible inclusion in future issues of the Circulars.

New Members

Addresses of the following new members are given in the accompanying list: C.BROOKMAN, R.McNAUGHT, D.SHEPHERD.

1978 LPV Predictions - BAA VSS

Star	Mean Range	(M-m)/P*	Max	Min
R And	6.9 - 14.3	0.38	Jan 31	Oct 12
R Aql	6.1 - 11.5	0.42	-	May 03
			Sep 02	-
V Cam	9.9 - 15.4	0.31	-	Sep 12
X Cam	8.1 - 12.6	0.49	Jan 16	Mar 30
			Jun 08	Aug 20
			Oct 30	-
S Cas	9.7 - 14.8	0.43	-	Mar 21
			Dec 10	-
Mira	3.4 - 9.1	0.38	-	Jul 04
			Nov 08	-
S CrB	7.3 - 12.9	0.35	Feb 03	Sep 26
W CrB	8.5 - 13.5	0.45	-	Apr 12
			Jul 28	Dec 06
R Cyg	7.5 - 13.9	0.35	-	Mar 31
			Aug 27	-
S Cyg	10.3 - 16.0	0.50	-	Apr 26
			Oct 05	-
X Cyg	5.2 - 13.4	0.41	-	Apr 11
			Sep 25	-
SS Her	9.2 - 12.4	0.48	Jan 07	Mar 04
			Apr 24	Jun 19
			Aug 09	Oct 04
			Nov 24	-
R Hya	4.5 - 9.5	0.48	Apr 09	Oct 29
U Ori	6.3 - 12.0	0.38	-	May 10
			Sep 29	-
R Ser	6.9 - 13.4	0.41	-	Mar 21
			Aug 14	-
T UMa	7.7 - 12.9	0.41	Feb 09	Jul 10

* Fraction of period spent rising from min to max.

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