

ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND.

VARIABLE STAR SECTION.

CIRCULAR No. 167.

RW CENTAURI.

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SUMMARY:

RW Cen is a semi-regular variable that has been observed visually from 2,437,528 to 2,440,822. The mean visual range is 9.09 to 10.02 in a mean period of 185.2 days. Epoch (maximum) is 2,438,134. The individual observations are listed and V magnitudes for a sequence of comparison stars are given.

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INTRODUCTION:

RW Cen, spectra Nb, is a very red star with a colour index of 3.3 and a photographic range of 11.84 to 12.51 (1). It was too faint for detailed study in the Harvard Milton Bureau survey (1).

CHART & SEQUENCE:

Charts 146 and 147 (2) gave SPv magnitudes for the brighter comparison stars. The sequence was lettered to agree with the Harvard photographic sequence (3). Menzies has determined V magnitudes for the stars for which no SPv magnitudes are available. He used CPD -54° 4339 as standard, for which Jackson & Stoy (4) give SPv= 9.0; SPg= 8.61, Spectra B9. The complete sequence is given in Table 1 below.

TABLE 1. SEQUENCE OF COMPARISON STARS FOR RW CEN.

<u>CHART LETTER</u>	<u>C.P.D.</u>	<u>H.A.47 (ptg)</u>	<u>MAGNITUDES.</u>		<u>ADOPTED.</u>
			<u>SP v</u>	<u>V (Menzies)</u>	
d	-54° 4338	9.00	7.63	...	7.6
c	54 4360	8.72	7.94	...	7.9
a	54 4339	8.29	9.0	...	9.0
b	54 4355	8.44	9.0	...	9.0
e	54 4321	9.35	...	9.07	9.1
f	54 4310	9.67	...	9.57	9.6
h	54 4311	10.40	...	10.20	10.2
g	54 4335	9.95	...	10.33	10.3
k	...	10.85	...	11.90	11.9
m	...	11.28	...	12.08	12.1
l	...	11.03	...	12.18	12.2
n	...	11.78	...	12.92	12.9

The final column above gives the magnitudes, rounded off to tenths, to be used by visual observers.

OBSERVATIONS:

Visual observations from 2,437,528 (1961 Aug. 16) to 2,440,822 (1970 Aug. 22) are listed individually in Table 2 with observers' abbreviations omitted. Generally the observations are not numerous enough to warrant being listed as ten day means.

V.S.S. CIRCULAR No. 167 (cont).

DISCUSSION:

Observed maxima and minima are listed in Table 3, in the usual form. The mean period is 185.2 days with Epoch (maximum) 2,438,134; M-m 99 days. The O-C residuals for these elements give  $\pm 12$  days for maxima;  $\pm 18$  days for minima. Visual magnitudes are:-

MAXIMA	Mean 9.09 ( 8.6 to 9.6)
MINIMA	Mean 10.02 (9.6 to 10.3)

RW Cen is difficult to observe visually on account of both the small range and colour excess. Whilst there is some scatter in a few parts of the curve most of the observations agree well, considering the nature of this star.

ACKNOWLEDGEMENTS:

We wish to thank observers for their records. Our appreciation is also due to the Board of Trustees of the Auckland Observatory for use of their 50cm Zeiss reflector and attached equipment which made the determination of the sequence possible.

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18 POOLES ROAD,  
GREERTON,  
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V.S.S. CIRCULAR No. 167 (cont).

TABLE 2.

VISUAL OBSERVATIONS OF RW CEN.

2,437,000+	2,438,000+	2,438,000+	2,439,000+	2,440,000+	2,440,000+
528 9.3	231 9.5	918 9.1	522 10.3	001 9.1	317 9.1
529 9.1	237 9.7	932 9.3	533 10.2	004 8.9	323 9.1
562 8.9	255 9.6	940 8.6?	554 10.3	006 9.2	331 9.1
580 9.1	264 9.7	960 9.6	564 10.2	007 9.1	338 8.8
624 9.4	283 9.6	997 9.7	583 9.5	008 9.3	347 8.1?
644 10.2	356 9.2	2,439,000+	596 9.8	009 9.4	353 8.7
682 10.0	390 10.3	004 9.1	617 9.5	028 9.2	354 8.7
696 10.2	413 10.1	033 9.1	624 9.2	037 9.1	378 9.1
763 9.4	435 10.1	067 9.0	639 9.5	038 9.5	382 8.7
779 9.5	473 9.7	094 9.1	649 9.6	052 9.1	383 8.9
793 9.5	492 9.7	142 10.0	669 9.9	062 9.1	386 8.9
821 9.7	525 10.0	153 10.2	681 9.7	064 9.4	392 9.1
840 10.1	534 9.8	171 10.2	696 10.1	069 9.7	436 9.0
853 9.9	548 9.5	201 9.8	709 10.0	080 9.4	596 9.1
865 9.5	554 9.6	227 9.1	716 10.2	083 9.9	606 9.2
876 9.6	574 10.1	236 9.3	737 10.0	090 9.4	618 9.2
902 9.5	605 10.0	246 9.4	768 9.6	093 9.8	620 9.1
946 9.1	624 10.0	257 9.1	794 9.4	094 9.8	623 9.8
2,438,000+	699 9.1	267 9.4	805 9.5	178 9.1	630 9.6
022 10.1	710 9.2	285 9.5	826 9.4	187 8.6	637 9.2
031 10.2	733 9.7	295 9.7	848 9.6	210 9.1	646 8.1?
053 10.3	739 9.6	318 9.8	860 9.5	216 8.4	651 9.1
090 9.4	757 9.8	328 9.6	875 10.1	234 9.4	676 9.1
105 9.4	797 10.3	345 9.5	897 10.1	235 9.4	682 9.1
116 9.3	813 9.7	355 9.6	907 10.0	245 9.1	718 9.5
137 8.7	828 9.5	358 9.7	919 10.2	246 10.0	733 9.6
146 9.1	848 9.4	406 9.1	939 10.2	269 9.2	738 9.4
168 9.1	855 9.3	416 9.0	953 9.1	276 9.5	743 9.3
179 9.4	870 9.1	449 9.1	973 9.4	280 9.2	822 9.3
197 9.5	884 9.1	470 9.3	982 9.5	285 9.0	
208 9.7	890 9.1	501 9.8	994 9.1	300 8.6?	
			999 9.5	301 9.1	

TABLE 3.

RW CENTAURI---OBSERVED MAXIMA & MINIMA.

MAXIMA.					MINIMA.				
J.D.	MAG. <sub>v</sub>	INT. <sub>d</sub>	Wt.	O-C <sub>d</sub>	J.D.	MAG. <sub>v</sub>	INT. <sub>d</sub>	Wt.	O-C <sub>d</sub>
2,437,562	8.9	...	2	-16	2,437,663	10.2	...	2	-14
777	9.4	215	3	+13	835	10.1	172	5	-28
946	9.1	169	2	- 3	2,438,046	10.2	211	3	- 2
2,438,134	8.8	188	4	+ 0	233	9.6	187	2	+ 0
347	9.2	213	1	+28	389	10.3	156	3	-29
502	9.6	155	2	- 2	525	10.0	136	3	-78
688	9.1	186	1	- 2	793	10.2	268	5	+ 4
894	9.0	206	3	+19	977	9.8	184	2	+ 3
2,439,046	8.8?	152	1	-14	2,439,165	10.2	188	4	+ 6
249	9.2	203	3	+ 4	317	9.8	152	4	-27
426	9.0	177	4	- 4	523	10.3	206	5	- 6
617	9.4	191	3	+ 1	716	10.1	193	3	- 1
816	9.4	199	3	+15	909	10.1	193	3	+ 9
2,440,030	9.2	214	2	+44	2,440,115	9.8	206	1	+30
186	8.6	156	2	+15	243	9.6	128	2	-27
353	8.7	167	3	- 3					