

TWO VARIABLE STARS IN CYGNUS

by

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Abstract

The star BD +40° 3673 has been discovered to vary irregularly, and its light curve is presented. Variability of the suspected variable, S5000, is confirmed.

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This past summer at the Maria Mitchell Observatory I worked primarily on two stars in Cygnus. One of these was a new variable I discovered while comparing two plates by the positive-negative method. This method involves superimposing a negative plate on a positive plate of a different date and looking for differences in the relative sizes of the stars' images. The plates were centered on DF Cygni and were of JD 2433150.722, and JD 243389.619, about two years apart. The new variable star was fortunately bright enough to have a BD number: BD +40° 3673. Because it was so bright, I restricted my search through the plates to exposures of ten minutes or less. I had a total of 360 observations, which gave me several good light curves. The four best light curves are shown in Figure 1.

As can be seen from the light curves, at times the star appears to vary sinusoidally, and at other times it varies with no apparent pattern. Because of this, I believe it is an irregular variable, and consequently was unable to determine a period for it. It normally varies between 10^m8 and 11^m5 (pg), occasionally going up to 10^m5 and down to 11^m7 . I found three high maxima (10^m5).

The chart in Figure 2 indicates the stars I used as comparison stars for my magnitude estimates. The magnitudes of the comparison stars were found by using a flyspanker and standard magnitudes from Selected Area 38 (Pickering and Kapteyn, 1918, revised by Shapley, 1922). I was unable to find a spectral class for this star, but I did find it on the Palomar Sky Survey and the image on the red print was decidedly the larger. This gives it a color index of greater than 0.7, making it an extremely red star, probably K or M type.

The other star on which I worked was S5000 in the first Catalog of Suspected Variable Stars (Kukarkin et al., 1951). I observed it on 412 plates running from JD 2426263.582 to JD 2442634.789. On these plates the star varied from 13^m8 to 16^m3 (pg), a solid confirmation of its variability. I was unable to determine a period.

REFERENCES

- Kukarkin, B. V. et al. 1951, Catalog of Suspected Variable Stars, Moscow.
 Pickering, E. C. and Kapteyn, J. C. 1918, Annals of the Astrophysical Observatory of Harvard College, 101, xix.
 Shapley, H. 1922, Bulletin of Harvard College Observatory, No. 781, 1.

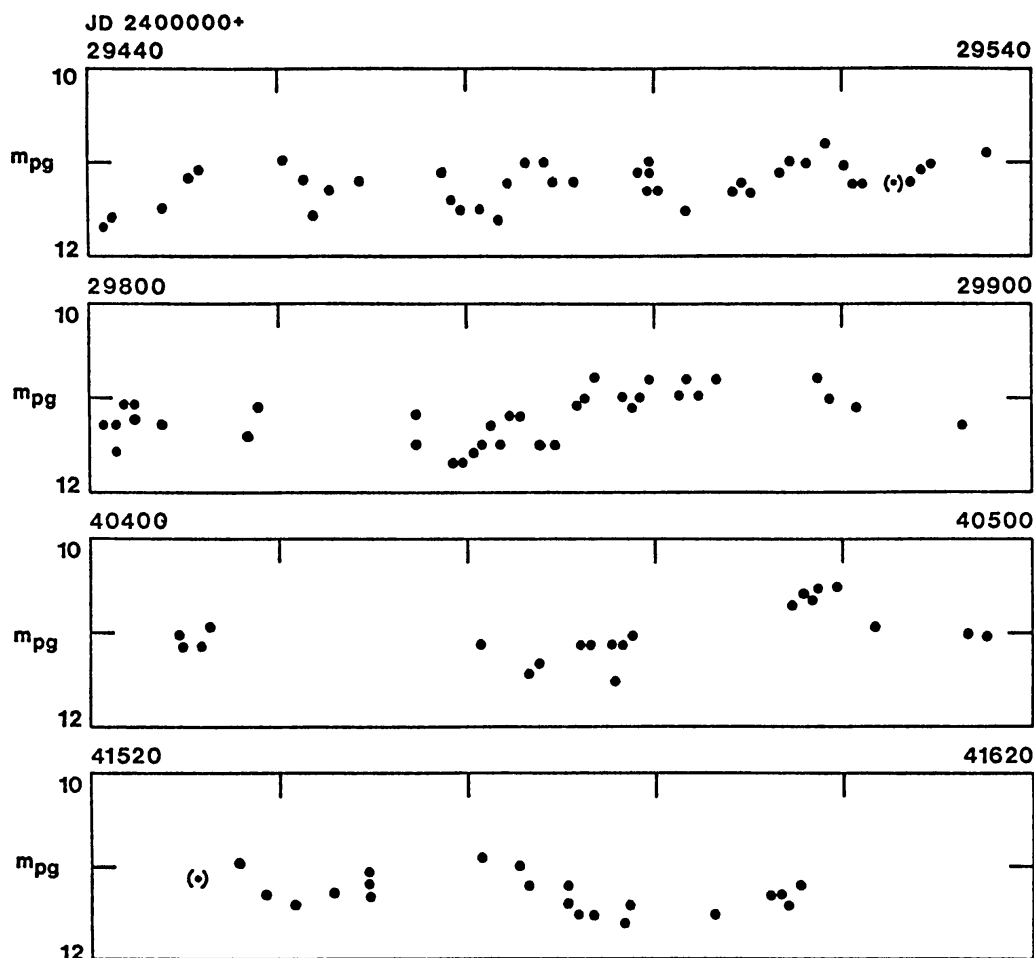


Figure 1. Segments of the light curve of BD +40°3673. Magnitude markers at intervals of one magnitude; JD markers at intervals of 20 days.

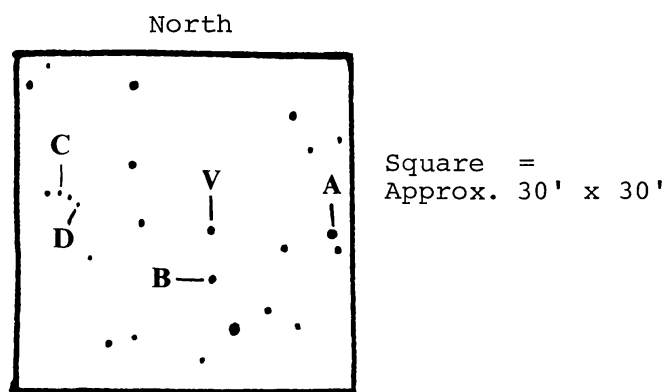


Figure 2. Finder chart with comparison stars for BD +40°3673.

Adopted photographic magnitudes:

A = 10.5 C = 11.7
 B = 10.8 D = 11.9