

ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND.

VARIABLE STAR SECTION.

CIRCULAR No. 145.

THE SEMI-REGULAR VARIABLE, T RETICULI.

Frank M. Bateson, A.F. Jones & B. Menzies.

SUMMARY:-

V magnitudes, determined photoelectrically, for a sequence for T Ret are listed. Visual observations from J.D. 2,438,313 (1963 Oct. 9) to 2,440,002 (1968 May 25) are now published.

T Ret is a typical semi-regular variable of small range. Maxima visual magnitudes range from 9.7 to 10.3 and minima from 10.8 to 11.3. The variable oscillates around a median visual magnitude of 10.5. The best determined maxima give a period of 59.7 days and the best observed minima a period of 56.8 days. The short period appears to be superimposed on a longer period of approximately 200 days. Because of the small range and scattered observations these elements should be treated with reserve.

INTRODUCTION:-

T Ret was discovered by Gerasimovic (1) from examination of plates taken at Arequipa from 1924 to 1926. The photographic range is given by him as 11.4 to 13.2 with a period that might be 56 or 57 days.

SEQUENCE AND CHART:-

Chart No. 66 (2) showed the brighter comparison stars by their SPv magnitudes while the fainter comparison stars were designated by chart letters.

The brighter comparison stars are:-

CHART LETTER	C.P.D.	R.A.	1950	DEC. 1950	SPv	SPEC.
a	-55° 598	4h 02m 44.10s	S. 55° 32' 07.8"	7.76	A2	
b	54 618	3 59 51.11	54 32 40.9	8.16	A2	
c	54 611	3 56 20.70	54 29 58.4	8.61	F2	
d	54 629	4 07 29.41	54 46 08.8	8.98	F8	
e	55 602	4 05 08.58	55 22 39.0	8.98	K0	
f	55 589	3 57 49.16	54 58 57.8	9.41	G0	
g	55 582	3 54 29.69	54 46 57.3	9.64	G0	
h	55 607	4 09 01.35	54 54 54.4	9.6	G6	
k	55 591	3 58 45.40	55 11 26.5	9.9	G8	
l	55 585	3 55 57.60	55 02 14.2	10.3	F5	

For the fainter comparison stars the following V magnitudes have been determined at the Auckland Observatory by Menzies, assisted by Christie. Star CPD -55° 591 was taken as the zero point in determining this sequence

CHART LETTER	C.P.D.	V.	ADOPTED MAG.	CHART LETTER	CPD.	V	ADOPTED MAG.
m	-55° 588	10.49	10.5	t	...	11.93	11.9
o	55 593	10.51	10.5	v	...	12.31	12.3
n	55 592	10.73	10.7	r	...	12.34	12.3
q	...	11.41	11.4	u	...	12.42	12.4
s	...	11.74	11.7				

V.S.S. CIRCULAR No. 145 (cont).

These stars can be identified from Chart 66. Visual observers should in future use the adopted values given in the last column of the table.

OBSERVATIONS:-

The individual observations from 1963 October 9 (J.D. 2,438,313) to 1968 May 25 (2,440,002) are given in Table 1. The observers who have contributed results are:-

BATESON,	F.M.	Bt.
JONES,	A.F.	Jo.
JONES,	M.V.	Jn.
MATCHETT, (Dr.)	V.L.	Mt.
MENZIES,	B.	Mf.
STRANSON,	I.	Sr.
WALKER,	W.S.G.	Wk.

DISCUSSION:-

Observations are rather scattered with A.F. Jones observing T Ret once or twice per month from 1963 Oct. 9 to 1967 December. From then onwards Jones' records were supplemented by results from other observers.

T Reticuli oscillates around a visual magnitude of 10.5 in the manner typical of a semi-regular variable. The range is small with maxima varying from 9.7 to 10.3 visual and minima from 10.8 to 11.3 visual.

Table 2 lists the best determined maxima and minima. The former gives a period of 59.7 days and the latter 56.8 days. By the inclusion of lesser well determined maxima and minima it is possible to derive other periods and the periods quoted need to be treated with reserve because this star has not been well observed. In addition its small range makes it a difficult object for visual observers. There is a suggestion of a longer period of about 200 days on which the shorter period is superimposed. As is usual with stars of this class there are periods during which the variable is much more active than at other times.

ACKNOWLEDGEMENTS:-

We are indebted to the Auckland Observatory Trust Board for the use of their 50cm Zeiss Cassegrain reflector and auxiliary equipment for the photoelectric determination of the sequence. The assistance of G. Christie in these observations is appreciated. We also wish to thank the various observers for their records.

As usual in these sequence programmes Menzies has been responsible for the photoelectric observations and reductions. A.F. Jones has made the bulk of the visual observations and Bateson is responsible for the discussion and reductions.

REFERENCES:-

- (1) 1927. Gerasimovic. H.B. 853.
- (2) 1966. Bateson, F.M., Jones, A.F. and Stranson, I. Charts for Southern Variables, Series 3. Published by F.M. Bateson

1970 February 9

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18 POOLES ROAD,
GREERTON, TAURANGA.
NEW ZEALAND.

V.S.S. CIRCULAR No. 145 (cont).

TABLE 1.

VISUAL OBSERVATIONS OF T RETICULI.

<u>J.D.</u>	<u>MAG.</u>	<u>OBS.</u>	<u>J.D.</u>	<u>MAG.</u>	<u>OBS.</u>	<u>J.D.</u>	<u>MAG.</u>	<u>OBS.</u>
2,438,313.0	10.5	Jo.	2,439,266.8	10.5	Jo	2,439,910.0	10.3	Sr
336.9	10.6	Jo	287.8	10.5	Jo	912.9	10.4	Wk
357.1	10.5	Jo	295.3	10.5	Jo	916.9	10.7	Jo
384.9	10.8	Jo	302.2	10.5	Jo	924.9	10.5	Jo
416.9	10.6	Jo	319.3	10.2	Jo	927.9	10.4	Wk
430.9	10.4	Jo	334.3	10.2	Jo	936.8	10.5	Wk
467.9	10.5	Jo	348.2	10.6	Jo	938.8	10.5	Jo
487.8	10.0	Jo	355.2	11.2	Jo	944.9	10.2	Bt
526.8	10.4	Jo	394.2	10.2	Jo	945.0	10.1	Mt
553.8	10.4	Jo	408.2	10.4	Jo	966.8	10.5	Jo
595.2	10.6	Jo	418.2	10.6	Jo	970.0	10.0	Mt
615.2	10.5	Jo	443.0	9.7	Jo	974.8	10.5	Jo
650.2	10.4	Jo	463.0	10.7	Jo	.9	10.4	Mf
666.0	10.4	Jo	475.0	11.3	Jo	981.8	10.5	Jo
679.2	10.4	Jo	498.0	10.3	Jo	.8	10.4	Mf
697.9	10.4	Jo	508.0	10.3	Jo	.9	10.3	Mt
717.9	10.3	Jo	518.9	10.2	Jo	993,9	10.2	Jn
728.9	10.4	Jo	527.9	10.6	Jo	2,440,002.8	10.5	Jo
752.0	10.4	Jo	534.9	10.6	Jo			
771.0	10.7	Jo	547.9	10.2	Jo			
792.9	10.9	Jo	560.9	10.5	Jo			
800.0	10.6	Jo	567.9	10.4	Jo			
812.9	10.4	Jo	582.8	10.7	Jo			
827.9	10.3	Jo	589.8	11.0	Jo			
847.9	10.5	Jo	609.8	10.3	Jo			
854.8	10.5	Jo	616.8	10.2	Jo			
868.8	10.5	Jo	623.8	10.7	Jo			
879.9	10.3	Jo	638.8	10.7	Jo			
885.9	10.4	Jo	648.3	10.4	Jo			
916.3	10.0	Jo	656.3	10.3	Jo			
924.3	9.9	Jo	675.3	10.4	Jo			
940.3	10.1	Jo	685.2	10.9	Bt			
952.3	10.6	Jo	687.2	11.2?	Jo			
969.2	10.7	Jo	700.2	10.8	Jo			
977.2	10.9	Bt	716.2	10.6	Jo			
978.2	10.7	Jo	747.2	10.7	Jo			
2,439,000.2	10.5	Jo	761.9	10.6	Bt			
008.2	10.5	Jo	763.2	10.6	Jo			
022.2	10.5	Jo	775.2	10.5	Jo			
025.0	10.3	Bt	792.0	10.6	Jo			
036.1	10.4	Jo	806.1	10.7	Jo			
053.9	10.4	Jo	811.0	10.9	Wk			
064.9	10.3	Jo	833.1	11.2	Jo			
095.0	10.5	Jo	842.9	10.5	Wk			
113.0	10.4	Jo	843.9	10.7	Jo			
138.9	10.5	Jo	854.9	10.7	Jo			
150.9	10.5	Jo	856.0	10.5	Jn			
164.9	10.3	Jo	859.9	10.9	Wk			
181.9	10.5	Jo	869.1	10.8	Jo			
198.9	10.5	Jo	875.0	10.5	Wk			
207.9	10.5	Jo	879.0	10.5	Sr			
231.8	10.3	Jo	885.9	10.7	Jo			
232.9	10.3	Jo	887.0	10.7	Sr			
245.8	10.8	Jo	890.9	10.6	Wk			
256.8	10.5	Jo	893.9	10.7	Jo			
			905.9	10.6	Jo			

V.S.S. CIRCULAR No. 145 (cont).

TABLE 2.

BEST DETERMINED MAXIMA AND MINIMA OF T RETICULI.

MAXIMA.			MINIMA.			
<u>J.D.</u>	<u>INT.</u> d	<u>MAG.</u> v	<u>J.D.</u>	<u>INT.</u> d	<u>MAG.</u> v	
2,439,063	...	10.3	2,439,415	...	10.6	
112	49	10.4	476	61	11.2	
165	53	10.3	530	54	10.6	
233	68	10.3	589	59	11.0	
310	77	10.2	630	41	10.8	
394	84	10.2	688	58	11.2	
443	49	9.7				
517	74	10.2				
546	29	10.2				
615	69	10.2				
660	45	10.3				

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