CV AQUARII IDENTIFIED WITH (52) EUROPA

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Abstract

From examination of Harvard College Observatory photographic plates, the "cataclysmic variable" CV Aquarii is shown to be an apparition of the asteroid (52) Europa.

1. Introduction

It has been suggested frequently that some "cataclysmic variables" discovered, but never seen again, may be asteroids. PS realized that CV Aquarii could easily be one of these, more specifically (52) Europa, which was near the discovery position at the time. CV Aqr was discovered by Emily Hughes (Shapley and Hughes 1934) during her work on the Harvard College Observatory (HCO) program to search for variables on the Harvard plates. After the discovery, additional Harvard plates were investigated by Hughes and also by Margaret Olmstead (manuscript notebooks at HCO), who noted additional possible maxima.

2. Discussion

Figure 1 shows the existing finding chart for CV Aqr (Walker and Olmstead 1958). This chart has been inverted so that north is at the top and east to the left; the variable is indicated by an open circle—this circle corresponds to the position on the discovery plate, MF 15594, taken on geocentric JD 2426504.617 with the 0.25-m Metcalf refractor at Harvard's Boyden Station in Bloemfontein, South Africa, and is shown as position 2 in Figure 2.

MH located the other plates on which Hughes and Olmstead claimed to have seen CV Aqr; on none of these plates could she detect an image of the star. She was also able to locate two additional plates of the region, one taken the night before MF 15594, and the other five nights afterwards, both with the 0.08-m Ross patrol camera (RB) at Bloemfontein.

Each of the Ross plates shows a stellar image near, but not at, the original position of CV Aqr. These images are shown as positions 1 and 3 on Figure 2; the plate data are given in the caption to the figure.

Gareth Williams of Harvard-Smithsonian Center for Astrophysics kindly provided positions of (52) Europa on the date of the Metcalf plate, and also the dates of the Ross plates. They coincide with positions 1, 2, and 3 on Figure 2.

3. Conclusion

The facts that the three images seen on the Harvard plates are exactly where (52) Europa was at those times, and that CV Aqr has never again been observed, argue conclusively that CV Aquarii was simply an apparition of this asteroid.

References

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Space Telescope Science Institute 1993–95, *Digitized Sky Survey*, Baltimore.
Walker, A. D., and Olmstead, M. 1958, *Publ. Astron. Soc. Pacific*, **70**, 495.

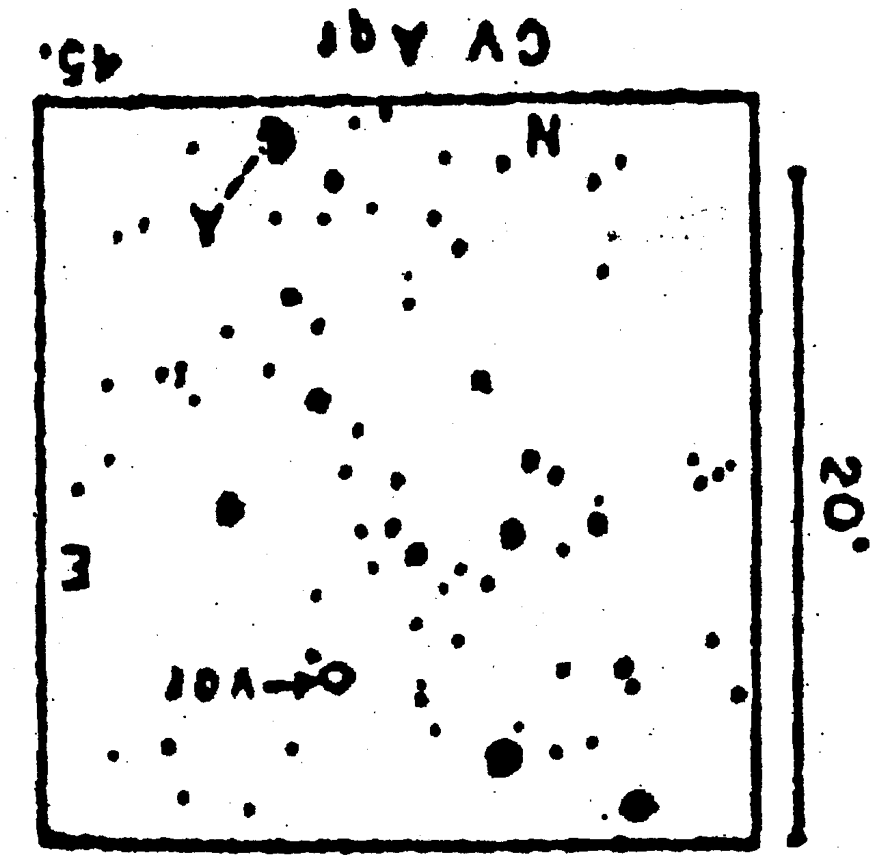

Figure 1. Finding chart for CV Aqr from Walker and Olmstead 1958. The chart is inverted so that north is up and east to the left.

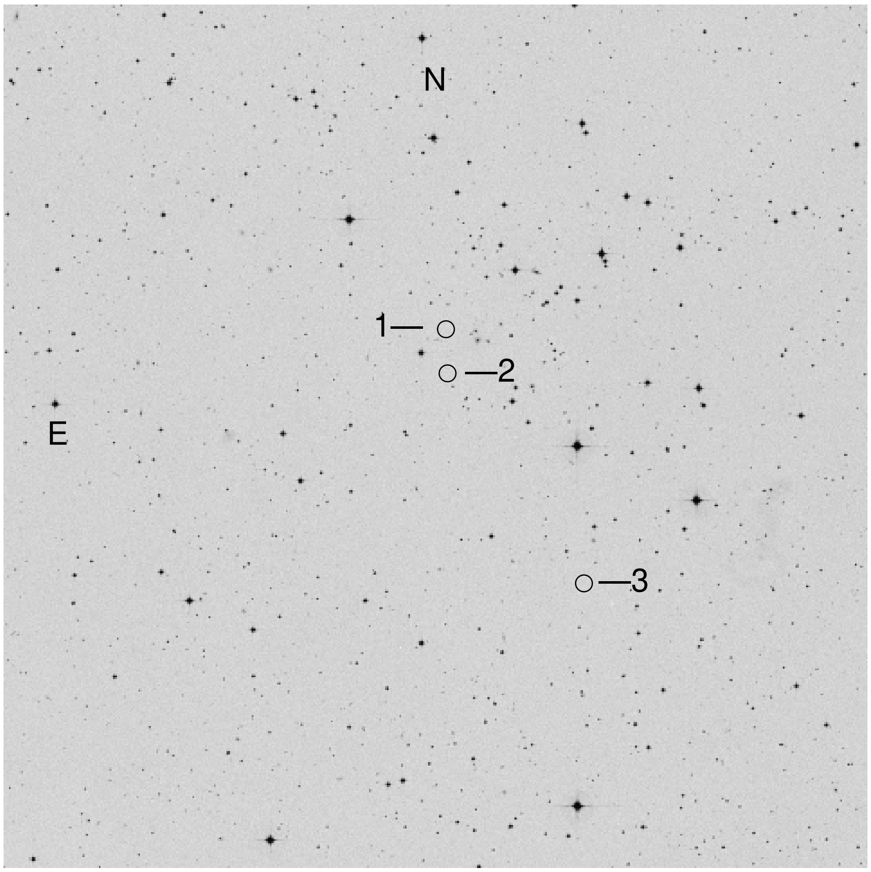

Figure 2. *Digitized Sky Survey* (DSS) chart, 30 arc min on a side, centered at (2000) R. A. $21^h21^m43^s$, Decl. -14° 21.0'. Position 1: from RB 1841, geocentric JD 2426503.552; Position 2: MF 15594, 2426504.617; Position 3: RB 1877, 2426509.544. (The DSS was produced at the Space Telescope Science Institute under U. S. Government grant NAG W-2166.)