RW ARIETIS, A SHORT PERIOD PULSATING STAR, ONE COMPONENT OF AN ECLIPSING BINARY

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RW Arietis (021017) was found by Detre (1937) to be a pulsating RR Lyrae star with a period of $0^d.2614151$. In 1962 Notni published a new period of $0^d.3543184$. Wisniewski (1971) reported photoelectric observations on 19 nights in 1966 which confirmed Notni's period, but also indicated that the pulsating star is apparently one component of an eclipsing binary. Since access to the publications concerned is difficult for many, I have attempted to show roughly in Figure 1 Wisniewski's 1966 observations. The average light curve (RR Lyrae type variations only) is shown by black dots, and his observations on three particular nights are indicated by the symbols "X", "O", and "+". The "X" symbols (on the night of JD 2439411) were assumed to represent a normal RR Lyrae type pulsation superimposed on a secondary minimum eclipse. The observations on nights 384 and 505 seem to represent this pulsation superimposed on a primary minimum eclipse.

Figure 2 shows the light curve of the eclipsing binary feature of RW Arietis after eliminating the RR Lyrae variation.

I have reduced the observations made in 1936 by Detre using the period $0^d.3543184$ (Notni and Wisniewski). All of these observations fit a purely RR Lyrae-type curve fairly well. Detre's observations on one particular night lie consistently fainter than the normal curve by about $0^m.2$ and may indicate an eclipse minimum at about JD 2428407.540. This agrees well with the period of $3^d.1754$ which Wisniewski found for the eclipsing binary.

This star should be well worth observing further in the hope of catching primary eclipse minima predicted by the elements: JD 2439384.97 + 3.1754 E.

Magnitudes by Detre:

a = $11^m.75$

b = 11.77

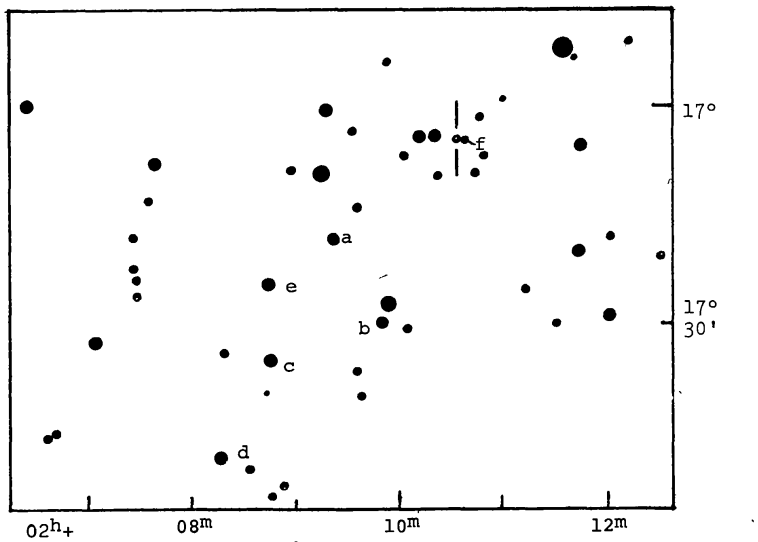
c = 11.85

d = 12.06

e = 12.39

f = 12.61

(Star a = BD =17° 328)



Finder Chart, RW Ari, RA $02^h\ 10^m\ 34^s$, Dec. +17° 04!1 (1900)
South at top. Traced from Stamford Observatory Photograph.

REFERENCES

1. Detre, (1937) AN. 262, 18.
2. Wisniewski, (1971) Acta Astr., 21, No. 3.
3. Notni, (1962) MVS 667.

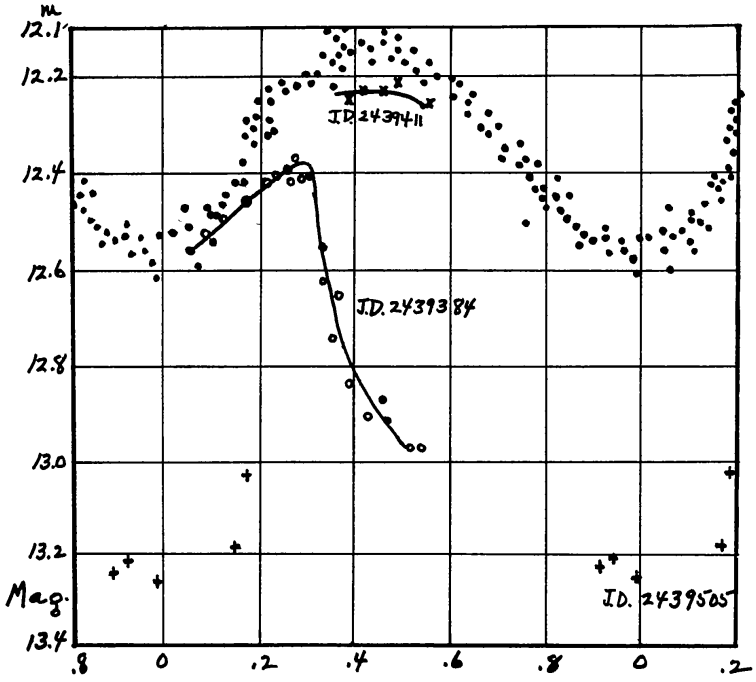


Figure 1. Phase - RR Lyrae (after Wisniewski)

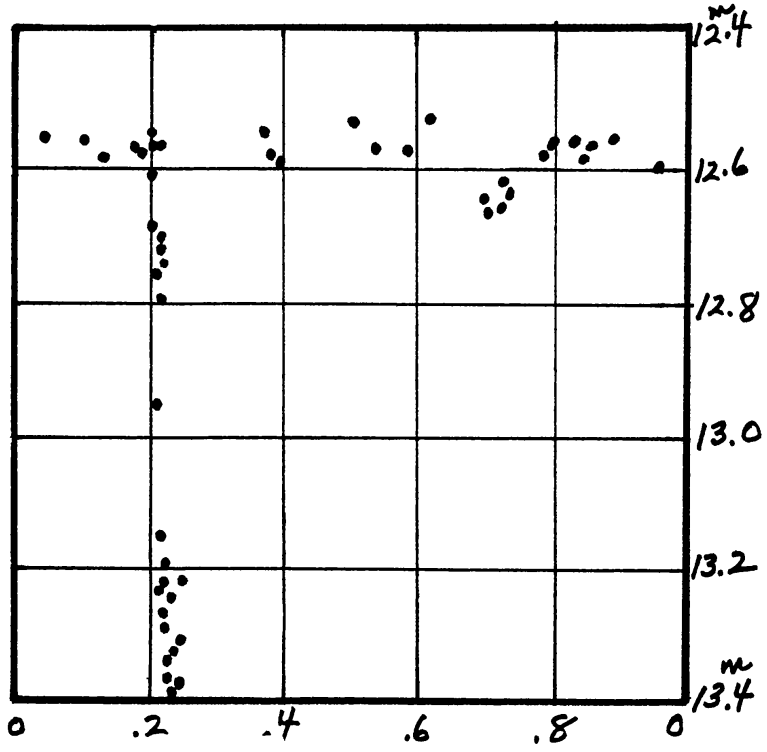


Figure 2. Phase - Eclipse (after Wisniewski)