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A NEW RED VARIABLE IN AQUILA

While working on the optical counterpart of the x-ray source 4U1915-05, a new variable was discovered on a IV-N plate exposed by one of us (JEG) at CTIO on August 26, 1977. It is a faint, red object located at R.A. = $19^h16^m02\overset{s}{.}28$, Dec. = $-5^o19'44\overset{''}{.}3$ (1950), approximately 4.5 arc minutes west of the x-ray position (Fig. 1).

Referring to an approximate blue magnitude sequence estimated from the Palomar Observatory Sky Survey (POSS) blue print using the King and Raff calibration (1977), we examined more than 100 Harvard plates taken with various astrographs (25-, 40- and 60-cm apertures) between 1899 and 1949. Although the star was mostly below the plate limits, it did brighten to nearly B~16 on several occasions and to B = 15 in 1924-1925 (Fig. 2). Since its image is not visible on the Palomar blue print, i.e., B> 21 in 1951, the range of its variation is at least six magnitudes.

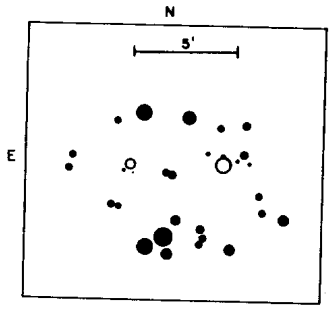

Figure 1. Finding chart for the new variable, which is indicated by the larger circle. The smaller circle is the optical candidate of the x-ray source 4U1915-05.

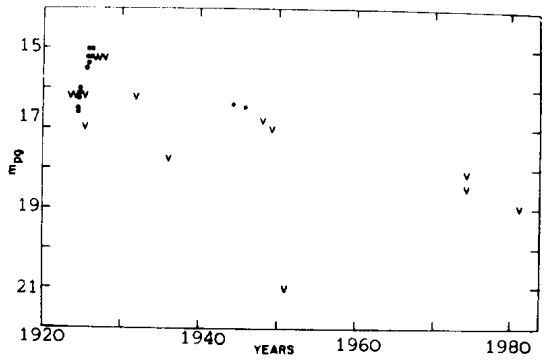

Figure 2. Light curve of the new variable. "V" signs indicate limiting magnitude estimates. The deep minimum in 1951 is from the POSS blue print.

The red magnitude of the star is about 18 on the Palomar red print. By an approximate color relation given for the Palomar P and R magnitudes (Minkowski and Abell, 1963), we found P-V$\sim$1.9 for the star.

The limiting magnitude of the POSS and those of several plates taken with the 1.5-meter reflector at Harvard's Agassiz Station in 1974 and 1981 are also shown on the light curve. If the light variation is periodic, our magnitude materials seem to indicate a period of 200-300 days.

The above data suggest that the object is probably a long-period variable.

J. E. GRINDLAY and C. Y. SHAO
Harvard-Smithsonian Center for Astrophysics
Cambridge, Massachusetts, 02138

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Minkowski, R.L., and Abell, G.O., 1963, in "Basic Astronomical Data", Stars and Stellar Systems, Vol. III, ed. K. Aa. Strand (Chicago, University of Chicago Press), p. 481.