



The Variable Star

OBSERVER

Number 14

August 1992

Monthly

Editor: Tristram Brelstaff, 3 Malvern Court, Addington Road, Reading, RG1 5PL. Telephone: 0734-268981

Subscriptions: If you live in the UK and would like to receive the VSO each month then simply send six stamped, addressed envelopes to the above address. Please use stamps marked '1st' or '2nd' as these are not affected by rises in postal rates. If you live outside the UK then please write to the editor and something will be arranged.

A Spurious Variation of P Cygni

By Tony Markham

In early and late 1979, my estimates of P Cygni were typically 4.9/5.0, whereas during the summer of 1979 they were 5.2/5.3. Typical estimates in subsequent years were 4.8/4.9 in 1980, 4.9 in 1981, 5.0 in 1982, 5.1/5.2 in 1983, 5.2 in early 1984, 5.3 in late 1984 and 5.2/5.3 thereafter. The means of estimates (including my own) published in TA in the period 1979-87 did not show these variations, being 4.8/4.9 in the early years and around 5.0 in the later years.

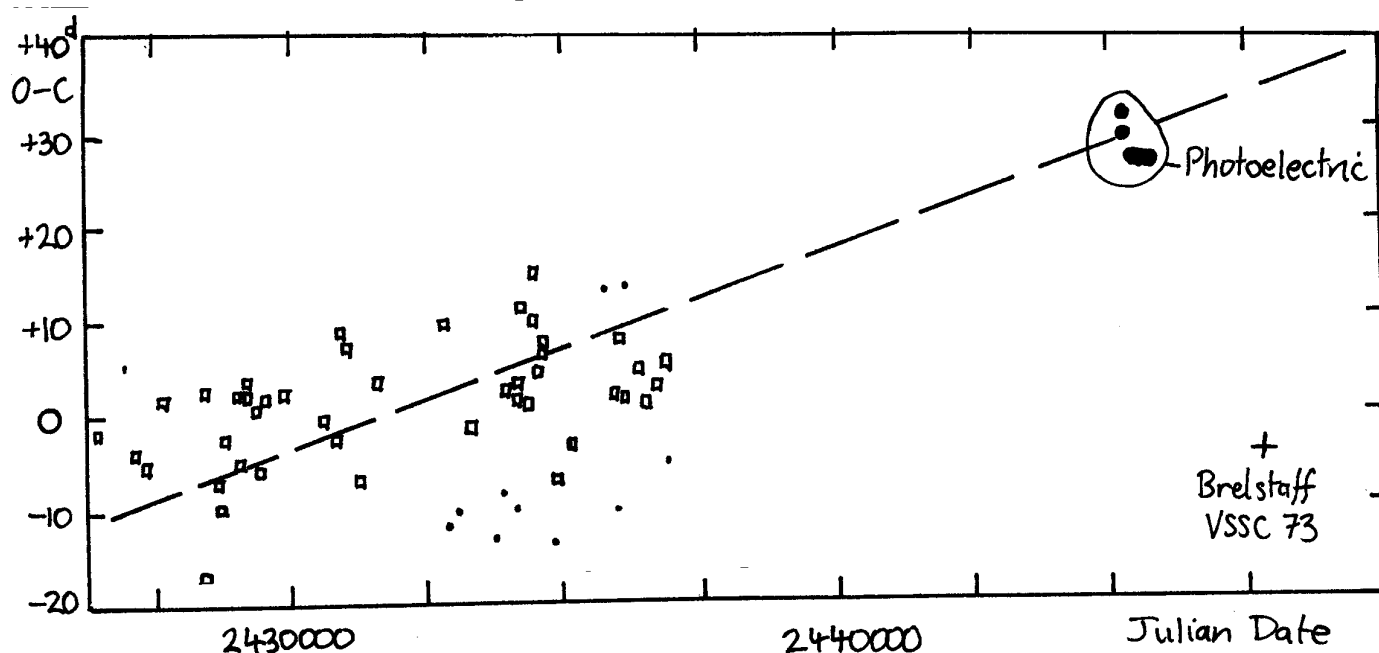
Why was there such a discrepancy? It is unlikely to have been due to the colours of the stars - P Cygni is of spectral class B; the comparisons used, '50' and '55f', are of spectral class A. An alternative possibility would involve some change in my eyesight but this would not realistically explain the 0.3 mag temporary fade during the summer of 1979. However, the estimates of summer 1979 were made from Aike, East Yorkshire whereas the other 1979 estimates were made from Blackford Hill, Edinburgh, suggesting that the observing site used may have affected the estimates. This does not seem to be the full explanation, however, since it does not explain the 'fade' up to mid 1984 while I was still making the estimates from Blackford Hill, albeit from several other locations on the hill. It also does not explain the lack of variation in my estimates since 1984 despite these being made from four different parts of England.

I suspect that the main cause of the 'variations' has been the orientation in which the field of P Cygni has been viewed. Observing from a 'flat' site, it is straightforward to ensure that the field is always viewed in approximately the same orientation - from a hillside this is not so easy. I normally view the field with P approximately above comparison '50' and the estimates are typically 50-2, 55f+2. If I view the field with P below '50', the estimate is 50+2. With P to the right of '50', the estimate is 50+1. Thus I can see apparent variation in the reduced magnitudes of 0.5 mag merely by changing the orientation in which I view the field. My recollection of the observing sites used on Blackford Hill at different times seems consistent with this explanation.

This is of course an example of a position angle effect. Normally, position angle effects are associated with spurious periods of around a year. The above example shows that this is not always the case.

HP Lyrae Revisited
By Tristram Brelstaff

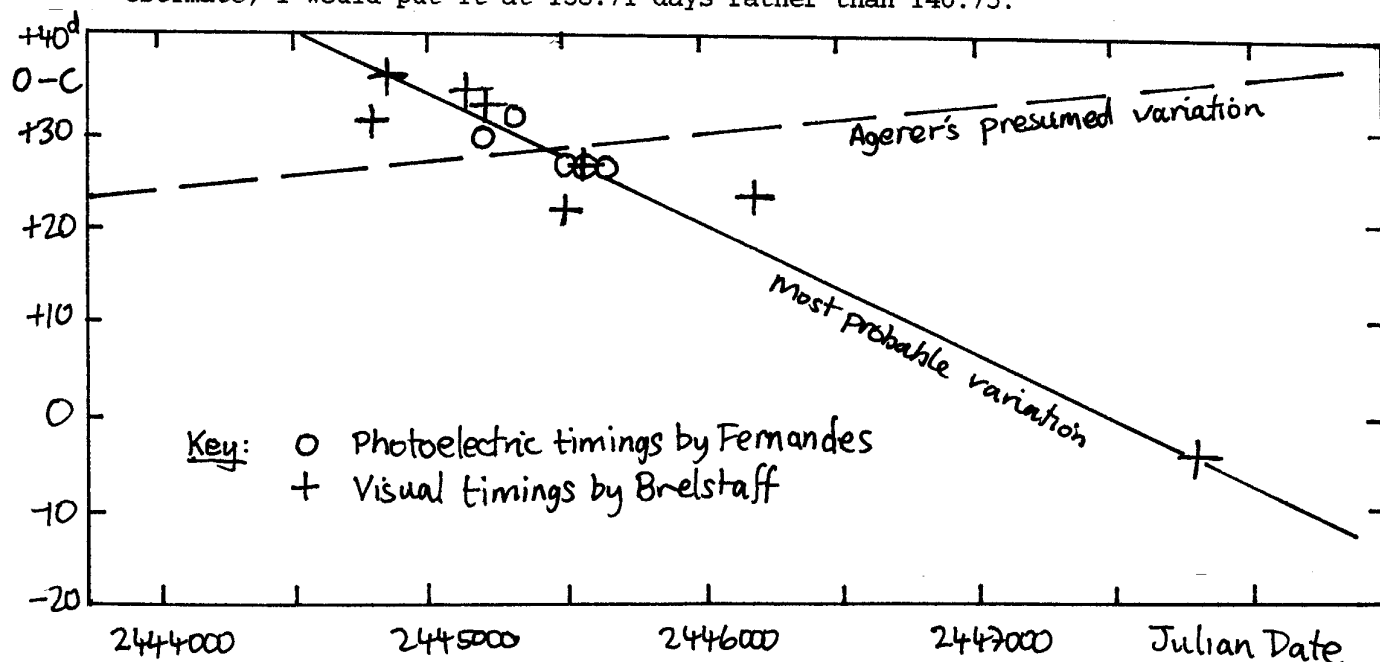
Recently John Isles sent me a copy of a letter he had received from Franz Agerer, a German astronomer, who has been constructing a database of timings of eclipsing binary minima. With this letter there were several O-C diagrams for various stars. (An O-C diagram is a graph of the difference between the observed ('O') and the calculated ('C') times of minima against time. These can be used to show up period changes in these stars.) Anyhow, among the O-C diagrams from Herr Agerer was one for HP Lyrae, an old favorite of mine. According to the General Catalogue of Variable Stars, HP Lyr is a Beta Lyrae type eclipsing binary with a range of 10.5 - 11.0 mag and a period of 140.75 days, unusually long for a Beta Lyrae star. Back in VSS Circular 64, I published an article summarising my own observations which showed that there was something wrong with the GCVS period and suggested that it might be nearer to 138 days. Unfortunately, at that time, my observations covered too short a time-span to allow any firm conclusions to be drawn.



However, the reason that Herr Agerer had sent the diagram to John was that it contained one, apparently discrepant, point which was derived from a timing made by me in 1989. Its O-C differed by over 30 days (a huge amount) from a the O-C's of a series of photoelectric timings made in 1982-83. My first thought, like John's, was that this was a clear demonstration of the poor quality of my visual observations - I had been 'found out' by the photoelectric photometer! I was rather disappointed because I had spent quite a lot of observational and analytical effort on HP Lyrae and I had thought my results on it to be some of my better ones. I started to console myself with the thought that it did have a rather small amplitude, after all, and it wasn't a particularly bright object, anyway.

Then I noticed that Agerer's diagram did not contain any of my earlier timings of HP. John must have sent him a pre-print of the 1989 timing list, which was to appear in VSSC 73, but Agerer had, apparently, not seen the earlier timings of HP which were published in VSSC's 59, 60 and 64. I was curious to see how these fitted in on the O-C diagram so I looked them up. I also remembered that the photoelectric timings of HP Lyrae had been made by a certain M. Fernandes and had been listed in the Krakow Yearbook a few years ago. Now, my copies of the Krakow Yearbook from before 1987 are still in a box in the attic of my parent's house, so they weren't immediately to hand. Then I remembered that Melvyn Taylor has been receiving the Yearbook for even longer than I have (indeed, it was him who first told me about it). So, to save my aging parents from having to go up into their attic, I phoned Melvyn and explained to him what I was after. A few minutes later, he phoned back with the details of Fernandes' timings.

A little calculation soon revealed that, far from contradicting my observations, Fernandes' timings actually confirm them. The following diagram shows that, instead of slowly increasing over the past few years, as Agerer had assumed, the O-C has decreased rapidly. That is to say, the period must be quite a bit shorter than that listed in the GCVS. As a rough estimate, I would put it at 138.71 days rather than 140.75.



It is harder to see how the earlier points on Agerer's diagram can be reconciled with my results but, from the large scatter of the former, it seems possible that these are not true timings of minimum but are just the times of single photographic plates on which the star appears faint. In view of the small amplitude of the star, and the inaccuracy of photographic photometry, this type of timing might not be very reliable. Anyhow, I have sent off to the RAS Library for photocopies of the GCVS source paper for this star to see if the discovery observations can be made to fit the new value for the period. Although my observations are not yet completely vindicated, I feel a lot happier than I did when I first looked at Herr Agerer's letter!

Glimpses

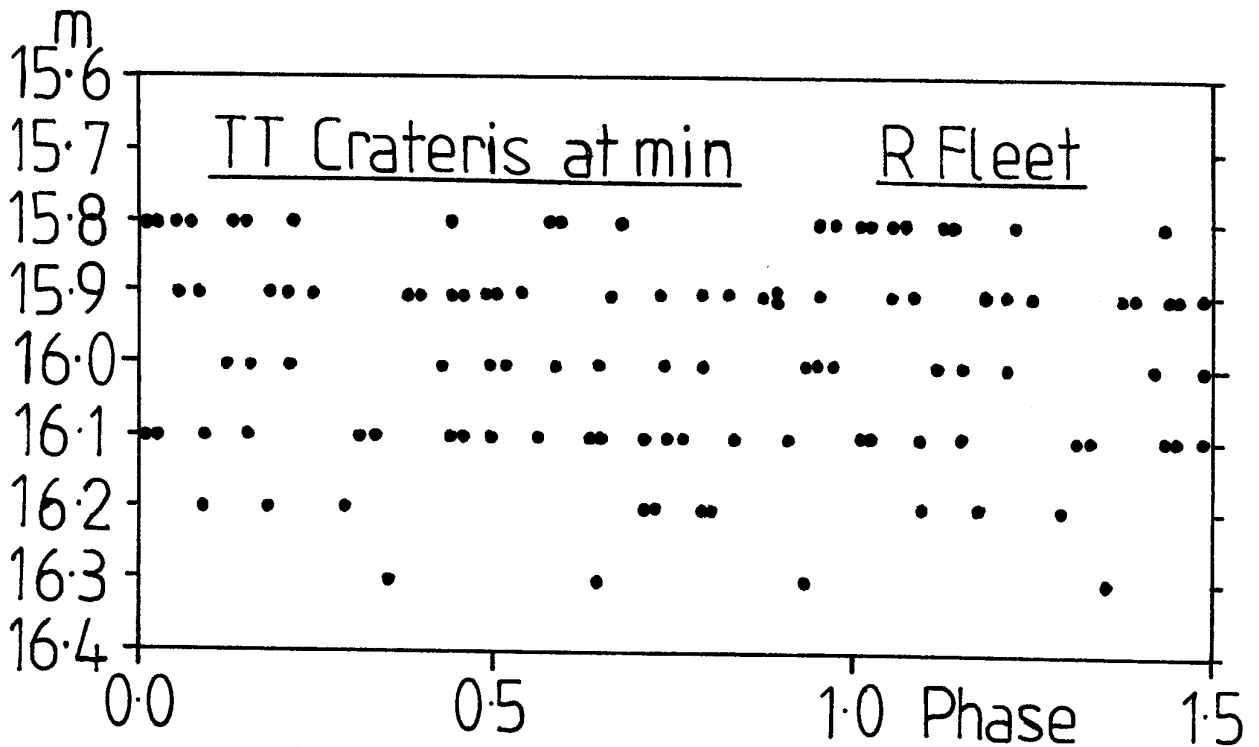
Chris Washington, of Reading, writes: "As V Cyg slips out of reach of my 4-inch refractor (last spotted at 12.2m and fading), I've ordered a long-focus 8-inch Dobsonian (f8, tenth-wave optics) in search of similar contrast to my refractor. It should be interesting having to memorise all the star fields in reverse (the 4-inch has an excellent multi-coated diagonal)."

Chris adds: "I am writing regularly to the young Russian observer [Dmitry Kazansky] whose letter you printed in the VSO early this year. He observes from the 5th-floor balcony in a tower block with an 80mm single-element (!) refractor. He says that, through it, the bright stars are nice colours and the fainter ones all look like Messier objects!"

A few days ago I received a note from Krakow acknowledging receipt of my subscription to the 1993 edition of the Krakow Yearbook. The extent to which inflation has hit Poland can be judged from the 3500 zlotys-worth of stamps on the envelope. If my memory is right, a few years ago the Yearbook itself cost only 150 zlotys.

Bill Worraker has been making observations of V841 Oph (Nova Ophiuchi 1848) at minimum and has found that one of the comparison stars seems to be variable. Apparently, the variability of this star has been noticed

before. According to an article on V841 Oph by Robert McNaught (*The Astronomer* 20, 175-176, 1983) Barnard, Steavenson and Webbink all independently mentioned the possibility. The star is marked as comparison star C on McNaught's chart and has a magnitude of about 12.5. Rather surprisingly, in view of the observing reputations of Barnard and Steavenson, the star is not even mentioned in the New Catalogue of Suspected Variable Stars. Identifying the type of variability, if any, could be quite useful because if it was periodic (ie: was an RR Lyrae star or an eclipsing binary) then it might be possible to correct Steavenson's original observations which rely heavily of C. Bill would be interested to hear from anyone able to help him observe this star. If you think you can make reliable estimates to mag 12.5 at -13 degrees declination then you should write to him at 27 Freeman Road, Didcot, Oxfordshire, OX11 7DD.



TT Crateris Revisited

Earlier this year, Richard Fleet went back to his former home in Zimbabwe for a month's holiday. While he was there he made a series of observations of 'his' dwarf nova, TT Crateris, at minimum in order to see if he could detect the variations reported by Szkody *et al* (see VSO 10). The accompanying light-curve shows all of his estimates folded on the 0.30428-day period. Zero phase corresponds to 1992 April 0.0d UT. The estimates were made on 14 nights between April 22 and May 8.

You can judge for yourself whether you believe he has detected the sinusoidal variations but, to my eye, the dips at phase 0.3 and 0.8 seem significant. We will have to wait until the elements have been reliably determined to check if the minima really were occurring at these phase. The scatter in the magnitude estimates is really quite small considering the faintness of the star, even in Richard's 52cm reflector.