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ANOTHER SEMI-REGULAR VARIABLE IN CYGNUS

A reinspection of photometric data obtained for the investigation of galactic structure in selected regions in Cygnus (Hartl 1975) led us to the detection of an obviously new variable star. Besides 9 U and 8 V values, we derived altogether 63 B values, mainly by using the plate archives of the observatories in Asiago and Heidelberg, supplemented by a few plates recently taken in Innsbruck. The star is located at  $\alpha = 21^{\text{h}}14^{\text{m}}06^{\text{s}}$ ,  $\delta = +46^{\circ}49'51''; \pm 10''$  (1950.0). A finding chart is shown in Figure 1.

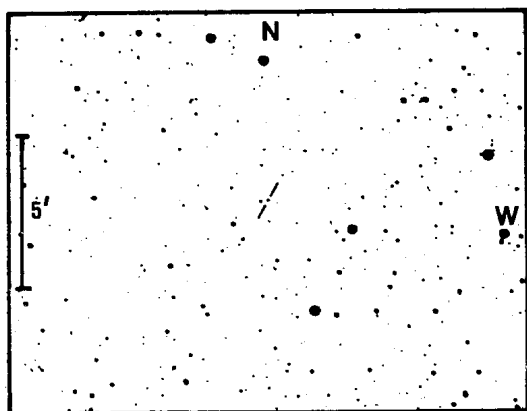
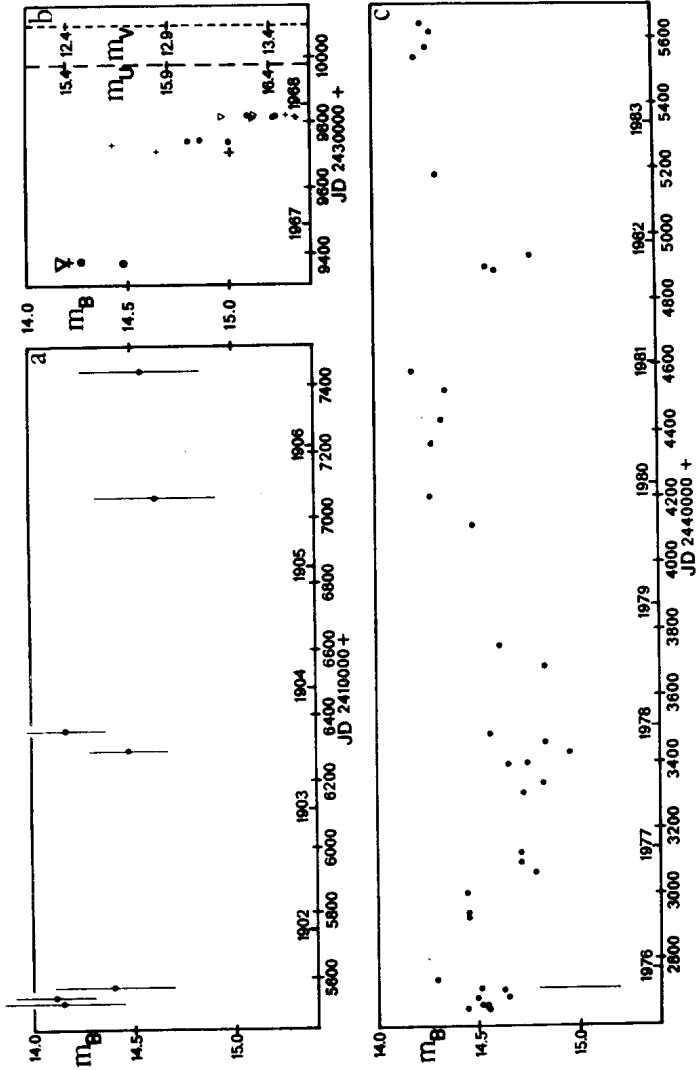


Fig. 1: Finding chart reproduced from a B-plate (103a-0+GG13), obtained with the 90-65-cm Schmidt of the Asiago Observatory.

In Figure 2, all data are given except two B values ( $14^{\text{m}}90 \pm 0^{\text{m}}.2$  in 1952-07-19 and  $14^{\text{m}}62 \pm 0^{\text{m}}.2$  in 1958-09-05). The variability of the star is evident especially in Figure 2b; Figure 2c demonstrates its long-term behaviour.



Figures 2a-c. Light curves of 3 periods. In Figures 2a,c each point represents one observation. The large symbols in Figure 2b are the mean of up to 5 values, with errors of  $0.02$  to  $0.1$ . ( $\nabla$ :  $m_V$ ,  $+$ :  $m_U$ ), the residual data in Figure 2b are accurate to  $\leq 0.2$ .

On objective-prism plates of the Asiago archives, the star could be classified as M4 - M6. In addition, we found it in a list of cool stars (Nandy and Smriglio 1970), where it is classified as M5.

The luminosity class can be determined indirectly by employing Hartl's (1975) colour excess vs. distance diagram and the extinction in the line-of-sight to the object: For several nights, we have U-B and B-V values at hand derived from plates taken within a few hours; the mean is  $U-B = 1^m.29$  and  $B-V = 1^m.95$ , respectively. U-B is a rather uncertain quantity for evaluating the extinction for the spectral type we are interested in: e.g.,  $(U-B)_0 = 1^m.58$  for M5III, but  $1^m.16$  for M6III according to Landolt-Börnstein. The usage of B-V gives  $E(B-V) \sim 0^m.2$  for an M5 or M6 star, provided it is a giant; this assumption is strongly suggested by Hartl's (1975) absorption model - according to it, a super-giant should suffer from a much higher obscuration. The observed colours also argue against a main-sequence star.

The light curve, spectral type, and luminosity class point to a variable star of semi-regular type (SRa or SRb), though we cannot rule out that it is of irregular type. Since Cygnus is one of the best studied regions of the sky and the star is moderately faint, it might be contained on a number of other plates, particularly because the famous nova Cygni 1975 is only  $1^{\circ}.4$  distant.

We are grateful for the permission to use the plate archives of the Osservatorio Astrofisico in Asiago and of the Landessternwarte in Heidelberg. This work was supported by the Austrian Fonds zur Förderung der wissenschaftlichen Forschung under project no. 4128.

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