BRITISH ASTRONOMICAL ASSOCIATION

VARIABLE STAR SECTION

CIRCULAR No. 40 1979 MAY

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Absence of Director The Director will be abroad, attending a conference and on holiday, until the middle of July. Any urgent correspondence requiring attention before that date should be sent to the Secretary. This applies especially to the observations requested in the next note.

Observations of eruptive stars required Mayo and Jones (Royal Greenwich Observatory) are undertaking a programme of observation on certain eruptive variables, which will be monitored from Teneriffe in August this year. In order to assist in effective planning of the programme, early information is required on the previous behaviour of the stars to be examined. Observers are consequently asked to estimate the following stars as often as possible during the next three months:

RX And, SS Aur, AB Dra, AM Her, TZ Per (Z Cam stars);

UU Aql, SS Cyg, AY Lyr, RU Peg, UV Per (U Gem stars);

GK Per, WZ Sge (recurrent novae).

Particular priority should be given to SS Cyg and AY Lyr, the latter star khving just been positively identified as an X-ray source. It would be greatly appreciated if any observations of maxima are reported immediately. (They may be telephoned to Storm Dunlop.) Charts are available from Rodney Lyon.

Nova Cygni 1978 and Nova Serpentis 1978 It is known that some observers have made observations of Nova Cyg during 1978, and have not submitted these for analysis. Some persons may have been discouraged by the request to submit Nova Cyg observations on the trial computer forms. PLEASE send in any outstanding observations NOW - THEY ARE URGENTLY REQUIRED. A similar request applies to observations of Nova Ser 1978, which was badly covered - even single estimates would be of value. Observations for both objects, on old forms, computer forms, hair powder bags, etc. to Storm Dunlop, please.

Computing We would like to thank all observers who did submit their Nova Cyg 1978 reports on the trial computing forms and for all their comments. It is fully appreciated that the forms were not ideal, but we now have a good idea of the changes which are required. We hope that observers will find the final version as easy as (or easier than) the old forms to complete. The actual computing trial has been delayed for various reasons, but should go ahead shortly. Our aim is to ease the very heavy burden of checking which the Secretary has to carry out at the moment, and to make observations readily available quickly, as well as helping with the Section's large backlog of unpublished material. More about this project in a later Circular.

X Per In IAU Circular 3352, Dorren, Guinan & McCook report results of an examination of photoelectric observations of this star which is identified with the X-ray source 3U 0352+30. (See VSSC 20 1, 21 6 & 34 1.) They find three light increases of ~0.6 mag at approximate 6-year intervals. This is somewhat similar to much earlier visual results reported by Kempf and Müller in Astr. Nach. 202 330 (1916) where there was the same

pattern with a period of ~7 years. The present authors record the latest maximum as occurring in early 1978 (V = 6.33), since when the brightness has been declining (1979 Apr 7.03, V = 6.77) and is now at its lowest since 1904 when it was 6.90. The decline is expected to continue into 1979, levelling off at about 6.9. The duration at minimum may continue for 3 years. The behaviour is similar to that of a symbiotic star or a slow recurrent nova. They suggest that the observations are consistent with a binary system with O9V and neutron star components, with orbital period of ~581 days.

Z Camelopardalis Len Brundle was the first to report that Z Cam had finally ended its phenomenally long standstill. He found it <11.9 on 1979 Apr 11 (JD 2 443 975), and <12.5 on Apr 17 (2 443 981). Subsequently, AFOEV Liaison N^{o} 47 reports positive observations on Apr 11 at 12.5 by Vedrenne, and Apr 13 (2 443 977) at 13.6 and Apr 19 (2 443 983) at 13.9 by Verdenet. Other observations show that the decline began after Apr 7 (2 443 971), so as standstill began about 1976 Jun 20 (2 442 950), the duration was about 1020 days. This greatly exceeds the previous record of 679 days between 1948 Mar 30 and 1950 Feb 7 (2 432 641 - 2 433 320). The star's behaviour this time was very similar to that of the typical standstill shown in JBAA 89, 2 page 180 (1979) as observations by Brundle, Bortle and Munford indicate that it rose immediately to maximum ~10.4 about Apr 29, while the last observation to hand (Saw) gives it back at 13.5 on May 12. This maximum was a 'long', in accordance with the expectations noted in the Report. [Recipients of VSS Reprints will find a copy of this Report enclosed with this current Circular.] Recent observations to Storm Dunlop, please.

Supernova in M100 (NGC 4321) Several observers have made estimates of this object which was reported in TA Early Warning Circulars 35 & 36. Initial results suggest that in comparison with the sequence for AL Com, the magnitudes given in TAEWC 36 are too low by between 0.4 and 0.6 magnitude, the error increasing towards the lower end of the sequence. Observers using this AAVSO sequence are urged to make estimates of all the comparison stars so that the errors may be determined. Photoelectric estimates show a rate of decline in V of approx. 0.035 mag per day, which is typical of a Type II object. However, although the spectrum was initially blue and featureless (typical of Type II), typical Type II features, such as strong emission in Hα and Hβ and the evolution of broad emission and absorption features have not yet been recorded. This may be due to the fact that the measured expansion velocity of this object is only 3 000 km/s, compared with the typical 7 000 km/s. The situation is complicated by the fact that the object's high maximum brightness suggests a Type I supernova.

Nova-like object in Vulpecula Details of this object have been given in BAA Circular 593 and TA Early Warning Circulars 34 & 35. It appear to be a very slow nova of more extreme type than even DO Aql and HR Del. IAU Circulars 3344 onwards announce that many photographic images have been identified reaching back to 1898. The object generally remained at ~16.0 to 16.5 pg between 1898 and 1956, reaching ~15 on occasions (notably 1926 and 1955). Palomar

Sky Survey plates give ~16.5 for 1951 July and ~14.5 in 1956 July. Harvard College Observatory Damon Camera patrol plates give: 1977 Oct 7, <14; Nov 2, 12.5; Dec 12, 12.5; 1978 May 31, 11.4; Jul 1, 10.9; Jul 27, 10.1; Sep 2, 10.0; Sep 25, 9.7; Oct 3, 9.8; Nov,3, 9.7; Nov 26, 9.5. There is a report of the object being fainter than magnitude 11-12 on 1979 Mar 26. Current observations suggest slow variation around 9.0 to 9.3. A chart is issued with this Circular, and all observers are urged to keep this star under close scrutiny.

Nova Search Programme Meeting The second meeting of the Nova Search Programme will take place at Earls Barton, Northamptonshire, on June 9. All Section members and other interested persons are welcome. Admission is by programme - 75p from Mrs Anne Hurst, 12 Clare Close, Earls Barton, Northampton, NN6 OPP.

A Late Note on Nova Cyg and Nova Ser 1978 We have just received a request from Dr M.F. Bode (University of Keele) for any observations of Nova Cyg 1978 and Nova Ser 1978, to be used in connection with a study of variable infrared sources. He comments that data are rather sparse at the moment. This emphasizes the point made earlier in this Circular about the importance of submitting all observations.

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