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A Few Words from the Director

It is 6 months since I officially took over the Directorship and I feel that I am just beginning to settle in now. Initially I felt quite intimidated at the thought of taking over from John. He has been the key figure in the VSS ever since I first joined in 1973 and has left his 'stamp' both on the VSS and on the expectations of its members. I have to keep on reminding myself that I have not been asked to take over 'being John Isles' but just the running of the VSS as best as I can. When I remember this, I start to see all the opportunities that the job presents, instead of just all the difficulties.

The greatest of these opportunities is provided by the work of Dave McAdam and his helpers in the computerisation of our past records (it was actually this that made me decided in favour of accepting the Directorship). In the next few years all of our past records should become instantly accessible for the plotting of light-curves and analysis. This puts me in a position which would have been the envy of all of my predecessors.

I mentioned in VSSC 75 that I intend to work more through the Circulars than John did. At the present it might seem that I have just filled them up with eclipsing binary predictions and articles on stars which don't vary. This is not just because I happen to have observed these stars but is more because this material was relatively easy for me to produce (I thought it would be a very quick job to show from our observations that 33 Ceti was constant, but it didn't quite work out that way!). I have also tried to include in the Circulars lots of 'snippets' from the various variable star publications that, as Director, I now receive. This should give you a clearer view of what is going on in the rest of the variable star world (I do have difficulty in translating the Hungarian and Czech ones, though).

It would be useful to me to learn what you think of all this. If you have any comments, suggestions or criticisms then please do write and let me have them. I am conscious that I could probably do more on cataclysmic variables but I don't really feel qualified (apart from SS Cyg the only dwarf nova I have ever seen was U Gem and that was only once!). We could also probably do with a series of articles on the 'basics' of variable star observing, for beginners. If I get enough letters we can have a regular letters page too (It has been suggested to me that the best way to get lots of letters would be to mention the possibility of changes to the program).

Fade of Alpha Orionis

In IAU Circular 5708, E Guinan et al report that Alpha Ori faded from about 0.42V in October 1992 to around 0.87V in February 1993. The last time this star was as faint as this was in 1988-89. This does not agree very well with the period of 2335 days (=6.4 years) given in the GCVS. The star also shows lesser variations with a period of 200-400 days.

GEOS Circulars

GEOS (Groupe Europeen d'Observations Stellaires) was formed in 1973 from several European groups and its main activity seems to be the observation of eclipsing binaries, RR Lyrae stars and suspected or poorly-studied variables. GEOS circulars EB20 and RR12 have recently been published. EB20 is devoted to a study of the 11th-magnitude eclipsing binary RT UMi by A Maraziti and T Bertold (This star is an old favorite of the present VSS Director). Their study concludes that the period of this star varies on a time-scale of several thousand days but it is not clear whether these variations are periodic. Circular RR12 is a study of the 12th-magnitude RR Lyrae star TZ Aur by G Boistel. Apparently the period of this star has remained more or less constant for the past 75 years.

The 71st Name-List of Variable Stars

IBVS 3840 contains a list of the 438 variable stars newly designated in 1992, along with data necessary for their identification and references to the discovery papers. The following is a selection of the more interesting objects. You can obtain a copy of the full list through the Inter-Library Loan Scheme in the same way as other IBVS's (though you should note that the full list consists of 27 A5-pages and so will cost you a bit more).

The stars with TAV or TASV numbers were all discovered (or rediscovered) by Mike Collins of Sandy, Beds, who has been searching for new variables photographically. His discoveries were initially published in The Astronomer and some have been followed up and confirmed by other people, including, in the case of V836 Her, by the present VSS Director!

In the range column a figure in parentheses indicates the amplitude where this has been measured in a different photometric system from the brightness. This is often used for eclipsing binaries when the observer didn't have enough time to tie their differential observations to a standard scale.

Name	RA(1950) Dec(1950)	Range		Type	Notes
PX And	00 27 28 +26 00.8	14.95 - 17	V	E+UG	= PG 0027+260
HS Aqr	20 38 20 -00 46.5	9.35 (0.42)	V	EB	
HT Aqr	21 37 45 -02 00.8	9.6 - 11.0	b	SRB	
V1413 Aql	19 01 32 +16 21.8	10.6 - 15.1	v	ZAND+E	
V1414 Aql	19 31 58 -07 40.9	9.0 - 14.4	v	M	
CC Cam	04 51 53 +69 22.5	10.7 - 14.5	v	M	= TAV 0451+69
HS CMa	06 31 29 -18 05.2	9.8 - 14.0	v	M	
TV Crv	12 17 48 -18 10.4	12 - 18	p	UG	= "Nova" Crv 1931
V1964 Cyg	19 28 10 +31 17.9	12.0 - 12.8	p	SRD:	
V1967 Cyg	19 43 44 +30 08.1	7.43 - 7.83	V	SRB	
V1970 Cyg	20 14 16 +46 45.2	11.4 - 12.3	p	SRB	
V1972 Cyg	20 21 14 +39 20.1	11.54 - 12.12	B	IA	
V1973 Cyg	20 21 22 +40 40.5	9.67 - 10.09	V	ISA	
V1974 Cyg	20 29 07 +52 27.7	4.2 - 17.5:	v	NA+E:	= Nova Cyg 1992
V1977 Cyg	20 45 51 +43 36.3	10.81 - 11.44	V	INA	
V1981 Cyg	21 00 37 +44 35.6	7.5 - 8.1	b	SRB	
EO Dra	18 19 42 +50 30.2	10.8 - 13	p	M:	
EQ Dra	19 24 19 +57 07.8	10.3 - 11.6	v	SRB	= TASV 1924+57
Gamma Her	16 19 43 +19 16.1	4.02 (0.09)	B	SRD:	
V836 Her	18 09 28 +23 54.5	10.7 - 11.4	v	EA	= TASV 1809+23
V838 Her	18 44 12 +12 10.8	5.0 - 20	v	NA+EA	= Nova Her 1991
DU Leo	09 41 19 +25 35.1	8.68 - 9.43	R	EA/SD	
BI Lyn	09 00 06 +40 02.9	12.93 - 13.13	B	NL	
V694 Mon	07 23 26 -07 38.1	9.1 - 10.1	v	*	Symbiotic-like system
V2291 Oph	18 23 14 +08 00.1	7.02 (1.1)	U	EA/GS	
Gamma Per	03 01 10 +53 18.7	3.63 (0.55)	B	EA/GS	
V505 Per	02 17 46 +54 16.9	6.87 - 7.46	V	EA/DM	
V511 Per	03 23 08 +40 17.0	8.1 - 8.6	v	EA/DM	
V513 Per	03 29 11 +41 16.4	10.4 - 13:	v	M	= TAV 0329+41
V335 Sge	20 12 04 +16 51.7	9.8 - 11.2	p	SRB	
V4197 Sgr	19 03 02 -19 33.5	7.95 - 8.70	V	EW/KE	
V444 Sct	18 44 27 -08 24.2	10.5 - (20	v	NA	
TT Sex	09 43 56 -05 48.0	10.4 - 11.9	p	LB	
V1060 Tau	04 47 45 +15 41.9	11.2 - 12.18	B	LB:	
V1061 Tau	04 55 50 +24 25.2	7.95 - 8.45:	V	EB/KE	
XX Tri	02 00 49 +35 21.1	8.1 - 8.7	v	RS	
V335 Vul	19 21 10 +24 22.4	10.1 - 12	p	SR	= TAV 1921+24
V336 Vul	19 32 36 +23 46.7	7.7 - 9.6	v	SRB:	

= 2 Novae
19 > 10 mag, 8 > 6 9 9 8 mag

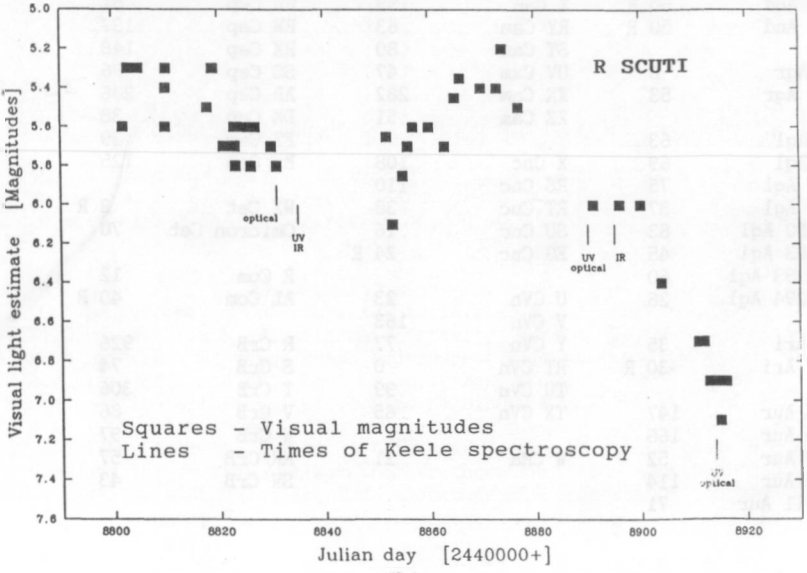
Work on R Scuti at Keele University
Mervyn Shenton

Like the BL Herculis stars and W Virginis stars, the RV Tauri (RVT) stars belong to the broad group of Type II Cepheids, being variables to the blue side of the Giant Branch with periods greater than 1 day. They are stars having i) alternate deep and shallow minima in the light-curve; ii) periods (ie: the interval between deep minima) in the range 30 - 150d; iii) spectral types of F, G and K.

Few attempts have been made to provide an explanation for the unique RVT light-curve. In 1929 Gerasimovic found that it was possible to model the visual light-curve of an RVT star by the addition of two sinusoidally varying functions; more recently Fadeyev and Fokin have postulated that the light-curve is the result of an integer resonance between the fundamental period and the first overtone. In the early 70's Gehrz made the first infrared observations of RVT stars and found that the IR light-curve of AC Herculis (the most stable of these stars) was a simple sine wave rather than the alternating deep and shallow minima seen in the optical. According to Gehrz this could only be understood if the star oscillated between oblate and prolate spheroids at successive light minima.

R Scuti has the longest period of the RVT stars (about 150d) and the most irregular light-curve. During recent months we have received up-to-date visual estimates of R Scuti from the BAA VSS, the observers being B Crawford, J S Day, R C Dryden, J Fraser, B H Granslo, S Koushiappas, B R Munden, J Pietz, G Poyner, S Ridley, A Smeaton, M D Taylor, J Toone, W J Worraker, K Xylaris and E Yusuf. These observations have enabled us to coordinate the first simultaneous UV-optical-IR spectroscopy of the star close to two successive minima and near the intervening maximum. High resolution UV spectroscopy was obtained with IUE satellite and both high and low resolution optical and IR spectroscopy were obtained at the South African Astronomical Observatory and on the UK Infrared Telescope at Hawaii. By determining the physical parameters (temperature, stellar radius, gravity, etc) of the star at the times of these three observations we shall further our understanding of the behaviour of R Scuti and RVT stars in general.

We acknowledge with thanks the help of Melvyn Taylor and Guy Hurst in collecting and passing on the observations.



Observation Totals for 1992
Compiled by Melvyn Taylor

As of the end of March 1993, the grand total of observations for 1992 stood at 22937. This excludes observations of eclipsing binaries, which will be dealt with separately, and observations from a few observers who have not yet sent them in. Please make every effort to get your observations for the first half of 1993 in by the end of August.

The leading observer in 1992 was Gary Poyner with 3500+, followed by Mike Gainsford (2000+); John Day, Shaun Albrighton, Melvyn Taylor and Bill Worraker (all 1500+); Len Brundle, Tony Markham and Ian Middlemist (1000+); and Neil Bone, Bob Dryden, Rhona Fraser, Brian Munden, Bob Paterson and Gary Pointer (500+). There were 42 observers in all.

The following list gives the number of observations made of each star on our program. This includes Binocular, Telescopic and 'Recurrent' objects, the latter being indicated by an 'R'. The general reduction in numbers means that many stars were underobserved but only one, R CrB, was grossly over-observed.

Star Totals for 1992

R And	86	U Boo	67	S Cas	30
W And	76	V Boo	52	T Cas	54
Z And	63	W Boo	34	UV Cas	143
RS And	23	RV Boo	28	WZ Cas	99
RW And	44	RW Boo	30	V391 Cas	86
RX And	245	RX Boo	33	V393 Cas	81
SU And	10	UZ Boo	39 R	V465 Cas	325
TZ And	23	N1962 Boo	37 R	V630 Cas	81 R
AQ And	35			Gamma Cas	212
BZ And	19	U Cam	103	Rho Cas	229
DX And	94 R	V Cam	33		
EG And	176	X Cam	65	W Cep	133
HP And	50 R	Z Cam	199	RU Cep	81
LS And	50 R	RY Cam	63	RW Cep	137
		ST Cam	80	RX Cep	148
R Aqr	6	UV Cam	47	SS Cep	96
VY Aqr	53	XX Cam	282	AR Cep	206
		ZZ Cam	51	DM Cep	38
R Aql	63			FZ Cep	39
V Aql	69	X Cnc	108	Mu Cep	125
UU Aql	75	RS Cnc	110		
UW Aql	37	RT Cnc	38	WX Cet	3 R
V450 Aql	83	SU Cnc	16	Omicron Cet	70
V603 Aql	45	EG Cnc	24 R		
V1293 Aql	60			R Com	12
V1294 Aql	28	U CVn	23	AL Com	40 R
		V CVn	163		
V Ari	35	Y CVn	77	R CrB	926
SV Ari	30 R	RT CVn	0	S CrB	74
		TU CVn	99	T CrB	306
SS Aur	147	TX CVn	65	V CrB	86
UU Aur	166			W CrB	97
UV Aur	52	W CMa	21	RR CrB	57
AB Aur	114			SW CrB	43
Psil Aur	71				

R Cyg	74	AC Her	267	S Per	77
S Cyg	66	AH Her	202	X Per	387
V Cyg	76	IQ Her	55	RS Per	85
W Cyg	293	OP Her	192	SU Per	50
RU Cyg	22	V443 Her	37	TZ Per	228
RV Cyg	50	V566 Her	58	UV Per	237
SS Cyg	373	g Her	130	UW Per	104 R
TT Cyg	33			AD Per	48
AF Cyg	312	R Hya	10	AX Per	93
BC Cyg	49	U Hya	8	BU Per	98
BF Cyg	125	RW Hya	0	GK Per	173
BI Cyg	39			KK Per	36
CH Cyg	422	SU Lac	64	PR Per	50
CI Cyg	170	SX Lac	56	NSV895 Per	50 R
V460 Cyg	131				
V482 Cyg	137	X Leo	126	Z Psc	35
V973 Cyg	132	RS Leo	14	TV Psc	50
V1016 Cyg	36	RY Leo	41	TX Psc	27
V1251 Cyg	73 R	RZ Leo	40 R		
V1329 Cyg	46	TU Leo	34 R	SV Sge	110
V1819 Cyg	22			WZ Sge	141
Chi Cyg	82	U LMi	31	HM Sge	45
P Cyg	94	W LMi	0	QW Sge	32
N1992 Cyg	451				
		RX Lep	43	V1017 Sgr	0 R
U Del	184	SS Lep	7	AS245 Sgr	0
EU Del	176			N1992#2 Sgr	5
HR Del	98	W Lyn	0		
		X Lyn	16	U Sco	9 R
T Dra	52	Y Lyn	72		
RY Dra	214	SV Lyn	86	R Sct	415
TX Dra	153			S Sct	33
UW Dra	59	R Lyr	32	FR Sct	2
UX Dra	73	XY Lyr	90		
VW Dra	52	AY Lyr	193	R Ser	61
AB Dra	166			FG Ser	18
AG Dra	87	U Mon	169	AS289 Ser	0
AH Dra	133	RV Mon	25		
AT Dra	41	SX Mon	24	Y Tau	66
DO Dra	122 R	BX Mon	8	RV Tau	46
		V616 Mon	20 R	SU Tau	169
U Gem	147			TT Tau	40
TU Gem	46	X Oph	54	BU Tau	132
TV Gem	67	RS Oph	105	CE Tau	49
WY Gem	66	V2048 Oph	33	HW Tau	9 R
BN Gem	79	Hen1341 Oph	0	NSV1280 Tau	0 R
BQ Gem	42			NSV1702 Tau	0 R
BU Gem	81	U Ori	83		
DW Gem	10	W Ori	62	W Tri	48
IR Gem	138	BL Ori	44		
IS Gem	44	BQ Ori	69	T UMa	93
NQ Gem	44	CK Ori	71	Z UMa	175
		CN Ori	77	RY UMa	174
X Her	195	CZ Ori	105	ST UMa	148
RU Her	55			SU UMa	182
SS Her	43	RU Peg	123	SW UMA	170
ST Her	28	AG Peg	151	TV UMa	81
SX Her	9	EF Peg	55 R	VW UMa	164
UW Her	58	GO Peg	92	VY UMa	179
YY Her	31			BC UMa	70 R

BZ UMa	71 R	SS Vir	13	Mrk421	29
CH UMa	137	SW Vir	9	NGC4151	15
CY UMa	49 R	BK Vir	4	3C273	34
		HV Vir	33 R	SN1991BY	2
V UMi	103			SN1992G	12
		V Vul	47		
RW Vir	3	PU Vul	133		------
RX Vir	1	PW Vul	1	Total:	22937

The Krakow Yearbook for 1994

The Krakow Yearbook, alias Rocznik Astronomiczny, alias Supplemento ad Annuario Cracowiense (SAC), is a compilation of up-to-date elements and predictions for about 900 eclipsing binary stars and 230 RR Lyrae variables. It is published by the Jagiellonian University Astronomical Observatory in Krakow, Poland. The price of the 1994 issue (SAC 65) is US$15-00 surface mail or US$18-00 air mail. Payment, along with a clear identification of its purpose (ie: "Rocznik Astronomczny - subscription"), should be made to the account of the Jagiellonian University at Bank Depozytowo-Kredytowy II Krakow No 333401-592-151-4787 or by a cheque drawn to the name of the Astronomical Observatory of the Jagiellonian University. If a payment is made directly to the bank, a separate message to the editors is required. Their address is The Jagiellonian University Astronomical Observatory, ul. Orla 171, 30-244 Krakow, Poland. The payments must reach them by September 30th 1993, else they cannot guarantee a successful delivery.

The Geminga Pulsar and its Supernova

Geminga is the name given to a strong gamma-ray source located between Gamma and Nu Geminorum. It was first detected by the SAS-2 satellite in the mid 1970's. In 1983, it was identified with the peculiar X-ray source 1E0630+178 which led to the suggestion that it was a relatively near-by pulsar. This was later confirmed when a 237ms periodicity was detected in both gamma-rays and X-rays. Searches for the optical counterpart revealed the best candidate to be a 25.5-mag star which is now referred to as G". Because the pulsar was thought to be only about 100pc distant it was suggested that G" should show a detectable proper motion. Recently, an Italian group, led by G F Bignami, have shown that G" has a proper motion of 0.17 arcsecs (Bignami et al, Nature, 361, 704-706, 1993). This is about what one would expect for a pulsar at about 100pc. For it to be a conventional star it would have to be either unusually faint (absolute magnitude about 20.5) or else moving at an unusually high velocity (over 1000km/s).

Bignami et al mention that it is interesting to speculate on where the Geminga pulsar was when its supernova explosion occurred. The spin-down rate of the pulsar suggests an age of about a third of a million years. Extrapolating the proper motion backwards from the present position (6h 34m +17° 46' [2000]) for this length of time takes you to the region of Lambda and Alpha Orionis (6h 34m +17° 46' [2000], give or take several degrees). The progenitor star may have appeared as a first or second magnitude star rather like the other bright stars in Orion. At maximum, the supernova may have been comparable in brightness to the Full Moon.

Gehrels and Chen (Nature, 361, 706-707, 1993) suggest that the 'Local Bubble' might have been created by the Geminga Supernova. This 'Bubble' is a 150pc-wide cavity in the local interstellar medium. The Sun lies within the cavity, close to one edge. If the supernova did produce this cavity then its distance must have been less than 60pc and the pulsar should now show quite a large radial velocity away from us. Gehrels and Chen are able to put a lower limit of 10pc on the distance of the explosion because anything closer would be expected to severely disrupt the Earth's atmosphere.

The Suspected Variable Star 33 Ceti

By Tristram Brelstaff

33 Ceti (= NSV 422 = CSV 5895 = BS 347 = BD+1°221 = HD 7014 = SAO 109715) is a 6th magnitude red giant (V = 5.95, B-V = +1.51, spectrum gK4) on the border of Cetus and Pisces. The New Catalogue of Suspected Variable Stars (NSV) lists it as a possible 'slow' variable (type L:) with a photographic range of 7.1 to 9.0. This would correspond to a visual range of about 5.6 to 7.5.

Photographic Observations

The source for the NSV data is a short note by R Kippenhahn in the rather obscure German newsletter Nachrichtenblatt der Astronomischen Zentralstelle (8, No 2, 8, 1954). Kippenhahn first suspected the star of being variable when comparing plates taken at the Bamberg Observatory with Franklin-Adams Chart No 93. He went on to examine all other plates of that part of the sky that were available to him and compiled the following list of magnitudes:

		mpg	
Wolf-Palisa Chart No 7	1903 Sep 24	9.0	
Harvard Plate HM 86	1904 Aug 4	7.1	
Harvard Plate HM 74	1905 Nov 21	7.1	
Franklin-Adams Chart No 93	1910 Oct 6	8.7	
'Himmelskarte' +1° No 9	1919 Dec 25	8.3:	
42 Bamberg Ernostar plates	1928 Oct to 1933 Dec	7.1	constant
32 Bamberg Tessar plates	1933 Sep to 1934 Aug	7.1	constant
5 Bamberg Tessar plates	1952 Sep to 1953 Aug	7.1	constant

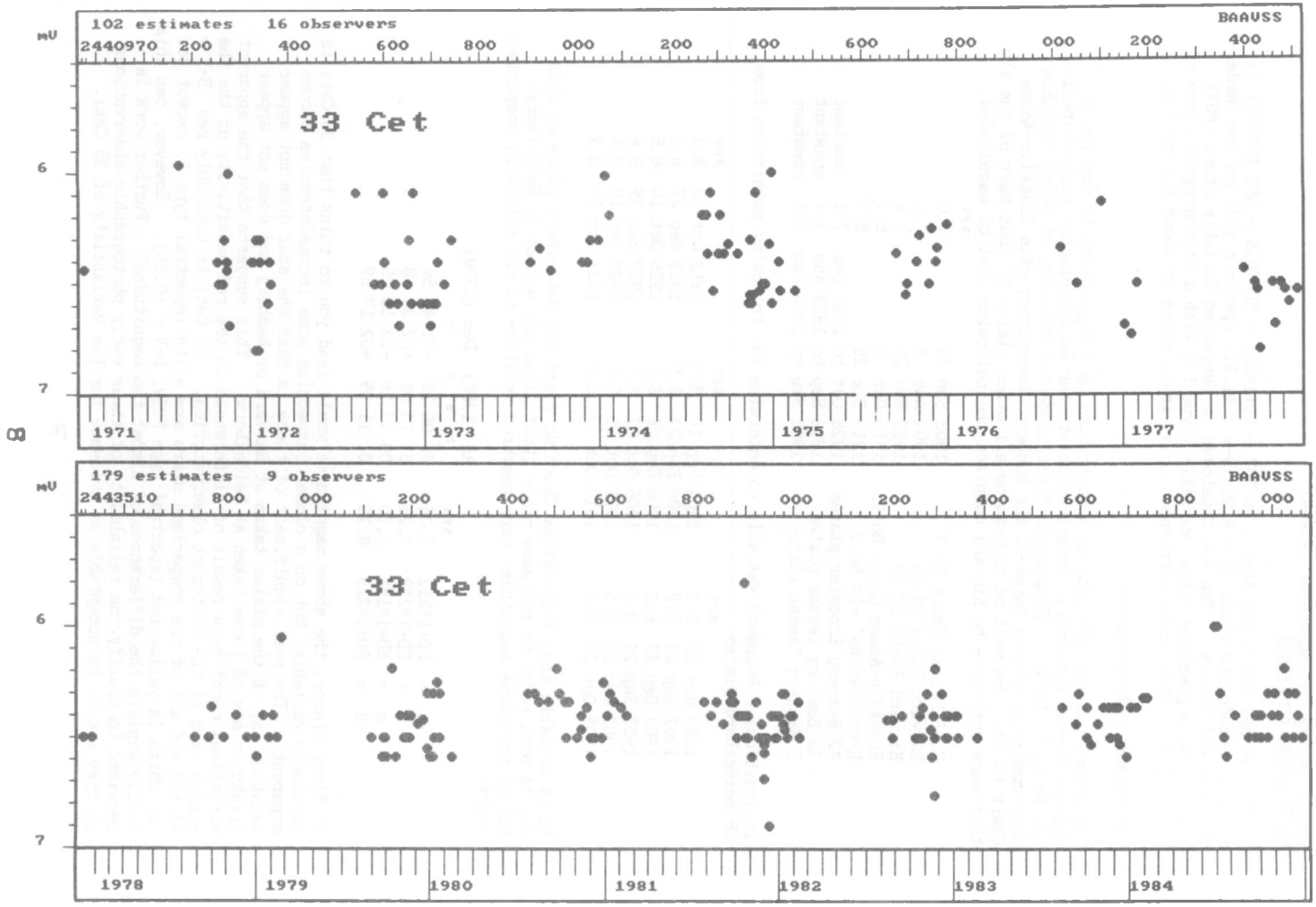
In addition, K Reinmuth was able to determine the following magnitudes from 18 Heidelberg plates:

	mpg		mpg		mpg
1899 Nov 26	8.2	1904 Sep 18	8.5	1912 Oct 10	8.4
1902 Sep 26	8.0	1906 Sep 24	8.5	1913 Sep 27	8.3
1902 Sep 27	8.0	1906 Sep 26	8.1	1925 Oct 10	8.5
1903 Sep 24	9.0	1906 Oct 22	8.7	1927 Sep 29	8.6
1903 Sep 27	8.5	1911 Oct 19	8.5	1929 Sep 10	8.6
1903 Oct 25	8.5	1912 Oct 7	8.5	1931 Sep 16	8.2

It is probable that Wolf-Palisa Chart No 7 and the Heidelberg plate of 1903 Sep 24 both refer to the same plate (Wolf lived and worked in Heidelberg). All of the above magnitudes were measured relative to the following comparison stars:

			mpg	RA (1950) h m s	Dec (1950) ° ' "
a	=	BD+1°212	7.05	01 05 25	+01 43 56
b	=	BD+1°238	7.25	01 14 01	+02 28 18
c	=	BD+1°191	7.70	00 59 25	+02 15 25
d	=	BD+1°229	8.75	01 11 09	+02 17 59

At first glance, the above magnitudes would lead you to think that 33 Ceti is obviously variable, but on a closer inspection some inconsistencies become apparent. The most significant of these is that the star does not appear faint on any of the plates taken at Harvard or Bamberg and does not appear bright on any of those taken at Heidelberg. This suggests that the apparent variations might be a result of differences in the red-sensitivity of the the plates used at the different observatories. 33 Ceti is noticably red (B-V = +1.51) and all of the comparison stars are white (spectral type F) except for 'a' which is yellow-red (spectral type K0IV, B-V = +0.85). However, can this really explain the differences of almost two magnitudes? Further work is required to clarify the reliability of these early photographic observations if they are to be acceptable as evidence for the variability of 33 Ceti.


102 estimates 16 observers
BAAVSS
2440970 200 400 600 800 000 200 400 600 800 000 200 400
mU
33 Cet
6
7
1971
1972
1973
1974
1975
1976
1977
179 estimates 9 observers
BAAVSS
2443510 800 000 200 400 600 800 000 200 400 600 800 000
mU
33 Cet
6
7
1978
1979
1980
1981
1982
1983
1984

Visual Observations

In 1971, 33 Ceti was added to the observing program of the Binocular Sky Society (BSS) and when the BSS was absorbed into the BAA VSS in 1974 it became part of the VSS Binocular Program. Between 1971 and 1984, when the star was dropped by the VSS, 281 visual observations were made of the star by 23 observers. The names and individual totals for each observer are listed below:

33 Ceti Observer Totals

J Bingham	8	M S Hoenig	9	P Quadt	16
T Brelstaff	65	A J Hollis	10	J H Robinson	1
P R Clayton	6	D Hufton	7	D R B Saw	7
M J Currie	7	J E Isles	1	M D Taylor	4
R B I Fraser	49	B Jobson	6	F Ventura	2
V J Freeman	1	R H McNaught	2	W J Worraker	13
T Gough	1	I A Middlemist	53	P Yates	1
M A Hather	5	I P Nartowicz	7		

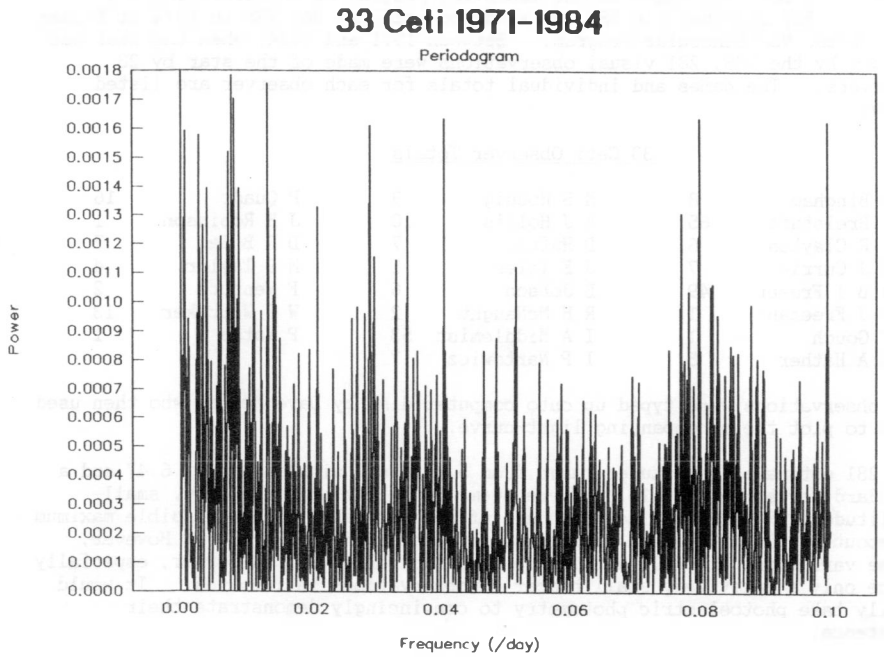
The observations were typed up onto computer disk by Dave McAdam who then used them to plot the accompanying light-curve.

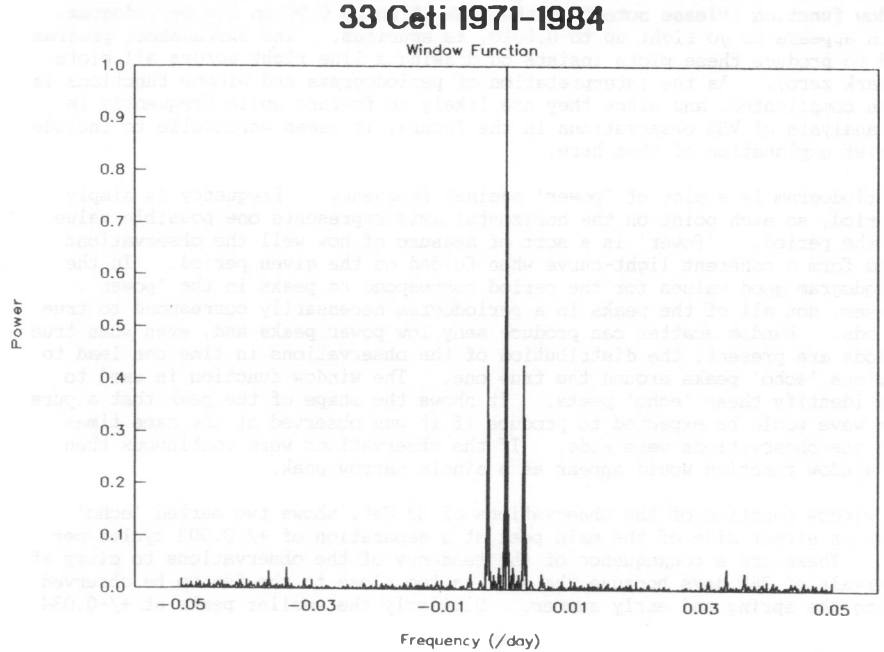
The 281 estimated magnitudes range from 5.8 to 6.9 with a mean of 6.47 and a standard deviation of 0.15. There seems to be evidence for slow, small-amplitude variations on the timescale of several years with a possible maximum of about 6.3 in 1974 and a possible minimum of 6.55 in 1977-78. However, these variations are well within the bounds of observational error, especially since only a relatively small number of observations is involved. It would really take photoelectric photometry to convincingly demonstrate their existence.

The observations were also used to plot the accompanying periodogram and window function (Please note that the peak at phase 0.00 on the periodogram, which appears to go right up to 0.0018, is spurious. The spreadsheet program used to produce these plots insists on drawing a line right across all plots to mark zero). As the interpretation of periodograms and window functions is quite complicated, and since they are likely to feature quite frequently in the analysis of VSS observations in the future, it seems worthwhile to include a brief explanation of them here.

A periodogram is a plot of 'power' against frequency. Frequency is simply 1/period, so each point on the horizontal axis represents one possible value for the period. 'Power' is a sort of measure of how well the observations would form a coherent light-curve when folded on the given period. In the periodogram good values for the period correspond to peaks in the 'power'. However, not all of the peaks in a periodogram necessarily correspond to true periods. Random scatter can produce many low power peaks and, even when true periods are present, the distribution of the observations in time can lead to spurious 'echo' peaks around the true one. The window function is used to help identify these 'echo' peaks. It shows the shape of the peak that a pure sine wave would be expected to produce if it was observed at the same times that the observations were made. If the observations were continuous then the window function would appear as a single narrow peak.

The window function of the observations of 33 Ceti shows two marked 'echo' peaks on either side of the main peak at a separation of +/-0.003 cycles per day. These are a consequence of the tendency of the observations to clump at intervals of 365 days because the star is too close to the Sun to be observed during the spring and early summer. Similarly the smaller peaks at +/-0.034


33 Ceti 1971-1984
Periodogram
Power
0.0018
0.0017
0.0016
0.0015
0.0014
0.0013
0.0012
0.0011
0.0010
0.0009
0.0008
0.0007
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
0.00
0.02
0.04
0.06
0.08
0.10
Frequency (/day)


33 Ceti 1971-1984
Window Function
Power
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-0.05
-0.03
-0.01
0.01
0.03
0.05
Frequency (/day)

and +/-0.036 cycles per day are probably a consequence of there being fewer observations made at times of Full Moon, and when the Moon is close to the star, respectively.

The highest peak in the periodogram is at about 0.0077 cycles per day which corresponds to a period of about 130 days. There are several other peaks of similar power. Light-curves were constructed for the periods corresponding to the ten highest peaks but none produced convincing light-curves. The most interesting was the peak at 0.0027 cycles per day which corresponds to the annual cycle. This seems to result from a tendency of the observations made early in the observing season (ie: in July and August) to be a few tenths of a magnitude brighter than those made later. One possible explanation for this could be that these early observations tend to be made at lower altitudes. Red stars suffer less from atmospheric extinction than do blue stars and, consequently, under these conditions one would expect 33 Ceti to appear brighter relative to its bluer comparison stars.

Conclusions

Neither the photographic observations nor the visual observations provide convincing evidence for or against the variability of 33 Ceti. Further work is required. The early photographic record needs re-investigating in order to determine whether the large range found by Kippenhahn was real or just the result of differences between the plates used at various observatories. Photoelectric photometry is also needed in order to check on the reality of he slow small-amplitude variations which are apparently present the visual observations. It is unlikely that further visual observations would be of much use in answering these questions so the decision to drop the star was probably a good one.

'The Measurement of Starlight'

According to reports in the Quarterly Journal of the RAS (vol 33, pages 378 and 384, 1992), J B Hearnshaw is writing a book with the above title for Cambridge University Press. Those of you who have seen Hearnshaw's earlier book, 'The Analysis of Starlight' (CUP, 1986), which covered the historical development of stellar spectroscopy, will know what an excellent book that was. His new book will cover the history of stellar photometry and so should be of particular interest to all variable star observers.

Binocular Variable Star Observing

The May 1993 issue of Astronomy Now contains a good introduction to observing binocular variable stars written by John Isles. He seems to cram an amazing amount into four pages. Not only does he cover what to observe and how to do it, he also gives some interesting insights into the history of binocular variable star observing in this country. Before the 1960's there seems to have been a general feeling that you needed a large telescope if you were to make scientifically useful observations of variable stars. The key event in changing this attitude was the outburst of Nova HR Delphini 1967. This nova spent ten months fluctuating between magnitudes 3.5 and 6.0 before fading away and created a lot of interest, even amongst people who had never observed variable stars before. Many present-day variable star observers 'cut their teeth' on HR Delphini. However, the BAA VSS refused requests to form a program of stars specifically for binocular observers so, in 1968, John teamed up with James Muirden to form the Binocular Sky Society (BSS). The BSS collected observations on over 100 bright variables and soon was receiving as many as the VSS. In 1972 John took over the VSS Directorship and in 1974 the BSS was merged into the VSS to form the VSS Binocular Group. Many of the stars on the current VSS Binocular program were inherited from the BSS.

Eclipsing Binary Predictions

The following predictions are calculated for an observer at 53 degrees north, 1.5 degrees west but should be usable for observers throughout the British Isles. The times of mid-eclipse appear in parentheses with the start and end times of visibility on either side. Times are hours GMAT, that is UT-12h. 'D' and 'L' are used to indicate where daylight and low altitude, respectively, prevent part of the eclipse from being visible. Charts for all of these stars and for other eclipsing binary stars are available from the Director at 10p each (please enclose a large SAE). Two of these charts are reproduced below.

1993 Jun 1 Tue
Z Per L12(08)13
1993 Jun 2 Wed
Z Vul D10(06)11
U Cep D10(08)13
U Sge D10(12)14D
1993 Jun 3 Thu
S Equ L11(13)14D
Z Dra 12(15)14D
1993 Jun 4 Fri
SW Cyg D10(13)14D
Z Vul 12(17)14D
Z Per L12(10)14D
TW Dra 12(17)14D
1993 Jun 6 Sun
Z Dra D10(08)10
RZ Cas D10(11)14D
1993 Jun 7 Mon
U Cep D10(07)12
TW Dra D10(13)14D
Z Per L12(11)14D
RZ Cas 14(16)14D
1993 Jun 8 Tue
ST Per L13(11)14D
1993 Jun 9 Wed
U Sge D10(06)11
Z Vul D10(15)14D
Y Psc L13(16)14D
1993 Jun 10 Thu
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Z Dra D10(09)12
S Equ L10(10)14D
Z Per L12(12)14D
1993 Jun 12 Sat
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RZ Cas D10(11)13
U Sge D10(15)14D
1993 Jun 13 Sun
SW Cyg 11(17)14D
Z Per L11(14)14D
Y Psc L12(10)14D
RZ Cas 13(16)14D
1993 Jun 14 Mon
Z Dra D10(11)14
Z Vul D10(13)14D
1993 Jun 16 Wed
Z Per L11(15)14D
ST Per L12(10)14D
1993 Jun 17 Thu
U Cep D10(07)11
S Equ D10(07)12
1993 Jun 18 Fri
SW Cyg D10(07)13
RZ Cas D10(10)13
Z Dra 11(13)14D
TW Dra 13(18)14D
1993 Jun 19 Sat
U Sge D10(09)14D
Z Vul D10(11)14D
Z Per 12(16)14D
RZ Cas 13(15)14D
1993 Jun 20 Sun
S Equ 12(18)14D
X Tri 13(16)14D
1993 Jun 21 Mon
TW Dra D10(13)14D
ST Per 13(17)14D
X Tri 13(15)14D
1993 Jun 22 Tue
U Cep D10(06)11
Z Dra 12(15)14D
X Tri L12(15)14D
U Sge 13(18)14D
Z Per 13(18)14D
1993 Jun 23 Wed
X Tri L12(14)14D
1993 Jun 24 Thu
Z Vul D10(08)14
TW Dra D10(09)14D
RZ Cas D10(10)12
ST Per L12(08)13
X Tri L12(13)14D
Y Psc 13(17)14D
U Cep 13(18)14D
1993 Jun 25 Fri
TX UMa D10(06)10
Z Dra D10(08)10
RZ Cas 12(14)14D
X Tri L12(13)14D
1993 Jun 26 Sat
X Tri L12(12)14D
1993 Jun 27 Sun
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SW Cyg D10(10)14D
S Equ D10(15)14D
X Tri L12(11)14
1993 Jun 28 Mon
TX UMa D10(07)12
Y Psc L11(12)14D
X Tri L12(11)13
1993 Jun 29 Tue
Z Vul D10(06)12
Z Dra D10(10)12
U Sge D10(13)14D
ST Per 11(16)14D
X Tri L12(10)12
U Cep 13(18)14D
1993 Jun 30 Wed
RZ Cas D10(09)12
1993 Jul 1 Thu
TX UMa D10(09)13
RZ Cas 11(14)14D
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1993 Jul 2 Fri
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1993 Jul 3 Sat
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1993 Jul 4 Sun
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U Cep 13(18)14D
1993 Jul 5 Mon
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RZ Cas D10(09)11
SW Cyg D10(14)14D
Z Vul D10(15)14D
RW Tau L13(15)14D
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TX UMa D10(12)14D
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1993 Jul 8 Thu
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RZ Cas 10(13)14D
Y Psc L10(13)14D
1993 Jul 14 Wed
Z Dra D10(08)10
U Cep 12(17)14D
S Equ 13(19)14D
1993 Jul 15 Thu
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1993 Jul 16 Fri
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Z Vul D10(11)14D
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1993 Jul 17 Sat
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RW Tau L13(17)14D
1993 Jul 18 Sun
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RZ Cas D10(07)10
Z Dra D10(10)12
SS Cet L14(09)14
1993 Jul 19 Mon
RZ Cas 10(12)14D
TW Dra 10(15)14D
U Cep 12(17)14D
TX UMa 13(18)13L
U Sge 14(19)14D
1993 Jul 20 Tue
Z Per D10(06)11
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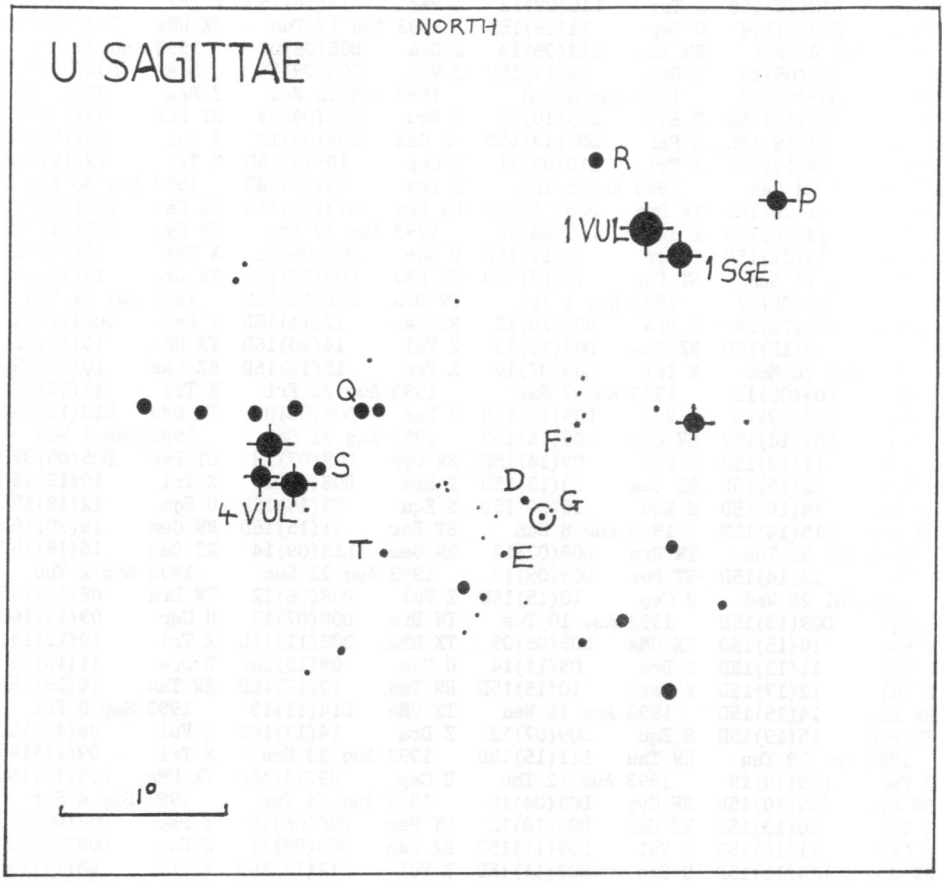
S Equ 10(16)14D
1993 Jul 22 Thu



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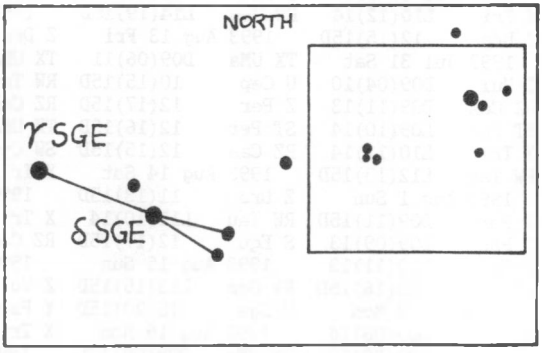
T.Brelstaff 1993 Jan 24



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TW Dra 11(16)15D
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X Tri 14(16)16D
1993 Aug 28 Sat
S Equ D08(11)16L
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U Cep 09(14)16D
RW Tau L10(06)11
X Tri 13(15)16D
TX UMa L13(14)16D
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Z Vul 10(15)16D
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SW Cyg D08(11)16D
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U Sge 12(18)15L
RW Gem 15(20)16D
RZ Cas 15(18)16D
1993 Sep 2 Thu
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X Tri 10(12)15
Z Dra 11(13)16
RW Tau 14(19)16D
1993 Sep 3 Fri
Z Vul 08(13)16L
X Tri 09(11)14
TX UMa L13(17)16D
1993 Sep 4 Sat
Y Psc D08(06)11
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X Tri 08(11)13
RW Gem L12(17)16D
1993 Sep 5 Sun
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Z Dra D08(06)09
RZ Cas D08(08)10
TW Dra D08(08)13
X Tri D08(10)13
RW Tau L09(13)16D
1993 Sep 6 Mon
X Tri D08(09)12
ST Per 08(12)16D
RZ Cas 10(12)15
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TX UMa 13(18)16D
1993 Sep 7 Tue
Z Per D08(03)08
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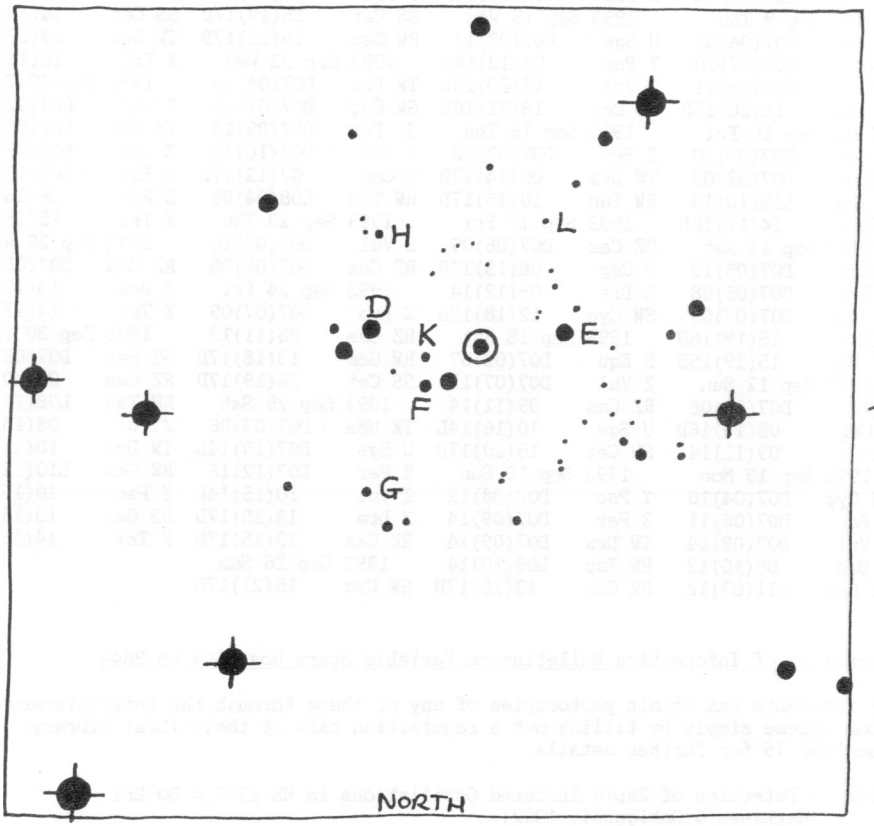
SWCYG



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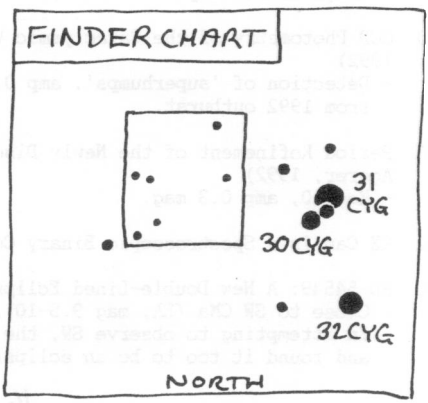

TJB. 1987. JUN. 6

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1993 Sep 9 Thu

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TX UMa	15(20)16D	SS Cet	16(21)16D

1993 Sep 10 Fri

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X Tri	D07(07)09	TW Dra	09(14)17D
RW Gem	L12(10)15	RW Tau	10(15)17D
Z Dra	14(17)16D		

1993 Sep 11 Sat

S Equ	D07(05)10	RZ Cas	D07(06)09
X Tri	D07(06)08	U Cep	08(13)17D
RZ Cas	D07(07)09	Z Dra	09(12)14
Y Psc	15(19)16D	SW Cyg	12(18)17D
ST Per	15(19)16D		

1993 Sep 12 Sun

X Tri	D07(05)08	S Equ	D07(02)07
U Cep	08(13)16D	Z Vul	D07(07)12
RZ Cas	09(12)14	RZ Cas	09(11)14
		U Sge	10(16)14L
		SS Cet	15(20)17D

1993 Sep 13 Mon

SW Cyg	D07(04)10	Y Psc	D07(08)12
Z Per	D07(06)11	Z Per	D07(09)14
Z Vul	D07(09)14	TW Dra	D07(09)14
Z Dra	08(10)12	RW Tau	L09(10)14
RW Gem	L11(07)12	RZ Cas	13(16)17D

1993 Sep 14 Tue

ST Per	D07(11)15	TW Dra	13(18)16D
S Equ	10(15)15L	RZ Cas	14(16)16D
Z Dra	16(18)16D	RW Tau	16(21)16D

1993 Sep 15 Wed

U Sge	D07(07)12	ST Per	14(18)17D
Y Psc	09(13)16D		
Z Vul	14(20)15L		
SS Cet	16(21)16D		

1993 Sep 16 Thu

Z Per	D07(07)12	Z Per	D07(09)14
TW Dra	09(14)17D	U Cep	07(12)17D
RW Tau	10(15)17D	RW Tau	L08(04)09

1993 Sep 17 Fri

RZ Cas	D07(06)09	Z Vul	D07(04)10
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Z Dra	09(12)14		
SW Cyg	12(18)17D		

1993 Sep 18 Sat

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Z Vul	D07(07)12	SS Cet	14(19)17D
RZ Cas	09(11)14		
U Sge	10(16)14L		
SS Cet	15(20)17D		

1993 Sep 19 Sun

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RW Tau	L09(10)14		
RZ Cas	13(16)17D		

1993 Sep 20 Mon

Z Dra	D07(05)07	Z Vul	12(17)14L

1993 Sep 21 Tue

S Equ	D07(12)14L	Z Dra	11(13)16
SS Cet	15(19)17D	RW Gem	16(21)17D

1993 Sep 22 Wed

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U Cep	07(12)17D	RW Tau	L08(04)09

1993 Sep 23 Thu

Z Vul	D07(04)10	RZ Cas	D07(06)08

1993 Sep 24 Fri

Z Dra	D07(07)09	RZ Cas	08(11)13
RW Gem	13(18)17D	SS Cet	14(19)17D

1993 Sep 25 Sat

TX UMa	D07(03)08	U Sge	D07(10)14L
Z Per	D07(12)16	Z Vul	10(15)14L
Z Dra	13(15)17D	RZ Cas	13(15)17D

1993 Sep 26 Sun

SW Cyg	15(21)17D		

1993 Sep 27 Mon

U Cep	07(12)17	RW Gem	L10(15)17D
RW Tau	12(17)17D	ST Per	13(17)17D
SS Cet	14(18)17D	TW Dra	14(19)17D
X Tri	16(18)17D		

1993 Sep 28 Tue

Z Vul	D07(02)08	TX UMa	D07(05)09L
Z Dra	D07(08)11	S Equ	D07(09)14L
Z Per	08(13)17D	X Tri	15(18)17D

1993 Sep 29 Wed

RZ Cas	D07(05)08	Z Dra	14(17)17D
X Tri	14(17)17D		

1993 Sep 30 Thu

ST Per	D07(08)12	RW Tau	L08(11)16
RZ Cas	08(10)12	TW Dra	10(15)17D
Z Vul	08(13)14L	RW Gem	L10(12)17
Y Psc	10(15)16L		
SS Cet	13(18)17D		
X Tri	14(16)17D		

Summaries of Information Bulletins on Variable Stars Nos 3809 to 3844

UK residents can obtain photocopies of any of these through the Inter-Library Loan Scheme simply by filling out a requisition card at their local library. See VSSC 75 for further details.

3809 A Detection of Rapid Infrared Oscillations in HR 1217 = DO Eri (Martinez & Sekiguchi, 1992)
- Microvariability.

3810 CCD Photometry of the Cataclysmic Variable HV Virginis (Ingram & Szkody, 1992)
- Detection of 'superhumps', amp 0.2 mag and period 84 mins, on fade from 1992 outburst.

3811 Period Refinement of the Newly Discovered W UMa System EF Dra (Wunder & Agerer, 1992)
- Mag 10, amp 0.3 mag.

3812 RX Cam is a Spectroscopic Binary Cepheid (Szabados, 1992)

3813 HD 54549: A New Double-Lined Eclipsing Binary (Lui Qingyao et al, 1992)
- Close to SW CMa (EA, mag 9.5-10). AAVSO chart confuses the two. In attempting to observe SW, the authors looked at HD 54549 by mistake and found it too to be an eclipsing binary (amp 0.13V, period 21d).

3814 Twelve New or Undesignated Variables (Kaiser, 1992)
- Mostly red stars brighter than 12 mpg but one EA star (see IBVS 3815).

3815 A Period for the New Eclipsing Binary DHK 29 = BD +33°4070 (Kaiser & Baldwin, 1992)
- At 20h 51m 10s +33° 55.7' (1950), EA, 8.9 - 9.5v, D = 5h, Min = JD 2448909.558 + 1.9021093xE.

3816 Investigation of Four Eruptive Stars on Sonneberg Plates (Wenzel, 1992)
- GRO J0422+32 Per, V360 Her, V2109 Oph and V1274 Sgr.

3817 Renewed Activity on CH Cyg (Panov & Ivanova, 1992)
- UBV photometry in August 1992.

3818 UBV Light Curve of RT And for 1991 (Dapergolas et al, 1992)
- Mag 9 eclipsing binary with variable light-curve due to star spots.

3819 A New Ephemeris for TX Ursae Majoris (Todoran & Roman, 1992)
- Discuss possiblity of apsidal motion in this eclipsing binary. Need PEP of secondary minima in order to clarify this. Current ephemeris: Primary Min = JD 2441766.427 + 3.0632455xE.

3820 Theta^2 Sgr, NOT an Am Star (Hoffleit, 1992)
- See IBVS 3768. Error in the Bright Star Catalogue. Goes on to discuss whether it is Theta^2 or HR 7631 (= NSV 12655) which varies.

3821 A New Primary Minimum of OW Gem (Hanzl et al, 1992)
- CCD and V photometry of this long period eclipsing binary.

3822 New Rapid Photometry of BQ Cnc using CCDs (Vidal et al, 1993)
- Microvariability.

3823 Periodic Light Variations in Ten Weak Emission T Tauri Stars in Taurus-Auriga Complex (Grankin, 1993)
- Mag 9 - 13, amps up to 0.4 mag, periods 1.5 - 6.2d. Due to rotation.

3824 MWC 560: Detection of Periodic Component in the Light Curve (Doroshenko et al, 1993)
- A unique interacting binary. M giant + hot component with disk. Brightened from 14 mpg to 9.5-11B over past 100 years. Shows period of 1930d with amp of about 0.7B.

3825 Photographic Photometry of V350 Cep (Semkov, 1993)
- Faint nebular variable, 14.8 - 16.6V but is mag 21 on Palomar Survey.

3826 Possible Variability of Pleiades Member HII 263 (Prosser & Stauffer, 1993)
- Mag 11.6, amp 0.04V, spec G8.

3827 A New Variable in Perseus (Prosser, 1993)
- Mag 11 eclipsing binary, amp 0.3 mag, period 21.6 hours.

3828 Photographic Observations of a Newly Discovered Intermediate Polar RE 0751+14 and of the Object OI 090.4 (Andronov, 1993)
- 24 plates from 1982-1990 show the cataclysmic binary, RE 0751+14 at 13.65-14.17 mpg (ie: in 'high' state).

3829 On the New Cataclysmic Variable Star in Crater (Wenzel, 1993)
- No, not TT Crt but J 05.23. Was classified as a candidate Seyfert galaxy. Wenzel has found a max of 12.4 mpg in 1953 and suggests it is a dwarf nova with amp of 5.0 mpg.

3830 HD 28665: A Probable Delta Scuti Star (Koen & Roberts, 1993)
- Microvariability.

3831 The Rates of Period Change in BS Aqr and DY Her (Yang Dawei et al, 1993)
- Two large amp Delta Scuti stars, mag 9 and 10 respectively.

3832 HR 8851 = HD 219586 is a Delta Scuti Star (Hao Jinxin & Huang Lin, 1993)
- Microvariability.

3833 The Variability of BD +40°5040 (Williams and Skiff, 1993)
- 9.2 mag comparison star on AAVSO chart for TY And (SRb) found to be SRb star itself (range 10.5 - 11.2 mpg, period 72d, spec M8).

3834 Spectroscopy of the B[e] Star HD 50138 (MWC 158) (Bopp, 1993)

3835 A Photelectric Light Curve of GR Carinae (Woodward & Koch, 1993)
- Eclipsing binary, mag 14, amp 0.7 mag, period 17d, eccentric secondary minimum 0.6 mag deep.

3836 A Flare Event on the A-Type Star BD+47°819 (Wang, 1993)
- Mag 9.25V. 6 exposures on U-band plate show 1.5-mag flare.

3837 A New Bright Eclipsing Variable in Cepheus (Groebel, 1993)
- Alias NSV 13911. Range 7.27-7.58V, period 1.49574d.

3838 UBVR Light Curves of TX Pyxidis (Allen et al, 1993)
- RS CVn type eclipsing binary. Range 7.0-7.5V.

3839 New Probable Eclipsing Binary GSC 1383_600 (Pravec, 1993)
- Rise 11.40-10.83V noticed while observing minor planet!

3840 The 71st Name-List of Variable Stars (Kazarovets et al)
- See article elsewhere in this Circular.

3841 Simultaneous Photometry and Radial Velocities of Delta Scuti (Berdnikov et al, 1993)

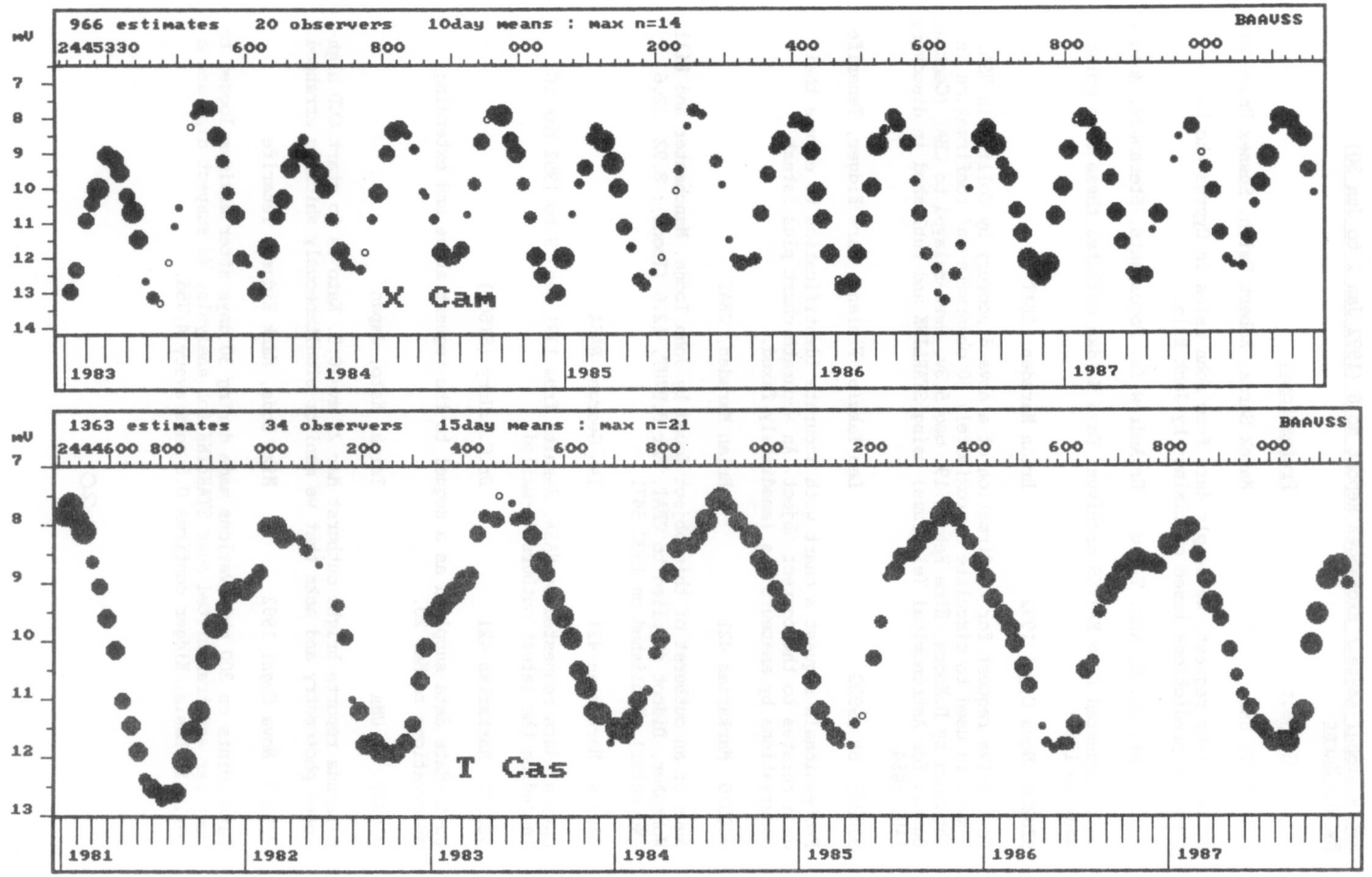
3842 NSV10848: A Problematic Star (Maffei & Tosti, 1993)
- Faint (below 17.4B) infrared variable near M16-M17. Only recorded on two plates in Sep-Oct 1967. May be nova or cataclysmic variable.

3843 A New Variable in Sagittarius (Tosti, 1993)
- Faint infrared variable. Type unknown

3844 Discovery of Rapid Oscillations in the Ap Star HD 42659 (Martinez et al, 1993)
- Microvariability.

Medium-Term Light-Curves for two Mira Stars

Dave McAdam supplied the following two light-curves for X Cam and T Cas which cover a few years during the 1980's. Our records for these stars extend right back to 1930 so the full light-curves should be quite impressive when they are available.


966 estimates 20 observers 10day means : max n=14
BAAVSS
mV
2445330 600 800 000 200 400 600 800 000
7
8
9
10
11
12
13
14
X Cam
1983
1984
1985
1986
1987
1363 estimates 34 observers 15day means : max n=21
BAAVSS
mV
2444600 800 000 200 400 600 800 000 200 400 600 800 000
7
8
9
10
11
12
13
T Cas
1981
1982
1983
1984
1985
1986
1987

Professional-Amateur Exchanges Report No 8 (1992 Jan 1 to Jun 30)
By Guy Hurst

Date	Subject	Professional

920114 TX UMa — Marek Sarna, Robert Smith, Sussex University

Eclipse data request. We supply data from John Isles in Cyprus who has computed predictions based on timings by Jack Ells.

920216 RW, SU, SS Aur, T Tau — Dr.Andrew Yu. Pogosyants, Sternberg, Moscow

Data requested from BAAVSS archives. Dave McAdam collates these some going back to 1929!

920220 Nova Cygni 1992 — Brian Marsden, CBAT

We receive request for confirmation of a nova discovery by Collins in USA. E-mail is used to circulate approximately 50 observers and confirmation is obtained by D.Moore, Eire Feb 20.19, mag 5.3v. News relayed to CBAT (Central Bureau for Astronomical Telegrams) using STARLINK and published in discovery IAUC 5454

920305 SN 1992G — Leo Takalo, Finland Mark Kidger, Tenerife

Professionals request a chart with accurate identification to ensure their data relates to the correct object. An accurate chart plus latest observations by amateurs was immediately faxed.

920310 Markarian 421 — Brian Marsden, CBAT

News of an outburst of this object found by John Toone, Manchester and Bill Worraker, Didcot supplied to CBAT. Mar 8.87UT, 12.6 (Toone); 8.92, 12.6 (Worraker). Published on IAUC 5471

920314 Markarian 421 — Ian George, NASA

Optical data requested by NASA. Results from 1991 Dec 9 to 1992 Mar 10 including the latest outburst e-mailed.

920322 Markarian 421 — Dr.C.M.Urry (STSCI)

Up-to-date data supplied as a sequel to the request above and extending observations to Mar 20.

920322 SW UMa — Taichi Kato, Japan

M.Yamada reports bright outburst Mar 22 mv=10.5. Kato is to start CCD high-speed photometry and asks that we monitor simultaneously which is arranged.

920327 Nova Cygni 1992 — Mike Bode, Mark Kidger, Tenerife

Data points on 300 observations made during 30 days after maximum logged to computer and transmitted over STARLINK for analysis. We suspect dips and a periodic basis. Kidger confirms 0.3 mags every 4.75d.

920330 EY Cygni Brian Marsden, CBAT

P.Schmeer, Germany observes rare outburst on Mar 28.148 at mv=11.0. We obtain confirmation in Norway as follows: 29.02, 11.6 (Midtskogen); 30.05, 11.4 (Granslo). Details relayed to CBAT. Published on IAUC 5484

920330 Nova Cygni 1992 Mike Bode, Lancashire Poly

Preliminary analysis and comments on first 300 data points received.

920408 Novae Bob Williams, CTIO

Future exchanges requested on novae and we relay news of our suspected periodic dips in the Nova Cygni 1992 light curve.

920421 HV Virginis A Gilmore, NZ, B Marsden, CBAT, B Margon, USA

P.Schmeer observes this object to be bright on Apr 20-21. Last seen 1929 Feb 1! We alert professionals who may try photoelectric photometry. 1992 Apr 20.928, 12.0 (Schmeer). A response was received from Gilmore confirming the outburst and Brian Marsden published this on IAUC 5502.

920423 HV Virginis Alan Gilmore, New Zealand

We supply data from a Guide Star download for comparisons in the field and Alan undertakes to obtain V values for us.

920424 DY Persei Andrejs Alksnis, LATVIA

We are requested to monitor this suspected R CrB star. We find it catalogued as class 3 non-stellar in GSC and relay to Alksnis. He suggests this might be connected to a possible shell. We receive a faxed chart and commence regular monitoring.

920424 R CrB Stars Dr.A.F.Pugach, UKRAINE

We approach Pugach at the suggestion of Alksnis as they are observing spectra of R CrB stars and need simultaneous visual monitoring. We make preliminary arrangements.

920424 R Scuti Mervyn Shenton, Keele

Requests for minima predictions and visual observations required as a prelude to three IUE runs by professionals. We commence regular reports.

920424 Nova Cygni 1992 Mark Kidger, Tenerife

Preliminary analysis of light curve based on our data points and those by various professionals received from Mark. He also supplies a spectrum and details of IR photometry.

920426 Nova Cygni 1992 Mark Kidger, Tenerife

We supply data up to date and provisional assessment of maximum magnitude (4.42 on JD 674.5). t2=22d, t3=46d. I ask for assistance in calculating distance for a lecture at a BAA meeting later in the week which was duly supplied.

920429 R Scuti Mervyn Shenton, Keele

1991 light curve supplied. Request continued coverage. Period believed to be 140d.

920504 HV Virginis Dr.T.Richards, La Trobe University, Australia

Computerised chart and sequence sent to us. Regular exchange of charts and sequences set up as a result.

920507 Nova Cygni 1992 Dr.Mark Kidger, Tenerife

Up to date VJHK photoeletric photometry supplied to us as feedback to our visual data reports.

920506 Markarian 421 Dr.Tosti, Perugia,Italy

Visual data on the recent outburst supplied to Tosti Responds inviting regular future exchanges.

920506 Markarian 421 Leo Takalo, Finland

Visual data on the recent outburst supplied to Takalo. Responds suggesting future collaboration on QSO/BL Lac objects

920506 PG 0943 +521 Taichi Kato, Japan

Requests confirmation of identification. Photograph obtained by Martin Mobberley which clarifies the position.

920505 Nova Cygni 1992 Taichi Kato, Japan

Photoelectric sequence supplied to us by Kato.

920505 Nova Sgr 1992 Taichi Kato, Japan

Photoelectric sequence supplied to us by Kato.

920510 TAV0451+69 TASV1924+57 Dr.Samus, Sternberg. Moscow

Photometry by Bohme confirms variability of these two stars originally found by Mike Collins. Details sent to Samus for possible GCVS entry.

920510 R Sct Mervyn Shenton, Keele

Extensive observations by our Norwegian group and supplied by B.Granslo sent to Shenton.

920513 TAV 0033+59 Don Pollacco, St.Andrews

Complete set of data on this recently discovered star (found by Mike Collins) requested and supplied. Planned 'Observatory' paper. File transmitted contained 113 data points.

920513 Nova Cygni 1992 Hilmar Duerbeck, Germany

All data points sent to this 'nova specialist' to see if our interpretation of the periodic dips is correct. Responds immediately agreeing our analysis and sugegsting data in V1668 Cygni (N Cyg 1978) might show similar properties.

920514 HV Virginis Taichi Kato, Japan

Supplies extensive data from Japanese group to help extend our light curve analysis.

920518 Light Curves of Novae Hilmar Duerbeck, Germany

Extensive guidance notes supplied by e-mail on Nova Cygni 1992 and on various nova light curves published in C.Payne-Gaposchkin's book. Again suggests we look for similarities in V1668 Cygni data but BAAVSS are unable to find their data for this nova. We supply data file on 602 estimates to date.

920522 SW UMa Taichi Kato, Japan

In response to our earlier exchanges, Kato supplies a copy of a paper submitted to Publ. Astron.Soc. of Japan

920524 Nova Cygni 1992 Brian Marsden, CBAT

Full report of our analysis, showing periodic dips published in IAUC 5526.

920526 Markarian 421 Mark Kidger, Tenerife, Leo Takalo, Finland, Gino Tosti, Perugia

Two data files created. 302 estimates JD 2444706 - 2447000, 562 estimates JD 2447000 - to date. Transmitted via STARLINK.

920528 Nova Cygni 1992 Bob Williams, CTIO

Analysis and IAUC notes sent for comment. Response received that no obvious explanation for a period of 4d but that we should continue monitoring and keep him informed.

920528 Nova Cygni 1992 Mike Bode, Lancashire Poly

Astrometric position requested by Mike and supplied from measurements by Denis Buczynski, Conder Brow. He responds that this agrees well with another result from the Carlsberg Group.

920529 V1668 Cygni Peter Hingley, RAS, Mark Kidger, Tenerife

In the absence of BAA data on this nova, proposed for analysis as possibly similar to Nova Cyg 1992, I visited RAS and obtained published data which was relayed to Kidger for further analysis.

920601 Markarian 421 Leo Takalo, Finland

Following recent exchanges, full details of the observatory near Turku and its instrumentation supplied to us.

920608 Nova Cygni 1992 Phil Pavelin, Jodrell Bank

Photograph requested and supplied to Pavelin in connection with his work on MERLIN observations and his thesis.

920609 AH Herculis Janet Drew, Oxford

We alert Janet Drew to an exceptionally long standstill of this variable (Apr 15-June 8, mag 12.5).

920609 VW Cephei Chris Lloyd, RAL

Results by Roger Pickard and John Watson showing a major period change submitted and published on IBVS 3704

920616 R Scuti Mervyn Shenton, Keele

Data on R Scuti supplied by P.Schmeer, Germany relayed.

920616 Be stars Paul Roche, Southampton

PEP observations of X Per, HD 245770, HD 34921 and Gamma Cas obtained by Roger Pickard submitted to Paul Roche.

920628 V Coronae Austrinae R McNaught, Australia, D Pollacco, St Andrews

Fade of this R CrB variable detected by P.Williams, NSW and relayed to us by R.McNaught submitted to Don Pollacco.

920628 RS Ophuichi Phil Charles, La Palma, Nye Evans, Keele

Data on a very bright phase in this variable (1992 June 21, 10.6) submitted in view of earlier exchanges. Our detection was by Savvas Koushiappas of Nicosia, Cyprus.

920630 Nova Outbursts Nye Evans, Keele

Thanks for alert on RS Oph on which he is trying to obtain UKIRT and IUE time. He also requests we alert him to outbursts of new novae brighter than mag 9.

Mitteilungen ueber Veraenderliche Sterne (MVS)

The latest issue of MVS, the publication of the Sonneberg Observatory contains several items that might interest VSS observers.

R Luthard (MVS 12, 122-134, 1992) presents UBV photometry of five symbiotic variables covering the years 1982-91. AG Dra was for most of this time at about 9.7V but there was a major outburst to 9.0 in 1980 and two lesser ones to 9.3 and 9.5 in 1983. The range in B-band was about 1.5 mags and in the U, about 3.0 mags. When not in outburst, AG Dra shows small variations with an amplitude of about 0.1 mag and a period of 300-370 days. AX Per showed a large outburst in 1987-88 which took it from 11.5V to 9.2. BF Cyg showed semiregular variations with a period of 757 days superimposed on a general increase in mean brightness and amplitude. The total recorded range was 9.72-12.35V. Neither CI Cyg nor UV Aur showed any outbursts in the interval in question. CI Cyg showed semiregular variations with a range 10.63-11.35V and period 855 days, UV Aur with a range of 8.69-10.65V and period 396 days. The amplitude of CI Cyg becomes larger as you go towards the ultraviolet while that of UV Aur decreases and is practically zero in the U-band.

In the same issue, D Boehme uses photovisual plates taken at Sonneberg to study two of Mike Collins' red variables. TASV 1924+57 (named EQ Dra in the latest Name-List of Variable Stars) is shown to be an SRb star with a range of 10.3-11.6pv and a period of 380 days and TAV 2251+61, an SRb or SRc star with a range of 8.8-11.5pv and a period of 570 days (MVS 12, 135-138, 1992).

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Binocular Variable Star Charts: Vol 1

Almost out of print (if not already so). Order from Storm Dunlop.

United Kingdom:	£1-25
Overseas:	£1-50

Eclipsing Binary Programme Handbook: 1988

Although the predictions are out of date, this provides a good introduction to the work of the Eclipsing Binary Program and the list of elements for around 400 stars is still useful. Order from Tristram Brelstaff.

United Kingdom:	£1-25
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VARIABLE STAR SECTION
CIRCULAR 76

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