

**British Astronomical Association**



## **VARIABLE STAR SECTION CIRCULAR**

**No 101, September 1999**

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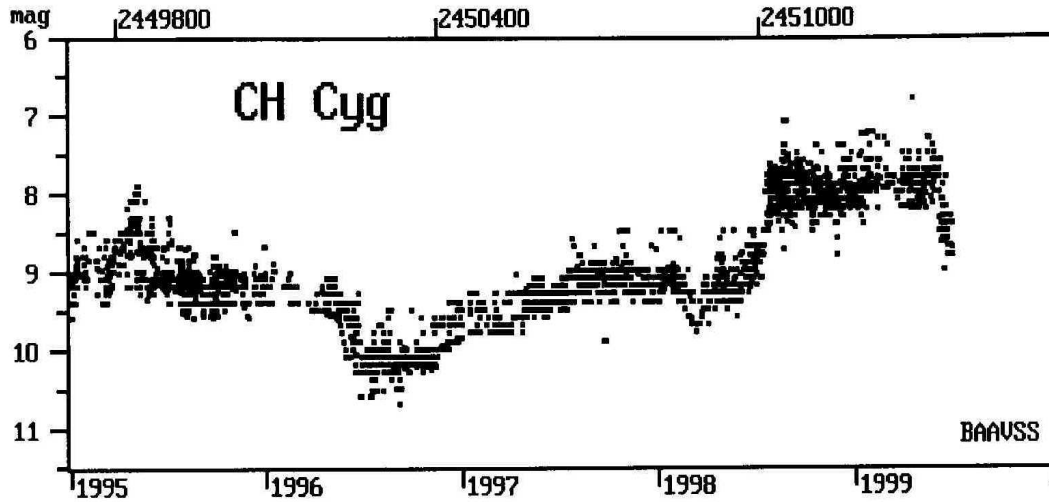
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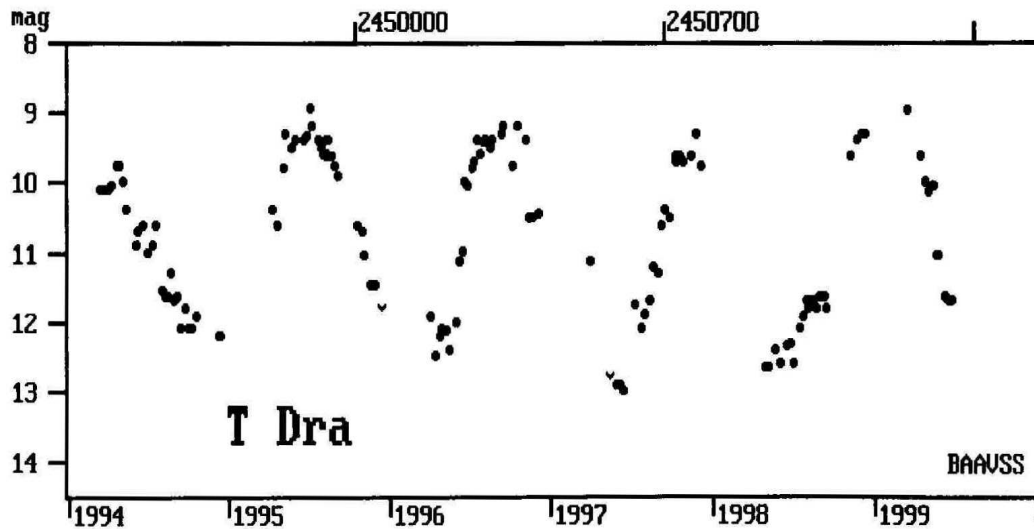
**Office: Burlington House, Piccadilly, London, W1V 9AG**

## LIGHT CURVES

DAVE McADAM



**CH Cyg 1995 to 1999.** 2764 observations by;- S W Albrighton, K G Andersson, A R Baransky, M Barrett, N M Bone, R J Bouma, L K Brundle, J S Day, R B I Fraser, D Gavine, D Gill, B H Granslo, C Henshaw, G M Hurst, A J Johnston, Miroslav Komorous, D K Lloyd, T Markham, H W McGee, J Meacham, Volodymir G Mormyl, E Muyllaert, I P Nartowicz, C Newman, B O'Halloran, Gabriel Oksa, G Poyner, J D Shanklin, D Stott, D M Swain, D R Taylor, M D Taylor, J Toone, Vince Tuboly, W J Worraker.



**T Dra 1994 to 1999.** 148 observations by;- A R Baransky, M J Gainsford, Petro Veleshchuk.

## FROM THE NEW DIRECTOR

**ROGER PICKARD**

To quote from Variable Star Section Circular No. 1 “*The new Director begs to present his compliments to all the members of the Section*”. What wonderful language they used in those days.

Little did I ever anticipate taking over the reigns of the Section, when I was first introduced to variable star observing in the autumn of 1967 by Jack Ells. We used Jack’s 12 inch Newtonian in his heated observatory (what a joy that was to use!) to observe W and T Cas.

However, I also clearly remember Dick Chambers, who used to present members' variable star observations at Crayford Manor House Society Meetings, displaying my first half-dozen or so observations alongside his own and Jack’s. Take heart all you members who are new to observing, because whilst Jack’s and Dick’s (both experienced observers) results fitted a smooth curve, mine, were all over the place! However, I think I quickly learnt the technique of making good observations, but I have never had the ability to produce the prodigious number of observations of the last Director.

That said, I’ve always been fascinated by gadgets, and the technique of photoelectric photometry was to grab me in the early eighties. I am now experimenting (with much help from Richard Miles) with CCD photometry, and hope to encourage others with similar equipment to try variable star observing.

I don’t envisage any drastic changes to the Section that Gary has so ably headed for the last few years. Indeed, for the moment, I don’t foresee any changes at all (apart from the titles of Section Officers as shown on the back cover). Regarding this, I’m very grateful to Gary for wishing to continue looking after the Recurrent Objects Programme and the OJ287 project. I’m also pleased that he is happy to be contacted at any time of the night with urgent variable star queries - the new Director is not available after 11 pm! Any comments from members on any aspect of variable stars or variable star observing will always be welcome.

## REQUEST FOR A COPY OF VSSC NUMBER 4

**STORM DUNLOP**

The Variable Star Section would like to locate a copy of a very early Section Circular (No.4), which was issued at some time between October 17, 1922, and September 23, 1923. There is no copy in the Section archives, nor in the BAA and RAS Libraries. Ideally, we would like to obtain a copy to complete our archives, but we would be very pleased to have at least one photocopy. Does anyone have a copy or know where one may be found? If so, please contact **Storm Dunlop at: 140 Stocks Lane, East Wittering, Chichester, West Sussex PO20 8NT**  
**Email: [sdunlop@star.cpes.susx.ac.uk](mailto:sdunlop@star.cpes.susx.ac.uk)**

## OBSERVER TOTALS FOR 1998

GARY POYNER

During 1998, 46,132 observations were reported to the secretary. Of these, 15,064 observations were logged as provisional data, as they were reported without estimates. These are mainly observations that have been reported to TA by observers outside of the UK, whose observations are integrated into the VSS database. Observers are encouraged to include the full estimate and sequence when reporting to both VSS and TA. The list below includes observers whose observations have been processed. There are still a small number to be entered (mainly because of the lateness with which the reports were sent in). Our thanks to all observers who have contributed during 1998.

Albrecht, W .....	6	Martin, G.J .....	2
Albrighton, S.W .....	2,138	Martin, N .....	10
Andersson, K.G .....	32	McGee, H.W .....	494
Baransky, A.R .....	1,962	Meacham, J .....	162
Barrett, M .....	164	Middlemist, I.A .....	774
Bone, N.M .....	288	Middleton, R.W .....	59
Bouma, R.J .....	1,125	Monard, L.A.G .....	538
Brandie, J .....	2	Mormyl, V.G .....	568
Brundle, L.K .....	468	Muylleart, E .....	1,128
Clarke, M .....	617	Nelson, P .....	8
Coates, J .....	134	Newman, C .....	74
Collins, M .....	1	Oksa, G .....	46
Cragg, T .....	42	Overbeek, M.D .....	183
Darbyshire, K .....	46	Pearce, A .....	4
Day, J.S .....	325	Pereira, A .....	23
Dryden, R.C .....	297	Pickard, R.D .....	11
Gainsford, M .....	2,215	Poyner, G .....	11,918
Gill, D .....	351	Salmon, G.W .....	181
Godwin, S .....	210	Schmeer, P .....	412
Granslo, B .....	2,575	Shanklin, J.D .....	225
Harries-Harris, E .....	3	Stephanopoulos, G .....	53
Herdman, G .....	35	Stott, D .....	799
Hers, J .....	13	Stubbings, J. ....	462
Holland, K .....	129	Taylor, M.D .....	2,289
Horsley, E.H .....	189	Taylor, N .....	78
Hurst, G.M .....	1,056	Thorpe, J .....	140
Jenner, S .....	38	Tilbrook, J .....	1
Johnston, A.J .....	30	Toone, J .....	4,168
Jones, C.P .....	576	Tregaskis, B .....	1
Kerner, H .....	6	Tuboly, V .....	262
Komorous, M .....	465	Veleshchuk, P .....	3
Lehky, M .....	76	Vitarino, C .....	18
Liu, A .....	30	Westlund, M. ....	426
Livesey, R.J .....	8	Williams, P .....	35
Loukas, M .....	1	Wilson, W .....	1
Mackey, J .....	40	Worraker, W.J .....	1,361
Markham, T .....	3,527		

# NOVA VELORUM 1999 - A TALE OF DISCOVERY

PETER WILLIAMS

May in Sydney is associated with cool temperatures, which see the mercury fall to near +5 degrees C, with heavy overnight dewing, and morning fog. These conditions usually spell disaster for telescope optics. It is not uncommon for water to drip from the metal telescope tube by the end of an observing session! By the nature of a roll-off roof observatory, my 30cm newtonian at Heathcote is fully exposed to the elements during an observing session. The observatory walls do offer some protection from the wind, but during these nights of heavy condensation there is generally not even a light breeze.

Saturday morning, May 22, 1999, was much like many other days that month, and saw me standing in rain, whilst watching my son play soccer for the local team. The chances of observing that evening seemed rather remote, as the opposition scored yet another goal. Yes, it was going to be a long day. Fortunately, these showers passed and the skies cleared towards sunset. Not wishing to miss an opportunity to observe, even under the First Quarter Moon, I began preparation indoors under subdued lighting. I decided not to open the observatory roof until after completion of the binocular variables and my regular nova search, to minimise the problems of *dewing-up*.

By 7 pm local time (0900 UT) I moved outdoors with the 10 x 50 mm binoculars in hand, setting down a folding chair at the end of our driveway in a small spot, free from most direct lighting.

Whilst waiting to become fully dark adapted, I located the first magnitude  $\alpha$  **Crucis** with the binoculars, and began checking the star patterns several degrees to the West. This covers an area where I already observe several telescopic variables, including **SY Mus**, **DI Cru**, **BI Cru** and **BP Cru**. Bill Liller of Chile has had some success in the region with his photographic nova patrol, so I reasoned it would not hurt to spend several minutes each clear night in this area.

After a minute or two, I lowered the binoculars to commence a routine naked eye nova search along the Milky Way. Facing in the general direction of Carina, my attention was immediately drawn to an unfamiliar star of magnitude 3, lying several degrees south of  $\mu$  **Vel**, a star regularly used as the starting point, when sweeping to the nearby telescopic variables **UX Ant**, **V436 Cen** and **NSV4721 Vel**. A number of seconds passed as I waited for the object to drift slowly from its position. After all, it is not uncommon for bright satellites to pass through this area. There was no movement. Perhaps it would fade, I thought, bearing in mind several recent VSNET reports caused by satellite flashes. There was no fading!

At this stage, my pulse quickened. I fumbled my way to the appropriate chart of the Uranometria 2000 star atlas, and began to identify the surrounding stars to obtain the object's position - this is essential information when reporting a potential discovery. The hand held 10 x 50 mm binoculars quickly proved inadequate for the task, so I pressed my 15 cm newtonian into action. Its greater light gathering and stable mount allowed for hands-free use, whilst identifying the nearby stars in relation to the interloper. There was no time to waste getting the 30 cm telescope operational.

Visually through the telescope, the star was a pale yellow hue. After what seemed like an eternity of checking and double checking, a small irregular pencil circle was drawn on the chart.

Once indoors, whilst measuring the plotted position with a transparent overlay, I realised that I had omitted to make one important measurement - an accurate magnitude estimate of the star! I made a quick reference to the AAVSO Variable Star Atlas, rushed back outdoors and made a speedy but careful estimate which placed the star at visual magnitude 3.1. This was on 1999 May 22.935 UT. A full half-hour had now passed since I had first noticed the star.

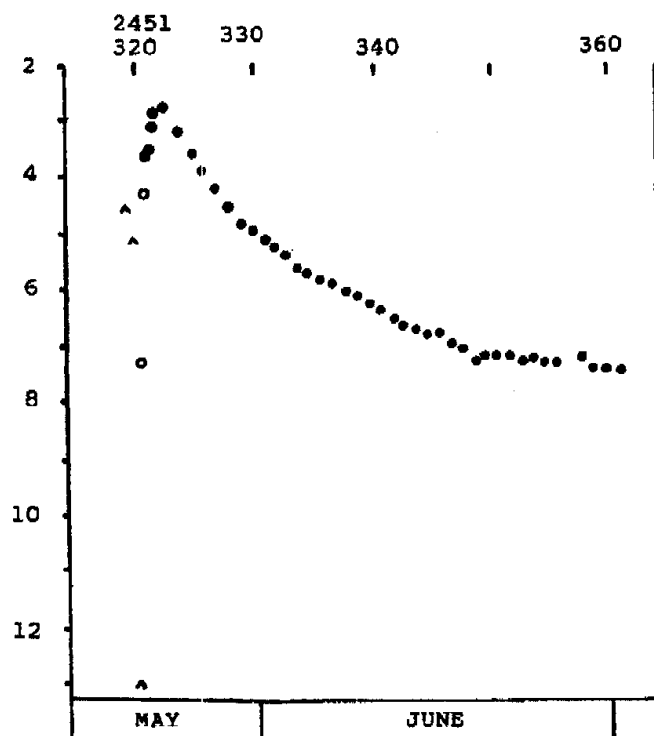
A succession of telephone calls followed. Frank Bateson, Director of the Variable Star Section of the RASNZ, relayed the news to observers across the Tasman. Observers in Victoria were clouded out. Mati Morel in Newcastle struggled with broken cloud, and Andrew Pearce of Western Australia eagerly awaited the onset of twilight, each providing independent confirmation and early magnitude estimates. I also contacted Steve Lee, long-time friend, and night assistant at the Anglo Australian Telescope (AAT). Due to the potential importance and opportune nature of this object, the scheduled observations were temporarily put on hold, whilst the AAT swung towards the reported position in an effort to obtain a spectrum and verify the nature of this star.

They soon encountered a problem: the AAT was unable to locate the star! This was, however, not because of the object's brightness - they do not often come brighter than 3rd magnitude - but because of a small error in the visually reported position, combined with the very small 2x3 arcmin acquisition field of the 2dF spectrograph then in use on the AAT (observers using the AAT at this time had been in the process of measuring the red shift of distant galaxies. Therein lies an important lesson for all potential discoverers. The reported position of an object must be of sufficient accuracy to allow for ready location and identification by our professional colleagues, upon whom we often rely to verify the nature of a discovery. Although the 2x3 arcmin acquisition field of the 2dF is perhaps a little smaller than usual, there is no guarantee of knowing what instrumentation will be attached to a telescope at the time of discovery. After some persistence the star was located and a spectrum was obtained. This showed H $\alpha$  and H $\beta$  in emission with strong P-Cyg profiles, indicating rapidly expanding nebulousity; this confirmed the object as a nova. Incidentally, because of the brightness of the nova, the AAT was stopped down to 2.5 meters and an exposure of just 1 second used!

This information, along with the reports of Morel and Pearce were e-mailed to Brian Marsden of the Central Bureau for Astronomical Telegrams in Cambridge, USA and to the VSNET of Kyoto University in Japan, all within an hour of the initial observation. Word of the discovery quickly spread throughout the global astronomical community, and observers world wide turned their attention to this star.

Independently of this, Alan Gilmore of the Mount John University Observatory in New Zealand had also noticed the nova, an hour or so after the first Australian observations. He reported the earliest electronic photometry of the nova using the 60 cm reflector. He measured  $V = 2.88$  and  $B-V = +0.24$  on May 22.488UT; the nova was pale yellowish, as had been reported earlier, and was slowly increasing in brightness.

During the following 24 hours Nova Velorum 1999, now officially designated V382 Vel, continued to brighten, reaching a peak visual magnitude near 2.6 on May 23.5 UT. At this magnitude it scraped in at number 9 amongst the brightest historically recorded novae, according to a list of galactic novae maintained by Patrick Schmeer of Germany. By the following day it had faded somewhat, but was still clearly visible to the naked eye. One further day saw it at magnitude 3.5 and looking set to rapidly fade from view.



**Light Curve of V382 Vel = Nova Vel 1999 based on daily VSNET report. Open circles represent pre-discovery photographic images.**

By early June it was still an easy binocular object near 5th magnitude, as shown in the accompanying light curve. At this time the nova had become a fine orange colour, in marked contrast to its appearance at the time of discovery. An interesting point here, has been the location of two pre-discovery photographs, which showed the nova at 4th magnitude the day before discovery, and when it was cloudy at Heathcote.

As usual, an amateur discovery such as this involved the contributions of a number of key players. Firstly, Andrew Pearce and Mati Morel provided early visual confirmation, and also sent e-mail advice of this object at the time when my e-mail *outbox* was inopportunistically inoperable. Also, Steve Lee and the scheduled observing team at the AAT gave their time, and persisted in locating the nova to obtain a spectrum, thereby confirming its true character.

The keenness and co-operation of these people - both amateur and professional - is a tribute to the spirit of astronomy.

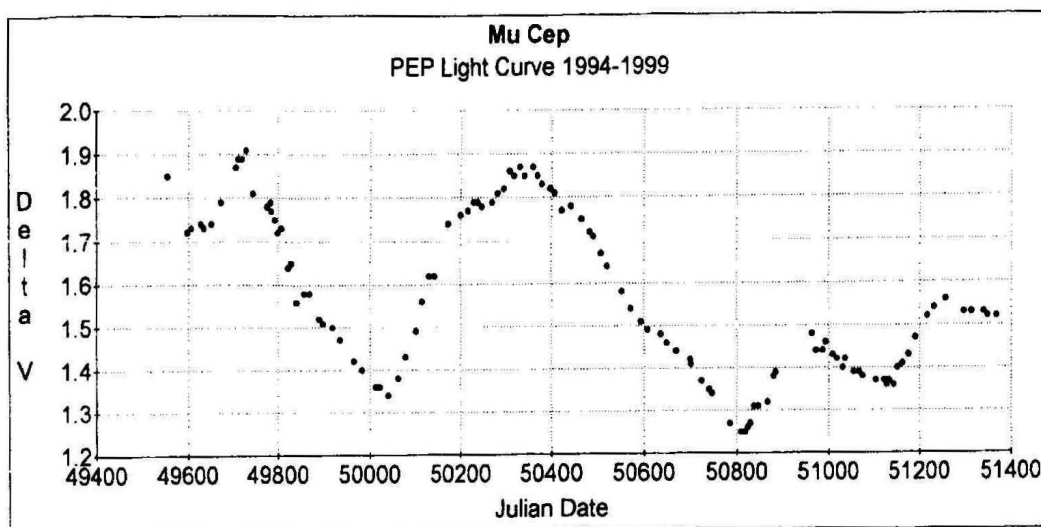
## PEP FROM THE BACKYARD OBSERVATORY AT RYDE - THE FIRST 5 YEARS (PART 1).

KEVIN WEST

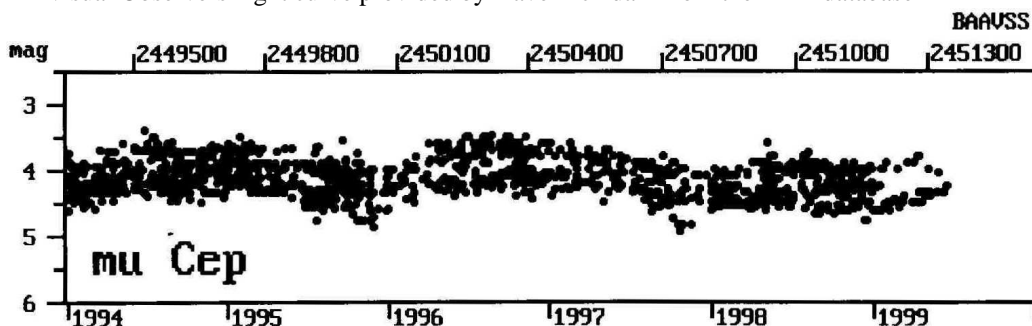
This series of articles sets out to show PEP light curves with some provisional analysis, and to compare these with visual light curves. The stars are all part of a programme of the long-term monitoring of high declination, bright variables conducted by the author. The data is readily available from the BAA database. It is intended that a more detailed compilation of the articles will be submitted for publication in the Journal. The programme comprises: **Psi 1 Aur**, **UU Aur**, **BR CVn**, **TU CVn**, **Y CVn**, **V465 Cas**, **Mu Cep**, **UX Dra**, **g Her**, **OP Her**, **Delta 2 Lyr**, **R Lyr**, **XY Lyr**, **X Per**, **ST UMa**, **VY UMa**, **RR UMi**.

### Mu Cep

Kevin West's PEP light curve



Visual Observers' light curve provided by Dave McAdam from the BAA database





**Observer list for Mu Cep for 1994 to 1999, provided from the database by Dave McAdam**

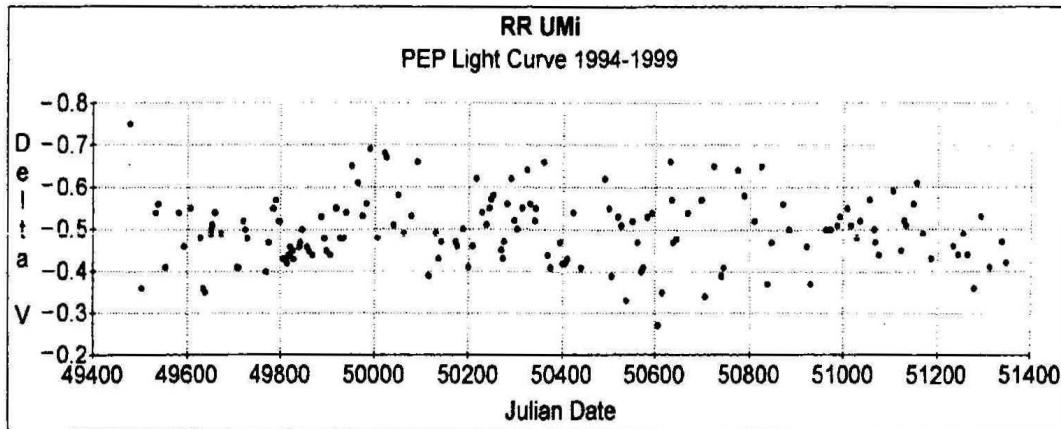
1363 observations by: S W Albrighton, K Barnwell, M Barrett, R Billington, M Clarke, J Coates, K Darbyshire, S Godwin, B H Granslo, L Green, F Hamilton, C Henshaw, E H Horsley, S Jenner, T Markham, I A Middlemist, R Minty, B R M Munden, I P Nartowicz, C Newman, G O'Mara, G Pointer, S G Ridley, D Stott, M D Taylor, J Toone, S T Wanstall.

The first  $\frac{2}{3}$  of the data show a pretty close match to the GCVS listing of 730 days, and analysis of this part of my observations returned a period of 743 days. Just when you think you can see a reasonably tidy light curve from a well-behaved variable, nature comes along and prompts you to adjust your model. There is obviously something else going on here, and visual inspection and analysis suggest a superimposed period of around 300 days, although this is a little speculative on my part. After all, this is a very long period variable, and I have only recorded 3 cycles at the very most.

**RR UMi**

Kevin West's PEP light curve for RR UMi

The GCVS gives a period of 43.3 days, and with an observation made on average every 10



days, one would expect the light curve to appear rather amorphous. However, this only serves to show the skill of the analyst, to tease out hidden periodicity from data, given a long enough baseline. Preliminary analysis of the earliest data gave a period of around 61 days. More recent analysts who had the benefit of a much larger data set, have all independently found a clear period at around 33 days. In fact they found 33, 33.6 and 33.56 days. I don't have the resources to make a definitive search of the literature, but as far as I am aware, this has not been seen by other observers (AAVSO?). Perhaps this article will flush them out.

Dave McAdam comments that RR UMi is under-observed by visual observers; however, there are some observations for this star which have not yet been added to the database, and therefore a visual light curve is not yet available.

For further information please contact:

**Kevin West at 5, Edward St., Ryde, Isle of Wight. PO33 2SH**

**Tel: 01983 614591. E-mail: kwest@ryde.prestel.co.uk**

## **VARIABLE STARS DOWN-UNDER - PART 1**

**JOHN TOONE**

Anyone who has had a good look at the southern skies during the northern hemisphere spring will testify that there is no other naked-eye astronomical sight to rival the spectacular Milky Way passing overhead. From Puppis in the west, through Vela, Carina, Crux, Centaurus, Norma, Sagittarius, and finally, Scutum in the east, we have nothing in the northern skies (not even Cygnus) to compare. Together with the Magellanic Clouds, you really do get a convincing impression that you are part of a galaxy system, and I have often wondered how long the realisation of the correct theory explaining the Milky Way was delayed, because the great scientific minds of the 17th and 18th Centuries were sited in the northern hemisphere. One can also readily understand why Australia and New Zealand use Crux as the basis for their national flags.

There is also a wealth of notable variable stars in the southern skies, some of which I have been fortunate enough to have observed from time to time when travelling to southerly latitudes. All of the southern variables I had seen, to date, were binocular or naked eye objects, and I had a burning desire to try for some telescopic objects when the opportunity arose. I knew from my experiences in Australia in April 1986 (I was there to observe Halley's Comet), that my C8 in good desert conditions could push 16th magnitude visually, which is more than adequate for objects like VW Hyi. I planned, therefore, to return to Australia together with the C8 in April 1999 for two weeks around the new moon. I learned in the proceeding January however, that the South Pacific Star Party (SPSP) hosted by the Astronomical Society of New South Wales (ASNSW), was scheduled for the 19th - 21st March, so I decided to bring forward my planned trip by one month to take in this event, together with the March new moon.

I realised that I only had a few charts for southern telescopic variables (those published in the Webb Society Deep Sky Observers Handbook Volume 8), and was not sure that the sequences were still current. So I e-mailed Frank Bateson of the RASNZ who promptly sent me a pack of 53 charts. Because of my earlier departure date, I did not have time to study and reconcile these charts with Atlas Australis (to give me binocular views), and had to rely purely on plotting the variable's position on sections of Nortons Star Atlas, as I was flying south. This meant taking a long time to locate these variables for the first few times at the telescope.

Throughout February I checked the weather satellite images of Australia on the internet, and I was concerned that there was more cloud than I was expecting to find. I noticed that frontal systems usually travelled west to east, and tended to pass over the whole continent in 3 - 4 days. To combat this, and to maximise my observing prospects, I realised that I needed a flexible movement capability, which would allow me to go where it was clear, as well as dark. The solution was to hire a Bush Safari 4WD Land Cruiser, which was to be my home as well as transport for the duration of my time in Australia.

Now I was set up for the trip, I had the problem of transporting both myself and the C8 to Australia. I had previously flown with Indonesian Airways back in 1986, which took an arduous 36 - 39 hours each way. This time I insisted on a BA/Quantas flight that would reduce the time each way to 26 - 27 hours, but it created a problem with the C8. The C8 weighs 30kg when packed for transport, and I was informed that excess baggage would be charged at 16 pounds per kg. Not wanting to pay an extra 480 pounds, I decided not to take any luggage

instead. I hand-carried my charts, binoculars, camera and C8 wedge into the cabin, and dressed in my observing gear. The C8 without the wedge weighed 26kg, and was put into the cargo hold (the cargo limit was 23kg but smiling, and flirting with the check-in girl helped to ensure no excess costs were incurred). Due to my appearance, several fellow passengers cast strange expressions towards me, obviously thinking that I had got on the wrong flight.

The outbound flight was via Singapore, and because I was travelling eastwards, as well as south, I experienced two nights in quick succession. From my window seat I was facing NNE most of the time, and saw Cassiopeia on the first night, whilst on the second it was replaced with Bootes and Corona Borealis upside-down. After touching down at Sydney, I quickly collected the Land Cruiser, and headed towards Parramatta, which was inland, and was equipped with a large shopping centre. I walked into a clothing store and the assistant approached me and said "*can I get anything for you Sir?*"; her eyes lit up when I handed her my visa card stating "*yes - everything!*". I then began to realise that Australia is very cheap for the British tourist with an exchange rate of A\$2.70/£. I got fully kitted out for less than £150, which meant that I had saved £300+, and the local sales assistant had made a large stride towards her monthly sales target.



**The Land Cruiser used to ensure mobility during the tour**

From Parramatta I headed inland away from Sydney and into the Blue Mountains. I got as far as Mount Victoria (altitude 1030 metres), and decided to stop overnight at a deserted picnic and viewpoint area. In spite of jetlag, I eagerly awaited my first telescope-equipped night in the southern hemisphere for nearly 13 years (10th March). Conditions were good although there was moisture in the air. I was pleased to be able to see star N at mag 13.3 on the **SS Aur** sequence, even though it was only a few degrees above the northern horizon. **U Gem** at mag 14.4 was easily seen, although it was lower in the sky compared with back home. Of the southern telescopic variables, **VW Hyi** and **RR Pic** were picked up both at minimum light at mags 13.9 and 12.1 respectively. Unfortunately, dew built up on the C8 optics, and I was soon

limited to binocular work. **R Dor** - the reluctant Mira star was in the middle of its normal range at mag 6.2, while **S Dor** - the supergiant in the Large Magellanic Cloud (LMC), was at mag 8.9 (my first binocular observation of a variable star in an external galaxy). **Eta Car** at mag 5.8 was pretty much the same as when I observed it in 1982, 1984, 1986, 1994 and 1995. **L2 Pup** on the other hand was very faint at mag 6.6. I had previously seen it between mags 4.2 and 5.8, and mag 6.0 is the catalogue minimum for this star. **SAO251015**, two degrees NP the naked eye open cluster **IC2602**, was at mag 9.6. This is a carbon star, which Colin Henshaw alerted me to, and appears very red on photographs I took back in 1986. Tiredness and the last quarter moon in Scorpius, deterred me from observing longer than four hours on this first night.

The following day in the Blue Mountains was wet and overcast, so I headed further inland west through Bathurst, and then turned north through Dubbo. Conditions were clear in this region, so I decided to stop for two nights at Gilgandra. I booked into a motel because I was desperate for sleep, and was pleasantly surprised to find that the prices were less than half that of equivalent accommodation back home. This influenced my future thinking, and apart from the SPSP, I stayed in motels in remote towns for the rest of my time in Australia. This allowed me access to the latest satellite weather images, which determined where I headed to the next day (to an area where it was least likely to be cloudy). Because motels like to evict you by 10 am the daily routine I developed was to sleep until 9 am, travel to the next destination, sleep for a while in the afternoon in the motel, log the previous night's observations, go out for a meal and then observe in a dark area nearby.

My two nights in Gilgandra produced over a hundred observations, and were good learning sessions in terms of re-familiarising myself with the southern skies, and getting used to the northern constellations appearing upside-down. On the first night (11th March), I saw the recurrent nova **T Pyx** at mag 15.2. This was quickly followed by **UY Pup** - a UG star in outburst at mag 13.8. **UY Pup** is just two degrees NF **M46**, and could be seen from the UK, if the observer has a clear southern horizon. The RCB stars **DY Cen** and **S Aps** were seen at mags 13.1 and 10.6 respectively (both just a little below maximum perhaps?). I was finding it was taking up to half an hour to locate and make estimates of these Southern telescopic variables. This is rather inefficient, compared with my normal 2 minutes back home, where I am conditioned to combat the unpredictable British climate. **RY Sgr**, the southern hemisphere equivalent of **R CrB**, was at a normal maximum of mag 6.5. On the second night (12th March), I picked up **W Men** at mag 14.2. I was later advised by Mati Morel, at the SPSP, that this RCB star is a member of the LMC - another extragalactic object. **BV Pup** - a UG star close to **M93**, was seen at mag 14.7, probably fading to minimum. **V442 Cen**, another UG star, was caught in outburst at mag 13.1. I had difficulty with the RASNZ chart for this star which was distorted in RA, and did not reflect the actual visual appearance of the starfield. I drew a sketch of the field, which I intended to later send to Frank Bateson for his consideration, when their chart is updated. **BV Cen** - a bright UG star, was seen at minimum at mag 13.2, and **V485 Cen** another UG star was seen fading to minimum at mag 14.5. I then picked up **V854 Cen**, which caused some confusion. Ignorant of its true nature, I was expecting to see a mag 10 object because the RASNZ chart listed it as type NI, 7.0-10.5v? I was surprised to find it blazing away at mag 7.3. After calming down I decided just to log the observation, and ask questions about the star at Siding Spring Observatory where I was planning to travel to the next day. Other notable observations made on this night were that of the quasar **3 C279** at mag 15.3, and **V818 Sco** - an X ray object at mag 12.5.

The following day I drove into the Warrumbungle mountain range, and booked into a motel

in Coonabarabran. In the afternoon I visited Siding Spring Observatory. In the visitor center I inquired about Robert McNaught and Tom Cragg, but was informed that they did not work there any more. I was however, told that they both still reside in Coonabarabran, and was given their telephone numbers. Back at the motel I contacted them both, and invited them out to dinner as a thank you for accommodating me (and Rhona Fraser) overnight at Siding Spring Observatory back in April 1986. The evening with Robert and Tom was most entertaining. Whilst a thunderstorm was flooding Coonabarabran, Robert told me that **V854 Cen** is the third brightest RCB star in the sky, and that I could relax over my observation made the previous night. Tom explained the circumstances around his (unique) observation of the shadow transit of one of Uranus's inner satellites. He was the night assistant at Mount Wilson Observatory, and used the 100" Telescope visually between photographic exposures by professional astronomers. We talked at length about many astronomical subjects, and had to be forcibly evicted from the hotel restaurant at midnight. It was still raining heavily at that time, so I did not miss out on any observing.

Robert had planned to go up to the Observatory to do a meteor watch the following night, and invited me along, so I stayed in Coonabarabran for an extra day. This night (14th March) was very clear, although lightning lit up the north and eastern horizons from time to time. I set up my C8 on a clearing next to the 48" UK Schmidt Telescope, and occasionally wondered what



The LMC taken from Nyngan with a 135mm F1.8 lens, 2 minute exposure on Fujichrome 1600 slide film.

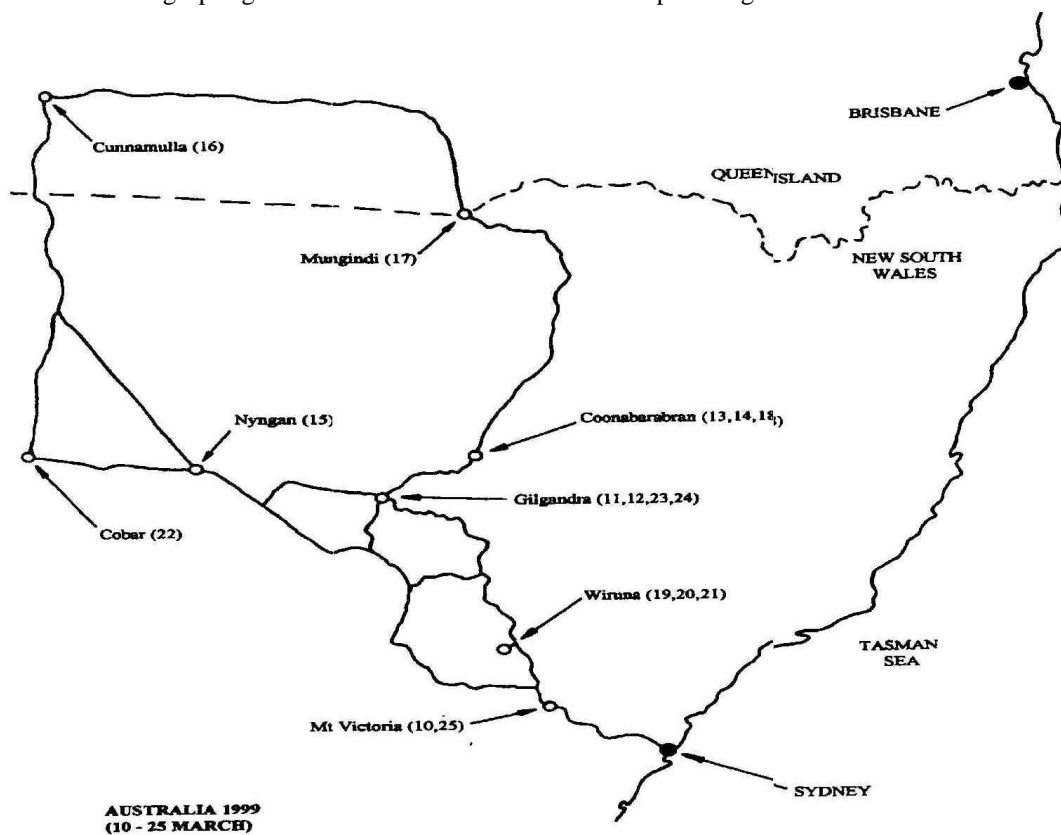
they were observing with their extra 40" aperture. Conditions were every bit as good as I recalled from 1986, although the distant lights from Coonabarabran seemed more noticeable. At times, it was windy, but during one of the calm spells, I did some photography of the LMC with a 135mm lens piggybacked on the C8. The quasar **AP Lib** was clearly seen at mag 15.5. The RCB stars **RT Nor** and **V CrA** were picked up at mags 9.7 and 10.2 respectively, and were both probably near maximum. Pluto was seen for the first time in ten years. At mag 14.6 it seemed fainter than it was when it was inside Neptune's orbit in the 1980's. Robert did not seem to have much luck with his meteor watch; he logged less than 20, which were mainly sporadics. The expected activity from a radiant in Norma did not materialise. The crescent moon in Capricornus encouraged me to abort observing, so I said goodbye to Robert and drove back to the motel in Coonabarabran (narrowly missing several kangaroos on the way).

The next day I travelled westwards, and stopped at a town called Nyngan, which is where the Mitchell Highway up to Queensland splits off from the Western Highway to Broken Hill and South Australia. Six miles out of town, towards the north, was a convenient dark area where I could observe from. On this night (15th March), I concentrated on photography of Canis Major and Puppis, as well as repeating observations of eruptive stars seen on previous nights. One new star I picked up, however, was **Z Cha** at mag 15.2, probably at the brighter end of its minimum phase. The estimate was not easy because the sequence for this star did not go fainter than mag 14.0.

I next headed north into Queensland, and stayed at a town called Cunnamulla. It was warm and humid here, and I had to observe without gloves and a jacket which attracted the attention of mosquitoes. In the motel I had to contend with a large green frog which seemed to reside in the toilet. When I complained to the manager (who was also the barman) he said "*don't worry about the frog mate, if it was a snake we would come and remove it*". In the bush, five miles outside town it was good for observing, except for the eerie sounds of animals, insects and probably reptiles nearby. I decided to observe all variable stars tonight (16th March), instead of just concentrating on eruptive objects. **X Leo** and **TT CrI**, which were both seen in outburst on previous nights, were now fading back to minimum at mags 14.7 and 14.9 respectively. I caught **SS Aur** rising to another outburst at mag 13.0, close to the treeline. The active galaxies **BW Tau** and **W Com** were both at mag 14.3. **R Pic** at mag 10.0 was probably at its very minimum. I made observations of several binocular variables in Fornax, Eridanus, Pictor, Canis Major, Sextans and Monoceros for the first time, but with three hours of darkness left, the sky unfortunately clouded over. The following day I added up the observations made, and the total came to 139 (in 6 hours 25minutes), which is just 20 short of my highest nightly total recorded back in January 1995 in Cressage. On this experience, I definitely feel that 200 observations in a night is achievable, but it is important to stress that it should never be attempted if the observer is prepared to sacrifice accuracy for speed. A biased or careless observation is worse than useless.

From Cunnamulla I travelled east to escape the cloud, which had aborted the previous nights observing, but ran into more cloud and increasing humidity. It was too late to turn around, so I carried on until I reached Mungindi on the border between Queensland and New South Wales. In the late afternoon a thunderstorm hit the town, and things did not look promising as I logged the Cunnamulla observations. Shortly after dark however, gaps appeared in the cloud and I was able to observe after all, although distant lightning kept spoiling my night vision. **CN Ori** and **HL CMa** were both approaching minimum light following recent outbursts at mags 13.5 and 14.0 respectively. **T Cen**, which I have observed many times in the past (including once from England), was close to minimum light at mag 8.8.

The following day, I travelled south, and visited the radio telescope establishment close to Narrabri. From there, I drove on to Coonabarabran where I attended the local astronomical society's AGM. Most of the members were pommie professional astronomers, who worked at Siding Spring or used to work there. There was a sprinkling of Australians but it caused



**A Map to show the route taken on the tour**

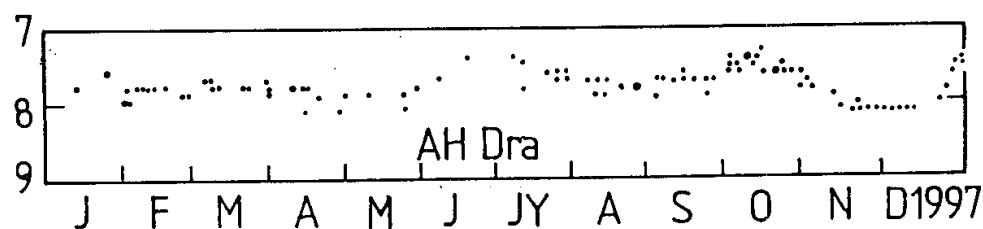
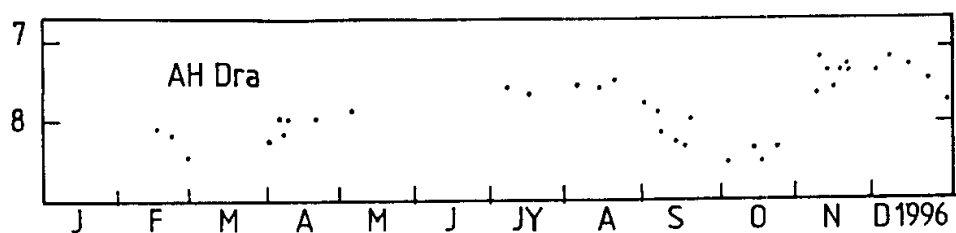
further imbalance when I turned up to swell the UK contingent. After the meeting I spoke to Dr Fred Watson, who was the Astronomer-In-Charge at Siding Spring Observatory. He lamented that they now feel overshadowed in the Southern hemisphere following the commissioning of the Gemini 8 metre telescope. He added, however, that the Anglo Australian Telescope (AAT) still has a larger dome, which I could well appreciate having seen the 3.9 metre AAT dwarfed by its still very imposing building. This night was cloudy with frequent thunder and lightning. I was told that Siding Spring averages 65% of nights clear, but out of the three nights that I stayed in the vicinity, two were complete washouts.

To be continued in VSSC102

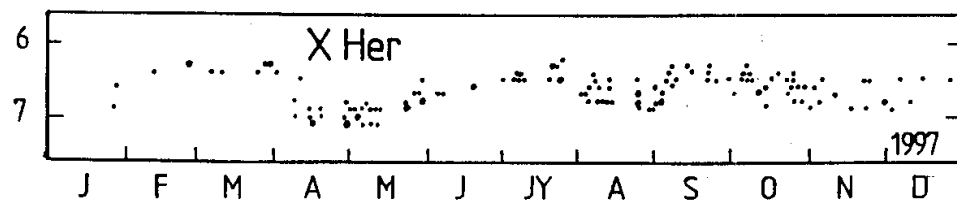
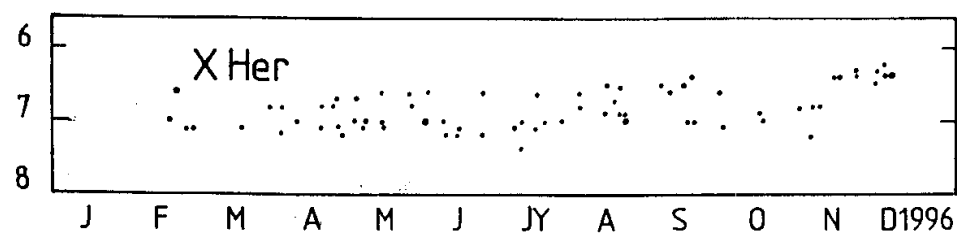
## BINOCULAR PRIORITY STARS - SELECTED LIGHT CURVES

MELVYN TAYLOR

Observer lists have been provided by Dave McAdam, but may be incomplete where data from paper reports has not yet been entered into the database. The editor apologises for any observers whose names are not included here.



Observers of AH Dra 1996 to 1997.:- J S Day, B H Granslo, T Markham, J Toone.



Observers of X Her 1996 to 1997.:- A R Baransky, J S Day, D Gill, B H Granslo, C Henshaw, T Markham, Volodymir G Mormyl, J Toone.



## SUMMARY OF ECLIPSING BINARY OBSERVATIONS AND OBSERVERS IN 1998

MELVYN TAYLOR

Visual observations which have been made mainly with binoculars, but also with the naked-eye and small reflectors, account for the observations of 30 stars noted below:

DS And	5	EG Cep	34	u Her	96
WW Aur	21	EI Cep	6	AR Lac	69
AR Aur	7	GK Cep	74	UV Leo	6
HL Aur	14	U CrB	8	delta Lib	14
ZZ Boo	13	Y Cyg	58	Beta Lyr	315
WY Cnc	8	V367 Cyg	78	Beta Per	67
RZ Cas	279	V448 Cyg	40	HU Tau	40
TV Cas	13	V1143 Cyg	3	lambda Tau	21
U Cep	90	Al Dra	8	W UMa	37
VW Cep	7	GW Gem		TX UMa	13

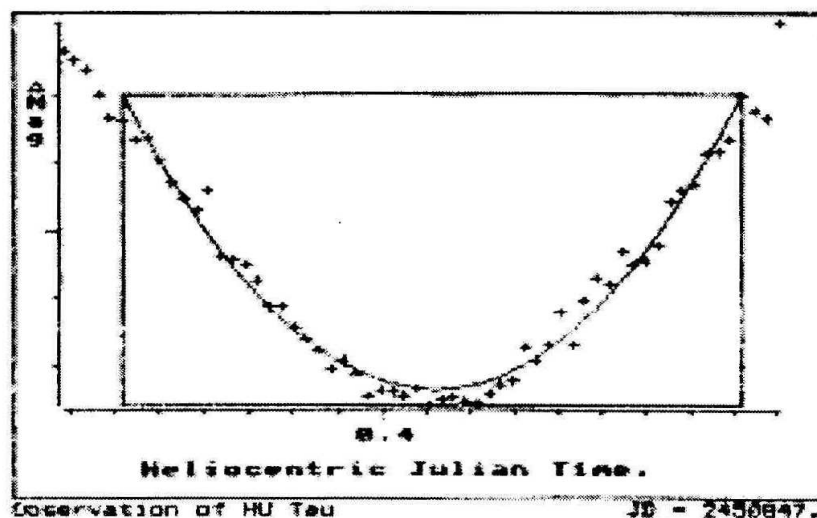
Observers were: M Barrett, M Clarke, J Coates, D Conner, S Godwin, E Horsley, S Lenner, S Johnston, T Markham, C Newham and M Taylor. Tony Markham includes in this set estimates from observers as above in the Society for Popular Astronomy.

PEP measures by Malcolm Gough, and provided through the Jack Ells APT, account for 62 on HU Tauri on 1998 Feb 2/3 at estimated time of minimum at JD 2450847.4117 (Heliocentric) as shown in the figure below. Comparison star SAO 094022, check star SAO 094021.

Potential observers of eclipsing binaries are invited to write for a copy of the EB catalogue of stars, it contains over 140 objects for which charts are available.

Julian Date: 2450847

Page 2



# SUSPECTED BINOCULAR VARIABLES IN THE HIPPARCOS DATA

TONY MARKHAM

The Hipparcos and Tycho catalogues contain the results of around 100 photometric measurements per star over a 3 year period. These can be used to give an indication of whether suspected variables are truly variable, or not.

The following table gives the quoted V magnitudes and the corresponding scatter in the Hipparcos (Hp) and Tycho (Vt) measurements for a number of suspected variables.

Variable	HIP	V	Photometric scatter		Var Annex	Type	Other Name	Notes
			Hp	Vt				
Tau Cas	117301	4.88	0.02	0.05	N		NSV 14707	
NSV 14260 Lac	111795	5.11	0.13	0.09	Y	U/I	V416 Lac	
NSV 13857 Cyg	107235	5.51	0.04	0.08	Y	U/LB		
NSV 2917 Ori	30099	5.67	0.04	0.08	Y	U/LC		
NSV 14213 Lac	111362	5.72	0.03	0.08	N			
NSV 12088 Aql	95898	6.08	0.04	0.09	Y	U		
NSV 13729 Cep	105949	6.11	0.15	0.12	Y	U/I	V426 Cep	
69 Dra	98401	6.20	0.06	-	N			
SAO 37607 And	8922	6.25	0.02	0.08	N			
NSV 13784 Cyg	106420	6.27	0.05	0.10	Y	U		
NSV 13656 Cep	105193	6.43	0.14	0.15	Y	U/I	V422 Cep	
SAO 19521 Cep	106604	6.47	0.06	0.09	Y	P	V431 Cep	(1)
+49°2165 CVn	62600	6.50	0.03	0.09	N	N	NSV 5976	
NSV 2967 Gem	30722	6.57	0.05	0.09	Y	U	PZ Gem	(2)
SAO 44590 CVn	65309	6.64	0.32	0.34	Y	U/L	BR CVn	(3)
NSV 3597 Lyn	36334	6.66	0.10	0.13	Y	U/SR	BY Lyn	(4)
SAO 77971 Gem	28969	6.67	0.03	0.11	N			(5)
+20°1156 Ori	27829	6.70	0.02	0.12	N			
SAO 21020 Cas	181	6.77	0.09	0.15	Y	U/SR	V822 Cas	(6)
NSV 1280 Tau	17572	6.85	0.02	0.09	N			
NSV 1702 Tau	22013	6.91	0.03	0.12	N			
+47°2801 Cyg	94813	7.26	0.03	0.13	N			
NSV 12247 Cyg	96533	7.29	0.11	0.19	Y	U/I	V2085 Cyg	
NSV 13150 Del	101512	7.29	0.13	0.19	Y	P/SR	MV Del	(7)
NSV 650 Cas	8896	7.31	0.04	0.13	N			
SAO 78074 Gem	29360	7.41	0.04	0.17	N		NSV 2859	
NSV 12439 Cyg	-	7.50	-	0.15	N			
NSV 14680 Cep	116945	7.70	0.05	0.17				
+18°4586 Del	-	7.85	-	0.22				
+61°0668 Cam	19122	7.91	0.04	0.21	N			
TAV 0136+60	7755	7.97	0.68	0.73	Y	U/LB	V770 Cas	(8)
SAO 15926 Dra	62839	8.65	0.06	0.34	N			(9)
NSV 3369 Gem	-	9.11	-	0.76	N			

The *Var Annex* column indicates whether additional information is included in the catalogues variability annex (Types: U=Unsolved , P=Periodic).

As can be seen, there is a tendency for the scatter to be larger in the Tycho measurements, and also for it to be slightly larger for the fainter stars. The scatter is very low for most of these stars - no larger than that found in non-variable stars. However, there are a few for which the scatter is somewhat larger, and many of these have now been given permanent designations.

## Notes

- (1) Period given as 8.340d
- (2) Formerly comparison F (mag 6.95) for BL Ori (chart 831003)
- (3) Formerly mag 6.9 comparison for V CVn (chart 840412)
- (4) Possible period of 10.64d
- (5) Comparison E (mag 7.2) for BU Gem (chart 721111)
- (6) Possible period of 10.29d
- (7) Possible period of 25.099d
- (8) Period ~ 1000d
- (9) Comparison K (mag 7.8) for RY Dra (chart 225.01)

## IBVS 4679-4694

GARY POYNER

- 4679** The sudden period change of VV Cephei. (Graczyk et al, 1999)
- 4680** The revision of Apsidal motion in V541 Cyg: No discrepancy with theory. (Volkov & Khaliullin, 1999)
- 4681** New times of Minima and updated ephemerides of selected contact binaries. (Kiss et al, 1999)
- 4682** A study of the Microvariable star V1674 Cygni. (Goranskij et al, 1999)
- 4683** CL Aurigae: A new photometric triple star. (Wolf et al, 1999)
- 4684** HD 74425: A new ellipsoidal variable star. (Henry & Kaye, 1999)
- 4685** Discovery of the variability of GSC 1009.766 and GSC 1057.1309 (Lloyd & Bernhard, 1999)
- 4686** HD 130484: A new Delta Scuti variable in Virgo. (Rodriguez et al, 1999)
- 4687** New photoelectric photometry of MM Herculis. (Evren & Tas, 1999)
- 4688** Tau 1 Hydrae: Not a Gamma Doradus variable. (Henry et al, 1999)
- 4689** The spectrum of Sakurai's object in 1998. (Kipper & Klochkova, 1999)
- 4690** The third body in the eclipsing binary AS Camelopardalis. (Kozyreva et al, 1999)
- 4691** New observations of the FUOR V1057 Cyg. (Ibrahimov, 1999)
- 4692** A transit of the Planet 51 Peg B? (Krisciunas, 1999)
- 4693** On the period of GU Canis Majoris. (Ezhkova, 1999)
- 4694** HD 129231: A new short period delta Scuti variable. (Rodriguez et al, 1999)

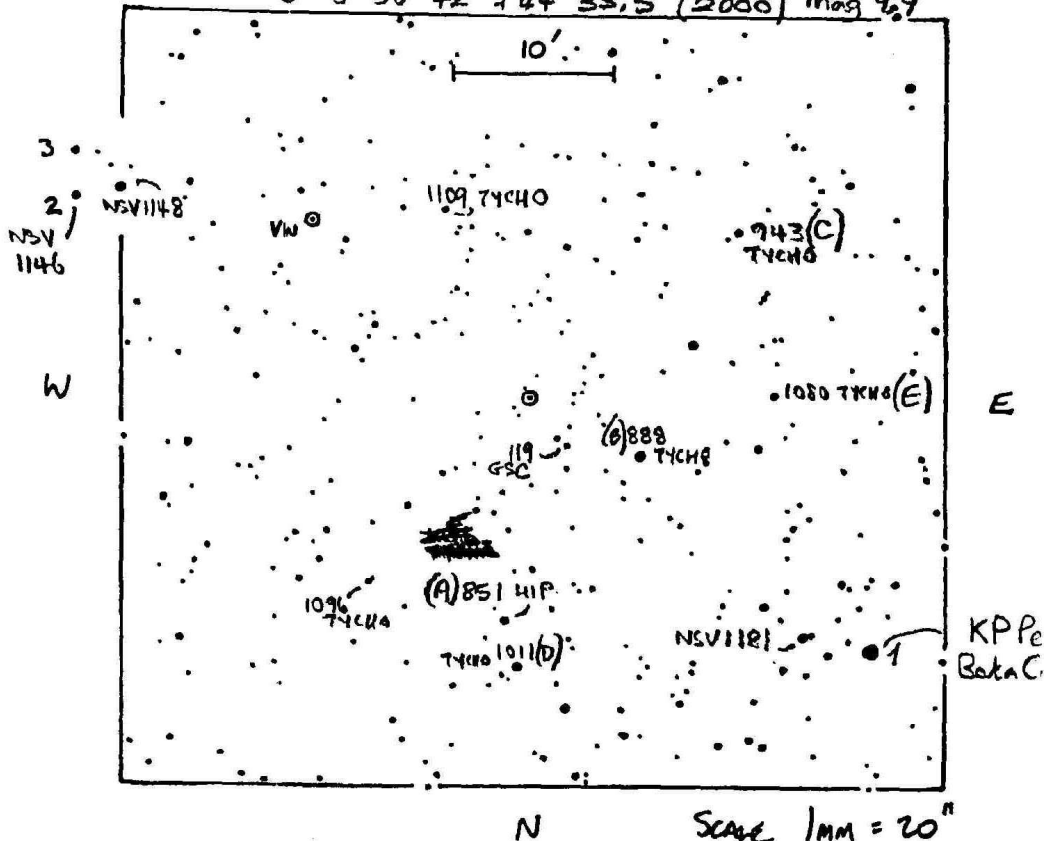
(B)

# TASV 0327+44

RA  $03^h 27^m 30^s$  DEC  $+44^\circ 25'$  (1950)  
MAGN:  $9.9-10.9$  ? TYPE  $3S(2000)$  SP: C5

DISCOVERED BY MIKE COLLINS ON UK NOVA PATROL PHOTOGRAPHS

GSC 2874.1828  $3^h 30^m 42^s$   $+44^\circ 35.5'$  (2000) ON 1989 SEP 7 mag 9.9



SEQUENCE: SEE (A) CHART

FOR Y PER / VW PER / GK PER

1 6.3  
2 8.1  
3 8.5

CHART:

FROM PLATES 487, 488  
BY D.G. BUCZYNSKI

DRAWN BY M.J. COLLINS

Adapted 900717

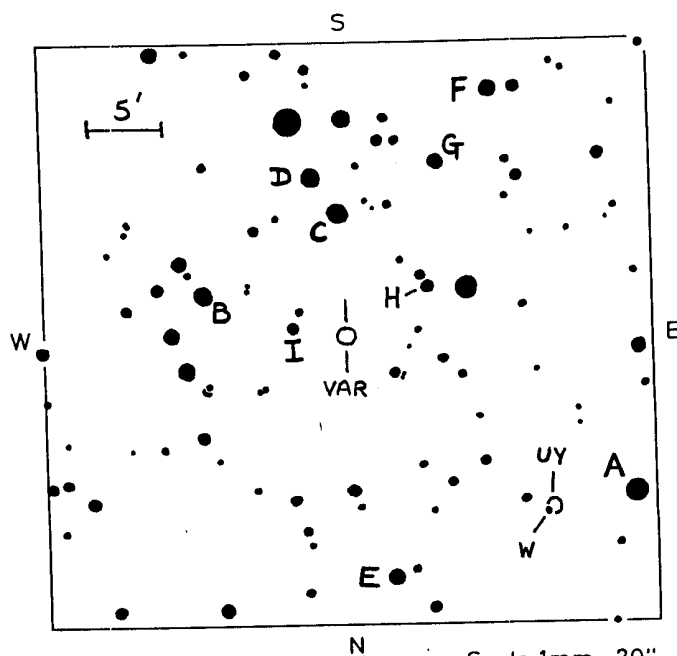
© THE ASTRONOMER / UK NOVA PATROL

(B)

# TASV 0234+38

RA 02<sup>h</sup> 34.<sup>m</sup>1      Dec. +38° 45' (1950)  
02 37.2      +38 58 (2000)  
Magh.: 9.6 - 10.3      Type:      Sp: M7

Discovered by Mike Collins on UK Nova Patrol photos 28 Sep. 1990



Sequence: AAVSO (UY AND), GSC

A 7.7 = SAO 55746  
B 8.3  
C 8.7  
D 9.5  
E 9.8  
F 10.1  
G 10.5  
H 10.9  
I 11.2

Chart: From TVMPA  
by M.J. Collins  
Adopted 910106

W = OLIVIER'S "W" NEAR UY

TA Refs: P276 - P281

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THE ASTRONOMER

January 1991

## **BAAVSS WWW PAGE UPDATES 7, 8 AND 9**

**DAVE MCADAM**

### **Update Notice No. 7      14 May 1999**

The following items have been added since 14/04/99:-

IP Peg: 1999 Eclipse Ephemeris by W J Worraker

Known Variables in Hipparcos data by Tony Markham

HT Cas: 1999 Eclipse Ephemeris by W J Worraker

Mike Collins' discoveries by G M Hurst

Observing Campaign for QR And by Petr Sobotka and Dr Vojtech Simon

New Current lightcurves:- Z And, UX Ant, CR Boo, CI Cam, V770 Cas, V362 Cep,

TASV2204+59 Cep, YZ Cnc W Com, NSV7378 CrB, AF Cyg, V1016 Cyg, V1661 Cyg, U

Gem, J0712+296 Gem RZ LMi, X Leo, GK Per, FG Sge, VZ Sgr, EI UMa

Long-term lightcurves updated

8 Other detailed lightcurves

6 Observing charts: SX Her (113.01) - YY Her (084.01) - g (30) Her (224.01) U Hya

(109.01) - U LMi (218.01) - RX Lep (110.01) - RY Leo (222.01)

Plus latest lists, observing totals, and other details

### **Update Notice No. 8      14 Jun 1999**

The following items have been added since 14/05/99:-

T Cep: Pre-maximum spectra by M Gavin

Report on the Warner Symposium on CVs by W J Worraker

New Current lightcurves:- TAV0556+55 Aur, CR Boo, Z Cam, V727 Cas, V451 Cep, AT

Cnc, W Com, R CrB SS Cyg, EM Cyg, V751 Cyg, V1060 Cyg, NSV13262 Cyg, TAV1933+53

Cyg, AB Dra EX Dra, J0712+296 Gem, AH Her, AM Her, HZ Her, V443 Her, LL Lyr, MV

Lyr RZ Nor, V426 Oph, AX Per, GK Per, NSV1665 Per, LX Ser, R Sge, V3795 Sgr V4444

Sgr, SU UMa, ER UMa, Markarian 421 UMa, SN1999by UMa, Z UMi, RZ Vul

Long-term lightcurves updated

17 Other detailed lightcurves

23 Observing charts: Markarian 509 Aqr (210382) - U Cam (100.01) XX Cam (068.01) -

V465 Cas (233.01)  $\gamma$  and  $\rho$  Cas (064.01)  $\mu$  Cep (112.01) -  $\omega$  Cet (039.02) - R Com (212.01)

SW and RR Com (220.01) - TT Cyg (227.01) - AF, V973 Cyg (232.01) TX, AH, AT Dra

(106.01) - NQ Gem (077.01)

### **Update Notice No. 9      14 Jly 1999**

The following items have been added since 14/06/99:-

VSSC100: VSS obs and the Hubble Key Programme : I D Howarth

VSSC100: from the BAA President : M Mobberley

New Current lightcurves:- Z And, RX And, BR CVn, S5 0716+71 Cam, TASV J2352+665

Cas, DY Cen, V854 Cen NSV14680 Cep, TASV2204+59 Cep, W Com, SN1999cl Com, WX

CrA, SS Cyg, CH Cyg CI Cyg, EM Cyg, V503 Cyg, V1329 Cyg, NSV13262 Cyg, EX Dra,

AH Her, AM Her BL Lac, CY Lyr, LL Lyr, MV Lyr, RU Peg, DY Per, V818 Sco, R Sct, NY

Ser V Sge, SV Sge, FG Sge, V1860 Sgr, Markarian 421 UMa, Z UMi, V Vul, RZ Vul VW

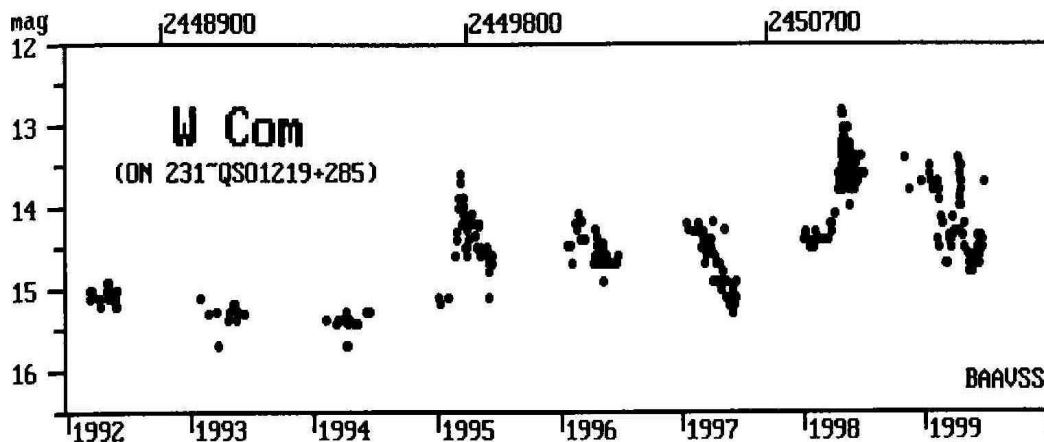
Vul, FY Vul

10 Long-term lightcurves updated

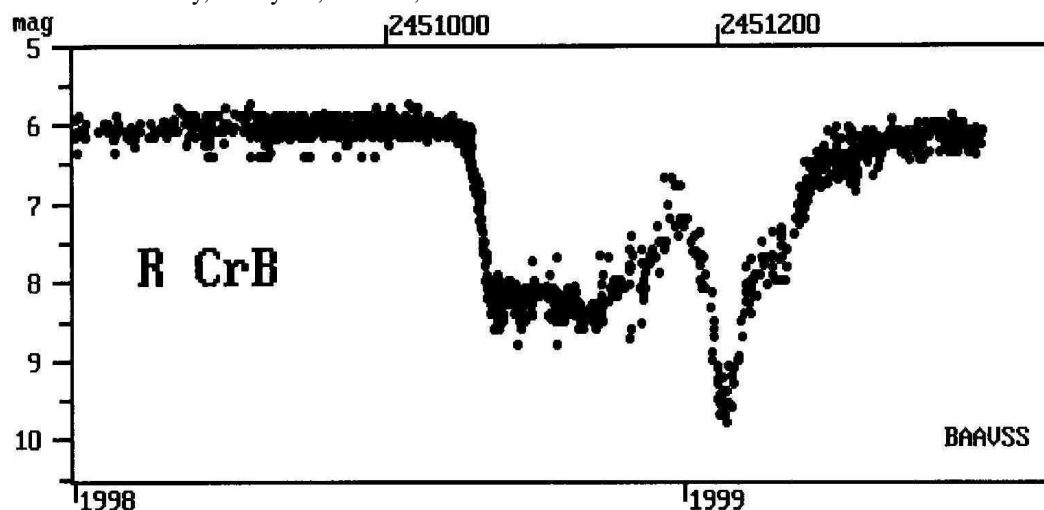
14 Other detailed lightcurves

Plus latest lists, observing totals, and other details

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**W Com 1992 to 1999.** 418 observations by;- J Greaves, G M Hurst, L T Jensen, C P Jones, John Mackey, G Poyner, J Toone, W J Worraker.



**R CrB 1998 to 1999.** 1444 observations by;- S W Albrighton, K G Andersson, A R Baransky, N M Bone, R J Bouma, L K Brundle, M Clarke, Tom Cragg, J S Day, R C Dryden, M J Gainsford, D Gill, B H Granslo, G M Hurst, A J Johnston, Miroslav Komorous, M Loukas, T Markham, J Meacham, I A Middlemist, Volodymir G Mormyl, E Muylleert, A Pereira, R D Pickard, G Poyner, P Schmeer, J D Shanklin, G Stephanopoulos, J Stubbings, M D Taylor, J Thorpe, J Toone, Vince Tuboly, C Vitarino, M Westlund, P Williams.

The deadline for contributions to the December issue of VSSC will be November 7th, 1999. All articles should be sent to the editor (details are given on the back of this issue)

Whilst every effort is made to ensure that information in this circular is correct, the Editor and Officers of the BAA cannot be held responsible for errors that may occur.

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## TELEPHONE ALERT NUMBERS

**Nova and Supernova discoveries**

First telephone the Nova/Supernova Secretary. If only answering machine response, leave a message and then try the following: Denis Buczynski 01524 68530, Glyn Marsh 01772 690502, or Martin Mobberley 01245 475297 (weekdays) 01284 828431 (weekends).

**Variable Star Alerts**

Telephone Gary Poyner (see above for number)

<b>BAAVSS web pages:</b> <a href="http://www.telf-ast.demon.co.uk/">http://www.telf-ast.demon.co.uk/</a>
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