

British Astronomical Association



VARIABLE STAR SECTION CIRCULAR

No 117, September 2003

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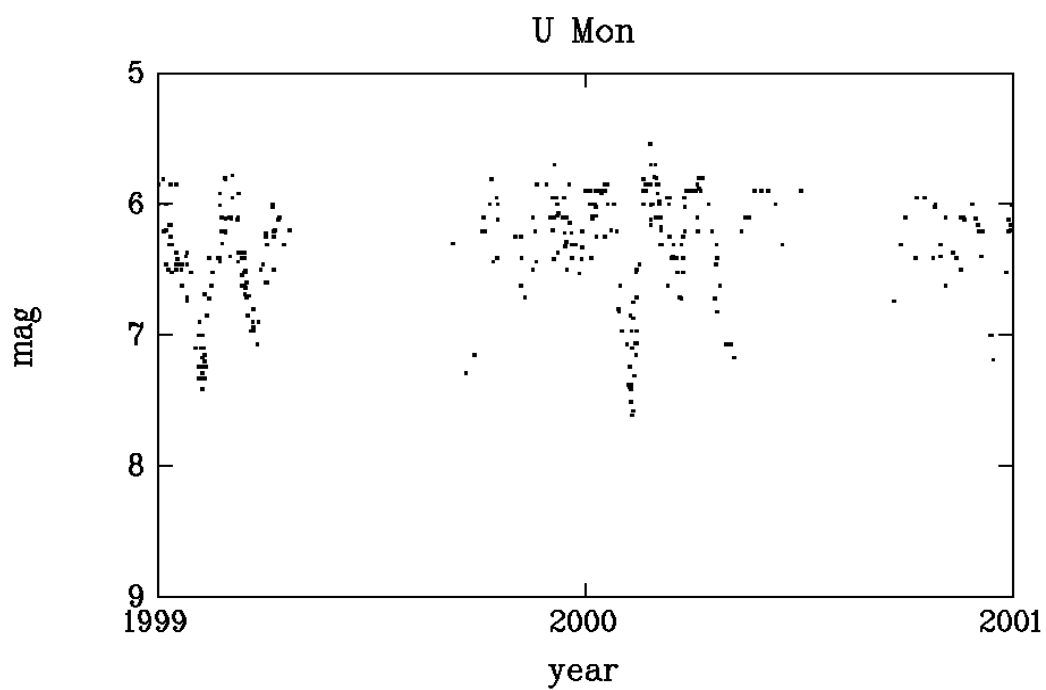
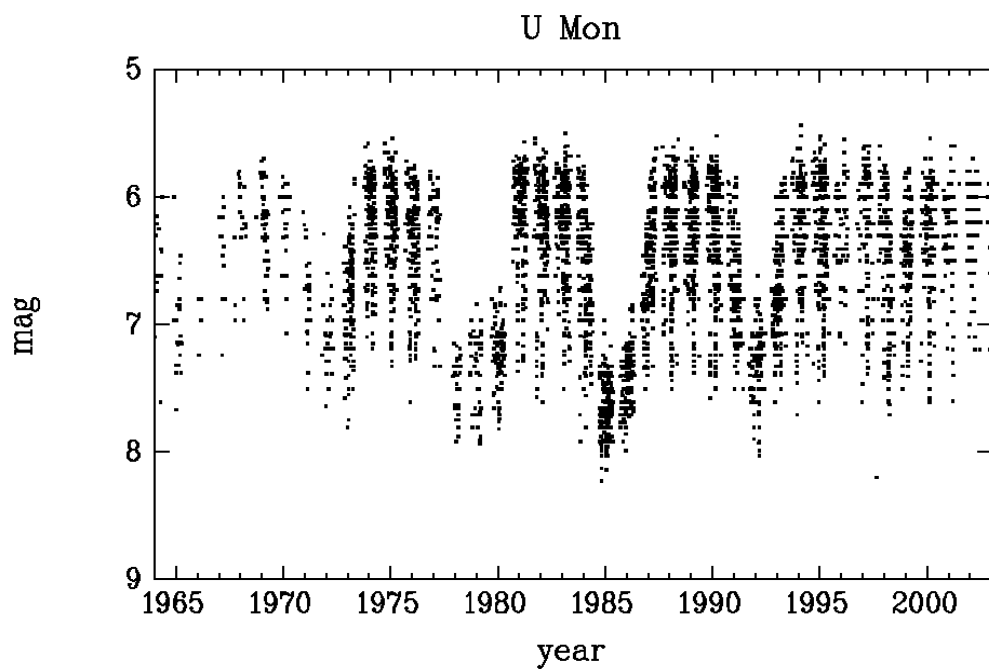
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LIGHT CURVES

JOHN SAXTON



FROM THE DIRECTOR

ROGER PICKARD

Members E-addresses

Following my request in the last Circular for members e-addresses, I was surprised to receive just one, and that was only an update of an old address! I'm sure there must be members out there who can be contacted via email when necessary, and who have not yet supplied me with their e-addresses. So, don't be shy, please let me know if you are now on email.

BAA Exhibition Meeting

I'm pleased to advise that the Section had a prominent profile at the Exhibition Meeting at the end of June, and I'm particularly indebted to those members who either brought along, or otherwise supplied displays. Courtesy of the BAA, we now have two large collapsible display boards and we managed to fill them both easily. However, one point was highlighted. It now seems that the Director lives in a part of the world that is not blessed with a first class postal service, and some display material didn't arrive on time. Could I ask therefore, that if you do have material you are posting to me to meet a specific deadline, that you post it with at least two days to spare.

AAVSO Award for Gary Poyner

I'm sure you'll all join me in congratulating Gary for another award he has received from the AAVSO. This latest one is the Director's Award, given by Janet Mattei, and I quote from the citation:-

"The AAVSO Director's Award for 2003 is presented to Gary Poyner for his meticulous observing of variable stars and his contribution of timely and often critical observations during special observing runs with ground-based and satellite instruments, making immediate observations at the request of Headquarters to confirm potential discoveries, and, as (a past) Director of the Variable Star Section of the British Astronomical Association, mentoring observers, fostering productive collaborations and amity among variable star observing associations worldwide, and working to maintain and improve the level of variable star observing worldwide."

Section Meeting

See page 2 for details of this meeting to be held in Northampton on November 8th. However, please note that with two display boards of our own, you can, and indeed are urged, to submit a poster paper whether you are intending to attend or not.

New Chart Catalogue

Please note that a new Chart Catalogue is now available on the Web Site. I'm hopeful that all new and revised charts will also be available on the Web by the time you read this. However, if you do not have Internet access then please send a large sae to the Director who will post a copy of the Catalogue to you. Charts for Telescopic and Binocular Programme stars can also be obtained from John Toone, and those on the Eclipsing Binary Programme from Tony Markham, in this way. Please check your collection of charts to see which ones need revising.

It would be appreciated if observers started to use the new charts straight away. Some far southern stars have now been dropped from the Section's programme as it was felt that they were better observed by observers in the southern hemisphere. However, there have also been one or two additions, as noted in past Circulars.

Circulars Now Available in Electronic Format

I am pleased to advise that the Variable Star Circulars are now available in electronic format as a PDF document. Subscriptions to the circulars in electronic format will be at the same basic price (3.00 pounds for BAA members, 5.00 pounds for non BAA-members), but this price will apply regardless of the address of the recipient. If you would like to receive a PDF document in future then please inform the Circulars Editor, Karen Holland, letting her know if you no longer require the circular as a hard copy. The Circulars will also be made available in PDF form on the Variable Star Section Web Page, approximately six months after they have been released to subscribers.

.....and finally, congratulations are due to Chris Jones who was due to be married to the lovely Sue on September 19th.

SECTION MEETING

The next Section Meeting will be held on Saturday, 8th November 2003, at the Humfrey Rooms, Castilian Terrace, Northampton. A provisional programme is given below. A light ploughmans lunch will be available in the rooms at a nominal cost, to maximize the opportunity for discussion during the day.

Programme (order subject to change)

<i>Doors open and coffee</i>		10.30
Welcome and Introduction,	Roger Pickard	11.00
Poster Papers, various		11.15
Dwarf novae: X-rays mark the spot	Dr Darren Baskill Leicester University	11.30
<i>Lunch</i>		12.15
Officers' Reports:		
Eclipsing Binaries	Tony Markham	14.00
The Recurrent Object Programme	Gary Poyner	14.15
The Circulars and Mentoring programme	Karen Holland	14.30
The Novae/Supernovae Programme	Guy Hurst	14.45
Chart News	John Toone	15.00
The Section's Database	John Saxton	15.15
The CCD programme	Richard Miles	15.30
<i>Tea</i>		15.45
Accretion in Cataclysmic Variables,	Mr Owen Matthews Leicester University	16.30
R Corona Borealis Stars	Gary Poyner	17.15
<i>Finish</i>		17.30

RECURRENT OBJECTS PROGRAMME NEWS

GARY POYNER

Changes to the programme.

Several changes have recently been made to the Recurrent Objects Programme - the first since June 2001. Nine stars have been dropped and ten added. Those objects which are no longer on the programme should still be regularly monitored for outbursts or unusual behaviour, but should not be considered as *alert* stars.

The following stars have been dropped:

- HP And** A recent IBVS by D. Nogami et al suggests that **HP And** is not a variable star.
See IBVS 5416
- HT Cas** Seven outbursts detected and monitored since 1994, with good eclipse coverage, both visual and CCD, and photometry.
- BC UMa** Seven outbursts detected since 1992, with photometric photometry revealing its UGSU status.
- V660 Her** Seven outbursts since 1999
- AQ CMi** Five outbursts since 1996, and confirmed to be a type UGSU
- V493 Lyr** Eight outbursts since 1993, type UGSS
- EY Cyg** Only three outbursts since 1992, but it has been established that EY Cyg is a long period UGSS star.
- EF Peg** Seven outbursts detected since 1994. The UGSU type has been established, with both the superhump and orbital periods established. EF Peg has an orbital period very close to the period gap (around 2hrs), and an unusually long supercycle. Photometry during any future outbursts would still be welcomed.
- QY Per** Four outbursts have been detected since 1994, with a well established superhump period determined. As with EF Peg, future outbursts should still be closely monitored - both visually and photometrically with CCD's.

The following stars have been added

Star	RA & Dec (2000.0)	Type	Range
SDSSpJ015543.40+002807.2 ¹	01h 55m 43s.40 +00 28 07.2	AM?	? ?
SDSSpJ072910.68+365838.3	07h 29m 10s.68 +36 58 38.3	NL	? ?
SDSSpJ074716.81+424849.0	07h 47m 16s.81 +42 48 49.0	NL	? ?
1502+09	15h 04m 41s.8 +08 47 54	UG:	? - 15.5V
FSVJ1722+2723	17h 22m 43s.96 +27 23 55.7	UGWZ:	? - 21.0V
FBS1735+825	17h 29m 34s +82 26.8	UG:	14.0 - <20.0B
FBS1719+834	17h 13m 13s +83 19 09	UG:	14.0 - <20.0B
KX Aql:	19h 33m 53s.7 +14 17 46	UGSU:	12.5p - 18.4V
SDSSpJ230351.64+010651.0	23h 03m 51s.64 +01 06 51.0	UG:	? ?
EI Psc ²	23h 29m 54s +06 28 2	UGSU	? ?

Notes

1: SDSSp J015543 see IBVS 5389

2: EI Psc = 1RXSJ232953.9+062814 see IBVS 5233

SDSSp = Sloan Digital Sky Survey (p = preliminary astrometry). See <http://www.sdss.org/>

FBS = First Biurakan Survey

FSV = Faint Sky Variability Survey

Charts for these new ROP stars are available, or will be available from the chart secretary.

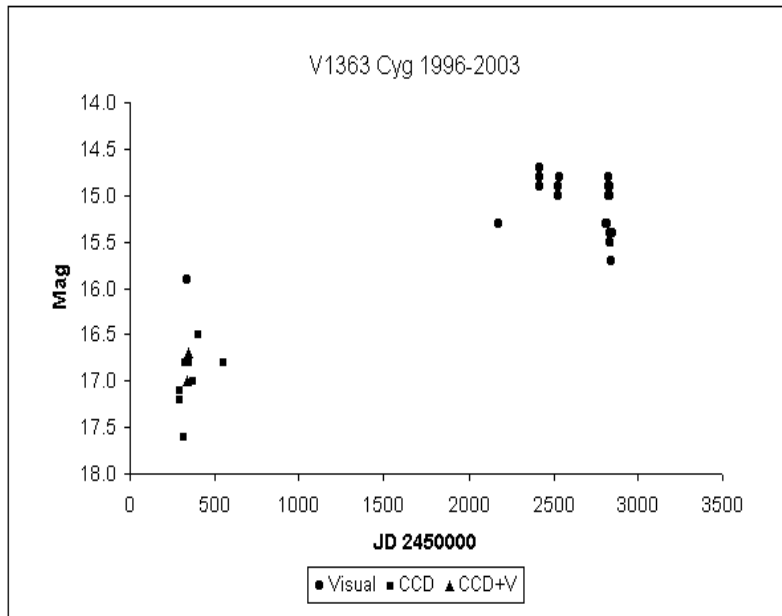
The inclusion of these new stars into the programme offers an ideal opportunity for observers equipped with CCDs to make a genuine contribution to our understanding of these objects in quiescence, as well as to undertake photometric surveys during any outburst or bright states. Nightly visual monitoring is of course just as important.

V1363 CYG - A CCD TARGET LIST PROJECT

GARY POYNER

V1363 Cyg was discovered in 1971 by Miller¹ who classified it as a Dwarf Nova. An independent discovery was made in 1972 by Pinto and Romano², whose classification of it as an irregular type variable was based on the star's photometric behaviour. The long term light curve displayed by Miller in 1971 partly explains this confusion in classification. Photometrically the light variations are very *un-dwarf nova-like*, with long periods spent in quiescence (17-18th magnitude); periods of intense variability in excess of 100 days; and an outburst feature which displays standstill-type characteristics which last around 200 days, followed by a very slow decline lasting a further 200 days. This remains the only detailed photometric study of the star. In addition to this, Bruch et al³ observed the field photographically for eleven nights in 1987, and found the star to be in a high state on one single occasion. Spectroscopically however V1363 Cyg reveals itself to be a CV. Bruch and Schimpke⁴ report strong Balmer emission lines seen in the continuum, along with HeI, FeII, CaII and possibly HeII. It is also suggested by these authors that V1363 Cyg is a VY Scl type CV. However unlike classical VY stars that spend much of their time in a bright active state interrupted by fades to minimum light, the opposite is the case for V1363 Cyg.

Past amateur detections of V1363 Cyg in a bright state are rare. Since 1993, there have been just six very brief periods when a bright state has been reached. In 1993, Tonny Vanmunster made a single observation on July 17th at magnitude 15.0. On September 12th 1996, Poyner observed the star visually at 15.9, which was confirmed by Vanmunster with an unfiltered CCD several hours later, by which time the magnitude had decreased to 16.5. On 18th October 2001, Chris Jones reported a single positive observation at visual magnitude 15.3. Following observations were negative. On May 21st 2002, Mike Simonsen reported seeing V1363 Cyg at visual magnitude 14.8, which was confirmed by M. Reszelski thirteen hours later at 14.7. Nick James made an unfiltered CCD run during this bright state on May 22nd, which yielded a periodic variation of more than 0.2 magnitude with a period about 0.06 days. Finally P. Dubovsky reported a positive observation on September 11th 2002 of 15.0 which was confirmed by Chris Jones at magnitude 14.9 on September 12th 2002. The star was still *bright* at 14.8 on September 13th, following which all observations were negative (Fig. 1).



Contributing observers were L. Jensen (CCD), T. Kato (CCD), Ouda Station (CCD+V), P. Dubovsky, C Gualdoni, C. Jones, G. Poyner, M. Reszelski, M. Simonsen, T. Vanmunster (CCD)

Fig. 1. A rather un-inspiring light curve of available positive observations for V1363 Cyg for the period 1996-2003 showing five 'bright states', along with CCD & CCD+V band observations at minimum.

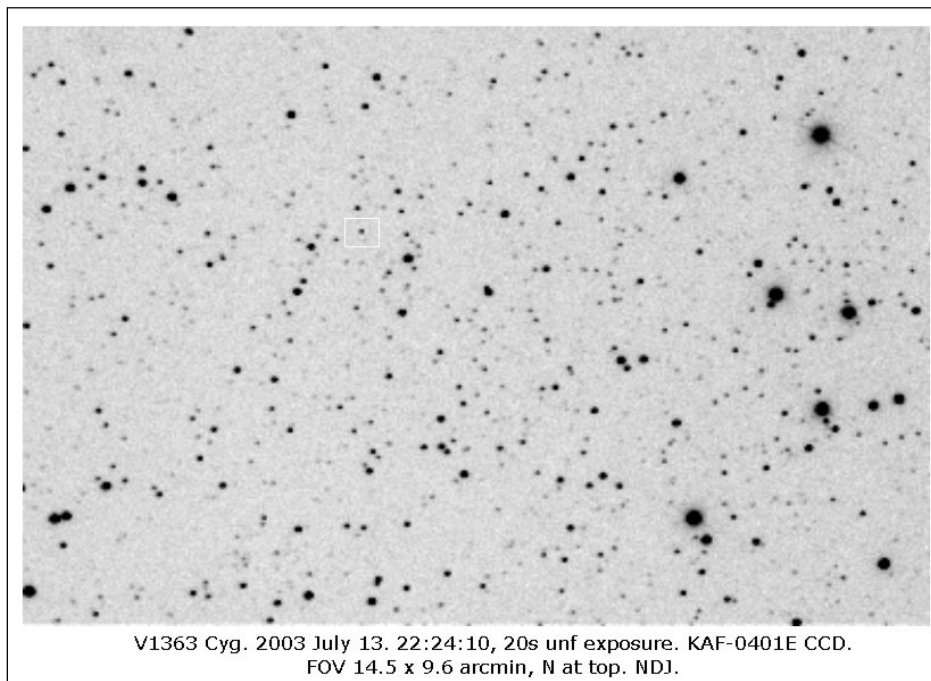


Fig.2 CCD Image taken by Nick James on July 13th.

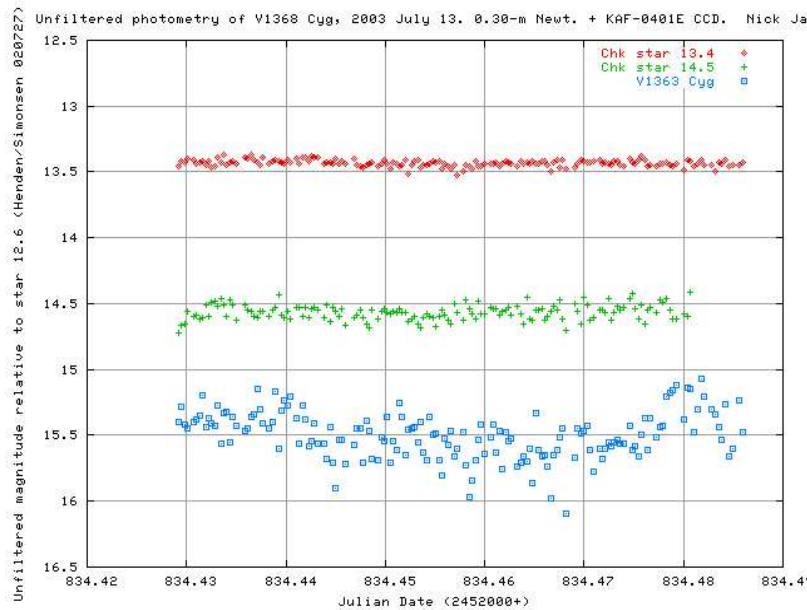


Fig.3. Eighty three minutes of unfiltered photometry, July 13th. Nick James

V1363 Cyg has been active again, and for a longer period than previous occasions, during June and July 2003, reaching a *maximum* brightness of 14.8 on July 7th, and slowly fading to 15.5 by July 15th. Following a series of negative observations (<15.7 being the faintest), V1363 Cyg was again observed on July 25th at 15.4. Taking advantage of this *rare* opportunity to study V1363 Cyg, I circulated an e-mail message to observers who had expressed an interest in the ROP. Nick James responded with an image of V1363 Cyg in its bright state (Fig.2) and 83 minutes of unfiltered CCD photometry (Fig.3) on July 13th. Unfortunately the photometry didn't reveal too much information, although this isn't too surprising considering the majority of orbital periods in VY stars range between 3 and 4 hours (with the possible exceptions of **V751 Cyg** (6h?) and **V794 Aql** (5.5h?). The plot does clearly show a decline and rise at the start and end of the run however. Nick has promised a longer CCD run during the star's next venture into a bright state.

The possibilities of obtaining a 3 to 4 hour photometric CCD run on V1363 Cyg during its next bright state are high, giving the excellent standard of work of CCD observers these days (James, Buczynski & Boyd in the UK and Vanmunster in Belgium to name just a few). However detailed observations at quiescence are surely the key to unlocking the classification of this star. Do amateurs have the resources to undertake photometric studies of 17th magnitude stars? Visual observers can also play a vital role in monitoring V1363 Cygni for rises to 15th magnitude or brighter - easily achievable these days. A long term visual study, coupled with CCD photometry should help reveal the unusual and most interesting nature of this star.

References

- 1: Miller W.J 1971 Spec. Vat. Ric. Astron 8, 167
- 2: Pinto G. & Ronamo G, 1972 Padova Publ. 162
- 3: Bruch A, Fischer F J & Wilmensen U, A&AS 70,481
- 4: Bruch A & Schimpke T, 1992 A&AS 93, 419-439

The online services of VSNET was used in the compiling of this article.

A VARIABLE STAR OBSERVING HISTORY - AN OBSERVER PROFILE

TONY MARKHAM

Accounts of how I first got started in astronomy have appeared in Popular Astronomy and in The Astronomer. This account highlights key events which have influenced the development of my variable star observing.

RY Dra 1977

My first variable star observation was made on January 11, 1977, having read in a book that RY Dra was an interesting star to observe. Using 10 x 50 binoculars, I estimated it at magnitude 6.65. Five nights later it still seemed to be at the same brightness, so I concluded that variable stars weren't that interesting!

R UMa 1977

My log book shows no more variable star observations until September 17, 1977. At the time I was using some variable star charts that were included in an astronomy book to test how faint I could see using my 10 x 50 binoculars. Among the charts used was one for **Chi Cyg** and, as an aside, I noted that Chi Cyg was at magnitude 6.1. During some more tests on October 31, I noted that **R CrB** was below magnitude 7.2. However, the most significant observation was made on November 6, when R UMa was seen at magnitude 8.6, having been invisible on several previous checks. Over the next few months I observed it on a regular basis, producing a light curve that I was quite pleased with, although I later saw a light curve published which suggested that it had actually peaked 2 to 3 weeks later than in my light curve.

W Cyg and R Lyr 1978

Having produced a light curve for R UMa, I was hopeful of producing similar light curves for these two variables. However, although the **W Cyg** light curve did show it slowly brightening over the next few months, the 131 day period was not immediately obvious and the brightness range was much less than the listed 5.0-7.6. The R Lyr light curve was rather disappointing. My expectation of Mira-type reliability was thus shown to have been unrealistic.

R Tri 1978

Although various other variables (**CH Cyg**, **R CrB**, **TX Dra**, **Y CVn**, etc) were observed in the early part of 1978, my log book shows a drift towards observing Mira-type variables, as these seemed to be more interesting. I had no set of predictions to work from, so I had to discover maxima by trial and error. A particularly good set of observations was obtained for **R Tri**, seeing it rise from magnitude 8.9 in early March, to a bright peak in late March, before losing it in the evening twilight of mid April.

TA 1979

In Oct 1978 I arrived at Edinburgh University and joined the University Astronomical Society

(EUAS). This introduced some competition from meteor observing and Jupiter observing, and my variable star observations became less frequent, although my log book shows numbers picking up again from April 1979 onwards. One thing that I did notice, was how my estimates of some variables showed *jumps* of several tenths of a magnitude when I moved from the term-time, sodium-lit skies, to the dark skies of East Yorkshire during vacations. Membership of EUAS introduced me to *The Astronomer* magazine, and following correspondence with Melvyn Taylor, who was then the TA variable star editor, I started reporting my observations from the summer of 1979 onwards.

BAA 1980

My access to variable star charts was initially restricted to those that had been published in books and magazines. My prime reason for joining the BAA VSS was actually to gain access to more charts!

Nova Vul 1984 No 1 and CH Cyg

After being quite active in 1980-81, my variable star observing dropped off in the last year of my degree, and when I started work. I became unemployed in the summer of 1984, and the resurgence of my variable star observing was boosted by the timely appearance and persistence of the above nova (which remained visible in binoculars for several months) and by that summer's dramatic fade of CH Cyg.

Nova And 1986

I moved to Oxfordshire in 1985 and my variable star observing continued at a productive rate. I observed this nova several times during late 1986. My last estimates were just glimpsing it at magnitude 9.3 on January 4 and 5, 1987. Rather embarrassingly, when I received TA, I read that it had faded dramatically from magnitude 9.9 on January 4 to magnitude 11.0 on January 5. Thus I had fooled myself into thinking that I had seen it.

Hillside Drive 1990

In December 1987, I moved to Bath and my variable star observing again dropped off due to the lack of a good observing site. I moved to Leek in late 1989, but my observing didn't really pick up again until the following summer when I bought a house on the western edge of Leek. Some observing was possible from my back garden, and from several sites within reasonable walking distance. Consequently my observing picked up again.

Nova Cyg 1992

This nova appeared in February 1992, and I observed it on several occasions. Guy Hurst was surprised by magnitude estimates that I phoned in to TA as they were nearly a magnitude fainter than those of most other observers, although I was seeing it fade at the same rate as other observers. This was a dramatic illustration of how one observer can see a star systematically brighter or fainter than other observers. Although off-putting at the time, fortunately I didn't let it put me off observing, and experience over the years has shown that there are a number of stars (e.g. **W CMa**, **rho Cas**, **P Cyg**, **AT Dra**, **TX Psc**) that I routinely see significantly fainter than do other observers.

JAS VSS (later SPA VSS) 1992

I took over from John Isles as JAS VSS Director in the summer of 1992, and held this post until summer 2000. One of the most interesting parts of the job was seeing other observers' reports, and the way in which different observers see the same basic variations in stars, whilst seeing the star as systematically brighter or fainter than other observers, and how, by allowing for these differences, a scatter diagram can be turned into a nice smooth light curve. It was also interesting to see how even the most experienced observers do sometimes make mistakes (such as reporting Beta Lyrae at maximum when everyone else is seeing it near mid eclipse).

11 x 80 Binoculars 1992

I had always been frustrated by my inability to see various binocular variables on moonlit nights. Buying a pair of 11 x 80 binoculars allowed me to follow them throughout the month, and my 10 x 50 binoculars were progressively retired. Interestingly I didn't go on to observe lots of new fainter variables, I merely used them to extend my ability to follow the stars that I was already observing.

PCs and the Internet 1996

Despite working with computers since the mid 1980s, I didn't buy my first home PC until early 1996. Nowadays, it is routine to rapidly receive news of activity via e-mail, whereas, in 1984, a paper circular reporting the discovery of **Nova Vul 1984** No 2 took a week to reach me due to Christmas postal delays. Correspondence with observers elsewhere in the world is also much quicker and cheaper via e-mail than it used to be on paper.

BAA VSS Eclipsing Binary Director 1999

I had observed various eclipsing binaries such as **RZ Cas** and **U Cep** over the years and added these two to the SPA VSS programme during my period as Director, in order to include some binocular variables. Indeed, during the 1990s the SPA VSS became one of the main contributors of Eclipsing Binary observations to the BAA VSS, and this was presumably a factor in me being offered the post of Eclipsing Binary Director in 1999.

Astronomy Now 2002

I took over the writing of the Variable Star Scene column from June 2002. The column is written two months in advance of publication, and so it is necessary to think ahead to how favourably placed variables will be at that time. This has its risks: in late January 2003, I wrote the column for the April issue to feature R CrB, but in mid-February it faded dramatically dropping below the limit of the accompanying finder chart. Fortunately it brightened again in late March.

In summary, it can be seen that the development of my variable star observing has depended on various chance events, ranging from contact with individuals, to events in the night sky. The reliability of Mira-type variables was key to driving my initial enthusiasm, whereas unrealistic expectations of semi-regular variables made them unrewarding for a newcomer. Access to a good observing site is critical. Had my career caused me to live in the centre of a large city, my variable star observing might well have come to an end. There have been various setbacks which could easily have diverted me away from VS observing, but fortunately they did not. Who knows what the future years will bring !

007-04

20' FIELD INVERTED

AB DRACONIS 19h 49m 06.6s +77° 44' 23" (2000)

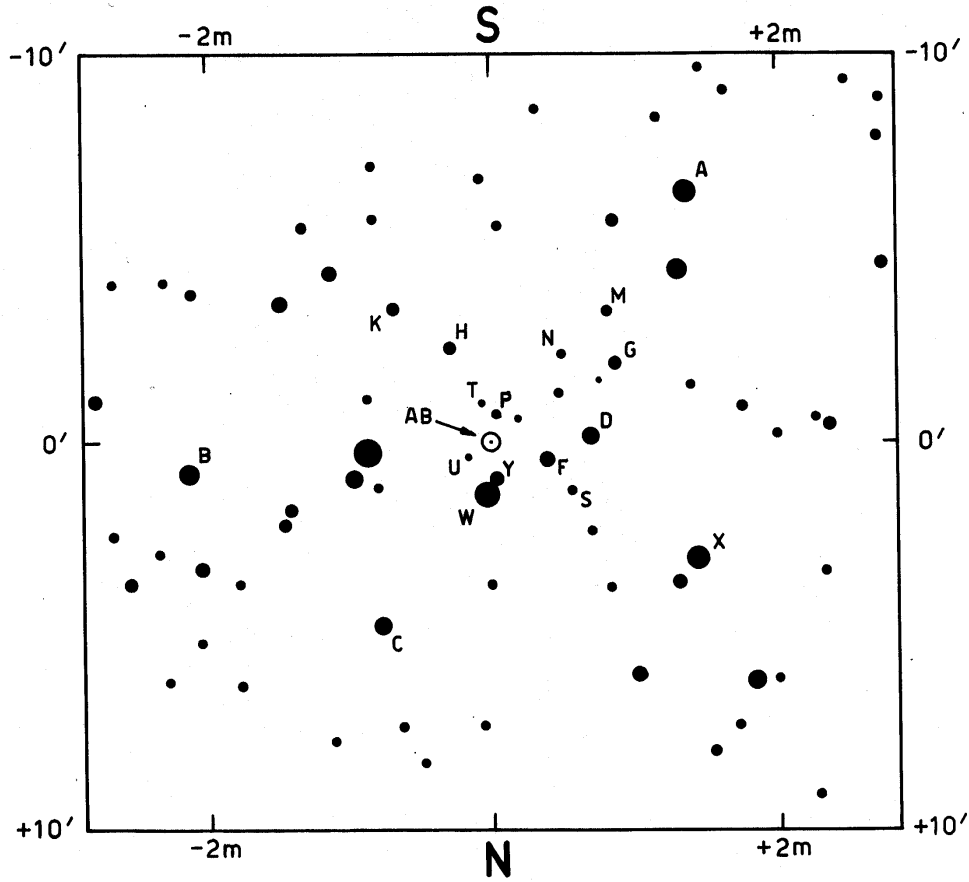


CHART:
 STELLARUM
 SEQUENCE:
 B & C BAILEY
 P, S & T MISSELT
 OTHERS ZISSELL

W 11.1	K 14.1
X 11.7	Y 14.2
A 12.0	M 14.4
B 12.5	N 14.6
C 12.7	P 15.0
D 12.9	S 15.3
F 13.1	T 16.0
G 13.6	U 16.7
H 13.9	

BAA VSS
 EPOCH: 2000
 DRAWN: JT 10-02-03
 APPROVED: RDP

005-03

1° FIELD INVERTED

SS CYGNI 21h 42m 42.8s +43° 35' 10" (2000)

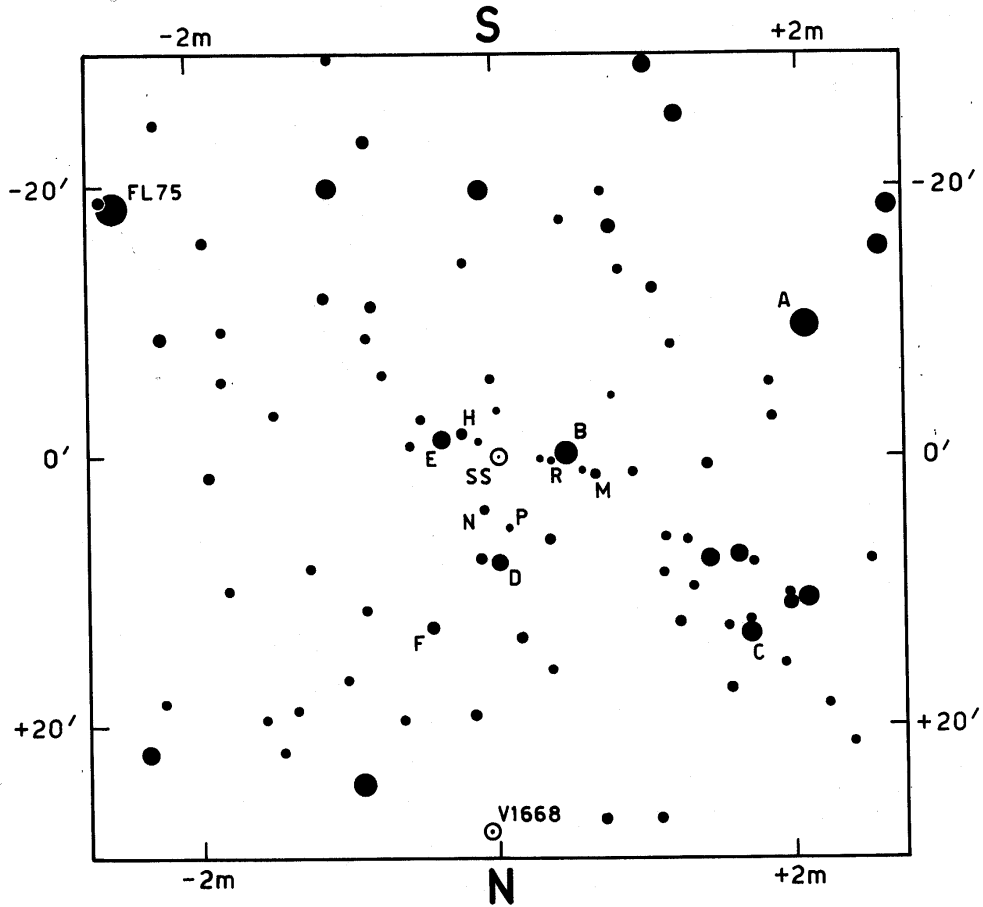


CHART:	A 7.6	H 10.9	BAA VSS
STELLARUM	B 8.5	M 11.4	EPOCH: 2000
SEQUENCE:	C 9.1	N 11.9	DRAWN: JT 16-02-03
A&C TYCHO 2 WJ.	D 9.6	P 12.3	APPROVED: RDP
R HENDEN.	E 9.9	R 12.8	
OTHERS LENOUEVEL & DAGUILLON	F 10.3		

BOOK REVIEW

Observing Variable Stars by Gerry A. Good

Springer-Verlag, 2003. ISBN 1-85233-498-3. 274 Pages, 24.50 paperback

I enjoyed this book, in spite of the odd howler! The main thing for me was the author's obvious enthusiasm for his subject, which counts for a lot. In addition, near the end of the book, it was confirmed for me that he and I are on the same wavelength, because he quoted one of my favourite sayings from no less than Albert Einstein : "You should make things as simple as possible, but not simpler"!

Following a competent introductory two chapters, the author explains most types of variable by using the GCVS as a guideline, although most usefully, he adds several of the more recently recognised types of variable, which are not yet in the GCVS. This is one of the strong points of the book although a little repetitive in places. The author also gives a guide as to whether a particular type of variable is best observed by eye or CCD (or PEP), which is a little subjective, and with which I did not always agree. But that is of small consequence.

The book closes with over 100 pages of how to go about observing variable stars and covers just about all you could want to know. Again, some of this is a little repetitive, although I have heard that spaced repetition is good for you! The emphasis is very much on preparation and planning and knowing what you want to observe. Very sound advice. There are many useful Internet addresses in the latter part of the book and although I didn't check them all out, most I knew already to be an excellent resource. I also rather liked the occasional short bibliographical notes such as that on Perkinje. The graphs are generally OK, but some of the artwork leaves a little to be desired.

Generally, I felt the description of CCDs and photometry programmes was not really necessary in a book of this type, but they are not long and can easily be skipped if they do not hold your interest.

OK, some of those howlers:

Apparently, I am the "President" of the BAA VSS (in the acknowledgements); on p197, The Astronomer and (BAA VSS) maintains a recurrent object program consisting of variable stars that have been well! (my exclamation) observed; and on p254, Observations (to the BAA VSS) are reported through The Astronomer!

Nonetheless, I felt this was a very useful book, particularly for the beginner (although the cover states it is intended for amateurs of all levels). I would certainly have appreciated having it around when I first started variable star observing.

Roger Pickard

BINOCULAR PRIORITY LIST

MELVYN TAYLOR

Variable	Range	Type	Period	Chart	Variable	Range	Type	Period	Chart
<i>AQ And</i>	8.0-8.9	SRC	346d	82/08/16	<i>AH Dra</i>	7.1-7.9	SRB	158d?	106.01
<i>EG And</i>	7.1-7.8	ZA		072.01	<i>NQ Gem</i>	7.4-8.0	SR+ZA	70d?	077.01
<i>V Aql</i>	6.6-8.4	SRB	353d	026.03	<i>X Her</i>	6.3-7.4	SRB	95d?	223.01
<i>UU Aur</i>	5.1-6.8	SRB	234d	230.01	<i>SX Her</i>	8.0-9.2	SRD	103d	113.01
<i>AB Aur</i>	7.2-8.4	INA		83/10/01	<i>UW Her</i>	7.8-8.7	SRB	104d	107.01
<i>V Boo</i>	7-12	SRA	258d	037.01	<i>AC Her</i>	6.8-9.0	RVA	75d	048.03
<i>RW Boo</i>	6.4-7.9	SRB	209d	104.01	<i>IQ Her</i>	7.0-7.5	SRB	75d	048.03
<i>RX Boo</i>	6.9-9.1	SRB	160d	219.01	<i>OP Her</i>	5.9-6.7	SRB	120d	84/04/12
<i>ST Cam</i>	6.0-8.0	SRB	300d?	111.01	<i>R Hya</i>	3.5-10.9	M	389d	049.01
<i>XX Cam</i>	7.3-9.7?	RCB?		068.01	<i>RX Lep</i>	5.0-7.4	SRB	60d?	110.01
<i>X Cnc</i>	5.6-7.5	SRB	195d	231.01	<i>SS Lep</i>	4.8-5.1	ZA		075.01
<i>RS Cnc</i>	5.1-7.0	SRC	120d?	84/04/12	<i>Y Lyn</i>	6.9-8.0	SRC	110d	229.01
<i>V CVn</i>	6.5-8.6	SRA	192d	214.01	<i>SV Lyn</i>	6.6-7.5	SRB	70d?	108.01
<i>WZ Cas</i>	6.9-8.5	SRB	186d	82/08/16	<i>U Mon</i>	5.9-7.8	RVB	91d	029.03
<i>V465 Cas</i>	6.2-7.2	SRB	60d	233.01	<i>X Oph</i>	5.9-9.2	M	328d	099.01
<i>γ Cas</i>	1.6-3.0	GC		064.01	<i>BQ Ori</i>	6.9-8.9	SR	110d	84/04/12
<i>rho Cas</i>	4.1-6.2	SRD	320d	064.01	<i>AG Peg</i>	6.0-9.4	NC		094.01
<i>W Cep</i>	7.0-9.2	SRC		83/10/01	<i>X Per</i>	6.0-7.0	GC+XP		84/04/08
<i>AR Cep</i>	7.0-7.9	SRB		85/05/06	<i>R Sct</i>	4.2-8.6	RVA	146d	026.03
<i>μ Cep</i>	3.4-5.1	SRC	730d	112.01	<i>Y Tau</i>	6.5-9.2	SRB	242d	84/04/12
<i>O Cet</i>	2.0-10.1	M	332d	039.02	<i>W Tri</i>	7.5-8.8	SRC	108d	114.01
<i>R CrB</i>	5.7-14.8	RCB		041.02	<i>Z UMa</i>	6.2-9.4	SRB	196d	217.01
<i>W Cyg</i>	5.0-7.6	SRB	131d	062.1	<i>ST UMa</i>	6.0-7.6	SRB	110d?	102.01
<i>AF Cyg</i>	6.4-8.4	SRB	92d	232.01	<i>VY UMa</i>	5.9-7.0	LB		226.01
<i>CH Cyg</i>	5.6-10.0	ZA+SR		089.02	<i>VUMi</i>	7.2-9.1	SRB	72d	101.01
<i>U Del</i>	5.6-7.5	SRB	110d?	228.01	<i>SS Vir</i>	6.9-9.6	SRA	364d	097.01
<i>EU Del</i>	5.8-6.9	SRB	60d?	228.01	<i>SW Vir</i>	6.4-7.9	SRB	150d?	098.01
<i>TX Dra</i>	6.8-8.3	SRB	78d?	106.01					

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GARY POYNER

- 5347 Photometry of **OW Gem** (Kaiser et al, 2002)
- 5348 **HD 67852**: A new delta Scuti variable (Henry, 2002)
- 5349 Times of light maxima of some RRab stars (Szeidl & Pocs, 2002)
- 5350 New elements for **V651 Her** and **V1058 Oph** (Haussler et al, 2002)
- 5351 **FR Cnc = BD +16.1753** A young active main sequence star (Pandey et al, 2002)
- 5352 **Delta Scorpii**: Visual photometric variability in 2000-2002. (Gandet et al, 2002)
- 5353 New elements for the Eclipsing Binary **GO Vul** (Wolf & Sarounova, 2002)
- 5354 The absolute magnitude (Mv) of type AB RR Lyrae stars (Kinman, 2002)
- 5355 New Stromgren photometry of **AI Draconis**: No pulsations detected (Kiss, 2002)
- 5356 A new variable faint carbon star in the M92 field (Meusinger, 2002)
- 5357 Times of minima of eclipsing binaries. (Lacy, 2002)
- 5358 Detection of short period oscillation in **V592 Cas** (Kato & Starkey, 2002)
- 5359 **SV Cam**: Light curve parameters and spot activity between February 2000 and Apr 2001 (Frigo et al, 2002)
- 5360 New times of minima of eclipsing binary systems (Yakut et al, 2003)
- 5361 Photoelectric minimum times of some eclipsing binary stars (Ak et al, 2003)
- 5362 A new variable star in the vicinity of **YY Her** (Pejcha et al, 2003)
- 5363 New elements for 5 RR Lyrae stars (Haussler & Berthold, 2003)
- 5364 The first eclipsing binary observations at the Ulupinar Astrophysics Observatory (Demircan et al, 2003)
- 5365 On the variability of the dwarf nova **EM Cygni** (Spogli et al, 2003)
- 5366 Three new W UMa binaries: **GSC 0766-1248 (Brh V40)**, **GSC 0471-2133 (Brh V60)** and **GSC 0763-0572 (Brh V103)**. Lloyd et al 2003)
- 5367 **LX Cygni**: A Mira variable with a drastic period increase (Templeton et al, 2003)
- 5368 Identification of **V379 Pegasi** (Henden et al, 2003)
- 5369 Elements for 5 RR Lyr stars in Ophiuchus (Haussler & Krol, 2003)
- 5370 **GSC 02757-00769** A new EW binary system (Maciejewski et al, 2003)
- 5371 CCD minima for selected eclipsing binaries in 2002 (Nelson, 2003)
- 5372 New times of minima of eclipsing binary systems (Hegedus et al, 2003)
- 5373 A long term photometric study of the PMS star **V391 Cep** (Semkov, 2003)
- 5374 Long term behaviour of Ha emission in **BU Tau** (Pollmann, 2003)
- 5375 Spectroscopic binaries in the open cluster Trumpler 16 revisited (Luna et al, 2003)
- 5376 **IW And** is a Z Cam dwarf nova (Kato et al, 2003)
- 5377 The period of **V2109 Cyg** revisited (Gomez-Forrellad, 2003)
- 5378 Times of minima for neglected eclipsing binaries in 2002 (Dvorak, 2003)
- 5379 First BVR photometry of **TV Ursa Minoris** (Degirmenci et al, 2003)
- 5380 CCD times of minima of some eclipsing binaries in 2002 (Karska & Maciejewski, 2003)
- 5381 **GSC 4288-186**: A new eccentric binary (Bakis et al, 2003)
- 5382 A new possible long period in the optical variability of **T Tauri** (Ismailov & Samus, 2003)
- 5383 A revised period for **AY Aur**. (Price et al, 2003)
- 5384 Discovery of another Mira variable in the field of **V4641 Sgr** (Orosz et al, 2003)
- 5385 Elements for 6 RR Lyr stars (Haussler et al, 2003)
- 5386 First BVR photometry of **V821 Cassiopeiae** (Degirmenci et al, 2003)
- 5387 Photometric observations of VW LMi and the new binary system **V345 Gem**.

- (Gomez-Forrellad et al, 2003)
- 5388** The 2002 outburst of the intermediate polar **GK Per** (Simon, 2003)
- 5389** The light curve of the new cataclysmic variable **SDSS J015543.40+002807.2** (Dubkova et al, 2003)
- 5390** New photoelectric photometry of the young star **LO Pegasi** (Dal & Tas, 2003)
- 5391** **V781 Tau**: Improved evidence for an orbital period change (Donato et al, 2003)
- 5392** UBV photometry of the Be star **Gamma Cas** (1983-87)
- 5393** The minima of the eclipsing binary system **Y Cyg** (Mossakovskaya, 2003)
- 5394** Database on binaries among galactic classical Cepheids (Szabados, 2003)
- 5395** Elements for 6 RR Lyr stars (Haussler et al, 2003)
- 5396** **EK And** is not a semi-regular variable (Yoshida et al, 2003)
- 5397** A new bright helium variable B star: **HR 2949** (Rivinius et al, 2003)
- 5398** **VV Cep** outside eclipse (Pollmann, 2003)
- 5399** New times of minima of eclipsing binary systems (Bakis et al, 2003)
- 5400** Spectroscopic and photometric solution of the binary system **BD+14.5016** (Maciejewski et al, 2003)
- 5401** New and suspected Mira variables on Stardial images (Wils, 2003)
- 5402** Discovery of the bright eclipsing binary in the Pleiades cluster (Torres, 2003)
- 5403** CCD light curves of ROTSE1 variables, XVIII: **GSC 3022:996 CVn**, **GSC 2534:216 CVn**, **GSC 2536:122 CVn**, **GSC 2548:936 CVn** and **VV CVn**. (Blattler & Diethelm, 2003)
- 5404** The first precision CCD observations of the neglected dwarf contact binary **V524 Monocerotis** (Samec & Loflin, 2003)
- 5405** CCD observations of the short period near contact system: **UY Muscae** (McKenzie et al 2003)
- 5406** Three new PMS variables in the vicinity of **NGC 7129** (Semkov, 2003)
- 5407** Photoelectric minima of some eclipsing binary stars (Tanriverdi et al, 2003)
- 5408** Observations of **HD 279684** (Robb et al, 2003)
- 5409** **NSV 16**, the enigmatic variable in Cassiopeia (Sorokin et al, 2003)
- 5410** Accurate astrometric position for **M31-RV** (Munari et al, 2003)
- 5411** Five new W UMa variables (Bernasconi & Behrend, 2003)
- 5412** The start of the 2003 eclipse of **EE Cephei** (Mikoiajewski et al, 2003)
- 5413** **V1154 Tau**: A new eclipsing star within a triple system (Dallaporta et al, 2003)
- 5414** **HH UMa** is a contact binary (Pribulla et al, 2003)
- 5415** **GRB030329**: Multicolour light curve and ionospheric detection (Price et al, 2003)
- 5416** On the nature of the suspected dwarf nova **HP Andromedae** (Nogami et al, 2003)
- 5417** New R CrB type star **HadV98** (Kato & Katsumi, 2003)
- 5418** 2001 and 2003 photometry of **WY Cancri** (Heckert, 2003)
- 5419** BVRI photometry of dwarf novae (Spogli et al, 2003)

The Information Bulletin on Variable Stars (IBVS) can be accessed through the WWW in HTML format at the following URL.... <http://www.konkoly.hu/IBVS/IBVS.html>

AN UPDATE OF THE ACTIVITIES OF THE VSS CCD PHOTOMETRY WORKING GROUP

RICHARD MILES

During the course of the year, the Working Group, comprising Karen Holland, Andy Wilson, David Boyd, Richard Miles, Roger Pickard and Peter Moreton (initially), has been looking at ways in which observers can extract useful and accurate photometry from CCD imaging, with or without filters.

Although commercial software allows users to integrate the intensity signal within stellar images yielding a total count or number of ADUs (Analogue Digital Unit, equal to one digital number), converting these raw measurements into a meaningful magnitude is by no means straightforward. Indeed, we have been looking at writing additional software to serve as an aid in the reduction procedure and to produce summarised results in a standard report format suitable for the Section database.

Our initial approach has been to develop an Excel workbook comprising various individual spreadsheets supported by Visual Basic macros, which can be used as part of the data reduction pipeline. The initial step in this pipeline involves processing of the raw images. Commercial software, such as AIP4WIN, is entirely adequate for this step, which usually requires a dark/bias frame subtraction, followed if necessary by flat-fielding. The brightness within each required stellar image is then integrated using a photometric aperture, or occasionally by modelling of the point spread function, to give a total ADU count for each star.

The next step in the pipeline will be to import block data from the AIP4WIN output, or similar, into the spreadsheet, which then provides the photometric reduction. Currently, depending on the type of observing project, the data can be reduced in one of four modes, i.e.

- (a) Differential photometry in the instrumental magnitude system.
- (b) As in (a) but with corrections applied for differences in airmass of the variable, comparison and check stars.
- (c) Differential photometry according to the standard Johnson V magnitude system relative to comparison and check stars in the same CCD frame.
- (d) An alternative to as in (c) but using an independent 'reference star' imaged in a separate CCD frame to tie the measurements to the standard V magnitude system.

Pairs of 'red-blue' stars will be included in the spreadsheet, imaging of which permits calibration of the relative response of the CCD (the so-called 'transformation coefficient'), as well as determining the degree of attenuation of light by the atmosphere (the so-called 'atmospheric extinction coefficient') on the night of the observing run.

As part of the data reduction, estimates will also be automatically generated of the errors associated with each magnitude result, taking into account the various contributory factors involved.

Finally, a report file containing the summarised results of the observing run is also generated in a format suitable for submission to the Section.

Although this activity is now well underway, we are particularly interested to receive feedback from Section members. As a CCD user interested in photometry, what are your needs? What facilities do you think we should build into the data reduction software to make your life easier? All feedback and comments will be much appreciated.

Naturally, the concept of providing free software of this sort for use by Section members is a worthy one but we do recognise that some tuition in its use may be welcomed. To this end, we plan to launch the VSS Photometry Spreadsheet at a BAA Observing Workshop in the very near future. Watch this space!

Richard Miles

ECLIPSING BINARY PREDICTIONS

TONY MARKHAM

The following predictions, based on the latest Krakow elements, 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. The times are hours UT, with a value greater than 24 indicating a time after midnight. D indicates that the eclipse starts/ends in daylight, L indicates low altitude at the start/end of the visibility and << indicates that mid-eclipse occurred on an earlier date.

Thus, for example, on Oct 1, Y Psc D18(23)27 indicates that an eclipse of Y Psc starts in daylight, but can be observed between approx 18h UT (19h BST) on Oct 1st and 03h UT on Oct 2nd, with mid eclipse occurring at approx 23h UT on Oct 1st. Please contact the Eclipsing Binary secretary if you require any further explanation of the format.

The variables covered by these predictions are :

TV Cas	7.2-8.2V	S Equ	8.0-10.08V	U Sge	6.45-9.28V
U Cep	6.75-9.24V	delta Lib	4.9-5.9V	RW Tau	7.98-11.59V
SS Cet	9.4-13.0v	V640 Ori	11.2-13.5V	HU Tau	5.92-6.70V
SW Cyg	9.24-11.83V	Z Per	9.7-12.4p	X Tri	8.88-11.27V
Z Dra	10.8-14.1p	ST Per	9.52-11.40V	TX UMa	7.06-8.80V
TW Dra	8.0-10.5v	Y Psc	9.44-12.23V	Z Vul	7.25-8.90V

Note that predictions for **RZ Cas**, **Beta Per** and **Lambda Tau** can be found in the BAA Handbook.

2003 Oct 1 Wed
X Tri 01(04)05D
TX UMa 02(06)05D
V640 Ori 03(06)05D
U Sge D18(18)24
Y Psc D18(23)27
Z Vul 19(24)26L
2003 Oct 2 Thu
X Tri 00(03)05D
Z Per 02(06)05D
S Equ D18(22)25L
X Tri 24(26)29
2003 Oct 3 Fri
V640 Ori 03(06)05D
U Cep 04(09)05D
ST Per D18(15)20
TW Dra D18(15)20
Z Dra D18(18)20
SW Cyg D18(19)25
RW Tau L20(17)22
SS Cet 23(27)29D
X Tri 23(25)28
2003 Oct 4 Sat
TX UMa 03(08)05D
TV Cas 04(08)05D
U Sge 21(27)25L
X Tri 22(25)27
2003 Oct 5 Sun
Z Dra 00(03)05D
Z Per 03(08)05D
V640 Ori 04(07)05D
Y Psc D18(17)22
U Cep D18(21)26
X Tri 22(24)27
TV Cas 23(27)29D
2003 Oct 6 Mon
ST Per 03(07)05D
Z Vul D18(22)25L
X Tri 21(23)26
SS Cet 22(27)29D
2003 Oct 7 Tue
V640 Ori 04(07)05D
TX UMa 05(09)05D
Z Dra D18(20)22
TV Cas 19(23)27
X Tri 20(23)25
2003 Oct 8 Wed
SW Cyg 03(09)05D
U Cep 04(09)05D
Z Per 04(09)05D
ST Per 18(23)27
X Tri 20(22)25
2003 Oct 9 Thu
TW Dra 01(06)05D
RW Tau 01(06)05D
Z Dra 02(04)05D
TV Cas D18(18)23
S Equ D18(19)24
X Tri 19(21)24
SS Cet 21(26)29D
2003 Oct 10 Fri
U Cep D18(21)25
X Tri 18(21)23
2003 Oct 11 Sat
Z Vul D18(20)25
X Tri D18(20)22
U Sge D18(21)24L
Z Dra 19(22)24
RW Tau 20(25)29D
HU Tau L20(19)22
TW Dra 20(26)29D
2003 Oct 12 Sun
X Tri D18(19)22
SW Cyg D18(22)28
SS Cet 21(25)29D
2003 Oct 13 Mon
S Equ 00(06)01L
Y Psc 02(06)04L
U Cep 04(08)05D
Z Dra 04(06)05D
X Tri D18(19)21
HU Tau L20(20)24
2003 Oct 14 Tue
ST Per 02(06)05D
X Tri D18(18)20
TW Dra D18(21)26
RW Tau L19(19)24
2003 Oct 15 Wed
TV Cas 01(05)05D
X Tri D18(17)20
U Cep D18(20)25
SS Cet 20(25)29D
HU Tau L20(21)25
Z Dra 21(23)26
2003 Oct 16 Thu
TX UMa D18(14)19
S Equ D18(16)21
X Tri D18(17)19
Z Vul D18(18)23
ST Per D18(21)25
Y Psc 20(25)27L
TV Cas 20(24)29
2003 Oct 17 Fri
TW Dra D18(16)21
HU Tau L20(23)26
2003 Oct 18 Sat
U Cep 03(08)05D
U Sge D18(16)21
Z Dra D18(16)19
TV Cas D18(20)24
SS Cet L20(24)29
Z Vul 23(28)25L
2003 Oct 19 Sun
TX UMa D18(15)19L
HU Tau 20(24)28
S Equ 21(26)24L
Z Dra 23(25)27
2003 Oct 20 Mon
RW Tau 03(08)05D
TV Cas D18(15)20
Y Psc D18(19)23
U Cep D18(20)25
2003 Oct 21 Tue
Z Vul D18(15)21
U Sge 19(25)24L
SS Cet L20(23)28
SW Cyg 20(26)29L
HU Tau 21(25)29
2003 Oct 22 Wed
ST Per 00(04)05D
TX UMa D18(17)19L
Z Dra D18(18)21
RW Tau 22(26)29D
2003 Oct 23 Thu
TW Dra 02(07)05D
U Cep 03(08)05D
Z Per D18(16)21
Z Vul 21(26)24L
HU Tau 23(27)30D
2003 Oct 24 Fri
Z Dra 00(03)05
TV Cas 02(06)06D
ST Per D18(20)24
SS Cet L19(23)27
2003 Oct 25 Sat
TX UMa D18(18)19L
U Cep D18(20)24
RW Tau L18(21)26
TW Dra 21(26)30D
TX UMa L22(18)23
TV Cas 22(26)30D
2003 Oct 26 Sun
HU Tau 00(04)06D
SW Cyg D18(16)22
Z Per D18(17)22
Z Dra D18(20)22
S Equ 18(23)24L
2003 Oct 27 Mon
TV Cas D18(21)26
SS Cet L19(22)27
2003 Oct 28 Tue
HU Tau 01(05)06D
Z Dra 02(05)06D
U Cep 03(07)06D
U Sge D18(19)23L
TX UMa D18(20)19L
TW Dra D18(22)27
RW Tau L18(15)20
Z Vul 19(24)24L
TX UMa L21(20)25
2003 Oct 29 Wed
X Tri 05(08)06D
TV Cas D17(17)21
Z Per D17(18)23
ST Per 23(27)30D
2003 Oct 30 Thu
HU Tau 03(07)06D
X Tri 05(07)06D
U Cep D17(19)24
SS Cet L19(22)26
Z Dra 19(22)24
SW Cyg 23(29)28L
2003 Oct 31 Fri
X Tri 04(06)06D
RW Tau 05(10)06D
TW Dra D17(17)22
TX UMa D17(21)19L
TX UMa L21(21)26
Y Psc 22(26)26L
U Sge 22(28)23L
2003 Nov 1 Sat
X Tri 03(06)06D
Z Dra 04(06)06D
HU Tau 04(08)06D
ST Per D17(19)23
Z Per D17(20)25
2003 Nov 2 Sun
U Cep 02(07)06D
X Tri 02(05)06D
TV Cas 04(08)06D
S Equ D17(20)23L
Z Vul D17(22)24L

SS Cet L19(21)26 X Tri 20(23)25 U Sge 20(26)22L ST Per D17(15)19
 RW Tau 23(28)30D **2003 Nov 11 Tue** **2003 Nov 18 Tue** Z Dra D17(17)19
2003 Nov 3 Mon TV Cas 05(09)06D SW Cyg D17(12)19 TV Cas 17(21)26
 X Tri 02(04)06D TW Dra 17(23)28 TV Cas D17(15)20 TW Dra 18(23)28
 Z Dra 21(23)26 SS Cet L18(19)24 X Tri D17(17)20 HU Tau 20(24)28
 TX UMa L21(23)28 HU Tau L18(15)19 Z Dra 19(22)24 **2003 Nov 26 Wed**
 TV Cas 23(27)30D X Tri 20(22)25 **2003 Nov 19 Wed** Z Per 02(07)06D
2003 Nov 4 Tue **2003 Nov 12 Wed** TX UMa 02(07)06D S Equ D17(22)22L
 X Tri 01(04)06D Z Dra 00(03)05 X Tri D17(17)19 SS Cet L17(16)21
 U Sge D17(13)19 U Cep 02(06)06D U Cep D17(18)23 V640 Ori L21(19)22
 U Cep D17(19)24 ST Per 05(09)06D RW Tau D17(19)24 Z Dra 23(25)28
 SW Cyg D17(19)25 Z Vul D17(18)23 Y Psc 17(22)25L **2003 Nov 27 Thu**
 Y Psc D17(20)25 X Tri 19(21)24 HU Tau L18(20)24 U Cep 01(05)06D
 Z Per D17(21)26 S Equ 22(28)23L S Equ 19(25)22L SW Cyg D17(16)22
2003 Nov 5 Wed TX UMa 23(28)30D Z Vul 21(26)23L TV Cas D17(17)21
 X Tri 00(03)05 **2003 Nov 13 Thu** Z Per 23(28)30D RW Tau 22(26)30D
 RW Tau 18(23)27 TV Cas 01(05)06D **2003 Nov 20 Thu** HU Tau 22(26)29
 SS Cet L19(20)25 SW Cyg D17(23)28L ST Per 03(08)06D **2003 Nov 28 Fri**
 TV Cas 19(23)27 HU Tau L18(16)20 TW Dra 04(09)06D ST Per 02(06)06D
 X Tri 24(26)29 X Tri 18(21)23 Z Dra 04(06)06D TW Dra D17(19)24
2003 Nov 6 Thu Z Per 20(25)30 X Tri D17(16)18 V640 Ori L21(20)23
 TW Dra 03(08)06D **2003 Nov 14 Fri** SS Cet L18(17)22 **2003 Nov 29 Sat**
 Z Dra D17(17)19 RW Tau 01(06)06D **2003 Nov 21 Fri** Z Per 03(08)06D
 TX UMa L21(25)29 U Sge D17(17)22L X Tri D17(15)18 U Cep D17(17)22
 ST Per 22(26)30 TW Dra D17(18)23 HU Tau L18(22)25 Z Dra D17(18)21
 X Tri 23(26)28 U Cep D17(18)23 **2003 Nov 22 Sat** Z Vul D17(22)22L
2003 Nov 7 Fri X Tri 18(20)23 U Cep 01(06)06D SS Cet L17(15)20
 U Cep 02(07)06D Z Dra 18(20)22 TV Cas 02(06)06D HU Tau 23(27)31D
 TV Cas D17(18)23 SS Cet L18(18)23 TX UMa 03(08)06D **2003 Nov 30 Sun**
 Z Vul D17(20)23L ST Per 20(24)28 Z Vul D17(13)19 RW Tau D17(21)25
 U Sge D17(22)23L TV Cas 20(24)29 RW Tau D17(13)18 ST Per 18(22)26
 Z Per 18(23)27 **2003 Nov 15 Sat** X Tri D17(15)17 V640 Ori L21(20)23
 X Tri 22(25)27 X Tri D17(19)22 ST Per 19(23)27 **2003 Dec 1 Mon**
 Z Dra 23(25)28 HU Tau L18(17)21 SW Cyg 20(26)27L Z Dra 01(03)05
2003 Nov 8 Sat Y Psc 23(28)25L Z Dra 21(23)26 TV Cas 04(08)07D
 Y Psc D17(15)19 **2003 Nov 16 Sun** TW Dra 23(28)30D TW Dra D17(14)19
 RW Tau L17(17)22 TX UMa 00(05)06D **2003 Nov 23 Sun** U Sge D17(14)20
 SS Cet L18(20)24 Z Dra 02(05)06D Z Per 00(05)06D SW Cyg 24(30)26L
 X Tri 22(24)27 S Equ D17(14)20 SW Cyg L05(02)06D **2003 Dec 2 Tue**
 TW Dra 22(27)30D X Tri D17(19)21 Y Psc D17(16)21 U Cep 00(05)07D
2003 Nov 9 Sun TV Cas D17(20)24 SS Cet L17(17)21 HU Tau 00(04)07L
 SW Cyg 03(09)04L RW Tau 20(24)29 HU Tau 19(23)27 SW Cyg L04(06)07D
 TV Cas D17(14)18 Z Per 22(27)30D TV Cas 22(26)30 Z Per 05(09)07D
 S Equ D17(17)23 **2003 Nov 17 Mon** **2003 Nov 24 Mon** SS Cet L17(15)19
 ST Per D17(17)21 U Cep 01(06)06D Z Dra 06(08)06D V640 Ori L21(21)24
 U Cep D17(19)23 TW Dra D17(13)18 U Cep D17(18)22 TV Cas 23(27)31D
 X Tri 21(23)26 Z Vul D17(15)21 U Sge D17(20)22L **2003 Dec 3 Wed**
 TX UMa 21(26)30D ST Per D17(16)20 Z Vul 19(24)22L RW Tau D17(15)20
2003 Nov 10 Mon X Tri D17(18)21 **2003 Nov 25 Tue** S Equ D17(19)21L
 Z Dra D17(18)21 SS Cet L18(18)22 RW Tau 03(08)06D Z Dra 18(20)23
 Z Per 19(24)29 HU Tau L18(19)23 TX UMa 05(10)06D **2003 Dec 4 Thu**

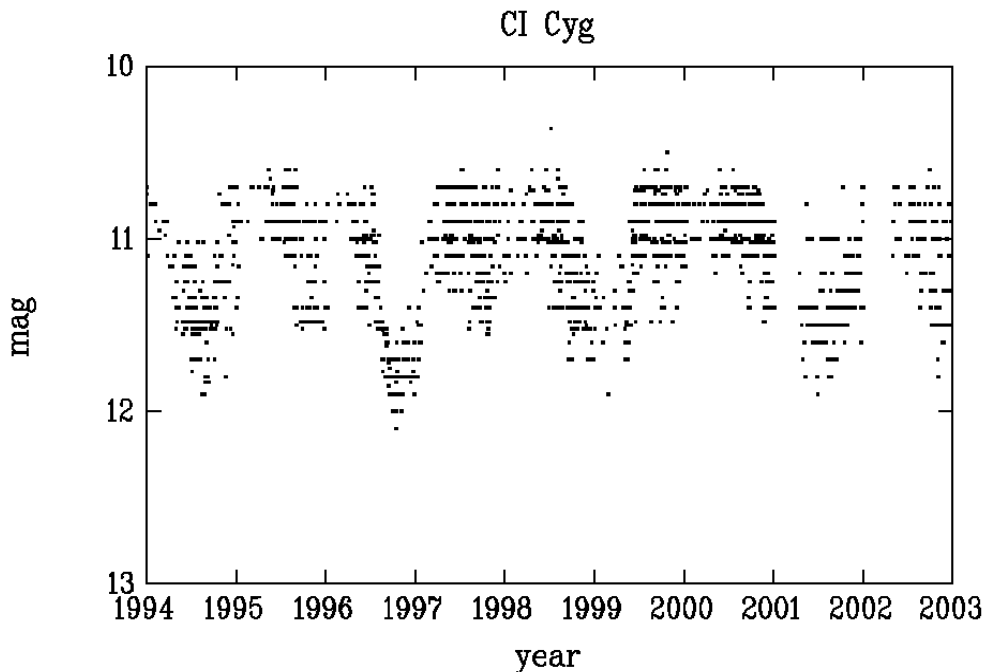
HU Tau 02(06)06L
X Tri 04(06)04L
TW Dra 04(09)07D
del Lib L06(04)07D
U Cep D17(17)22
Z Vul D17(20)22L
U Sge 18(23)21L
TV Cas 19(23)27
Y Psc 19(23)24L
V640 Ori L21(21)24
2003 Dec 5 Fri
Z Dra 02(05)07D
X Tri 03(06)04L
Z Per 06(11)07D
SS Cet D17(14)19
2003 Dec 6 Sat
ST Per 01(05)07D
X Tri 03(05)04L
HU Tau 03(07)06L
RW Tau 05(10)06L
del Lib L06(12)07D
TV Cas D17(18)23
SW Cyg D17(19)26
V640 Ori L21(22)25
TW Dra 24(29)31D
2003 Dec 7 Sun
U Cep 00(05)07D
X Tri 02(04)04L
TX UMa L19(16)20
Z Dra 19(22)24
2003 Dec 8 Mon
X Tri 01(04)04L
HU Tau 05(08)06L
SS Cet D17(13)18
TV Cas D17(14)18
Y Psc D17(18)22
ST Per D17(20)25
V640 Ori L21(22)25
RW Tau 23(28)30L
2003 Dec 9 Tue
X Tri 01(03)04L
Z Dra 04(06)07D
U Cep D17(17)21
Z Vul D17(18)21L
TW Dra 19(24)29
X Tri 24(26)28L
2003 Dec 10 Wed
TV Cas 05(09)07D
S Equ D17(15)21
TX UMa L19(17)22
V640 Ori L21(23)26

X Tri 23(26)28L
2003 Dec 11 Thu
SW Cyg L04(09)07D
del Lib L06(04)07D
Z Per D17(13)18
U Sge D17(18)20L
RW Tau 18(22)27
Z Dra 21(24)26
X Tri 22(25)27
U Cep 24(28)31D
2003 Dec 12 Fri
TV Cas 01(05)07D
Z Vul L07(05)07D
TW Dra D17(20)25
V640 Ori 21(23)26
X Tri 22(24)27
2003 Dec 13 Sat
del Lib L05(12)07D
Z Dra 06(08)07D
TX UMa L18(19)23
TV Cas 20(25)29
S Equ 21(26)21L
X Tri 21(24)26
ST Per 23(28)30L
2003 Dec 14 Sun
Z Per D17(15)20
Z Vul D17(16)21
U Cep D17(16)21
Z Dra D17(17)19
RW Tau D17(17)22
X Tri 20(23)25
V640 Ori 21(24)27
2003 Dec 15 Mon
TW Dra D17(15)20
TV Cas D17(20)24
SW Cyg 17(23)25L
X Tri 20(22)25
Z Dra 23(25)28
2003 Dec 16 Tue
SW Cyg L03(<<)05
HU Tau D17(14)18
ST Per D17(19)23
TX UMa L18(20)25
X Tri 19(22)24
V640 Ori 22(24)27
U Cep 23(28)31D
2003 Dec 17 Wed
Z Vul L06(02)07D
S Equ D17(12)18
TV Cas D17(16)20

Z Per D17(16)21
X Tri 18(21)23
2003 Dec 18 Thu
del Lib L05(03)07D
TW Dra 05(10)07D
U Sge D17(12)18
HU Tau D17(15)19
Z Dra D17(18)21
X Tri 18(20)23
V640 Ori 22(25)28
2003 Dec 19 Fri
Z Vul D17(13)19
U Cep D17(16)21
X Tri 17(19)22
TX UMa L18(22)26
Y Psc 20(25)23L
2003 Dec 20 Sat
Z Dra 01(03)05
RW Tau 01(06)06L
del Lib L05(11)07D
SW Cyg 07(13)07D
SW Cyg D17(13)19
HU Tau D17(16)20
Z Per D17(17)22
X Tri D17(19)21
S Equ 17(23)20L
V640 Ori 23(25)28L
2003 Dec 21 Sun
TW Dra 01(06)07D
TV Cas 02(07)07D
X Tri D17(18)21
U Sge D17(21)20L
Z Vul 19(24)20L
ST Per 22(26)30L
U Cep 23(28)31D
2003 Dec 22 Mon
X Tri D17(17)20
HU Tau D17(18)22
Z Dra 18(20)23
TX UMa 19(23)28
RW Tau 20(24)29
TV Cas 22(26)30
V640 Ori 23(26)28L
2003 Dec 23 Tue
X Tri D17(17)19
Z Per D17(19)24
Y Psc D17(19)23L
TW Dra 20(25)30
2003 Dec 24 Wed
Z Dra 02(05)07D

U Cep D17(16)20
X Tri D17(16)19
ST Per D17(18)22
HU Tau D17(19)23
TV Cas 17(22)26
SW Cyg 20(26)25L
V640 Ori 24(26)28L
2003 Dec 25 Thu
SW Cyg L03(02)07D
del Lib L05(03)07D
U Sge L06(06)07D
X Tri D17(15)18
RW Tau D17(19)23
TX UMa 20(25)30
2003 Dec 26 Fri
TV Cas D17(17)21
Z Per D17(20)25
TW Dra D17(20)25
HU Tau D17(21)24
Z Vul D17(22)20L
Z Dra 20(22)24
U Cep 23(27)31D
2003 Dec 27 Sat
V640 Ori 00(03)03L
del Lib L04(11)07D
ST Per 05(09)06L
Y Psc D17(14)18
S Equ D17(20)20L
2003 Dec 28 Sun
Z Dra 04(07)07D
RW Tau D17(13)18
U Sge D17(15)19L
HU Tau 18(22)26
TX UMa 22(26)31D
2003 Dec 29 Mon
V640 Ori 01(03)03L
Z Vul L06(09)07D
Z Dra D17(15)18
U Cep D17(15)20
TW Dra D17(16)21
SW Cyg D17(16)22
Z Per D17(21)26
ST Per 21(25)29
2003 Dec 30 Tue
TV Cas 04(08)07D
HU Tau 19(23)27
Z Dra 21(24)26
2003 Dec 31 Wed
V640 Ori 01(04)03L
RW Tau 03(08)05L
U Cep 23(27)31D
TV Cas 24(28)31D

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The deadline for contributions to the issue of VSSC 118 will be November 7th, 2003. All articles should be sent to the editor (details are given on the back of this issue)

Whilst every effort is made to ensure that information in this circular is correct, the Editor and Officers of the BAA cannot be held responsible for errors that may occur.

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First telephone the Nova/Supernova Secretary. If only answering machine response, leave a message and then try the following: Denis Buczynski 01524 68530, Glyn Marsh 01772 690502, or Martin Mobberley 01284 828431.

Variable Star Alerts Telephone Gary Poyner (see above for number)

BAAVSS web pages: <http://www.britastro.org/vss>

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