



The *Variable Star*

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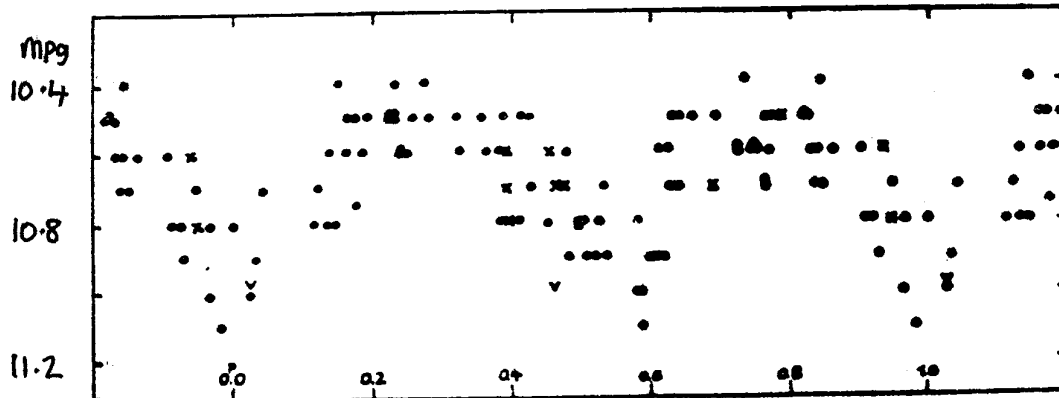
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HP Lyrae Retracted

By Tristram Brelstaff

In last month's VSO, I suggested on the basis of some of my own observations that the period of HP Lyrae was less than 139 days, rather than the 140.75 days previously thought. Since then, I have obtained a copy of the paper by Wenzel, in which he proposed the 140.75-day value. His conclusions look basically sound and Herr Agerer's presumed course of variation of the period is probably correct.



I also had another look at the estimates from which my discrepant timing had been derived and the light-curve looks most irregular. Wenzel does mention that his O-C diagram and his mean light-curve (see diagram) both show quite a bit of scatter, and he suggests the possibility that the shape of the light-curve might vary. He specifically mentions BM Cassiopeiae, another long-period eclipsing binary ($P=197d$), in which one of the components is thought to be a Cepheid. I suppose my light-curve could be explained if HP Lyrae was also a Cepheid but, this would require the amplitude of its pulsations to have increased markedly in the past decade (or why are none of the earlier timings also wildly discrepant?), and this is not very likely. However, HP Lyrae would appear to be a good target for intensive photoelectric photometry. It might be a bit faint for most amateur PEP observers but I know of one or two who can reach below mag 10. The star's long period makes it rather difficult for professionals, who tend to observe, in short

runs, but it also makes the star more interesting because, to produce the Beta Lyrae type light-curve at the implied separation, the components must be rather massive.

RT Aurigae

Melvyn Taylor has passed on a letter from Jose Maria Fernandez Andujar, a Spanish variable star observer. Jose has been following the Cepheid RT Aurigae and, according to him, his observations do not agree with the GCVS data on this star. The GCVS data is:

Type:	DCep	Range:	5.00 - 5.82 V
Epoch of Max:	2442361.155	Period:	3.728115 days
(M-m)/P:	0.25		

In the notes it mentions that the period is thought to be variable and that observations made before 1950 are best represented by a period of 3.728365 days. The quantity (M-m)/P is the proportion of each cycle spent on the rise from min to max.

While it is unlikely that any major change has happened in such a bright Cepheid, it might be worth making a few visual estimates just to make sure. Suitable comparison stars are: 139 Tau = 4.82, 49 Aur = 5.27, 53 Aur = 5.79, HD 44092 = 6.30 (HD 44092 is roughly 6 minutes preceding Kappa Aur and is the brightest star between Kappa and RT). If you do get any results then I'm sure that Jose would be pleased to hear from you. You can write to him at: Jose Laguillo 27 Bq2 3D, 42003 Seville, SPAIN.

Glimpses

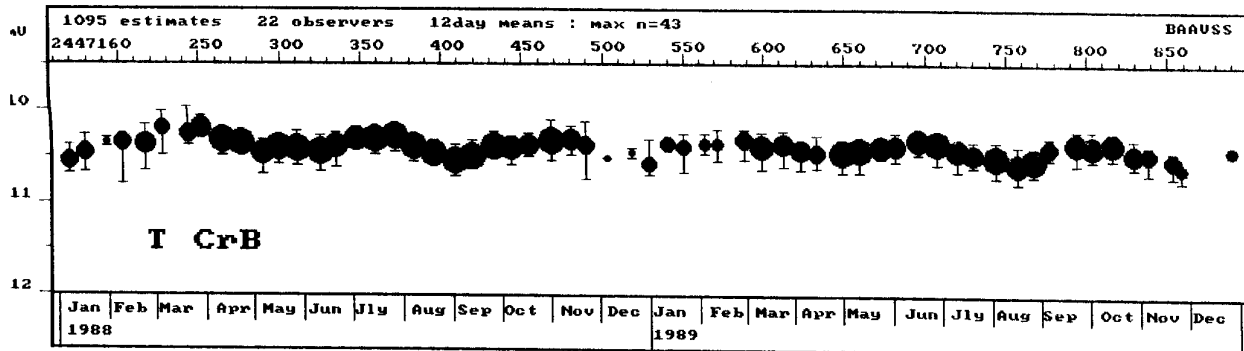
Melvyn Taylor writes to say that Paul Roche of Southampton University has again asked for visual observations of X Persei. These are to help him interpret observations in the ultraviolet and infrared. He suspects that there have been some interesting changes in the system in the past few months. You can telephone your observations at weekly intervals to Gary Poyner on 021-3504312. He deals with variable star alerts for *The Astronomer* and will forward the observations to Paul.

Storm Dunlop says he is putting the finishing touches to two VSS Circulars which should be sent out soon. Storm works from home as a translator. For the past three years he has been busy translating a large handbook of practical amateur astronomy from French into English. He describes it as being on the scale of *Burnham's Celestial Handbook* but covering the practical side - 'How to do it' rather than 'What to look at'. It includes chapters on such subjects as how to build a plate comparator, how to get started in CCD's, how to go about drawing Jupiter and so on. Over thirty people were involved in writing the book. It is to be published by the Cambridge University Press. They are hoping that it will be very popular in the USA.

In spite of Rossie Atwell's little note in the BAA Newsletter, the VSO is not an official newsletter of the BAA Variable Star Section. However, depending upon how successful I am, in my new role as VSS Director, at making the VSSC's regular again, there may be a position for the VSO within the VSS. The VSS Circular could become a sort of *Journal* of the VSS, containing observational reports, light-curves, eclipsing binary predictions and other material that is too bulky to publish in either the BAA *Journal* or the VSO. There certainly is a need for something like the VSO, which appears regularly, come what may. Has anybody else got any ideas on this?

T Coronae Borealis

I'm sure I mentioned in a recent VSO that I have been entering observations of T CrB onto disk as part of the VSS Computerisation project. Well, I eventually finished the two years that I had been assigned, and sent in my disk to Dave McAdam. After copying the data of the disk, he sent it back with the accompanying light-curve plotted from the observations I had entered. I almost feel that I had made the observations myself! You can just make out the 228-day orbital variation with its two minima per cycle. This variation were first discovered from VSS observations in the 1970's.



33 Ceti (alias NSV 422)

This rather obscure, 6th-magnitude suspected variable used to be on the VSS Binocular Program but was dropped a few years ago because, apparently, it wasn't doing anything. However, I don't think that the observations were analysed in any detail. I thought it might be worth having a close look at the observations of some of the suspected variables - they could, just possibly, show small-amplitude variations which would only show up under close scrutiny. A second reason was that the study of these observations might give information on the errors in visual magnitude estimates. A third reason was that quite a few observers, myself included, had put quite a bit of effort into making these observations, and it would be nice to know if we had been wasting our time or not. I thought that 33 Ceti would be a nice easy one to start with because there was only a couple of hundred observations of it in the VSS records.

I requested a photocopy of the GCVS source paper on the star from the RAS Library, half expecting that the 'discovery' was going to be a case of mis-identification, or poor observing. However, it turned out that the discoverer, R Kippenhahn, reports about 100 estimates from photographic plates taken between 1899 and 1953, most of which show the star at 7.1 mpg, but about a fifth of them show it at between 8.0 mpg and 9.0mpg. One of these faint estimates was taken from the Franklin Adams Chart, a photographic atlas, a copy of which is available at the RAS Library. Last week, I made a special trip into London to check this estimate for myself and, to my surprise, I found that the star was, indeed, faint.

However, I still have some doubts about Kippenhahn's paper because some of the other observations he reports seem to contradict each other and, also, because the estimated magnitudes seem to correlate rather too closely with the observatory from which the plates were taken. For instance, two Harvard plates in 1904 and 1905 show the star at 7.1, but 18 Heidelberg plates from 1899 - 1931, including one in 1904, all show the star at 8.0 or fainter. Similarly, 74 Bamberg plates from 1928 - 1934 all show the star at 7.1. These contradictions are rather hard to explain. Maybe the plates used at the different observatories had greatly differing spectral sensitivities? One would certainly expect this to affect magnitude estimates of a fairly red star such as 33 Ceti (spectrum gK4, B-V +1.51), but would it lead to differences of nearly 2 magnitudes? I can't tell. Maybe someone experienced in estimating magnitudes from plate archives would know?

Variable Star Books in the BAA Library
By Tristram Brelstaff

Anthony Kinder, the Librarian of the BAA has recently published a new catalogue of the books in the BAA library. Below I have listed those books on variable stars which are available for loan (to BAA members only) and which may be of interest to readers of the VSO. Those marked with an asterisk are, in my opinion, well worth borrowing if you haven't seen them before. The list is by no means a complete survey of the variable star literature but there are enough good books in it to provide a reasonable amount of background reading for the keen observer. You might find it useful to read the list in conjunction with Storm Dunlop's survey of books on variable stars which was published in VSSC 69.

- * A H Batten, *Binary and Multiple Systems of Stars* (1973).
- * R Burnham, *Celestial Handbook Vol 1, And - Cet* (1978).
- * R Burnham, *Celestial Handbook Vol 2, Cha - Ori* (1978).
- * R Burnham, *Celestial Handbook Vol 3, Pav - Vul* (1978).
- * L Campbell and L Jacchia, *The Story of Variable Stars* (1941, 1949).
- D Clark, *Superstars* (1979).
- * D H Clark and F Stephenson, *The Historical Supernovae* (1977).
- * C E Furness, *An Introduction to the Study of Variable Stars* (1915).
- J S Glasby, *The Dwarf Novae* (1970).
- J S Glasby, *Variable Stars* (1968).
- J S Glasby, *The Variable Star Observer's Handbook* (1971).
- V G Gorbatskii, *Exploding Stars and Galaxies* (1970).
- J S Hagen, *Die Veranderlichen Sterne* [in German] (date unknown).
- G H Herbig (ed), *Non-Stable Stars* (1957).
- * C Hoffmeister, G Richter and W Wenzel, *Variable Stars* (1985).
- Krakow Observatory, *Ephemerides of Eclipsing Binaries for 1992* (1991).
- B V Kukarkin (ed), *Pulsating Stars* (1975).
- * D H Levy, *Observing Variable Stars* (1989).
- P W Merrill, *The Nature of Variable Stars* (1938).
- P Murdin, *End in Fire: The Supernova in the Large Magellanic Cloud* (1990).
- P and L Murdin, *Supernovae* (1985).
- F Palmer, *Studies in Irregular Variable Stars* (1939).
- * C Payne-Gaposchkin, *The Galactic Novae* (1957, 1964).
- * C Payne-Gaposchkin, *Stars and Clusters* (1979).
- C Payne-Gaposchkin, *Variable Stars and Galactic Structure* (1954).
- * C Payne-Gaposchkin and S Gaposchkin, *Variable Stars* (1938).
- C Payne-Gaposchkin and S Gaposchkin, *Variable Stars in the Small Magellanic Cloud* (1966).
- * J R Percy (ed), *The Study of Variable Stars using Small Telescopes* (1986).
- * M Petit, *Variable Stars* (1982).
- A G Petschek (ed), *Supernovae* (1990).
- J Plassman, *Untersuchungen uber den Lichwechsel des Granatsterne Mu Cephei* [in German] (1904).

To borrow books by post you have to be a BAA member and you have to be living in the UK. You will be required to pay for the postage and insurance both ways. This should only amount to a few pounds. The insurance for the return is obtained by filling out a Compensation Fee for Parcels form when you hand over the parcel at the Post Office. You can borrow two books at a time, for a period of up to one calendar month. The library closes for the month of August and new loans cannot be started between the end of June and the start of September.

If you are interested then write to the Librarian, British Astronomical Association, Burlington House, Piccadilly, London, W1V 9AG, giving your name, address and your BAA membership number (if known). For each book (up to two at a time), you should give the name of the author, the title and the date of publication. For £2.50 you can also get a copy of the library catalogue.