

British Astronomical Association



VARIABLE STAR SECTION CIRCULAR

No 127, March 2006

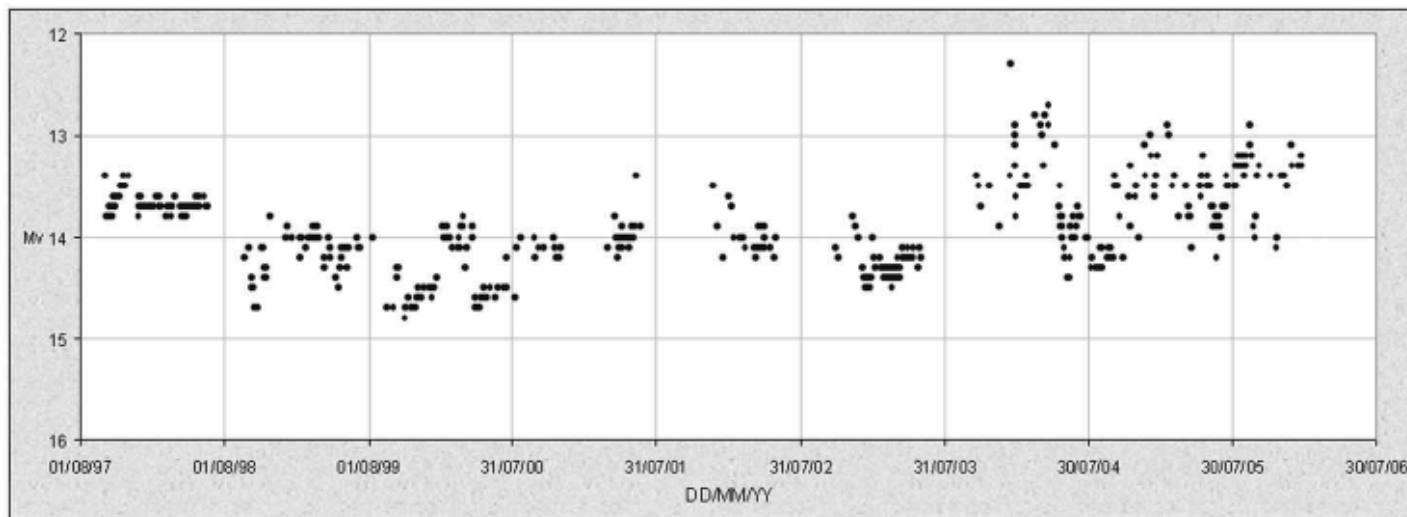
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Office: Burlington House, Piccadilly, London, W1J 0DU

LIGHT CURVES



S50716+71: Visual G Poyner

This is a very active Blazar which can display flare like activity in a single night. 2004 saw the historical maximum magnitude of 12.0 reached. Since 2003, S50716 has been extremely active.

FROM THE DIRECTOR

ROGER PICKARD

Section Secretary

You will read elsewhere in this Circular, that John Saxton wishes to stand down from the position of Section Secretary after nearly five years in the job. I wish to thank John for his efforts in re-writing the whole of the database software, after taking over from Dave McAdam, so that much of the work of entering the data could be automated.

However, this does mean we now need a new Secretary. John has written a *job description* (see page 4) and if there is anybody out there who has a few hours to spare once a month, and who feels that they could look after data input, I shall be only too pleased to hear from them. As I've said, the software has been written, but we need somebody to take the observations and run them through the various programmes so that they are added to the database. In the meantime, please continue to send your observations to John, at least until the next Circular comes out, when I'm hoping to have details of the new Secretary!

Project Quixote

I'm sure most members will be aware that Roger Dymock developed *Project Quixote*, the project to make all VSS visual data available on-line (see VSSC 123, March 2005). This he has completed up to the end of 2004 (for details of how to access the database contact the Director). However, following the sad passing of Andy Hollis, the BAA Council has appointed Roger as the new Director of the Asteroids Section. Consequently, Roger has relinquished control of the database, but as yet, we do not have a successor. This should not be an onerous job as it will only require updating twice per year when all the visual data has been collated into the main database. However, it is possible that it could also involve uploading all the CCD data as well, although this remains to be seen. Again, if anybody feels they would like to be involved in this exciting project please contact me at your earliest convenience.

The VSS Meeting

The next VSS Meeting will be held at the Rutherford Appleton Laboratory, Didcot, Oxfordshire, and the main speaker will be none other than the Director of the AAVSO, Dr Arne Henden. The title of Arne's talk will be *The Enigmatic V838 Mon*. Doors will open at approximately 10.30, and the meeting will be scheduled to finish around 17.30. Further details will appear on the web pages soon. It would be nice if as many members as possible would attend this meeting, as it would be good to impress Arne with our commitment.

Some time will be left for short contributions and discussion, and members are invited to bring slides, overheads, videos, discs and/or laptops, as all media can be accommodated. Space is also available for exhibition material and equipment. Please advise the

Director if you wish to give a presentation or bring along equipment. Entrance: £5 (booking not required), to include tea, coffee and biscuits. There will be a small selection of sandwiches and other meals available to purchase on-site during the lunch break.

Revisions to the Binocular Programme

The following Binocular Stars have been **deleted** from the Binocular Programme. However, as I've mentioned before, if you wish to continue to observe any star, whether it is on the VSS Programme or not, or even if it has been deleted from the programme, please feel free to do so. Observations will always be accepted into the database.

Stars that have been deleted are *V1293 Aql, V1294 Aql, AT Dra, BN Gem, BQ Gem, IS Gem, SS Lep, V2048 Oph, CE Tau*

These stars have been deleted because they haven't shown much activity and hence have been poorly-observed for many years. However, binocular observers are encouraged to follow some (all!) of the stars Tony Markham mentions in his article later in this Circular.

There has been one **addition** to the Binocular Programme and we hope to have a chart for it soon:

CE Lyn SR 7.20-7.66 (Hp) Spec M4

Although the range shown by Hipparcos for this star is quite low, visual observations indicate a much larger range. Only further observations will determine what this is.

New Section Publications: CCD Guide and Binocular Charts

Hot on the heels of the Visual Observing Guide which was published this time last year, are two new publications.

The Guide to Measuring Variable Stars Using a CCD Camera has been written by David Boyd, with Richard Miles and Karen Holland assisting with the appendices. It is available from the BAA Office in hard copy for £7.50. The purpose of the Guide is to introduce those new to CCD photometry to the process of making accurate, useful measurements, and explains how to submit them to the VSS CCD Database.

Melvyn Taylor has also produced a new booklet entitled *Binocular Variable Star Charts, Volume 2*. This too is available from the Office for a modest £2.00. It follows on from Volume 1 which has been out of print for many years. It is more than just a collection of some of the charts suitable for use with binoculars, as it explains some of the *whys and wherefores* of visual observing.

My thanks to all these authors for producing the publications.

Guide8 Software

I've had a few queries over the years from users of this planetarium program about how they can display the Henden sequences. These are a set of sequences for several hundred stars that have been measured in V and B, and sometimes in U, R and I as well, by Dr Arne Henden, now Director of the AAVSO.

If anybody wishes to know how to display the data for each of the fields measured by Arne then please contact me at the usual email address.

UGem

This star recently celebrated the 150th year of its discovery, and John Toone and I were asked to submit a couple of articles (see <http://home.mindspring.com/~mikesimonsen/cvnet/id4.html>).

Whilst researching this, I became aware that there are more observations from pre-1900 still waiting to be entered into the database. Storm Dunlop provided me with a list of potential articles containing VS observations from the Monthly Notices of the RAS which go back to 1827, and this is now being actively pursued by Phil Busby.

However, I was particularly taken by an extract from MNRAS LXVII [67], No.2, p.119 [Dec. 1906] by Prof H H Turner with regard to Joseph Baxendell's observations. *It is scarcely possible to hand it to anyone who is not familiar with variable star records I take this opportunity of saying that I should be very glad of skilled volunteer assistance, at any rate in dealing with the copied ledgers for different stars, and perhaps with these early records also. If any variable star observer has leisure for work of the kind and would communicate with me, I should gratefully accept assistance in making this mass of valuable material ready for publication as soon as possible. Unaided, my work at it must necessarily be slow.....*does this sound familiar?

Reversed Charts

Now that most of the more modern charts are available on the Section's web pages, I wish to include reversed charts to make them more useful to users of SCTs etc. Gary Poyner has already reversed a number of charts using the Paint Shop Pro software package, and advises that a chart can be reversed in about 5 minutes once you are familiar with the process. It is quite easy, if rather tedious, and therefore, help with this small project would be appreciated. So, yet again, I ask if there may be someone among the membership who would be happy to contribute to this work, please contact the Director.

.....and finally, **Welcome to the world**, Nathan Jones, born to Chris and Sue on 6th December 2005 and to Alexander John Toone, born to John and Irene on 23rd January 2006. May you both have long and healthy lives (and perhaps even follow in your fathers footsteps?).

VACANT POSITION OF SECTION SECRETARY

JOHN SAXTON

As you will have read in the contribution from Roger, I have decided that the time has come for me to hand routine operation of the database over to someone else. In particular, I think routine operation might best be carried out by someone with a closer affinity to visual observers; I am, after all, mainly a CCD observer and computer programmer.

I would stress that I intend to remain available to maintain and update the database software, but I would just like someone else to look after the routine work of putting observations into it. So you do not need to be a programmer to do this job; an enthusiasm for visual observations of variable stars is more important. Here's what the job involves:

- 1 Receiving data files from observers, and possibly converting them to the standard format (conversion programs are available).
- 2 Running them through the main checking program to create the BUF files. Some observers do this prior to submission, which makes the task even easier.
- 3 From time to time, update the database. I can provide instructions for this, but it uses the standard VSS software used to create the BUF files, and is no more complex than actually creating the BUF files in the first place.

I am happy to provide whatever help and training is required concerning the software.

Finally, I take this opportunity to sincerely thank all of you who have submitted data whilst I have been Section Secretary. I hope you have not minded my attempts to improve the consistency of the reporting formats! It has certainly made maintaining the database an easier task.

SECONDARY MINIMUM OF OW GEMINORUM

ALEX VINCENT

The long period eclipsing binary star OW Geminorum has a period of 3.4559 years (1258.63 days). At maximum it is of magnitude 8.2, and it drops down to 10.0 at minimum. The duration of the eclipse is 16 days. The primary star is almost totally eclipsed at minimum. Its last primary minimum was on June 12, 2005, and its next occurs on November 24, 2008.

The orbit of OW Geminorum is elongated, and therefore secondary minima are to one side of the primary minima. The next secondary minimum is due on March 31, 2006 \pm 6 days. The amplitude is much shallower, possibly only 0.1 magnitude, but it is possible that this star may have deep and shallow minima, and that the former could be as much as 0.5 magnitudes. Duration of secondary minima are 30 days and so observations should be made between March 16 and April 15 2006.

VSS CCD DATABASE

ANDREW WILSON

As some of you will already be aware, the BAAVSS has been operating a CCD database since early 2004. To date, 7 observers have contributed measurements of 97 different variables from 31,970 images.

If you make measurements of variables using a CCD camera, then we would ask you to please submit them to the Section. That way they are recorded for posterity and available to researchers. Even if you submit your CCD observations to other organisations, you should still send them to the BAAVSS. We record different information to other organisations, and so there is a definite benefit in reporting them to the Section.

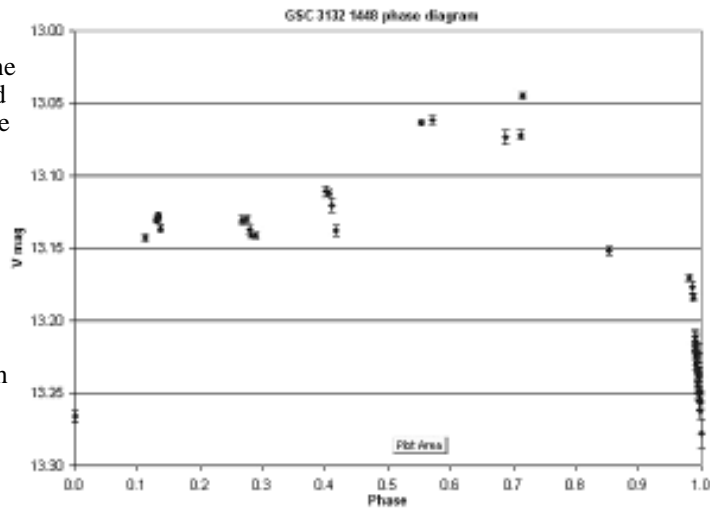
To submit observations there are two pre-defined text and tab formats, with some flexibility as to exactly what data is supplied. The VSS CCD Photometry spreadsheet will create a file in one of these formats for you, and so provides an easy way of submitting data. Though it should be noted that you will need the AIP4WIN version 1 software to use it easily (a spreadsheet to work with AIP4WIN version 2 will be developed in due course). If you want to submit data without using the Photometry spreadsheet then please contact Andrew Wilson at the below email address to obtain sample submission files.

Any questions on submitting or requesting data should be directed to Andrew Wilson at andyjwilson_uk@hotmail.com. Observations in the text and tab format should be sent (if possible in a compressed or zipped folder) to vssccdobs@britastro.org. The VSS CCD Photometry spreadsheet can be downloaded from the BAAVSS website <http://www.britastro.org/vss/>.

ERRATUM IN VSSC 126 - A NEW ECLIPSING VARIABLE IN LYRA

The editor wishes to apologise for the error that occurred in the above article in issue 126 of the Variable Star Section Circulars, and for any confusion that this might have caused.

Figure 2 was printed twice, both as Figure 2 and as Figure 3. The correct Figure 3 is reproduced right.



RECURRENT OBJECTS PROGRAMME NEWS

GARY POYNER

Below is a complete list of ROP outbursts that have been detected and confirmed by observers during 2005. The introduction of regular CCD monitoring for outbursts (in contrast to CCD observations during outburst only) has greatly increased the numbers of outbursts detected in some objects. This will obviously lead to more frequent updates to the programme, as stars with newly discovered short outburst periods are dropped, whilst other objects of unknown nature are added. The use of the CCD for patrolling for outbursts is a very welcome, and most valuable contribution to the programme. Visual observers should not be discouraged from continuing to monitor these objects for outbursts however, as CCD users get cloudy nights too, and it's generally quicker by eye.

Star	Date UT	Magnitude	Observer
BZ UMa	Jan 16.35	14.2v	P. Schmeer/D. Boyd
CP Dra	Feb 08.84	14.9C	J. Pietz
DV UMa	Feb 11.11	14.9v	D. Taylor
DK Cas	Feb 13.07	15.2v	M. Simonsen/D. Taylor
KV Dra	Apr 02.90	14.1v	P. Dubovsky
CG Dra	Apr 09.01	16.1C	J. Shears/R. Pickard
CI Gem	Apr 12.13	15.0C	Schmeer
GO Com	Apr 21.68	13.5C	A. Imada/H. Maehara
NSV18241	Apr 26.30	13.8R	Schmeer/E. Muyliaert
CG Dra	May 27.96	15.8C	Shears/Poyner
V589 Her	Jly 02.23	14.5v	Simonsen
CG Dra	Jly 06.99	15.8V	Pickard/Shears/Poyner
TY Vul	Jly 16.98	15.1C	Shears/Poyner
V1363 Cyg	Aug 05.91	15.5C	Shears
EI Psc	Aug 07.92	12.9C	Pietz/Schmeer
CP Dra	Aug 14.88	15.4C	Shears
CG Dra	Aug 16.89	15.7C	Pickard/Poyner
CG Dra	Aug 29.90	15.8C	Shears/Pickard/Poyner
V1316 Cyg	Sep 05.23	15.2v	Simonsen/Shears
CG Dra	Sep 13.84	15.9C	Shears
V452 Cas	Sep 23.92	15.8C	Shears/Poyner
V1316 Cyg	Oct 04.06	14.8v	Taylor
V402 And	Oct 26.89	16.6C	Shears
EX Hya	Nov 04.73	9.8v	R. Stubbings
V725 Aql	Nov 08.74	13.5v	Schmeer/Vanmunster
DV Dra	Nov 21.06	14.9v	T. Parson/Schmeer
V701 Tau	Dec 06.92	15.1C	Shears/Poyner
BZ UMa	Dec 17.89	11.6v	Schmeer/Shears

v = Visual

C = Unfiltered CCD

Magnitude given at time of detection

R = CCD+R filter

V = CCD+V filter

Observers include confirming observer

Outburst Notes

V701 Tau

A rare outburst of this UGSU star was detected by Jeremy Shears on December 06.92 at 15.1C, and confirmed by G. Poyner on December 06.95 at 14.9v. This was the first outburst observed since December 1995. During the 1995 outburst, Taichi Kato and the Ouda team detected superhumps of 0.25 magnitude amplitude, with a period of 0.06891d (vsnet-obs 1829)

DV Dra

A rare outburst of this possible UGWZ star was detected by Tim Parson (New Mexico, USA) on Nov 21.06 at 14.9v, and independently by Patrick Schmeer on Nov 22.062 at 15.1C. This was the first outburst recorded since discovery in 1982. T Vanmunster reported superhumps with a period of 0.061 +/- 0.002 on November 22, thus confirming the UGSU nature of this object. The long outburst period almost certainly classifies DV Dra as a UGWZ star.



Figure 1, Image of DV Dra taken by Jeremy Shears on November 25th

A New Dwarf Nova in Cetus: ASAS 023322-1047.0

Bogumil Pilecki, Warsaw University Astronomical Observatory reported the discovery by the ASAS3V instrument on January 20.121UT of a possible Nova or new Dwarf Nova in Cetus at magnitude 12.08V at the following position:

RA 02h 33m 21.398 -10d 47' 04.55

The observation was confirmed by David Boyd on January 21.779 at 12.58V. Further data from observers worldwide, and collated by T Vanmunster reveal superhumps at amplitude 0.3 magnitude and $P_{sh} = 0.05579 \pm 0.00027d$, thus establishing this new object as a UGSU star. See CVnet archives for more details at:

<http://groups.yahoo.com/group/cvnet-outburst/>

The image shown below was taken by Martin Mobberley on January 28.79 UT in windy conditions, using an 120s exposure on C14 and ST9XE CCD. The galaxy is NGC 977.

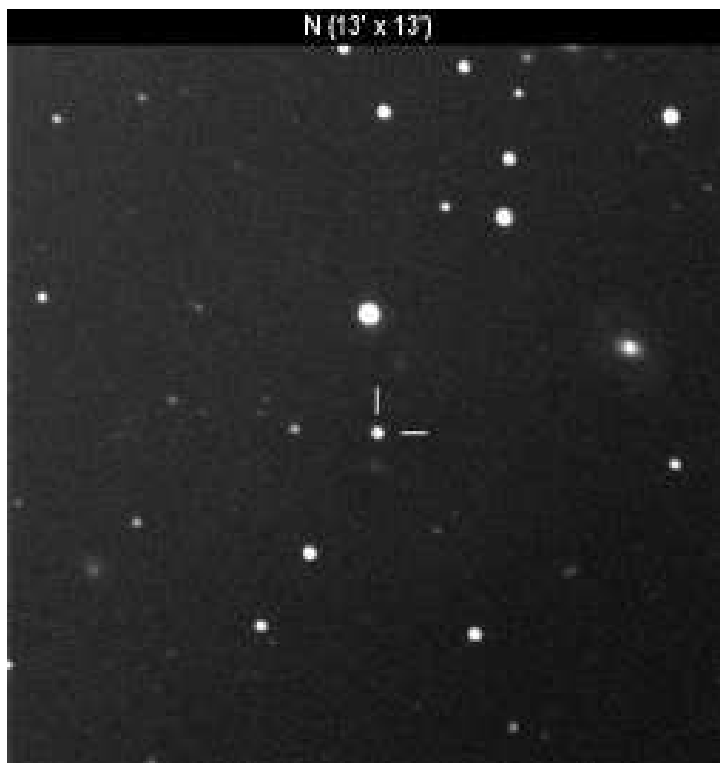


Figure 2, Image of ASAS 023322-1047.0 taken by Martin Mobberley on January 28th

EUVE J0854+390 Lyn

JEREMY SHEARS

The UV source EUVE J0854+390 Lyn was catalogued by the Extreme Ultraviolet Explorer (EUVE) all-sky survey. In 1997 the optical counterpart was identified at 16.4B on a single night of photometry, and the source was identified as a Cataclysmic Variable from spectroscopic studies (IBVS 5032). Very little else was known about the star at this time. In an effort to encourage observational coverage, Gary Poyner added the star to the Recurrent Objects Programme in 2001 (see VSSC 109, 2001 Sept).

I began to monitor the star by CCD imaging during April 2005. Only once was the star detected before the field was lost in the twilight for the summer. This positive observation was on May 20.945 at approximately magnitude 16.5C.

I resumed imaging the field again during November 2005, and the star has been detected on several occasions at between magnitude 16 and 18C. An image of the field is shown in Figure 1 below.

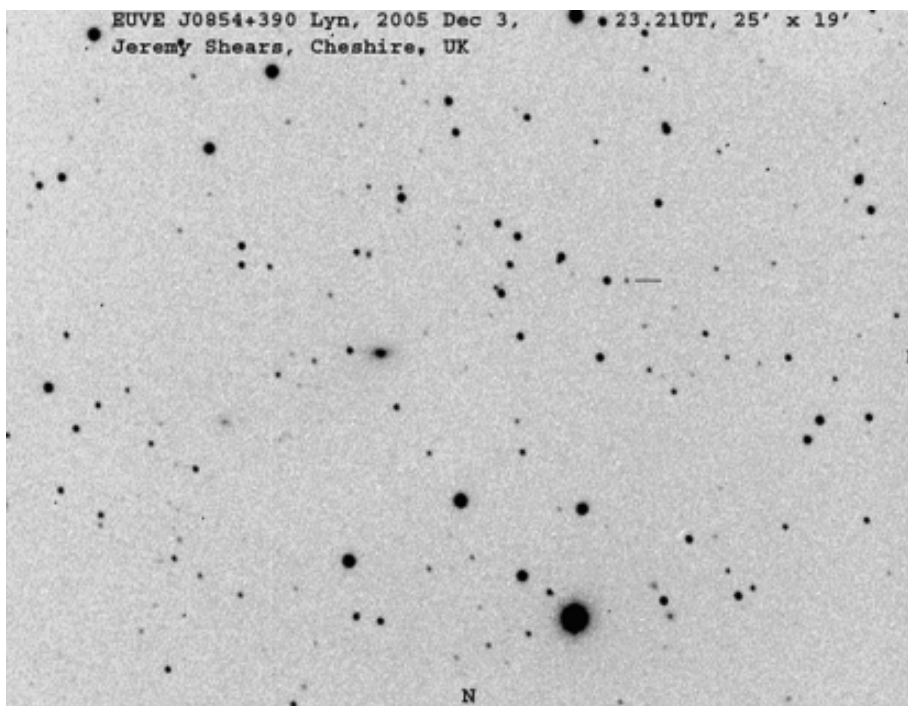


Figure 1, Image of EUVE J0854+390 Lyn, taken by Jeremy Shears on December 3rd, 2005. A Takahashi FS102, 102 mm apochromatic refractor was used with an unfiltered Starlight Xpress SXV-M7 CCD. The integration time was 3 minutes, and the star magnitude is measured as 16.0C.

Following a posting I made to the CVnet-discussion group (<http://groups.yahoo.com/group/cvnet-discussion/>), Dr. Boris Gaensicke of the Dept of Physics and the University of Warwick kindly provided some further information on the star, for which I am most grateful.

He has recently obtained photometry with the 2.5m Isaac Newton Telescope on La Palma, which led him to characterise it as a Polar (a CV with strong magnetic field, typified by AM Her) having an orbital period of 113.3 minutes. Two nights of photometry showed a very complex variability pattern with two maxima per orbital cycle, which he interprets as a combination of cyclotron beaming and an eclipse of the accretion region by the white dwarf itself (see CVnet-discussion 685). The brightness varies by 1.5 magnitudes during the orbital cycle, hence it is likely that the occasions when I have detected the star coincide with the maximum brightness.

I obtained about 45 minutes of time-resolved photometry on December 3 2005, which corresponds to about 40% of an orbital cycle (clouds prevented a longer run). During this time there was a smooth variation of about 1 magnitude:

23.20 UT 16.04C, fading to
23.37 UT 17.09C, rising to
23.53 UT 16.34C

Polars do not exhibit outbursts as such. Instead they show brighter high states and fainter low states. Some polars stay for a long time in one state, but others tend to fluctuate more rapidly between states (see CVnet-discussion 687 by Berto Monard). In the low state accretion from the donor secondary star to the primary white dwarf may drop to zero, and the light is then dominated by the white dwarf and the donor star. By contrast, in the high state, the light is dominated by emission from the accretion stream (there is no accretion disc in polars, by contrast to non-magnetic CVs) and the accretion column close to the white dwarf, which emits cyclotron radiation (see CVnet-discussion 688 by Boris Gaensicke).

Very little is known about the long term activity of EUVE J0854+390. For example, were my observations made during a high state or a low state? Dr Gaensicke commented that my December 3rd observations were about a magnitude brighter than during his INT run, suggesting it was a high state, although this could be an effect of our detectors having a different spectral response. The large amplitude of the orbital cycle may confound the problem of interpreting high and low states, which in typical polars are separated by only 2 to 3 magnitudes, with insufficient data.

Since so little is known about EUVE J0854+390, further observations are encouraged in order to understand its short and long term variations. Given its faintness, this is an ideal project for a CCD observer. A chart for the field, prepared by Chris Jones, is available from Gary Poyner.

SPRING BINOCULAR VARIABLES

TONY MARKAM AND MELVYN TAYLOR

To a newcomer, many semi-regular variables can be a disappointment, as their brightness ranges in each cycle are usually somewhat lower than their catalogue ranges listed, and their periodicities are not as obvious as those of Mira-type variables. However, there are a good number of exceptions. Well-placed throughout the spring are two of the most rewarding semi-regular variables: V Canum Venaticorum and Z Ursae Majoris. Another, Y Lyncis, starts well-placed but is less favourable by late spring. Other rewarding semi-regular variables become better placed as spring progresses including AF Cygni, TX Draconis and UW Herculis.

Many Mira-type variables reach binocular visibility during the spring months, for visual estimations using small instruments. Although the exact dates of maxima cannot be predicted, and peak brightnesses vary from one maximum to the next, a table is given below, showing those targets which are expected to be brighter than 9.5 magnitude during the period noted. Observability for each star due to solar conjunction has not been accounted for.

Star	Mean Visual Magnitude Range M-m	Period, P (days)	(M-m)/P1	Month 1, 2, 3 ²
R And	6.9-14.3	409	0.38	Feb, Mar, Jun
W And	7.4-13.7	396	0.42	Jan, Mar, Jun
RW And	8.7-14.8	430	0.36	Feb, Feb, Mar
R Aqr	6.5-10.3	387	0.42	Jun, Oct, 2007 Apr
RAql	6.1-11.5	284	0.42	Jly, Sep, Dec
UV Aur	7.4-10.6	394	0.5	Jly, Nov, 2007 Mar
XCam	8.1-12.6	144	0.49	Apr, May, May & Sep, Sep, Oct
T Cas	7.9-11.9	445	0.56	Jan, May, Jly
o Cet (Mira)	3.4-9.3	332	0.38	- , Apr, -
R Com	8.5-14.2	363	0.38	Sep, Oct, Nov
SCrB	7.3-12.9	360	0.35	Aug, Sep, Nov
V CrB,	7.5-11.0	358	0.41	2005 Dec, Mar, Jly
W CrB	8.5-13.5	238	0.45	Aug, Aug, Sep
R Cyg	7.5-13.9	426	0.35	Jun, Aug, Oct
VCyg	9.1-12.8	421	0.46	Nov, Dec, 2007 Jan
chi Cyg	5.2-13.4	408	0.41	May, Aug, Dec
RU Her	8.0-13.7	485	0.43	Mar, May, Jly
SS Her	9.2-12.4	107	0.48	Feb & May & Sep & Dec
R Hya	4.5-9.5	389	0.49	- , Oct, -
X Oph	6.8-8.8	329	0.53	- , Mar, -
U Ori	6.3-12.0	368	0.38	2005 Oct, Jan, May
R Ser	6.9-13.4	356	0.41	Sep, Nov, 2007 Feb
T UMa	7.7-12.9	257	0.41	Feb, Mar, May & Nov, Dec, 2007 Feb

The base data for the bright phases is a list of times for maxima and minima which are approximate as highlighted in the 2006 BAA Handbook page 91; consequently the times given in the table are only a guide.

Notes

- 1 The column (M-m)/P shows the fraction of the period taken in rising from minimum to maximum.
- 2 Month 1 = month rising at magnitude 9.5; Month 2 = month for maximum magnitude; Month 3 = month fading below magnitude 9.5.

It should be noted that whereas some stars show quite sharp peaks, others remain near maximum for many weeks, so don't just look for them close to the maximum dates. U Cyg, R Leo and S UMa, for example (not noted in the table above) will be observable in binoculars for most of the spring, whilst X Oph is a binocular object throughout all of its cycle, with a mean visual minimum magnitude of 8.8. Note that the prediction for RU Her in the BAA Handbook is incorrect; its next maximum is not due until May 2007. Although Mira (3.4) peaks in early April, by then it will only be visible to southern hemisphere observers.

Other variables worth observing that are not included in the table above include R Leo (5.8) and V Cnc, which peak around mid-April and U Cyg (7.2) near the end of the month. May sees R Dra (7.6) and T Her (8.0) peaking during the mid-month and S UMa (7.9) towards the end of the month. RT Cyg (7.3) is due at maximum in mid June, whilst R Boo (7.2), T Cam (8.0) and U Her (7.5) will be around peak brightness late in the month. Watch out for R Cas and Chi Cyg reaching binocular visibility during June on the way to their August maxima.

In addition, R Coronae Borealis is well placed throughout the spring, whilst AC Herculis and R Scuti are initially morning sky objects, but reach the evening sky by late spring. Well placed eclipsing variables include U Coronae Borealis, W Ursae Majoris and TX Ursae Majoris.

Acknowledgements

Thanks are due to John Isles for the Mira Star data.

The deadline for contributions to the issue of VSSC 128 will be 7th May, 2006. 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.

A SUMMARY OF THE 2005 VSS MEETING

KAREN HOLLAND

Roger Pickard welcomed all to this meeting, held at Sussex University on 6th August, 2005, and introduced the first speaker, **Martin Crow** who talked with the title *Something to Crow about*. This talk concerned his recent discovery of a new variable star, although Martin had recently decided that he should have titled the talk *A Stroke of Luck!* For details of this talk, see VSSC126 page 19.

The next speaker was **Brian Warner**, who was visiting the UK from South Africa, talking on *Cataclysmic Variables in Perspective*. This particular VS meeting had been deliberately organised to coincide conveniently with the time and location of his visit, so that we could benefit from his presence and knowledge at the meeting.

Brian had been a member of the BAA for 50 years this year, and had started out as a chemist at school, but later went to UCL to study astronomy which was his hobby at the time. His early interest was in the planets and the moon, and he used a borrowed instrument from the BAA, to observe, publishing his work in the lunar section publications of the BAA.

Brian described his early University studies, and gave an account of the key events in his student life, with respect to the science that he had conducted, before moving on to give a very good, concise outline of the history and current level of understanding of cataclysmic variables. He explained how, in the late 1950s, it was realised that these stars were actually binary stars, many of them spectroscopic binaries. Hydrogen spectrum lines were detected in emission, and this was usually a sign of an optically thin gas. Furthermore, the spectral lines were doubled, containing red and blue-shifted components, which was evidence that they originated in a rotating disc, although at this time, the structure of the disc was not well-understood.

Brian explained how he had started to study UGem at a low time-resolution, and saw some flickering; a hump in the light curve that lasted for around half of the orbital period; and an eclipse that cut into the hump. The duration of the eclipse indicated that the eclipsing object must be fairly small. When he applied a higher time resolution to the system using the Macdonald 82" (and this was a unique observation at this time in 1971) he also saw lots of flickering, which disappeared during the eclipse.

Brian and Smak realised (Brian through his observations, and Smak through reviewing the literature) that the eclipses were due to the hot spot rather than the white dwarf, and that it was the disc that was increasing in brightness during an outburst, rather than the white dwarf.

Brian described the mechanism for nova eruptions, which was different to that of a dwarf nova explosion, and went on to illustrate the various subclasses of cataclysmic variable using a chart which plotted the orbital period (x axis) from 1 hour up to many hours, versus the log of the mass transfer rate (y axis). He indicated the period gap that we see, and the critical mass transfer line, showing where the different classes of CVs sat on the diagram, with the permanent superhumpers (WZ Sge, SU UMa, ER UMa,) all

having periods of <2 hours, and having progressively increasing mass transfer rate, whereas U Gem, Z Cam and Nova-likes had increasing mass transfer rates on the high side of the period gap.

He felt that it was possible that a nova, before it became a nova was a novalike, although no CV that had ever been well-studied had ever had a nova outburst, and he felt that it was worth keeping an eye on the novalike variables for the day that one would become a nova.

Finally Brian discussed the value of amateur observations, talking about the wealth of information that long periods of study could provide. In a case like SS Cyg, which had been followed for many, many years, analysis of the interval between outbursts now appeared to show that there might be a semi-periodic variation, and professionals were currently studying this data to see if solar-type magnetic cycles on the secondary star might be the cause of this effect.

After lunch **Brian** continued with a discussion of *Rapid Oscillations in Cataclysmic Variables*.

Brian went on to talk about his studies of DQ Her, which showed rapid oscillations, with eclipses too. He analysed the 71s oscillations in an attempt to measure the light travel time across the system. This would give us the diameter of the orbit of whatever was producing the clock. He compared the oscillations as observed with a constant clock with a period of 71s, and found that through the eclipse he saw a phase shift of 90 degrees, which then flipped, and came back to zero. This behaviour could be modelled by the presence of a beam, or one side of the white dwarf being brighter than the other. The period of the oscillation was also found to be getting very slightly faster with time, and it was thought that the accretion of mass on to the white dwarf, might be spinning it up due to the transfer of angular momentum.

Later, after the discovery of DQ Her, in 1978, a new class of cataclysmic variables were discovered which had exceptionally strong x-ray emission; this might be explained by lots of mass hitting the white dwarf, rather than interacting with the disc.

Now it is known that white dwarves have magnetic fields, although the strength of this magnetic field can vary greatly from one white dwarf to another. It is thought likely that they all probably have them, although there is a lower limit to what we can detect. The effect of this magnetic field is that the gas that comes from the secondary star, which would usually go into the disc, gets trapped by the magnetic field-lines (in the same way as aurorae are created on earth by ionized particles getting magnetically channelled as they come down). If this happens then the material falls near to the magnetic poles of the white dwarf. If the magnetic field isn't quite strong enough, then the gas can start to produce an accretion disc further away from the white dwarf. DQ Her systems, or Intermediate Polars, are the systems that have intermediate magnetic fields, so that a partial accretion disc forms before the accretion is channelled by the white dwarf as it gets nearer; the systems which have a strong magnetic field are called polars.

Using a combination of photoelectric photometry and fourier transforms to examine more data, they quickly found that there were examples of this rapid type of oscillation

in the sky, which they hadn't been able to find observationally previously. Brian went on to show various examples of different oscillations that had been observed in dwarf novae such as dwarf novae oscillations and quasi-periodic oscillations, and to consider these in detail.

The next speaker was **Darren Baskill**, who talked about *Hidden Magnetic Accretors*. Darren, who works at Leicester University in the X-ray and Observational Astronomy Group, talked about the results that he had obtained using the XMM Newton X-ray telescope.

Darren's talk is covered by his article in VSSC124 p6 and VSSC126 p10, and so this is not repeated again here.

Chris Jones spoke next with the title *Would you Care for ICCE with That?* Chris described his revision of the new objects programme which Gary Poyner had started in March 1995. This programme covered many of Mike Collins discoveries originally. Chris had been giving some thought to what the programme's intentions were, and had realised that the essence of the programme concerned the Identification and Characterisation of stars, and the Correction of Errors, and hence he named the revised programme the ICCE programme.

The identification part of this concerned the resolution of the nature identity of the variable where it was not uniquely known. A good example of this would be a star like TASV 1946+00, where Mike had not been able to uniquely identify the variable in his photographs. Based on a year's worth of observations, the star that was not thought to be the variable originally, had now been confirmed as the variable. Characterisation of the stars involved a determination of any of the properties of the system including its range, period and type, if possible. The correction of errors concerned the correction of wrong and inadequate identifications, wrong range information, wrong classification, and wrong or out of date period information.

Chris said that he needed CCD observers to assist with producing good photometry for the preparation of charts and sequences, and also to assist with the observation of very low amplitude red objects, which were difficult for visual observers to monitor without large scatter. CCD observers could also assist with the detection of the true minimum and maximum amplitudes, and identifying objects with large red excesses. Visual observers were required to assist with the checking of sequences of charts, and to add one or two of these objects to their observing programmes. Analysts were required to take some of the data, review and analyse it, and provide feedback to observers by preparing papers.

Chris requested that observers let him know if they were adding stars to their list, in order that we didn't saturate on one star. He preferred copies of observational data in either TA format date or BAA format by email.

Richard Miles talked next about *Observing variables with a 60mm refractor - my First Year of Small Telescope Photometry from Golden Hill Observatory*. Richard talked about the idea of using CCDs to the highest accuracy possible, and how he had strived to achieve this over the last year, using two refractors with V and I filters respectively.

Richard briefly outlined the advantages that he felt using small refractors gave over reflectors, and showed some images of his observatory and equipment set-up, which included the two refractors mounted on a larger telescope; all the telescopes had a CCD camera on them.

He discussed some of the technical details of doing good photometry, including his choice of standard stars, his spreadsheet which helped to select suitable stars for the calculation of extinction, and the method for the calculation and application of transformation coefficients.

He showed some of the many results that he had obtained over the last year: he showed very detailed light curves for RS And, a semi-regular variable; R Tri, a mira going through minimum; SU And; and BZ And, showing that if great care was taken to achieve photometry of a very high precision, you could start to pick out things that were going on that weren't usually detected.

His EG And data sparked interest by Arne Henden, who was possibly interested in using the data in a paper he was going to prepare on EG And.

He had obtained data on a Hipparcos unresolved variable in the AQ And field; previously it only had two data points, and he had been able to collect 49 data points, covering three minima.

He was also monitoring a couple of Gamma Cas variables, which demonstrated flickering, but he was finding it quite difficult to interpret the data.

The next speaker was **Roger Dymock** who talked about *Project Quixote*. Roger gave us a summary of this well-known project to develop the Variable Star Section Database, outlining the time-line to the present day, and the features of the on-line database: the data could be extracted by star, observer, and between particular dates of interest, and the output could be a list, a light-curve, or both.

Roger explained how he loaded data into the database, and the checks that he performed in order to check that the correct data had been entered. The data was all stored at Exeter University on their computer system. He was now loading the 2003 data, and hoped to load the 2004 data by the end of the year.

Roger explained that he intended to make some enhancements to the plotting routines, and ensure A4 compatibility in the next year. He also needed to think further about how best to plot very large numbers of observations, which looked rather messy on the screen!

Anyone who wanted to be able to access the database, needed to contact Roger Pickard for a username and password.

Roger reported that direct data input by observers was some way off yet - a modification for the future!

SUMMARY OF THE VSS OFFICERS MEETING ON 5TH NOVEMBER, 2005

KAREN HOLLAND

On 5th November, 2005, both a CCD Working Party Meeting, and main Officers meeting was held. I present a brief summary of the minutes here; this is a heavily edited version of the minutes, as it was a long day, and much was discussed!

CCD Working Party Meeting (held before the main officer's meeting)

Present: David Boyd, Arne Henden, Karen Holland, Richard Miles, Roger Pickard, Andrew Wilson

Karen outlined the changes that had been made to the first revision of the **VS Section CCD Target List**. An article had been written for the Variable Star Circular, and one was in preparation for the BAA journal (BAAJ 116, 1, 2006). David had found it very difficult to monitor some of the three Hipparcos small-amplitude variable stars, due to the differential extinction across the very wide field of view, and it was agreed that plans would start to be made to include a new category of targets suitable for wide field bright star photometry, in the next revision of the target list, as this type of photometry was a specialised area with its own techniques and difficulties.

So far, 7 observers had contributed data to **the CCD Database**, from 334 observing runs, which totalled 30,374 images on 78 different variables. Andrew reported that there were now some changes that needed to be made to allow the storage of data associated with multiple comparison stars, and it was agreed that the submission format to the database would be changed accordingly. Each of the comparison stars would be recorded separately with an identifier, its instrumental magnitude and its reference magnitude.

The key changes to the database were as follows (please note that one or two points have been discussed subsequent to the meeting, and discussions continue):

- The redesigned database would accept 2 types of magnitude depending on what the observer could provide, in order to allow measurements made by ensemble photometry to be reconstructed if necessary at a later date. The two types would include instrumental magnitudes, and differential magnitudes with a comparison; the instrumental magnitude would be the preferred option.
- It was agreed that we would store the error on the Instrumental/Differential magnitude only
- It was proposed that the JD of the submitted observations should be the mid-exposure time.
- Photometry radii would be stored in arc seconds if this was feasible
- The ability to use different photometry aperture radii for different stars would be included. For the moment, these fields would probably be the same, and could automatically be populated.
- The idea of calculating an average magnitude for each run would be dropped, in order to permit the storage of a filter type associated with each observation.
- A field would be added for transformation coefficient applied (see AOB below)

Karen reported on the successful **Two Day CCD Photometry Workshop** that was run in May 2004. It was felt that we should start to make plans for another workshop and Roger agreed to look into the possible arrangements for such a 2 day workshop, in terms of the location and possible dates.

The **CCD Guide** has now been printed, and is available from the BAA office. There was some discussion about whether we might be able to make the information available on-line to BAA members, and this will, no doubt, be considered further

AOB

There was some discussion regarding the method for calculating instrumental magnitudes. Arne commented that we would need an additional flag in the database, if we were to permit or encourage the dividing of ADU counts by time for the error calculation, as people would not convert over to this method very quickly. Arne felt that we should just record what was measured, the raw magnitude, and the time, so that the record contained the instrumental magnitude based on the integration time used, and then in the database the calculation could be performed however we wanted. Additionally, he said that different software applied different offsets to instrumental magnitudes, so that if we were not storing raw counts, then we would need to know that observer's offset.

Roger commented that we used to have a section for calculating transformation coefficients in the spreadsheet, but that this had been removed. It was thought that we should start to consider including this in the spreadsheet again, without making it too complicated, just for V. Arne pointed out that we would then also need another flag in the database, to say whether the data had been transformed or not.

Main Variable Star Officers' Meeting

Present: David Boyd, Arne Henden, Karen Holland, Guy Hurst, Tony Markham, Richard Miles, Roger Pickard, Gary Poyner, John Saxton, Melvyn Taylor, Andrew Wilson

John Saxton reported that there were now in excess of 2 million observations in **The Visual Database**. The software seemed to be working much better now that the bugs had been fixed. John's eventual aim was that data submission would run automatically, with the minimum of input from him, so he had been distributing his software to observers to use prior to input. He had, on his own webpage, a manual to explain the format for data input submission, and the submission process. He explained the 6 checks that the software performed on the data.

The problem of AAVSO sequences not being recognised by our database software would soon be resolved by Arne's offer to make a complete set of AAVSO sequence information available to us in April 2006.

The entering of **Paper Records** was still ongoing, and volunteers were still needed. Currently Bob Dryden, Alex Menarry, David Griffin, and Geoff Land were entering data, and the officers noted that they were grateful for the hard work of these volunteers.

Roger Dymock had done a good job of getting **Project Quixote**, the VS database up and running on the Exeter server now that he had taken over as Director of the Remote Planets and Asteroids section, he wanted to hand over the job of uploading data on a six monthly basis to the database, and needed a volunteer. Andrew Wilson said that he might be willing to help if we needed someone, although he didn't really want to commit to doing it permanently.

John Toone had made some proposals to alter the **Telescopic Programme**:

- He questioned whether we should have old novae on the programme, feeling that they should be ROP objects; it was agreed that the 7 old novae would be dropped, even though observations of these objects would still be worth making.
- There were 5 LPs which were very poorly-observed, for which we used AAVSO preliminary charts; in discussions following the meeting it was agreed, after discussion with Mike Gainsford, that these stars should be dropped and replaced with others

It was thought that a Telescopic booklet would naturally follow-on from the other booklets that were being developed.

John Toone had noted that there were a number of variables on the **Binocular Programme** which varied by very small amounts according to Hipparcos, and he suggested that these be dropped. It was agreed that dropping such stars, but replacing them with more reliable and interesting variables that might attract observers to the programme was a good idea. Arne commented that he no longer added things to the AAVSO programme unless an expert thought that it would be interesting to monitor; he didn't like to remove objects, however, unless there was a good reason. It was agreed that Tony and Melvyn would look for suitable bright Miras to add to the programme as replacements.

Richard also commented that he felt we should start to encourage CCD observers to monitor brighter stars, and he agreed that he would look at producing something for the circular on bright star photometry. The binocular stars whose variation was so small that they would be dropped from the visual programme could then be attempted by keen CCD observers.

Similarly, John Toone had noted three Gamma Cas stars on the list which also showed little variation for most of the time. He thought that we should also move these to the CCD list, with CCD observers alerting visual observers if there was any sign of increased activity, which these stars occasionally showed.

Gary had updated **The Recurrents Objects Programme** late last year. He had dropped CG Dra, as a concerted CCD programme had covered that well. The object of the ROP was to bring long-period CVs to the attention of observers, but systems that were outbursting often were dropped. He added new objects if they had one of Arne's sequences or an AAVSO chart.

For the outbursts 2004-2005, there had been 30 outbursts over the year; 13 of them were

purely visual, 11 were both CCD and visually-observed. Only 9 were purely CCD detected. There were 82 stars on the list, with new ones usually being sourced from Sloan and DSS.

The possibility of producing a ROP booklet was discussed, and would be considered.

Tony was still working for the **The Eclipsing Binary Programme** and was continuing to make predictions for the web page and circulars, which members used. He was cutting the programme to 95 stars, with a view to further reducing the programme to 60-70 stars the next revision around, by dropping stars that no-one was observing. In general, it was the non-observed stars that were to be dropped. 9 more charts had been drawn since the last meeting.

Tony was considering producing an Eclipsing Binary Handbook, which would have charts in it ready to use.

The Chris Jones-administered old Mike Collins programme, formerly the New Variable Star Programme, was now called **The ICCE Programme**. This stood for Identification, Characterisation, and Correction of Errors. Chris was currently working on a BAA journal article to publicise this list.

On the subject of **Charts and Sequences** John Toone reported that the ICWG had been wound up, after producing 'best practice' guidelines. He had 19 new charts, of these, 5 were for stars on the telescopic programme, including 3 ICCE stars with Pickard and Boyd photometry; 2 were on the binocular programme; and 10 charts were for EBs, covering a total of 12 stars. Chris Jones had drawn 6 of the 19 charts. John made an appeal for good CCD photometry below magnitude 13 to enable sequences to be produced to fainter magnitudes. Arne agreed that he could give John access to the AAVSO automated chart plotter, which would be available soon.

It was agreed that reversed charts, which would be produced in the future would have an OR appended to the end of the chart number.

Melvyn showed the draft version of **The Binocular Booklet V2** that he had produced, and this is now available to purchase from the BAA office.

Karen advised that there were currently 172 **Circular** subscribers, 89 of which received the circular on a complimentary or exchange basis. Circulars from number 88 were now made available as pdfs on CD, or as a pdf subscription, and it was hoped that it would be possible to scan all earlier circulars so that a full set might be made available in this format. Storm Dunlop had a full set, but if other circulars from 46 onwards could be scanned by officers, then it was thought that Storm might be willing to do the earlier ones pre-46.

Callum Potter had produced a note regarding progress on the **Web Site**. He had produced a new front page some time ago, but it needed a few words before it could be updated and published.

Gary reported that the **UKAlert group** now had 104 members, of which 41 were from the UK, 52 elsewhere, and a number who were of uncertain location. 340 messages had been posted this year.

Karen reported that the **Mentoring Scheme** seemed to be running well, and an article describing the progress of this project had been sent to the BAA Journal for publication. She had recently added a new category of mentor to the Visual and CCD Mentors that already existed; these were the Analytical Mentors, who could advise on the analysis of data, and give guidance on preparing the data for publication if thought suitable.

Guy reported that the **UK Nova/Supernova Patrol** was definitely going digital; this meant that checking software was becoming particularly important. He reported that the RAS had a group that were interested in helping us with autochecking software, and Dominic Ford had also been writing software which Ron Arbour and Tom Boles had been starting to use.

It was reported that professionals still had a lot of interest in lightcurves and types of supernovae. Guy wondered if we were publicising our work clearly enough, and it was thought that posters at NAM, SAS or other specialist conferences, or an article in Astronomy and Geophysics might be worth considering to promote **Pro-Am collaboration**.

Arne suggested that AAVSO campaign requests could be passed on to our group. It was agreed that we could publicise AAVSO campaigns through our alert groups, and could also pass some of our campaigns on to the AAVSO such as Gary's recent OJ287 project.

Roger, Richard and Karen had already attended the **Faulkes Telescope** training day. Arne suggested some observing campaigns with suitable target types that would be useful with just half an hour of time, so that we could start to consider working with schools on this project.

Roger reported that a sub-group of officers had had a good discussion yesterday regarding increased co-operation. Arne reported that the **AAVSO** were seeking **increased co-operation with groups worldwide**, and he felt that it was good if the BAA also worked to this end.

Roger mentioned that we had received a CD with all the RASNZ data on it, and had been given permission to use this as we wished, so it could be passed on to the AAVSO.

AOB

John Toone suggested the polar AM Her for Variable star of the year 2007. Gary agreed to formulate the text to go with the light curve and chart for the handbook.

It was thought that we would try to arrange a joint meeting between AAVSO and BAAVSS in Spring 2008 just after Easter (March 21st is Easter Friday).

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>mu 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					

IBVS 5615-5637

GARY POYNER

- 5615** Optical observations of **BQ Cam** using ROTSE3D observations. (Baykal et al, 2005)
- 5616** New times of minima of eclipsing binary stars. (Bakis et al, 2005)
- 5617** **XY Pic**: A detached binary mis-classified as a W UMa system. (Dall, 2005)
- 5618** **GSC 4232.2830**, an eclipsing binary with elliptical orbit. (Goranskij et al, 2005)
- 5619** There is no third body in the eclipsing binary system **HS Herculis**. (Colak & Mutyesseroglu, 2005)
- 5620** A new bright U Gem variable identified with the X-ray source **1RXS J053223.9+624755** (Bernhard et al, 2005)

- 5621 **IL Lac**: An eclipsing binary with displaced secondary minimum. (Agerer & Berthold, 2005)
- 5622 The GEOS RR Lyr survey. (Le Borgne et al, 2005)
- 5623 Photoelectric minima of eclipsing binaries (Drozd & Ogloza, 2005)
- 5624 The first CCD BVRI light curves of the near contact binary **V387 Cyg**. (Manimanis & Niarchos, 2005)
- 5625 **GW Cancri**: A W-type W UMa system with complete eclipses. Terrel et al, 2005)
- 5626 Outburst of the Black Hole X-ray binary **V4641 Sgr** in July 2004. (Uemura et al, 2005)
- 5627 On the orbital period of **KQ Mon**. (Schmidtbreick et al, 2005)
- 5628 Discovery of a short period pulsating component in the Algol type eclipsing binary system **V346 Cyg**. (Kim et al, 2005)
- 5629 Discovery of a short period pulsating component in the Algol type eclipsing binary system **IU Per**. (Kim et al, 2005)
- 5630 New elements for 80 eclipsing binaries VI. (Otero & Wils, 2005)
- 5631 HIPPARCOS eclipsing binaries showing apsidal motion II (Otero, 2005)
- 5632 **ASAS 081933-2358.2**: RRc type variable with two closely spaced frequencies. (Antipin & Jurcsik, 2005)
- 5633 Periods of 54 known Miras and of 16 new ones in Scorpius. (Roslund et al, 2005)
- 5634 Time resolved H alpha monitoring of the Herbig Ae/Be star **HD 200775**. (Ismailov & Aliyeva, 2005)
- 5635 2004 UBVR photometry of the eclipsing binary star **KR Cyg**. (Sipahi, 2005)
- 5636 CCD observations of times of minima of eclipsing binaries (Cook et al, 2005)
- 5637 Elements for 7 eclipsing binaries in Ophiucus. (Haussler et al, 2005)
- 5638 Absolute Spectrophotometry and light curve of Nova Puppis 2004 (**V574 Pup**) (Siviero et al, 2005)
- 5639 Discovery of a new pulsating star: **SAO 29875**. (Zola et al, 2005)
- 5640 Newly discovered variable stars in the Globular Clusters NGC 5634, **Arp 2** and **Terzan 8**. (Salinas et al, 2005)
- 5641 Revision of the list of Galactic Field RRab stars with known Blazhko periods. (Sodor & Jurchisk, 2005)
- 5642 Photometric variability in the strongly interacting binary **DK Canum Venaticorum**. (Terrell et al, 2005)
- 5643 Photoelectric Minima of selected Eclipsing Binaries and Maxima of Pulsating Stars. (Hubscher, 2005)
- 5644 New elements for 80 Eclipsing Binaries VII. (Otero & Wils, 2005)
- 5645 CCD times of minima of several Eclipsing Binaries. (Pejcha, 2005)
- 5646 Partial Eclipses in **BR Cygni**. (Terrell & Gross, 2005)
- 5647 New photometry of the roAp star **33 Lib**. (Kurtz et al, 2005)
- 5648 Erratum to IBVS 5566 (Strassmeier et al, 2005)
- 5649 Photoelectric Minima of some Eclipsing Binary Stars. (Albayrak et al, 2005)
- 5650 The GEOS RR Lyr Survey. (Le Borgne et al, 2005)
- 5651 A photometric null result in the search for pulsations of the luminous rapidly oscillating Ap star **HD 116114**. (Lorenz et al, 2005)
- 5652 Additional data for 69 variables. (Hoogeveen, 2005)

- 5653** 164. List of timings of minima of Eclipsing Binaries by BBSAG observers. (Diethelm, 2005)
- 5654** GSC 02050-00745: A new RR Lyrae star with Blazhko effect. (Antipin et al, 2005)
- 5655** Southern RR Lyrae stars exhibiting the Blazhko effect, (Wils & Sodor, 2005)
- 5656** New variable stars in the open cluster M103 (NGC581) (Lee et al, 2005)
- 5657** Photoelectric Minima of selected Eclipsing Binaries and maxima of Pulsating Stars. (Hubscher et al, 2005)
- 5658** Discovery of a new Pulsating Star: **GSC 04619-00846**. (Zhang & Xing, 2005)
- 5659** Discovery of Eclipsing Binary **GSC 2007:761** and mis-classification of **delta Scuti SAO 83225**. (Cosmas & Yecko, 2005)
- 5660** Elements for 8 RR Lyrae variables in Ophiuchus. (Haussler et al, 2005)
- 5661** The rapid fading of **V1647 Orionis**: The sudden end of a FUOR type eruption? (Kospal et al, 2005)

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>

VARIABLE STAR SECTION CIRCULAR, NOTES FOR AUTHORS

KAREN HOLLAND

This is a list of guidelines to follow if you are preparing an article for possible publication in a Variable Star Section Circular. This outlines the preferred format for articles which maximises ease of transfer into the publishing package that is used; speeds up the process of generating a circular; and minimises the risk of mistakes. However, please do not be dissuaded from sending articles and graphics on paper, or in other formats if that is the only format that you are able to provide; it is the quality of article that is most important, and I do not want to deter potential contributors.

Article Content

The Circular is designed to be a Newsletter for the Variable Star Section of the British Astronomical Association. As such, it includes a wide range of articles including news about the Section and variable star observing, members' projects and discoveries, requests for observation of particular targets, and many other topics. If you have any doubt that your article is suitable for the Circular, then please contact the editor in advance of writing the article, for guidance regarding the content and level, or for advice concerning more appropriate publications.

Use of English

Please check your article carefully for errors before sending it to me. English spellings are used in the Circular, rather than US spellings eg *accretion disc*, not *accretion disk*, *materialise* rather than *materialize*, *centred* rather than *centered*.

Avoid unnecessary abbreviations such as mag (for magnitude) and the use of & instead of 'and'.

Please put two spaces after full stops.

Text Format

Text should be sent in **raw text** form. Please **do not** send articles as Word documents. You *may* include a Word document purely for the purpose of illustrating the formatting of complicated columns or tables, but the document **MUST** be sent as raw text for importing into the circular. Include the reference to each figure, together with your figure caption in the body of the text, roughly where it is to appear, eg:

The graph below shows the light curve for RZ Cas.

Figure 1, Graph for RZ Cas showing.....

.....text continues

Image Format

Images must be sent individually, and labelled as <AuthorSurnamefig1.bmp/tiff/pcx> etc. The preferred formats are TIFF, PCX and BMP, but other common formats such as GIF can also be accepted. The images should be of a good resolution, and must be saved as black and white images, with no colour information. The simplest method for doing this is to open the image using Adobe Photoshop, and simply select Image>Mode>Grayscale, and when prompted 'this will discard all colour information - continue' hit return. If you are unable to do this, then please inform me when you send the image, and I will convert to black and white for you.

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Please ensure that any text that you have on graphs and images is large. One of the commonest problems with producing the Circular is that axis labels and text on graphs is too small, and once reproduced it becomes almost unreadable. If you have any doubt, send me a trial plot well in advance of the deadline (or the Excel file if used), so that I can advise if the text is too small, and then remember the settings for the next time.

Use a plain background for any graphs if possible.

Don't include the figure caption in the image. Include figure captions with your figure references in the raw text file.

Circular Deadline

The deadline for articles for a Circular will be the seventh day of the month preceding the month that the Circular is to appear e.g. the September Circular deadline will be 7th August. Any changes to this will be clearly noted in the preceding Circular. The vast majority of Circulars have been formatted for the printer by a week after the deadline, and the acceptance of a late article involves the reformatting of the whole document, and is therefore usually declined. However, it may occasionally be possible for me to accept late articles (if I am late starting the document due to holidays etc), but only if I know about this in advance; if you think you are able to produce an article, but that it

might be late, please contact me to enquire if this will be possible. If it is possible, then I need to have a good idea of the length of the article so that I can leave enough space at the appropriate point, to avoid having to reformat the whole Circular to include it.

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Article Submission

Articles should preferably be sent by email to karen.holland@xcam.co.uk.

Paper articles will be accepted if this is the only format that you are able to produce; send to :

Karen Holland, 136 Northampton Lane North, Moulton, Northampton, NN3 7QW

Author Details

If you are happy for your name and contact details to be published, then you may include them at the bottom of your article, so that readers may contact you direct, regarding your contribution.

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 Apr 4, TV Cas D20(21)25 indicates that TV Cas will be in mid eclipse at approx 21h UT. The start of the eclipse occurs during Daylight, but the eclipse will be observable from approx 20h UT through to the end of the eclipse at "25h" (i.e. 01h UT on Apr 5). Please contact the EB secretary if you require any further explanation of the format.

The variables covered by these predictions are :

RS CVn	7.9-9.1V	Z Dra	10.8-14.1p	U Sge	6.45-9.28V
TV Cas	7.2-8.2V	TW Dra	8.0-10.5v	HU Tau	5.92-6.70V
UCrB	7.7-8.8V	S Equ	8.0-10.08V	X Tri	8.88-11.27V
SW Cyg	9.24-11.83V	delta Lib	4.9-5.9V	TX UMa	7.06-8.80V
V367 Cyg	6.7-7.6V	Y Psc	9.44-12.23V	Z Vul	7.25-8.90V

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

Two long period eclipsing variables have eclipses due during this interval. These are W Cru (mid-eclipse April 10) and V1488 Cyg (mid-eclipse May 22). For further details, see VSSC 114.

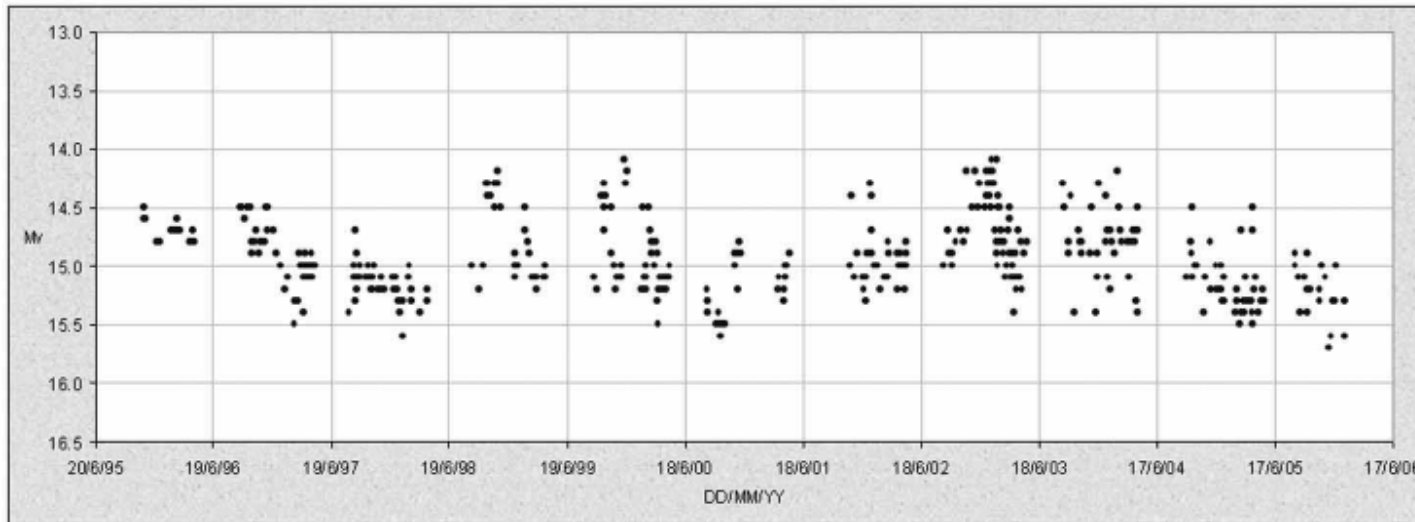
In addition, a secondary eclipse of the recently discovered NN Del (SAO 126201) is predicted to be centred on approx 11h UT on March 25 and a primary eclipse is predicted for approximately 01h UT on Jun 14. Outside of eclipses, NN Del is of magnitude 8.4. Both eclipses are approx 0.5 magnitudes deep, with the primary eclipse lasting approx 17 hours, compared with approx 21 hours for the secondary eclipse. NN Del was discovered via the Hipparcos data and has a period of approx 99.2684 days and a highly eccentric orbit. More observations are required to define the elements more accurately.

2006 Apr 1 Sat	U Sge	01(07)04D	HU Tau	D20(21)22L	2006 Apr 23 Sun
TV Cas	02(06)04D	RS CVn	D20(18)24	2006 Apr 16 Sun	SW Cyg
2006 Apr 2 Sun	2006 Apr 9 Sun	TW Dra	D20(22)27	V367 Cyg	L22(24)27D
Z Vul	00(06)04D	SW Cyg	D20(23)28D	Z Vul	L22(23)28D
TW Dra	D20(21)26	2006 Apr 10 Mon	2006 Apr 17 Mon	TV Cas	D20(19)24
Z Dra	20(23)25	TX UMa	02(07)04D	Z Dra	D20(21)23
TV Cas	21(25)28D	delLib	L22(23)28D	HU Tau	D20(23)22L
2006 Apr 3 Mon	Z Dra	24(26)28D	delLib	L21(23)28D	U Sge
RS CVn	D20(23)28D	2006 Apr 11 Tue	2006 Apr 18 Tue	2006 Apr 25 Tue	Z Dra
delLib	L22(24)28D	TW Dra	02(07)04D	RS CVn	02(08)04D
TX UMa	23(27)28D	HU Tau	D20(18)22L	SW Cyg	21(27)28D
V367 Cyg	L23(57)28D	Z Vul	L23(25)28D	2006 Apr 19 Wed	U CrB
2006 Apr 4 Tue	TV Cas	23(27)28D	TW Dra	D20(17)22	Z Vul
TV Cas	D20(21)25	2006 Apr 12 Wed	U CrB	D20(22)28D	2006 Apr 27 Thu
V367 Cyg	L23(33)28D	U CrB	D20(24)28D	HU Tau	D20(24)21L
U Sge	L24(22)27	2006 Apr 13 Thu	2006 Apr 20 Thu	delLib	00(06)03D
2006 Apr 5 Wed	delLib	01(07)04D	delLib	00(07)04D	RS CVn
U CrB	21(26)28D	Z Dra	D20(19)22	2006 Apr 21 Fri	TW Dra
V367 Cyg	L23(09)28D	HU Tau	D20(20)22L	TV Cas	00(04)04D
2006 Apr 6 Thu	TV Cas	D20(22)26	S Equ	L02(03)04D	SW Cyg
delLib	01(08)04D	TW Dra	21(26)28D	Z Dra	20(23)25
Z Dra	22(24)27	2006 Apr 14 Fri	Z Vul	L22(21)26	2006 Apr 29 Sat
V367 Cyg	L23(<<)28D	S Equ	L02(06)04D	U Sge	L23(19)25
Z Vul	L23(27)28D	U Sge	L23(25)28D	2006 Apr 22 Sat	2006 Apr 30 Sun
2006 Apr 7 Fri	2006 Apr 15 Sat	TV Cas	D20(24)27D	U CrB	01(06)03D
TX UMa	00(05)04D	Z Dra	02(04)04D	RS CVn	21(27)27D
2006 Apr 8 Sat	TV Cas	D20(18)22	V367 Cyg	L22(48)27D	2006 May 1 Mon

del Lib	D21(22)27D	TX UMa	D21(25)26D	2006 May 31 Wed	X Tri	01(03)02D	
TV Cas	21(25)27D	RS CVn	D21(27)26D	V367 Cyg	D22(04)26D	Z Dra	D22(23)25
U Sge	L22(23)27D	2006 May 17 Wed	TW Dra	D22(20)25	V367 Cyg	D22(43)26D	
2006 May 2 Tue	TW Dra	D21(19)24	del Lib	22(28)26D	2006 Jun 18 Sun		
RS CVn	D21(18)24	del Lib	23(29)26D	2006 Jun 1 Thu	TV Cas	00(04)02D	
SW Cyg	D21(20)26	2006 May 18 Thu	V367 Cyg	D22(<<)25	X Tri	L01(03)02D	
2006 May 3 Wed	U Sge	D21(20)26	TV Cas	D22(21)25	V367 Cyg	D22(19)26D	
U CrB	D21(17)23	Z Vul	D21(21)26	2006 Jun 2 Fri	2006 Jun 19 Mon		
TW Dra	D21(18)23	Z Dra	24(26)26D	Z Dra	22(25)26D	X Tri	L01(02)02D
TV Cas	D21(21)25	2006 May 19 Fri	2006 Jun 3 Sat	2006 Jun 3 Sat	V367 Cyg	D22(<<)26D	
Z Vul	22(28)27D	TX UMa	22(26)26D	U CrB	D22(19)25	RS CVn	D22(17)24
del Lib	24(30)27D	2006 May 20 Sat	SW Cyg	D22(20)26D	Z Vul	D22(19)24	
2006 May 4 Thu	TV Cas	00(04)02D	2006 Jun 4 Sun	2006 Jun 4 Sun	del Lib	D22(19)25L	
Z Dra	02(04)03D	U CrB	D21(24)26D	U Sge	D22(18)24	TV Cas	D22(24)26D
TX UMa	D21(19)23	SW Cyg	D21(27)26D	Z Vul	D22(26)26D	2006 Jun 20 Tue	
2006 May 6 Sat	2006 May 21 Sun	S Equ	L23(19)24	2006 Jun 5 Mon	2006 Jun 5 Mon	X Tri	L01(01)02D
Z Dra	D21(21)24	Z Dra	D21(20)22	del Lib	D22(20)26D	U CrB	D22(25)26D
U CrB	22(28)27D	RS CVn	D21(22)26D	2006 Jun 7 Wed	2006 Jun 7 Wed	X Tri	L00(01)02D
2006 May 7 Sun	TV Cas	D21(24)26D	2006 Jun 8 Thu	2006 Jun 8 Thu	TV Cas	D22(19)24	
TX UMa	D21(20)25	S Equ	L24(25)26D	U CrB	00(06)02D	TV Cas	D22(19)24
2006 May 8 Mon	U Sge	24(30)26D	Z Dra	00(02)02D	S Equ	D22(23)26D	
del Lib	D21(22)27D	2006 May 22 Mon	Y Psc	L01(01)02D	del Lib	D22(27)25L	
Z Vul	L21(25)27D	del Lib	D21(21)26D	U Sge	D22(27)26D	SW Cyg	D22(27)26D
U Sge	L21(17)23	TX UMa	23(28)26D	del Lib	D22(28)26D	Z Dra	22(25)26D
2006 May 10 Wed	2006 May 23 Tue	S Equ	24(29)26D	2006 Jun 9 Fri	2006 Jun 9 Fri	Y Psc	L24(27)26D
TX UMa	D21(22)26	Z Vul	D21(19)24	2006 Jun 8 Thu	2006 Jun 8 Thu	X Tri	L00(00)02D
Z Dra	D21(23)25	TV Cas	D21(19)24	TV Cas	23(27)26D	TX UMa	D22(19)24
V367 Cyg	D21(62)27D	2006 May 24 Wed	2006 Jun 9 Fri	2006 Jun 9 Fri	Z Vul	D22(23)26D	
TV Cas	23(27)27D	del Lib	22(29)26D	Z Vul	D22(23)26D	2006 Jun 24 Sat	
del Lib	23(30)27D	2006 May 25 Thu	RS CVn	D22(27)26D	U Sge	D22(25)26D	
2006 May 11 Thu	SW Cyg	D21(17)23	2006 Jun 10 Sat	2006 Jun 10 Sat	2006 Jun 25 Sun		
SW Cyg	D21(23)27D	Z Dra	D21(21)24	TV Cas	D22(22)26D	TX UMa	D22(20)25
V367 Cyg	D21(38)27D	TW Dra	24(29)26D	2006 Jun 11 Sun	2006 Jun 11 Sun	TW Dra	D22(26)26D
U Sge	L21(26)27D	2006 May 26 Fri	TW Dra	D22(25)26D	Y Psc	L24(21)26D	
TW Dra	23(28)27D	RS CVn	D22(17)24	2006 Jun 12 Mon	2006 Jun 26 Mon		
2006 May 12 Fri	2006 May 27 Sat	del Lib	D22(20)26L	Z Dra	00(03)02D		
V367 Cyg	D21(14)27D	U CrB	D22(21)26D	SW Cyg	D22(24)26D	del Lib	D22(19)25L
TV Cas	D21(22)27	2006 May 28 Sun	2006 Jun 13 Tue	2006 Jun 13 Tue	Z Vul	22(28)26D	
2006 May 13 Sat	U Sge	D22(24)26D	Z Dra	D22(21)24	2006 Jun 27 Tue		
V367 Cyg	D21(<<)27D	TW Dra	D22(24)26D	U CrB	D22(28)26D	U CrB	D22(23)26D
TX UMa	D21(23)27D	S Equ	L23(22)26D	2006 Jun 14 Wed	2006 Jun 28 Wed		
Z Vul	D21(23)27D	2006 May 29 Mon	TW Dra	D22(20)25	Z Dra	D22(20)22	
U CrB	D21(26)27D	del Lib	D22(20)26D	Z Vul	D22(21)26D	S Equ	D22(20)25
2006 May 14 Sun	Z Dra	D22(23)25	U Sge	D22(21)26D	TW Dra	D22(21)26D	
TW Dra	D21(23)27D	V367 Cyg	D22(52)26D	RS CVn	D22(22)26D	TX UMa	D22(22)26D
Z Dra	22(25)27D	2006 May 30 Tue	S Equ	D22(26)26D	TV Cas	D22(25)26D	
S Equ	L24(28)27D	SW Cyg	00(06)02D	del Lib	D22(27)25L	del Lib	D22(26)24L
2006 May 15 Mon	TV Cas	D22(25)26D	2006 Jun 16 Fri	2006 Jun 16 Fri	2006 Jun 30 Fri		
del Lib	D21(21)27D	V367 Cyg	D22(28)26D	V367 Cyg	D22(67)26D	TV Cas	D22(21)25
2006 May 16 Tue	Z Vul	22(28)26D	2006 Jun 17 Sat	2006 Jun 17 Sat			

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LIGHT CURVES



BY Cam: Visual G. Poyner

BY Cam is an underobserved Polar with a catalogued Blue magnitude range of 15.0- <17.0 . The visual range since 1995 has been 14.2-15.7. During this period BY Cam has not displayed the classical low state observed in this type of object, but has been seen to vary over one magnitude in 24 hours (January 2000), with 0.5-0.7 mag. fluctuations visible in under three hours.

SECTION OFFICERS

Director Roger D Pickard
3 The Birches, Shobdon, Leominster,
Herefordshire HR6 9NG T:01568 708136
E: rdp@star.ukc.ac.uk

Secretary details as for Director

Chart Secretary John Toone
Hillside View, 17 Ashdale Road,
Cressage, Shrewsbury, SY5 6DT.
T:01952 510794 E: EnootnhoJ@aol.com

Binocular Secretary Melvyn D. Taylor
17 Cross Lane, Wakefield, West Yorks, WF2 8DA
T:01924374651 E: melvyn.taylor@breathemail.net

Nova/Supernova Secretary Guy M Hurst
16 Westminster Close, Basingstoke,
Hants, RG22 4PP .
T& F:01256 471074 E: Guy@tahq.demon.co.uk

Eclipsing Binary Secretary Tony Markham
20 Hillside Drive, Leek, Staffs, ST13 8JQ
T: 01538 381174
E: tonymarkham@compuserve.com

Recurrent Objects Co-ordinator
Gary Poyner
67 Ellerton Road, Kingstanding,
Birmingham, B44 0QE.
T:0121 6053716
E: garypoyner@blueyonder.co.uk

CCD Advisor Richard Miles
Grange Cottage, Golden Hill, Stourton Caundle,
Dorset, DT10 2JP
T:01963 364651
E: rmiles.btee@btinternet.com

Circulars Editor Karen Holland
136 Northampton Lane North, Moulton,
Northampton, NN3 7QW
T: 01604 671373 Fax: 01604 671570
E: karen.holland@xcam.co.uk

Webmaster Callum Potter
The Cottage, Bredon's Hardwick, Tewkesbury,
Glos., GL20 7EE, UK.
T: 01684 773256
E: callum.potter@gmail.com

TELEPHONE ALERT NUMBERS

Nova and Supernova discoveries

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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