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A NEW VARIABLE STAR IN SERPENS

Mr. John Kirszenberg, a student at Case-Western Reserve University, has discovered a new variable star in Serpens. Figure 1 is a finding chart for the variable, whose 1900 coordinates are $RA = 18^h 14^m 9^s$, $D = -10^\circ 14'$. The discovery was made while blinking a pair of objective-prism photographs taken twenty days apart with the 60-90 cm Burrell Schmidt telescope of the Warner and Swasey Observatory. On the earlier plate of the pair, taken August 6, 1970, the spectrum shows narrow, moderately strong Balmer emission lines and a strong ultraviolet continuum. The continuum between $H-\beta$ and $H-\gamma$ is about three quarters of a magnitude brighter than on the later photograph where the spectrum is that of a late K-type star with $m_{pg} = 11.5$. There are twenty other photographs of this star in our plate collection, taken between 1948 and 1963, none of which show any detectable variation in brightness or spectrum.



The type of variability which is observed in this case is very puzzling. The disappearance of the emission spectrum suggests a flare type activity, but the vast majority of flare stars are of spectral type dMe while this star is not. Moreover, flare spectra show strong Ca II emission lines, absent in the spectrum of this star. Classification as a U Geminorum or symbiotic variable is highly improbable in view of its non-variability in the past. The possibility that the variable is a fainter star nearly coincident in position with the K star cannot be ruled out, but does not appear likely. I have carefully compared the position of the emission spectrum with that of the K star and conclude that they are coincident within the errors of measurement (approximately two seconds of arc).

The available data suggests that this star may be similar to Popper's (1953) flare star which has been observed to flare only once. Its spectral type is K6V and it is quiescent most of the time, characteristics which agree with what is known about the Serpens variable. Its behavior may also bear some similarity to that of EZ Pegasi, a star which the General Catalog of Variable Stars calls a unique object. EZ Pegasi has a normal spectral type of G5; but on one objective prism photograph from the Leander McCormick Observatory it shows a spectrum of type B. However, EZ Pegasi is also an irregular variable with an amplitude of about one magnitude, a fact which argues against a real similarity with the variable described here. More observations of this star are evidently needed in order to decide between the various possibilities described above.

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Reference: Popper, D.M. (1953) Publ. A.S.P. 65, 278.

Editor's note: Recently S. Cristaldi and M. Rodonò have observed several flares in Popper's star, BY Dra, Sp K6Ve (Astron. and Astrophys., 12, 152, 1971).