

ROYAL ASTRONOMICAL SOCIETY OF NEW ZEALAND.

VARIABLE STAR SECTION.

CIRCULAR No. 177.

SEQUENCES FOR SOUTHERN VARIABLES.

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SUMMARY: Sequences, determined photo-electrically at the Auckland Observatory, are published for the fields of:-
ST Psa; AA & UU Tuc; SU Dor; RV Pup; W Cha; AS Pup;
CU Vel; UW Cen; TT Cen; S Hor; RZ Ind; T Vol; CH Pup;
Z Cru; V Cha; TU Pup; V Pyx; CM Vel and a suspected
variable in Centaurus.

Also X Ant

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INTRODUCTION: In this Circular are the results of sequence determinations carried out at the Auckland Observatory. Details of equipment, calibration and reduction methods were given in Circular 148 (1).

For each variable star field, for which a sequence is now published, the following details are given:-

1. Name of variable.
2. Chart reference to charts published in "Charts for Southern Variables" (2).
3. Details of star used as standard in each field. Where V and B-V magnitudes are available these are given with the reference from which they were obtained. For those standards for which such magnitudes are not available, the Sp_p & Sp_v magnitudes, taken from Cape Catalogues (3) are stated.
4. The comparison stars, for which values are now published, are shown for each field by the chart letter used on the charts referred to in 2 above. Against each star appears the V magnitude determined in accordance with the methods outlined in Circular 148 (1); the adopted value (V magnitude rounded off to tenths) which is to be used by visual observers and finally any remarks deemed necessary.

For a number of fields the B-V magnitudes have also been determined and these are shown where this has been done.

Visual observers are requested to use the magnitudes given under "Adopted" in place of chart letters when making their estimates.

ACKNOWLEDGEMENTS: We wish to thank the Board of Trustees of the Auckland Observatory for the use of their 50cm Zeiss reflector and auxiliary equipment for the research now reported.

The measures for several of these sequences extend back in some cases for two years, and it is fitting here to give acknowledgement of the valuable work done therein, by many of the present senior observers of the Auckland Observatory, and in particular that of G.W. Christie and R. Feasey, both of whom were on the Sequence Programme over much of this period.

1971 July 29

18 POOLES ROAD,
GREERTON,
TAURANGA.
NEW ZEALAND.

V.S.S. CIRCULAR No. 177 (cont).

REFERENCES:

- (1) 1970. Bateson, F.M. & Menzies, B. "Sequence Determination" Circ. 148, VSS, RASNZ.
- (2) 1960-1970 Bateson, F.M., Jones, A.F. & Stranson, I. "Charts for Southern Variables" Series 2 to 7. Published by F.M. Bateson.
- (3) 1954-1968. Cape Obs. Annals. Vols. 17 to 22. "Cape Photographic Catalogue for 1950.0".

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SEQUENCES.

ST PsA. (Chart 26).

Standard. CoD -35° 15565. $SP_g = 9.82$; $SP_v = 9.02$. Spec. G5

<u>CHART LETTER</u>	<u>V</u>	<u>ADOPTED</u>	<u>REMARKS.</u>
I	10.30	10.3	CPD -34° 9182
J	11.32	11.3	
k	11.36	11.4	
m	11.46	11.5	
n	11.71	11.7	
o	12.47	12.5	
p	12.68	12.7	
s	12.96	13.0	
q	13.04	13.0	
r	13.11	13.1	
u	13.93	13.9	

AA & UU Tuc. (Chart 28).

Standard. CPD -61° 6648. $SP_g = 10.53$; $SP_v = 9.5$. Spec/ G8

m	10.40	10.4	CoD -61° 6699
n	...	...	CoD -61° 6700. Possibly variable 11.16-11.30 (see note).
o	11.34	11.3	
r	11.90	11.9	
q	12.23	12.2	
s	13.07	13.1	
t	13.64	13.6	
u	...	...	Variable 13.50 to 13.96 (see note)
w	14.56	14.6	Not lettered on chart. Is shown 2mm west of "u".

NOTES:

"n" V Mags. J.D. 2,440,000 *
 422.14 11.18; 456.90 11.30; 463.89 11.28; 478.02 11.17;
 484.94 11.16; 491.94 11.25; 533.91 11.21.

"u" V Mags. J.D. 2,440,000 +
 463.90 13.76; 478.03 13.96; 484.95 13.94; 526.92 13.80;
 533.90 13.50.

SU Dor. (Charts 42 & 43).

Standard. CPD -56° 731. $SP_g = 10.83$; $SP_v = 9.9$ Spec. G5.

k	10.60	10.6	
l	10.74	10.7	
m	11.40	11.4	
o	11.57	11.6	
n	11.65	11.7	
q	12.20	12.2	
p	12.44	12.4	
r	12.68	12.7	
t	13.15	13.2	
u	13.57	13.6	
w	...	...	Not determined

V.S.S. CIRCULAR No. 177 (cont).

CHART LETTER V B-V ADOPTED REMARKS.

RV Pup. (Charts 57 & 58).

Standard HD 48969. V=8.52; B-V +0.69. Spec.G5.(Roy.Obs. Bull.64 1962).

CHART LETTER	V	B-V	ADOPTED	REMARKS.
H	8.72	...	8.7	CoD-42°2714. Shown as 8.9 on Chart 57.
m	10.99	...	11.0	CPD-42° 1024
n	11.20	...	11.2	CoD-42° 2681
p	11.87	...	11.9	CPD-42° 1027
r	12.59	...	12.6	
u	12.91	...	12.9	
t	12.95	...	13.0	
s	13.24	...	13.2	
w	13.72	...	13.7	

W Cha. (Charts 82 & 84).

Standard HD 69547. V=7.04; B-V +0.98. Spec. K0.(Roy.Obs.Bull 64 1962)

CHART LETTER	V	B-V	ADOPTED	REMARKS.
q	11.54	+1.1	11.5	
p	11.79	+1.3	11.8	
r	12.43	+0.7	12.4	
u	12.72	+1.3	12.7	
s	12.84	+1.0	12.8	
w	12.98	+0.8	13.0	
x	13.39	+0.3	13.4	
v	...	...	...	Appears to vary 12.8 to 13.1

AS Pup.(Charts 85 & 86)

Standard HD 69425. V=9.07; B-V +0.17. Spec. B1.(MNRAS,127,71,1963).

CHART LETTER	V	B-V	ADOPTED	REMARKS.
"90"	8.89	...	8.9	CoD -37° 4370. Chart 86 120mm N. & 90mm E. of AS Pup.
d	9.59	...	9.6	
e	10.02	...	10.0	
f	10.31	...	10.3	
g	10.99	...	11.0	
h	11.14	...	11.1	
l	11.23	...	11.2	
m	11.35	...	11.4	
k	11.83	...	11.8	

CU Vel. (Chart 114).

Standard HD 77550 (CoD -39° 5082). SPg =9.88; SP_v=9.40. F.

CHART LETTER	V	B-V	ADOPTED	REMARKS.
d	10.14	...	10.1	On left hand field sketch, chart 114, appears unlettered 16mm E & 13mm S. of CU Vel.
e	10.68	...	10.7	On left hand field sketch, chart 114, appears unlettered 15mm E of CU Vel.
g	10.73	...	10.7	
k	11.34	...	11.3	
m	11.91	...	11.9	
s	12.39	...	12.4	
q	12.50	...	12.5	
t	12.74	...	12.7	
u	13.19	...	13.2	
x, y, z	...	...	...	Not measured

CHART
LETTER

V.

B-V

ADOPTED

REMARKS.

UW Cen. (Charts 119 & 120).

HD 122510

Standard. CPD -53° 5219. $SP_v = 9.31$. $SP_g = 9.70$. FO.

d	9.78	+0.2	9.8	CPD -53°	5310
c	10.05	+0.4	10.0	-53	5302
b	10.42	+0.1	10.4	-53	5278
e	10.61	+0.4	10.6	-53	5304
f	11.24	+0.4	11.2	-53	5296
g	11.64	+0.4	11.6	-53	5300
J	12.19	+1.1	12.2		
m	12.81	+0.6	12.8		
n	13.07	+0.6	13.1		
q	13.38	+0.9	13.4		
p	14.46	+0.4	14.5		
r	...	...	...	Not yet measured	

TT Cen. (Charts 127 & 129).

Standard. HD 114213. $V = 8.98$; $B-V = +0.91$. Bl. (MNRAS, 122, 239, 1961).

h	9.34	+0.1	9.3		
n	10.75	+0.3	10.8		
o	10.82	+1.2	10.8		
q	11.57	+1.2	11.6		
r	11.73	+1.3	11.7		
p	...	...	...	Has close companion which is variable, causing integrated mag. to vary 11.0 to 11.4 in V.	
t	...	...	...	Appears to vary 12.6 to 12.9 V	

S Hor. (Charts 136 & 137).

Standard CPD -60° 201. $SP_g = 9.98$; $SP_v = 9.67$. F8.

h	11.53	...	11.5		
k	...	...	...	Possibly var. 11.62 - 11.87 V	
m	11.89	...	11.9		
n	12.20	...	12.2		
o	12.38	...	12.4		
l	12.72	...	12.7		
p	12.85	...	12.9		

V760 - Cen. (Susp. Var. 14h 08.9m -59° 12' (1950). (Charts 199 & 200).

Cen Standard 122879. $V = 6.41$; $B-V = +0.12$. B0. (Roy.Obs.Bull.64, 1962).

b	10.15	...	10.2		
a	10.35	...	10.4		
c	10.66	...	10.7		
e	10.87	...	10.9		
f	10.88	...	10.9		
d	11.15	...	11.2		
g	11.21	...	11.2		
k	11.23	...	11.2		
h	11.28	...	11.3		
l	11.61	...	11.6		
m	11.66	...	11.7		
n	...	...	...	Not seen	

RZ Ind. (Charts 218 & 219).

Standard HD 201800. $V = 8.30$; $B-V = +0.33$. FO. (Roy.Obs.Bull 64, 1962).

b	8.00	+0.1	8.0	CoD -50°	13214
d	8.82	+0.4	8.8	-50	13213
e	9.10	+0.6	9.1	-50	13237
f	9.27	+0.5	9.3	-50	13231
g	9.75	+0.6	9.7	-50	13221
k	10.80	+0.9	10.8	-49	13300
n	11.20	+0.7	11.2		
p	11.87	+0.7	11.9		
s	12.01	+0.7	12.0		
t	12.13	+0.8	12.1		
r	12.42	+0.6	12.4		
u	...	...	...	Not determined.	

V.S.S. CIRCULAR No. 177 (cont).

CHART V B-V ADOPTED REMARKS.
LETTER.

T Vol. (Charts 257 & 258).

Standard HD 53658. V=7.33; B-V +0.46. F6. (Roy. Obs. Bull. 64, 1962)

m	10.22	+0.6	10.2
p	11.31	+1.2	11.3
q	11.84	+1.2	11.8
r	12.08	+0.8	12.1
u	12.31	+0.6	12.3
s	12.34	+1.2	12.3

CH Pup. (Charts 259 & 260).

Standard HD 46858. V=8.19; B-V +0.92 G7. (Roy. Obs. Bull. 64, 1962)

e	10.06	+0.6	10.1
f	10.36	+0.5	10.4
h	10.40	+1.5	10.4
k	10.82	+1.1	10.8
m	11.56	+0.4	11.6
n	11.88	+0.3	11.9
q	13.08	+1.1	13.1
r	13.55	+0.8	13.5

Z Cru. (Charts 261 & 262).

Standard. CPD -63° 2168. SP_g=8.69; SP_v=8.67. A0

h	9.33	+1.4	9.3	CPD -63° 2169
g	9.37	+0.5	9.4	-63 2173
d	9.59	+0.7	9.6	-63 2183
l	9.73	+0.9	9.7	-63 2174
e	9.93	+0.3	9.9	-63 2176
c	10.54	+0.3	10.5	-63 2167
n	11.04	+0.3	11.0	

V Cha. (Chart 265).

Standard. HD 62039. V=8.12; B-V +0.59. G0 (Roy. Obs. Bull. 64, 1962)

g	9.92	+1.2	9.9	
l	10.87	+0.4	10.9	CPD -77° 325
q	12.67	+0.8	12.7	
s	13.17	+0.7	13.2	
t	13.40	+0.5	13.4	

N.B. On chart 265 star marked "91" just S.E. of "1" should be "99".

TU Pup. (Charts 273 & 274).

Standard. CoD -34° 4781. V=9.32; B-V +0.30 (MNRAS 127,71, 1963)

e	9.19	+1.1	9.2	CPD -34° 2216
f	9.76	+0.1	9.8	-34 2201
h	10.19	+1.2	10.2	-34 2198
r	10.47	+1.1	10.5	-34 2199
K	10.67	+1.1	10.7	-34 2221
J	10.70	+1.3	10.7	-34 2222
l	11.12	+1.2	11.1	-34 2224
m	11.52	+1.5	11.5	
n	12.10	+0.6	12.1	
o	12.10	+1.4	12.1	
p	12.31	+1.4	12.3	
q	13.04	+0.2	13.0	
u	13.20	+0.6	13.2	
w	13.21	+0.6	13.2	

s Appears to vary 13.15-13.40 V
x Certainly variable. Brightened as follows:
V Mags. J.D. 2,441,000 +
023.86 13.47; 044.94 13.19; 065.92 12.73;
072.84 12.43

V.S.S. CIRCULAR No. 177 (cont).

CHART V B-V ADOPTED REMARKS.
LETTER

V Pyx. (Charts 276 & 277).

Standard. HD 75057. V=7.88; B-V +0.41. F2 (Roy. Obs. Bull. 64, 1962)

Letter	V	B-V	Adopted	Remarks
n	10.52	+0.1	10.5	CPD -34° 3059
m	10.56	+0.7	10.6	-34 3057
o	10.82	+0.3	10.8	-34 3064
p	11.50	+0.1	11.5	-34 3062
q	11.79	+0.1	11.8	-34 3065
r	12.17	+0.5	12.2	
s	12.34	+0.5	12.3	
t	12.35	+0.5	12.4	
u	13.13	+0.6	13.1	

CM Vel. (Charts 278 & 279).

Standard. CPD -52° 3234. SP_g = 7.9; SP_v = 8.19. AO

Letter	V	B-V	Adopted	Remarks
g	9.82	+0.2	9.8	CPD -52° 3258
l	10.70	+1.8	10.7	-52 3251
h	10.99	+0.6	11.0	-52 3259
m	11.76	+0.7	11.8	-52 3257
n	12.17	+0.3	12.2	-52 3254

X Ant. (Charts 291 & 292).

Standard. HD 87686. V=9.10; B-V +1.24. K5. (Roy. Obs. Bull. 64, 1962)

Letter	V	B-V	Adopted	Remarks
A	8.78	+0.8	8.8	CoD -29° 8085
a	9.09	+0.1	9.1	-29 8109
b	9.20	+0.6	9.2	-29 8092
e	10.02	+1.4	10.0	-29 8108
d	10.09	+0.3	10.1	-29 8081
g	10.51	+1.0	10.5	-29 8088
h	10.57	+1.0	10.6	-29 8084
J	11.42	+0.5	11.4	-29 8097
K	11.58	+0.6	11.6	-29 8091
m	12.34	+1.2	12.3	
p	12.80	+1.0	12.8	
r	13.89	+0.6	13.9	

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