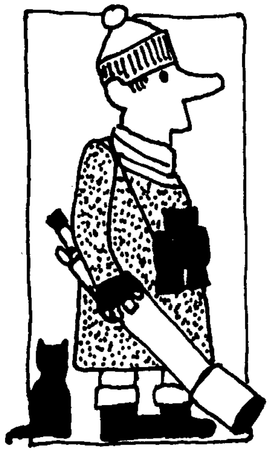

The *Variable Star* OBSERVER

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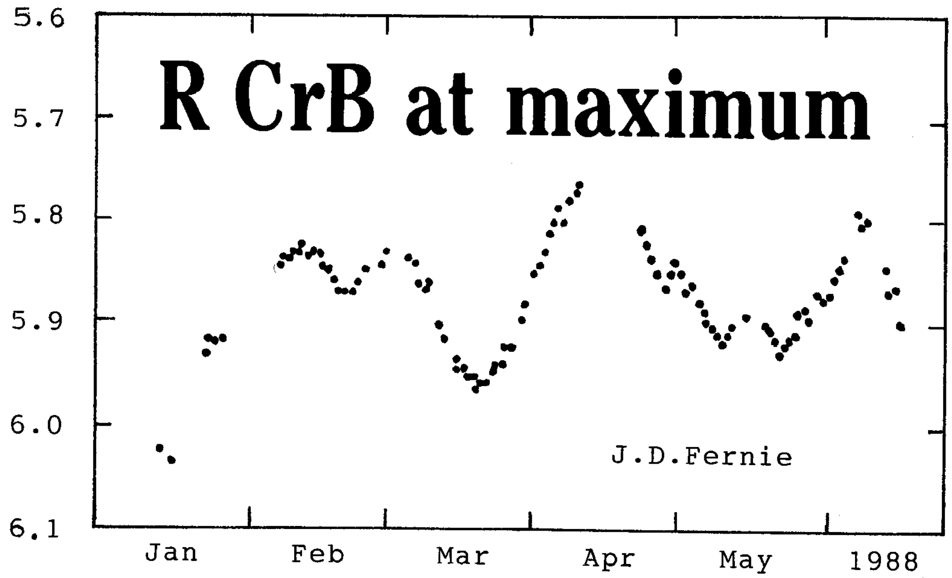

So you think R CrB is constant when at maximum?

R Coronae Borealis is quite a difficult star to make accurate visual estimates of when it is at maximum. The VSS sequence is not ideal and probably contains an error near the top end (see VSO 10). This difficulty has, apparently, lead many observers to record the star as being constant when, in fact, it has varied noticably. Observers frequently fail to notice the onset of a major fade (see VSO 6, page 3 and JBAA **83**, 368-375, 1973). They also fail to record the slight fluctuations which occur in the brightness of R when it is at maximum. The accompanying light-curve shows some photoelectric results published by J.D.Fernie (Publ. Astron. Soc. Pacific, **102**, 162-165, 1990). This shows the pulsations which are characteristic of all R CrB type stars at max. These pulsations might be detectable in visual observations, if they were made with care. Even if they are not directly detectable, they should contribute to the scatter of each observer's observations. If we assume that each estimate is accurate to $\pm 0^{m}.1$ (rather optimistic in this case) then the $0^{m}.2$ range in R should give an overall observational scatter of $\pm 0^{m}.4$ in the estimates. So, an observer should not assume that, just because R is brighter than comparison star D ($6^{m}.28$), it must be at $5^{m}.9$!

A Period Change in VW Cephei

In last month's VSO, I mentioned that Roger Pickard had won a prize in the Stargazers' Trust competition. As it happens, he very nearly didn't make the closing date for entries. He had decided, a while ago, to completely rebuild the mounting of his telescope to make it suitable for photoelectric photometry. He completed this just a few weeks before the competition deadline. He then decided to time the minimum of an eclipsing binary and submit that as his entry. He selected the W UMa-type star VW Cephei and managed to obtain his timing only a week or so before the date. He wrote it up and sent it off and it got there just in time.

Somehow, Roger's timing came to the notice of Chris Lloyd, a professional astronomer at the Rutherford Appleton Laboratory, who recognised that it implied that a large period change must have occurred in VW Cep in the past few years. Chris appealed for more timings of VW Cep in order to check on this period change. Roger and another amateur photoelectric photometrist, John Watson, managed to get several more timings over the next few months and these confirmed the change. Chris analysed these new timings and all available timings of VW Cep going back to the first half of this century and was able to show that major shortenings of the period occurred in 1943, 1960 and 1980. The latest of these is the one that Roger's observations had revealed. Apparently, it had otherwise passed largely unnoticed. The following elements satisfy the recent timings:

$$\text{JD min} = 2446822.5233 + 0.2783099 \times E$$

Papers describing this work have been submitted for publication in the Information Bulletins on Variable Stars and the Journal of the BAA.

Observer Profile - The Reverend Giffard Thompson

So far in this series, only relatively experienced variable star observers have been the subjects of profiles. This month I break with tradition and give a profile of a complete beginner. Sometimes it can be good for us more-experienced observers to be reminded of the enthusiasm and wonder that we felt ourselves when we were beginners. In another departure from tradition I have allowed Giffard to speak for himself, through extracts from his letters:

23rd February 1992

"Rosemary Naylor has just sent me a complimentary copy of the JAS News Circular 166, Nov 26 1991, and as a consequence I've been able to begin studying Delta Cephei, thanks to John Isles' section on variables. This has whetted my appetite for more naked-eye variables to observe and chart. I live in a monastery and so don't have access to the relevant catalogues and literature. I wonder if you could help me?..."

8th March 1992

"Thanks ever so much for your package of information. These were exactly the sort of details I had in mind, especially the explanation of how to plot short-period variables. I just about manage to tread water with mathematics but I can understand the formulae well enough to translate my random estimates of Delta Cephei into a respectable light-curve. It's rather exciting actually...

... For a few years now I have been getting by with a small pocket atlas - Collins' Gem 'The Night Sky' by Tirion [These Collins' Gem Guides are <u>tiny</u>, they are little bigger than a match-box! - Ed]. But last year I splashed out and bought his Uranometria Vol 1. As a monk in a monastery I don't have many possessions and so I treasure what little amount of astronomical charts and catalogues I can get hold of...."

22nd March 1992

"[Since the previous letter he has got hold of a VSS Binocular Chart booklet and a pair of binoculars]...These past few weeks, since your last letter, have been very cloudy. However, I have managed to follow Zeta Geminorum and Algol. There's a chance now of my being able to see the Nova in Cygnus. Melvyn Taylor says it was at 6^{m}1 on the 14th of this month. Rosemary Naylor told me about it first, at the beginning of the month but I never fancied my chances of seeing it, even when it was visible to the naked-eye. Now my chances have picked up. It would be an excellent first object for the 8x40's....

... I feel I should tell you a few things about myself. I'm 28 years old and a novice monk in a contemplative religious order. My interest in astronomy dates back to childhood, though I became seriously interested when I was working as a farm labourer after leaving school. It was the excellent dark country skies that did it. And, again, around the time of Comet Halley, when I observed it as a member of the university astro 'soc' (the 'King of Soc's'!). On graduating (I was reading philosophy at York), I entered the monastery here as a postulant and soon after was ordained as a monk. We're fortunate in being situated in a remote, uninhabited moorland valley in the south of Northumberland. The only light pollution is a faint band near the eastern horizon - Newcastle - which in no way impedes observing. I've managed to see the full 3^{o} of M31's span with a pair of opera glasses..."

5th April 1992

"... After vespers the other night I managed to creep out of the dormitory to try out the 8x40's. I found the CH Cygni field OK but I don't think I made out CH itself. I've heard so much about it that I fancied my chances.

I wonder what the the VSO audience will think about this Observer Profile?(I'm just thinking out loud here) METAPHYSICS and ASTROPHYSICS. Umm. Anyway; there goes the bell for evening meditation. Thanks once again."

<u>Observing from Botswana</u>

The following has been extracted from a letter from Colin Henshaw.

"... At this end, the observing continues to be routine, the only things of note are the slow rise of AG Carinae and VY Canis Majoris. I am in the middle of observing the 1992 eclipse of BL Telescopii but I am not being as successful as I was in 1985 when I last observed it. I managed to secure three observations on the decline but full Moon and bad weather coincided with the minimum. My latest observation seems to indicate it is on its way up again. An appeal for observations went out in the latest edition of Southern Astronomy, published in Australia, so I will also contribute my observations to them to help them to build up a more complete light-curve. Once the eclipse is over I will send the observations to John Isles and he will still be able to estimate the time of minimum, even though I didn't actually see it."

"A few months ago I obtained a wide-angle lens in South Africa and I will be able to use it on photography of the Milky-Way and the Zodiacal Light. It 'saw first light' earlier this month, using 1000 ASA film, and I am very much looking forward to seeing the results. I have also taken a photo of the field of V854 Centauri [A recently-discovered R CrB star - Ed] which is once again in minimum. I hope to build up a complete photographic atlas of the southern sky, while the wide-angle shots will be helpful in my ongoing Milky-Way project, which is now 20 years old. I will wait for an opportunity to photograph the northern Milky-Way sometime when I come home. I may be going back to South Africa later next month, and if I can pick up a second-hand 135 telephoto, I will do so. My next lens will then be an all-sky fish-eye lens."

"One aspect of photography I am thinking of developing is the recording of variable stars at different stages in their light-curves. This was prompted by my photos of Supernova 1987a, five years ago, and of pictures of Horologium with, and without R Horologii. Other targets will be Mira, R and S Carinae, R Centauri and, of course, BL Telescopii."

'Glimpses'

Last month I went along to the Cosmos II meeting at Middlesbrough and there I met **Michael Houchen**, an amateur photoelectric photometrist who lives in the same town as my parents. Mike said that he had been taking part in the campaigns on Zeta Aurigae type binaries organised by Dr Roger Griffin. You will probably have already read of the **Gamma Persei** saga and of Dr Griffin's exploits at Mount Palomar. Well, Dr Griffin had left instructions that if any of the photometrists detected any fade then they should phone him direct at Mount Palomar. Mike noticed the star slightly fainter than usual on one night but the difference wasn't large enough for him to say that it had definitely faded, so he waited till the next night. Then the star was clearly fainter, about $0^{m}.3$, so he plucked up his courage and dialled America. However, he just could not get any answer. Then he tried phoning Dr Griffin's home base at the RGO in Cambridge (England), but he only got through to a caretaker who wasn't able to help. Fortunately, everything was sorted out on the following day when he managed to get through to one of Dr Griffin's colleagues at the RGO. Apparently, the Mount Palomar number that he had been given had recently been switched over to allow computer access only!

On the way back from Middlesbrough, I dropped in on **Melvyn Taylor**. He was in the middle of plotting a light-curve from the 1991 VSS observations of **R Scuti**. This was in response to a request from Dr Shenton, of Keele University. Apparently the Keele group want to be able to be able to compare their infra-red and spectroscopic results with the visual variations. Melvyn pointed out that the coverage was rather poor in the first half of the year, the first estimated being as late as March. Maybe bad weather had something to do with it, but if anyone is looking for a worthwhile project then concentrating on getting early-morning light-curves for RV Tauri variables would be a good one. You could follow R Scuti from January, through the spring until the 'evening-only' observers join in, in the early summer. Similarly you could follow AC Herculis through the spring, or U Monocerotis through the autumn. In this way you could record lots of interesting variations which currently are either being completely missed or else only observed very sketchily. A planisphere and a reliable alarm clock will be useful to ensure that you wake up at the right times.

Melvyn also mentioned that **Dave McAdam** and his computerisation helpers are now geared up to produce **light-curves from the VSS observations** as they come in. They are planning to do this with the observations from the first half of this year. VSS observers should therefore submit their observations as soon as possible after the end of June. If you delay too long, they might not be included!