British Astronomical Association

Variable Star Section Circular

No 82, December 1994

CONTENTS

ISSN 0267-9272

Office: Burlington House,
Piccadilly, London, W1V 9AG

Section Officers

Director	Tristram Brelstaff, 3 Malvern Court, Addington Road, READING, Berks, RG1 5PL Tel: 0734-268981
Section Secretary	Melvyn D Taylor, 17 Cross Lane, WAKEFIELD, West Yorks, WF2 8DA Tel: 0924-374651
Chart Secretary	John Toone, Hillside View, 17 Ashdale Road, Cressage, SHREWSBURY, SY5 6DT Tel: 0952-510794
Computer Secretary	Dave McAdam, 33 Wrekin View, Madeley, TELFORD, Shropshire, TF7 5HZ Tel: 0952-432048 E-mail: COMPUSERV 73671,3205
Nova/Supernova Secretary	Guy M Hurst, 16 Westminster Close, Kempshott Rise, BASINGSTOKE, Hants, RG22 4PP Tel & Fax: 0256-471074 E-mail: GMH@AST.STAR.RL.AC.UK GMH@GXVG.AST.CAM.AC.UK
Pro-Am Liaison Committee Secretary	Roger D Pickard, 28 Appletons, HADLOW, Kent TN11 0DT Tel: 0732-850663 E-mail: RDP@UK.AC.UKC.STAR KENVAD::RDP
Eclipsing Binary Secretary	See Director
Circulars Editor	See Director

Telephone Alert Numbers

Nova and Supernova Discoveries	First phone Nova/Supernova Secretary. If only answering machine response leave message and then try the following: Denis Buczynski 0524-68530 Glyn Marsh 0772-690502 Martin Mobberley 0245-475297 (w'kdays) 0284-828431 (w'kends)
Variable Star Alerts	Gary Poyner 021-6053716 E-mail: GP@STAR.SR.BHAM.AC.UK

Charges for Section Publications

The following charges are made for the Circulars. These cover one year (4 issues). Make cheques out to the BAA. Send to the Circulars Editor.

	UK	Europe	Rest of World
BAA Members	£2-50	£3-50	£6-00
Non-Members	£4-50	£5-50	£8-00

The charges for other publications are as follows. Make cheques out to the BAA and please enclose a large SAE with your order.

	Order from	Charge
Telescopic Charts	Chart Secretary	30p each
Binocular Charts	Chart Secretary	10p each
Eclipsing Binary Charts	Eclipsing Binary Secretary	10p each
Leaflets	Section Secretary	20p each
Observation Report Forms	Section Secretary	No Charge

A New Director

I am stepping down as Director at the end of January 1995. This is because my wife, Liz, is expecting our first child. I have suggested to the BAA Council that they appoint Gary Poyner as my successor and, if all goes well, this appointment should be approved at the Council meeting at the end of November. Gary is an experienced observer with international contacts who has already done much good work for the Astronomer organisation. He should make a good Director. I have offered to him to continue producing the Circulars and to continue running the Eclipsing Binary Program, so I won't be escaping completely. Before I do step down I would like to thank the Section Officers for all their work. What little I have managed to do in the past couple of years is due in a large part to their help.

Credit for Observations

Melvyn Taylor points out that the 1993 observation totals included results received from the SPA-VSS and from the RASNZ-VSS. A late submission from John Toone has now brought the 1993 total up to 34,660 observations from 50 observers.

Submission of 1994 Observations

Melvyn also points out that observers should submit the rest of their 1994 observations by the end of February 1995. Paper reports should be sent to him, computer reports to Dave McAdam.

Chart Problems

David Lloyd has raised a query over some of the comparison stars on the chart for W CMa (dated 1982 Nov 07). The GCVS lists two of the comparisons as variable. Star 72, about 1° sp W, is FW CMa (7.28-7.50V, EB/DM, P= 2.7888d, RA 07h 03m 23s Dec -12° 44.1' [1950]). Observers should not use this star to make estimates in future. The chart will be updated in due course. Comparison star 53, which is too bright to be used for estimating W, is FN CMa a small-amplitude Beta Cephei star.

Melvyn Taylor mentions that star F on the BL Ori chart (dated 1983 Oct 03) is listed as 6.95 yet looks about mag 6.6 and also that this star is listed in the New Catalogue of Suspected Variables as NSV 2969 at 6.64V. Observers can avoid using this comparison star if they think it necessary. However, so long as they record what they see, and not what they think they ought to see, it Dave McAdam's programs can easily re-reduce all the observations to use the correct magnitude.

Recent Novae Named

The following recent novae have had GCVS names assigned to them:

Nova Aql 1993	=	V1419 Aql
Nova Cas 1993	=	V705 Cas

Z Ursae Minoris - A New R CrB Star?

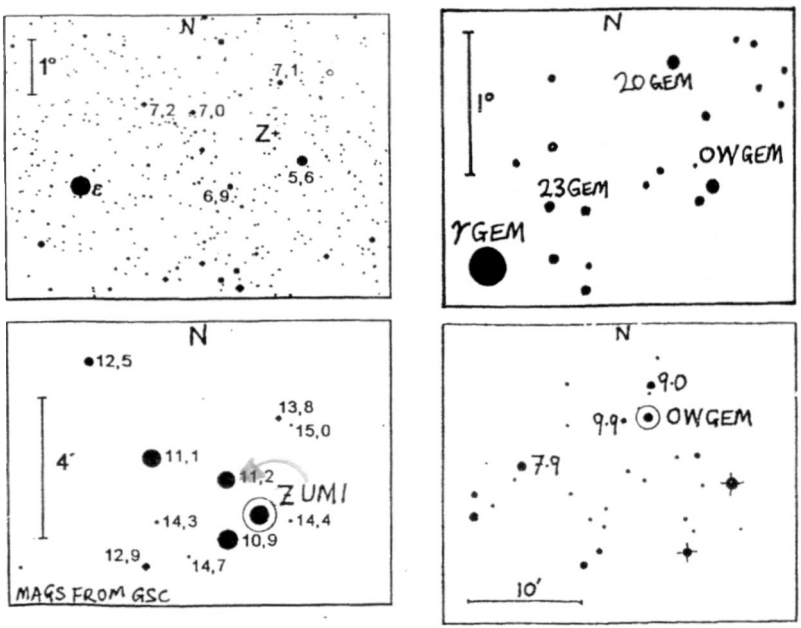
The GCVS lists Z UMi as a possible Mira star with a visual range of 11 - <14 and an uncertain period of 475 days. Its position (15h 05m 36s +83° 14.6' [1950], 15h 01m 31s +83° 3.0' [2000]) is about mid-way between Alpha and Beta UMi.

In the September 1994 issue of 'Meteor', the journal of the Hungarian Astronomical Association, I noticed an article which seemed to indicate that Z UMi has now been found to be an R CrB star. I cannot be completely certain about the details as my Hungarian is not very good. However, the article contains a reference to a paper by Benson, Clayton, Garnavich and Szkody in the July 1994 issue of the Astronomical Journal. I will investigate further and try to get more details for VSSC 83. If Z UMi is an R CrB star then it is a likely addition to the VSS Program.

(Stop Press: Gary Poyner says that Z UMi has been at about mag 12.1 since September)

The February 1995 Eclipse of OW Geminorum

The next eclipse of this long-period eclipsing binary will take place early next year and should be easily visible to observers with small telescopes. The eclipse is expected to start on February the 4th and end on the 20th of the same month, with mid-eclipse on the 12th. OW Gem is located at 06h 28m 48s +17° 07.1' [1950], 06h 31m 42s +17° 4.9' [2000], about 2° np of Gamma Gem. Its range is 8.24V to about mag 10. Visual observations will be useful but photoelectric ones would be particularly valuable. Please send any results to the Eclipsing Binary Secretary.



Computerisation News
By Dave McAdam

Half-a-Million and Counting...

In the first week of October 1994, the VSS computer archive passed 500,000 observations. A special thank-you to all those contributing to the work of keying past observations, and also to the observers providing machine-readable reports, thereby relieving both secretaries from some of the annual paper handling.

Reaching this milestone, however, also points out the importance of continuing the effort to get more observational runs into the database. Indeed, several variables dropped from the current programmes are also still of interest. These data are the section heritage and therefore 'belong' collectively to members.

Can you help with keying observations from old reports and lists? If you have a computer and can devote some time, please contact me.

Joint AAVSO and BAAVSS Computer Records on SS Cygni

After informal discussion at Cambridge (UK) and Basingstoke, Janet Mattei has provided the VSS Computer Secretary with the SS Cygni observations 1963-1990 from the AAVSO international database. During these years, several observers have reported to both organizations and special program routines will be written to check and ensure that individual observations are not duplicated in combining the two sets of data. This cooperation will benefit both associations and should allow further investigations of outburst periodicity in this class of dwarf nova.

Special and Monthly Computer Reports

A few more observers have provided machine readable reports and others have expressed interest in changing to this method. If you already use a computer for other things, then the change will be relatively easy - you are not expected to obtain a computer and/or setup special software just to report to the section.

A description of *B* reports appeared in Circular 77 and most observers keep close to this format. However, there are a few cases where totally different report styles are just as easily dealt with by means of specially written conversion programs. For this to work, and be worth doing, the ASCII files have to contain all relevant details in some regular repeatable order.

For instance, Jonathan Shanklin keeps observing logs on computer with observations of different variables listed in the order in which they were made. These are first sorted so that observations of each variable are placed in blocks and then a conversion program refers to a master-list of instruments and adds keywords and field separators before the file is processed into the database.

Gary Poyner reports his results to other national organizations abroad and found he had a considerable amount of extra work generating different report styles. After a little experimentation, he now writes all reports from a single spreadsheet 'template'. His VSS disk report is now a TAB-delimited text file which is also converted to *B* style for input. From June 1994, Gary has

provided monthly reports because this fits in with other organizations and means he doesn't have to work on large bi-annual files for the section.

I should stress that such arrangements can only be made on a one-to-one basis where it is possible for me to write a conversion program that will save the observer extra work. If you routinely produce *B* style reports, then please continue.

Note also that none of the above comments apply to paper reports - in particular, written monthly and/or observing log style reports take much longer to deal with than standard report forms.

'Stella Maitland, or Love and the Stars'
By Philip Hurst

The following letter has been received from Philip Hurst of 9 Beverley Hills Mobile Home Park, Porton Road, Amesbury, Wilts, SP4 7LH:

I wonder if you could help me with a slightly strange query? I am a BAA member and am currently doing some research into a book called 'Stella Maitland, or Love and the Stars' by Hester Periam Hawkins, possibly with a view to writing a short paper about it. The authoress wrote several books about astronomy at the beginning of the century, but this one is special in that it was written as a romantic novel with, as the foreword says, 'the subject is discussed in the earlier chapters between two would-be lovers, in the form of occasional star-lessons'.

The novel is set in 1892 and 1893 and just now I'm trying to ascertain as to whether or not the sky phenomena described in the story follow true astronomical chronology. An extract from chapter 6 reads:

'The last star-lesson had taken place just a week ago, on the 17th [October, 1892], when John and Stella had watched for a time the partial eclipse of Algol, the "demon star" in Perseus, which had occurred at a more convenient time than usual.'

I don't know much about variable stars, so I don't know if this would be possible, but I would be very grateful if you could tell me whether Algol did indeed, as the story goes, go into partial eclipse at this time.

I would also be keen to know if you have heard of this book yourself, it seems to be quite a mystery in its own right!

Data in the GCVS and an O-C diagram for Algol given in 'Variable Stars' by Hoffmeister, Richter and Wenzel (Springer Verlag, 1985) indicates that Algol was in eclipse on the evening of the day in question [JD 2412389] and the eclipse would have been eminently observable. Does anyone know anything else about this book? If you do then please contact Mr Hurst at the address given above.

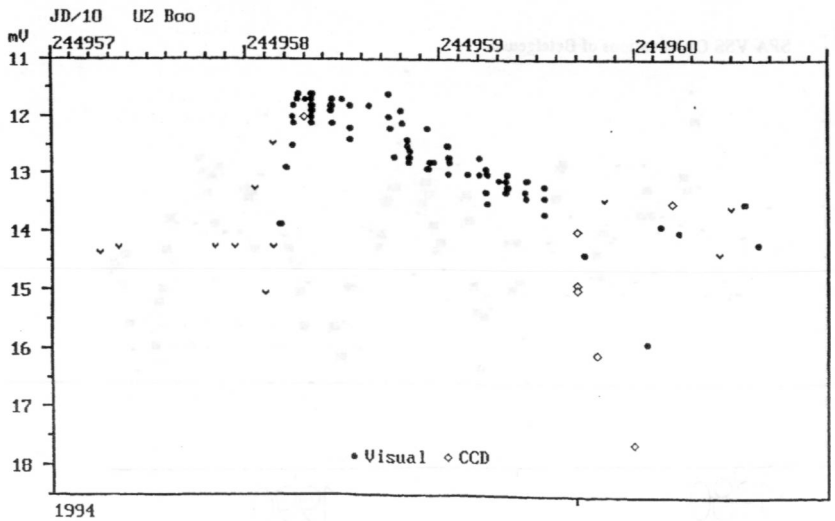
The 1994 Outburst of UZ Bootis
By Gary Poyner

The following is taken from Recurrent Objects Programme Newsletter No 3, which is produced by Gary Poyner. This issue also contains articles on QY Per, DM Lyr, FN And, V632 Cyg, V493 Lyr (=S10930), V795 Cyg, V1113 Cyg, V635 Cas, DX And, BZ UMa and BZ UMa as well as details of chart updates and changes to the Recurrent Objects Programme. The light-curve was plotted with a program written by Dave McAdam.

For some observers the highlight of the year was the SL-9 impact on Jupiter. For other, myself included, it was the wonderful outburst of UZ Boo. Detected by D.York on Aug 17.167 at mag 13.9, it was quickly confirmed by Y.Takenaka (of the Variable Star Observers' League of Japan) on Aug 17.490 at 12.9. The first positive observations from European observers were by J.Pietz, G.Poyner, W.Worraker and T.Vanmunster on the evening of the 17th. This was the first recorded outburst since Sep 23 1978, when the star reached mag 11.5.

The light-curve below was produced from 136 observations reported either to me personally, or to VSNET and VARSTARS. The plot shows a typical fast rise followed by a slower decline. Maximum seems to have occurred on Sep 18 (JD 2449583) at mag 11.6, although this is again difficult to determine as several different sequences were being used to obtain reduced magnitudes. From the reported magnitudes it can be seen that the rate of decline between Aug 18 (JD 2449583) and Aug 30 (JD 2449595) was approximately 0.15 magnitudes per day. This agrees well with VVS Circular No 17, which derived the same value. A sharper decline was recorded on Sep 1 (JD 2449596) - about 1 magnitude in 1 day - followed by a faint CCD image of 16.1 on Sep 2 (JD 2449597) and then 17.6 on Sep 4 (JD 2449599) by the Ouda team and M.Iida (VSOLJ).

The most remarkable behaviour was displayed towards the end ofthe outburst when two further "mini-outbursts" were observed by different observers. The first was detected by W.Worraker on Sep 5.874 (JD 2449601) at mag 13.9. This followed a visual observation by Bill. Dillon (USA) on Sep 5.101 at mag 15.9, which suggested that a second maximum was imminent. The second peak was observed by D.York on Sep 10.13 (JD 2449605) which followed by a <14.4 observation by Poyner on the 8th.



Behaviour of this type is not uncommon. WZ Sge appears to have experienced secondary maxima in all of its three recorded outbursts and T Leo also has been seen to display a mini-outburst following a deep minimum. The well documented outburst of BC UMa during April of this year displayed a mini-outburst lasting about 1 day (see Newsletter No 2). T.Vanmunster writes in the VVS CV Circular No 16 that VY Aqr has also undergone similar activity.

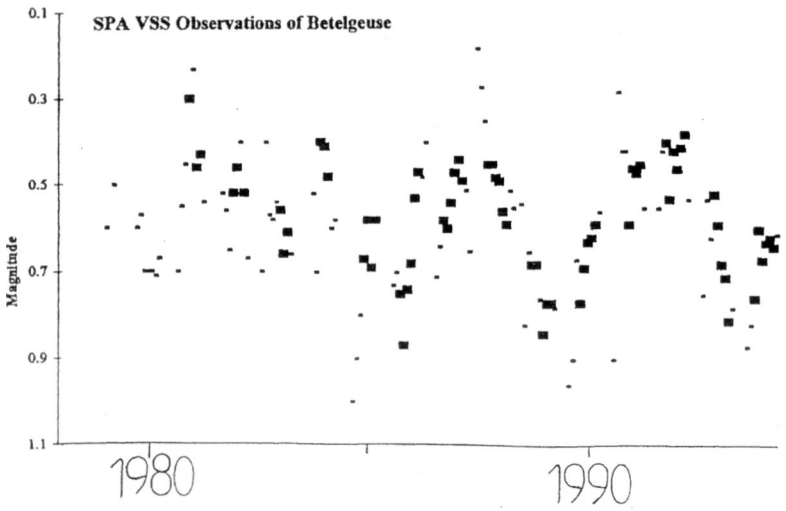
The following observers have contibuted observations to the plot: M.Adams, E.Broens, A.Diepvens, W.Dillon, B.Granslo, M.Iida, T.Kato, M.Makiguchi, M.Moriyama, the Ouda team, J.Pietz, G.Poyner, J.Ripero, P.Schmeer, E.Schweitzer, L.Szentasko, Y.Takenaka, S.Takahashi, T.Vanmunster, M.Verdenet, W.Worraker, M.Yamada, D.York.

Observations of Betelegeuse by Members of the SPA-VSS
By Tony Markham

The accompanying light-curve shows observations of Betelgeuse made in the years 1979 to 1994 by members of the Variable Star Section of the Society for Popular Astronomy (SPA-VSS, formerly the JAS-VSS). The points are monthly means; the large squares represent 10 or more estimates; the small ones, less than 10. Small squares are always used for the months April to September since it is difficult to make accurate estimates in these months as the star is so low in the sky.

For the earlier years, the low number of observations and the resulting large scatter makes it difficult to draw any conclusions. The results for the later years, however, suggest periodic variation. The suggested value for the period is 3.5 to 4.5 years (the annual gaps due to conjunction with the Sun make it difficult to be more precise). This is somewhat shorter than the 2100 days (nearly 6 years) that is usually quoted.

The JAS/SPA-VSS observations of Betelgeuse go back as far as 1958. Data is, however, rather sparse for the years 1974 to 1980 and there are no estimates at all for 1978. If anyone has any estimates of this star for these years, which have not yet been reported then I would be very pleased to receive them (my address is: 20 Hillside Drive, Leek, Staffs, ST13 8JQ).



The AAVSO and the Contribution of Amateurs to Variable Star Research

The following is an account of a talk given by Janet Mattei, Director of the AAVSO, during the Annual General Meeting of The Astronomer magazine at Basingstoke on Saturday, 3rd September 1994.

The American Association of Variable Star Observers (AAVSO) exists to coordinate the observation of variable stars and to compile, process, evaluate, archive, publish and disseminate the results. It was founded in 1911 by Edward Pickering, of the Harvard College Observatory, and Willam Olcott, a lawyer and amateur astronomer. For many years it was run as part of the Harvard College Observatory but in 1954 it became an independent research organisation. It is currently based in Cambridge, Massachusetts and has a staff of 8 - 10.

Each year the AAVSO receives 250,000 - 300,000 observations and, since 1911, it has accumulated about 7.5 million observations from a total of 4,000 observers. So far, all of the post-1960 observations (about 5.5 million) have been entered into a computer archive. The entry of the earlier ones will probably be completed within two years. Only about 50% of the observations are made by observers from within the USA. Many come from people who are not AAVSO members. You do not have to be a member to be an AAVSO observer.

The AAVSO issues various publications. The old AAVSO Reports which used to contain annual light-curves have been discontinued and are replaced by the Monographs which each deal with one star in detail. There are also the AAVSO Journal, Bulletin, Circular, Solar Bulletin, Alert Notices, Newsletter, and a Photoelectric Photometry Newsletter.

Janet said that, currently, about 98% of the observations received are visual, the rest photoelectric or CCD. There are about 3000 stars on the AAVSO visual program, mostly Mira stars and dwarf novae with amplitudes of at least 1 mag. The photoelectric program consists of about 50 stars down to mag 9.5. The recently created CCD program consists of 8 long-period variables reaching to mag 18 (!). These have special 4-colour charts. Observations are reported monthly and double-entry is used to filter out typing errors before they are entered into the archive. Various checking programs are also run.

The AAVSO get many requests for observations from professional astronomers. Many of these requests are for current visual magnitudes to correlate with observations made at other wavelengths. They also get requests for alert notices and for help with scheduling of observing runs on satellites and large telescopes. Over the years there has been a distinct correlation between increases in the number of requests received and the launches of certain satellites. The AAVSO get fewer requests for observations for long-term data analysis. Recently they have also supplied data for science projects and observing programs in schools and colleges. Most of the requests over the past 15 years have been for observations of eruptive variables but this does

not necessarily mean that these stars are more important than other stars. It is just that questions about them are easier to answer with the available instruments.

Janet then gave many examples of how AAVSO observations have been used by professional researchers. In many cases, data supplied by back-yard astronomers, using simple low-tech telescopes, has resulted in the rescheduling of observing runs on some of the most technologically advanced (and expensive) instruments. Most of these cases have involved cataclysmic variables and other types of eruptive stars but even observations of Mira stars have been useful. The HIPPARCOS satellite has 300 of these stars on its parallax and proper motion program and the operators needed to be able to predict their magnitudes to a reasonable precision. Visual observations from the AAVSO database was used to do this very successfully and the predictions could be updated as new observations come in.

In answer to a question from Nick Hewitt, Janet said that the AAVSO does have some active galaxies on its program and that they do receive requests for observations of them. In answer to another question she mentioned that the AAVSO does not usually charge for supplying data but where more than about 2 hours of work is required they may make a charge of about $50. However, they prefer not to charge because of all the paperwork that it involves.

Suspected Variables
By Colin Henshaw

Colin Henshaw (who gives his current address as 'Astronomical Safaris, Private Bag 303, Maun, Botswana') writes:

I found Chris Lloyd's article on the suspected variables quite interesting. Three of the suspects, I regret to say, are mine - BD+20°4720, Tau Cas and Theta Lyrae.

The first was suspected because of inconsistencies I found on photographs I had taken over 20 years ago but the variations are probably within the noise level you would expect on a photograph.

Theta Lyrae arose from the the fact that it is catalogued at the same magnitude as Eta Lyrae yet I saw a significant difference between them. They were both comparisons for Delta Lyrae at one time.

Similar inconsistencies were noticed between Sigma and Tau Cas in 1970 and I began to suspect that Tau Cas was 'dodgy'. Tau is listed as being about 0.2 mag fainter than Sigma but the difference seemed greater than that. Then I once recorded it brighter than than Sigma. I had also received independent suspiscions about it in 1972 from Peter Quadt in New Jersey and, subsequently, from Peter Hornby. I began to observe it regularly from then onwards and included it on the NWAVSO program. French and Hungarian observers joined in, but when I compared the sets of observations I could not confirm any evidence of variation. Tau Cas is probably constant most of the time but may occasionally 'splutter'. However, the evidence for this is scanty.

From the Literature (mostly via Physics Abstracts)

Identification of the Guest Star of AD 185 as a Comet rather than a Supernova (Chin & Huang, Nature, 371,398-399, 1994) - A re-examination of the Houhanshu (the official history of the Later Han Dynasty) suggests that this alleged supernova in Centaurus was in fact a comet.

The Photometric Period of V1974 Cygni (Nova Cygni 1992) (DeYoung & Schmidt, Astrophys. J. Lett., 431, L47-L49, 1994) - Find a periodicity of 0.081263 days, probably due to a reflection effect in a binary system with that orbital period.

The Previous Incarnation of the Old Nova GK Persei (Scott et al, MNRAS, 269, 107-112, 1994) - A high-resolution survey of CO emission reveals a symmetrical bipolar emission region centred on GK Per. This is interpreted as a "fossil" planetary nebula.

The DQ Herculis Stars (Patterson, Publ. Astron. Soc. Pacific, 106, 209-238, 1994) - DQ Her stars are cataclysmic variables containing a rapidly rotating magnetic white dwarf which is accreting matter. They all show strong X-ray emission, high excitation spectra and stable pulsations which are visible at both optical and X-ray wavelengths. They differ from the similar AM Her stars in that they do not show strong circular polarisation and their axial and orbital rotation periods are not synchronised. The current model has the material being accreted being channelled magnetically in a truncated disk but with some material accreting directly from the magnetosphere too. DQ Her stars tend to have greater accretion rates and orbital separations than the AM Her stars.

WX Hydri - Out of Steam or in Hibernation? (Bateson, RASNZ Variable Star Section Observations for 1994 July, 1994) - For almost six decades this southern SU UMa type dwarf nova has behaved with monotonous regularity with normal short 12th mag outbursts every 11.25 days and super outbursts occurring on average every 198 days. The last super outburst was on 1993 August 10 at mag 11.4. Certainly one, possibly two, super outbursts should have occurred since then but despite the excellent monitoring by RASNZ-VSS members, none have been observed. In addition, all of the normal outbursts seen in the past 7 months have been unusually faint - 0.7 to 1.0 mags below usual. In previous years these would not even have been thought of as proper outbursts and put down as fluctuations at minimum instead! There is also evidence from observers with large instruments that the minima are now about 2 magnitudes fainter than previously.

Discovery of OH and H_2O Masers in R Aquarii and H1-36 Arae (Ivison et al, MNRAS, 269, 218-224, 1994) - A survey of symbiotic Mira stars revealed a 22GHz water maser line in the spectrum of R Aqr. This may allow the first accurate determination of the orbital elements of this binary system.

New HST Observations of the Core of R Aquarii. I. Imaging (Parescu & Hack, Astron. & Astrophys., 287, 154-162, 1994) - The

Hubble Space Telescope Faint Object Camera has been used to investigate the structure of the bipolar jet emerging from this binary system. In the ultra-violet the jet can be traced in to within 15 AU of the Mira star. This seems to imply that its source is well within the binary orbit.

On the Nature of the Outburst Stage in the Symbiotic Binary AX Persei (Skopal, Astron. & Astrophys., 286, 453-462, 1994) - Photometry before and during outburst is interpreted in terms of a model in which the hot subdwarf component swells up and material falls onto the red giant component. The brightness increase is caused by this material heating the surface of the red giant and the large amplitude modulations in brightness result from the varying visibility of the heated hemisphere at different phases of the binary orbit. This model differs from those which involve accretion disks.

"Fossil" Symbiotic Novae (Lewis, Astron. & Astrophys., 288, L5-L8, 1994) - The outburst of a symbiotic nova is expected to break up the molecules that cause maser emission in circumstellar shells. It would take about 1000 years for these to be replaced by material blown out from the star. It should therefore be possible to identify symbiotic stars that have recently undergone an outburst. The author gives six such candidates.

Optical Observations of FY Persei (Okazaki, Astrophys. & Space Sci., 210, 227-229, 1993) - Multi-channel photometry and spectroscopy suggest that this suspected nova-like variable is really a Herbig Ae/Be star (a type of nebular variable).

On the Search for the Orbital Period in the X Persei X-Ray/Be System (Larianov & Larianova, Astron & Astrophys. Trans., 4, 179-183, 1994) - Reanalyse polarimetric observations+finds that they do not support the suggested periodicities of 1, 290 or 580 days. Variations on a timescale of 800 days, which correlate with the brightness variations, are present in 1977-82. Could be due to orbital motion or to changes in the rate of mass outflow.

The C/O Abundance Ratio in the Detached Circumstellar Envelopes around Carbon Stars (Bujarrabal & Cernicharo, Astron & Astrophys, 288, 551-557, 1994) - Observations of various molecular emissions confirm the presence of double shells around S Sct and TT Cyg, and also find evidence for a double shell around U Cam.

The Hubble Constant and Virgo Cluster Distance from Observations of Cepheid Variables (Pierce et al, Nature, 371, 385-389, 1994) - The High-Resolution Camera on the Canada-France-Hawaii Telescope on Mauna Kea has been used to identify 3 probable cepheids in the Virgo cluster spiral galaxy NGC 4571. Their apparent magnitudes (24.5, 24.5 and 23.5V) and periods (49.7, 57.3 and 90.5 days, respectively) imply a distance of 15Mpc. If this is typical of the cluster then it implies a value of the Hubble Constant which makes the Universe younger than the ages of some of the stars in it!

Eclipsing Binary Predictions

The following predictions are calculated for an observer at 53 degrees north, 1.5 degrees west but 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 GMAT, that is UT-12h. 'D' and 'L' are used to indicate where daylight and low altitude, respectively, prevent part of the eclipse from being visible. Charts for all of the stars included in these predictions (17 in all - see VSSC 80 for a list) are available from the Eclipsing Binary Secretary at 10p each (please enclose a large SAE).

1995 Jan 1 Sun
TW Dra D05(03)08
RZ Cas D05(05)07
X Tri D05(06)09
ST Per 08(12)16
Z Dra 10(12)15
SW Cyg 12(18)12L
U Cep 12(17)19D
SS Cet 13(17)13L
SW Cyg L14(18)19D
U Sge L18(14)19D
RW Gem 18(23)18L

1995 Jan 2 Mon
X Tri D05(06)08
RZ Cas 07(09)12
Z Vul L17(15)19D
Z Dra 18(21)19D

1995 Jan 3 Tue
Z Per D05(01)06
Y Psc D05(01)06
RW Tau D05(02)07
X Tri D05(05)08
RZ Cas 12(14)17
TX UMa 14(18)19D
TW Dra 17(22)19D

1995 Jan 4 Wed
ST Per D05(04)08
X Tri D05(04)07
U Cep D05(05)10
Z Dra D05(05)08
SS Cet 12(17)13L
RW Gem 15(20)18L
RZ Cas 16(19)19D
U Sge L18(23)19D

1995 Jan 5 Thu
Z Vul D05(02)07
X Tri D05(04)06
S Equ D05(06)07L
Z Dra 12(14)16
RW Tau 16(21)16L

1995 Jan 6 Fri
Z Per D05(02)07
X Tri D05(03)06
SW Cyg D05(08)12L
U Cep 12(17)19D
TW Dra 13(18)19D
SW Cyg L14(08)14
TX UMa 15(20)19D
ST Per 15(19)17L

1995 Jan 7 Sat
RZ Cas D05(04)07
SS Cet 12(16)13L
RW Gem 12(17)18L
Z Vul L17(13)18

1995 Jan 8 Sun
Z Dra D05(07)10
U Sge D05(08)07L
RZ Cas 06(09)11
RW Tau 10(15)16L

1995 Jan 9 Mon
Z Per D05(04)08
U Cep D05(05)09
ST Per 07(11)15
TW Dra 08(13)18
RZ Cas 11(14)16
Z Dra 13(16)18
TX UMa 17(21)19D
Z Vul 18(24)19D

1995 Jan 10 Tue
RW Gem 08(14)18L
Y Psc 09(14)10L
SS Cet 11(16)12L
SW Cyg 16(22)19D
RZ Cas 16(18)19D

1995 Jan 11 Wed
RW Tau D05(10)14
U Cep 12(16)19D
U Sge L17(17)19D

1995 Jan 12 Thu
ST Per D05(02)06
S Equ D05(03)07L
Z Per D05(05)10
TW Dra D05(08)13
Z Vul 05(11)07L
Z Dra 07(09)11
TX UMa 18(23)19D

1995 Jan 13 Fri
RZ Cas D05(04)06
RW Gem D05(10)15
SS Cet 10(15)12L
Z Dra 15(17)19D

1995 Jan 14 Sat
RW Tau D05(04)09
U Cep D05(04)09
Y Psc D05(08)09L
RZ Cas 06(08)11
ST Per 14(18)16L
Z Vul L16(21)19D

1995 Jan 15 Sun
U Sge D05(02)06L
TW Dra D05(04)09
Z Per D05(06)11
SW Cyg 05(11)11L
V640 Ori L06(04)06
RZ Cas 11(13)15
SW Cyg L13(11)17

1995 Jan 16 Mon
RW Gem D05(07)12
Z Dra 08(11)13
SS Cet 10(14)12L
U Cep 11(16)19D
RZ Cas 15(18)19D

1995 Jan 17 Tue
Z Vul D05(08)07L
ST Per D05(09)14
V640 Ori L06(04)07
Z Dra 17(19)19D
TW Dra 18(23)19D

1995 Jan 18 Wed
Y Psc D05(03)07
Z Per D05(08)12
U Sge 06(11)06L
U Sge L17(11)17

1995 Jan 19 Thu
S Equ D05(00)05
TX UMa D05(02)07
RZ Cas D05(03)05
Z Dra D05(04)06
RW Gem D05(04)09
U Cep D05(04)09
V640 Ori L06(05)07
SS Cet 09(14)12L
RW Tau 12(17)16L
Z Vul L16(19)19D

1995 Jan 20 Fri
SW Cyg D05(01)07
RZ Cas D05(08)10
Z Dra 10(12)15
TW Dra 13(18)19D

1995 Jan 21 Sat
Z Per D05(09)14
V640 Ori L06(05)08
RZ Cas 10(12)15
U Cep 11(16)19D
U Sge L16(20)19D
Z Dra 19(21)19D

1995 Jan 22 Sun
RW Gem D05(01)06
TX UMa D05(03)08
Z Vul D05(06)06L
S Equ D05(11)06L
RW Tau 07(11)15L
SS Cet 08(13)12L
ST Per 12(17)16L
X Tri 13(15)13L
RZ Cas 15(17)19D

1995 Jan 23 Mon
Z Dra D05(06)08
V640 Ori L06(06)08
TW Dra 09(14)19D
X Tri 12(15)13L

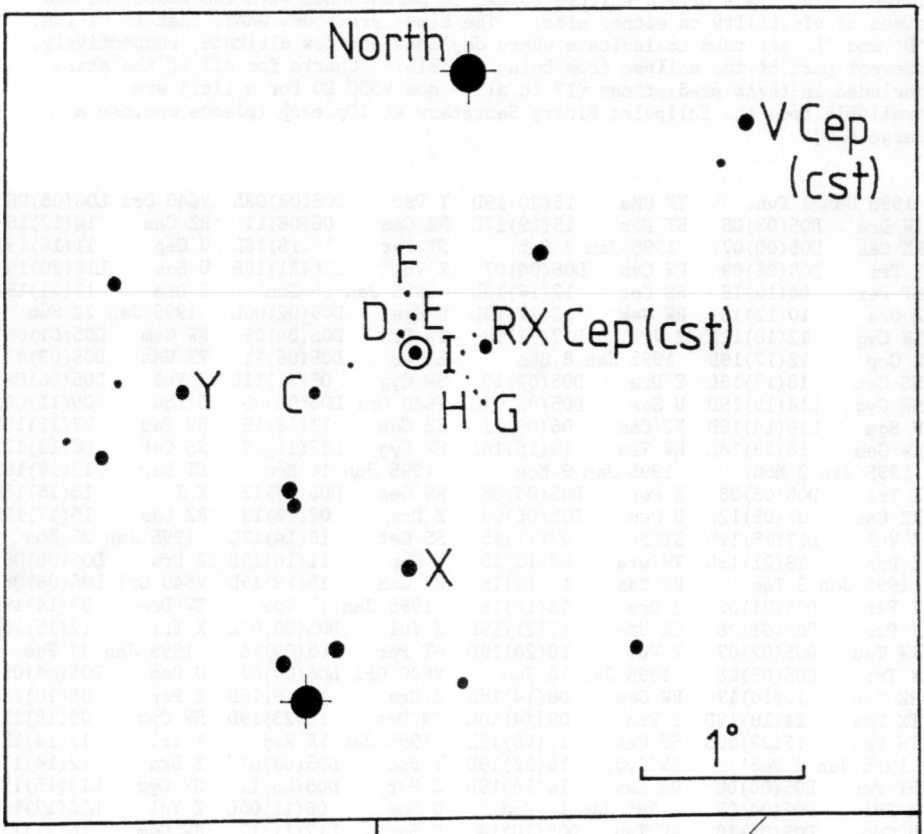
1995 Jan 24 Tue
U Cep D05(04)08
Z Per 06(10)15
SW Cyg 09(15)11L
X Tri 12(14)13L
Z Dra 12(14)17
SW Cyg L13(15)19D
Z Vul L16(17)19D
RW Gem 16(21)17L

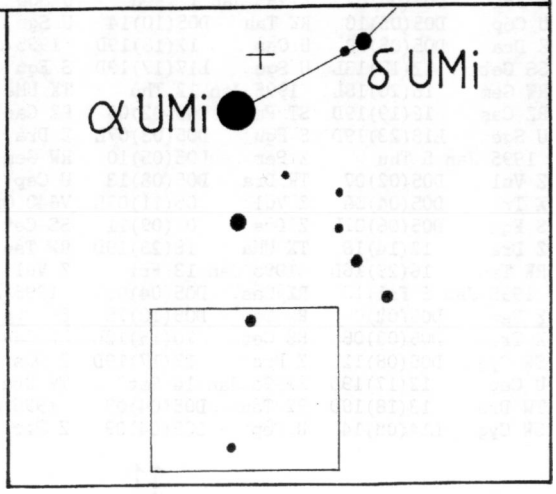
1995 Jan 25 Wed
TX UMa D06(05)10
U Sge D06(06)06L
RW Tau D06(06)11
ST Per D06(08)12
V640 Ori L06(06)09
SS Cet 08(12)11L
X Tri 11(13)13L

1995 Jan 26 Thu
RZ Cas D06(07)10
TW Dra D06(09)14
X Tri 10(13)13L
U Cep 11(15)19D

1995 Jan 27 Fri
Z Vul D06(04)06L
V640 Ori D06(07)09
Z Dra D06(07)10
Z Per 07(12)16L

U CEPHEI





U Cep: 6.75 (6.93) 9.24V
EA D = 9.0h d = 2.4h (var)
Min = 2440874.3009 +
2.49307xE (SAC 65)

(1950) 00h 57.8m +81° 36'
(2000) 01 02.3 +81 53

Sequence:

X = 6.6	F = 8.52
Y = 7.1	G = 8.96
C = 7.73	H = 9.17
D = 8.09	I = 9.54
E = 8.44	

T.Brelstaff 1994 Mar 13

RZ Cas 09(12)14
X Tri 09(12)13L
RW Gem 13(18)16L
1995 Jan 28 Sat
TX UMa D06(06)11
SS Cet 07(12)11L
X Tri 09(11)13L
Z Dra 13(16)18
RZ Cas 14(17)19D
U Sge L16(15)19D
1995 Jan 29 Sun
U Cep D06(03)08
TW Dra D06(05)10
SW Cyg D06(05)10L
V640 Ori D06(07)10
Y Psc D06(10)08L
X Tri 08(11)13L
Z Vul L15(15)19D
1995 Jan 30 Mon
X Tri 07(10)12
Z Per 08(13)16L
RW Gem 10(15)16L
ST Per 11(15)15L
RW Tau 14(19)15L
1995 Jan 31 Tue
V640 Ori D06(08)10
TX UMa D06(08)13
SS Cet 07(11)11L
Z Dra 07(09)11
X Tri 07(09)12
U Cep 10(15)19D
U Sge 18(24)19D
1995 Feb 1 Wed
RZ Cas D06(07)09
X Tri 06(09)11
Z Dra 15(18)19D
1995 Feb 2 Thu
Y Psc D06(04)08L
ST Per D06(07)11
X Tri D06(08)10
V640 Ori D06(08)11
RW Gem 07(12)16L
RW Tau 08(13)15L
RZ Cas 09(11)14
Z Per 10(14)15L
SW Cyg 12(18)19D
1995 Feb 3 Fri
U Cep D06(03)08
X Tri D06(07)10
TX UMa D06(09)14
SS Cet 06(11)11L
RZ Cas 14(16)18
TW Dra 14(19)18D
Z Vul L15(13)18
1995 Feb 4 Sat
X Tri D06(07)09
V640 Ori 06(09)11
Z Dra 08(11)13
RZ Cas 18(21)18D
1995 Feb 5 Sun
X Tri D06(06)08
RW Tau D06(08)12
RW Gem D06(08)14
U Cep 10(15)18D
Z Per 11(16)15L
Z Dra 17(19)18D
1995 Feb 6 Mon
X Tri D06(05)08
SS Cet D06(10)11L
TX UMa 06(11)16
V640 Ori 07(09)12
TW Dra 10(15)18D
1995 Feb 7 Tue
Z Dra D06(04)06
X Tri D06(04)07
RZ Cas D06(06)08
SW Cyg D06(08)10L
ST Per 10(14)15L
SW Cyg L12(08)14
U Sge L15(18)18D
1995 Feb 8 Wed
RW Tau D06(02)07
U Cep D06(03)07
X Tri D06(04)06
RW Gem D06(05)10
V640 Ori 07(10)12
RZ Cas 08(11)13
Z Dra 10(12)15
Z Per 12(17)15L
Z Vul L15(11)16
S Equ L18(15)18D
1995 Feb 9 Thu
SS Cet D06(09)10L
TW Dra D06(10)15
TX UMa 08(12)17
RZ Cas 13(15)18
1995 Feb 10 Fri
ST Per D06(05)10
V640 Ori 08(10)12L
U Cep 10(14)18D
Z Vul 16(22)18D
RZ Cas 18(20)18D
1995 Feb 11 Sat
RW Gem D06(02)07
Z Dra D06(06)08
Z Per 14(18)15L
SW Cyg 16(22)18D
1995 Feb 12 Sun
TW Dra D06(05)10
SS Cet D06(09)10L
V640 Ori 08(11)12L
TX UMa 09(14)18D
Z Dra 12(14)17
1995 Feb 13 Mon
U Cep D06(02)07
RZ Cas D06(05)08
Y Psc 07(11)07L
RW Tau 10(15)14L
1995 Feb 14 Tue
RZ Cas 08(10)13
V640 Ori 09(11)12L
U Sge L15(12)18
1995 Feb 15 Wed
Z Dra D06(07)10
SS Cet D06(08)10L
ST Per 08(13)14L
U Cep 09(14)18D
TX UMa 11(16)18D
RZ Cas 12(15)17
Z Vul L14(19)18D
1995 Feb 16 Thu
RW Tau D06(09)14L
SW Cyg D06(12)09L
V640 Ori 09(12)12L
SW Cyg L11(12)18
Z Dra 14(16)18D
RW Gem 14(20)15L
RZ Cas 17(19)18D
1995 Feb 17 Fri
Y Psc D06(06)07L
TW Dra 15(20)18D
U Sge 16(21)18D
1995 Feb 18 Sat
U Cep D06(02)07
ST Per D06(04)08
SS Cet D06(07)10L
V640 Ori 10(12)12L
TX UMa 12(17)18D
S Equ L18(22)18D
1995 Feb 19 Sun
RW Tau D06(04)09
RZ Cas D06(05)07
Z Dra 07(09)11
RW Gem 11(16)15L
1995 Feb 20 Mon
RZ Cas 07(10)12
U Cep 09(14)18D
V640 Ori 10(13)12L
TW Dra 10(15)18D
Z Vul L14(17)18D
Z Dra 15(18)18D
1995 Feb 21 Tue
SW Cyg D06(01)07
SS Cet D06(07)10L
RZ Cas 12(14)17
TX UMa 14(19)18D
1995 Feb 22 Wed
RW Gem 08(13)15L
V640 Ori 11(13)12L
RZ Cas 17(19)18D
1995 Feb 23 Thu
U Cep D06(02)06
TW Dra D06(11)16
ST Per 07(11)14L
Z Dra 08(11)13
1995 Feb 24 Fri
SS Cet D06(06)09L
V640 Ori 11(14)11L
RW Tau 12(17)13L
U Sge L14(16)18D
TX UMa 15(20)18D
Z Dra 17(19)18D
1995 Feb 25 Sat
RZ Cas D06(04)07
RW Gem D06(10)15L
U Cep 09(13)18D
SW Cyg L11(15)18D
Z Vul L14(15)18D
S Equ L17(19)18D
1995 Feb 26 Sun
ST Per D06(03)07
TW Dra D06(06)11
RZ Cas 07(09)11
1995 Feb 27 Mon
SS Cet D06(06)09L
RW Tau 07(11)13L
Z Dra 10(13)15
RZ Cas 11(14)16
TX UMa 17(22)18D
1995 Feb 28 Tue
RW Gem D07(07)12
RZ Cas 16(18)18D
1995 Mar 1 Wed
TW Dra D07(02)07
X Tri 10(13)11L
1995 Mar 2 Thu
Z Per D07(03)07
SW Cyg D07(05)08L
SS Cet D07(05)09L
RW Tau D07(06)10
Z Dra D07(06)08
U Cep 08(13)18D
X Tri 10(12)11L
SW Cyg L10(05)11
Z Vul L13(13)18D
1995 Mar 3 Fri
RW Gem D07(03)09
ST Per D07(10)13L
X Tri 09(11)11L
Z Dra 12(14)17
U Sge L14(10)16
TW Dra 16(21)18D
1995 Mar 4 Sat
RZ Cas D07(08)11
X Tri 08(11)11L
S Equ L17(16)18D
1995 Mar 5 Sun
Z Per D07(04)09
SS Cet D07(04)09L
X Tri 08(10)10L
RZ Cas 11(13)16
1995 Mar 6 Mon
Z Dra D07(07)10
X Tri 07(09)10L
TW Dra 11(16)17D
SW Cyg 13(19)17D
U Sge L14(19)17D
RZ Cas 15(18)17D
1995 Mar 7 Tue
X Tri D07(09)10L

U Cep 08(13)17D
Z Vul L13(11)16
Z Dra 14(16)17D
1995 Mar 8 Wed
SS Cet D07(04)08
Z Per D07(05)10
X Tri D07(08)10L
1995 Mar 9 Thu
TX UMa D07(02)07
X Tri D07(07)10
TW Dra D07(12)17
Z Vul 16(22)17D
1995 Mar 10 Fri
X Tri D07(07)09
RZ Cas D07(08)10
Z Dra D07(09)12
RW Tau 08(13)12L
1995 Mar 11 Sat
SS Cet D07(03)08
X Tri D07(06)08
Z Per D07(07)11
SW Cyg D07(08)08L
ST Per D07(09)13L
SW Cyg L10(08)14
RZ Cas 10(13)15
RW Gem 13(18)14L
Z Dra 15(18)17D
S Equ L16(13)17D
1995 Mar 12 Sun
TX UMa D07(04)08
X Tri D07(05)08
TW Dra D07(07)12
U Cep 08(12)17D
Z Vul L13(09)14
RZ Cas 15(17)17D
1995 Mar 13 Mon
X Tri D07(05)07
RW Tau D07(08)12L
U Sge L13(13)17D
1995 Mar 14 Tue
SS Cet D07(02)07
Z Per D07(08)13L
Z Dra 09(11)13
RW Gem 09(14)13L
Z Vul 14(20)17D
1995 Mar 15 Wed
TW Dra D07(02)07
TX UMa D07(05)10
SW Cyg 16(22)17D
Z Dra 17(20)17D
1995 Mar 16 Thu
RZ Cas D07(07)10
ST Per 12(16)12L
U Sge 17(23)17D
1995 Mar 17 Fri
Z Per D07(09)13L
RW Gem D07(11)13L
U Cep 07(12)17
RZ Cas 10(12)14
TW Dra 17(22)17D
1995 Mar 18 Sat
TX UMa D07(07)11
Z Dra 10(13)15
RZ Cas 14(17)17D
1995 Mar 19 Sun
ST Per D07(07)11
Z Vul L12(17)17D
1995 Mar 20 Mon
RW Gem D07(08)13L
Z Per D07(11)12L
SW Cyg D07(12)07L
SW Cyg L09(12)17D
TW Dra 12(17)17D
U Sge L13(08)13
1995 Mar 21 Tue
Z Dra D07(06)08
TX UMa D07(08)13
RW Tau 10(15)12L
S Equ L16(20)17D
1995 Mar 22 Wed
RZ Cas D07(07)09
U Cep D07(12)17
Z Dra 12(14)17
1995 Mar 23 Thu
RW Gem D07(05)10
Z Per D07(12)12L
TW Dra 07(12)17D
RZ Cas 09(11)14
U Sge L13(17)17D
1995 Mar 24 Fri
RW Tau D07(09)11L
TX UMa D07(10)14
ST Per 10(14)12L
Z Vul L12(15)17D
RZ Cas 14(16)17D
1995 Mar 25 Sat
Z Dra D07(08)10
1995 Mar 26 Sun
TW Dra D07(08)13
Z Per 09(13)12L
Z Dra 14(16)17D
Z Per L17(13)17D
1995 Mar 27 Mon
RW Tau D07(04)08
ST Per D07(06)10
TX UMa D07(11)16
U Cep D07(11)16
1995 Mar 28 Tue
RZ Cas D07(06)09
S Equ L15(17)17D
1995 Mar 29 Wed
TW Dra D07(03)08
Z Dra D07(09)12
RZ Cas 08(11)13
SW Cyg 09(15)17D
Z Per 10(15)12L
Z Vul L12(13)17D
Z Per L16(15)17D
1995 Mar 30 Thu
TX UMa 08(13)17D
U Sge L12(11)17D
RZ Cas 13(16)17D
Z Dra 15(18)17D

Summaries of Information Bulletins on Variable Stars Nos 4040 to 4092

You can order photocopies of any of these through your local branch library by filling out a requisition form as if you were requesting a book for loan. This service will cost you just a few tens of pence. It can also be used to order copies of other papers such as those mentioned in 'From the Literature'.

4040 *Non-Cepheid Character of V588 Cas (DuPuy & Bloomer, 1994)* - Mag 12 star, listed in the GCVS as 'DCEP:', is shown to be constant by CCD photometry.

4041 *Photoelectric Photometry of VW Cephei in 1993 (Abbott & Rumignani, 1994)*

4042 *On the Stability of Spotted Regions on Stellar Surfaces of Weak-Line T Tauri Stars (Grankin, 1994)* - Long-term UBVR photometry of sinusoidal variations in T Tauri stars.

4043 *Outburst Observations of LL Andromedae (S.B.Howell & G.M.Hurst, 1994)* - Outlines observations (visual and spectroscopic) of the Dec 1993 outburst which confirm that this star is a dwarf nova. Further details to be published in JBAA.

4044 *Variations of the Ap Star in NGC 2169 (Manfroid & Renson, 1994)* - Microvariability.

4045 *New Ephemeris of the Binary System 44i Bootis (Gherega et al, 1994)*

4046 *New Flare Stars in the Cygnus T1 Association Region (Parsamian et al, 1994)* - 7 new flare stars all fainter than mag 15U at minimum.

4047 *New Flare Stars in the Region of Ophiuchus and Scorpius (Parsamian et al, 1994)* - 4 more flare stars all fainter than mag 18U at minimum.

4048 *Optical Spectroscopy of a Flare on Proxima Centauri (Patten, 1994)*

4049 *Optical Spectroscopy and Photometry of EX Lupi (Patten, 1994)* - An 'EXor' (eruptive T Tauri star) which shows small FU Ori type outbursts at

intervals of several years when it rises from mag 13-14 towards mag 8.4. Latest outburst occured in early 1994 and reached mag 11.2.

4050 *V800 Aql is a Classical Cepheid (Antipin & Shugarov, 1994)* - This mag 15B star, once thought to be a Z Cam star, then a nebular variable, is listed in the GCVS as 'Lb:' but is here shown to be a 20-day cepheid.

4051 *1992, 1993 BV Photometry of CG Cygni (Dapergolas et al, 1994)* - Mag 10 RS CVn type eclipsing binary.

4052 *The Period of AG Phoenicis has Decreased (Cerruti, 1994)*

4053 *Photometry for Stars in the Field of V Bootis (Skiff, 1994)* - Semiregular variable on the VSS program. Finds the 11.3-mag AAVSO comparison star to be a probable red variable with a range of 10.59-10.83V

4054 *Photometry of Stars in the Field of S Persei (Skiff, 1994)* - Semiregular red supergiant on the VSS program.

4055 *Photometry of Stars in the Field of ZZ Draconis (Skiff, 1994)* - Mira star reaching mag 10p at max.

4056 *Photometry of Stars in the Field of VX Tauri (Skiff, 1994)* - Mira star, behind the Hyades, reaching mag 9.8v at max.

4057 *Photometry of Stars in the Field of AQ Aurigae (Skiff, 1994)* - Mira star reaching 8.5v at max.

4058 *Photometry of Stars in the Field of R Aurigae (Skiff, 1994)* - Mira star that was dropped from the VSS program in 1974 (see JBAA 97, 106, 1987).

4059 *The Observation of Superhumps in AY Lyrae (Nogami et al, 1994)* - CCD photometry of Jun 1994 super-outburst finds superhumps with period of 108.5 mins.

4060 *New Photoelectric Light Curves of VZ Canum Venaticorum (Gu Shenghong et al, 1994)* - Mag 9 short-period Beta Lyrae eclipsing binary.

4061 *New Times of Minimum for V444 Cygni (Eaton & Henry, 1994)* - Mag 8, small-amplitude eclipsing binary with O6 and Wolf-Rayet components.

4062 *1993 BVRI Photometry of BH Virginis (Heckert & Summers, 1994)* - Mag 10, G-dwarf eclipsing binary with star spots.

4063 *Chromospheric Inactivity of Delta Coronae Borealis in 1991-93 (Fernie, 1994)* - In 1985-1990 this star showed sinusoidal variations with a period of 45-65 days and an amplitude of up to 0.06V. Probably due to star spots. In 1991-93 this had ceased.

4064 *HIC 83921: A New Pulsating Star in Hercules (Aluigi et al, 1994)* - Microvariable found by GEOS observers in a comparison star for AK Her.

4065 *Photometry of Stars in the Field of V431 Orionis (Skiff, 1994)* - Semiregular carbon star with range 9 - 11v and an uncertain period.

4066 *Photometry of the Active Stars HD 127535 and HD 202077 (Strassmeier et al, 1994)* - Alias V841 Cen and BM Mic, both mag 8 with star spots.

4067 *A Directory of Comparison Stars in IBVS (Morel, 1994)*

4068 *Detection of Variability in HD 168947 (Paunzen et al, 1994)* - Microvariability.

4069 *Discovery of Pulsation in the Lambda Boo Star HD 111786 (Kuschnig et al, 1994)* - Microvariability.

4070 *HD 183324, a Pulsating Lambda Boo Star? (Kuschnig et al, 1994)* - Microvariability.

4071 *Photometric Period of the Suspected Delta Scuti-Type Star Iota Bootis (Gal et al, 1994)* - Confirms microvariablity.

4072 *Spectroscopy of Faint Cataclysmic Variables I (Howell et al, 1994)* - TV Crv and AH Eri.

4073 *Spectroscopy of Faint Cataclysmic Variables II (Howell & Leibert, 1994)* - EF Peg and KQ Peg.

4074 *Spectroscopy of Faint Cataclysmic Variables III (Howell et al, 1994)* - RU LMi and 2006-17.

4075 *A New Ephemeris for UZ For (G.Ramsay, 1994)* - ROSAT used to time eclipses of this AM Her type cataclysmic binary in X-rays. (The author is a long-standing member of the VSS).

4076 *New Light Curves and Period of BV Eridani (Gu Shenghong et al, 1994)* - Mag 8 W UMa eclipsing binary.

4077 *Period Change of Delta Sct Star HD 79889 (Liu Zongli & Jiang Shiyang, 1994)* - Range 8.60-9.00V, period 0.095869 days, RADec: 9h 14m 58s +46° 21.8' [1950], 9h 18m 17s +46° 9.2' [2000].

4078 *New Period and Period Change of EU Hydrae (Gu Shenghong, 1994)* - Mag 10, short-period eclipsing binary.

4079 *The Photometric Period of the Old Nova V368 Aquilae (Diaz & Bruch, 1994)* - Eclipses 0.25 mag deep in R-band and with period of 0.34521 days found.

4080 *UBVR Photometry of the Symbiotic Star AG Dra in its 1994 Outburst (Skopal & Chochol, 1994)* - Symbiotic binary with a period of about 552 days. Has shown outbursts in 1936, 1951, 1966, 1980, 1985 and 1994. Each outburst before the latest has shown two maxima roughly one orbital period apart. Proposed model explains this as due to impacting material from the hot star heating one side of red giant which turns away from us when it is on the near part of its orbit. This is similar to the model proposed for AX Per (see 'From the Literature'). The authors therefore predict that AG Dra will fade to min in Jan 1995 and then rise to a second max in the summer of 1995 before returning to its normal state.

4081 *UBV Photometry of FY Per (Zamanov & Zamanova, 1994)* - No rapid variations found in this alleged nova-like variable (also see 'From the Literature' article elsewhere in this circular).

4082 *Photoelectric Observations of GR Tauri (Min-jun Fang et al, 1994)* - Mag 11 Beta-Lyrae type eclipsing binary with unusually short period of 0.43d and distorted light-curve.

4083 *Photometry of the Eclipsing Binary FK Orionis (Zakirov, 1994)* - Mag 11 eclipsing binary.

4084 *Photmetry of the Short Period Eclipsing Binary FR Orionis (Zakirov, 1994)* - Mag 11 eclipsing binary.

4085 *Photoelectric Observations of VV Ori in R and I (Arai, 1994)*

4086 *Further Photoelectric Observations of VW Cep in R and I (Arai, 1994)*

4087 *V397 Per is Most Probably Not Variable (Bastian & Jung, 1994)* - Faint companion to X Per, listed as a red irregular variable with a range 11.67-12.40V in the GCVS, is shown to be constant by (unfiltered) CCD photometry with an 8-inch Celestron.

4088 *UBVR Photometry of the Eclipsing Binary FH Orionis (Zakirov, 1994)* - Mag 11 eclipsing binary.

4089 *New Photoelectric Observations and Period of RS Leporis (Gu Shenghong et al, 1994)* - Mag 9 eclipsing binary.

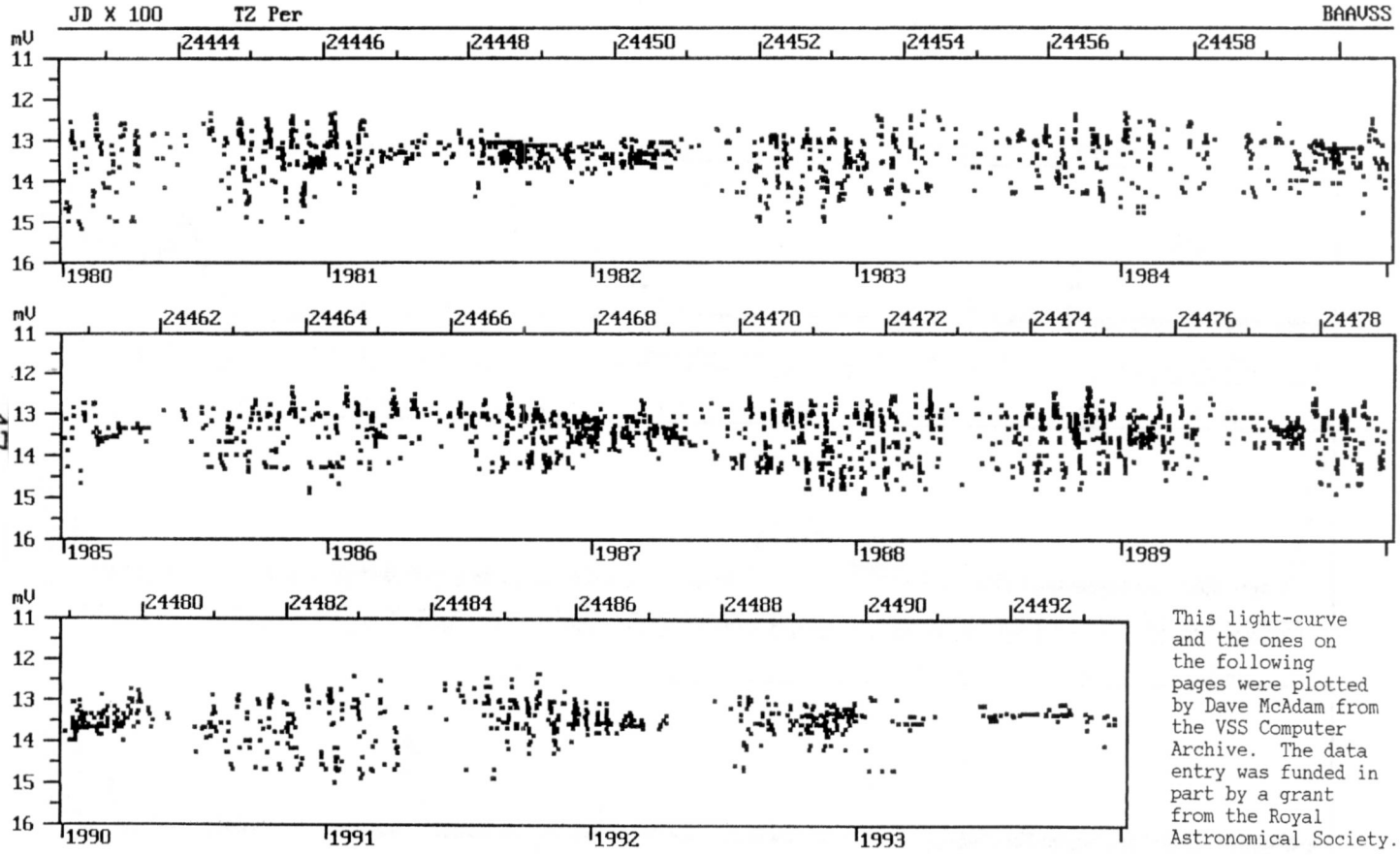
4090 *MWC147: A Suspect Pre-Main Sequence Binary Star (Vieira & Cunha, 1994)* - Mag 9 nebular variable in NGC 2247 may be binary with period of 1 year.

4091 *Is Gliese 410 or BD+23°2297 the Variable Star? (Jeffries et al, 1994)* - Reported variability in red dwarf probably due variability of comparison star.

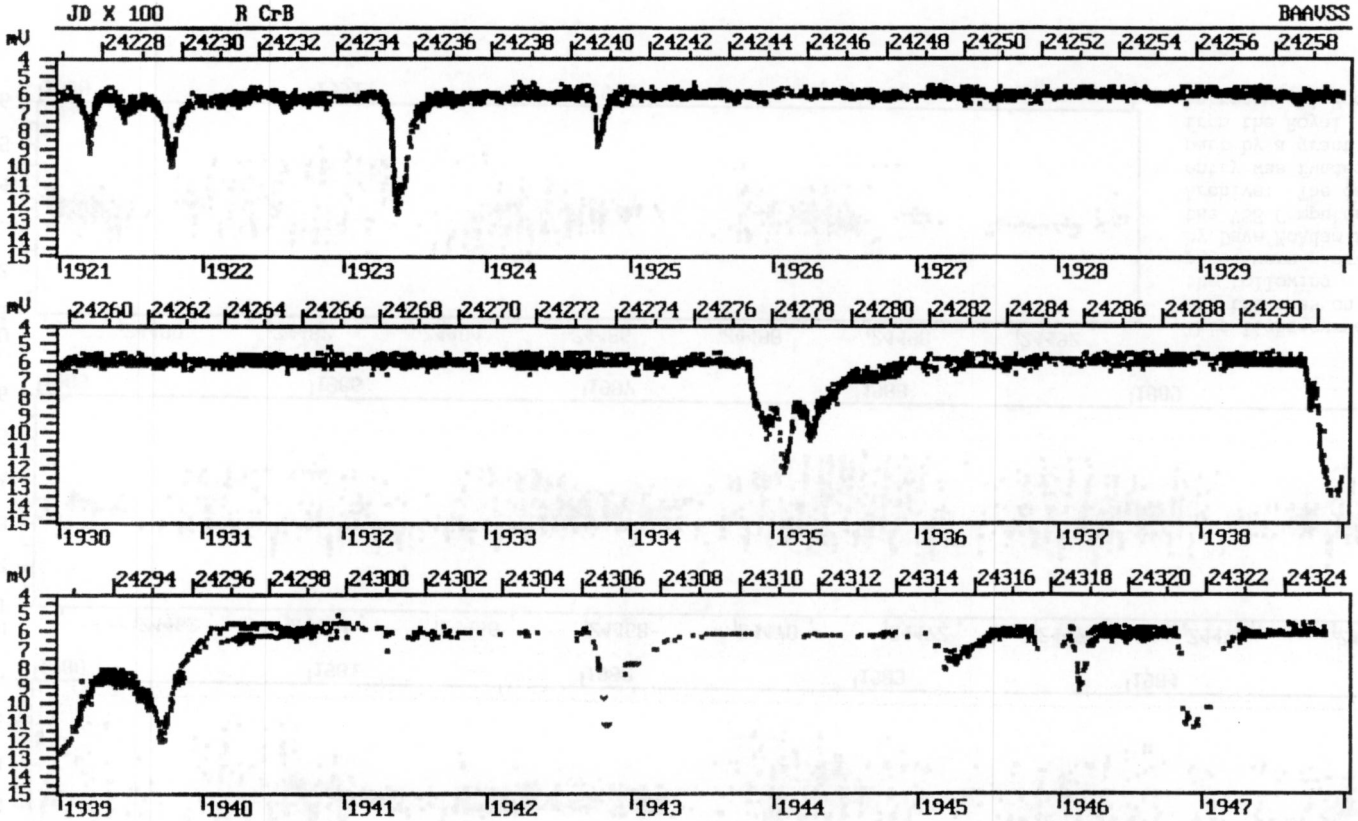
4092 *CZ Cnc - A Dwarf M Flare Star (Greiner & Motch, 1994)* - CCD spectroscopy of this mag 21 flare star (amp 9.5 mags in the blue!) shows it is probably an M-type dwarf.

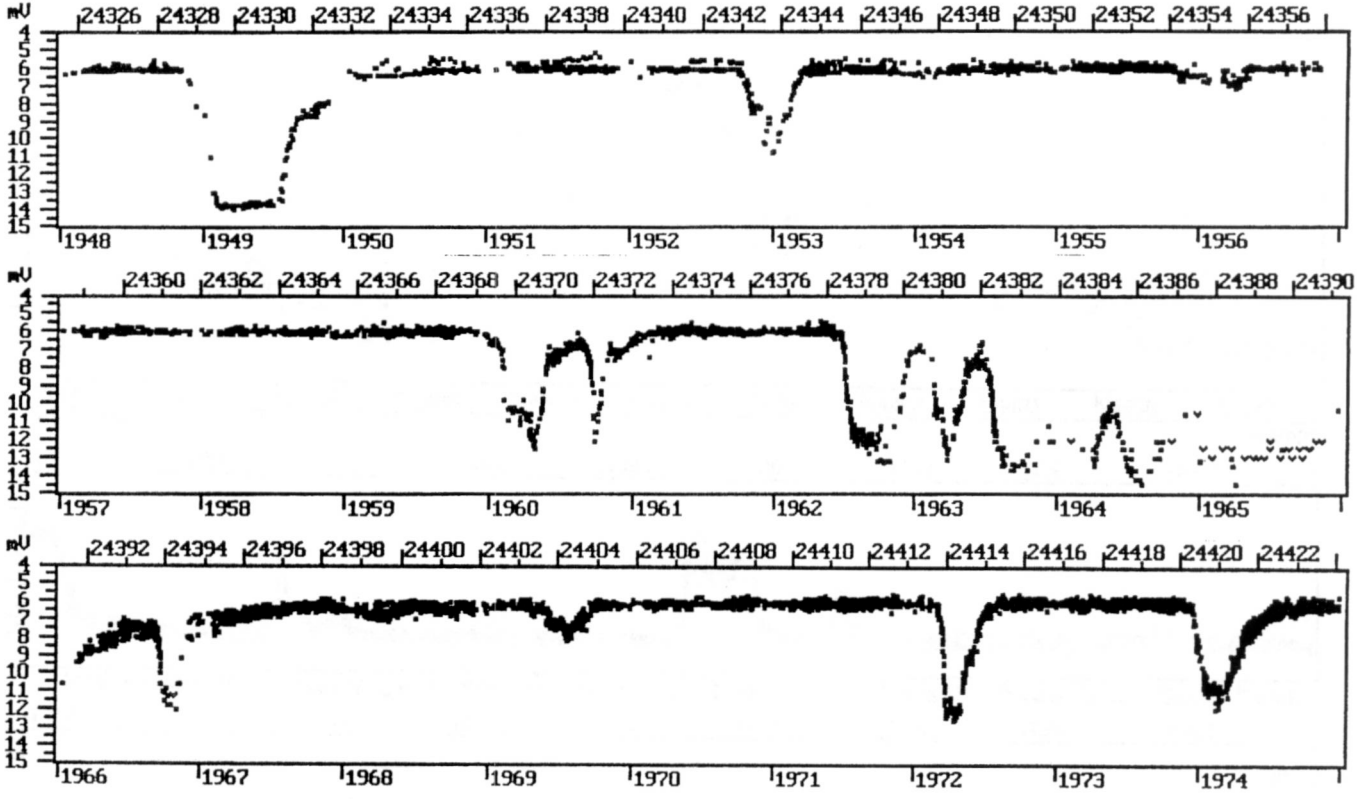
BAA Instruments and Imaging Section Newsletter

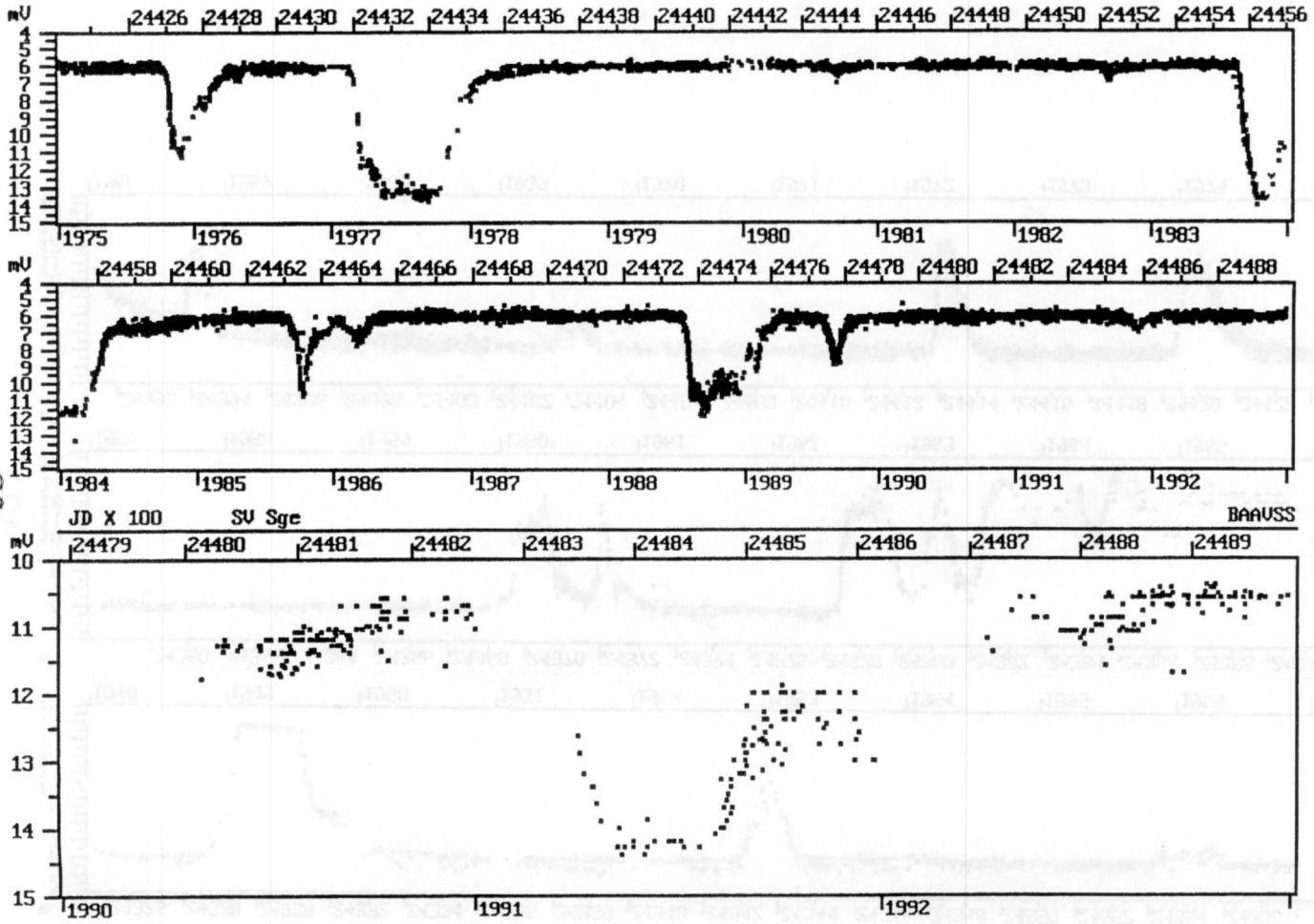
Two issues of the BAA Instruments and Imaging Section Newsletter have recently been received. These are packed with articles on telescopes, photography and, mostly, CCD's. In issue No 2, Richard Miles describes how he has used an SBIG ST-4 CCD to obtain an internal precision of +/-0.03 mags on a 13th magnitude asteroid! There is also a light-curve of Geographos obtained by Bob Neville with a Starlight Xpress on an 8.5-inch reflector. If you are interested in receiving this newsletter then contact the IIS Director, Dr Bob Neville, 19 Bradden Way, Greens Norton, Towcester, Northants, NN12 8BY.

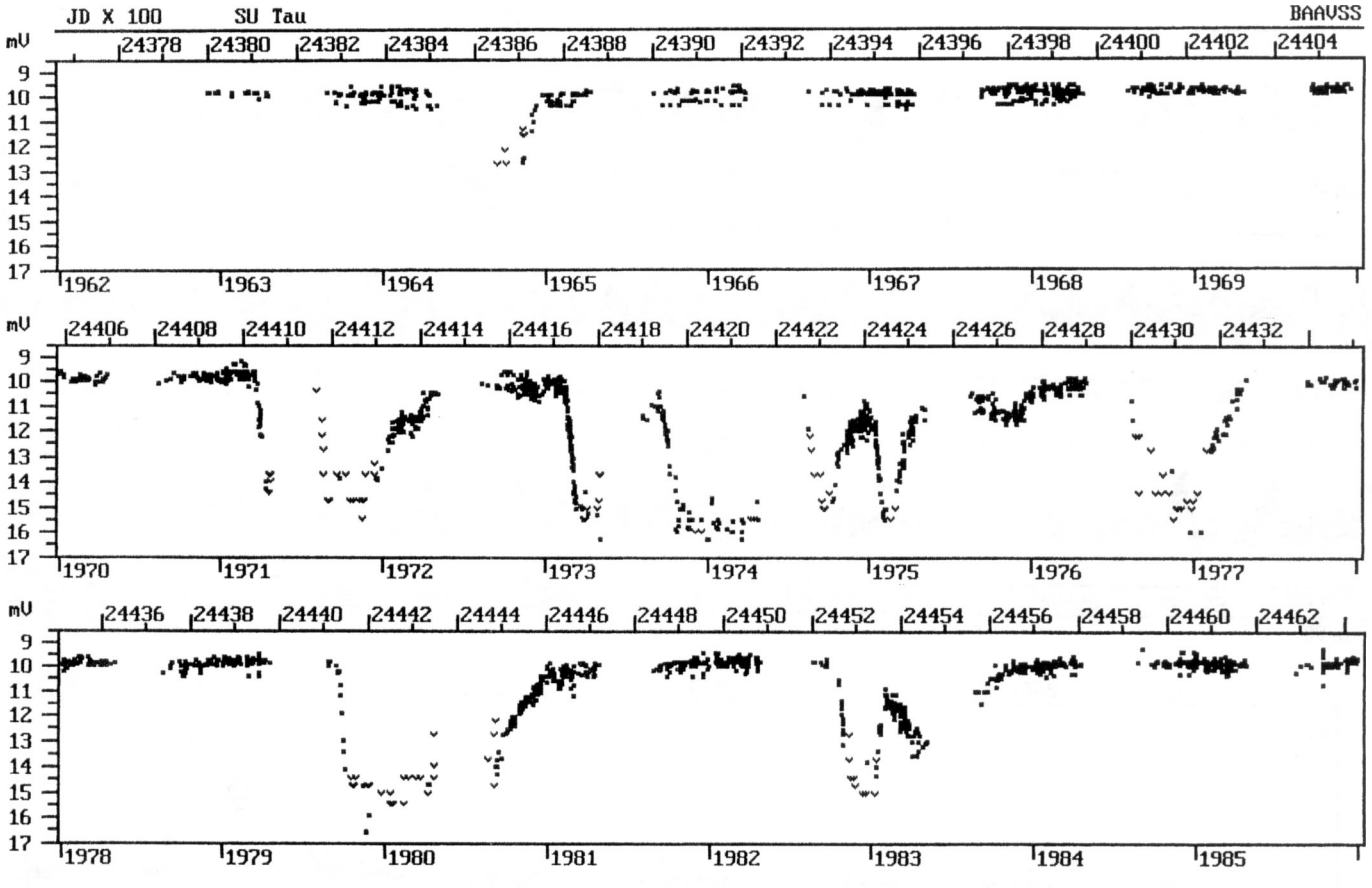


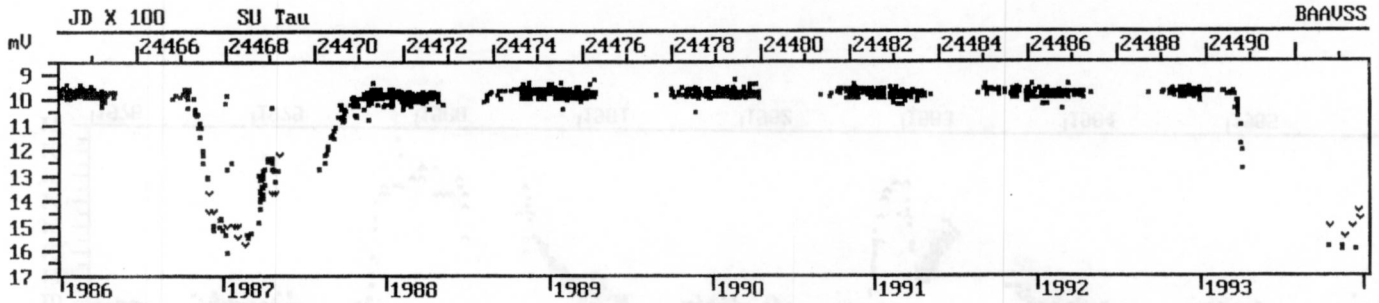
This light-curve and the ones on the following pages were plotted by Dave McAdam from the VSS Computer Archive. The data entry was funded in part by a grant from the Royal Astronomical Society.

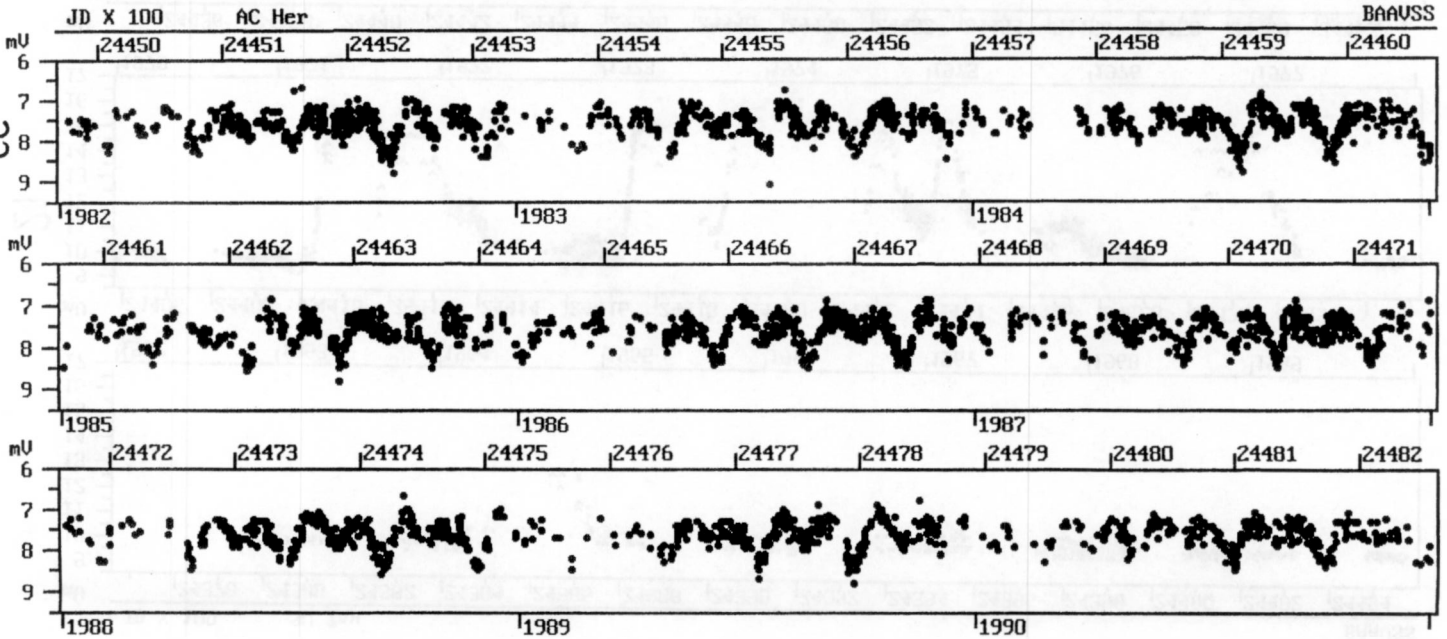

JD X 100
R CrB
BAAVSS
24228 24230 24232 24234 24236 24238 24240 24242 24244 24246 24248 24250 24252 24254 24256 24258
1921 1922 1923 1924 1925 1926 1927 1928 1929
24260 24262 24264 24266 24268 24270 24272 24274 24276 24278 24280 24282 24284 24286 24288 24290
1930 1931 1932 1933 1934 1935 1936 1937 1938
24294 24296 24298 24300 24302 24304 24306 24308 24310 24312 24314 24316 24318 24320 24322 24324
1939 1940 1941 1942 1943 1944 1945 1946 1947


mV
24326 24328 24330 24332 24334 24336 24338 24340 24342 24344 24346 24348 24350 24352 24354 24356
4 5 6 7 8 9 10 11 12 13 14 15
1948 1949 1950 1951 1952 1953 1954 1955 1956
mV
24360 24362 24364 24366 24368 24370 24372 24374 24376 24378 24380 24382 24384 24386 24388 24390
4 5 6 7 8 9 10 11 12 13 14 15
1957 1958 1959 1960 1961 1962 1963 1964 1965
mV
24392 24394 24396 24398 24400 24402 24404 24406 24408 24410 24412 24414 24416 24418 24420 24422
4 5 6 7 8 9 10 11 12 13 14 15
1966 1967 1968 1969 1970 1971 1972 1973 1974


mV
24426 24428 24430 24432 24434 24436 24438 24440 24442 24444 24446 24448 24450 24452 24454 24456
4 5 6 7 8 9 10 11 12 13 14 15
1975 1976 1977 1978 1979 1980 1981 1982 1983
mV
24458 24460 24462 24464 24466 24468 24470 24472 24474 24476 24478 24480 24482 24484 24486 24488
4 5 6 7 8 9 10 11 12 13 14 15
1984 1985 1986 1987 1988 1989 1990 1991 1992
JD X 100
SV Sge
BAAVSS
mV
24479 24480 24481 24482 24483 24484 24485 24486 24487 24488 24489
10 11 12 13 14 15
1990 1991 1992


JD X 100
SU Tau
BAAVSS
mV
24378
24380
24382
24384
24386
24388
24390
24392
24394
24396
24398
24400
24402
24404
9
10
11
12
13
14
15
16
17
1962
1963
1964
1965
1966
1967
1968
1969
mV
24406
24408
24410
24412
24414
24416
24418
24420
24422
24424
24426
24428
24430
24432
1970
1971
1972
1973
1974
1975
1976
1977
mV
24436
24438
24440
24442
24444
24446
24448
24450
24452
24454
24456
24458
24460
24462
1978
1979
1980
1981
1982
1983
1984
1985


JD X 100
SU Tau
BAAVSS
mV
24466 24468 24470 24472 24474 24476 24478 24480 24482 24484 24486 24488 24490
9 10 11 12 13 14 15 16 17
1986 1987 1988 1989 1990 1991 1992 1993


JD X 100
AC Her
BAAVSS
mV
24450 24451 24452 24453 24454 24455 24456 24457 24458 24459 24460
6 7 8 9
1982 1983 1984
mV
24461 24462 24463 24464 24465 24466 24467 24468 24469 24470 24471
6 7 8 9
1985 1986 1987
mV
24472 24473 24474 24475 24476 24477 24478 24479 24480 24481 24482
6 7 8 9
1988 1989 1990