British Astronomical Association

VARIABLE STAR SECTION CIRCULAR

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Contents

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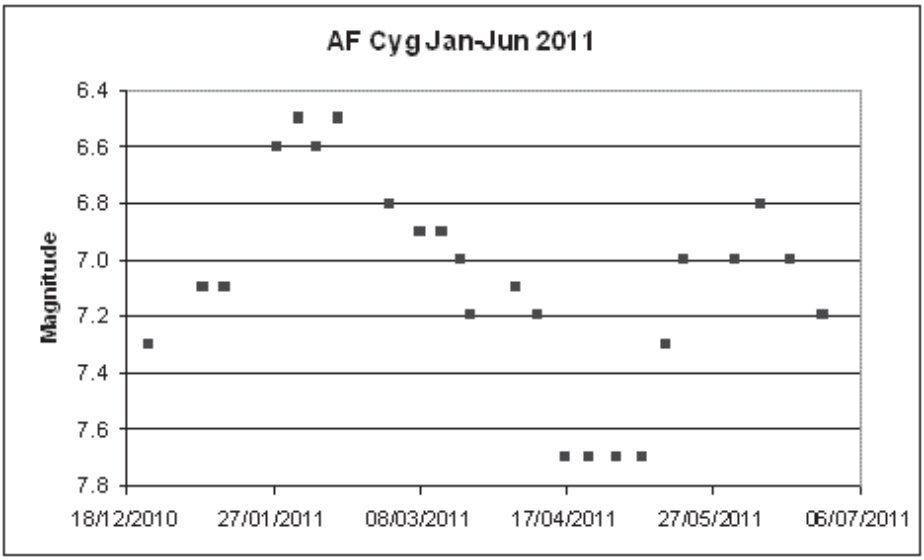
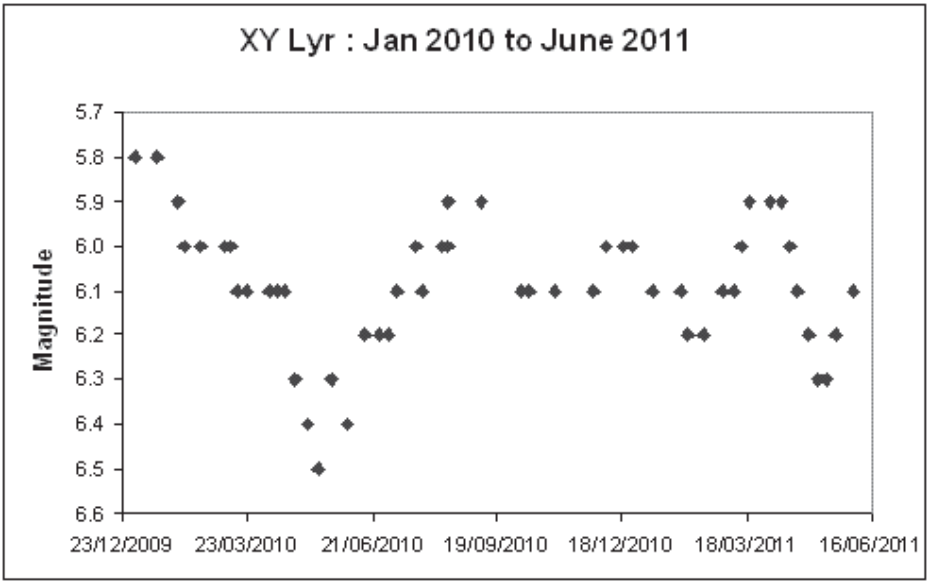
LIGHT CURVES - AF CYGNI and XY Lyrae

TONY MARKHAM





FROM THE DIRECTOR

ROGER PICKARD

Thomas A. Cragg

I am sure most, if not all observers will have heard of Tom Cragg who passed away on 6th May 2011 after a long illness.

Although Tom was a professional astronomer whose work included being an observer at both Mount Wilson and Siding Spring Observatories, he will be best remembered for his support of the amateur fraternity and his lifetime total of 157,056 observations (all but 5 being visual!).

Tom joined the AAVSO in 1945 at the age of 17 and took advantage of his location after moving to Australia to monitor many unstudied or neglected southern variables. Minor planet (5068) Cragg is named in Tom's honour.

I only had the privilege of meeting him once but like everybody who knew him, found him to be a very modest man.

I am grateful to Elizabeth Waagen of the AAVSO for much of the information used here.

BAA VSS Section Meeting Saturday 15th October 2011

Just a few more details about the next Members Meeting. This will be a full-day meeting and will take place at the Monton House Hotel, 116-118 Monton House Road, Eccles, Manchester M30 9HG. It will commence at approximately 10:30 and finish around 17:30.

Speakers booked are Professor Don Kurtz, University of Central Lancashire; Professor Tom Marsh, Warwick University; and possibly Dr. Boris Gaensicke, also Warwick University. Also booked are Des Loughney and Robin Leadbeater on epsilon Aurigae, Stan Waterman on his remarkable project, and short presentations from John Toone, Andy Wilson and Tony Markham.

The cost is likely to be around £10 to include refreshments throughout the day and a light buffet lunch.

Please advise the Director if you wish to attend.

There is ample (free) car parking and the nearest railway station is Eccles which is about 15 minutes walk from the hotel.

NOTE - JANET SIMPSON

This June's Circular is thanks to Steven Parkinson, who when I was incapacitated by a computer scam, took over, learnt how to use PageMaker and put together the bulk of the Circular unaided.

Steve took over the distribution of the Circulars from Karen about two years ago, and has always been very willing to check over the Circular and give help and advise when asked. Thank you Steve!

ECLIPSING DWARF NOVAE PROGRAMME UPDATE

ROGER PICKARD

This programme has not been updated for some time which has not been due to lack of interest but more due to lack of time on the part of the Director.

However, following an exchange of emails which were initiated by another outburst of SV CMi Mike Simonsen updated some of the information, for which I am most grateful, and I have now investigated the programme further.

AR And: Plenty of photometry has revealed no eclipses, so this star is dropped.

FO And: The data to date appears to rule out eclipses. Drop.

SV CMi: Plenty of data but no eclipses. Dropped.

KU Cas: Insufficient data. Retain.

V516 Cyg: Data received indicates no eclipses. Drop.

V1060 Cyg: Still insufficient time-series observations to rule out eclipses, so retain.

ES Dra: There has been plenty of data on this star which has not revealed any sign of eclipses and therefore this star is dropped.

CY Lyr: Quite a lot of data by the director but no sign of actual eclipses. Dropped.

LL Lyr: Insufficient data. Retain.

V426 Oph: Insufficient data. Retain.

HX Peg: Superhumps but no eclipses. Drop.

FY Vul: Insufficient data. Retain.

PY Per: Insufficient data although RP data looks intersting. Retain.

The revised programme now becomes:

Object Name (J2000)	Coordinates	Type	Min	Max T2	T1	P_orb(h) P_shu(h)
KU Cas +57 54 12	01 31 02.4	UGSS	18p	13.3p	??	??
V1060 Cyg +37 14 09	21 O7 42.2	UGSS	18p	13.5p	??	??

Object Name (J2000)	Coordinates	Type	Min	Max T2	T1	P_orb(h) P_shu(h)
LL Lyr	18 35 12.82 +38 20 04.4	UG	17.1	12.8	??	5.978
V426 Oph	18 07 51.7 +05 51 48	NL	13.4	11.5	17-55	6.847
FY Vul	19 41 40 +21 45 59	UGZ	15.3B	13.4B	??	??
PY Per	02 50 00.1 +37 39 23	UGZ	19.8	13.0	- -	3.715

Key:

Data taken from VSX, The Z Cam List, AAVSO data, and BAA VSS data.

p	photographic magnitude
T1	Normal outburst interval (days)
T2	Superoutburst interval (days)
UG	Dwarf Nova, U Gem type
UGSS	Dwarf Nova, SS Cyg type
UGZ	Dwarf Nova, Z Cam type
UGSU	Dwarf Nova, SU UMa type
NL	Dwarf Nova, Nova-like

It would be good if observers suitably equipped could concentrate their efforts on these few remaining stars in an effort to see whether they show eclipses or not.

A NOTE ON THE POLAR PROGRAMME

FROM THE RECURRENT OBJECTS COORDINATOR, GARY POYNER

Mike Simonsen has very kindly spent some time adding sequences to the charts on the Polar Programme list which before only had a preliminary sequence.

New sequences for AI Trianguli, V1309 Orionis, GG Leonis, DP Leonis, AP Coronae Borealis and 1RXSJ161008+635222 can now be downloaded from the AAVSO Variable Star Plotter (VSP).

WX Leonis Minoris remains the only object on the programme with a preliminary sequence.

ECLIPSING BINARY NEWS

DES LOUGHNEY

Epsilon Aurigae - the end of the eclipse!

The brightening phase of the eclipse was scheduled to start on 19th March. In fact it started at the beginning of March. At that time it seemed that the eclipse would be completed earlier than the predicted date of 13th May 2011. The brightening trend was, however, interrupted in late April. The light curve developed a 'shoulder'/'knee'/plateau which lasted for several weeks.

At the time of writing (10th May 2011) epsilon Aurigae is measured at about 3.29V which means that there is some way to go before it reaches the normal magnitude of 3.00V. It now seems that this will not be achieved until the middle of June. This means that egress has unexpectedly taken three and a half months rather than two months.

All the data will have to be analysed to work out the reasons for the longer egress and this may take some time. The probable reason for the change is density variations in the cloud of dust and gas that partially obscures epsilon. Egress was interrupted by a denser part of the disk which may suggest a ring structure.

Professionals involved in the international observing campaign have requested that observations (visual) and measurements (CCD / DSLR photometry) continue for the rest of 2011, to complement continuing spectroscopic studies.

The international campaign thanks all those who have submitted observations and measurements over the last two years, which means that this is the best ever observed epsilon Aurigae eclipse. Hopefully, later in 2011 or early 2012 papers will be published that will illustrate the value of all the hard work that has gone into observing the eclipse. We expect that a large step will be taken to explain the nature of the cloud that obscures epsilon every 27 years.

Eclipsing Binaries in Hercules

There are three eclipsing binaries in Hercules on our Eclipsing Binary Programme. They have been on the programme for some time (since the 1970s) although it is not clear whether any members have observed them in recent years.

U Herculis

This is a system that varies from magnitude 4.69 to 5.37. Thus it is a visual/binocular object. It is also a good DSLR target. The primary minimum has a depth of 0.8 magnitude, and the secondary 0.1 magnitude. The period is 2.0510258 days. This is nearly a day, so that it goes through long phases when the eclipse occurs during the day. It is classified as an algol type system (EA) which is semi-detached.

The interest in the system seems to lie in the fact that the stars are very close. The stars are distorted so that the system is almost intermediate between an EA system and an EB system. It is, perhaps, evolving into an EB system. The light curve is, apparently, affected by the proximity of the stars. All observations of the system are therefore useful

including observations outside the primary eclipse.

The system is fairly easy to find being bright, and near Pi Herculis and Epsilon Herculis. Some planetarium programmes identify the system as 68 Herculis.

Z Herculis

This system varies from about magnitude 7.30 to 8.18, with a period of 3.992819 days. It is classified as an EA-RS system. This means that it has Algol like eclipses but its light curve is modified by the effect of star spots. The light curve may show some of the features associated with stars such as RS Canis Venaticorum. The primary minimum has a depth of 0.8 magnitude and the secondary 0.1 magnitude.

As the period of the eclipse is nearly a day it can be unobservable for some time, but it will be at a favourable time in July / August. It seems that it got on the observing list due to star spot features and because its period may be changing.

Z Herculis is very near Rasalhague in Ophiuchus.

RX Herculis

This system is a good binocular object varying from magnitude 7.28 to 7.87 with a period of 1.7785724 days. The primary eclipse has a depth of 0.6 magnitude and the secondary 0.5 magnitude. It is classified as an EA / DM system which means that it is a classic Algol system with the stars separated though still quite close.

It appears that the orbit of the eclipsing stars is ellipitical as the secondary minimum does not occur at 0.5 of the system's phase.

RX Herculis is roughly midway between Rasalhague and Altair.

AK Herculis

Although this system is not on our list perhaps it should be. The eclipsing binary is itself part of a binary system. It is of the EW class which means that it is a contact binary with a period of 0.42152298 days. It is in continuous eclipse so it can observed at any time. It only takes 2.5 hours to move from maximum (8.29 magnitude) to primary minimum (8.77 magnitude). The primary minimum is 0.5 magnitude in depth and the secondary 0.4 magnitude. Although it is a difficult visual target it is very suitable for DSLR photometry.

This is a system that exhibits the 'O'Connell effect' which means that the maxima can be of varying height due to the effect of large star spots. Other explanations for the effect include circumstellar dust clouds and hot spots.

This system is easy to find being very near Alpha Herculis (2.25 magnitude). A study of this system will be my major priority this summer/autumn using precision DSLR photometry.

Charts for all the above systems can be obtained by contacting me.

desloughney@blueyonder.co.uk

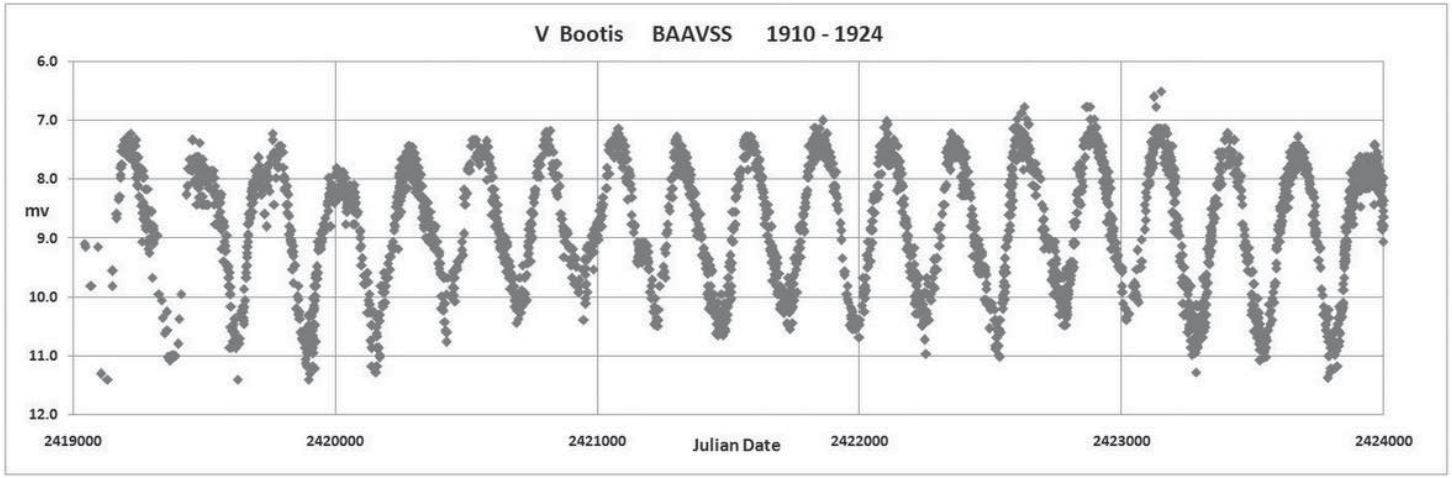
V BOOTIS, A CIRCUMPOLAR VARIABLE (1910 - 2011)

MELVYN TAYLOR

RA 14h30m, Dec. +38° 25', type SRA

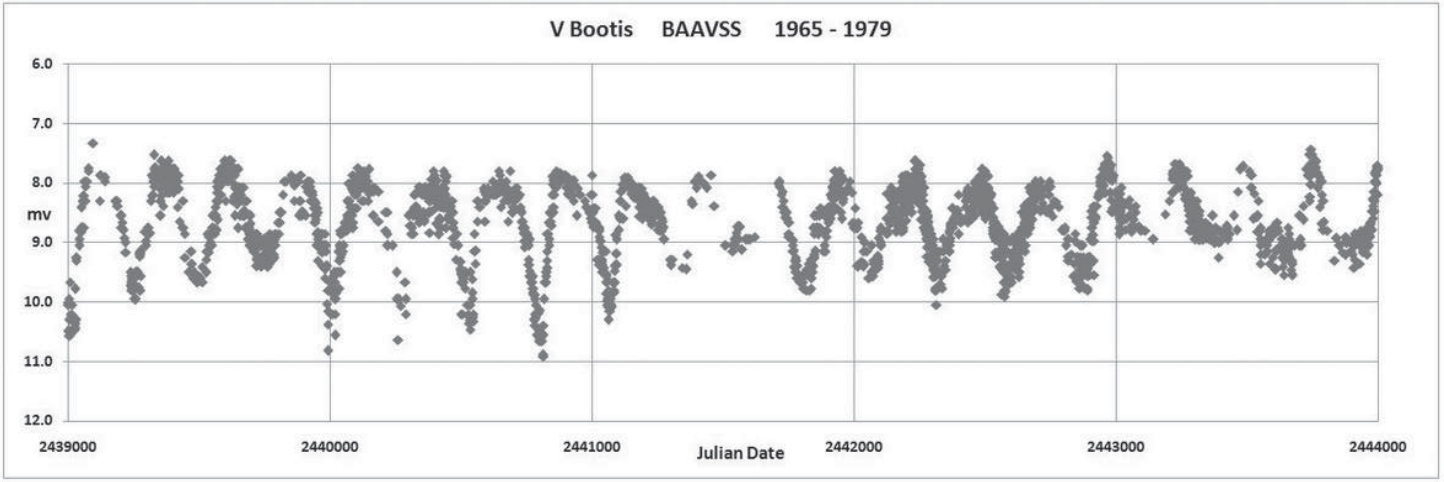
The light-curve of this semi-regular giant has been plotted from 1910 to 2011 and three portions of its activity are highlighted here showing typical variations of this type of object. Three plots over a series of selected intervals (Figures 1 - 3) show the great variability in this SRa type star.

Figure 1.



Maxima values have a mean magnitude of 7.2, varying in extreme from 6.8 to 8.4. Minima had a mean of 10.0, and varying mainly from 9.0 to 11.4 magnitude. From JD 2447700 for about 3 years (not shown in these plots) there is an interval of irregular changes about 1.2 magnitude in amplitude.

Figure 2



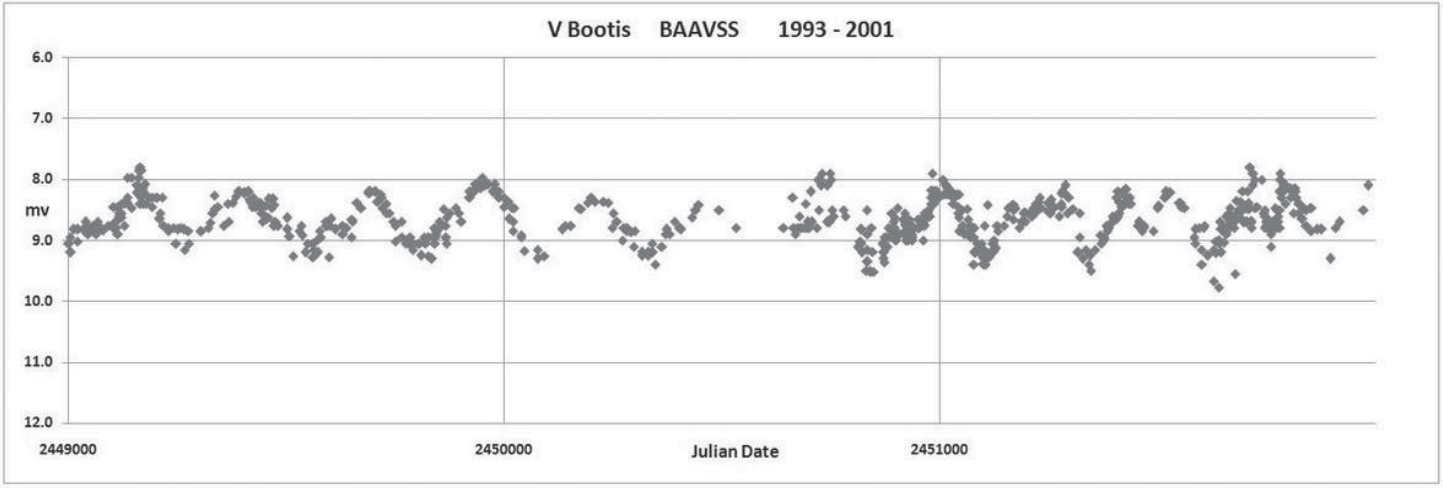
V Bootis (continued)

The mean period has been assessed from well observed maxima (only) at 259days. This value appears to be relatively stable, yet the amplitude changes are visually dominant, and more interesting for the stellar statistician to investigate.

There are occasions where maxima have appeared to show two peaks, similar to the RV type pulsators.

The final plot from 1993 to 2001 (Figure 3) is presented with a slightly different scale in the time axis.

Figure 3



Observers of V Bootis : 1910 to 2001

The following is a full list of observers from 1910 to 2001, not just those whose observations are shown in Figures 1 - 3.

Addey Albrighton Alexander Allen Anderson Andrews Bazin Beesley Bell Bird Bougon Bouma Brelstaff Bridger Brook Brookes Brown Bullivant Burbeck Butterworth	Cables Carter Chambers Chandra Chaplin Chesterfield Churchhouse Churchill Coady Collinson Colquhoun Cousins Cox Cripps Curtis de Roy Dryden	Ells Evans Fawssett Fleet Forsyth Fraser Friends Fry Gayfer Gheury Gibbons Gill Ginori Godden Gough Granslo Griffin	Hapgood Harraway Hartley Harvey Henderson Higgins Holborn Hollis Hornby Hoste Howard-Duff Howarth Hufton Hunt Ilott Isles Jones Joslin	Kay Kellaway Kelly Kiernan Knight Knox Kruybosch Laban Lacchini Lane- Hall Lashley Leach Lepper Lincoln Lindley Littler Livesey Lomas	Macvey Mark Markham Markwick Matthews Maudsley McNaught Middlefell Middlemist Munson Nicholls Pardoe Parkinson Paterson Patston Peel Pezzarossa Pickard Porter Poyner	Reid Robinson Rock Roper Rothery Ryves Saville Saw Shallis Shanklin Shepherd Smith Steer Stephenson Stott Swift	Tanti Taylor Thackeray Thomson Toone van der Bilt Walmesley Waring Washington Waterfield West Wheeler Williams Wilson Young

RECURRENT NOVA T PYXIDIS

Martin P. Mobberley, and Rainer Ehlert.

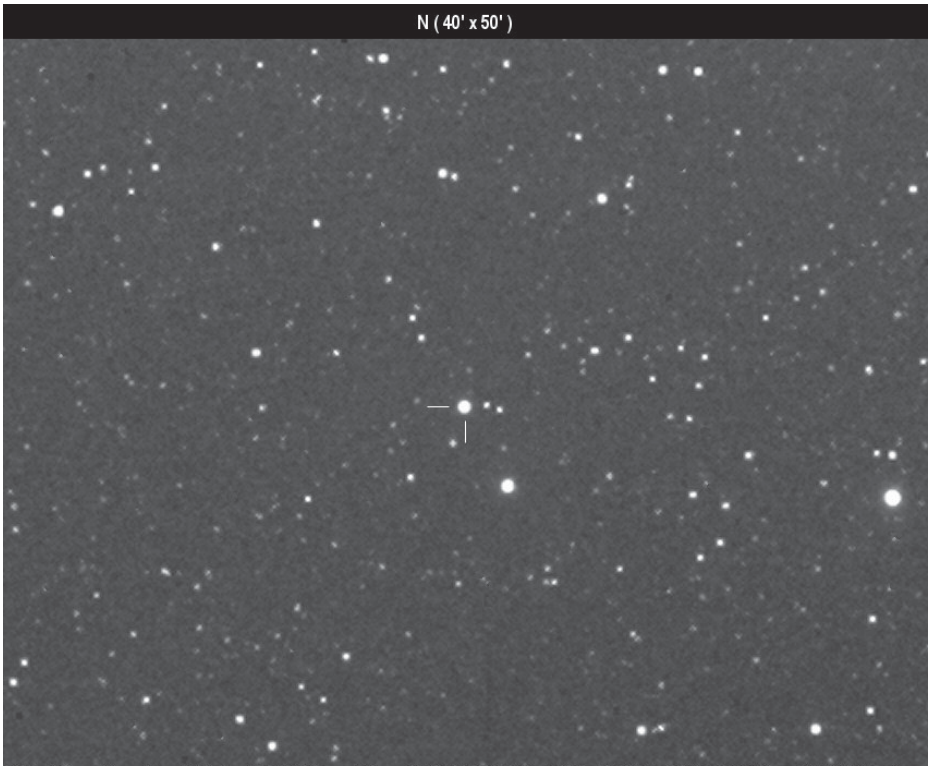


Figure 1: T Pyxidis in outburst, 10:32:10 UT, 15th April 2011.

The photograph above was taken by Martin Mobberley using the GRAS-012 remote telescope (a Takahashi FSQ refractor, 106mm aperture, f/5) with an SBIG STL-11000M which has a 35mm format CCD. It was a single exposure of 120 seconds. GRAS South was temporarily based at Officer Observatory, Victoria, Australia, (S 38° 03', E 145° 22') Elevation: 73 metres).

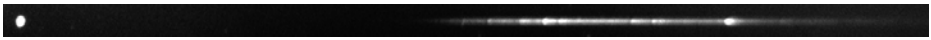
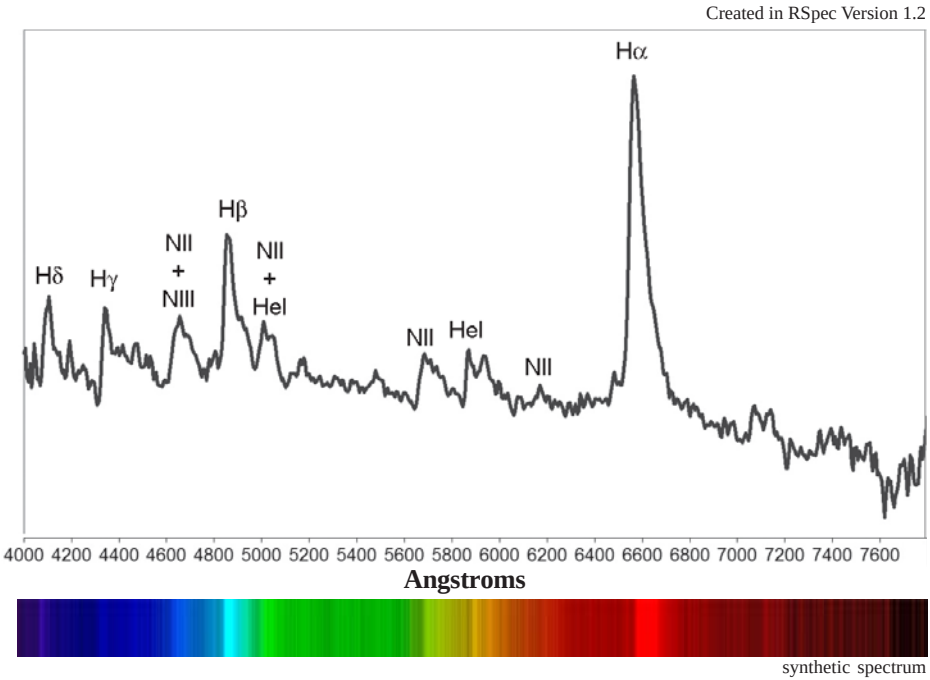


Figure 2: Spectrum of T Pyxidis 03:22:33 UTC, on the 16th April 2011.

Rainer Ehlert's spectra photographs were taken with a QSI 520i mono CCD camera with Star Analyser 100 and the Takshashi TOA 130 f/7.7. The spectrum above is composed of 6 RAW subexposures of 300 seconds each, median stacked and BIAS and FLAT calibrated, taken as T Pyxidis was just lurking over the wall of his Observatory. Rainer's observatory is in San Luis Potosi, Mexico (N 22° 08', W 101° 01').

Figure 3: Instrument response corrected spectrum.



Reference:

Attempted identification of emission lines was made with the help of Higashi-Hiroshima Observatory's web site: *http://kanatatmp.g.hatena.ne.jp/kanataobslog/20110417/p1*

Figure 4:
Rainer Ehlert's
Observatorio Real de 14.

Rainer used Real-time spectroscopy software: *http://www.rspec-astro.com/*

SUPERNOVA 2011B in NGC 2655

Guy Hurst

Although the primary goal of the UK Nova/Supernova Patrol is to find new novae and supernovae, increasingly the odd behaviour of some of these objects after maximum light needs closer inspection. There have been several cases of novae initially fading and then undergoing a second or third maximum, the cause of which is still being researched. Supernovae can also behave in ways which seem to contradict initial findings from the interpretation of their spectra. Supernovae of type Ia are particularly important in the interpretation of distances, so variation in their decline rates means amateur astronomers can extend photometry to quite faint levels to secure extended studies of their light curves.

Koichi Itagaki of Japan reported the discovery on CBET 2625 of a possible magnitude 15.8 supernova on an unfiltered CCD image taken on 2011 January 7.4 UT with a 0.30-m reflector at Takanezawa, Tochigi. The new object was not detected on Itagaki's image of January 2.447 (limiting magnitude 18.5), but it does appear at magnitude 17.5 on his image taken on January 5.570, providing a valuable pre-discovery result.

The object is located at: RA 08h 55m 48.50s DEC +78 13' 02.7"(2000), which is 31.7"E and 21.4"S from the nucleus of the host galaxy, NGC 2655.

Itagaki's discovery image can be seen at:
http://www.k-itagaki.jp/images/psn2655.jpg

An independent discovery was made by Masaki Tsuboi on a 30-sec unfiltered CCD frame (limiting magnitude 17.5) taken on January 8.459 UT using a 0.30-m reflector + CCD which yielded magnitude 15.7. His discovery image is posted at the following website URL:
http://ftenku.web.fc2.com/astrophoto/NGC2655110108-02.jpg

Following an appeal by the Central Bureau, Dave Balam, Dominion Astrophysical Observatory, National Research Council of Canada et. al., reported that a spectrogram of January 8.42 UT with the 1.82-m Plaskett Telescope shows it to be a type-Ia supernova near maximum light. Cross-correlation with a library of supernova spectra using the "Supernova Identification" code (Blondin and Tonry 2007, Ap.J. 666, 1024) indicated that 2011B is most similar to the type-Ia supernova 1992bo a few days pre-maximum light.

Guy Hurst, Basingstoke obtained V photometry using the 0.61-m Cassegrain of Sierra Stars, sponsored by the BAA Robotic telescope Project for which further details appear at:
http://www.britastro.org/robotscope/

The initial results showed a significant brightening several weeks after discovery: 2011 January 26.60 UT, 13.1V; February 1.34, 13.3V (see Figure 1). The subsequent light curve compiled by the coordinator from both patrol members' observations and other contributors (Figure 2) suggests maximum occurred 2011 January 23 with V magnitude 12.8 +/- 0.1. The light curve now extends to 104 observations in part due to the magnitude 11 galaxy in Camelopardalis being in a circumpolar area for most patrol members. Oddly, other

efforts, using the Bradford Robotic Telescope, failed to produce results as the system does not appear to respond to targets very near the North Pole.

To date the decline is fairly linear, though from early 2011 March the results with red filters seem to produce brighter magnitudes than in V. It seems this object may not be one which behaves oddly as mentioned in the introductory paragraph though it remains worthwhile to continue monitoring it especially as it is so well placed.

Charts with a sequence can be obtained from the AAVSO website:
http://www.aavso.org/vsp/chart
or by contacting the coordinator.

If anyone wishes to join the patrol, whether to search for novae or supernovae, and/or to help extend the associated light curves please contact the coordinator, details on back cover.

Guy M Hurst, Coordinator UK Nova/Supernova Patrol

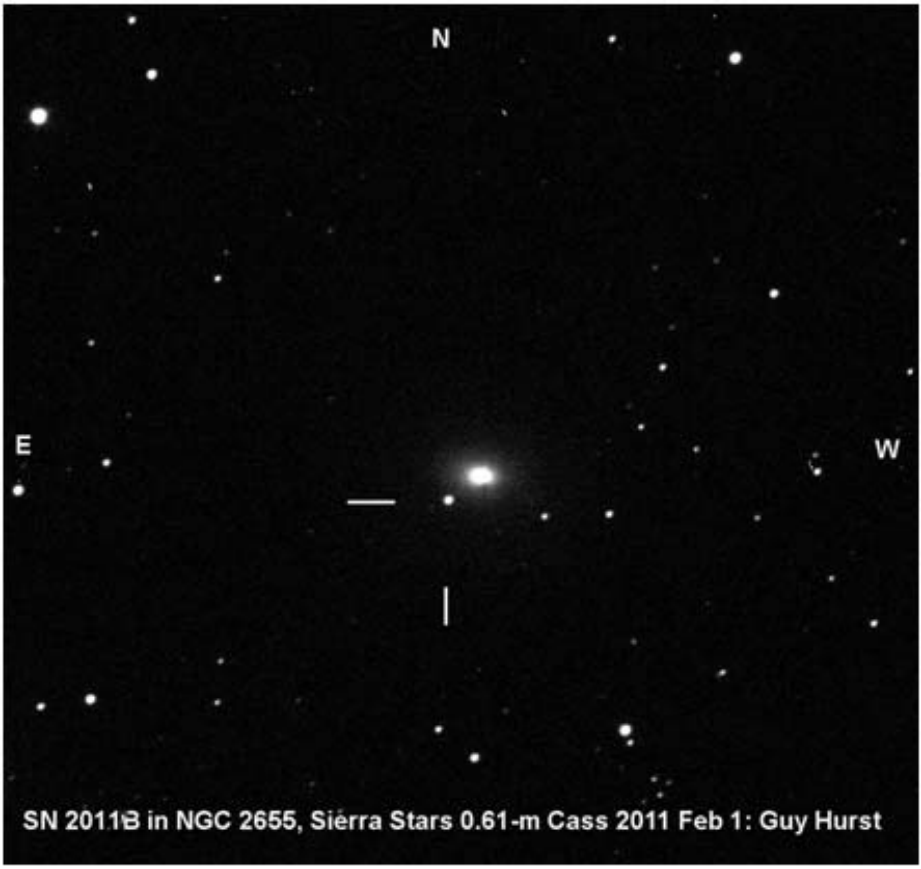


Figure 1: SN 2011B showing brightening after discovery to magnitude 13.3 on 2011 February 1. Guy Hurst

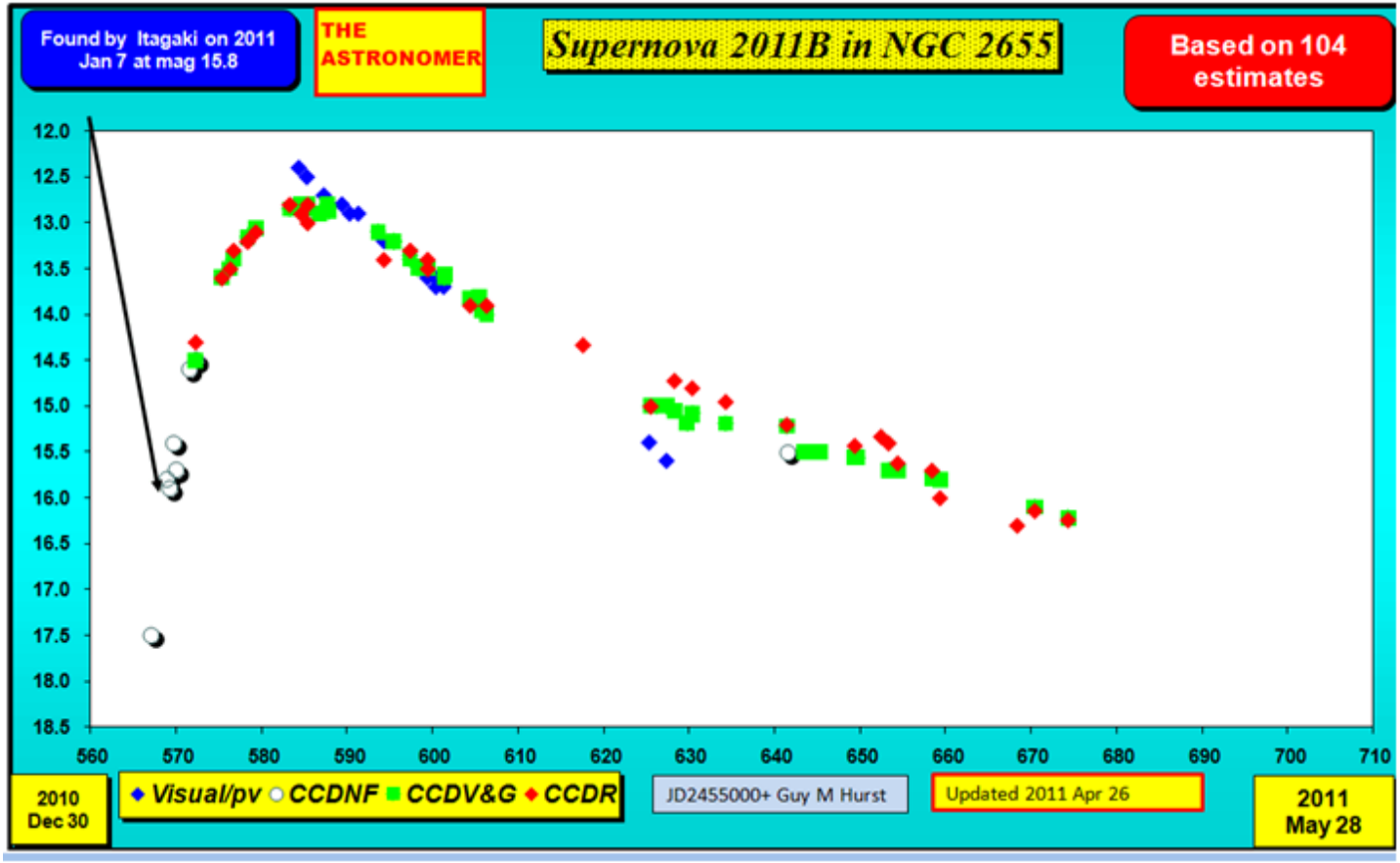


Figure 2: Light Curve of Supernova 2011B in NGC 2655

AN INVESTIGATION INTO OBSERVING ECLIPSING BINARIES WITH THE BRADFORD ROBOTIC TELESCOPE.

DAVID CONNER

Introduction

This project was inspired by a talk given to Leicester Astronomical Society last year by Gary Poyner. His talk was about making observations with the Bradford Robotic Telescope (BRT) [1], and it occurred to me that it would be interesting to investigate its suitability to the observation of my own variables of choice, eclipsing binaries.

The Bradford Robotic Telescope

The Bradford Robotic Telescope is an unmanned observatory in Tenerife, operated remotely from its home base at The University of Bradford. Its primary role is educational, and schools can subscribe to it and use any of its instruments to take images of objects that they choose. These users are given high priority by the observatory's automated 'scheduler'. It is also available - for free - to other members of the public, but they are given a lower priority by the observatory's 'scheduler'.

Why observe eclipsing binaries?

I am interested in determining times of minima, shapes of light curves, present periods and any changes. The ideal is to observe a complete minimum in one session if at all possible, every 5 to 10 minutes, from which the heliocentric time of minimum can be determined. Failing this, observations of different phases of a number of eclipses can observed and the results combined in order to determine when a minimum occurred.

It is not possible to predetermine when the BRT takes images of any particular object, neither can it be tied up for a number of hours by one observer, so observations of a variable are essentially made at random times over many weeks, from which we must construct a light curve and deduce a period. A suitable methodology needed to be devised, and I used Iris [2] for photometry and Peranso [3] for period analysis and light curve plotting.

Developing the methodology

I decided to concentrate on eclipsing binaries with constantly changing light curves, i.e. EBs and EWs. I arbitrarily chose 90 observations (i.e. one per night for three months) of any one star to see what sort of results were possible. This proved to be unrealistic, due to a combination of poor weather at the site and the unmanned nature of the observatory, which means that technical faults often require a visit to the remote site and so might not be resolved quickly.

The following are some of the results I obtained during 2010, which were calculated by the ANOVA function of Peranso (to spurious precision) using magnitude estimates from single images (i.e. not stacked images) of the variable. For AC Bootis (51 estimates between July 12 and October 31 2010), a period of 0.352443 days was calculated, which

compares favourably with the GCVS value 0.3524485 days [4]. The power spectrum for this star is shown in figure 1, and the magnitudes folded to this period are shown in figure 2. Similarly, VW Cephei (59 estimates between June 5 and October 31 2010) was calculated to have a period of 0.278331 d (GCVS value 0.2783146 d). Its resulting light curve is shown in figure 3. Similarly, V566 Ophiuchi, (49 estimates between July 12 and November 10 2010) was deduced to have a period of 0.409718 d (GCVS value 0.40964569 d).

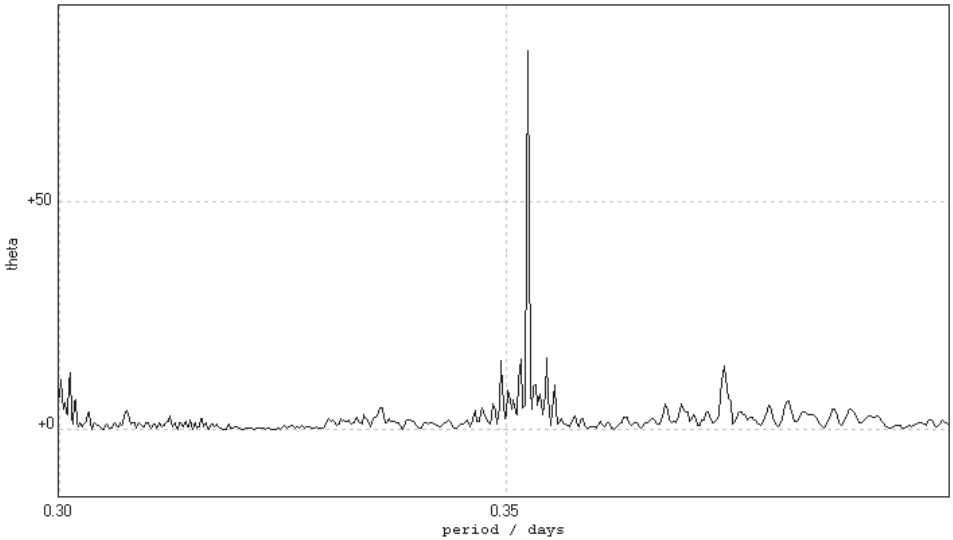


Figure 1: The power spectrum of AC Bootis, showing the strong signal at 0.352443 days

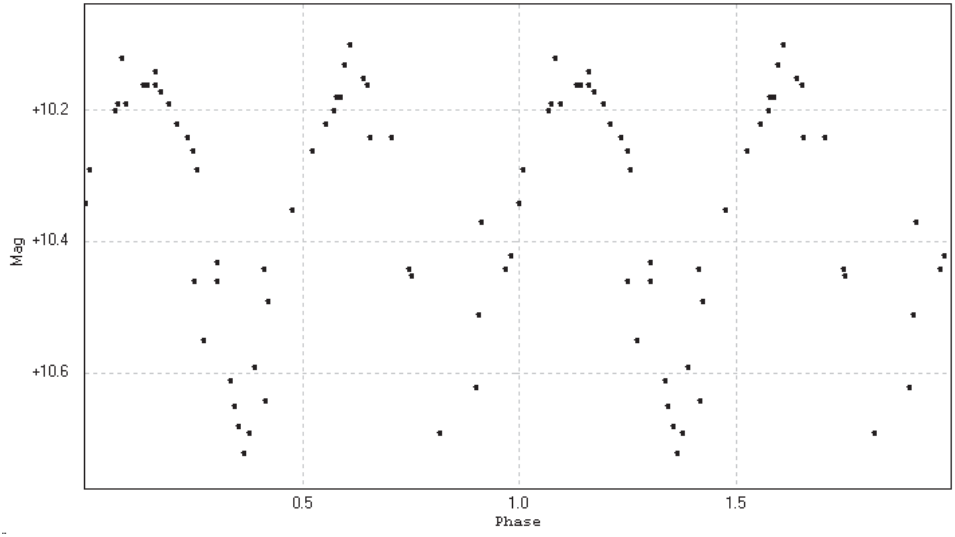


Figure 2: The light curve of AC Bootis folded to the period 0.352443 days (double phase view)

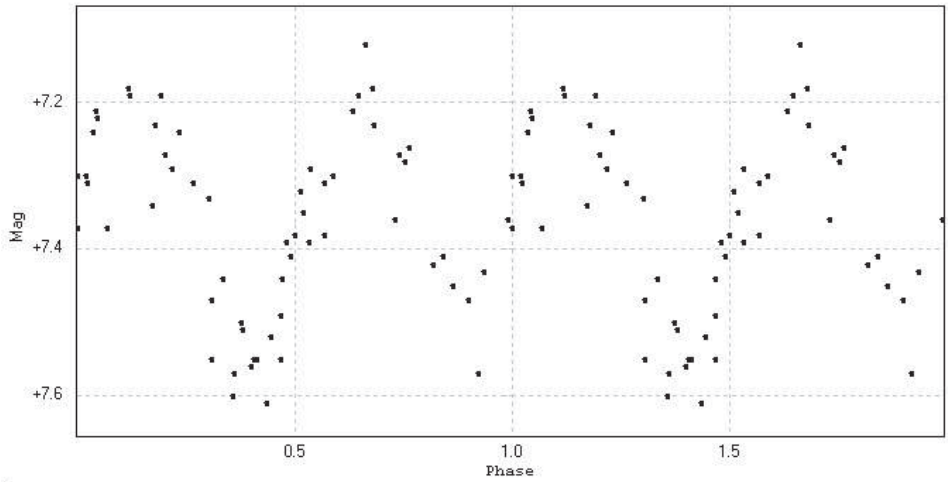


Figure 3: The light curve of VW Cephei (double phase view)

Improving the methodology

Scatter in magnitude is a problem. In correspondence from Roger Pickard and Des Loughney stacking images to improve the signal to noise ratio was suggested. It is possible for BRT users to obtain up to five consecutive, 'identical' images of a star by requesting five virtually identical exposures, e.g. 9998, 9999, 10000, 10001 and 10002 milliseconds. The scheduler will then indeed take them sequentially, but over a rather long time interval. This is partly due to the automatic dark frames taken after each exposure. There is also some system delay between taking images. The 5 x 10 second exposures cited above took over 300 seconds from start to finish.

Although accuracy of the estimated magnitude might thus be increased, it is the average magnitude over the five minute time interval, a feature which distinguishes it from 'instantaneous' visual estimates. For rapidly changing magnitudes this might well be less accurate than that estimated from a single exposure (more rigorous analysis needed), and short minima will be inherently 'smoothed out', possibly leading to an underestimate of the minimum magnitude.

Future work

From work done so far, it seems possible to get useful results by analysing images of an eclipsing binary taken at intervals over a two or three month period. With refinement, in particular the stacking of images, the accuracy of the deduced magnitudes and periods might well be better than those possible visually. Whether they can approach those obtainable by DSLR techniques remains to be seen. The BRT might be best suited to observing long period eclipsing binaries, such as BM Cas (period = ~ 197 days) and UU Cnc (period = ~ 97 days), and these are my next project. Sadly, at the time of writing (early May 2011), the scheduler seems to have forgotten that I exist – a drawback to using the BRT. We live in hope!

Conclusion

The modus operandi of the BRT was not designed for making the type of observations usually associated with eclipsing binaries, but with a little ingenuity it does appear possible to get useful results, especially their periods. In addition, utilising the BRT gives an insight into the skills required to extract meaningful data from astronomical images - for free - before deciding whether or not to invest in your own equipment.

References

1. Bradford Robotic Telescope, *http://www.telescope.org/*
2. Iris, Christian Buil, *http://www.astrosurf.com/buil/us/iris/iris.htm*
3. Peranso, Tonny Vanmunster, *http://www.peranso.com/*
4. General Catalogue of Variable Stars, N.N. Samus et al., General Catalogue of Variable Stars (Samus+ 2007-2009), 2009yCat....102025S , *http://www.sai.msu.su/gcvs/gcvs/index.htm*

U GEM AND NSV 1436 2011 MARCH OUTBURSTS OBSERVED FROM HIGHLAND SCOTLAND.

DENIS BUCZYYNSKI

The New Observatory

During the past 9 months my wife (Liz) and I retired from our retail business and relocated from Lancaster to Portmahomack on the Tarbatness peninsula, 40 miles north of Inverness overlooking the Moray and Dornoch Firths. The skies are dark, transparent and are clear more often than some would expect. Scotland gets a bad press regarding its weather, with the majority thinking that it is always cold and wet. This has not been our experience

to date. The rainfall total for 2010 for this location was 616mm, the 30 year average for Chelmsford in the SE is 577mm. We have not been disappointed with the skies we have experienced this winter and spring. We have seen lunar and solar eclipses, aurora, sunspots, comets, planets and now some variable stars and extragalactic supernovae.

I was fortunate to be able to persuade Liz to agree for me to purchase a new Paramount ME for my new observatory here, and Nick James was kind enough to stop here for a few nights (after a 12 hour train journey!) in the middle of March to set up the new mount for me. We mounted an old BAA telescope, a C11 OTA, on the mount for the initial trials. Martin Mobberley commented on seeing pictures of the OTA "that it looked like it had seen action in Helmand Province". The OTA has seen better days but it is still capable of successful imaging. So it proved over the next few weeks.

After the initial polar alignment of the Paramount ME, and some test exposures to test the pointing and tracking, Nick and I were ready to image a significant target. As usual the skies and the amateur astronomical community did not make us wait long. We were notified via TA that Maurice Gavin had discovered a possible supernova in IC 3862, (his first discovery) and confirmation was urgently required. The telescope was slewed to the field and a series of exposures taken. Processing was done immediately by Nick and hey presto! there was the supernovae clearly visible and as definite as could be (figure1). An excellent beginning with a new telescope and observatory.

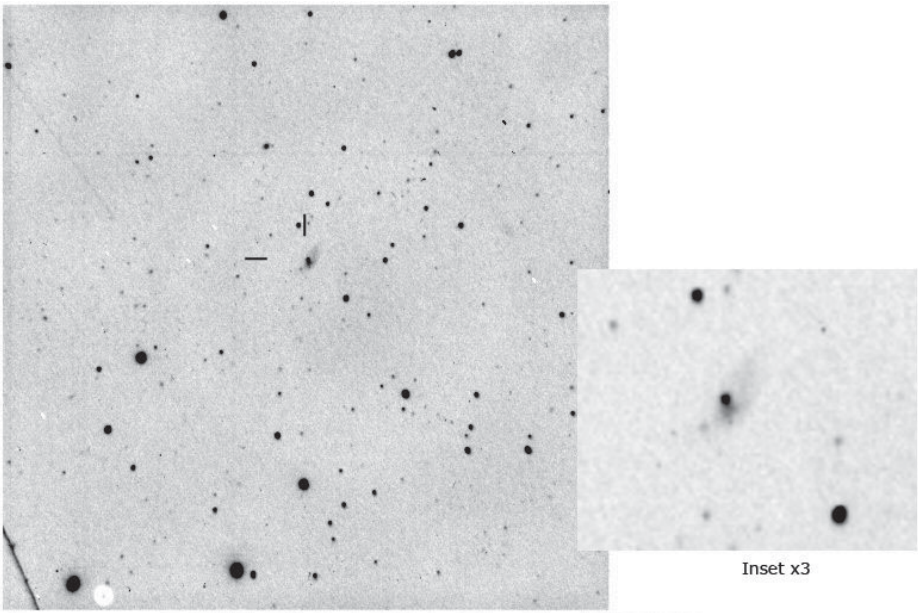
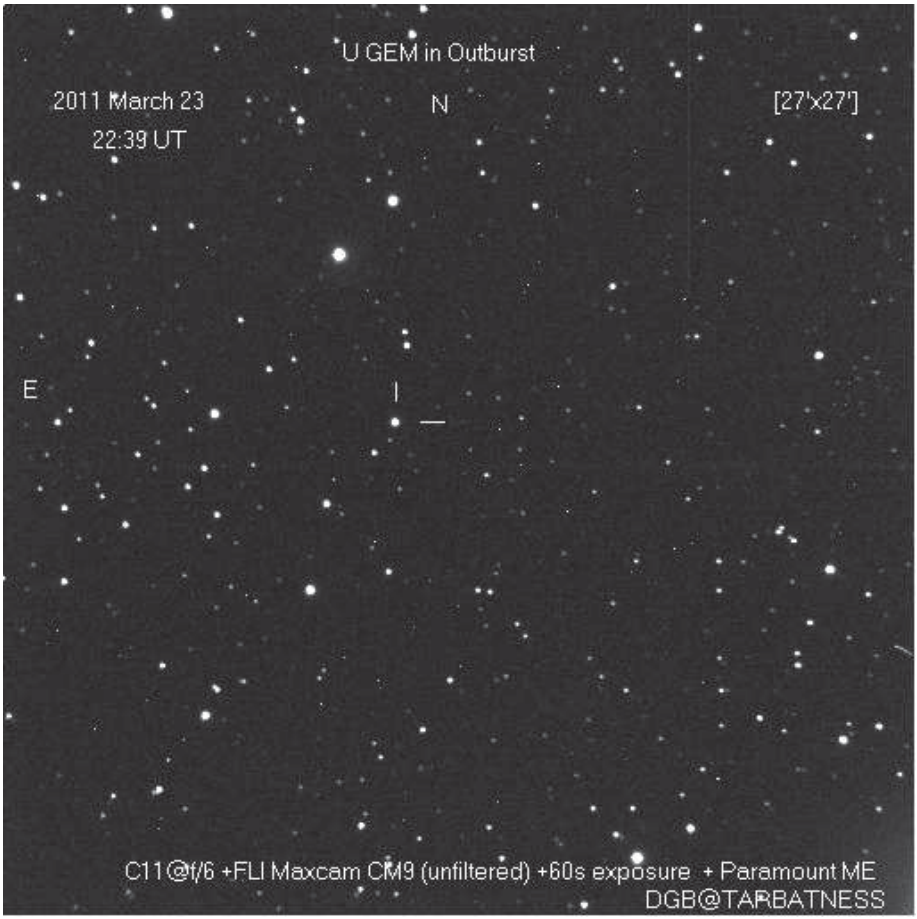


Figure 1: Supernova suspect in IC3862. 2011 March 20.84. 10 x 120 s unfiltered C11 + FLI CM9. Denis Buczynski and Nick James, Portmahomack. (Inset x3)

Nick returned to southern parts, Chelmsford (another 12 hour train journey), and I was now on my own. Could I master the operation of the new set up, and would the skies co-operate and serve me up some interesting targets? Again I was not disappointed.

On March 23 a BAA alert from Gary Poyner announced that U Gem was in outburst. A subsequent alert message from John Toone reminded us of the fact that it was exactly 155 years since Pogson's observations of this star started dwarf star monitoring as we know it today. I could not resist imaging this famous object in its present condition as one of my first solo runs in my new observatory. Imaging was done on two nights March 23 when the unfiltered magnitude was measured as 12.5 (figure 2) and on March 27 at unfiltered magnitude 10.3 (figure 3).

Figure 2: U Gem in Outburst. 2011 March 23 22:39 UT.

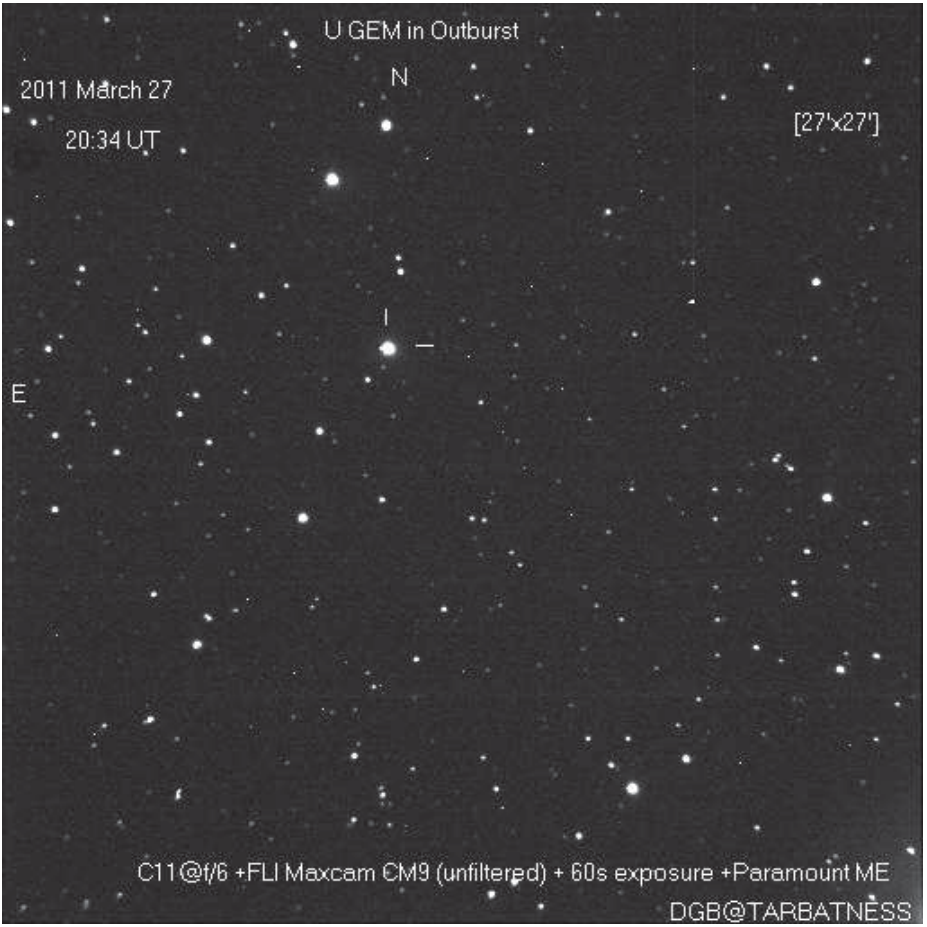


On March 29 a CVNET alert by Eddy Muyllaert reported a bright outburst of NSV1436 using the Bradford robotic telescope. Gary Poyner forwarded the AAVSO alert message as follows:

"Subject: AAVSO Alert Notice 434
Outburst of NSV 1436
March 30, 2011

The cataclysmic variable NSV 1436 has been discovered in outburst. This is the first bright outburst of this star observed since 1948, and follow up observations are strongly encouraged. Little is known about the nature of NSV 1436, and observations may help shed light on whether the star is an infrequently outbursting normal dwarf nova, a WZ Sge star, or a recurrent nova."

Figure 3: U Gem in Outburst. 2011 March 27 20:34 UT.

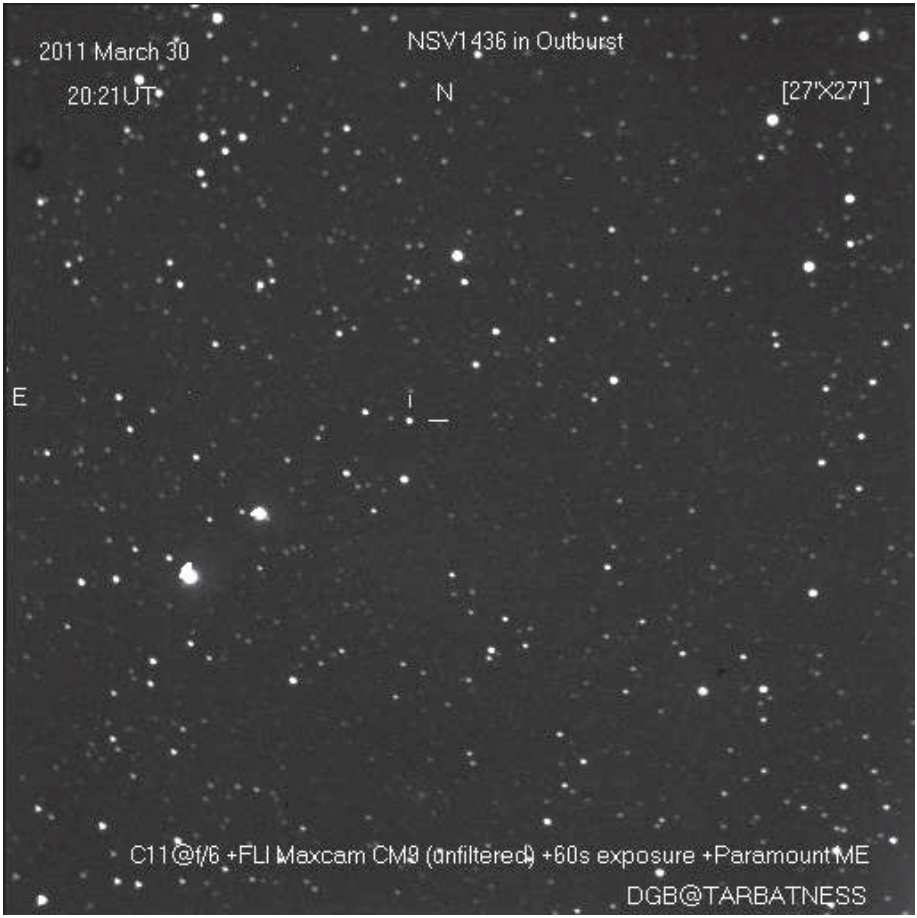


So here was another chance to observe an interesting object with my new set up. I was able to image the star over three nights: March 30 and 31, and April 02. My unfiltered measurements show the star (figure 4) near its outburst magnitude of 13.5 on March 30.84822, but fading to 14.7 on March 31.83723 (figure 5), and 15.5 on April 02.91332 (figure 6). A fast fade. However I believe that the fade was faster than that. NSV1436 is close to another star just south of it, as shown on the Palomar Observatory Sky Survey (POSS) print (figure 7), and it is difficult to resolve with the focal length of my current system. The astrometry when the star is at maximum outburst is close to the quoted value (04 02 39.02 +42 50 46.0), but as it fades the star close by must contaminate the

measurements, as seen in the results from Astrometrica:

buczynski8166@btinternet.com
NET UCAC-3
nsv1436 C2011 03 30.84822 04 02 39.02 +42 50 46.1 13.5 V
nsv1436 C2011 03 31.83723 04 02 39.03 +42 50 45.8 14.7 V
nsv1436 C2011 04 02.91332 04 02 39.04 +42 50 44.9 15.5 V

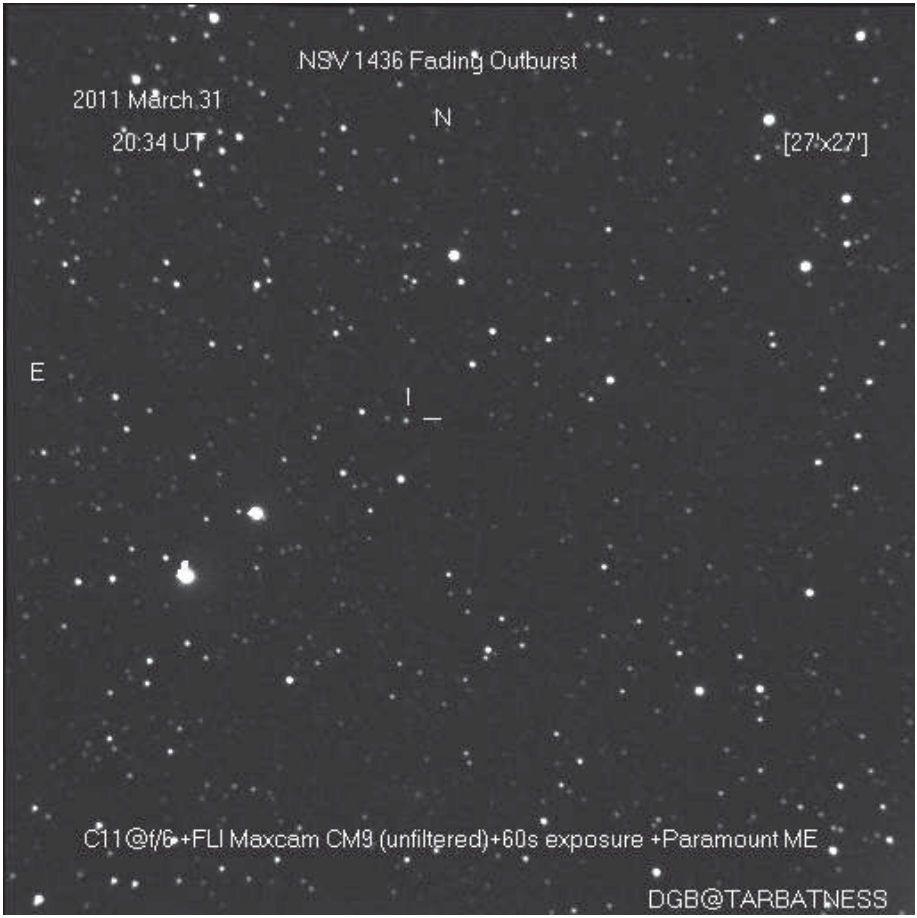
Figure 4: NSV1436 in Outburst. 2011 March 30 20:21 UT.



A subsequent notice from Joe Patterson (Centre for Backyard Astrophysics) on April 04 suggests that it is probably not worth persisting with continued observations of this star, given its low position in the eastern sky. So I brought my series to a close and hope that it is not another 48 years before I can observe it again in outburst.

Further observations of newly discovered objects in early April (supernovae discovered by Tom Boles and Ron Arbour amongst others) were made before the Moon

Figure 5: NSV1436 Fading Outburst 2011 March 31 20:34



became overwhelming in the night sky. So I have made a promising start at my new location. I just need to install a new OTA (C14), fit a motorised focuser, install the filter wheel, reduce the time series runs on NSV1436 and tackle the complexities that comprise the VSS CCD Excel spreadsheet. But now I have the time!

Denis Buczynski,Tarbatness, Highland Scotland
buczynski8166@btinternet.com

Figures 6 and 7 on page 24.

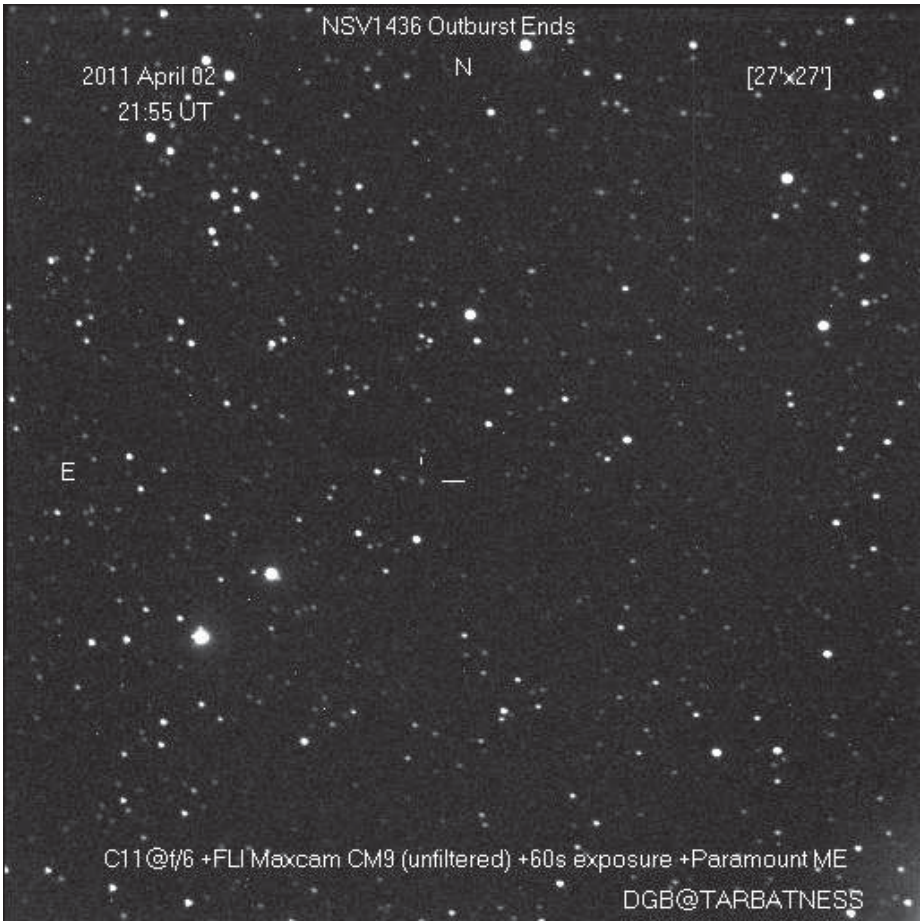


Figure 6: NSV1436 Outburst Ends. 2011 April 02 21:55 UT

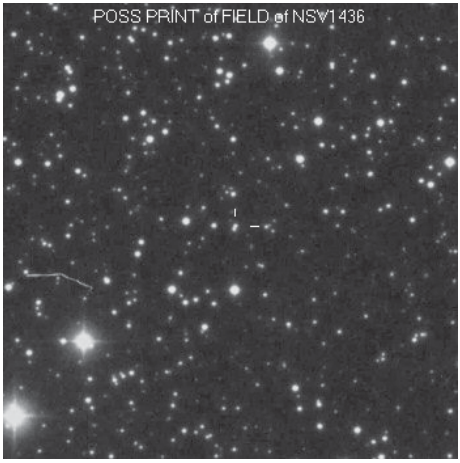


Figure 7: Palomar Observatory Sky Survey (POSS) PRINT, of FIELD of NSV 1436.

THE RETIREMENT OF LESBET

JOHN TOONE

The telescope that has been used to make the greatest number of visual observations of variable stars has now been retired. Albert Jones' 12.5 inch F5 reflector which he constructed himself in 1948 and christened Lesbet was transferred to the Nelson Museum, New Zealand in April 2011. The vast majority of Albert's estimated 500,000 observations made since 1948 have been made with Lesbet. The only other instruments used have been binoculars, and at weekends during 1948 – 1963 when Albert went to the Rakaia River during the fishing season (his father was a keen angler) a smaller telescope was employed. Albert is now continuing to observe variable stars with a loaned 30cm Dobsonian which is much easier to handle in conjunction with his walking frame.

Continued by:

ALBERT JONES

Away back in the late 1930s my first telescopes were made with simple lenses and cardboard tubes. Although they were crude, they fostered my interest. My first proper telescope was a pre-owned 5 inch f.15 Calver reflector with which I started serious observing of variable stars and comets. Aperture fever led me to purchase a 5.5 inch old refractor with which I found my first comet. Then I purchased an 8-inch mirror and made a telescope with that.

Wanting to be able to see fainter stars, I thought of buying a larger mirror of short focus for wide fields, but the question was where I could obtain an f.5 mirror. Very fortunate for me was that I was in contact by airmail with Dr Leslie Comrie who had been born in New Zealand and who had made a name for himself in the UK in applied maths (especially in Astronomy). He also gifted astronomy books, to Carter Observatory, and promising amateurs in NZ. I wrote to him asking about mirrors and he replied that his friend James Hargreaves was a celebrated maker of short focus mirrors and he had on hand a 12.5 inch blank of Hysil glass with which he could make an f.5 mirror, and which could be packed in a box.

Dr Comrie offered to bring it to New Zealand along with his luggage when he came to New Zealand to visit family later in the year 1947 and for me to pay him then.

When Dr Comrie arrived in New Zealand, the box was sent on to me in Timaru in January 1948. Then I sent the 75 pounds to Dr Comrie's account in the Auckland Trading Company - with that money, Dr Comrie sent food parcels to friends in England who had not

Albert and Lesbet

had certain items during WW2.

That arrangement had various advantages. Not only did it save me the hassle of applying in triplicate for an import licence and also for permission to send money overseas, and arranging transport of the mirror from England, but recipients of the parcels received longed-for foods.

I thought of calling the telescope Les, after Dr Leslie Comrie but he suggested the name Betty, after his wife as she too had a perfect figure ..... instead I named it Lesbet after them both.

Meanwhile I designed the telescope and mounting ready for the optics. Having been infected with the aperture-fever virus, I was anxious to be able to see fainter variables and comets, but a friend advised me not to rush the construction of the telescope otherwise I may never really finish the job.

Around that time, Frank Bateson was Director of the Jupiter Section, as well as of the Variable Star Section, of the RASNZ, and he urged me to make observations of Jupiter as well as variables, so the mounting was designed as an equatorial with the intention of adding a motor drive in R.A. later. As I was already proficient at "star-hopping" I did not need setting circles because I already had available, ex-war surplus lenses with which I made up a 45cm wide angle finder for star-hopping and for observations of bright variables and comets. A larger object glass of 78mm was made into a bigger finder which bridged the gap between the small finder and the 12.5 inch reflector.

However, as soon as possible I did get it to the stage where it was useable then made a few alterations and improvements.

After a while I found that I liked estimating the brightness of variable stars more than Jupiter observing and eventually concentrated on the former, and so I did not need the motor drive, and that project was never completed. Therefore you may agree with the

friend who advised me not to hurry the making of the telescope because I never completed it.

I have said that it was made to look through, not to look at, and from 1948 February until 2010 May, it enabled me to estimate the brightness of many variable stars and comets as well as discovering one supernova and one comet (the first comet was found while star-hopping with the 5.5 inch refractor). In addition I have had the fun of recovering some recurrent novae.

Sadly my collaboration with Lesbet was halted in May 2010 when I broke my hip and although I largely recovered from that and the stroke 15 months earlier, I was worried that Lesbet would be too heavy and awkward for me to manage. Then out of the blue, came an email from Alan Gilmore and Pam Kilmartin inquiring if a light-weight modern Dobsonian might be easier for me to handle. Of course I agreed, not realizing that they were offering one to me. I have gratefully accepted it as a loan while I can make good use of it.

My thoughts of the future of Lesbet, was that only the optics were worth keeping and the remainder was merely junk, but Alan suggested offering it to the Nelson Provincial Museum. Mid-week in April 2011, it was taken to the archives storage building at Isel Park, Stoke, Nelson.

THE DISCOVERY OF NOVA (DQ) HERCULIS 1934

TONY MARKHAM

This nova was discovered in the early hours of Dec 13 by J P M Prentice during a break in a Geminid meteor watch. The Jan 1935 issue of the Journal included a summary of his report given at the BAA meeting of 1935 Jan 2 as follows:

"On the nights of December 11, 12 and 13 the maximum Geminid meteor shower was expected and he was out to observe this in co-operation with Mr Alcock, who was observing at Peterborough.

On the evening of the 12th he started work at about 5h30m G.M.A.T and continued till 7h30m, and again from about 9h10m till 11h30m, when clouds stopped observation.

About 13h30m he was again able to see the sky and observed many Geminids. His observing station was on a farm, about 4 miles from Stowmarket. After observing for some three hours or so, he found himself missing meteors, a sign of fatigue, and therefore decided to rest a while by taking a stroll and looking at other parts of the sky.

He had not walked three paces before he noticed that "there was something wrong with the head of Draco." The strange appearance proved to be due to a conspicuous nova. He estimated the brightness at 3.4 magnitude. Knowing that the spectrum of the star should be photographed at the earliest possible moment, he got the car going and proceeded to Stowmarket and telephoned Greenwich Observatory at 17 hours … "

The nova eventually peaked at about mag 1.4 on Dec 22. This could, of course, have been George Alcock's first, and brightest, nova discovery, but it seems that in 1934 Prentice was more alert to spotting novae.

BINOCULAR PRIORITY LIST

MELVYN TAYLOR

(Includes *XX Cam*, *Mira*, *R CrB*, and *R Hya* which are also on the telescopic programme)

Variable		RA (2000) Dec	Range	Type	Period	Chart	Prog
AQ	***And***	00 28 +35 35	8.0-8.9	SR	346d	303.01	
EG	***And***	00 45 +40 41	7.1-7.8	ZAnd		072.02	
V	***Aql***	19 04 -05 41	6.6-8.4	SRb	353d	026.04	
UU	***Aur***	06 37 +38 27	5.1-6.8	SRb	234d	230.02	
AB	***Aur***	04 56 +30 33	6.7-8.4	Ina		301.01	
V	***Boo***	14 30 +38 52	7-12	Sra	258d	037.01	
RW	***Boo***	14 41 +31 34	7.4-8.9	SRb	209d	104.01	
RX	***Boo***	14 24 +25 42	6.9-9.1	SRb	160d	219.01	
ST	***Cam***	04 51 +68 10	6.0-8.0	SRb	300d?	111.02	
XX	***Cam***	04 09 +53 22	7.3-9.7	RCB		068.01	T/B
X	***Cnc***	08 55 +17 04	5.6-7.5	SRb	195d	231.01	
RS	***Cnc***	09 11 +30 58	5.1-7.0	SRc	120d?	269.01	
V	***CVn***	13 20 +45 32	6.5-8.6	SRa	192d	214.02	
WZ	***Cas***	00 01 +60 21	6.9-8.5	SRb	186d	1982Aug16	
V465	***Cas***	01 18 +57 48	6.2-7.8	SRb	60d	233.01	
γ	***Cas***	00 57 +60 43	1.6-3.0	GCAS		064.01	
Rho	***Cas***	23 54 +57 29	4.1-6.2	SRd	320d	064.01	
W	***Cep***	22 37 +58 26	7.0-9.2	SRc		312.01	
AR	***Cep***	22 52 +85 03	7.0-7.9	SRb		1985May06	
Mu	***Cep***	21 44 +58 47	3.4-5.1	SRc	730d	112.01	
O	***Cet***	02 19 -02 59	2.0-10.1	M	332d	039.02	T/B
R	***CrB***	15 48 +28 09	5.7-14.8	RCB		041.04	T/B
W	***Cyg***	21 36 +45 22	5.0-7.6	SRb	131d	062.03	
AF	***Cyg***	19 30 +46 09	6.4-8.4	SRb	92d	232.01	
CH	***Cyg***	19 25 +50 15	5.6-10.5	ZAnd+SR	97	089.03	
U	***Del***	20 46 +18 06	5.6-7.9	SRb	110d?	228.01	
EU	***Del***	20 38 +18 16	5.8-6.9	SRb	60d	228.01	
TX	***Dra***	16 35 +60 28	6.6-8.4	SRb	78d?	106.02	
AH	***Dra***	16 48 +57 49	7.0-8.7	SRb	158d	106.02	
NQ	***Gem***	07 32 +24 30	7.4-8.0	SR+ZAnd	70d?	077.01	
X	***Her***	16 03 +47 14	6.1-7.5	SRb	95d	223.01	
SX	***Her***	16 08 +24 55	8.0-9.2	SRd	103d	113.01	
UW	***Her***	17 14 +36 22	7.0-8.8	SRb	104d	107.01	
AC	***Her***	18 30 +21 52	6.8-9.0	RVA	75d	048.03	
IQ	***Her***	18 18 +17 59	7.0-7.5	SRb	75d	048.03	
OP	***Her***	17 57 +45 21	5.9-7.2	SRb	120d	1984Apr12	
R	***Hya***	13 30 -23 17	3.5-10.9	M	389d	049.02	T/B
RX	***Lep***	05 11 -11 51	5.0-7.4	SRb	60d?	110.01	
Y	***Lyn***	07 28 +45 59	6.5-8.4	SRc	110d	229.01	
SV	***Lyn***	08 84 +36 21	6.6-7.9	SRb	70d?	108.03	
U	***Mon***	07 31 -09 47	5.9-7.9	RVB	91d	029.03	
X	***Oph***	18 38 +08 50	5.9-9.2	M	328d	099.01	
BQ	***Ori***	05 57 +22 50	6.9-8.9	SR	110d	295.01	

Variable		RA (2000) Dec	Range	Type	Period	Chart	Prog
AG	***Peg***	21 51 +12 38	6.0-9.4	Nc		094.02	
X	***Per***	03 55 +31 03	6.0-7.0	GCas+Xp		277.01	
R	***Sct***	18 48 -05 42	4.2-8.6	RVA	146d	026.04	
Y	***Tau***	05 46 +20 42	6.5-9.2	SRb	242d	295.01	
W	***Tri***	02 42 +34 31	7.5-8.8	SRc	108d	114.01	
Z	***UMa***	11 57 +57 52	6.2-9.4	SRb	196d	217.02	
ST	***UMa***	11 28 +45 11	6.0-7.6	SRb	110d?	102.02	
VY	***UMa***	10 45 +67 25	5.9-7.0	Lb		226.01	
V	***UMi***	13 39 +74 19	7.2-9.1	SRb	72d	101.02	
SS	***Vir***	12 25 +00 48	6.9-9.6	SRa	364d	097.01	
SW	***Vir***	13 14 -02 48	6.4-8.5	SRb	150d?	098.01	

Updated 7th February 2010, M.T.

* *

ECLIPSING BINARY PREDICTIONS

DES LOUGHNEY

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/time.

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	AI Dra	7.2 - 8.2	U Sge	6.45 - 9.28V
TV Cas	7.2 - 8.2V	Z Vul	7.25 - 8.90V	RW Tau	7.98 - 11.59V
U Cep	6.8 - 9.4	Z Dra	10.8 - 14.1p	HU Tau	5.92 - 6.70V
U CrB	7.7 - 8.8V	TW Dra	8.0 - 10.5v	X Tri	8.88 - 11.27V
SW Cyg	9.24 - 11.83V	S Equ	8.0 - 10.08V	TX Uma	7.06 - 8.80V
V367 Cyg	6.7 - 7.6V	Z Per	9.7 - 12.4p	Del Lib	4.9 - 5.9
Y Psc	10.1 - 13.1	SS Cet	9.4 - 13.0	RZ Cas	6.3 - 7.9

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

For information on other eclipsing binaries see the website:
http://www.as.ap.krakow.pl/o-c/index.php3

Again please contact the EB secretary if you have any queries about the information on this site and how it should be interpreted.

July

2011 Jul 1 Fri
del Lib.....D22(23)24L
TV Cas....D22(23)26D
RZ Cas....D22(24)26D
2011 Jul 2 Sat
V367 Cyg...01(46)02D
TW Dra...D22(23)26D
U Cep.....D22(26)26D
V367Cyg.D22(46)26D
2011 Jul 3 Sun
X Tri.....01(04)02D
RZ Cas.....02(04)02D
TV Cas.....D22(19)23
V367Cyg.D22(22)26D
Z Dra.....D22(24)26D
Y Psc.....L23(20)24
2011 Jul 4 Mon
X Tri.....01(03)02D
S Equ.....02(07)02D
V367Cyg.D22(<<)26D
U Sge.....D22(17)23
TX UMa....D22(18)23
Z Vul.....D22(24)26D
U CrB.....D22(26)26D
X Tri.....24(26)26D
2011 Jul 5 Tue
TW Dra.....D22(18)23
RS CVn...D22(25)26D
X Tri.....L24(26)26D
AI Dra.....24(25)26D
2011 Jul 6 Wed
RW Tau....L02(04)02D
X Tri.....L23(25)26D
2011 Jul 7 Thu
S Equ.....D22(17)23
TX UMa....D22(20)25
RZ Cas.....D22(23)25
U Cep.....D22(25)26D
U Sge.....D22(26)26D
Z Dra.....23(26)26D
X Tri.....L23(24)26D
2011 Jul 8 Fri
del Lib.....D22(23)24L
SW Cyg...D22(25)26D
X Tri.....L23(24)26D
2011 Jul 9 Sat
TV Cas.....01(05)02D
RZ Cas.....01(04)02D
RW Tau...L01(<<)02D
Z Vul.....D22(22)26D
X Tri.....L23(23)25
2011 Jul 10 Sun
RS CVn...D22(21)26D
TX UMa.D22(21)26D
TV Cas....D22(25)26D
S Equ.....23(28)26D
X Tri.....L23(22)25
2011 Jul 11 Mon
U CrB.....D22(24)26D
X Tri.....L23(22)24
AI Dra.....23(25)26
2011 Jul 12 Tue
Z Dra.....01(03)02D
TV Cas.....D22(20)24
U Cep.....D22(25)26D
X Tri.....L23(21)23
2011 Jul 13 Wed
RZ Cas.....D22(22)25
TX UMa.D22(23)26L
TW Dra.....23(28)26D
2011 Jul 14 Thu
Z Vul.....D22(19)25
Z Dra.....D22(20)23
U Sge.....D22(21)26
Y Psc.....22(27)26D
2011 Jul 15 Fri
RZ Cas.....01(03)02D
RS CVn.....D22(16)22
del Lib.....D22(22)23L
2011 Jul 16 Sat
TW Dra...D22(24)26D
TX UMa.D22(24)26L
2011 Jul 17 Sun
RW Tau....L01(05)02D
Z Vul.....01(06)02D
U Cep.....D22(25)26D
S Equ.....D22(25)26D
SW Cyg.....23(29)26D
AI Dra.....23(25)26
U Sge.....24(30)26D
2011 Jul 18 Mon
U CrB.....D22(22)26D
Z Dra.....D22(22)25
Y Psc.....L22(21)26
2011 Jul 19 Tue
Z Vul.....D22(17)23
TW Dra.....D22(19)24
RZ Cas.....D22(22)24
TX UMa..D22(26)26L
TV Cas.....22(26)26D
2011 Jul 20 Wed
RW Tau....L01(00)02D
V367Cyg.D22(60)26D
2011 Jul 21 Thu
RZ Cas.....00(03)02D
TV Cas.....D22(22)26
V367Cyg..D22(36)26D
Z Vul.....23(28)26D
2011 Jul 22 Fri
V367Cyg..D22(12)26D
SW Cyg.....D22(19)25
del Lib.....D22(22)23L
U Cep.....D22(24)26D
Z Dra.....22(24)26
TX UMa.....23(27)25L
2011 Jul 23 Sat
V367Cyg.D21(<<)27D
Z Per.....D21(18)23
AI Dra.....23(25)26
2011 Jul 24 Sun
S Equ.....D21(22)27D
U Sge.....D21(24)27D
RS CVn.....24(30)25L
2011 Jul 25 Mon
U CrB.....D21(19)25
RZ Cas.....D21(21)24
2011 Jul 26 Tue
TX UMa.....00(05)01L
SS Cet.....02(07)03D
Z Per.....D21(19)24
Z Vul.....D21(26)27D
Z Dra.....23(26)27D
RZ Cas.....24(26)27D
2011 Jul 27 Wed
SW Cyg.....02(08)03D
U Cep.....D21(24)27D
2011 Jul 28 Thu
TW Dra.....00(05)03D
RW Tau.....03(07)03D
TV Cas.....24(28)27D
2011 Jul 29 Fri
U CrB.....00(06)03L
SS Cet.....02(06)03D
Z Per.....D21(21)25
del Lib...D21(22)22L
RS CVn.D21(25)25L
AI Dra.....23(24)26
Y Psc.....24(28)27D
2011 Jul 30 Sat
TV Cas..D21(23)27D
TW Dra.D21(25)27D
RW Tau..L24(26)27D
2011 Jul 31 Sun
Z Dra.....01(03)03D
U Sge.....D21(18)24
S Equ.....D21(19)24
RZ Cas.....D21(21)23
SW Cyg.D21(22)27D
Z Vul.....D21(24)27D

August

2011 Aug 1 Mon
SS Cet.....01(06)03D
U CrB.....D21(17)23
TV Cas.....D21(19)23
Z Per.....D21(22)27
U Cep...D21(24)27D
RZ Cas.....23(25)27D
2011 Aug 2 Tue
TW Dra....D21(20)25
Z Dra.....D21(21)23
Y Psc.....L21(23)27D
RW Tau.....L24(20)25
2011 Aug 3 Wed
RS CVn..D21(20)25L
U Sge.....22(27)27D
S Equ.....24(29)27D
2011 Aug 4 Thu
SS Cet....L01(05)03D
X Tri.....03(05)03D
Z Dra.....03(05)03D
Z Per.....D21(23)27D
U CrB.....22(28)26L
AI Dra.....23(24)26
2011 Aug 5 Fri
HU Tau L01(<<)02
X Tri.....02(04)03D
del Lib...D21(21)22L
Z Vul.....D21(22)27D

2011 Aug 6 Sat
X Tri.....01(04)03D
Y Psc.....D21(17)22
RZ Cas.....D21(20)23
Z Dra.....D21(22)25
U Cep.....D21(23)27D
2011 Aug 7 Sun
X Tri.....01(03)03D
SS Cet.....L01(05)03D
HU Tau...L01(<<)03D
TV Cas.....01(05)03D
S Equ.....D21(16)21
Z Per.....D21(25)27D
RZ Cas.....22(25)27D
X Tri.....24(26)27D
2011 Aug 8 Mon
RS CVn.....D21(15)22
TV Cas....D21(25)27D
V367Cyg.D21(50)27D
X Tri.....23(26)27D
2011 Aug 9 Tue
HU Tau....L01(01)03D
RZ Cas.....03(06)03D
SW Cyg...D21(26)27D
V367Cyg.D21(26)27D
X Tri.....23(25)27D
2011 Aug 10 Wed
SS Cet.....L00(04)03D
V367Cyg.D21(02)27D
Z Vul.....D21(20)25
TV Cas.....D21(20)24
U Sge.....D21(22)27D
S Equ.....21(26)27D
Z Per.....21(26)27D
Z Dra.....22(24)26
X Tri.....22(24)27
AI Dra.....23(24)25
RW Tau....L23(28)27D
2011 Aug 11 Thu
HU Tau....L01(02)03D
TW Dra.....01(06)03D
V367Cyg...D21(<<)23
U Cep.....D21(23)27D
U CrB.....D21(26)26L
X Tri.....21(24)26
2011 Aug 12 Fri
RZ Cas.....D21(20)22
del Lib.....D21(21)22L
X Tri.....L21(23)26
2011 Aug 13 Sat
SS Cet....L00(03)03D
HU Tau..L00(03)03D
Z Vul.....01(07)03D
TW Dra.D21(25)27D
X Tri.....L21(22)25
RZ Cas.....22(24)27
Z Per.....23(27)27D
RW Tau.....L23(22)27
2011 Aug 14 Sun
U Sge.....01(07)03D
Y Psc.....01(06)03D
SW Cyg....D21(15)21
X Tri.....L21(22)24
Z Dra.....23(26)27D
2011 Aug 15 Mon
HU Tau....01(05)03D
RZ Cas.....03(05)03D
Z Vul.....D21(17)23
X Tri.....L21(21)23
2011 Aug 16 Tue
SS Cet....L00(03)03D
TV Cas.....03(07)03D
TW Dra....D20(21)26
U Cep...D20(23)27D
X Tri.....L21(20)23
AI Dra.....23(24)25
Z Per.....24(29)27D
2011 Aug 17 Wed
HU Tau....02(06)03D
U Sge.....D20(16)22
Z Dra.....D20(19)21
S Equ.....D20(23)27D
Y Psc....D20(24)27D
X Tri.....L21(20)22
TV Cas.....22(26)27D
Z Vul.....23(28)27D
RS CVn....23(30)24L
2011 Aug 18 Thu
AI Dra.....03(05)03D
RZ Cas.....D20(19)21
U CrB....D20(23)25L
X Tri.....L21(19)21
SW Cyg....23(29)28D
SS Cet....L24(26)28D
2011 Aug 19 Fri
Z Dra.....01(04)04D
TW Dra....D20(16)21
TX UMa..D20(17)22
del Lib...D20(20)21L
TV Cas.....D20(22)26
X Tri...L21(18)21
RZ Cas..21(24)26
2011 Aug 20 Sat
Z Per.....01(06)04D
Z Vul.....D20(15)21
U Sge.....D20(25)28D
2011 Aug 21 Sun
RZ Cas.....02(04)04D
TV Cas.....D20(17)21
Y Psc.....D20(19)23
AI Dra.....D20(19)20
Z Dra.....D20(21)23
U Cep.....D20(22)27
SS Cet.....L24(25)28D
2011 Aug 22 Mon
RW Tau.....01(05)04D
TX UMa.D20(19)23L
RS CVn....D20(25)23L
Z Vul.....21(26)28D
AI Dra.....22(24)25
2011 Aug 23 Tue
Z Per.....03(07)04D
Z Dra.....03(05)04D
SW Cyg.....D20(19)25
2011 Aug 24 Wed
AI Dra.....03(05)04D
RZ Cas.....D20(18)21
S Equ.....D20(20)25
RW Tau....L22(24)28D
SS Cet.....L23(25)28D
2011 Aug 25 Thu
TW Dra.....02(07)04D
TX UMa.D20(20)23L
U CrB.....D20(21)25L
Z Dra.....D20(22)25
RZ Cas.....21(23)26
2011 Aug 26 Fri
del Lib.....D20(20)21L
U Cep.....D20(22)27
V367Cyg.D20(65)28D
TV Cas.....24(28)28D
2011 Aug 27 Sat
RZ Cas.....01(04)04D
AI Dra.....D20(19)20
U Sge.....D20(19)25
RS CVn....D20(20)23L
Z Vul.....D20(24)28D
V367Cyg.D20(41)28D
TW Dra.....21(26)28D
RW Tau.....L22(18)23
SS Cet.....L23(24)28D
2011 Aug 28 Sun
S Equ.....01(06)04L
SW Cyg.....03(09)04D
V367Cyg.D20(17)28D
TX UMa.D20(22)23L
TV Cas.....D20(23)27
AI Dra.....22(24)25
2011 Aug 29 Mon
TX UMa....L01(<<)02
Y Psc.....03(07)04D
V367Cyg.D20(<<)28D
Z Dra.....22(24)27
2011 Aug 30 Tue
AI Dra.....03(04)04D
RZ Cas.....D20(18)20
TV Cas.....D20(19)23
TW Dra.....D20(22)27
U Sge.....23(28)27L
SS Cet.....L23(24)28D
2011 Aug 31 Wed
S Equ.....D20(17)22
U Cep.....D20(22)26
TX UMa..D20(23)23L
RZ Cas.....20(23)25

September

2011 Sep 1 Thu
TX UMa....L01(<<)04
RS CVn.....D20(15)22
U CrB.....D20(19)24L
Z Vul.....D20(22)27
SW Cyg...D20(22)28D
Y Psc.....21(26)28D
2011 Sep 2 Fri
RZ Cas.....01(03)04D
RW Tau.....02(07)04D
TW Dra.....D20(17)22
AI Dra.....D20(19)20
del Lib.....D20(19)20L
SS Cet.....L23(23)28
Z Dra.....23(26)28D
2011 Sep 3 Sat
TX UMa.....20(25)23L
S Equ.....22(27)27L
AI Dra.....22(23)25
2011 Sep 4 Sun
TX UMa..L01(01)04D
Z Vul.....03(09)04L
RW Tau....L22(26)28D
U CrB.....24(29)24L

2011 Sep 5 Mon
TV Cas.....01(05)04D
AI Dra.....03(04)04D
RZ Cas.....D20(17)20
Z Dra.....D20(19)21
Y Psc.....D20(20)25
U Cep.....D20(21)26
SS Cet.....L23(22)27

2011 Sep 6 Tue
X Tri.....03(06)04D
Z Vul.....D20(20)25
U Sge.....D20(23)27L
RZ Cas.....20(22)24
TV Cas.....21(25)28D
TX UMa....22(26)22L
HU Tau.....L23(20)24

2011 Sep 7 Wed
TX UMa..L01(02)04D
Z Dra.....01(04)04D
X Tri.....03(05)04D
RW Tau.....L21(20)25

2011 Sep 8 Thu
RZ Cas.....00(03)04D
X Tri.....02(05)04D
TW Dra.....03(08)04D
U CrB.....D19(16)22
AI Dra.....D19(19)20
TV Cas.....D19(20)24
SS Cet.....L22(22)26
HU Tau.....L23(21)25

2011 Sep 9 Fri
Z Vul.....01(07)03L
X Tri.....01(04)04D
del Lib.....D19(19)20L
Z Dra.....D19(21)23
AI Dra.....22(23)25

2011 Sep 10 Sat
X Tri.....01(03)04D
TX UMa..L01(04)04D
U Sge.....02(08)03L
Z Per.....D19(15)20
TV Cas.....D19(16)20
U Cep.....D19(21)26
S Equ.....D19(24)27L
SW Cyg.....20(26)28D
TW Dra.....22(27)28D
HU Tau.....L22(22)26

2011 Sep 11 Sun
X Tri.....00(03)04D
AI Dra.....03(04)04D
Z Dra.....03(05)04D
Z Vul.....D19(18)23
U CrB.....21(27)24L
SS Cet.....L22(21)26
X Tri.....23(26)28

2011 Sep 12 Mon
RZ Cas.....D19(21)24
HU Tau.....L22(24)28
X Tri.....23(25)28

2011 Sep 13 Tue
TX UMa.....01(05)04D
U Cep.....04(09)04D
RW Tau.....04(09)04D
Z Per.....D19(17)22
U Sge.....D19(17)23
TW Dra.....D19(22)27
Z Dra.....20(22)25
X Tri.....22(24)27
Z Vul.....23(28)27L
RZ Cas.....24(26)28D

2011 Sep 14 Wed
TV Cas.....03(07)04D
AI Dra.....D19(18)20
V367 Cyg..D19(55)28D
X Tri.....21(24)26
SS Cet.....L22(20)25
HU Tau.....L22(25)28D

2011 Sep 15 Thu
RZ Cas.....04(07)04D
U CrB.....D19(14)20
SW Cyg.....D19(16)22
U Cep.....D19(21)26
RS CVn.....D19(25)22L
V367 Cyg..D19(31)28D
X Tri.....21(23)26
AI Dra.....22(23)25
TV Cas.....22(26)28D
RW Tau.....23(27)28D

2011 Sep 16 Fri
TX UMa.....02(07)04D
V367 Cyg..D19(07)28D
Z Vul.....D19(15)21
TW Dra.....D19(18)23
Z Per.....D19(18)23
del Lib.....D19(19)19L
X Tri.....20(22)25
U Sge.....20(26)26L
HU Tau.....23(26)28D
Y Psc.....23(27)28D

2011 Sep 17 Sat
AI Dra.....03(04)04D
V367 Cyg..D19(<<)27
S Equ.....D19(21)26L
TV Cas.....D19(22)26
X Tri.....19(22)24
Z Dra.....22(24)27
SS Cet.....L22(20)24

2011 Sep 18 Sun
U Cep.....04(09)05D
RZ Cas.....D19(21)23
X Tri.....D19(21)24
U CrB.....19(25)23L
RW Tau.....L21(22)27
Z Vul.....21(26)27L
HU Tau.....24(28)29D

2011 Sep 19 Mon
TX UMa....04(08)05D
TV Cas.....D19(17)21
Z Per.....D19(20)24
X Tri.....D19(20)23
RZ Cas.....23(26)28
SW Cyg.....23(29)29D

2011 Sep 20 Tue
Z Dra.....D19(17)20
AI Dra.....D19(18)20
X Tri.....D19(20)22
RS CVn...D19(20)22L
U Cep.....D19(20)25
Y Psc.....D19(22)26
SS Cet.....L22(19)24

2011 Sep 21 Wed
HU Tau.....01(05)05D
RZ Cas.....04(06)05D
X Tri.....D19(19)21
RW Tau.....L20(16)21
AI Dra.....22(23)24
Z Dra.....24(26)28

2011 Sep 22 Thu
TW Dra.....03(08)05D
X Tri.....D19(18)21
Z Per.....D19(21)26

2011 Sep 23 Fri
AI Dra.....03(04)05D
HU Tau.....03(06)05D
U Cep.....03(08)05D
TV Cas.....04(08)05D
X Tri.....D19(18)20
U Sge.....D19(20)26L
Z Vul.....D19(24)26L
SS Cet.....L22(19)23

2011 Sep 24 Sat
Y Psc.....D19(16)21
X Tri.....D19(17)19
S Equ.....D19(18)24
Z Dra.....D19(19)22
SW Cyg...D19(19)25
RZ Cas....D19(20)23
TW Dra...23(28)29D
TV Cas....24(28)29D

2011 Sep 25 Sun
HU Tau...04(08)05D
RS CVn...D19(15)21
U Cep.....D19(20)25
Z Per.....D19(22)27
U CrB...D19(23)23L
RZ Cas.....23(25)27

2011 Sep 26 Mon
Z Dra.....01(04)05D
AI Dra.....D19(18)19
TV Cas.....19(23)28
SS Cet.....L21(18)23
U Sge.....24(29)25L

2011 Sep 27 Tue
RW Tau...00(05)05D
RZ Cas....03(06)05D
TW Dra...D19(23)28
AI Dra.....22(23)24
S Equ.....23(29)26L

2011 Sep 28 Wed
U Cep.....03(08)05D
TV Cas....D19(19)23
Z Dra.....D19(21)23
Z Vul.....D19(22)26L
Z Per.....19(24)28

2011 Sep 29 Thu
AI Dra.....02(04)05D
SW Cyg...03(09)05D
RW Tau....L20(24)28
SS Cet.....L21(17)22

2011 Sep 30 Fri
Z Dra.....03(05)05D
RS CVn..L04(10)05D
U Sge.....D19(15)20
TW Dra...D19(19)24
RZ Cas....D19(20)22
U Cep.....D19(20)25

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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 148) will be 7th August, 2011. All articles should be sent to the editor (details are given on the back of this issue).

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