British Astronomical Association

VARIABLE STAR SECTION CIRCULAR

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Contents

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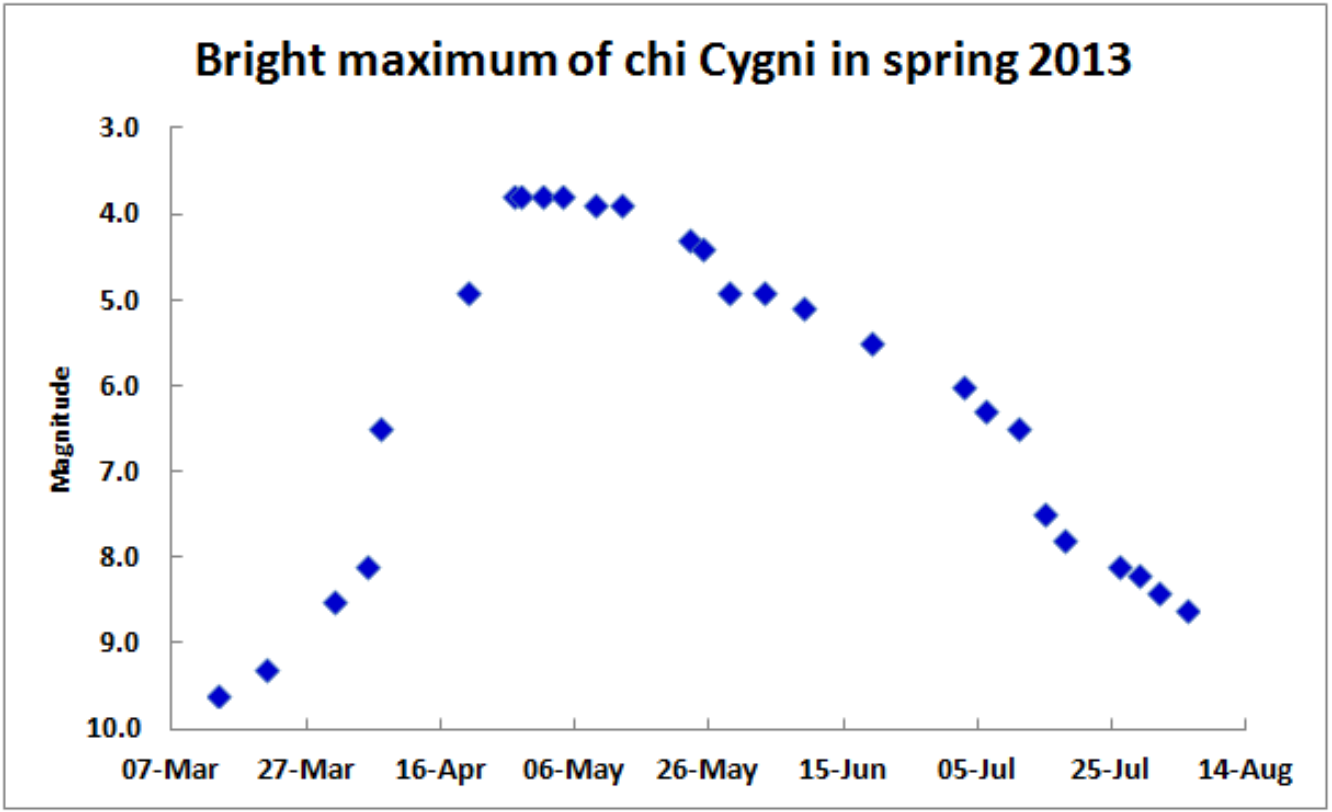
LIGHT CURVE OF CHI CYGNI

TONY MARKHAM

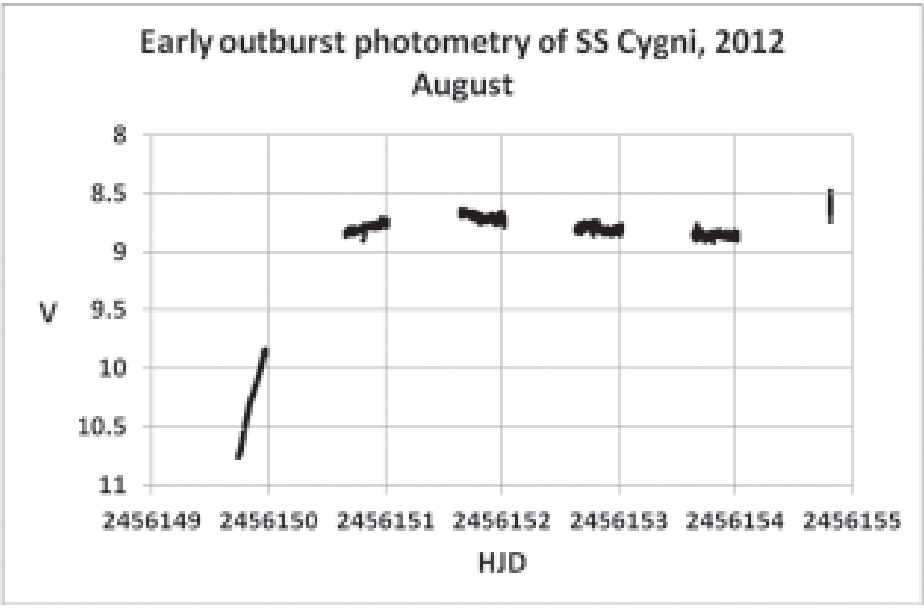


* * *

REQUEST FOR CCD MONITORING OF THE LONG OUTBURSTS OF SS CYGNI

Robert Smith University of Sussex < *R.C.Smith@sussex.ac.uk* >

Dr John Cannizzo, of NASA's Goddard Space Flight Center (GSFC) in Baltimore, Maryland, is an expert on models of dwarf nova outbursts. He has a theory that all the long outbursts of SS Cygni have a short precursor outburst, which can be seen at the beginning of the long outburst as a period of time during which the brightness is not quite as high as it later becomes. This is quite a small effect, and cannot be seen in the visual light curves. However, there is some evidence of it in CCD data, as seen for example in the accompanying plot of data from August 2012, taken by colleagues of mine in Mexico, which shows an initial slight dip followed by a rise on the last night (unfortunately clouded out before many data points were obtained). Dr Cannizzo has seen this plot, and is keen to see more evidence. I would therefore like to ask readers with CCD cameras to consider monitoring the outbursts of SS Cygni, particularly the long ones (about every second one is a long one – see the AAVSO charts) and passing the processed data to Dr Cannizzo at GSFC < *John.K.Cannizzo@nasa.gov* >. If anyone already has such data, please also pass that on.



FROM THE DIRECTOR

ROGER PICKARD

The 150th Anniversary of the Association for the Systematic Observation of Variable Stars.

Elsewhere in this Circular John Toone briefly describes the history of the 'Association for the Systematic Observation of Variable Stars' and the publication of its observing manual 'On the Method of Observing Variable Stars'. This manual was particularly important as it formed the template for all our modern-day visual observations. It is felt that this is a special part of our British heritage and to recognise this, and to celebrate the 150th anniversary of its publication, it was decided that we should replicate what was done with the October 1863 Astronomical Register, and distribute copies of it again with the September Circular. I hope you will enjoy reading it.

The copies have been produced by RAMPrint from an A4 size PDF of the original publication, which for ease of distribution with the Circular has been reduced to A5 size. The margins have been cropped to keep the text as large as possible which has inevitably caused a slight difference in the size of text from one page to another. Bob (RAMPrint) pointed out that the page numbers are not correctly assigned, but this was not a mistake, but an accurate reprint of the original publication.

Changes to the ICCE Programme

In an effort to encourage more observations of stars on this programme the following stars have been moved to the Main Telescopic Programme:

TASV 0626 +34 Aur	TAV 0033 +59 Cas	TAV 0714 +17 Gem	TAV 0346 +38 Per
CC Cam	TAV 2034 +61 Cep	V2303 Oph	V335 Vul
V720 Cas	J0712 +296 Gem	TAV 0559 +06 Ori	

Note that all these stars now have good BAAVSS charts (*** **). The remaining objects will stay on the Main ICCE page until their charts too have been updated.

In addition, TASV 1946 +00 Aql which now equals V1717 Aql has been dropped as it is well characterised and the GCVS entry looks secure.

It should also be noted that V720 Cas, TAV 1933 +53 Cyg (still on the main ICCE page), J0712 +296 Gem and TAV 0714 +17 Gem would almost certainly benefit from CCD observations carried out with a V filter. It is highly likely that the GCVS entries for V720 Cas and V1258 Tau (still on the basic ICCE programme) are probably incorrect as both stars show very intriguing behaviour.

Charts

Sadly, as of the middle of August, I have not had any offers of help to produce new charts. Come on folks, surely there is someone out there who could give occasional assistance.

Our youngest member

Similarly, I have not had a response to my request to find our youngest member. Does this mean that nobody reads the Circulars(!) or is it that we do not have anybody under the age of 30. In the hope that it is the latter rather than the former I shall raise the limit to 40 and look forward to a flood of responses!

VSS Logo

Melvyn Taylor recently suggested that it would be nice to have our own logo. This would need to be based on the BAA logo of the diamond ring effect at a total solar eclipse, but perhaps with a light curve. Or perhaps members may have other ideas?

Beginners Page

At the recent BAA Exhibition one VSS member approached me and made some helpful suggestions about the Beginners Page. Sadly, being very busy at the meeting, not only have I forgotten who that person was but also what he had to say! So, if you recall the discussion please email me and remind me of what you suggested.

Applets

Graham Relf has again been busy with the Computing Section site and added a useful applet to go with the JD Calculator that he produced before. This one calculates the Heliocentric Julian Date and so should be particularly useful for eclipsing binary enthusiasts. Thanks again to Graham.

Members Meeting 2014

We are only just over half way through 2013 (as I write this) but already the date and venue for next year's Full Members Meeting have been decided. It will take place on Saturday June 21st in York and the theme will be John Goodricke and eclipsing binaries. What is more, we even have two speakers booked and they are Dr. Boris Gaensicke of Warwick University and Martin Lunn MBE FRAS. Further details will follow in due course but please add the date to your diary.

* ***** *

ECLIPSING BINARY NEWS - AUGUST 2013

DES LOUGHNEY

BAA Eclipsing Binary Observing Guide

This is a reminder that our Guide is available to be downloaded from the BAA VSS website. Paper copies can be obtained by contacting me.

Actual Images of the Algol System

Wikipedia has published a graphic composed of actual images of the Algol system. It

was compiled with 55 images obtained by the CHARA interferometer.

EBs and Orbital Plane Precession

In the last News it was noted that there are EBs whose eclipse depths are changing due to orbital plane precession (caused by the presence of a third or more bodies). Two examples of these systems are IU Aurigae and AH Cephei.

IU Aurigae

This is an EB/SD system with a period of about 1.811465 days. Its maximum is 8.19V. According to the Krakow site the primary eclipse has a depth of 0.5 magnitude and the secondary eclipse has a depth of 0.4 magnitude. IBVS paper 3674 (1991) describes how the primary eclipse depth was 0.48V in 1964 and it increased to 0.74V in 1985 decreasing to 0.63V in 1990.

This seems to indicate that it may have gone down to 0.48V by 2006 and may be increasing again. The secondary eclipse was 0.38V in depth in 1964 and 0.56V in 1985.

It will be useful to determine the current depth of the eclipses. It is a possible target for visual observations but also a good target for precision DSLR photometry. Anyone interested in studying this system should contact me and we can go over a list of comparisons that can be used for ensemble photometry.

The system will be in a favourable position for observation this coming autumn and winter. Observations away from minima could be done every couple of hours. Near minima they could be done every fifteen minutes. The predictions for eclipses are available on the Krakow website.

Remember that the eclipse depth is defined in Johnson V magnitudes.

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NOVA DELPHINI 2013

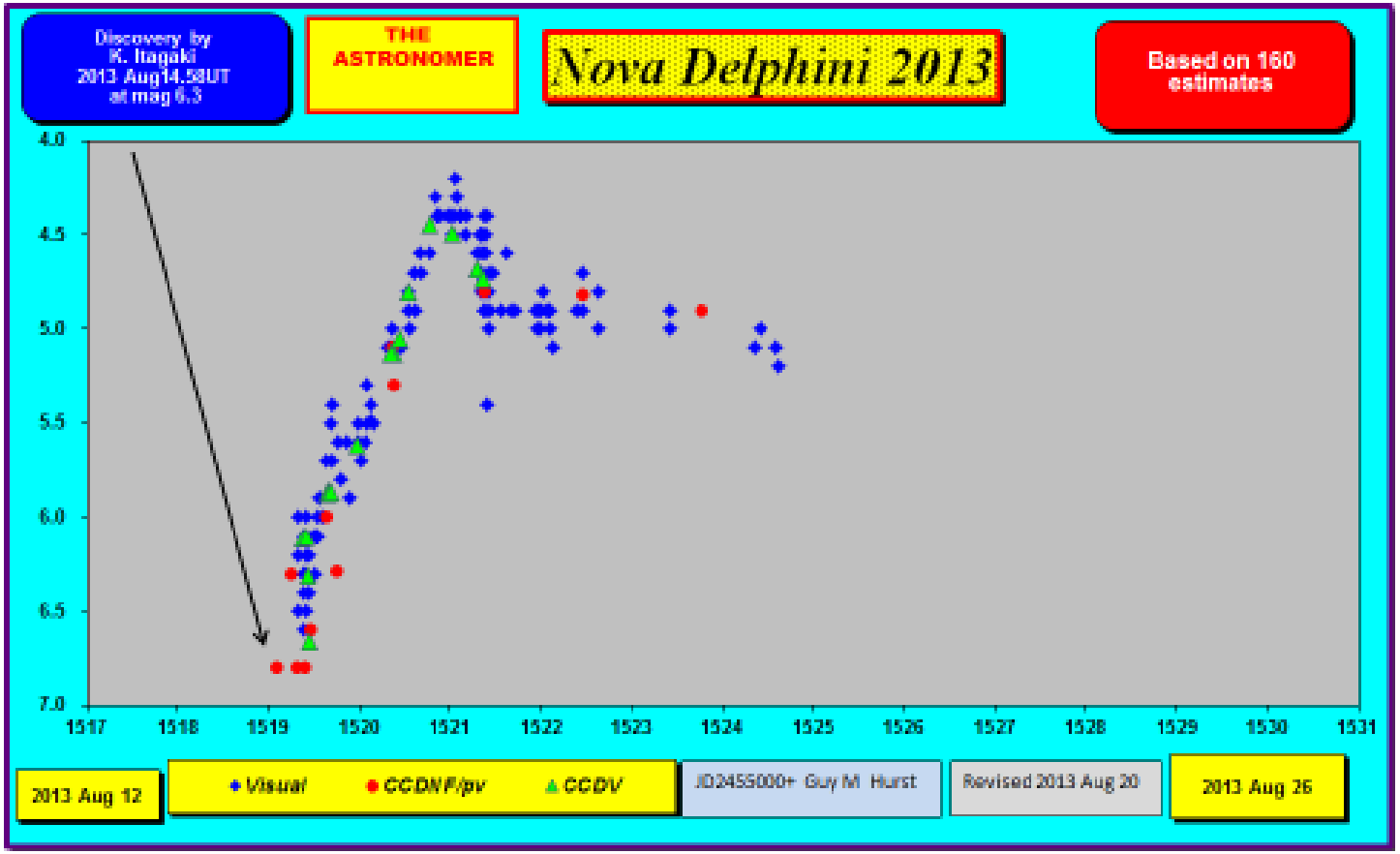
Guy Hurst

Koichi Itagaki, Japan has reported discovery of an apparent nova (mag 6.8) on an unfiltered CCD frame of 2013 Aug. 14.58UT using a 0.18-m reflector. It was confirmed with a 0.60-m f/5.7 reflector on Aug. 14.75 showing a brightening to mag 6.3. It is located at: RA 20h 23m 30.73s DEC +20 46' 04.1" (2000).
Itagaki posted his discovery image at:

http://www.k-itagaki.jp/images/pnv-del.jpg

Additional CCD magnitudes: 2013 May 13.99, 17.1 (D. Denisenko et. al. 0.40-m f/2.5 robotic MASTER-Kislovodsk reflector; limiting mag 18.9); Aug 14.8, 6.8 (Ernesto Guido et. al. 0.43-m f/6.8 astrograph, Spain; position end figures 30s.72, 03".4); 14.81, V = 6.2 (Wolfgang Vollmann, Vienna)

Continued, after the light curve, on page 8



Light Curve of Nova Delphini 2013 showing observations taken during the first six days after discovery. Guy Hurst

Visual magnitude estimates Aug. 14.82UT, 6.2 (M. Reszelski, Poland, 15x70 binoculars); 14.915, 6.3 (E. Broens, Belgium); 15.03, 6.0 (Gustav Holmberg, Sweden).
Denisenko et al. suggest that the variable is identical to the blue star USNO-B1.0 1107-0509795 (position end figures 30s.713, 03".97; blue mag 17.2- 17.4, red mag 17.4-17.7).

Strong H-alpha emission has been noted by Masi et al. (low-resolution spectra taken with a 36-cm robotic telescope at Ceccano; scale about 3.4 nm/pixel; Aug. 14.92 UT) and by Olivier Garde (Observatoire de la Tourbiere, France; C14 telescope; resolution 10000; echelle spectrograph).

Since the above I have received, at the time of writing, 160 magnitude estimates (as of 2013 August 20) which have been used to generate the light curve shown. An initial peak of about magnitude 4.4 seems to have occurred at 2013 August 16.5UT although further multiple peaks may still occur after writing this. Latest observations have suggested a fade to about magnitude 5.0 by August 19. At present the amplitude seems to be about 13 magnitudes, rather greater than the average for all novae.

Charts with sequence can be generated by visiting the AAVSO Home Page at:

http://www.aavso.org/

and entering 'Nova Del 2013' in the star finder box after which scale and orientation to suit your instrument and circumstances can be selected.

This report was written only six days after discovery but a fuller more up to date version is planned for the next BAA Journal.

Guy M Hurst - Coordinator
Guy@tahq.demon.co.uk

EUROVS HELSINKI, 27TH TO 28TH APRIL 2013

Nick Atkinson *<nick@nicksspace.co.uk>* (continued from VSSC No 156)

The EUROVS Helsinki 2013 program, photographs, presentations, and video links, can all be found on this web-site: *http://www.ursa.fi/english/eurovs-2013.html*

Nick Atkinson - The BAA VSS data base

Nick explained that on 1st January 2012 the new online database went live containing both the visual and CCD observations enabling anyone to easily review and download data. This is merely phase 1 of a complete overhaul of the BAA VSS database. Phase 2 will allow observers to submit observations online should they wish to do so. Once this has happened, then the old visual and CCD databases will be decommissioned. Data can now be accessed for any variable in the database, and light curves can be generated with the ability to zoom in to any part of them. Details of observers may also be obtained.

The BAA VSS database has the unique ability to re-reduce magnitudes. This is immensely useful when sequence magnitudes are updated with improved photometry.

Figure 1: The old observatory, now a museum. <*http://www.observatorio.fi/english/index.html*>

photographs courtesy of Arto Oksanen

It is made possible by three factors. The recording of:

1. The specific chart used.
2. The specific comparison stars used.
3. The calculation by fractional (or Pogson) method eg. B(2)V(3)C.

Not just the resulting calculated magnitude.

This means that observations spanning many years using different sequences can be re-reduced on modern sequences.

The BAAVSS Observing Programmes

These include a Binocular programme which publishes detailed charts with labelled sequence comparisons, an Eclipsing Binary programme, and an Eclipsing Dwarf Novae Programme which was set up to attempt to discover eclipses in these objects. The Nova/Supernova search is in conjunction with the Deep Sky Section of the BAA and the Astronomer Magazine. Over 240 supernovae discoveries have now been made by UK amateurs.

The BAA VSS Long Term Polar Programme has been set up to monitor a selection of AM Her stars over a period of years. The objective is to observe on a nightly basis both visually and with CCD's, and to report any change in high/low state activity. The programme is supported by Dr Boris Gaensicke, Warwick University.

The Recurrent Objects Programme was set up initially by Guy Hurst of 'The Astronomer' in the 1980s specifically to monitor poorly studied eruptive stars. Many of the objects have no known period, and details of maximum and minimum brightness are uncertain. Gary Poyner took over as co-ordinator of the ROP in 1990, and integrated it into the BAA VSS Programme in 1995.

The ICCE (Identification, Classification and Correction of Errors) and also checking on the discovery of new variables. Aim is to collect data on certain poorly studied variables with the aim to build light curves whic can be used to classify the star. The CCD programme is designed to help those with CCDs to obtain scientific results and covers CVs in the main, but not exclusively. More can be found on our website < *http://www.britastro.org/vss/* >

F.I.J. (Josch) Hambsch - Intense observations observations of RR Lyr stars.

Josch had a roll off roof observatory in Belgium with several telescopes and a CCD

camera, but with so many clouded nights, and his visits away from home, he decided to move and share a remote observatory in New Mexico equipped with a 50cm RC f/8.4 (4200mm FL) STL11K with BVI photometric filters. The conditions there were found to be unfavourable again, in this case because of high winds.

The Remote Observatory in the Atacama Desert at San Pedro de Atacama (ROAD), 2450 metres above sea level and with 5000 inhabitants has reliable supplies of electricity, water, lodging, food, shops, high speed (4MB and more) internet, plus more than 300 clear nights a year. In the Southern Hemisphere (23 degrees south) there are competent people for service and dark skies 22.00 mag/sq arc-sec. The ROAD in Chile in the Atacama dessert is the driest dessert on Earth and has the advantage that there are large international professional telescopes at several sites (Paranal, La Silla) and is UT -4.

Josch, started regular observations on Aug. 1, with Clear nights (Aug 2011-July 2012 = 320) and 100 so far in 2013.

Observing mainly from New Mexico, the star E = 2455087.44 HJD P = 0.53940 +/- 0.00002 deduced a Blazhko Effect! The Blazhko period for NU Aur was 114.7 days. The Blazhko Effect is the periodic variation in both period and shape of the light curve, something many RR Lyra stars exhibit. Other stars were also found to exhibit the Blazhko Effect. These were the VY CrB with a Blazhko period of 68.0 days, and DY And with a Blazhko period of 224.8 days.

Observing now from ROAD in Chile, observations were made of V354Vir in 2012 showing a Blazhko Effect. The Blazhko period of V354Vir was 68.0 days and of AL Pic was 32.4 days.

V1820 Ori is a RR Lyra star of type RRab period (0.479078 +/- 0.000032) days exhibiting a strong Blazhko effect with Blazhko amplitude modulation of 0.85 mag and a Blazhko period 27.89 days and demonstrating variability.

Josch illustrated his presentation with pictures of his telescopes and multi-wavelength light curves.

Mike Simonsen - The Z Campaign

Mike explained that Z Cam stars are Dwarf novae with outburst amplitudes of 2 to 5 magnitudes, and with relatively short cycle lengths of 10-40 days, which exhibit occasional standstills after outbursts. UGZ can be classified by their light curves alone. Their orbital period is not a definitive characteristic, even though they are all on the long side of the period gap from 3 to 10 hours. Consequently, if it does not exhibit standstills, it is not a Z cam. Another characteristic is that standstills are always initiated by an outburst ending in quiescence. At least three Z Cam stars appear to go into outburst from standstill: HX Peg, AH Her and AT Cnc.

Arne outlined the goals of the current campaign to gain a better understanding of the science behind Z Cams and the historical background of the new class. He proposed that there are over 60 UGZ but that only a couple of dozen are really Z Cams. If this is true, Z Cams are a rare and interesting class of stars like Recurrent Novae and R CrBs. Analysis of decades of historical data has excluded AB Dra, CN Ori, AM Cas, FO Per, and SV CMi from qualifying.

Arne said that of the results from studies of 64 CV systems listed as Z Cams in the literature, only 19 are confirmed as Z Cam variables. Twenty-four others are not Z Cam stars. The remaining stars are most likely not Z Cams but require more long term monitoring.

Figure 2: The old double-refractor (33 cm / 18 cm), in the old observatory, was used for the Cart-du-Ciel project in early 1900s. *<http://en.wikipedia.org/wiki/Carte_du_Ciel>*

IN RETROSPECT THE ASOVS 150 YEARS ON

JOHN TOONE *EnootnhoJ@aol.com*

1863 was quite a momentous year and as a consequence there are a number of 150 year anniversary celebrations being undertaken in 2013. On the world stage, 1863 was the year that the Red Cross was established in Geneva, the first underground railway opened in London, and in North America a civil war was at its height. On the domestic front, sport was very much in the news with the formation of the Football Association, and Yorkshire County Cricket Club. However, from a variable star perspective 1863 was definitely the year of the ASOVS.

The ASOVS (Association for the Systematic Observation of Variable Stars) was the first attempt to establish an association of variable star observers, and was the brainchild of Joseph Baxendell and George Knott. Baxendell based in Manchester and Knott based in Sussex were certainly the most active variable star observers in Great Britain following the departure of Norman Pogson to India in 1861. They actively communicated and collaborated with each other, and also with Pogson whose sister Mary Anne was the wife of Baxendell.

The announcement of the ASOVS was made in the Monthly Notices of the Royal Astro-

nomical Society in January 1863, and two months later Baxendell presented the outline proposals for the ASOVS at a meeting of the Manchester Literary and Philosophical Society. In brief, the objective of the ASOVS was to promote the systematic observation of variable stars by employing a uniform observing method using fixed sequences (taken in the main from Pogson's Hartwell Variable Star Atlas) to a standard magnitude scale (Pogson's proposal from 1856).

The climax of the ASOVS activities was the production of the first observing manual for variable stars entitled 'On the Method of Observing Variable Stars.' This manual had everything necessary in terms of instruction to the variable star observer as well as advice on retaining a logbook and the drawing of light curves. There was also a heavy emphasis on the adoption of Pogson's proposed light ratio of 2.512 for a difference of 1 magnitude. The manual was completed in August 1863 and distributed with the October 1863 edition of the Astronomical Register that was released at the end of September 1863.

Unfortunately, the ASOVS did not develop any further due to opposition to the Pogson standard magnitude scale proposal and a lack of sequences arising from the delayed production of the Hartwell Variable Star Atlas. For a more detailed account of the ASOVS and the reasons for its failure to become fully established, please refer to JBAA 2010, 120, pages 136-138.

In retrospect the ASOVS was way ahead of its time as the world was not ready to accept the standard magnitude scale proposed by Pogson which was a prerequisite to standard sequences and ultimately the pooling of variable star observations. Eventually, the Pogson magnitude scale was adopted worldwide and this cleared the way for the BAA VSS and Harvard College Observatory at the end of the 19th Century to commence the systematic observations of variable stars envisaged by Baxendell and Knott 150 years ago.

Despite its failure to get established, the ASOVS became the template for the BAA VSS which in turn was the template for the AAVSO (almost an anagram for the ASOVS). Therefore the ASOVS was a much underestimated key step in the evolution of variable star astronomy and deserves recognition as such today some 150 years on.

VARIABLE STAR SECTION, AT THE BAA EXIBITION MEETING, MANCHESTER

GARY POYNER
AND
TONY MARKHAM

Figure 1: by T.M.

Figure 2: Roger Pickard and Paul Abel at the Manchester Exhibition Meeting June 2013, by G.P.

Figure 3: Melvyn Taylor, Gary Poyner; and Roger Pickard talking to Nick Atkinson, by T.M.

BINOCULAR PROGRAMME - MODIFICATIONS

MELVYN TAYLOR

The binocular programme of mainly pulsating variables together with a few other types (M, RV, Ina, Z And, G Cas, S Dor and NC) is being modified very slightly to assist both new and existing observers. The programme is changed little except that NQ Gem and CK Ori are dropped as only very minor variations not dissimilar to observers' scatter are seen. It is likely that a set of 'red irregulars' (see level 4 below) may ultimately be dropped and that some more suitable 'binocular' variables may be added.

The VSS database has been consulted for assessing the priority scenarios. The distribution and continuity of the observational set in terms of the light-curve and determination of a star's basic variation was seen as being more relevant than grand totals. One of the initial criteria in prioritising stars was not only about an object being 'popular' (i.e. easily found, or considered to be important astrophysically) but that it may be seen to have definite brightness changes, which is not always the case in terms of the characteristics of the pulsating classes. Data given is generally from the General Catalogue of Variable Stars.

This does not mean that if a star is dropped an observer should stop observing it if they still wish to, if they have been following it for years, for example. Their observations will still be accepted by the VSS.

Priority level 1:

This list is as existing and as previously published, but it should be noted that V Boo, XX Cam, gamma Cas, R CrB, omicron Cet, R Hya and VY UMa are not shown, as they that are on the telescopic programme.

Star	RA (2000)	Dec	Type	Range	Period	Chart
AQ And	00 28	+35 35	SR	8.0 - 8.9	346d	303.01
EG And	00 45	+40 41	ZAnd	7.1 - 7.8		72.02
V Aql	19 04	-05 41	SRb	6.6 - 8.4	353d	26.04
UU Aur	06 37	+38 27	SRb	5.1 - 6.8	234d	230.02
AB Aur	04 56	+30 33	Ina	6.7 - 8.4		301.01
RW Boo	14 41	+31 34	SRb	7.4 - 8.9	209d	104.02
RX Boo	14 24	+25 42	SRb	6.9 - 9.1	160d	219.02
ST Cam	04 51	+68 10	SRb	6.0 - 8.0	300d?	111.02
X Cnc	08 55	+17 04	SRb	5.6 - 7.5	195d	231.02
RS Cnc	09 11	+30 58	SRc	5.1 - 7.0	120d?	269.01
V CVn	13 20	+45 32	SRa	6.5 - 8.6	192d	214.02
WZ Cas	00 01	+60 21	SRb	6.9 - 8.5	186d	323.01
V465 Cas	01 18	+57 48	SRb	6.2 - 7.8	60d	233.02
Rho Cas	23 54	+57 29	SRd	4.1 - 6.2	320d	64.01
W Cep	22 37	+58 26	SRc	7.0 - 9.2		312.02
AR Cep	22 52	+85 03	SRb	7.0 - 7.9		332.02
Mu Cep	21 44	+58 47	SRc	3.4 - 5.1	730d	112.02
RS CrB	15 59	+36 01	SRa	7.0 - 10.2	332d	220.02
W Cyg	21 36	+45 22	SRb	5.0 - 7.6	131d	62.03
AF Cyg	19 30	+46 09	SRb	6.4 - 8.4	92d	232.02

CH Cyg	19 25	+50 15	ZAnd+SR	5.6 - 11.0	97d	089.03
P Cyg	20 18	+38 02	SDor	3.0 - 6.0	6d	1972Jul29
U Del	20 46	+18 06	SRb	5.6 - 7.9	110d?	228.02
EU Del	20 38	+18 16	SRb	5.8 - 6.9	60d	228.02
TX Dra	16 35	+60 28	SRb	6.6 - 8.4	78d?	106.03
AH Dra	16 48	+57 49	SRb	7.0 - 8.7	158d	106.03
X Her	16 03	+47 14	SRb	6.1 - 7.5	95d	223.02
SX Her	16 08	+24 55	SRd	8.0 - 9.2	103d	113.02
UWHer	17 14	36 22	SRb	7.0 - 8.8	104d	107.02
AC Her	18 30	+21 52	RVA	6.8 - 9.0	75d	048.04
IQ Her	18 18	+17 59	SRb	7.0 - 7.5	75d	048.04
OP Her	17 57	+45 21	SRb	5.9 - 7.2	120d	324.01
RX Lep	05 11	-11 51	SRb	5.0 - 7.4	60d?	110.01
SV Lyn	08 04	+36 21	SRb	6.6 - 7.9	70d?	108.03
Y Lyn	07 28	+45 59	SRc	6.5 - 8.4	110d	229.02
U Mon	07 31	-09 47	RVB	5.9 - 7.9	91d	029.04
X Oph	18 38	+08 50	M	5.9 - 9.2	328d	099.02
BQ Ori	05 57	+22 50	SR	6.9 - 8.9	110d	295.01
AG Peg	21 51	+12 38	Nc	6.0 - 9.4		094.02
X Per	03 55	+31 03	GCas+Xp	6.0 - 7.0		277.01
R Sct	18 48	-05 42	RVA	4.2 - 8.6	146d	026.04
Y Tau	05 46	+20 42	SRb	6.5 - 9.2	242d	295.01
W Tri	02 42	+34 31	SRc	7.5 - 8.8	108d	114.02
Z UMa	11 57	+57 52	SRb	6.2 - 9.4	196d	217.02
ST UMa	11 28	+45 11	SRb	6.0 - 7.6	110d?	102.02
V UMi	13 39	+74 19	SRb	7.2 - 9.1	72d	101.02
SS Vir	12 25	+00 48	SRa	6 0 - 9.6	364d	097.02
SW Vir	13 14	-02 48	SRb	6.4 - 8.5	150d?	098.02

Priority level 2:

The following are regarded (in the main) as under-observed or having poor continuity, and several objects come to conjunction with the Sun so the light-curve is broken.

Star	**RA(2000)**	**Dec**	**Type**	**Range**	**Period**	**Chart**
RS And	23 55	+48 38	SRa	7.0 - 9.1	136d	1977Sep10
TZ And	23 51	+47 31	SRb	7.6 - 9.0		1977Sep10
V450 Aql	19 34	+05 28	SRb	6.3 - 6.7	64d	70.02
RV Boo	14 39	+32 32	SRb	7.5 - 8.8	137d	104.02
U Cam	03 42	+62 39	SRb	7.7 - 8.8		100.02
RY Cam	04 31	+64 26	SRb	7.3 - 9.4	136d	1972Jul29
Y CVn	12 45	+45 26	SRb	5.2 - 6.6	157d	215.02
TU CVn	12 55	+47 12	SRb	5.6 - 6.6	50d	215.02
V393 Cas	02 03	+71 18	SRa	7.0 - 8.0	393d	1978May15
RU Cep	01 21	+85 08	SRd	8.2 - 9.8	109d	332.02
RW Cep	22 23	+55 58	SRd	6.2 - 7.6	346d?	312.02
SS Cep	03 50	+80 19	SRb	6.7 - 7.8	90d	315.01
FZ Cep	21 20	+55 27	SR	7.0 - 7.6		302.01
RR CrB	15 41	+38 33	SRb	7.1 - 8.6	61d	220.02
RU Cyg	21 41	+54 19	SRa	8.0 - 9.4	233d	302.01
RV Cyg	21 43	+38 01	SRb	7.1 - 9.3	263d	1983Sep18

TT Cyg	19 41	+32 37	SRb	7.4 - 8.7	118d	227.01
dTU Gem	06 11	+26 01	SRb	7.4 - 8.3	230d	294.01
TV Gem	06 12	+21 52	SRc	6.6 - 8.0	42d	294.01
WY Gem	06 12	+23 12	Lc+E?	7.2 - 7.9		294.01
ST Her	15 51	+48 29	SRb	7.0 - 8.7	148d	223.02
V566 Her	18 08	+41 43	SRb	7.1 - 7.8	137	324.01
g(30) Her	16 29	+41 53	SRb	4.3 - 6.3	89	224.02
SX Lac	22 56	+35 12	SRd	7.7 - 8.7	190	235.01
CE Lyn	07 44	+38 50	SR	7.8 - 8.7	?	108.03
R Lyr	18 55	+43 57	SRb	3.9 - 5.0	46?	330.01
RV Mon	06 58	+06 10	SRb	6.8 - 8.6	132	292.01
SX Mon	06 52	+04 46	SR	7.3 - 8.5	100	292.01
W Ori	05 05	+01 11	SRb	5.9 - 7.7	212	105.02
GO Peg	22 55	+19 34	Lb	7.1 - 8.3		103.01
SU Per	02 22	+56 36	SRc	7.0 - 8.5	533	1974Jan13
AD Per	02 21	+57 00	SRc	7.7 - 8.4	362	1974Jan13
Z Psc	01 16	+25 46	SRb	7.0 - 7.9	144	278.01
TV Psc	00 28	+17 54	SR	4.7 - 5.6	49	1972Sep09
S Sct	18 50	-07 54	SRb	7.0 - 8.2	148	26.04
t4 Ser	15 36	+15 05	SRb	5.9 - 7.4	100	209.01
TT Tau	04 52	+28 32	SRb	8.1 - 8.8	166	301.01
BU Tau	03 49	+24 08	GCas	4.8 - 5.5		1983Oct03
RY UMa	12 21	+61 19	SRb	6.7 - 8.3	310?	217.02
TV UMa	11 46	+35 54	SRb	6.8 - 7.3	42	271.01
VW UMa	10 59	+69 59	SR	6.9 - 7.7	610	226.01
BK Vir	12 30	+04 25	SRb	7.3 - 8.8	150?	270.01

Priority level 3:

Stars (not all in programme) that have been queried by GCVS cataloguers as to its period and/or type.

Star	**RA(2000)**	**Dec**	**Type**	**Range**	**Period**	**Chart**
V Ari	02 15	+12 14	SRb	7.8 - 8.8	77?	1984Oct26
W Boo	14 43	+26 32	SRb?	4.7 - 5.4	450?	Undated
UV Cam	04 06	+61 48	SRb	7.5 - 8.1	294?	1972Jul29
RT Cnc	08 58	+10 51	SRb	7.1 - 8.6	60?	311.01
V460 Cyg	21 42	+35 31	SRb	5.6 - 7.0	180?	1983Sep18
V973 Cyg	19 45	+40 43	SRb	6.2 - 7.0	40?	232.02
UX Dra	19 22	+76 34	SRa?	5.9 - 7.1	168	1982Nov07
U Hya	10 38	-13 23	SRb	4.3 - 6.5	450?	109.01
RX Vir	12 05	-05 46	SRd?	8.0 - 8.6	200?	317.01

Priority level4:

Not all the 'red-irregulars' are included here. These are considered unlikely to reveal further relevant data other than a trend of the variation and the overall mean range. Many of these stars would make a suitable longer term project for observers with a DSLR camera.

Possibly, if there is sufficient interest, a DSLR/instrumental observer may be keen to take

on a few of these (?). It is appreciated that a set measures would define variations to a superior accuracy than light estimates of the visual worker.

Star	RA(2000)	Dec	Type	Range	Chart
SU And	00 05	+43 33	Lc	8.0 - 8.5	1977Sep10
BZ And	00 38	+45 36	Lb	7.5 - 8.4	1982Aug16
Psi1 Aur	06 25	+49 17	Lc	4.8 - 5.7	1973Jul14
ZZ Cam	04 18	+62 21	Lb	7.1 - 7.9	1972Jul29
W CMa	07 08	-11 55	Lb	6.4 - 7.9	213.02
V391 Cas	01 57	+70 12	Lb	7.6 - 8.4	1978May15
DM Cep	22 08	+72 46	Lb	6.9 - 8.6	Undated
UW Dra	17 58	+54 40	Lb	7.0 - 8.2	1974Jul27
BU Gem	06 12	+22 55	Lc	5.7 - 8.1	294.01
XY Lyr	18 38	+39 40	Lc	5.8 - 6.4	331.01
BL Ori	06 26	+14 43	Lb	6.3 - 7.2	211.01
KK Per	02 10	+56 34	Lc	6.6 - 7.9	1974Jan13
PR Per	02 22	+57 52	Lc	7.6 - 8.3	1974Jan13
TX Psc	23 46	+03 29	Lb	4.8 - 5.8	276.01
VY UMa	10 45	+67 25	Lb	5.9 - 7.0	226.01
RW Vir	12 07	-06 46	Lb	6.7 - 7.6	317.01

BRIEF NOTE

For visual estimators observers just starting observing and wishing to make their own set of stars from the VSS programmes the following advice is given.

As a simple selection theme the following constellations have a number of Binocular Programme stars: 9 in Cygnus and Hercules; 8 in Cepheus; 6 in Andromeda and Ursa Major, and 5 in each of Cassiopeia, Camelopardalis, Draconis and Virgo. Another obvious aspect of making a personal selection apart from the instrumental, local topographical, and seasonal considerations, is that the database may be checked to appreciate the observed magnitudes. This may not coincide with the catalogued values or even with current estimates of other observers which could 'put-off' an observer's confidence in their results. The Binocular Secretary is always willing to assist in the choice of stars to follow. He would also like to hear from VSS observers of any possible new additions which could be added to the programme, and in terms of future changes in particular.

The lists above cater for 116 objects (apart from the six from the 'telescopic' prog.) and in general new observers may first wish to select, say 10 or 15 stars and thereafter consider another 15 stars. One aspect of over-observing just a few stars has to be considered where (bias comes into play). Even experienced observers may wish to re-develop their existing set of variables and this was another intention of creating the priorities as listed above.

MDT 2013 July

ECLIPSING BINARY PREDICTIONS

DES LOUGHNEY

The publication of Eclipsing Binary Predictions is now discontinued in the VSS Circular. Predictions for RZ Cas, Beta Per and Lambda Tau can still be found in the BAA Handbook. Predictions, completed on a monthly basis, are available on the BAA VSS website at:

http://www.britastro.org/vss/dpredict.html

If readers require paper copies of the predictions please contact me.

The best source for predictions for Eclipsing Binaries is the Mt. Suhora Astronomical Observatory, Cracow Pedagogical University website (known as the Krakow website)at:

http://www.as.up.krakow.pl/o-c/index.php3

Click on 'Constellation List', choose your constellation and then choose your system.

A webpage will then appear with lots of useful information regarding the system. In the section entitled 'Light Elements' there is a link entitled 'current minima and phase'. When you click on this link, in the example of Beta Lyrae, you get predictions of primary and secondary eclipses for a period of three months. For systems with very short periods such as RZ Cas the predictions are for one week. For a system such as SW Cyg, with a period of around 4.57 days, the predictions are for a month.

The Krakow website does not tell you how much of an eclipse will be observable at a particular time of the year at your latitude and longitude. However, it has some useful literature references for each system, although they may not necessarily be up to date. Nor are references to the 'Information Bulletin on Variable Stars' included, but these can be found at:

http://www.konkoly.hu/IBVS/IBVS.html

Although the Krakow website lists the depth of eclipses it does not list the actual V magnitudes at maximum and minimum. For an indication of these magnitudes you will need to visit the 'General Catalogue of Variable Stars' website at:

http://www.sai.msu.su/groups/cluster/gcvs/gcvs/

Click on 'GCVS Query Form', type in a designation such as SW Cyg, and click on 'Search'. The resulting information displayed shows that maximum is 9.24V, primary minimum 11.83V, and secondary minimum 9.30V. These magnitudes, however, may have been determined some time ago.

The GCVS website gives SW Cyg a period of 4.57313411 days but the Krakow website lists the period of SW Cyg as 4.572986 days. The latter is more likely to list the most up to date period. It must always be borne in mind that small changes in a period can result in significant changes in the times of minima if the period was determined a few years ago.

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The following charges are made for the Circulars. These cover one year (4 issues). PDF format subscriptions are £3.00 per year. Make cheques out to the BAA, and send to the Circulars editor (address on back cover); or you can now pay on-line.

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* * *

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CD-ROM of the last 3 items	BAA Office	£7.50

Charts are downloadable from the VSS web pages at
http://www.britastro.org/vss/chartcat/wfb.php

For more information, please visit our web pages at **http://www.britastro.org/vss**

CONTRIBUTING TO THE CIRCULAR

If you would like to prepare an article for consideration for publication in a Variable Star Section Circular, please read the *Notes for Authors*, published on the web pages at:
http://www.britastro.org/vss/circs.htm; reproduced in full in VSSC132 p 22, or contact the editor (details on back cover) for a pdf copy of the guidelines.

If you are unsure if the material is of a suitable level or content, then please contact the editor for advice.

The **deadline for contributions** to the next issue of VSSC (number 158) will be 7th November, 2013. All articles should be sent to the editor (details are given on the back of this issue).

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First telephone the Nova/Supernova Secretary, Guy Hurst: 01256 471074
If only answering machine response, leave a mess-age and then try the following:
Denis Buczynski 01862 871187,
Glyn Marsh 01624 880933, or
Martin Mobberley 01284 828431.

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