

# The *Variable Star*

## OBSERVER

Number 10

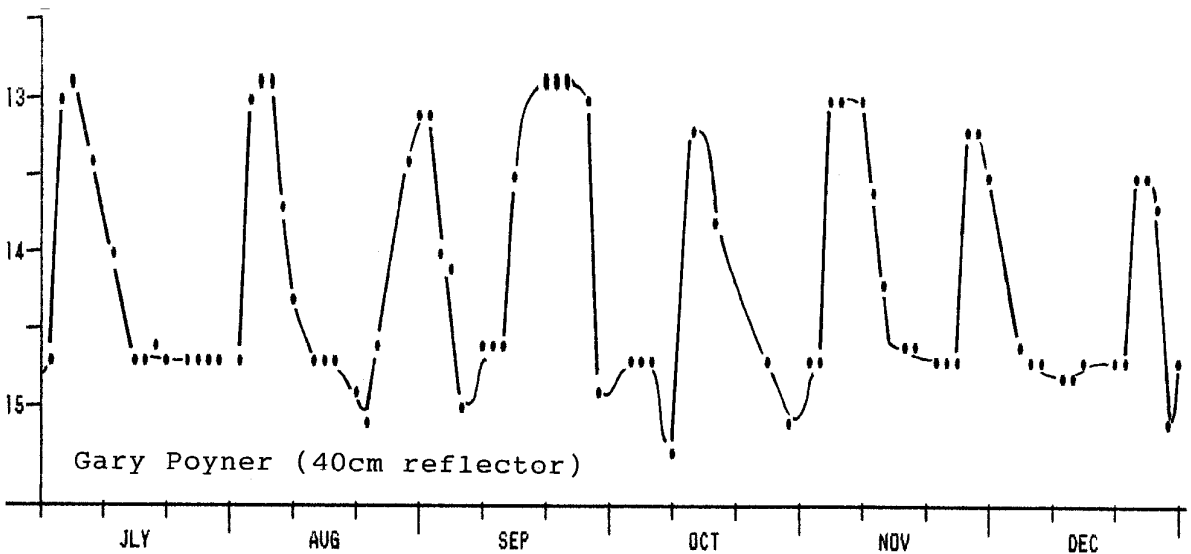
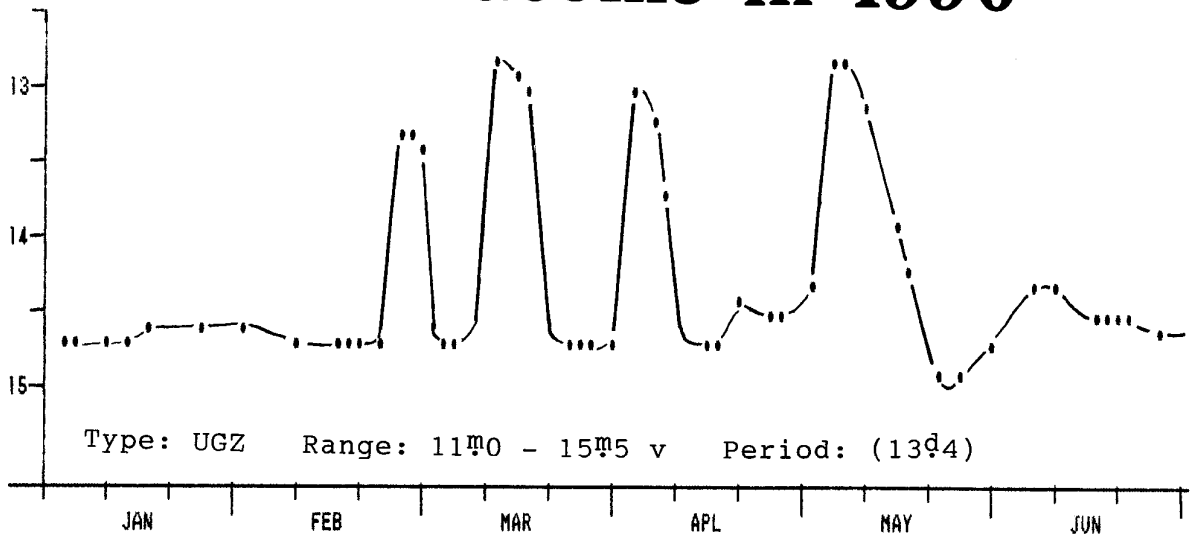
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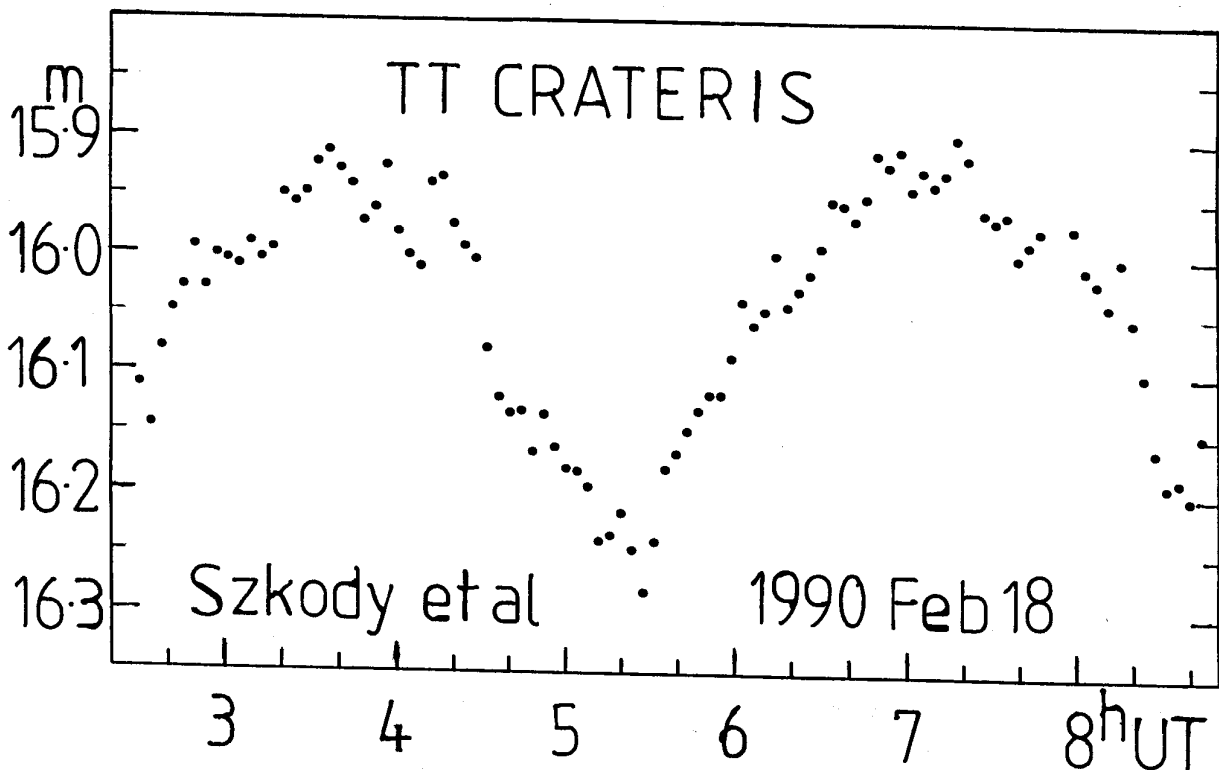
## AB Draconis in 1990



Professionals and Amateurs 1 - TT Crateris

TT Crateris is a dwarf nova which was discovered by Richard Fleet in 1986 when he was still living in Zimbabwe. He first noticed it when he found that one of the comparison stars that he was planning to use for Halley's Comet was double. Further observations showed that one of the pair was varying between mag 13 and below mag 15. Richard's observations eventually led to this star being recognised as a dwarf nova.

Recently, Richard was surprised to receive, via Guy Hurst, a pre-print of a paper on TT Crt which was due to appear in the Astrophysical Journal, the most prestigious of the professional journals. The paper was written by a group of five American astronomers led by Dr Paula Szkody of the University of Washington, Seattle. In it they report CCD photometry and spectroscopy of TT Crt at minimum. TT is apparently an unusual dwarf nova in that the lines of the cool secondary component are clearly visible in the spectrum. This makes it relatively easy to derive the ratio of the masses of the components. In most systems the light from the accretion disk swamps the light from the secondary. The secondary is probably a K5 or M0 dwarf, but it does show some peculiarities. The total light of the system at minimum shows cyclical variations with a period of 0.30428 days (or possibly 0.309 days) and an amplitude of 0<sup>m</sup>35V. This is probably ellipsoidal variation resulting from the secondary being very distorted by the gravitational pull of the white-dwarf primary. The amplitude is rather large for an ellipsoidal variable and the system must be pretty close to being an eclipsing binary, and the white dwarf must be rather massive (at least 0.8 Solar masses).



From the point of view of amateurs, however, the most encouraging thing about this paper is that the authors give credit to Richard for the discovery and refer to his observations. They also quote the position of the star which was measured by the late Alan Young and which was published in an IAU Circular by Guy Hurst.

## Professionals and Amateurs 2 - Nova Herculis 1991

In a recent issue of Nature, H.M.Lloyd and seven other astronomers from Lancashire Polytechnic, the University of Leicester, and the Max Planck Institute in Germany, report the first ever detection of X-rays from a classical nova near maximum (Nature, 356, 222-224). On March 30th, only five days after maximum, they used the Rosat satellite to detect X-rays from Nova Herculis 1991. Previously people had looked for X-rays from V1500 Cyg (1975), NQ Vul (1976) and PW Vul (1984) when they were near maximum, but had failed. The standard models of classical novae suggest that X-rays should not be seen until much later in the outburst. Lloyd et al seek to explain their results as being caused by the nova ejecta interacting with pre-existing material closely surrounding the nova. The paper includes an optical light-curve based on amateur visual estimates published in the IAU Circulars. There is also a "thank-you" to Denis Buczynski for informing them so quickly of George Alcock's discovery.

## The Return of "Reds" to the Astronomer

It is good to see the return of regular reports on red variables (ie: semiregulars and Mira stars) to the pages of the Astronomer. The February issue of TA contains, as well as the usual monthly report on eruptive variables, a two-page report on semiregular variables. This summarises observations of 50 binocular semiregulars made between May and November 1991. A similar report on Mira stars should appear in a future issue.

The TA variable star editor, Tom Saville, is to be congratulated on this move which should encourage existing observers of these stars and maybe even attract some new people to follow them. I strongly recommend that all TA subscribers who observe these stars support Tom by sending him their observations at the end of each month. Just because semiregulars and Mira stars aren't "trendy" doesn't mean that they are not important and that there is no interesting science to be done on them!

## Variable Star Observers win Prizes!

The results of the Stargazers' Trust competition provide confirmation, for those who need it, of John Isles' claim that the BAA Variable Star Section is "doing work of greater scientific value than the whole of the rest of the BAA lumped together". The competition was to find the most valuable research carried out by amateur astronomers over the past two years. The first prize of £1000 (!) was awarded to J.J.Howarth and his helpers at Crayford Manor House Astronomical Society for their work on W Cygni (see JBAA, 101, 101-106, 1991). Equal second was Roger Pickard, also of CMHAS, for his work on photoelectric photometry. Further down the prize list is a Natasha Ley for her "variable star work". Source: Neil Bone's society news page in Astronomy Now.

## An Anomaly at a Critical Point in the VSS R CrB Sequence By Tristram Brelstaff

Back in the mid-1970's, when I was a regular observer of R CrB, I began to feel uneasy about estimating it when it was at maximum. Eventually, I tracked down the cause of this feeling to the fact that comparison star C appeared to be about  $0^m.4$  brighter than listed on the VSS chart. Column 3 of the accompanying table shows the VSS magnitudes for the stars at the top of the R CrB sequence. Star C is listed at  $5^m.94$  but, to me, appeared to be  $5^m.5$ . Observ-

