BRITISH ASTRONOMICAL ASSOCIATION: VARIABLE STAR SECTION

CIRCULAR No.13

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The programme. Enclosed with this Circular are details of stars which may reasonably be considered to be currently under observation by the Section, and members are now asked to concentrate their attention on the stars on this list.

The programme still needs considerable revision. Many of these stars are now adequately observed by the AAVSO and other overseas groups. Commission 27 of the IAU has repeatedly drawn attention to the unnecessary duplication in the work of different variable star groups, for which there is little excuse, with some 20 000 named variables in the 1969 GCVS, and about 8000 unstudied variables in the two Catalogues of Suspected Variables, a large proportion of which would be suitable subjects for visual investigation.

A sudden discontinuity in our work is obviously undesirable. In revising the programme, 'hasten slowly' tactics will be adopted. Professional advice will be sought before deciding which new stars are to be taken on, and the programme will not be allowed to expand indefinitely.

A recent request for certain stars to be observed by the Section has been received from Dr. Richard Stothers, of NASA's Goddard Institute for Space Studies, whose work on semiregular supergiants will be known to members of the Binocular Sky Society. In collaboration with K.C. Leung, he has used published values of the periods of some of these stars to derive their luminosities and masses; in some cases, new values for the periods were derived from AAVSO observations. He now wishes to extend his investigations to other stars whose periods have not yet been properly determined, and has suggested that the VSS undertake their observation. The stars concerned are: UW Aql, TZ Cas, PZ Cas, V358 Cas, SW Cep, RW Cyg, AZ Cyg, BC Cyg, BI Cyg, V441 Cyg, RS Per, BU Per and UY Sct. Moreover, Drs. T.A. Lee (University of Arizona) and A.S. Wawrukiewicz (Western Kentucky University) are jointly engaged on a two-year photometric and spectroscopic programme on about 20 M-supergiant variables, most of which are already observed by British amateurs or mentioned above. This programme needs to be supplemented by a long series of observations covering many years, just to derive periods.

Preliminary charts and sequences for these stars are being drawn up, and experienced observers willing to check them are invited to contact the Acting Director.

Publications. Plans for bringing our publications up to date have been drawn up and approved by Council.

(1) Current observations will be published in duplicated annual Reports listing all estimates reported to the Section. For each observation, the information given will be the Julian Date (with two or more decimals for eruptive variables), the deduced magnitude, and an observer abbreviation. About 100 copies of these Reports will...

will be sent free of charge to observatories, scientific libraries and individual astronomers likely to be interested in the Section's work. Copies will be put on sale to members at a price probably not exceeding 50p. The first of these will detail results for 1970.

(2) Unpublished observations prior to 1970 will be published in similar Reports dealing with one or more individual stars. Probably two or three of these Reports will be issued each year. After about 10 years, the backlog of unpublished estimates should be cleared.

(3) Any observations which it proves impracticable to publish in such Reports (e.g. scattered estimates of stars not on the VSS programme) will deposited for reference in the BAA and RAS libraries. A description of this material will be published in the Journal, with an announcement of the availability at cost of photocopies of the lists.

(4) Analyses of the observations of the semiregular and eruptive variables on our programme will appear in the Journal. With one report in each issue, these analyses will be brought up to date in about five years.

(5) Observations of long period variables from 1940 to date will also be analysed. If funds can be found, it is hoped to publish this analysis as a Memoir, listing maxima and minima for each star, and giving mean light curves and a statistical discussion of possible period changes. If this does not prove possible, the work will be published in instalments in the Journal.

A grant has been made to the Section to cover the cost of producing the first of the Reports mentioned in (1) and (2) above, but their future financing must come from sales to members. We will also be dependant on considerable voluntary clerical and typing assistance from members of the Section if these plans are to come to fruition.

Chart errors. All observers are asked to correct the following errors which occur in charts issued by the Section.

R Aql: Star 5 is not labelled on the 3° chart, but is correctly indicated on the 1° chart. The star labelled 20 on the 3° chart is in fact star 18.

S CrB: Star k is not labelled on some copies of the 9° chart, while others label it K. It is 91mm from the left-hand frame line and 4mm from the foot of the chart, i.e. about 1½° N and slightly f Fl 50 Boo. It should not be confused with star h (90mm, 47mm) which is not included in the current sequence. Star 1 (71mm, 70mm), about 48' S of U CrB, is also unlabelled.

SS Cyg: Star 70 is not shown on the 1° chart. It is 94mm from the left-hand frame line, and 63mm from the foot, i.e. about 2' Nf star f.

Flare star patrols. Attention is drawn to the notice in the June issue of the Journal concerning the forthcoming IAU patrols on UV Cet and EV Lac. We hope that all experienced observers will take part: even as little as half an hour's "stare" will be a valuable contribution. Preliminary charts may be obtained from the Acting Director.

T Cassiopeiae. The Acting Director would be grateful if all members who have observed this star so far this year would communicate details of their estimates to him as soon as possible.

Gamma Cassiopeiae. Comparison stars to be used for this novalike variable, with their photoelectric V magnitudes, are:

Alpha Per	1.80	Beta UMa	2.36	Alpha Peg	2.48
Alpha And	2.07	Alpha Cep	2.43	Beta Ari	2.65
Gamma Cyg	2.22	Epsilon Cyg	2.46	Delta Cas	2.68
Beta Cas	2.26				

Visual estimates by JAS observers indicate that it has been slowly brightening since 1959, while photoelectric observations show a reddening. The spectroscopic appearance in recent years has resembled that observed shortly before this star's shell episode in 1935, when it rose to 1.5m. In view of the likelihood of the ejection of a second shell, and the convenience with which this star can be observed with the naked eye, it is hoped that all observers will keep watch on it. To avoid errors resulting from differential atmospheric absorption, comparison stars at the same altitude as the variable should be used whenever possible.

BD +32° 3848. Variation of this star in Cygnus has been recorded by one member, but estimates by other observers are needed, to determine whether it should be placed in the suspect category. The 1950 position is 20h 29m 30s, +32° 30'. The star is shown in Atlas Borealis as a K-type star about 6' north of the irregular variable AD Cygni (10.0-10.5pg, Sp S5), and its magnitude is listed as 9.3 in the BD. Would anyone who is willing to participate, and would like charts and details of comparison stars, please communicate with: E. Waring, 1 Little Stoke Road, Stoke Bishop, Bristol 9.

Telescopic meteors. The following notes relate to the completion of telescopic meteor report forms, one of which is enclosed with this Circular. Further supplies may be obtained from the Acting Director.

MAGNITUDE: Give to the nearest whole number.

TYPE: 00 = entered and left field
aO = began in field and left field
Oa = entered field and ended in field
aa = began and ended in field

DIRECTION OF MOTION: PA to the nearest 10°, measured anticlockwise from North.

SPEED: Very swift/swift/average/slow/very slow.

FIELD CENTRE: To 1m in RA and 1° in Dec, for 1950. The position of the variable star, even if not at the field centre, will be sufficiently accurate, even with binoculars.

NOTES: If the co-ordinates of the field centre are those of a variable, name the star here so that the position can be checked.

Mr. Ginman has requested that observers do not use a separate form for each instrument or eyepiece, but record those most frequently used at the head of the form, and record any variations clearly in the 'Notes' column. Forms should be returned soon after June 30 in each year to the acting Director, who will check them, forward them to the Meteor Section, and report totals in the Circulars. An active variable star observer may only see one telescopic meteor a week on average, but if all VSS members take the trouble to record those they see we should collect several hundred sightings each year.

Acknowledgement. The Acting Director is very grateful to Messrs. Storm Dunlop and J.C. Smith for undertaking the production of the Section Circulars. Members are reminded that they may submit notes on observational problems and unusual activity in stars they are following, or suggest topics for discussion. All contributions should be sent to the Acting Director.

MINIMA OF ECLIPSING BINARIES: 1972 July-September

The following predictions have been produced by a computer program written by Dr. Peter Owen, and run at the Royal Military College of Science, Shrivenham. The elements used are those of the 1969 GCVS, except for the following stars which have been adjusted by the stated amounts from recent observations: TV Cas (-.013d), U Cep (+.020), VW Cep (-.064), GK Cep (-.040), TW Dra (-.014), AR Lac (+.015), DM Per (-.017), IZ Per (+.030), HU Tau (+.014), W UMa (-.055).

Timings are badly needed for the following, for which the predictions may be considerably in error: V822 Aql, WW Aur, AR Aur, RS CVn, EI Cep, V477 Cyg, BH Dra, S Equ, RX Her, U Oph, V451 Oph, V566 Oph, EE Peg, SZ Psc, RW Tau, CD Tau, TX UMa, Z Vul.

II distinguishes a secondary minimum.

Date	GMAT	Star	Date	GMAT	Star	Date	GMAT	Star
Jul 01^{d}12^h		VW Cep II	Jul 08^{d}11^h		VW Cep II	Jul 17^{d}13½^h		V822 Aql
	12	AR Lac		11	RX Her II	18	11	VW Cep II
	13	W UMa		12	S Equ		12	V451 Oph
	13½	V566 Oph II		12½	V566 Oph II		12½	U Cep
02	11	VW Cep		13	U Cep		12½	TW Dra
	12	u Her	09	10½	AR Lac		13½	V566 Oph
	12½	Z Vul		12	DM Per	19	10½	VW Cep
	13	W UMa		12½	EE Peg		14	VW Cep II
03	10½	VW Cep II		13	EI Cep II		14	AI Dra
	11½	AR Lac		13	V566 Oph		14	V451 Oph II
	13	W UMa		13½	VW Cep II		14	V566 Oph II
	13½	U Cep	10	11	IZ Per	20	10	DM Per
	14	VW Cep		13	VW Cep		13½	VW Cep
04	10½	V566 Oph II		13	U Oph		13½	GK Cep II
	11½	TW Dra		14	V566 Oph II	21	10	V566 Oph
	13	VW Cep II	11	12	VW Cep II		10½	U Oph II
	13	u Her	12	10½	U Sge		12	GK Cep II
	13	W UMa		11½	VW Cep		12½	VW Cep II
05	10½	BH Dra	13	10½	V566 Oph II		12½	IZ Per
	11	AR Lac		11	VW Cep II	22	10½	GK Cep II
	11	V566 Oph		12½	U Cep		11	V566 Oph II
	12½	VW Cep		13	GK Cep		12	VW Cep
	12½	U Oph		14	AI Dra		14	U Sge
	13	W UMa	14	10½	VW Cep	23	11½	VW Cep II
06	10½	RZ Cas		11	V566 Oph		11½	V566 Oph
	11½	V566 Oph II		11½	GK Cep		12	U Cep
	12	VW Cep II		12½	BH Dra		14	RX Her
	12½	GK Cep II		13½	VW Cep II	24	10½	RS CVn
	13	W UMa	15	12	V566 Oph II		11	VW Cep
07	10½	AR Lac		13	VW Cep		11	RX Her II
	11	GK Cep II		13½	RX Her II		12	V566 Oph II
	11½	VW Cep	16	11	RX Her		14	VW Cep II
	12	V566 Oph		12	V566 Oph II	25	10	VW Cep II
	12½	V451 Oph		12½	VW Cep II		10½	BH Dra
	13	TV Cas	17	12	VW Cep		12	V822 Aql
	13½	RX Her		13	V566 Oph II		12½	V566 Oph

July continued:

DATE	GMAT	STAR	DATE	GMAT	STAR	DATE	GMAT	STAR	DATE	GMAT	STAR
25	13½	RZ Cas	27	12½	VW Cep	29	11½	V451 Oph	31	10	VW Cep
	13½	VW Cep		14	GK Cep		12½	Z Vul		11	V566 Oph II
	13½	AI Dra	28	11½	U Cep	30	10½	VW Cep II		12	U Oph II
26	10½	V477 Cyg		11½	VW Cep II		10½	V566 Oph		13	RZ Cas
	11½	U Oph II		12½	GK Cep		13	EE Peg		13	VW Cep II
	13	VW Cep II	29	10	V566 Oph II		13½	V451 Oph II		13½	AI Dra
	13	V566 Oph II		11	VW Cep		14	VW Cep		14	RX Her II
27	11½	TV Cas		11	GK Cep						

AUGUST 1972

01	11	RX Her	09	12½	V477 Cyg	16	10½	V566 Oph II	23	10	V566 Oph II
	11½	V566 Oph		14	IM Aur		12½	EI Cep		12	VW Cep
	12½	VW Cep		14½	VW Cep		13	VW Cep		12	BH Dra
	13	TW Dra	10	09½	W UMa II		13½	V477 Cyg		14	W UMa
	13	S Equ		10½	VW Cep		14	AR Aur II		14½	V477 Cyg
	14	IZ Per		11	u Her		14	W UMa	24	10	V566 Oph
02	10½	V822 Aql		12	V566 Oph	17	09½	VW Cep		11	RZ Cas
	11½	U Cep		13	V451 Oph II		10	RS CVn		11½	VW Cep II
	11½	V477 Cyg		13½	VW Cep II		10	W UMa II		13	AI Dra
	12	VW Cep II		13½	SZ Psc		10½	U Cep		13½	IM Aur
	12½	V566 Oph II		14	HU Tau		11	V566 Oph		14	WW Aur II
03	10½	IZ Per II	11	09½	VW Cep II		11½	RX Her		14	W UMa
	10½	Z Vul		09½	W UMa II		12½	VW Cep II		15	VW Cep
	11½	VW Cep		10	U Oph		14	W UMa	25	09	U Sge
	12½	BH Dra		12½	V566 Oph II	18	09½	TW Dra		11	VW Cep
	13	V566 Oph		13	VW Cep		10	W UMa II		11	V566 Oph II
04	10½	VW Cep II		13½	GK Cep		11½	RZ Cas		11½	TV Cas
	13	GK Cep II	12	09½	W UMa II		12	VW Cep		11½	RX Her II
	14	VW Cep		10½	U Cep		12	V566 Oph II		12½	Z Vul
	14½	IM Aur		12	RZ Cas		12	SZ Psc		13½	IZ Per II
05	10	VW Cep		12	GK Cep		13	AI Dra		14	W UMa
	11½	GK Cep II		12½	VW Cep II		14	GK Cep II		14½	VW Cep II
	13	TV Cas		12½	u Her		14	W UMa		14½	GK Cep
	13½	VW Cep II		13½	AI Dra		15	U Sge		14½	S Equ
	13½	Beta Per		14½	BH Dra	19	10	DM Per	26	10	SZ Psc
06	09½	V566 Oph	13	10	W UMa II		10	W UMa II		10½	VW Cep II
	10	GK Cep II		10½	GK Cep		11½	VW Cep II		11½	V566 Oph
	12½	RZ Cas		12	VW Cep		12½	GK Cep II		13	GK Cep
	13	VW Cep	14	09½	V566 Oph II		13½	IM Aur		13½	VW Cep
	13½	AI Dra		10	BH Dra		14	W UMa		14	W UMa
	13½	RW Tau		10	W UMa II		14½	VW Cep	27	09½	U Cep
	14	SZ Psc		11	VW Cep II	20	10	W UMa II		09½	VW Cep
07	09½	W UMa II		12	IZ Per II		10½	V451 Oph		09½	IZ Per
	10	EE Peg		12½	SZ Psc		11	VW Cep		11½	GK Cep
	10½	V566 Oph II		13½	u Her		11	GK Cep II		13	VW Cep II
	11	U Cep		14	IM Aur		13½	EE Peg		14	W UMa
	12	VW Cep II		14	W UMa		14	VW Cep II		14½	DM Per
08	09½	W UMa II		14½	TV Cas		14	W UMa		15	CD Tau
	10	S Equ		14½	VW Cep		14½	V Vul	28	09	VW Cep II
	10	u Her	15	10	V566 Oph	21	09½	GK Cep II		10	GK Cep
	11	V566 Oph		10	W UMa II		10	VW Cep II		11	EE Peg
	11½	VW Cep		10½	VW Cep		10	W UMa II		12	Beta Per
	11½	U Sge		14	VW Cep II		12½	V451 Oph II		12½	VW Cep
	12½	DM Per		14	TW Dra		13½	VW Cep		14	W UMa
	14	RX Her		14	W UMa		14	W UMa	29	12	VW Cep II
09	09½	W UMa II		14½	CD Tau II	22	09½	VW Cep		13	IM Aur
	11	VW Cep II	16	10	TV Cas		10	U Cep		14	W UMa
	11	V451 Oph		10	VW Cep II		11	SZ Psc		14½	TW Dra
	11½	RX Her II		10	W UMa II		13	VW Cep II		15	VW Cep
	11½	V566 Oph II		10½	U Oph		14	W UMa	30	09	V566 Oph II

August continued:

DATE	GMAT	STAR	DATE	GMAT	STAR	DATE	GMAT	STAR	DATE	GMAT	STAR
30	09½	SZ Psc	30	13	AI Dra	31	10½	VW Cep II	31	14	VW Cep
	10	RZ Cas		14	W UMa		10½	V451 Oph		14	W UMa
	10½	Z Vul		14½	VW Cep II		11½	RW Tau		15	RZ Cas
	11	VW Cep	31	09½	V566 Oph						

SEPTEMBER 1972

01	09	U Oph II	08	09	VW Cep	15	11½	VW Cep II	21	11	VW Cep
	09½	U Cep		09	V566 Oph II		12½	CD Tau II		12½	Z Vul
	10	VW Cep		12½	IM Aur		14½	VW Cep		14	BH Dra
	10	TW Dra		12½	VW Cep II		14½	W UMa		14½	VW Cep II
	10	V566 Oph II		14½	W UMa	16	08½	U Cep		14½	W UMa
	11½	S Equ	09	08½	VW Cep II		09	u Her		15	IM Aur II
	12½	V451 Oph II		09½	V566 Oph		09	V566 Oph		15½	TX UMa
	13½	VW Cep II		11½	VW Cep		10½	VW Cep		16	TV Cas
	14	BH Dra		14	GK Cep		11	V822 Aql	22	08½	U Oph
	14	W UMa		14½	W UMa		14	VW Cep II		09½	V451 Oph
	15	GK Cep II		15	VW Cep II		14½	AR Aur		10½	VW Cep II
02	09½	VW Cep II	10	10½	V566 Oph II		14½	GK Cep II		13½	VW Cep
	09½	EI Cep		11	VW Cep II		14½	HU Tau		14½	W UMa
	10½	V566 Oph		11½	RX Her		14½	W UMa		15	WW Aur
	11½	RX Her		12½	GK Cep		15	IM Aur II		15½	RW Tau
	12½	VW Cep		14	EE Peg	17	08½	RZ Cas	23	08	RZ Cas
	13½	GK Cep II		14½	VW Cep		09½	V566 Oph II		08	V566 Oph
	14	W UMa		14½	W UMa		10	VW Cep II		09½	VW Cep
03	08½	VW Cep	11	08½	U Cep		12½	AI Dra		09½	BH Dra
	08½	SZ Psc		09	RZ Cas		13	GK Cep II		11½	IM Aur
	09	RX Her II		09	V477 Cyg		13½	VW Cep		11½	TV Cas
	10	BH Dra		09	RX Her		14	WW Aur		11½	EI Cep II
	12	VW Cep II		10	V451 Oph		14	Beta Per		12½	AI Dra
	12	GK Cep II		10½	VW Cep		14½	W UMa		13	VW Cep II
	12½	IM Aur		11	GK Cep	18	09½	VW Cep		14½	W UMa
	13	TV Cas		12½	AI Dra		10	V477 Cyg		15	GK Cep
	14	W UMa		13½	RW Tau		10	V566 Oph	24	08½	V566 Oph II
04	10½	GK Cep II		14	VW Cep II		10½	u Her		09	VW Cep II
	11½	VW Cep		14½	W UMa		10½	DM Per		09½	V822 Aql
	12½	U Sge		15½	IM Aur II		11½	GK Cep II		12½	RZ Cas
	14½	W UMa	12	09½	GK Cep		11½	EE Peg		12½	VW Cep
	15	VW Cep II		10	VW Cep II		12	IM Aur		13½	GK Cep
05	09	GK Cep II		11½	HU Tau		12½	IZ Per		14½	W UMa
	09½	RZ Cas		12	BH Dra		13	RZ Cas		15½	VW Cep II
	11	VW Cep II		12½	WW Aur		13	VW Cep II	25	08½	VW Cep
	12½	AI Dra		13	VW Cep		14½	W UMa		09	V566 Oph
	14	VW Cep		14	RZ Cas		16	HU Tau		10	RW Tau
	14½	W UMa		14½	TV Cas	19	09	VW Cep II		11	V477 Cyg
	15	IZ Per		14½	W UMa		09	RX Her II		12	VW Cep II
06	09	U Cep		15½	TW Dra		10	GK Cep II		12	GK Cep
	10	VW Cep	13	09	VW Cep		12	VW Cep		12½	S Equ
	10	U Oph II		12	IM Aur		14½	W UMa		14½	W UMa
	13½	VW Cep II		12½	VW Cep II		15½	VW Cep II		15	VW Cep
	14½	RZ Cas		14½	W UMa	20	08	VW Cep	26	07½	U Cep
	14½	EI Cep II	14	08½	VW Cep II		08½	GK Cep II		08	VW Cep II
	14½	W UMa		10	TV Cas		09	IZ Per II		08½	EE Peg
07	08½	V566 Oph		12	VW Cep		10½	Beta Per		10½	GK Cep
	09½	VW Cep II		12½	AR Aur II		11½	VW Cep II		10½	Z Vul
	11	IZ Per		13	HU Tau		11½	u Her		11	VW Cep
	12½	DM Per		14½	W UMa		14½	W UMa		14½	IM Aur II
	13	VW Cep		15½	VW Cep II		15	VW Cep		14½	VW Cep II
	14½	W UMa	15	08½	V566 Oph II	21	08	U Cep		14½	DM Per
08	08½	S Equ		11	TW Dra		10	U Sge		15	W UMa

September continued:

DATE	GMAT	STAR
27	09	GK Cep
	09	RX Her
	10½	VW Cep II
	13	CD Tau
	14	VW Cep
	15	W UMa
28	10	VW Cep
28	11½	IM Aur
	13	VW Cep II
	15	W UMa
29	08	DM Per
	09½	VW Cep II
	11	W UMa II
	11½	TW Dra
29	12	AI Dra
	12½	VW Cep
	14	IZ Per
	15	W UMa
	16	VW Cep II
30	08½	VW Cep
	11	W UMa II
30	12	RZ Cas
	12	VW Cep II
	15	W UMa
	15½	GK Cep II
	15½	VW Cep
	16	BH Dra

STARS IN THE PROGRAMME OF THE B.A.A. V.S.S. IN 1972
(excluding eclipsing binaries)

STAR	HARVARD DESIGN.	EXTREME RANGE	MEAN RANGE	TYPE	PERIOD	RECOMMENDED APERTURE Gen. Use	Faint Min.
* R And	001838	6.0-14.9	6.9-14.3	M	409^{d}	8	12
RX And	005840	10.3-13.6		Z Cam	(14)	8	10
R Aql	190108	5.7-12.0	6.1-11.5	M	293	3	4
UU Aql	195109	11.4-15.9		UG	(56)	8	18
R Ari	021024	7.5-13.7	8.2-13.2	M	187	6	10
R Aur	050953	6.7-13.7	7.7-13.3	M	458	6	10
* X Aur	060450	8.0-13.6	8.6-12.7	M	164	6	10
SS Aur	060547	10.5-14.8		UG	(56)	6	12
R Boo	143227	6.7-12.8	7.2-12.3	M	223	4	8
S Boo	141954	8.0-13.8	8.4-13.3	M	271	6	12
* U Boo	144918	9.8-13.0		SRb	201	5	8
V Boo	142539	7.0-11.3		SRa	258	-	3
V Cam	054974	8.5-16.0	9.9-15.4	M	522	8	20
X Cam	043274	7.4-13.7	8.1-12.6	M	143	6	10
Z Cam	081473	10.2-14.5		Z Cam (E)	(22)	10	12
* AF Cam	032458	13.4-(17.0		UG	(15:)	15	20?
R Cas	235350	5.5-13.0	7.0-12.6	M	431	4	8
S Cas	011272	7.9-15.2	9.7-14.8	M	611	12	18
T Cas	001755	7.3-12.4	7.9-11.9	M	445	3	5
W Cas	004858	8.2-12.4	8.8-11.8	M	405	4	6
* HT Cas	010359	13.5-17		UG	(107)	15	20
* Gamma Cas	005060	1.6- 3.0		N1	-	-	-
Rho Cas	234956	4.1- 6.2		RCB?	-	-	-
S Cep	213678	7.4-12.9	8.3-11.2	M	487	3	6
T Cep	210868	5.4-11.0	6.0-10.3	M	388	-	3
* Omicron Cet	021403	2.0-10.1	3.4- 9.3	M	332	-	3
R CrB	154428	5.8-14.8		RCB	-	-	12
* S CrB	151731	6.5-14.0	7.3-12.9	M	360	5	8
* T CrB	155526	2.0-10.8		Nr	(29 000)	-	3
* W CrB	161138	7.8-14.3	8.5-13.5	M	238	6	12
R Cyg	193449	6.5-14.2	7.5-13.9	M	426	6	12
* S Cyg	200357	9.3-16.0	10.3-16.0	M	323	8	20
U Cyg	201647	6.7-11.4	7.2-10.7	M	465	4	8
W Cyg	213244	5.0- 7.6		SRb	131	-	2
SS Cyg	213843	8.2-12.1		UG	(52)	3	4
Chi Cyg	194632	3.3-14.2	5.2-13.4	M	407	5	12
S Del	203816	8.3-12.3	8.8-12.0	M	277	4	5
HR Del	203718	3.5-12?		Nb	-	-	4?
R Dra	163266	6.9-13.0	7.6-12.4	M	246	3	10
AB Dra	195277	12.0-15.5		Z Cam	(13)	12	18
R Gem	070122	6.0-14.0	7.1-13.5	M	370	5	12
U Gem	074922	8.8-14.2		UG (E)	(102)	4	12
T Her	180531	6.8-13.6	8.0-12.8	M	165	5	10
U Her	162119	6.5-13.4	7.5-12.5	M	405	5	8
* SS Her	162807	8.5-13.2	9.2-12.4	M	107	6	10
* R Hya	132422	3 -11	4.5- 9.5	M	388	-	3
R Leo	094211	4.4-11.3	5.8-10.0	M	313	-	3
* X Leo	094512	11.5-15.5		UG	(23)	8	18
R Lyn	065355	7.2-14.0	7.9-13.8	M	379	6	12
W Lyr	181136	7.3-13.0	7.9-12.2	M	196	6	10
AY Lyr	184137	12.6-17.0		UG	(24)	12	20
* U Mon	072609	5.5- 7.5		RVb	92	-	2
* RS Oph	174406	4.3-13.3		Nr	-	-	5
U Ori	054920	5.3-12.6	6.3-12.0	M	372	4	6
* CN Ori	054705	11.6-14.8		Z Cam	(19)	8	12
CZ Ori	061015	12.1-15.7		UG	(27)	12	18
R Peg	230110	7.1-13.8	7.8-13.2	M	378	5	10
RU Peg	220912	9.0-13.1		UG	(66)	8	10

	R Per	032335	8.1-14.8	8.7-14.0	M	210	6	12
	S Per	021558	7.9-11.1		SRc	810	4	5
	TZ Per	020657	12.3-15.6		Z Cam	(17)	12	18
	UV Per	020356	11.9-17.3		UG	(360)	12	40
	R Sct	184205	5.0- 8.4		RVa	140	-	2
*	R Ser	154615	5.7-14.4	6.9-13.4	M	357	6	12
*	T Tau	041619	9.6-13.5		InT	-	4	10
	RV Tau	044025	9.8-13.3		RVb	79	6	10
	SU Tau	054319	9.5-16.0		RCB	-	4	20
	R Tri	023033	5.5-12.6	6.2-11.7	M	266	3	6
	R UMa	103769	6.7-13.4	7.5-13.0	M	302	5	12
	S UMa	123961	7.4-12.3	7.8-11.7	M	226	4	6
	T UMa	123160	6.6-13.4	7.7-12.9	M	257	6	12
	SU UMa	080362	11.0-14.5		UG	(17)	10	12
	SW UMa	082953	10.6-15.8		UG	(459)	8	18
	S UMi	153378	8.0-12.9	8.4-12.0	M	326	6	10
*	S Vir	132706	6.3-13.2	7.0-12.7	M	378	5	10

The above data are mostly taken from the 1969 GCVS. An asterisk preceding the star name indicates that the star was seriously under-observed in 1971. The Harvard Designation comprises the hours and minutes of RA, and degrees of Dec (underlined if negative), for epoch 1900. Thus R And is at approximately $0^h\ 18^m$, $+38^\circ$. The periods given are mean values; where the period is subject to very considerable variation, a typical value is given in brackets.

The recommended apertures (in inches) are not to be interpreted too rigidly. Smaller instruments can do useful work on the brighter stages, and may suffice to detect the star at minimum, especially in the hands of an experienced observer. Purists may multiply by 2.54, to obtain cm.