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WELCH'S RED VARIABLE STAR IN CRUX
 AN R CENTAURI LIKE VARIABLE

This star was discovered in September, 1969, by R.G. Welch on photographic patrol plates exposed by him. In Circular 151 of the RNZAS Variable Star Section, Bateson published a chart of this star and gave its position as:

AR= $12^{\text{h}}13^{\text{m}}5$, D= $-56^{\circ}01.9'$, 1950

Welch advised the Auckland Observatory of his discovery and we have made 100 photo-electric observations during the period 1969 October 11 to 1972 February 9. These will be published shortly in the RNZAS Variable Star Section Circulars, but copies are available from the authors upon request. These observations are presented graphically in Figure 1.

All measures were made using the Auckland Observatory 50 cm cassegrain reflector, and EMI 9502 SA photomultiplier, and standard UB_V filters. Comparison stars used were CPD -55^o 4940 and CPD -55^o 4926.

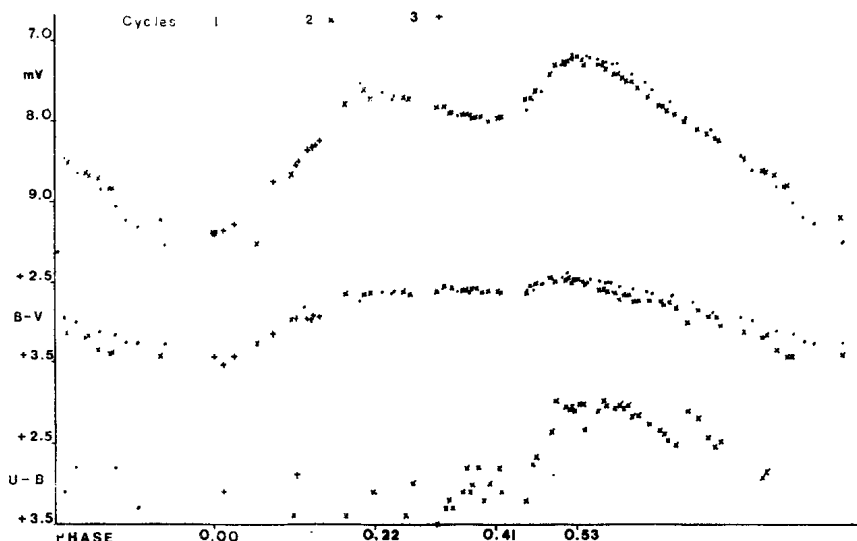


FIGURE 1 WELCH'S RED VARIABLE STAR IN CRUX UB_V OBSERVATIONS

From the observations made in Auckland we have derived the following elements: JD 2440827 + 420^d.25E

The light variations range from, at maximum, $V=7.2, B-V=+2.5, U-B=+2.0$; to minimum $V=10.0, B-V=+3.5, U-B=+3.5$.

Following discovery by Welch, Dr Richter of the Sonneberg Observatory has kindly supplied photographic measures from plates taken in South West Africa in 1937 and 1951. Those in 1951 match present observations very well but in 1937 the amplitude of the light variations appeared much smaller although there were some comparison problems arising through the use of several differing types of film emulsions.

The most notable feature of this star is that its light curve is very similar to R Cen, in that it exhibits double maxima. The amplitude of the variations is smaller, but this may be attributable to the greater redness of Welch's star (+2.5 at maximum as against R Cen +1.9). In all other respects this variable is very similar to two other stars of this type, R Cen and R Nor. The phase positions of maxima and minima are very similar and the light variations, expressed as a percentage of the total light variation are similar, although the secondary minimum of this Crucis variable is rather shallower than either of the others.

This star at present has an amplitude in B of about 4 magnitudes and it is surprising that discovery was so late. We surmise, and this is confirmed by the 1937 observations, that whilst the period remains reasonably steady the amplitude may be highly variable. Further observations are continuing.

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