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Wamsteker, W.

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NOTE

PHOTO-ELECTRIC OBSERVATIONS OF RU CAM IN THE YEARS 1966-1968

Three-colour observations of the peculiar variable star RU Cam were made from March 1966 until January 1968. Earlier observations of this population II Cepheid indicated a remarkable decrease in the amplitude of its pulsation (WAMSTEKER, 1966).

The measurements were made with the 45-cm Zunderman reflector of the Leiden Observatory; the photometer used was the one described by KWEE (1966). On five nights the star NPS 8 and three standard stars taken

from a list of H. L. Johnson were observed in order to derive the magnitude and colours in the *UBV* system of the comparison star BD +70°447. The results are listed in table 1 together with the number (*n*) of observations on which they are based. Each observation is the mean of at least three individual measurements. The extinction coefficients for the five nights used for this calibration were derived by means of least-squares solutions. Sometimes a second comparison star,

TABLE 1
Observations of standard and comparison stars

Star	<i>n</i>	<i>V</i>		<i>B-V</i>		<i>U-B</i>	
		Leiden	Johnson	Leiden	Johnson	Leiden	Johnson
NPS 8	7	8.08	8.08	+0.41	+0.42	-0.06	-0.08
BD +80° 347	4	7.28	7.32	+0.56	+0.55	+0.02	+0.04
BD +61° 1451	6	6.24	6.25	+0.41	+0.41	-0.01	+0.01
BD +71° 1112	5	6.37	6.38	-0.03	-0.05	-0.21	-0.18
BD +70° 447	8	9.00 ± 0.02 (m.e.)		+0.32 ± 0.01 (m.e.)		+0.04 ± 0.01 (m.e.)	
BD +69° 422	3	7.99 ± 0.03 (m.e.)		+0.76 ± 0.02 (m.e.)		+0.48 ± 0.07 (m.e.)	

TABLE 2
Observations of RU Cam (night means)

J. D. Hel. -2439000	Phase	<i>V</i>	<i>B-V</i>	<i>U-B</i>	J. D. Hel. -2439000	Phase	<i>V</i>	<i>B-V</i>	<i>U-B</i>
204.546	.856	8.48	+1.19	+0.94	578.558	.753	8.47		
355.578	.679	8.40			587.541	.159	8.40	+1.10	+0.95
356.565	.724	8.42	+1.18	+0.89	590.502	.293	8.36	+1.12	+0.92
357.590	.770	8.41	+1.17		594.488	.473	8.38	+1.17	+0.95
375.438	.576	8.41	+1.14	+0.91	604.415	.921	8.49	+1.14	+0.98
378.492	.714	8.42	+1.17	+0.98	606.549	.018	8.47	+1.14	+0.93
388.549	.169	8.50	+1.18	+0.96	607.506	.061	8.44	+1.16	+0.98
389.545	.214	8.48	+1.18	+0.96	614.527	.378	8.39	+1.17	+0.94
397.500	.573	8.39	+1.13	+0.96	619.512	.603	8.49	+1.18	+0.97
427.469	.927	8.46	+1.13	+0.87	621.552	.696	8.50	+1.20	+1.09
432.458	.152	8.47	+1.19	+1.00	802.442	.868	8.56	+1.18	+0.97
497.568	.094	8.49	+1.17	+0.95	803.470	.915	8.56	+1.16	+0.93
507.599	.547	8.44	+1.18		884.485	.575	8.45	+1.20	
537.473	.897	8.54	+1.21	+1.03					

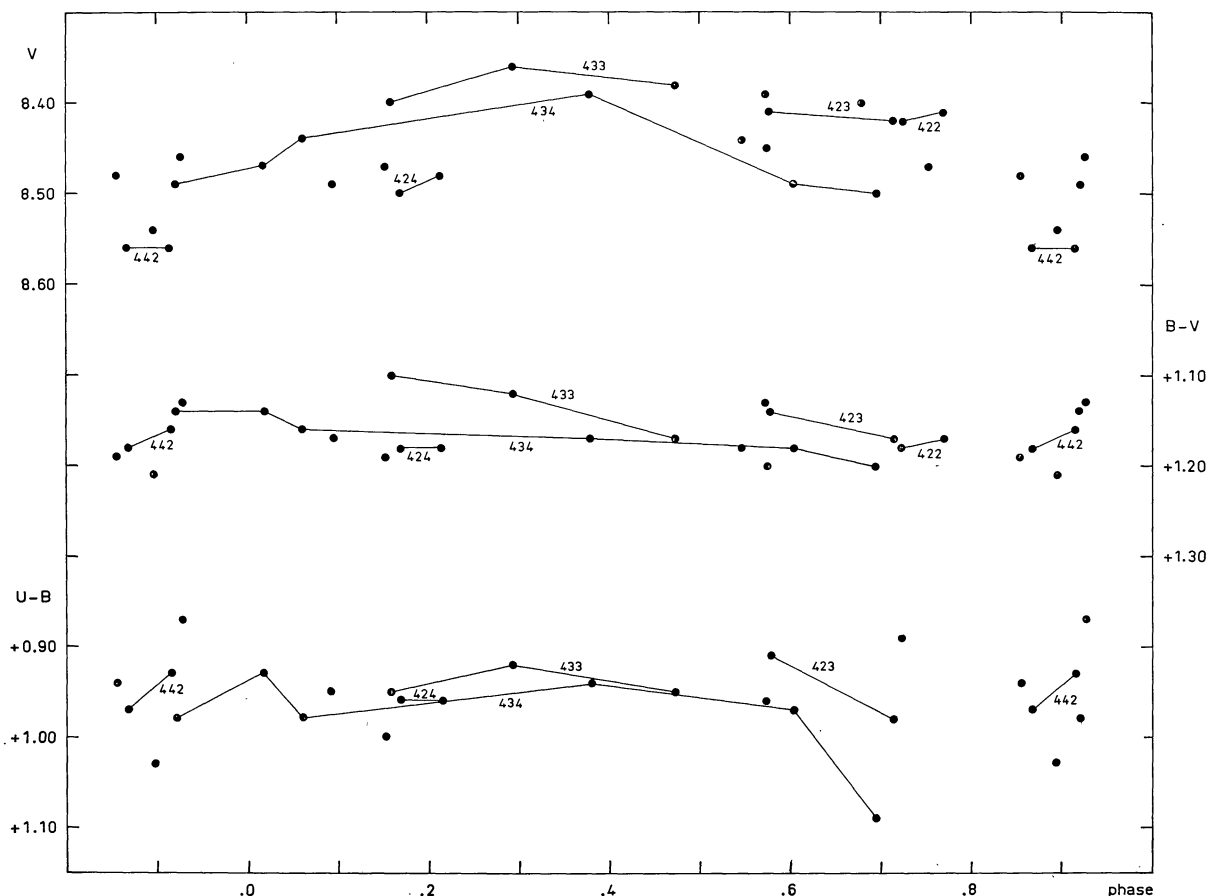


Figure 1. Light- and colour-curves of RU Cam. Straight lines connect the points belonging to the same cycle. The numbers next to the lines are the numbers of the cycle counted from $E = \text{J.D. } 2430000$.

BD + 69°422, was also measured to allow a direct comparison with the results of other observers (FERNIE and WATT, 1967). Most of the other nights only NPS 8 was observed as a standard star. Table 2 gives the night means of the UBV observations of the variable.

In figure 1 the observations are plotted against phase. The latter was calculated with the formula $\phi = (\text{J.D.} - 2430000) / 22.134$. The points belonging to the same cycle have been indicated. It is obvious from figure 1 and the earlier observations mentioned above that, contrary to DEMERS and FERNIE's (1966) conclusion, there still persists some sort of light-variation, although there seems to be no strict periodicity.

The observations are not conclusive with respect to the tentative interpretation by DETRE (1966) of the earlier behaviour of RU Cam. Contrary to the observations of FERNIE and WATT (1967) there is no significant increase in the amplitude of the light-variation.

The present measurements indicate that the magnitude of maximum and minimum light varies from cycle to cycle. The variations in the $B-V$ colour are small and only slightly correlated with the variations in the V magnitude. The observations in V are completely consistent with those by Detre and Szeidl (private communication). Unfortunately, the present number of observations is too small to give any evidence of a periodicity in the variations of the light-curve.

6 March 1968

W. WAMSTEKER

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