British Astronomical Association

VARIABLE STAR SECTION CIRCULAR

No 146, December 2010

Contents

ISSN 0267-9272

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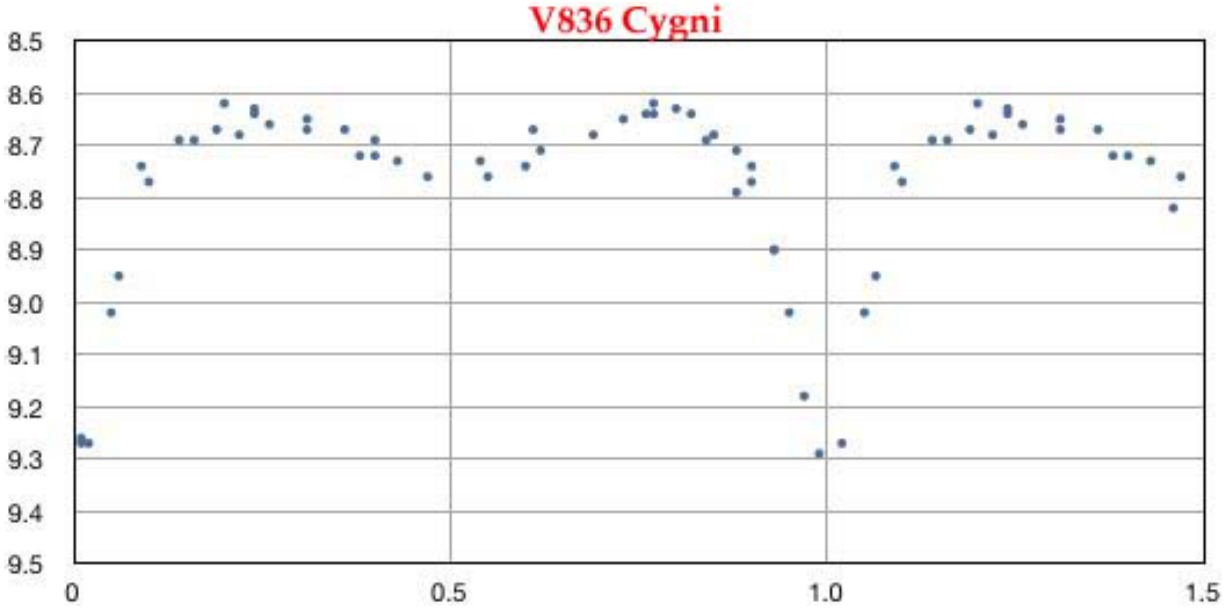
V836 CYGNI PHASE DIAGRAM

DES LOUGHNEY

This phase diagram of a near contact eclipsing binary is constructed from DSLR measurements in August 2010 to date. Note that the secondary minimum is quite clear although it is under 0.2 magnitude in amplitude. There is not much, if any, change in Krakow period.

Settings with a Canon 450D and a 200 mm lens, were exposure 4 seconds, F2.8, ISO 800.

Each measurement is the analysis of ten images using AIP4WIN.



FROM THE DIRECTOR

ROGER PICKARD

Facebook and Twitter

I rather hoped to have had some feedback from members following my note in the last Circular but sadly, nobody has said anything!

Undaunted, and following a BAA Council Meeting where Steve Owens, who looks after the BAA Blog and Twitter pages, mentioned that the blog was the most "hit" page after the BAA main page, I thought we should still progress this a little further. Which is where we still are at the moment. However, I note Tony Markham has a short article on this topic as well so, perhaps members could at least find a moment to have a look at these pages and send me their thoughts?

Next Variable Star Section Meeting

I was hoping to be able to make an announcement about this but alas, it has not yet proved possible. I'm hoping that it will be in the Manchester area sometime during next summer but for the moment, can only say "watch this space" (and the alert messages).

Naming Variable Stars

I suspect that everyone is aware that Argelander started the modern system of classifying variables and that the GCVS is responsible for giving them a name, but who used to be responsible as the GCVS commenced doing this in 1948?

Following a query from David Griffin on this very subject I turned to my copy of "The Story Of Variable Stars by Campbell and Jacchia" (part of the Harvard books on astronomy series). There, on page 17, they state ". . .the nomenclature (of Variable stars that we know today) has been used for the designation of only those stars which were recognised as variable by a special commission chosen to assign such names." They added it was known as the Variable Star Commission of the Astronomische Gesellschaft.

So, I then Googled "Variable Star Commission of the Astronomische Gesellschaft" and come up with a brilliant paper by Emile Schweitzer, former President of the Association Francaise des Observateurs d'Etoiles Variables (AFOEV), who is an old friend of the VSS: *<http://cdsarc.u-strasbg.fr/afoev/var/edenom.htx>*. This paper is an excellent history of the cataloguing of variable stars and I heartily recommend it to you. (Alternatively, if you do not have Internet access, send me an SAE and I'll post you a copy).

In the course of my researches I also looked at the AAVSO web site and saw they have a posting by Rebecca Turner where she adds:- "Why the letter J is always omitted is a mystery lost in the dusty annals of astronomical history." However, I also come across this on Wikipedia "Most of this system (by Argelander etc) was invented in Germany, which was still on Fraktur (a typeface) at the time, in which the majuscules (capitals) "I" and "J" are indistinguishable." So, per chance, another mystery was solved!

Old Circulars

Following an appeal at the last VSS Meeting at Pendrell Hall, Heather and Derek Harris, came forward and offered their help in scanning old Circulars into a searchable format. They have now completed the more modern Circulars from 12-20, and these are now on the web site.

However, please be advised that in order to do this it proved necessary to first scan these Circulars into Word format, before converting into the PDF one. This necessitated some re-pagination and careful proof reading, so if you need to use some of the historical data from these Circulars it may be as well to obtain it from the original (just to be sure, although we have done our best to insure the new document is correct).

VS Light Curves

I am sure members will have noticed that the light curves on the web site have not been updated for some ten years now!

Whilst this is obviously disappointing it is the result of our poor harassed Secretary's (over the years) having too much to do simply entering (and correcting!) data. Therefore, I wonder if there is a member who may care to consider taking the data and updating the light curves? If necessary, guidance could be given on precisely how to do this.

Once produced the curves would be sent to Gary Poyner for uploading to the web pages.

I look forward to any offers of assistance.

SPADES Exoplanet Search Project

Simon O'Toole (Australian Astronomical Observatory)
Tom Richards (Variable Stars South)

We are pleased to announce that the SPADES pro-am project (Search for Planets Around Detached Eclipsing Systems) is now up and running. We seek observers immediately to join the team. Basic requirements are a telescope of about 30 cm aperture or more, an astronomical CCD camera with a Johnson V filter, and experience in CCD photometry. Targets are all south of +10 degrees declination.

We are hoping that many more observers with CCD experience will join this project. The basic approach to observing is just to get a good time series on an eclipse that's going to occur close to your meridian, close to midnight - so you get a full eclipse profile. It's a long-term project rather than night-after-night - wait until you get a suitably placed eclipse one night, and observe it.

We have now issued the third tranche of SPADES target systems, up to RA 7h and suitable for observation through February. That brings the total of targets for observing up to 22. Many are equatorial, making them suitable for our northern colleagues.

All information you need is on our website: *www.variablestarssouth.org* (please note

the change of our website address), Research Projects > SPADES. There you will find a project specification, science case, and observing/reporting requirements, and contact e-mails. Linked you'll find a table of data on the stars, and another table of comparison star data. You can also download a data table for EB_min (from: *http://members.shaw.ca/bob.nelson/software1.htm*), which is the best way to find information on eclipses visible from your site.

If you have any questions or want to discuss the project and your work, please note our website has a forum dedicated to this project.

Continuing our collaboration with the BAA-VSS, we are especially keen to welcome BAA members to the project team, which is why we've extended our limit to +10 degrees! But we can not go further north, for we will be using large southern telescopes for spectroscopy.

Simon O'Toole*: otoole@aao.gov.au* Tom Richards: *tom@prettyhill.org*

I do hope some of our members will be tempted to join in this interesting project and if you need any help do not hesitate to contact me.

Roger Pickard, Director VSS

BRIAN GEOFFREY MARSDEN (1937-2010)

Guy M. Hurst

It is with the deepest regret that I must advise readers of the death on 2010 November 18th of Dr. Brian Marsden, a British Astronomer who was born in Cambridge, England on 1937 August 5th. He was a long-time supporter of amateur astronomers and was elected as a member of the Association on 1953 November 25th.

The writer was in contact with Brian only a few days ago before he died, as he was helping The Astronomer's team by providing personal copies of the magazine to NASA officials, to enable them to be posted on the ADS website and to broaden their availability. This and other work for the Minor Planet Center were still being undertaken despite a lengthy illness with leukaemia, and more recently also with pneumonia. As recently as November 10 he was issuing orbital elements and an ephemeris for C/2010 V1 (Ikeya-Murakami), the first comet found visually for a very long time.

In the Minor Planet Electronic Circulars 2010-W10 issued 2010 November 18th, 15:41 UT, Gareth Williams provides a description of his amazing achievements in the field of astronomy. Brian succeeded Dr. Owen Gingerich as the director of the Central Bureau for Astronomical Telegrams in 1968, and was later joined by Daniel Green as a student assistant. He also undertook the directorship of the Minor Planet Center. It was through his work at the Central Bureau and the 'The Astronomer' editor's appointment in 1975 that regular contact was established in an effort to filter false alarms and ensure only genuine discoveries reached Brian. He visited me here in Basingstoke on a number of

occasions, and also took the trouble to look up various well-known amateur astronomers such as the late George Alcock. All this was so much appreciated as it illustrated his enormous support for the PRO-AM cause. He also had an extraordinary memory of astronomical events going back decades such that he could recall during our conversations about the latest observing query, earlier related incidences by date and observer without reference to the literature.

For his work in a number of fields including phenomena relating to Jovian satellites and the planetary perturbations on the orbit of comets, he was awarded the Merlin Medal and Gift in 1965, and subsequently in 1979 received the Association's most senior award, the Walter Goodacre Medal.

Dr. Marsden married Nancy Lou Zissell, of Trumbull, Connecticut, on 1964 December 26th, and fathered Cynthia (who is married to Gareth Williams, still MPC associate director), of Arlington, Massachusetts; and Jonathan, of San Mateo, California. There are three Californian grandchildren, Nikhilas, Nathaniel and Neena. A sister, Sylvia Custerson, continues to reside in Cambridge, England.

He will be sorely missed both by professionals throughout the world who worked with him but also by the whole amateur astronomy community. We extend our sincere condolences to all members of his family and to Dan Green, a colleague for over 30 years.

ECLIPSING BINARY NEWS

DES LOUGHNEY

Epsilon Aurigae

There has been no central eclipse brightening. The system, over the last three months, has varied between about 3.75 and 3.65 magnitude. The variation is on a 60 day pattern which seems to be related to the out of eclipse variations of epsilon. This shows that epsilon is not totally obscured by the cloud of dust and gas. The part of epsilon that remains unobscured is still influencing the photometry by varying on a 60 day cycle.

The end of the phase of deepest eclipse is scheduled to start on 19th March 2011. There is no guarantee that epsilon will start brightening on that date. The change could be earlier and up to a month later. The predicted date is based on the obscuring cloud of dust and gas remaining the same apparent size as observed 27 years ago. Somehow, this seems unlikely.

Visual observations may well be important in picking up the start of the brightening if instrumental observations are rendered impossible by the weather.

The end of the eclipse is scheduled for 13th May 2011.

On 11th January 2011 there will be Poster Papers and a Special Invited Talk Session on Epsilon Aurigae at the 217th Meeting of the American Astronomical Society in Seattle, Washington, USA (see *http://www.hposoft.com/Campaign09.html* for further details). Have a look out for this as it will provide the latest information on the eclipse. Maybe

the question as to whether the cloud of dust and gas has a star in the centre will be answered.

A Citizen Sky youtube presentation on Epsilon Aurigae can be seen on:
http://www.youtube.com/watch?v=HY9aPuO_Aew

VV Cephei

I had not realised that there are more systems that are similar to Epsilon Aurigae until I was asked when the next eclipse of VV Cephei was scheduled to take place. That system has a period of 20.4 years. The last eclipse took place in 1997, so that the next one is scheduled for around 2017. As VV Cep is a giant red star of about 40 solar masses, with a size that is equivalent to the orbit of Saturn, eclipses last some time. The small blue star that is being eclipsed is only small in a relative sense as it may be of 3 or 4 solar masses. The whole eclipse will last 1200 days of which 250 will be at a minimum. The brightness drops from 4.80 to 5.36. Ingress lasts about 500 days, as the blue star shines through the diffuse outer atmosphere of VV Cep.

There will be more news on this system nearer the date.

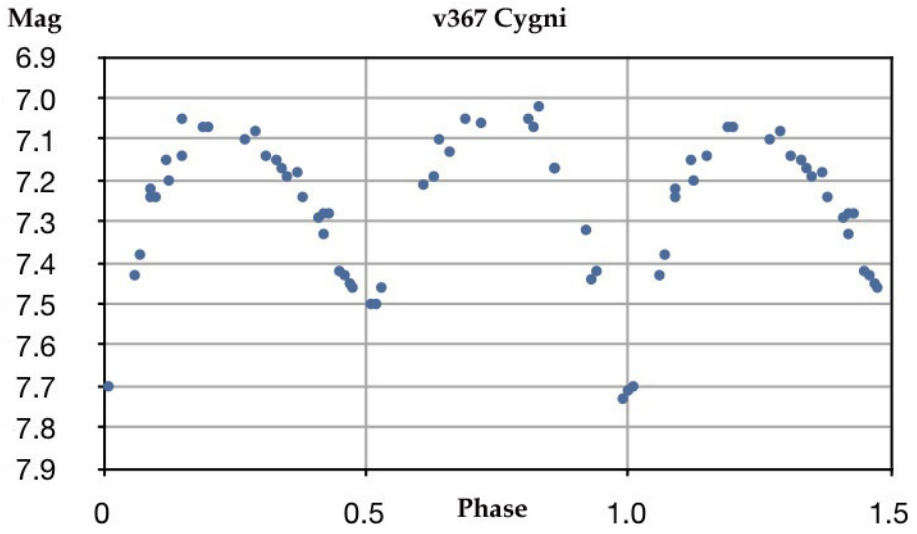
V367 Cygni

This system was highlighted in VSSC 144 (June 2010). I am now well on with accumulating measurements of the system by DSLR photometry. Each point on the phase diagram below, which shows measurements from August 2010 up to 25th October 2010, is derived from analysis of 10 images. The settings for the camera were, with a 200 mm lens, exposure 2.5 seconds, f 3.5, ISO 800.
Some more measurements are required around the minimum to confirm the current period of the system, but it looks like the Krakow period of 18.598 days is correct. The system is of interest because studies have indicated that asymmetries in the light curve show the presence of an accretion disk. The primary minimum does not seem to be asymmetrical, though there is some suggestion that the secondary may be. Hopefully, the weather will allow the missing gaps in the phase diagram to be filled in the not too distant future. The system is an EB class eclipsing binary. This is confirmed by the shape of the light curve.

Bonus Eclipsing Binary - SX Aurigae

It has been drawn to my attention that, for all those who are observing Epsilon Aurigae, there is another eclipsing binary that can be easily picked up in the same field of view. This system is SX Aurigae which is very near eta Aurigae, one of the common comparisons used for epsilon. SX Aurigae is an EB class system which has a period of around 1.21 days. With such a short period it can almost be considered to be in continuous eclipse. It can be usefully be observed several times in one night. It varies from 8.4 to 9.1 magnitude. The primary eclipse is 0.7 in depth and the secondary 0.4.

The system is on the BAA VSS Eclipsing Binary programme. It is of interest because, as its short period suggests, it is apparently in the process of evolving from a semi-detached system (EB class) to a contact binary (EW class). A chart can be obtained by contacting the email address below.



desloughney@blueyonder.co.uk

CHART NEWS

JOHN TOONE

The following new charts are now posted to the VSS web site, and are available in paper form from the Chart Secretary:

Telescopic Charts

038.03 X Camelopardalis
Formerly chart 038.02 the 3 degree, 1 degree and 20 minute field charts have been retained. Comparison stars K, R and U have been dropped. The new sequence consists of V measurements from Tycho and SRO.

067.02 T Cassiopeiae
New 2 degree and 40 minute field charts replace chart 067.01. Comparison stars A, C, E, H, P, U, Z, AA and BB have been dropped and comparison star T has been added. The new sequence consists of V measurements from Tycho and SRO. This chart and sequence has been updated at the request of John Mallett.

043.02 S Coronae Borealis
New 5 degree and 50 minute field charts replace chart 043.01. Comparison stars C, D, F, N, P and U are dropped. The new sequence consists of V measurements from Tycho and SRO. The previous sequence was poorly calibrated in magnitude range 9 to 11.

025.03 T Coronae Borealis
Formerly chart 025.02 the 50 degree, 9 degree and 2 degree field charts have been retained. The only change to the sequence is an amendment of the value of comparison star N from 11.3 to 11.2 (V measurement from Skiff).

057.02 V Coronae Borealis
New 5 degree and 1 degree field charts replace chart 057.01. Comparison stars C and E have been dropped and comparison stars W, X and Z have been added. The new sequence consists of V measurements from Tycho, TASS and SRO.

034.02 V Cygni
New 1 degree and 20 minute field charts replace chart 034.01. Comparison stars P, R, X and Y have been dropped. The new sequence consists of V measurements from Tycho and SRO. The previous sequence was poorly calibrated in magnitude range 8 to 11.

088.04 BF Cygni
New 2 degree and 20 minute field charts replace chart 088.03. Comparison stars N and P have been added to extend the sequence at the bright end. The new sequence consists of V measurements from Tycho and Skiff. This chart and sequence has been updated at the request of Len Brundle.

325.01 W Lyncis
No previous BAA VSS chart existed for this LPV and we have been previously relying upon an AAVSO preliminary chart dating from 1971 which did not cover the full range of the variable star. 3 degree and 20 minute field charts have been drawn and the new sequence is a combination of V measurements by Tycho and Pickard.

076.02 BX Monocerotis
New 1 degree and 20 minute field charts replace chart 076.01. Comparison stars D, and E have been dropped and comparison stars A, K, L, M, N, P and R have been added. The new sequence is a combination of V measurements taken from Tycho, TASS and USNO. The sequence has been extended at both the bright and especially the faint ends to better cover the extreme range of the variable star. This chart and sequence has been updated at the request of Mike Gainsford.

073.02 AX Persei
A new 20 minute field chart replaces chart 073.01. Comparison stars A, C, D, E, G and J have been dropped and comparison stars K, L, N and P have been added. The new sequence is a combination of V measurements taken from Tycho and USNO. The sequence has been extended at the faint end to better cover the extreme range of the variable star. This chart and sequence has been updated at the request of Brian Beesley.

320.01 BW Tauri
No previous BAA VSS chart existed for this AGN and a 40 minute field chart has been drawn. The sequence is a combination of V measurements by TASS, ASAS3 and Angione.

318.01 J0712+296
No previous BAA VSS chart existed for this star. A 1 degree field chart has been drawn. The sequence is a combination of V measurements by Tycho and GSC.

319.01 TAV0714+17
No previous BAA VSS chart existed for this star. A 1 degree field chart has been drawn. The sequence is a combination of V measurements by Tycho and UCAC.

321.01 NSVS 16874
No previous BAA VSS chart existed for this star. A 30 minute field chart has been drawn. The sequence is a combination of V measurements by Tycho and Pickard.

Binocular Charts

070.02 V450 Aquilae
A new 9 degree field chart replaces chart 070.01. Comparison stars B (V923 Aql), 2, D, and 3 have been dropped and former numbered comparison stars 1, 4 and 5 now have letter references C, G and H respectively. The new V sequence is taken from Tycho and can be used for **V1293** and **V1294 Aql** whose details are retained on the new chart.

100.02 U Camelopardalis
A new 5 degree field chart replaces chart 100.01. Comparison stars B and G have been dropped and comparison star K has been added. The new V sequence is taken from Tycho. This chart and sequence has been updated at the request of Shaun Albrighton.

068.02 XX Camelopardalis
A new 3 degree field chart replaces chart 068.01. Comparison stars A, B, D, E, F, L, N, P and R have been dropped and comparison stars S and T have been added. The new V sequence is taken from Tycho.

323.01 WZ Cassiopeiae
A new 3 degree field chart replaces chart MDT 1982-08-16. A lettered sequence is introduced that reduces the overall number of comparison stars. The new sequence contains only stars with a B-V range between 0.0 and +0.3 and should be much more internally consistent than what was previously in use. The new V sequence is taken from Tycho. This chart and sequence has been updated at the request of Rhona Fraser and Dave Gavine. Melvyn Taylor provided invaluable advice on the sequence selection.

048.04 AC Herculis and IQ Herculis
A new 9 degree field chart replaces chart 048.03. Comparison stars A, H, P, K and R have been dropped. The new V sequence is taken from Tycho and improves the calibration below magnitude 8.

324.01 OP Herculis and V566 Herculis
A new 9 degree field chart replaces chart MDT 1984 Apr 12. Comparison stars X, Y, 2 and 4 have been dropped and comparison stars E and 6 have been added. The new V sequence is taken from Tycho and provides better coverage for the ranges of both variable stars. This chart and sequence has been updated at the request of Tristram Brelstaff.

229.02 Y Lyncis
A new 6 degree field chart replaces chart 229.01. Comparison stars B, D and G have been dropped and comparison stars K, N and P have been added. The new V sequence is taken from Tycho. A replacement for comparison star C (NSV17506, B-V +1.60) was

sought but no suitable candidate is available. Otherwise the colour range in this sequence is now much reduced.

099.02 X Ophiuchi
A new 6 degree field chart replaces chart 099.01. Comparison stars B (V2291 Oph), C (V2393 Oph), D and H have been dropped and comparison stars N, K and L have been added. The new V sequence is taken from Tycho and is predominantly in the B-V range of +0.9 to +1.4.

105.02 W Orionis
A new 9 degree field chart replaces chart 105.01. Comparison stars B, E and F have been dropped and comparison stars G, H and K have been added. The new V sequence is taken from Tycho. Besides reducing the colour range in the sequence the comparison stars are now in an east/west direction and closer to the variable star.

Thanks are extended to all observers who have provided feedback on sequences that has precipitated the revision of some of the charts and sequences listed above. Observer feedback on charts and sequences is always welcomed. Credit is extended to Chris Jones who drew the charts for J0712+296, TAV0714+17 and NSVS 16874.

TWITTER AND FACEBOOK UPDATE AND TIPS.

TONY MARKHAM

My use of Twitter

In the June Variable Star Section Circular, I stated that I do not post items via Twitter. That was true at the time that I wrote the notes back in May. However, August brought us the Perseid Twitter meteorwatch, organised by Adrian West. The idea behind this was that people would use Twitter to report (in near real time) the meteors that they were seeing. Provided that their tweets included the hashtag #meteorwatch , they would be visible via the live meteorwatch feed.

Although most of the tweets did not contain enough information to be scientifically useful, my impression was that this was an excellent way of involving people who have a general interest in seeing meteors. Can anyone suggest a Twitter-based variable star equivalent?

Having posted tweets as part of this and picked up some followers, I now post tweets (mostly VS related) on a more regular basis via my twitter account:

http://twitter.com/tigertonym

Shortening links

As mentioned in the June VSSC, tweets are limited to 140 characters, so you do not want

to waste too many characters on long URLs. Fortunately there are various sites such as <*http://bit.ly*> that can be used to create shortened versions of URLs to include in your tweets.

URLs to your Facebook and Twitter pages

Knowing these makes it easier for other Facebook/Twitter/Web users to track you down.

For Twitter, this is quite straightforward – your URL is *http://twitter.com/<yourLogin>* Via this URL, people will be able to see the tweets you have sent, but will not automatically receive new tweets unless they follow you on Twitter.

For Facebook it is slightly more complicated - your default URL is rather long and unmemorable. However, you can create a shorter more memorable URL via: *http://facebook.com/username* . People who access your Facebook account via your URL will only see very basic details of your profile and will need to log in to Facebook to see more.

Links to Facebook and Twitter from the BAA VSS web pages

Slightly hidden away on the VSS web pages is a section that includes links to members' web pages. If you would like a link adding to your Facebook profiles, your Twitter account (or your pages on other sites such as Flickr), then send the URLs to Gary Poyner.

VARIABLE STAR ENTRIES IN OLD BAA JOURNALS

TONY MARKHAM

There is so much information available on-line nowadays that it becomes easy to miss announcements regarding new additions. For example, how many BAA members are aware that old BAA Journals dating back to 1890 are now downloadable from the BAA web site? Not many, I suspect, given the low numbers of hits for most journals.

To access the journals, go to the BAA web site: *http://www.britastro.org/baa* . If you have not previously registered for the members-only section, you will first need to select the 'Register' option from the 'Members' drop-down menu. When you have received your login and password, access the members-only section by selecting the 'Login tab', and enter them. Then, from the 'Members' drop-down menu, select 'Downloads' and from the list of items then displayed, select 'Journals'.

This will display details of the most recent four journals. To select older journals, you could use the 'Next' tab at the bottom of the page and (very) slowly work your way back through the years. However, a quicker way is to first jump back a long way by amending the last entry in the URL. The displayed URL will typically end in something like *Itemid=90&limitstart=5* . However if, for example, you change this to *Itemid=90&limitstart=410* , it will jump backwards to a list of journals from 1946.

Not all old journals are yet on-line (and I have not checked every journal), but here is an indication of the type of entries you might find :

1890 Dec p137-138: Observations of eclipses of Lambda Tau and Algol.
1900 Jan p154-157: Summary of observations of Long Period Variables made from Rousdon Observatory, Devon during 1899.
1902 Feb p228-229: Reports from other journals regarding Nova Persei 1901 (now GK Persei), including references to the uncertainty as to whether the expansion of the associated nebulosity is real or just a light-echo effect (and a suggestion that it is a "spiral nebula").
1902 May p345-348: Further observations of the nebulosity around Nova Persei.
1907 May p325-326: Summary of an article from another journal in which it is suggested that the variations of Long Period Variables are due to star spots.
1907 Jly p384-388: Summary of the section's observations of "irregular" variables during 1906, including a discussion as to whether the period of R Scuti is 71 days or 145-151 days.
1908 Dec p90-92: Discovery of a new Algol type variable in Vulpecula (now RS Vul).
1908 Dec p110: Confirmation of the variability of 26.1900 Vulpeculae (now Z Vul).
1910 Nov p70-71: Locations of newly discovered variables (some of which correspond to variable now on the BAA VSS programmes).
1918 Jun p237-255: Observations of Nova Aquilae 1918.
1918 Jun p265: Reports of faint novae in the spiral nebula NGC 6946 and in the Andromeda Nebula.
1935 Jan p98: J P M Prentice's account of his discovery of Nova Herculis 1934 (now DQ Herculis) during a Geminid meteor watch.
1935 Feb p145-150: Report and light curve based on the early observations of Nova Herculis 1934.
1946 Apr p74-76: Comparison of the 1866 and 1946 outbursts of T Coronae Borealis.
1950 Mar p120-121: A note (from the PASP) on short lived outbursts from red dwarf stars.
1962 Vol 72 No 1 p35-41: Article entitled "Detection of Novae by Electronic Computer".
1962 Vol 72 No 2 p73-78: Reports on SS Cyg in 1939 and R CrB 1942-1951.
1966 Feb p135-136: Article entitled "The effect of colour on the visual photometry of S Cephei".
1966 Jun p286-290: Report on the outburst of Nova Herculis 1963.
1967 Aug p357-359: Issues regarding W Cygni comparison X (now V1339 Cygni).
1968 Jun p254-255: News of a Nova discovery in Vulpecula by George Alcock.
1968 Dec p70-73: Director John Glasby outlines a change in emphasis from Long Period Variables to Cataclysmic Variables, Flare Stars and T Tauri variables.

PROJECT T.O.M.M.I.G.O.

LAURENT CORP

T.O.M.M.I.G.O. stands for Time Of Minima and Maxima Instrument Garden Observatory.

This project uses a CCD camera type ST7 with a filter wheel composed of several photometric filters (Green and Red) and a clear filter.

Figure 1: Garden Observatory near Rodez, the south of France.

This instrumentation is installed on a 200 mm diameter telescope; the telescope and the fork mount are personally manufactured.

The software controls the camera and the filter wheel. Several different imaging sequences can be made: either X images with the green filter, Y images with the red filter, or alternatively one image with the green filter and one image with the red filter. Different exposure times can be requested depending on the filter you use.

Figure 2: I used tape for masking parasite light.

My observation program is the following :

- OO Aquilae, AB Andromedae, V548 Cygni, XY Leonis ....

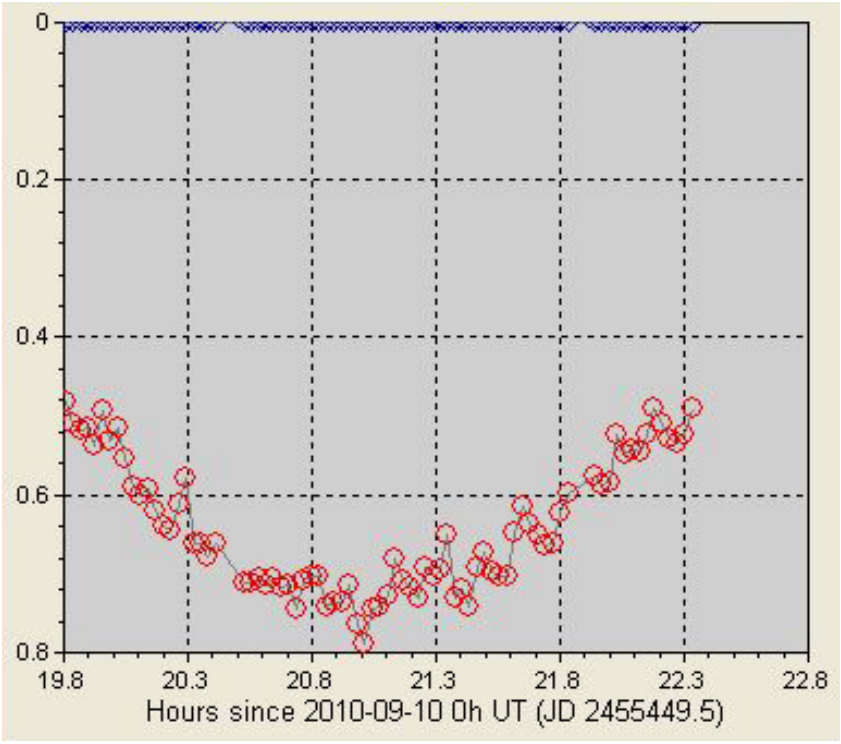
- HD 23642 (Pleiades star cluster - M45 - Campaign of David Valls - CNRS – Paris Observatory)

Plus other peculiar stars:

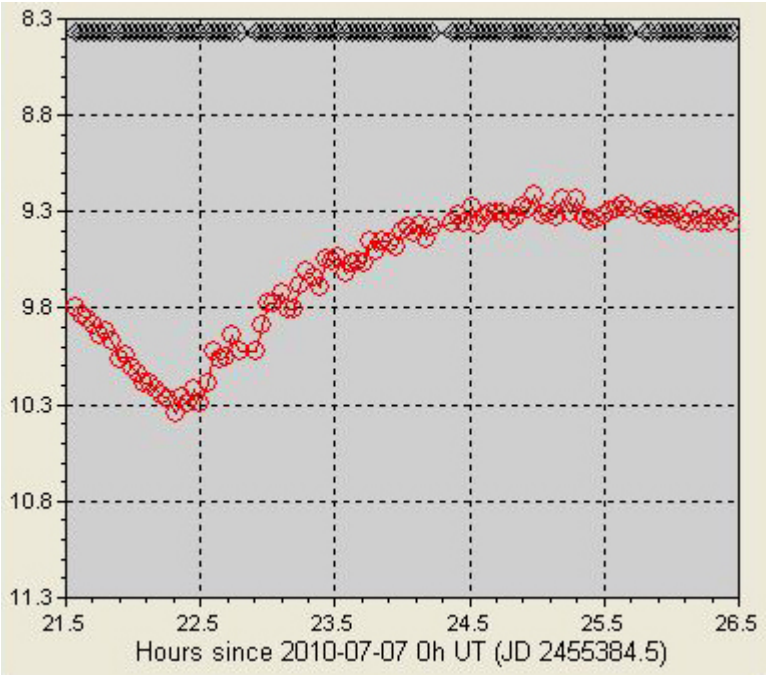
- RR Lyrae - pulsating star of short period. (Campaign of Jean - Francois Le Borgne, Midi-Pyrenees Observatory)

- Epsilon Aurigae (campaign of Jeff Hopkins; and Robert Stencel, University of Denver)

Figure3: V548 Cygni (8.5-9.3 EA / SD) : visualization of the minima.

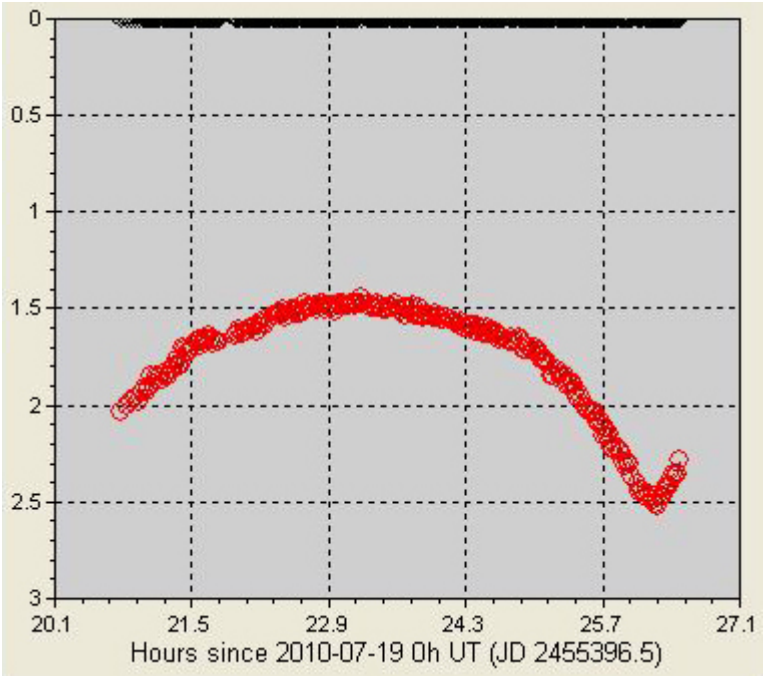


Observations of September 10, 2010 Project TOMMIGO
RA: 19h 55m 60.0s
Dec: 54° 40´ 0´´
JD0: 44456.45600
Period: 1.8052435
Comments: 8.6-9.4 A1+F7



Figures 4 and 5: OO Aquilae (9.2-9.9 EW / DW)

Curves of 2 minima at two different periods, Figure 4 above, V band; and Figure 5 below, R band. RA: 19h 48m 13.0s, Dec: 9° 18´ 30´´ JD0: 54335.36020 Period: 0.5067885



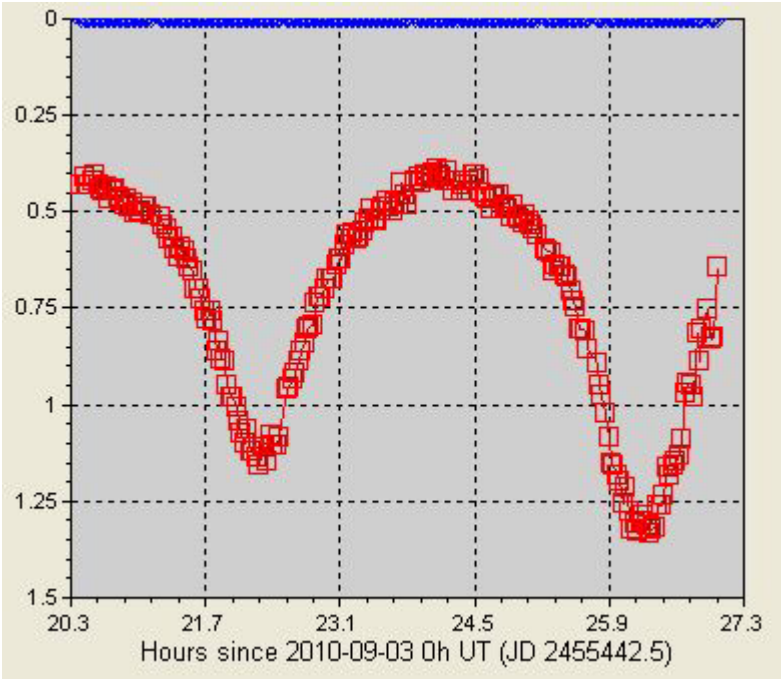


Figure 6: Primary and secondary minima of AB Andromedae. (9.5-10.5 EW).

Observations made during the same night, the minima were before the predicted time.
RA: 23h 11m 32.1s, Dec: 36° 53´ 35´´. JD0: 52936.66260 Period: 0.3318922

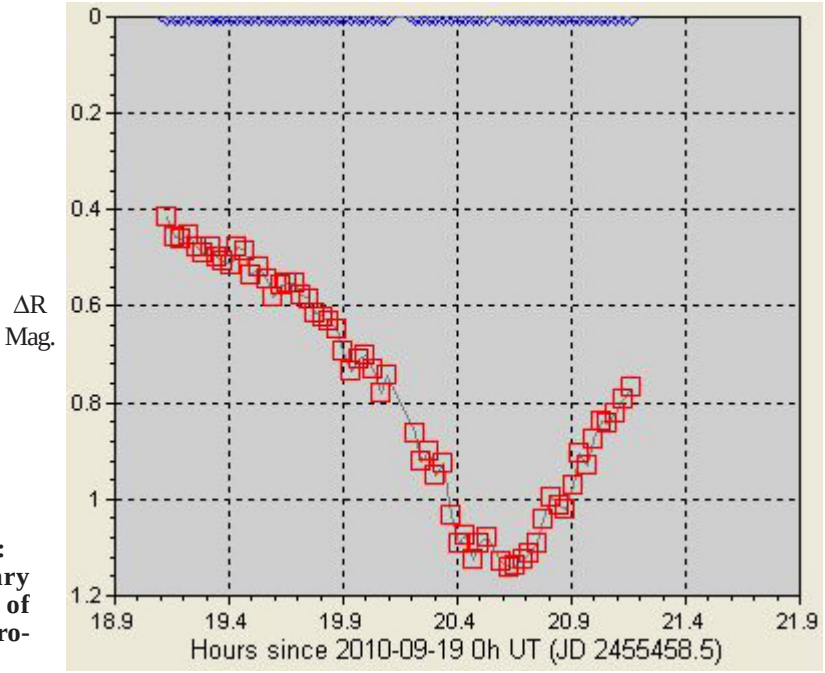
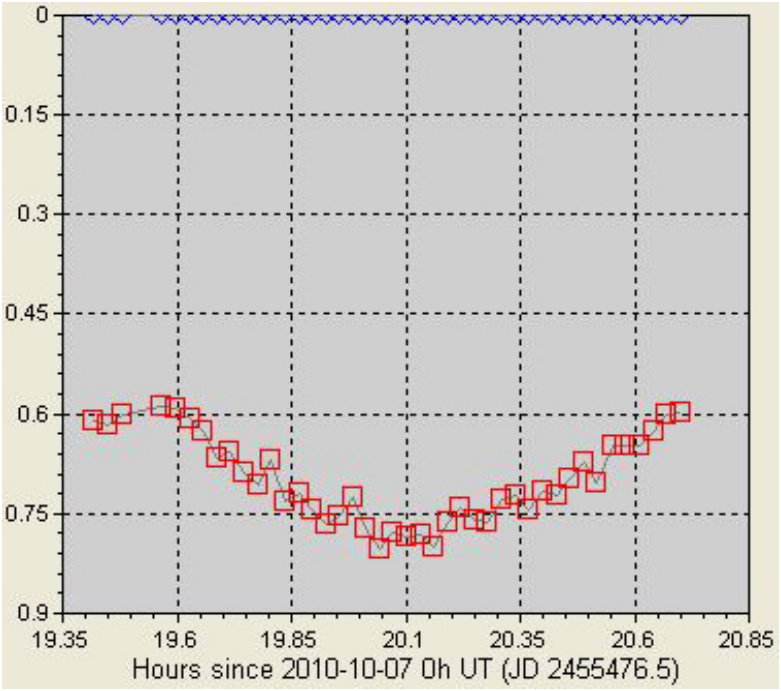


Figure 7: Secondary minima of AB Andromedae.

Figure 8:

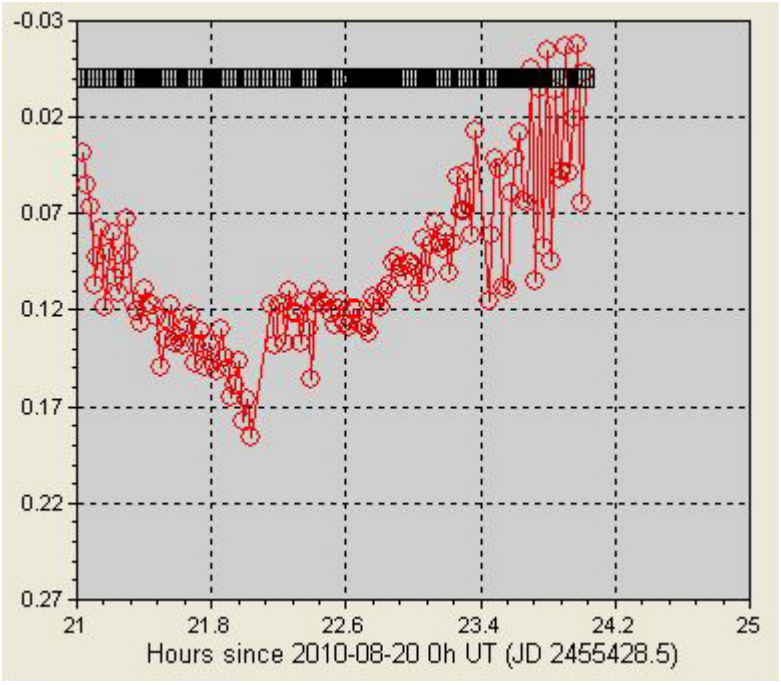
V836 Cygni (8.5-9.2 A0)



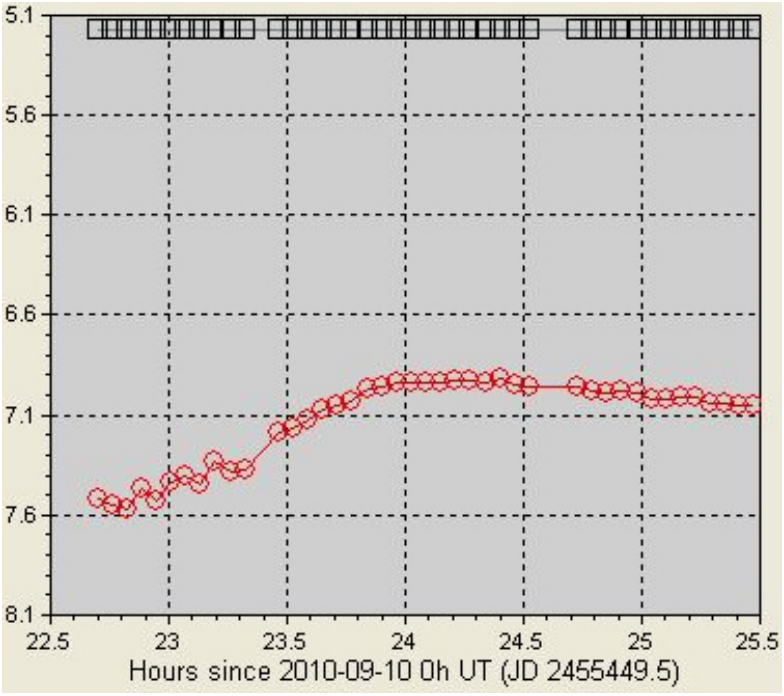
RA: 21h 21m 24.0s
Dec: 35° 44´ 12´´
JD0: 49919.40080
Period: 0.6534127

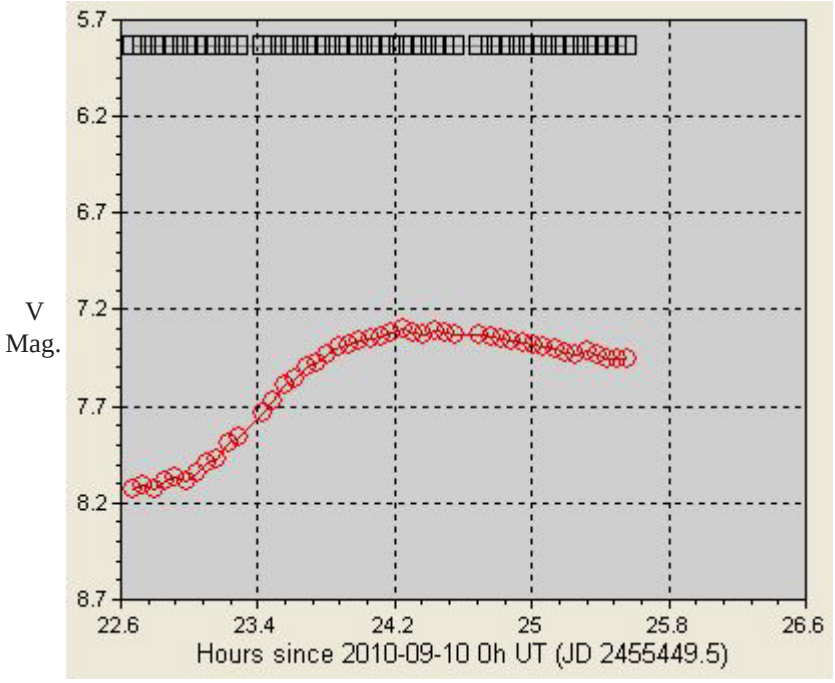
Figure 9:

RS Vulpeculae (6.8-7.8 B4+A2)



RA: 19h 16m 0.0s
Dec: 22° 21´ 0´´
JD0: 40818.80010
Period: 4.4776635





Figures 10 and 11: RR Lyrae (7.1-8.1 RRAB)

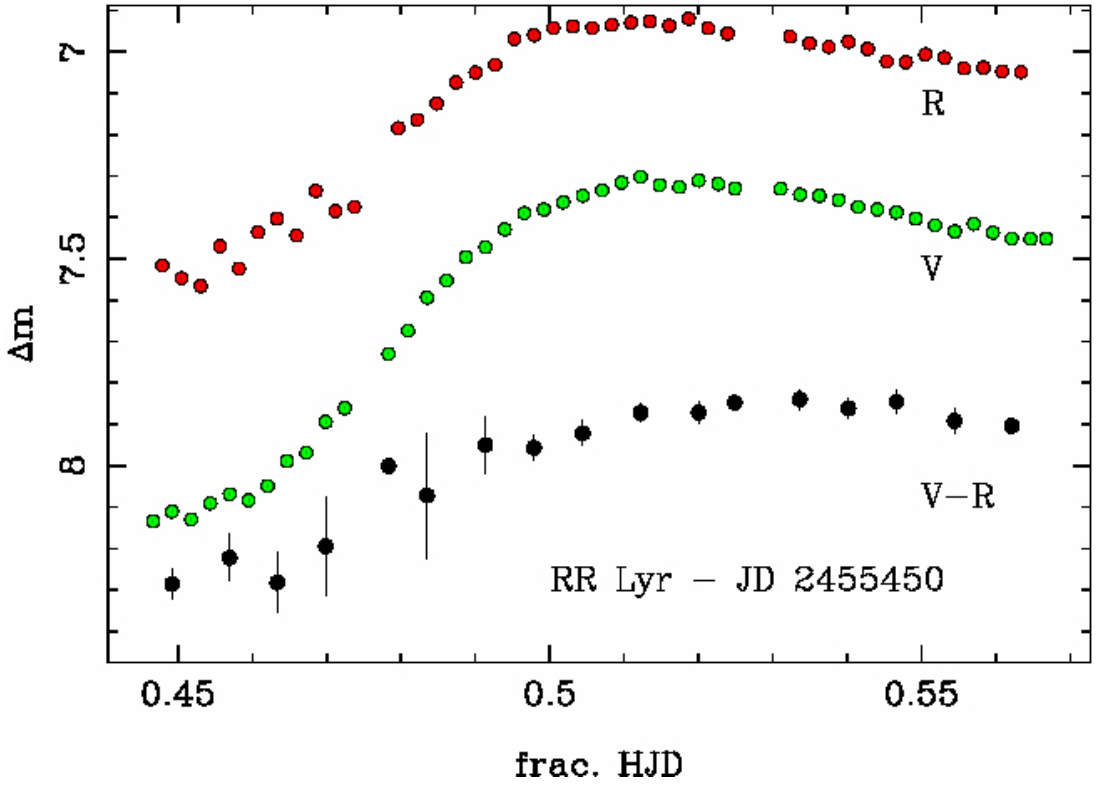


Figure 12: RR Lyrae (7.1 8.1 RRAB), VR curve

Dispersion less than 0.01 magnitude for the majority of points. Observations of September 10/11 2010 Project TOMMIGO (C) Jean François Le Borgne, MidiPyrenees Observatory.

Courtesy of Jean Francois Le Borgne.

References

BAA VSS 'Measuring Variable Stars Using a CCD Camera, A Beginners Guide':
http://wwwbritastro.org/vss
American Association of Variable Star Observers: *http://www.aavso.org*
AAVSO 'CCD Observing Manual':
http://www.aavso.org/sites/default/files/CCD_Manual_2010_revised.pdf
Variable Stars South: *http://www.varstarssouth.org/*
W.Romanishin (Oklahoma University.): *http://observatory.ou.edu/book2513.html*
Starizona's Guide to CCD Imaging : *http://starizona.com/acb/ccd/ccd.aspx*
CCD: Bruce Gary: *http://reductionism.net.seanic.net/ObservingTips/ObsgTips.html*
Howell, Steve B., 2006, 'Handbook of CCD Astronomy', 2nd Edition (Cambridge: Cambridge University Press)
Berry, Richard, and Burnell, James, 2005, 'The Handbook of Astronomical Image Processing' (Richmond, VA: Willman Bell)
Henden, Arne, and Kaitchuck, Ronald, 1990, 'Astronomical Photometry' (Richmond, VA: WillmanBell)
Brian D. Warner 'Lightcurve Photometry and Analysis' (Springer Practical Guide)
W.Romanishin Universitiy of Oklahoma, 'An Introduction to Astronomical Photometry.'

Using CCDs:
http://observatory.ou.edu/wrccd22oct06.pdf
http://www.astrosurf.com/luxorion/Documents/evolstarbmauclaire.pdf

RR LYR :
http://rr-lyr.ast.obs-mip.fr/dbrr/dbrr-V1.0_0.php
http://rr-lyr.ast.obs-mip.fr/

web site: *http://astrosurf.com/lcorp*
e-mail: *laucorp@wanadoo.fr*

IBVS 5932 - 5956

JANET SIMPSON

5932 BVRcIc Photometric Evolution of the Very Fast Nova Ophiuchi 2010 N.1 = V2673 Oph. (Munari and Dallaporta, 2010)
5933 New Times of Minima of 36 Eclipsing Binary Systems. (Lampens et al, 2010)
5934 The GEOS RR Lyr Survey. (Le Borgne et al, 2010)
5935 Radial Velocities for Twelve Pulsating Variables in the Anticenter. (KINMAN et al, 2010)
5936 Discovery and Photometric Orbital Solution of a New Double-Lined and Highly Eccentric B5V Eclipsing Binary. (Siviero et al, 2010)
5937 A new ephemeris and an orbital solution of epsilon Aurigae. (CHADIMA et al, 2010)
5938 Times of Minima for Eclipsing Binaries 2009. (Dvorak, 2010)

5939 Optical Photometry of Parsamian 21. (SEMKOV and PENEVA, 2010)
5940 The Highly Active Low-Mass Eclipsing Binary BS UMa. (Wils et al, 2010)
5941 BAV-Results of Observations - Photoelectric Minima of Selected Eclipsing Binaries and Maxima of Pulsating Stars. (Hubscher et al, 2010)
5942 MOST Observations of the lambda Bootis Star HD 142703. (Paunzen et al, 2010)
5943 CCD Times of Minima of Several Eclipsing Binaries. (Liakos and Niarchos, 2010)
5944 Absolute Spectrophotometry and BVRcIc photometric Evolution of the Fast Nova Ophiuchi 2010 N.2 (V2674 Oph). (Munari et al, 2010)
5945 Timings of Minima of Eclipsing Binaries. (Diethelm, 2010)
5946 Simultaneous Photometric and Spectroscopic Solution for AW Cam. (Frey et al, 2010)
5947 Observations of Mira variable V407 Cyg. (Kiziloglu, and Kiziloglu, 2010)
5948 Evidence for a Variable Component in the Eclipsing Binary System V417 Aurigae. (Fernandez et al, 2010)
5949 Detection of a Rapidly Pulsating Component in the Algol-Type Eclipsing Binary YY Boo. (Hambsch et al, 2010)
5950 The First Discovery of a Variable Magnetic Field in X-ray Binary Cyg X-1=V1357 Cyg. (KARITSKAYA et al, 2010)
5951 AC Bootis - An Unevolved W-Type Overcontact Eclipsing Binary with a High Mass Transfer Rate. (Nelson, 2010)
5952 The New Eclipsing Variable Star USNO-A2.0 0825-18396733, A Probable Polar. (Kryachko et al, 2010)
5953 The Long-term Multi-Colour Variation of Three Bright RS CVn Type Systems. (Tas and Evren, 2010)
5954 Spectroscopy of Eclipsing Binary DY Lyncis Third Component Detected. (SEKALSKA et al, 2010)
5955 New Double-Mode and Other RR Lyrae Stars from WASP Data. (Wils, 2010)
5956 Photometric Study of a Nova-Like Cataclysmic Variable Star NSV 25181. (Zubareva and Antipin, 2010)

A NIGHT AT SIDING SPRING

JOHN TOONE

When asked at the March 2010 BAA VSS meeting what was my favourite night of astronomy, I had no hesitation in saying 8th April 1986 from Siding Spring Observatory. Since 1975 I have had many memorable nights of observing which were special for various reasons, but this particular night at a favourable vantage point in Australia was outstanding for multiple reasons which I thought I would recount hereunder:

From a very early age I pinpointed two astronomical events that were due to happen in the closing stages of the Twentieth Century that I wanted to see to advantage. They were the return of Comet Halley in 1986, and the Leonid meteor storm of 1999. To clearly see these events the observer needed to be at a favourable latitude for Comet Halley, and a favourable longitude for the Leonids. The first of these events was not advantageous to observers based in northern temperate regions because the optimum latitude was about 10 degrees south of the Tropic of Capricorn. When searching for potential ob-

serving sites along that latitude the options are limited to South America, South Africa and Australia. Unfortunately in 1986 both South America and South Africa suffered from political unrest, whereas on the other hand Australia was very much a pillar of stability. Consequently I booked myself on an Explorers Tour of Australia, which incorporated a visit to Siding Spring Observatory in addition to travelling across the Outback at the time that Comet Halley would make its closest approach to the Earth.

When I arrived in Sydney on 5th April 1986 and joined the coach party I soon met up with two other BAA VSS members, Rhona Fraser and Hazel McGee. We were advised by Patrick Moore and the BAA NSW Branch members that the comet had diminished significantly in brightness and was not as impressive as it had been in the previous month of March. Not much could be seen of the southern sky from the Sydney hotel roof due to lights so I thought I would attempt to shake off the effects of the thirty nine hour flight by sleeping a full eight hours. Once outside of Sydney it was possible to undertake serious astronomical observations and Comet Halley displayed a fan shaped tail with the naked eye and was certainly not a disappointment. On the fourth day the coach reached Siding Spring Observatory and we were given a guided tour of the 153″ Anglo Australian Telescope (AAT), 48″ UK Schmidt and 92″ Advanced Technology Telescope. The group then retired for the night at nearby Coonabarabran where I received an unexpected but welcome invite from Robert McNaught via Rhona Fraser, to return to Siding Spring Observatory for a nights observing.

I had not previously met Robert but we were familiar with each other's work for the BAA VSS and 'The Astronomer', and whilst driving back to the observatory (narrowly missing several stray kangaroos in the dark) we were soon engrossed in astronomical conversation. Robert had worked at Siding Spring for two years and was photographing satellites on this particular night with a 24″ telescope. I have to say that he was not 100% successful and cursed a couple of times when targeted satellites were missed.

I observed from a point about 200 yards south west of the AAT dome between 20:00 and 23:10 local time. Robert lent me his tracking platform which allowed me to take 18 guided photographs of Comet Halley (see attached) and the Milky Way around Carina, Crux, Centaurus and Sagittarius. The seeing conditions were excellent and I recorded 14th magnitude stars with 10 minute exposures on a 50mm lens with 1600ASA Fujichrome film. Two of these images of the Milky Way were later published on the cover of the JBAA and several of them have been framed and now adorn my lounge wall.

Robert introduced Rhona and myself to Tom Cragg who was observing variable stars visually with a 12.5″ Newtonian. I recognised him as the guide who took us around the AAT earlier that day. Tom comes from California and he told me that he had made 130,000 variable star observations since 1946, which is a remarkable figure. Using Tom's telescope I saw HL Canis Majoris for the first time almost hidden within the glare of Sirius. X Leonis was a challenge at minimum, but we both recorded positive observations at magnitudes 15.9 and 16.3. I asked Tom if I could see what sequence he was using and when he showed me the AAVSO chart I re-reduced my estimate from 16.3 to 16.0 which meant that we then agreed to within 0.1 magnitude. Tom said that he was astonished that our eyes could be so closely calibrated on such a faint object. This was my faintest magnitude estimate at the time which would not be exceeded until March 2000. The Tarantula and Keyhole nebulae were quite spectacular, and Eta Carinae on high power displayed a compact bright white disk of nebulosity which was almost planetary in appearance. Omega Centauri was magnificent with literally hundreds of stars visible and

Figure 1: Comet Halley and Antares taken from Siding Spring on 8 April 1986.o

compressed so tightly together.

We had a two hour coffee break during which Tom, Rhona and I talked on many aspects of astronomy. Tom was the first AAVSO observer I had met in person and it was interesting to hear about their approach in undertaking and recording observations which differs in some respects to the BAA VSS. We had a lengthy discussion on charts and sequences, and Tom commented upon how many sequences for southern hemisphere variable stars were in his opinion "utter garbage". This was something I noted at the time to work on in the future. I said to Tom that I consider it to be wrong that our observations made earlier of X Leonis will be going into two separate databases showing a false/exaggerated discrepancy of 0.4 magnitude. We agreed that not much could be done about that until there is worldwide agreement to adopt standardised sequences.

Tom showed me a cardboard model of his visual observation of a shadow transit of one of Uranus' satellites which he made with the 100″ Mount Wilson Telescope. Tom's model showed two equatorial belts that were not visible on images taken by Voyager 2 which had made its bypass of the planet just three months beforehand. Tom said he was not surprised at that because of Uranus' axial tilt which he considered caused the belts to fade when the poles of the planet were sunward facing.

I resumed observing at 01:40 and continued until 05:15 local time. Overall I made 66 observations of variable stars, planets and Comet Halley. Halley at magnitude 2.8 was in the midst of the Milky Way in Norma, displaying a fan shaped tail. Despite the bright background it was an imposing sight. Of the notable southern variable stars Eta Carinae was seen at magnitude 6.0 and RY Sagittarii was at magnitude 6.7.

I made magnitude estimates of all the major planets with the exception of Venus and Earth (no suitable comparison stars). Jupiter in Aquarius was estimated to be magnitude -2.3 by comparison with Alpha Centauri and Fomalhaut. This was my brightest ever magnitude estimate. I also used Fomalhaut plus Epsilon Sagittarii to estimate Mercury in nearby Pisces at magnitude 1.6, which was a bit of a challenge due to strong zodiacal light activity. I had seen zodiacal light previously from Zimbabwe in 1982 but that was not nearly so prominent as what I could see on this occasion. The zodiacal light was noted one hour before morning twilight began, and I could follow it up to 60 degrees above the horizon. Robert also pointed out the Gegenschein which was a much fainter patch of light in Virgo. I had never seen the Gegenschein before and probably would not have noted it had Robert not mentioned it.

When full twilight set in observing was terminated and Robert drove us back to Coonabaraban, the lights of which could be seen from Siding Spring. At 06:45 exhausted and exhilarated we took some group photos (see attached) and thanked and said goodbye to Robert.

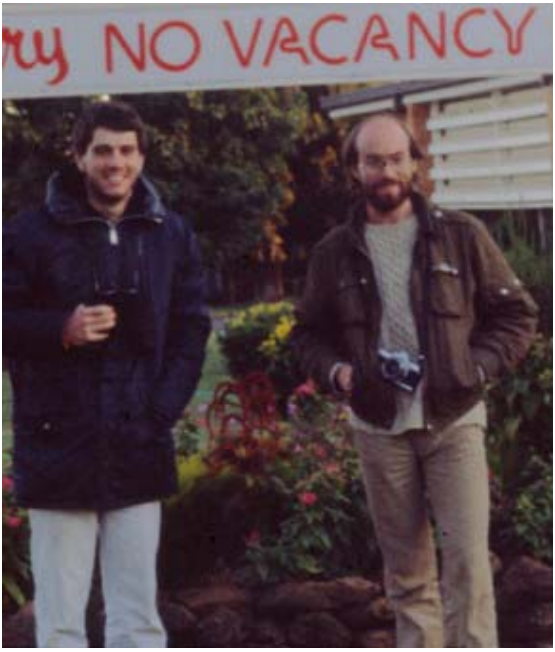


Figure 2: John Toone and Robert McNaught at the end of the night.

Photo by Rhona Fraser.

I spent a further eleven nights in Australia, travelling right through the Outback up to Darwin and experiencing many wonderful astronomical sights. The night at Siding Spring was undoubtedly the highlight though for the following reasons:

- Faintest observation (X Leonis at magnitude 16.3) followed 6 hours later by the bright est observation (Jupiter at magnitude -2.3). The ability to make estimates over a range of 18.6 magnitudes demonstrates rather well the versatility of the eye as a photometer.
- My best view of the zodiacal light.
- My first and only sighting of the Gegenschein.
- Most magnitude estimates of major planets (6 off) including my first estimate of Jupiter.
- My best view of Comet Halley.
- Acquisition of some of my finest astronomical photographs.
- My best view of the Milky Way and southern hemisphere sky in general.

In preparing this note I asked Rhona how the invite from Robert came about and this was her reply:

"*I remember we were invited up because I was getting teased on the bus because I was the only Scot. So I put a comment in the Observatory Visitors Book (re the English) knowing Rob was there. He saw it and looked me up, and because I knew you were a proper astronomer I thought you would like to come too. We met Tom Cragg (lots of VS discussion) and looked through his 12″ reflector. I asked Rob where various obscure constellations were and he had no idea as he was new to the southern skies as well. Lots of stories about kangaroos and red backed spiders, a truly great night*".

Although 25 years have now passed since the night at Siding Spring it seems like yesterday and is firmly established as my favourite night's observing; many thanks to Rhona, Robert and Tom for making it possible. I also consider myself fortunate that Rhona regarded me to be 'a proper astronomer' otherwise it would never have happened.

RHO CASSIOPEIAE 2007 - 2010

DES LOUGHNEY

Introduction

Rho Cassiopeiae is a famous naked-eye variable. It is one of the very few examples of a massive supergiant star known as a yellow hypergiant, being around 40 solar masses in size. Less than ten examples of this type of star are known in our galaxy, and although located some 11,650 light years from the Earth, it is so luminous that it can easily be seen as a 4th magnitude star in the constellation of Cassiopeia [1]. It is thought to be one of the prime candidates for the next galactic supernova. When the explosion occurs it will be a spectacular event as the star could brighten by 20 magnitudes so that, at around magnitude - 15, it will be easily visible during the day and will outshine the Moon at night. Stars of this mass have lives of about 6 million years [2].

According to the GCVS, it is a semi-regular variable between magnitude 4.1 and 6.2 with a period of around 320 days. From the literature [2] it seems that rho Cas spends most of its time varying over a range of 0.3 magnitudes. Every 50 years or so, the star varies by two

magnitudes. An outburst and a large fade occurred in 1948 and another in 2000/2001.

The most recent outburst was well studied by professional astronomers. They established that rho Cas had gone through the largest rate of mass loss in any stellar object up to that date. Rho Cas blasted off 10,000 times the mass of the Earth in atmospheric gases in a hundred day event. Apparently the star temporarily doubled in size from its usual radius of 450 times the radius of the Sun.

It seems that the outbursts are related to a 'shell helium flash'. As Wikipedia puts it:

"Shell helium flashes occur periodically in Asymptotic Giant Branch stars in a shell outside the core. This is late in the life of a star in its giant phase. The star has burnt most of the helium available in the core, which is now composed of carbon and oxygen. Helium continues to burn in a thin shell around this core. The shell of helium is not large enough to raise the material above it, and so cannot expand. Thus there is no expansion related cooling of the burning shell, so the temperature rapidly rises. This leads to a thermal pulse, rapidly releasing the energy built and allowing s-process reactions to occur. These pulses may last a few hundred years and are thought to occur periodically every 10,000 to 100,000 years. Thermal pulses may cause a star to shed circumstellar shells of gas and dust."

In the case of rho Cas, perhaps due to its great mass, the shedding of large amounts of gas and dust occurs every 50 years or so. The variation in magnitude that occurs on a 320 day cycle may indicate that minor shedding is occurring frequently.

Magnitude Measurements between 2007 and 2010

Professional papers on the spectroscopy of rho Cas [3] [4] include AAVSO data on visual observations. Spectroscopic data are compared with the visual data. This illustrates one of the clear benefits of the amateur contribution to professional work. Now amateurs can make higher quality contributions to the work of professionals by using DSLR photometry.*

**There does not seem to be any indication that there were will be another massive outburst in the near future. We may have to wait another forty years. Nevertheless the system is well worth studying as closely as possible. Hypergiants, so near the end of their lives and about to become a supernova, are, according to the experts, unpredictable.

References:

1. *http://en.wikipedia.org/wiki/Rho_Cassiopeiae*
2. *http://alobel.freeshell.org/rcas.htm*
3. 'High Resolution Spectroscopy of the Yellow Hypergiant rho Cassiopeiae from 1993 through the outburst of 2000 - 2001' : A. Lobel et al, AJ 583, 293, '2003'.
4. 'On the CO Near- Infrared Band and the Line-Splitting Phenomenon in the Yellow Hypergiant, rho Cassiopeiae': N. Gorlova et al, AJ, 651, 1130 - 1150, '2006'.

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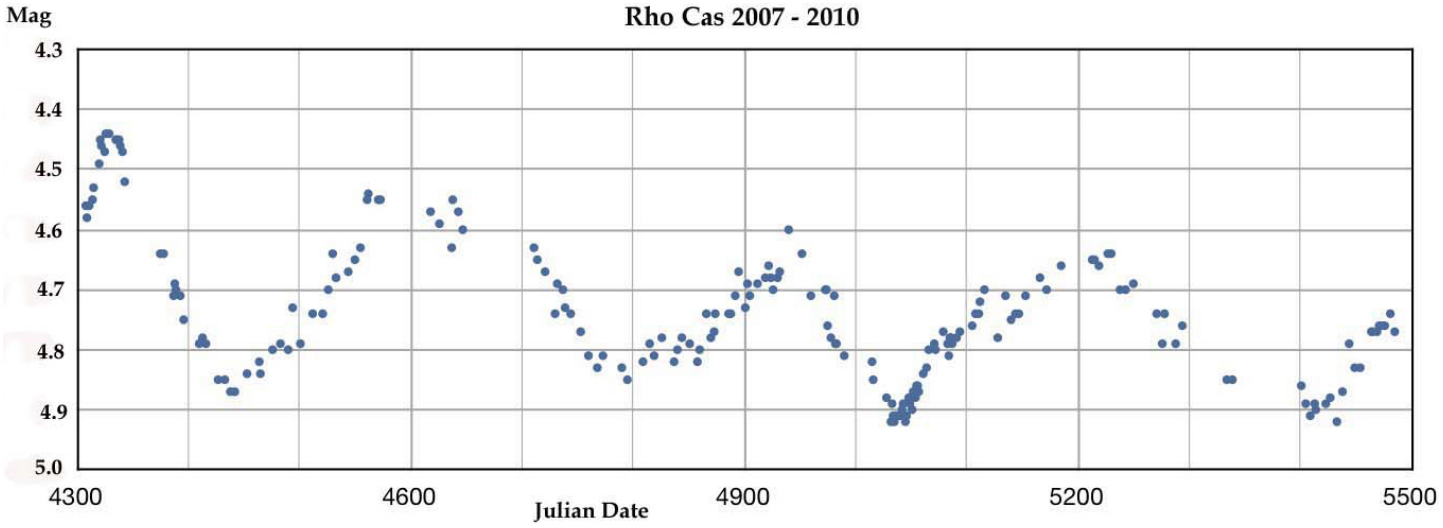

Figure 1: Magnitude Measurements of rho Cassiopeiae over a 1200-day period.

*The measurements were made with a Canon 450D camera. Settings used were exposure 5 seconds, F 3.5 and ISO 800. Each point on the figure represents the average of ten images analysed with AIP4WIN. The measurements are unfiltered therefore they do not represent V magnitudes. The fact that they are unfiltered does not change the shape of the light curve unduly.

Gaps in measurement are due to unfavourable weather in the summer when observing opportunities in Scotland are limited by the short nights.

Rho Cas does not change very fast so one measurement per week usually suffices. The light curve shows just how irregular the period actually is. The gaps between minima vary from around 350 days to 250 days. The general pattern does not seem any different from the light curves in between outbursts contained within the papers [3] and [4] which go back twenty years. **

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.

JANUARY

2011 Jan 1 Sat
AI Dra.....04(05)07
del Lib....L04(10)07D
RZ Cas.....05(07)07D
TW Dra....D17(12)17
RW Tau....D17(16)20
TV Cas.....D17(17)21
Z Dra.....D17(18)20
Z Vul.....D17(21)20L
TX UMa.....19(23)28
U Cep.....21(26)31
SS Cet.....21(26)25L

2011 Jan 2 Sun
SW Cyg....D17(13)20
Z Per.....20(25)29L
HU Tau....22(26)28L
Z Dra.....24(26)29

2011 Jan 3 Mon
U CrB....L00(03)07D
U Sge.....L06(04)07D
RZ Cas.....D17(17)19
Y Psc.....21(26)22L

2011 Jan 4 Tue
TW Dra....02(08)07D
Z Vul.....L05(08)07D
U Cep.....D17(14)18
AI Dra.....18(20)21
RZ Cas.....19(21)24
TX UMa.....20(25)29
SS Cet.....21(26)25L
RS CVn....L22(18)24
HU Tau....23(27)28L

2011 Jan 5 Wed
TV Cas.....04(08)07D
Z Dra.....17(20)22
Z Per.....21(26)29L
AI Dra.....23(24)26
RZ Cas.....24(26)28

2011 Jan 6 Thu
del Lib....L04(02)07D
U Sge.....D17(13)19
S Equ.....D17(15)19L
Z Vul.....D17(19)19L
U Cep.....21(25)30
SW Cyg....21(27)24L
TW Dra....22(27)31D
TV Cas.....23(28)31D
RW Tau....24(28)28L

2011 Jan 7 Fri
HU Tau.....00(04)04L
Z Dra.....02(04)06
SW Cyg....L02(03)07D
AI Dra.....04(05)06
RZ Cas.....04(07)07D
Y Psc.....D17(20)22L
SS Cet.....20(25)25L
TX UMa....22(26)31D

2011 Jan 8 Sat
del Lib.....L04(10)07D
TV Cas.....19(23)27
Z Per.....23(27)29L

2011 Jan 9 Sun
HU Tau.....02(06)04L
Z Vul.....L05(06)07D
RS CVn.....07(13)07D
U Cep.....D17(13)18
RZ Cas.....D17(16)19
U Sge.....D17(22)19L
TW Dra.....17(22)27
RW Tau.....18(23)28
Z Dra.....19(21)24

2011 Jan 10 Mon
U CrB.....L00(01)06
TV Cas.....D17(19)23
AI Dra.....18(19)21
RZ Cas.....18(21)23
SS Cet.....20(24)24L
TX UMa....23(28)31D

2011 Jan 11 Tue
HU Tau.....03(07)04L
Z Dra.....03(06)07D
Y Psc.....D17(14)19
Z Vul.....D17(17)19L
SW Cyg.....D17(17)23
U Cep.....20(25)30
AI Dra.....23(24)26
RZ Cas.....23(25)28

2011 Jan 12 Wed
Z Per.....00(05)05L
TV Cas.....D17(14)18
RW Tau.....D17(17)22
TW Dra.....D17(18)23

2011 Jan 13 Thu
X Tri.....01(04)02L
del Lib.....L03(02)07D
AI Dra.....04(05)06
RZ Cas..... 04(06)07D
U Sge.....L05(07)07D
U CrB.....06(11)07D
SS Cet.....19(24)24L
Z Dra.....21(23)25

2011 Jan 14 Fri
TX UMa.....01(05)07D
X Tri.....01(03)02L
RS CVn.....02(08)07D
Z Vul.....L04(04)07D
TV Cas.....05(10)07D
U Cep.....D17(13)18

2011 Jan 15 Sat
X Tri.....00(03)02L
Z Per.....01(06)05L
del Lib.....03(10)07D
Z Dra.....05(08)07D
TW Dra.....D17(13)18
RZ Cas.....D17(16)18
V367 Cyg..D17(61)22L
X Tri.....23(26)26L

2011 Jan 16 Sun
TV Cas.....01(05)07D
SW Cyg.....L01(07)07D
V367 Cyg..L04(37)07D
Z Vul.....D17(14)19L
Z Dra.....D17(16)19
U Sge.....D17(16)18L
S Equ.....D17(22)18L
V367 Cyg..D17(37)22L
RZ Cas.....18(20)23
AI Dra.....18(19)21
SS Cet.....18(23)24L
U Cep.....20(25)30
X Tri.....23(25)26L
U CrB.....L24(22)28

2011 Jan 17 Mon
TX UMa.....02(07)07D
V367 Cyg..L04(13)07D
V367 Cyg..D17(13)22L
TV Cas.....20(25)29
X Tri.....22(25)26L
Z Dra.....22(25)27
RZ Cas.....23(25)27
AI Dra.....23(24)25

2011 Jan 18 Tue
RW Tau.....02(06)04L
Z Per.....03(08)04L
TW Dra.....03(08)07D
V367 Cyg..L04(<<)07D
V367 Cyg..D17(<<)22L
RS CVn.....21(27)31D
X Tri.....21(24)25L

2011 Jan 19 Wed
RZ Cas.....03(06)07D
AI Dra.....04(05)06
V367Cyg.L04(<<)07D
Z Vul.....L04(01)07
TV Cas.....D17(20)24
SS Cet.....18(22)24L
X Tri.....21(23)25L

2011 Jan 20 Thu
del Lib.....L03(01)07D
U CrB.....03(09)07D
TX UMa...04(08)07D
U Sge.....L05(02)07D
Z Dra.....D17(18)20
SW Cyg...D17(20)23L
RW Tau.....20(25)27L
X Tri.....20(23)25
TW Dra.....23(28)31D

2011 Jan 21 Fri
SW Cyg.....L01(<<)03
Z Per.....04(09)04L
Z Vul.....D17(12)18
HU Tau.....D17(14)18
TV Cas.....D17(16)20
X Tri.....19(22)24
U Cep.....20(24)29

2011 Jan 22 Sat
Z Dra.....00(02)05
del Lib.....03(09)07D
RZ Cas.....D17(20)22
Y Psc.....D17(22)21L
SS Cet.....D17(22)24L
AI Dra.....18(19)20
X Tri.....19(21)24

2011 Jan 23 Sun
U Sge.....05(11)07D
TX UMa...05(10)07D
HU Tau.....D17(15)19
S Equ.....D17(19)18L
RW Tau.....D17(19)24
Z Vul.....18(23)18L
X Tri.....18(20)23
TW Dra.....18(23)28
RS CVn.....L20(22)29
RZ Cas.....22(24)27
AI Dra.....23(24)25
U CrB.....L23(20)26

2011 Jan 24 Mon
Z Vul.....L04(<<)04
Z Dra.....D17(20)22
X Tri.....D17(20)22

2011 Jan 25 Tue
TV Cas.....02(07)07D
RZ Cas.....03(05)07D
AI Dra.....03(05)06
SW Cyg....04(10)07D
HU Tau....D18(16)20
X Tri.....D18(19)22
SS Cet....D18(21)23L

2011 Jan 26 Wed
Z Dra.....02(04)07
Z Vul.....05(10)07D
TX UMa..07(11)07D
RW Tau....D18(14)18
Y Psc.....D18(16)20
X Tri.....D18(18)21
TW Dra....D18(18)24
U Cep.....19(24)29
TV Cas.....22(26)30

2011 Jan 27 Thu
U CrB.....01(07)07D
del Lib....L02(01)07D
X Tri.....D18(18)20
HU Tau....D18(18)22

2011 Jan 28 Fri
X Tri.....D18(17)20
RZ Cas.....D18(19)21
SS Cet....D18(21)23L
Z Vul.....D18(21)18L
TV Cas.....D18(22)26
AI Dra.....18(19)20
Z Dra.....19(21)24
RS CVn....L20(18)24

2011 Jan 29 Sat
del Lib.....02(09)07D
TW Dra....D18(14)19
X Tri.....D18(16)19
HU Tau....D18(19)23
SW Cyg....18(24)22L
RZ Cas.....21(24)26
AI Dra.....23(24)25

2011 Jan 30 Sun
SW Cyg.....L00(00)06
Z Dra.....04(06)07D
U Sge.....L04(05)07D
Z Per.....D18(13)18
X Tri.....D18(16)18
TV Cas.....D18(17)21
U CrB.....L23(18)24

2011 Jan 31 Mon
RZ Cas.....02(04)07D
AI Dra.....03(05)06
Z Vul.....L03(08)07D
SS Cet.....D18(20)23L
HU Tau.....D18(20)24
U Cep.....19(24)29
RW Tau.....22(26)27L

February

2011 Feb 1 Tue
TW Dra.....04(09)07D
TX UMa.....D18(14)19
Z Dra.....21(23)25

2011 Feb 2 Wed
RS CVn.....06(13)07D
Z Per.....D18(14)19
HU Tau.....18(22)26
U CrB.....23(29)31D

2011 Feb 3 Thu
del Lib.....L02(00)07D
TV Cas.....04(08)07D
Z Dra.....05(08)07D
V367 Cyg....06(51)07D
SW Cyg.....D18(14)20
RZ Cas.....D18(19)21
AI Dra.....D18(19)20
SS Cet.....D18(19)23L
RW Tau.....D18(21)26
V367 Cyg..D18(51)21L
TW Dra.....23(29)30D

2011 Feb 4 Fri
V367 Cyg..L03(27)06D
TX UMa.....D18(16)21
Z Dra.....D18(16)19
V367 Cyg..D18(27)21L
HU Tau.....19(23)26L
RZ Cas.....21(23)26
AI Dra.....22(24)25
TV Cas.....23(28)30D

2011 Feb 5 Sat
del Lib.....02(08)06D
V367 Cyg..L03(03)06D
Z Vul.....L03(06)06D
V367 Cyg..D18(03)21L
Z Per.....D18(16)20
U Cep.....19(23)28
Z Dra.....22(25)27

2011 Feb 6 Sun
RZ Cas.....01(04)06
V367 Cyg..L03(<<)06D
AI Dra.....03(04)06
U Sge.....L04(<<)05
V367 Cyg..D18(<<)21L
RW Tau.....D18(15)20
SS Cet.....D18(19)23L
Y Psc.....19(23)20L
TW Dra.....19(24)29
TV Cas.....19(23)27
HU Tau.....21(25)26L

2011 Feb 7 Mon
RS CVn.....02(08)06D
RZ Cas.....06(09)06D
TX UMa.....D18(17)22
SW Cyg.....21(28)22L
SW Cyg.....L24(28)30D

2011 Feb 8 Tue
Z Per.....D18(17)22
Z Dra.....D18(18)20
TV Cas.....D18(19)23
HU Tau.....22(26)26L

2011 Feb 9 Wed
U Sge.....L03(08)06D
RZ Cas.....D18(18)20
SS Cet.....D18(18)22L
AI Dra.....D18(19)20
TW Dra.....D18(19)24
U CrB.....L22(26)30D

2011 Feb 10 Thu
Z Dra.....00(03)05
del Lib.....L02(00)06D
Z Vul.....L03(04)06D
TV Cas.....D18(14)18
Y Psc.....D18(17)20L
TX UMa.....D18(19)24
U Cep.....18(23)28
RZ Cas.....20(23)25
AI Dra.....22(24)25
HU Tau.....23(27)26L

2011 Feb 11 Fri
Z Per.....D18(18)23
RS CVn.....21(27)30D
RW Tau.....24(28)26L

2011 Feb 12 Sat
RZ Cas.....01(03)06
del Lib.....02(08)06D
AI Dra.....03(04)06
TV Cas.....05(10)06D
TW Dra.....D18(15)20
SW Cyg...D18(17)22L
SS Cet.....D18(17)22
Z Dra.....D18(20)22

2011 Feb 13 Sun
HU Tau.....01(05)02L
RZ Cas.....06(08)06D
S Equ.....L06(10)06D
U Cep.....06(11)06D
TX UMa...D18(20)25

2011 Feb 14 Mon
TV Cas.....01(05)06D
Z Dra.....02(04)06D
Z Per.....D18(20)24
RW Tau...D18(23)26L

2011 Feb 15 Tue
Z Vul.....L02(01)06D
TW Dra.....05(10)06D
SS Cet.....D18(17)21
RZ Cas.....D18(17)20
AI Dra.....D18(19)20
U Cep.....D18(23)28
TV Cas.....21(25)29

2011 Feb 16 Wed
U Sge.....L03(03)06D
TX UMa...D18(22)27
RS CVn.....L19(22)29
Z Dra.....19(21)24
RZ Cas.....20(22)24
U CrB.....L22(24)30
AI Dra.....22(23)25

2011 Feb 17 Thu
SW Cyg.....01(07)06D
del Lib.....L01(00)06
RW Tau.....D18(17)22
TV Cas.....D18(20)24
Z Per.....D18(21)26

2011 Feb 18 Fri
RZ Cas.....00(03)05
TW Dra.....00(05)06D
AI Dra.....03(04)05
Z Dra.....04(06)06D
U Cep.....06(11)06D
SS Cet.....D18(16)21

2011 Feb 19 Sat
del Lib.....01(07)06D
RZ Cas.....05(07)06D
U Sge.....06(12)06D
TV Cas.....D18(16)20
TX UMa.....19(24)28
X Tri.....23(25)23L

2011 Feb 20 Sun
Z Vul.....L02(<<)05
U CrB.....05(11)06D
S Equ.....L06(07)06D
Z Per.....D18(22)26L
U Cep.....D18(22)27
TW Dra.....20(25)30
Z Dra.....21(23)26
X Tri.....22(25)23L

2011 Feb 21 Mon
SS Cet.....D18(16)20
RZ Cas.....D18(17)19
AI Dra.....D18(19)20
SW Cyg..D18(21)21L
RS CVn.....L19(17)24
X Tri.....21(24)23L
SW Cyg.....L23(21)27

2011 Feb 22 Tue
V367Cyg..L02(41)06D
Z Vul.....05(10)06D
Z Dra.....05(08)06D
V367Cyg..D18(41)20L
RZ Cas.....19(21)24
TX UMa.....20(25)30
X Tri.....21(23)23L
AI Dra.....22(23)25

2011 Feb 23 Wed
V367Cyg..L01(17)06D
U Sge.....L02(<<)03
TV Cas.....03(07)06D
U Cep.....05(10)06D
Z Dra.....D18(16)19
V367Cyg..D18(17)20L
TW Dra.....D18(20)25
Z Per.....19(24)26L
X Tri.....20(23)23L
U CrB.....L21(22)28
RZ Cas.....24(26)29

2011 Feb 24 Thu
del Lib.....L01(<<)06
V367Cyg..L01(<<)06D
AI Dra.....03(04)05
V367Cyg..D18(<<)19L
SS Cet.....D18(15)20
X Tri.....19(22)23L
TV Cas.....22(26)30D
Z Dra.....22(25)27

2011 Feb 25 Fri
V367Cyg..L01(<<)06D
Z Vul.....L02(<<)02
RZ Cas.....04(07)06D
Y Psc.....D18(19)19L
U Cep.....D18(22)27
X Tri.....19(21)23L
RW Tau.....20(25)25L
TX UMa.....22(27)30D

2011 Feb 26 Sat
del Lib.....01(07)06D
U Sge.....L02(06)06D
SW Cyg.....04(11)06D
RS CVn.....D18(12)19
TW Dra.....D18(15)21
X Tri.....D18(21)23L
TV Cas.....D18(22)26
Z Per.....20(25)26L

2011 Feb 27 Sun
Z Vul.....03(08)06D
U CrB.....03(09)06D
S Equ.....L05(04)06D
SS Cet.....D18(14)19
RZ Cas.....D18(16)19
Z Dra.....D18(18)20
AI Dra.....D18(18)20
X Tri.....D18(20)22

2011 Feb 28 Mon
U Cep.....05(10)06D
TV Cas.....D19(17)21
RW Tau.....D19(19)24
X Tri.....D19(19)22
RZ Cas.....19(21)23
AI Dra.....22(23)24
TX UMa.....23(28)30D

MARCH

2011 Mar 1 Tue
Z Dra.....00(03)05
HU Tau.....D19(15)19
X Tri.....D19(18)21
Z Per.....22(26)26L
RZ Cas.....23(26)28

2011 Mar 2 Wed
AI Dra.....03(04)05
X Tri.....D19(18)20
U Cep.....D19(22)27
SW Cyg..D19(24)20L
U CrB.....L21(19)25
SW Cyg..L22(24)30D

2011 Mar 3 Thu
del Lib.....L00(<<)05
RS CVn.....01(08)06D
RZ Cas.....04(06)06D
HU Tau.....D19(17)21
X Tri.....D19(17)20
Z Dra.....D19(20)22

2011 Mar 4 Fri
TX UMa..01(06)06D
TW Dra....01(06)06D
Z Vul.....L01(06)06D
TV Cas.....04(08)06D
X Tri.....D19(16)19
Z Per.....23(28)25L

2011 Mar 5 Sat
del Lib.....00(07)06D
U Sge.....L02(00)06D
Z Dra.....02(04)06D
U Cep.....05(10)06D
HU Tau.....D19(18)22
AI Dra.....D19(18)20
TV Cas.....24(28)30D

2011 Mar 6 Sun
U CrB.....00(06)06D
S Equ.....L05(01)06D
RZ Cas.....D19(20)23
TW Dra....21(26)29D
AI Dra.....22(23)24

2011 Mar 7 Mon
TX UMa..02(07)05D
SW Cyg..D19(14)20L
HU Tau.....D19(19)23
U Cep.....D19(21)26
TV Cas.....19(23)27
Z Dra.....19(22)24
RS CVn.....20(27)29D
RZ Cas.....23(25)27

2011 Mar 8 Tue
Z Per.....00(05)01L
AI Dra.....02(04)05
U Sge.....04(09)05D
RW Tau.....22(26)24L

2011 Mar 9 Wed
Z Vul.....L01(04)05D
RZ Cas.....03(06)05D
Z Dra.....04(06)05D
TV Cas.....D19(19)23
HU Tau...D19(21)24L
TW Dra.....D19(21)26
U CrB.....L20(17)23
del Lib.....L24(22)29

2011 Mar 10 Thu
TX UMa...04(09)05D
U Cep.....04(09)05D

2011 Mar 11 Fri
AI Dra.....D19(18)19
RW Tau...D19(21)24L
HU Tau...D19(22)24L
Z Dra.....21(23)26
SW Cyg.....22(28)29D
del Lib.....24(30)29D

2011 Mar 12 Sat
TW Dra.....D19(16)21
RZ Cas.....D19(20)22
U Cep.....D19(21)26
RS CVn.....D19(22)28
AI Dra.....22(23)24
U CrB.....22(28)29D

2011 Mar 13 Sun
V367Cyg..L00(32)05D
HU Tau.....20(23)24L
RZ Cas.....22(24)27

2011 Mar 14 Mon
V367Cyg..L00(08)05D
Z Vul.....L01(02)05D
AI Dra.....02(04)05
RW Tau.....D19(15)20

2011 Mar 15 Tue
V367Cyg..L00(<<)05D
TV Cas.....01(05)05D
U Sge.....L01(04)05D
RZ Cas.....03(05)05D
U Cep.....04(09)05D
HU Tau.....21(25)24L
Z Dra.....23(25)27

2011 Mar 16 Wed
V367 Cyg..L00(<<)04
S Equ.....L04(08)05D
SW Cyg...D19(18)19L
U CrB.....L20(15)21
TV Cas.....21(25)29
SW Cyg.....L21(18)24
del Lib.....L23(22)28

2011 Mar 17 Thu
RS CVn....D19(17)23
AI Dra.....D19(18)19
U Cep.....D19(21)26
HU Tau.....22(26)24L
2011 Mar 18 Fri
TW Dra....02(07)05D
Z Dra.....D19(18)21
RZ Cas.....D19(19)22
TV Cas.....D19(20)24
AI Dra.....21(23)24
del Lib.....23(30)29D
2011 Mar 19 Sat
Z Vul.....L00(<<)05
U CrB.....20(26)29D
RZ Cas.....21(24)26
RW Tau....23(28)24L
2011 Mar 20 Sun
Z Dra.....00(03)05D
AI Dra.....02(03)05
U Cep.....04(09)05D
TV Cas.....D19(16)20
TW Dra....21(26)29D

2011 Mar 21 Mon
SW Cyg.....01(07)05D
RZ Cas.....02(05)05D
2011 Mar 22 Tue
U Sge.....L01(<<)04
TX UMa....D19(15)19
Z Dra.....D19(20)22
U Cep.....D19(20)25
RW Tau....D19(23)23L
2011 Mar 23 Wed
S Equ.....L03(05)05D
TW Dra.....D19(22)27
del Lib.....L23(21)28
Z Vul.....L24(21)27
2011 Mar 24 Thu
Z Dra.....02(04)05D
TV Cas.....03(07)05D
RZ Cas.....D19(19)21
AI Dra.....21(23)24

2011 Mar 25 Fri
U Sge.....01(07)05D
U Cep.....03(08)05D
TX UMa...D19(16)21
RW Tau.....D19(17)22
SW Cyg.....L21(21)27
RZ Cas.....21(23)26
TV Cas.....22(26)29D
del Lib.....23(29)29D
2011 Mar 26 Sat
AI Dra.....02(03)05
Z Vul.....03(08)05D
TW Dra....D19(17)22
Z Dra.....D19(22)24
U CrB....D19(23)29D
2011 Mar 27 Sun
RS CVn.....01(07)05D
RZ Cas.....02(04)05D
U Cep.....D19(20)25
TV Cas.....D19(22)26
2011 Mar 28 Mon
Z Dra.....04(06)05D
TX UMa..D19(18)22
X Tri.....21(23)21L
Z Vul.....L24(19)24

2011 Mar 29 Tue
TV Cas.....D19(17)21
X Tri.....20(23)21L
2011 Mar 30 Wed
S Equ.....L03(02)05D
U Cep.....03(08)05D
U CrB.....04(10)05D
RZ Cas.....D19(18)20
X Tri.....19(22)21L
Z Dra.....21(23)26
AI Dra.....21(22)24
del Lib.....L22(21)27
2011 Mar 31 Thu
Z Vul.....01(06)05D
V367 Cyg....01(46)05D
TX UMa.....D19(19)24
X Tri.....D19(21)21L
RS CVn.....20(26)28D
RZ Cas.....20(23)25
V367 Cyg..L23(46)28D
U Sge.....L24(25)28D

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

Printed by RAMPrint 01604 233677

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