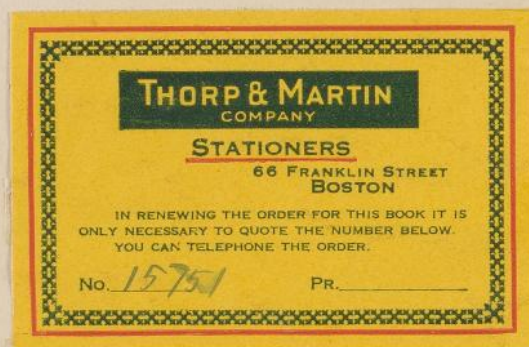


KG
11365
909

B.P.G.



KG 11365 .909



W. P. Gerasimovic

Color indices of long period
Variables

Estimates made by A. Sayer

Variables

R Aquarii

R Arietis

R Hydrae

U Herculis

R Herculis

S Hercules

X Ophiuchi

S Ursae min

R Cygni

RS Cygni

JS = Just seen
L = Fainter than
J = Brighter than
v = very
sl = slightly
ft = faint

KG11365.909 R Aquarii = 2338¹⁵Variable with Arbitrary sequence
Marked on AM 2629HARVARD
UNIVERSITY
LIBRARY

JUL 17 1955

Plate No.

Date

Remarks

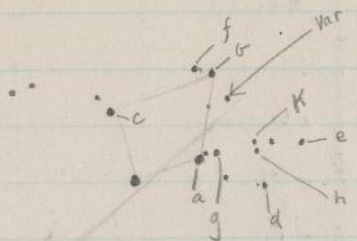
1605 m	16029	js < k	As much fainter than K, as K is < h.
3125 c	16115	4dc	
3135 c	16116	7dc	
2311 m	16397	3kh	
2322 m	16400	2kh	
4332 c	16459	3ed	
4342 c	16460	3ed	
4462 c	16479	2cb	
4493 c	16485	6cb	
2449 m	16494	2ba	
2454 m	16496	8cb	
✓ 16602 c	20701	~~e~~ lv Lf	
16644 c	20721	3dc	
10989 m	20723	4dc	
10997 m	20724	2dc	
10997 m	20724	4dc	Excellent plate for chart
16698 c	20743	2dc	
11608 m	20749	d	
16728 c	20752	d	
11150 m	20754	4ed	
11286 m	20772	2ed	
11309 m	20775	1ed	
11321 m	20776	sl > e	
16814 c	20777	3fe	
11331 m	20777	5fe	
11332 m	20777	4fe	v. diff to ed.
13351 m	20779	5fe	
17847 c	21109	sd c	

Plate No	Date	ID	Est	Remarks	Est#
12514 m		21135	8dc		
12584 m		21151	4dc		
12662 m		21159	3dc		
19067c		21468	7hg		
19089c		21478	e	Diff to est.	
19090c		21478	7fc		
19133c		21485	4dc		
19148c		21488	2cb		
19182c		21494	5cb		
13627m		21496	4cb	Focus poor	
13613m		21491	5cb	Diff to est, very sharp	images
19245c		21506	4cb		
13679m		21506	6cb		7cb
19292c		21518	6cb		3cb
19380c		21526	8dc		6dc
19412c		21540	4dc		3dc
19432c		21543	3dc		5dc
19448c		21545	c		4dc
12616m		21155	8dc		8dc
12628m		21156	c		c
12639m		21157	4dc		4dc
18039c		21158	d±	Underexposed	2dc
12665m		21160	4dc		5dc
18056c		21162	2dc	v diff to est	4dc
20531c		21864	3fe		3fe
20545c		21866	2fe		4fe
20564c		21870	4ed		5ed
14483m		21870	7ed		7ed
14484m		21870	8ed		5ed

Plate No	Date	JD	Est F	Remarks	Est #
14491 m		21874	6ed		6ed
20650 C		21903	2ct		3ct
20715 C		21921	3dc		4dc
20736 C		21924	6dc		4dc
20747 C		21925	2dc		2dc
20891 C		21958	e±	v ft	slze
15043 m		22253	f		f
20843 C		21947	ct		3ed?
15050 m		22257	red		7ed
21992 C		22273	8dc		7dc
22004 C		22281	2dc		5dc
22192 C		22327	5dc		~~st~~
22220 C		22334	5dc	w diff to est	2dc
24133 C	Sept 23, 1921		5hg		
24194 C	Oct 5, 1921		g	poor	
17632 i		21874	d±		
17647 i		21878	d±	P	
17673 i		21889	7dc		
17683 i		21891	7dc		
17691		21899	8dc		
17704		21902	7dc		
17733		21908	8dc		
17781		21921	4dc		
17854		21933	d		

Plate No	Date	JD	Est	
17989 _N		21946	7cb	
19111 _N		22287	9dc	
19199 _N		22311	5dc	
19241		22322	7dc	Pon
12989 _N		20726	5dc	
15021 _N		21090	7dc	P
15034 _N		21098	9dc	
15049 _N		21107	3cb	
15057 _N		21109	4cb	
15090		21124	3cb	

Chart of field of R Aquarii. = 23 35 15.
taken from AM 12629.



series a-k, omitting i & j.

catch figure

	AM 2976	AM 3131				Int. Sur.
B					6.51	6.49
C	= 2	= 2	7.36	7.36	7.36	7.39
d	6-8-3	6-9-3	8.19	8.15	8.17	8.25
e	10-8-6	10-5-6	8.71	8.94	8.82	8.95

$$b = 118 - 16.6245 \quad 5.44(\text{HRP}) = 6.57 \text{ mag (K2)}$$

Comparison field H.S.R. 812, Her b is too bright, assumed H.R.P. magnitude corrected for C.T.

R. Aquarii

P = 387 d.

7

W_{vis}	Vis. Epoch	Vis. M.	Phot. Epoch	Pg. M.	$\Delta Ep.$	C. J.
4.	20732	7.0	739	7.82	-7	+0.8
5	21113	6.3	119	7.12	-6	+0.8
5	21513	6.3	003	6.76	+10	+0.5
5	21908	6.7	904	7.39	+4	+0.7
4	22292	6.8	298	7.39	-6	+0.6
						+0.68

R Andia

Plate No	Date	JD	Est	
20460 c		21843	2 Ld	Prn
19403 c		21538	4ed	
19184 c		21494	8ed	prn
19181 c		21486	2dc	
19117 c		21483	7cd	
17893 c		21123	26a	
16790 c		20769	9cb	
16764 c		20763	36a	Yellow
16709 c		20750	3cb	
7119 c		17202	c	
7255 c		17245	2 Ld	Very prn
7213 c		17237	5dc	
7188 c		17232	7dc	
7184 c		17230	8dc	
14868 c		20176	36a	
14839 c		20169	Ld	
16834		20782	2dc	
16674		20728	2dc	
18027		21154	3dc	
19310		21522	2dc	
19247		21506	Ld	
20663		21906	e	
20566		21870	5cb	
21966		22261	3cb	
21937		22254	3cb	
21880		22239	9cb	
7243		17244	4dc	
7175		17227	8dc	

Center's $2^h + 30$
 $1^h \pm 0.0$

9

Plate No	Date	JD	Est	
7147		17217	6cb	
7110		17194	2dc	
8676		17798	8dc	
9019		18132	4cb	
9260		17983	7dc	
9135		17944	9dc	
10764		18546	5dc	
10663		18513	26a	
10241		18356	2dc	
10194		18339	8cb	
11901		18925	6ed	Poor
11406		18728	7dc	Poor
11384 ~~1183~~		18717	8cb	
11366		18713	6	
11284		18683	7cb	
12584		19306	5ed	
12938		19453	5cb	
13699		19798	7ed	
14340		20017	5cb	
13743		19806	9dc	
13739		19805	8dc	
20346		22637	3dc	
21993		22276	8ed	
21984		22272	7ed	
20183		20909	3ed	
20654		20905	7ed	Very poor
20499		21881	8cb	

Plate No	JD	Est	
19383	21536	7ed	
19126	21484	5ed	Very Poor
17934	21132	3ba	
17860	21117	2ba	
16742	20756	5dc	Very Poor
16700	20743	6t	
8222	17615	8dc	

17610 i	21868	4cb	Very Poor
17585 i	21864	3dc	" "
17518 i	21847	5dc	" "
18933 i	22239	4cb	" "
11699	20026	c	" "

Comparison field RA $16^h 0^m 5^s + 17.5$
(HA. 85, p. 25)

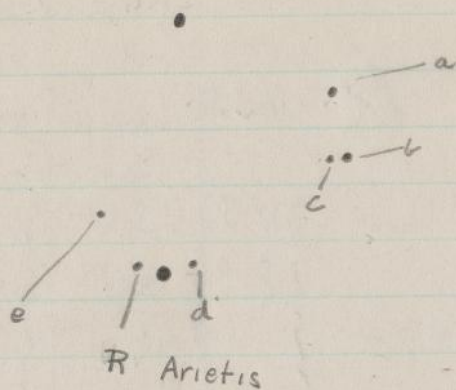
plate AC 16320

a	4-3-2	-4-4-2	{ 8.33; 8.21	{ 8.27 8.35
c	7-7-4	7-5-4	{ 8.96 9.14	{ 9.05 9.19
d	{ = 7	{ 7-1-4	{ 9.51	{ 9.51 9.69
e				
f	8-4-7	8-3-7	{ 10.15; 10.24	{ 10.20 10.40

U Herculis See p. 30

Chart of Field of R Arietis = 021024

taken from AC 14388



series a-e

meas. me 11796

						7.5
a	= a		7.46		7.46	7.49
b	e4d	e5d	9.06	8.94	9.00	9.14
c	g9e	e1d	9.61	9.41	9.51	9.69
d	g3f	K2g	10.11	10.38	10.24	10.45

from Moon 9 p.30

a = 7.46
 d = 8.35
 e = 9.53
 f = 9.60
 g = 10.33
 K2 = 10.83

R Arietis

P = 187 days.

13

W vis	Vis Epoch	Vis $\bar{m}$	Photop. Ep.	Pg m	ΔE_p	C. J.
5	17228	8.8	214	9.42	+14	+0.6
5	20751	8.3	755	8.98	-4	+0.7
5	21127	7.9		8.82		(+0.9)
4	21506	8.8	508	10.30	-2	+1.5
5	21876	8.6	880	9.30	-4	+0.7
5	22202	8.0		9.25		(+1.3)
						+0.95

R Hydrae

13 2422

AM 7031

Maxima

Plate No	JD	Est	
7525 C	17332	a	sl > a?
7626 C	17382	7BD	Diff to est
12916 C	19443	5AB	
12940 C	19453	3AB	
12952 C	19460	A	
12961 C	19461	2AB?	
14795 C	20154	3cd	
14909 C	20188	b	a
14909	20202	8BD	
14995	20211	6BD	
15005	20212	5BD	
15036		~~2BD~~	Yellow plate
15101	20240	7BD	
15224	20285	8a A	
15140	20253	7AB	
15229	20285	3AB	Poor
16128	20547	7dc	
	20565	~~2ab~~	call this a. "b" is nearly same mag as a, brighter?
16383C	20566	2BD?	
16518	20657	4BD	
16256c	20569	2cb	
		8a A	yellow
16384c	20557	3a A	
16373c	20595	4AB	brighter?
16445c	20628	6AB	
18860c	21374	4AB	
10375m	20592	5AB	
10470m	20610	7BD	
10629 m	20654	8AB	
10637 m	20655	2BD	

Plate
centers13^h - 15
14 - 15
12:30^m - 1512^h5, 13^h, 14^h - 30

15

Plate No	JD	Est	
10666 M	20660	4BD	
10680 m	20664	3BD	
10682 m	20664	8AB	
10688 m	20666	5BD?	
13286 m	21396	3AB	
13316 m	21400	5AB	
13526 m	21460	8AB	
13539	21468	5BD	
13185	21372	B	
13182	21371	5AB	?
13188	21367	5AB	?
13152	21366	5AB	?
13137	21364	3AB	?
13130	21363	5AB	?
10726 m	20681	4CA	
10548 m	20623	5DE	
10557 m	20621	7BD	
10363 m	20584	3AB	
9804 m	20282	5AB	
9800 m	20282	5AB	
9771 m	20267	8AB	?
9745 m	20254	D	
9730 m	20245	5BD	
5629 m	18130	8aA	
4453 m	17429	A	?
4416 m	17412	4AB	
4370 m	17399	5AB	?
4289	17373	3AB	

4267	17360	2BD	
13486m	21448	D±	
13483m	21447	8BD	
13329m	21402	7BD	
13285m	21396	3BD	
13259	21392	8AB	
13250	21391	7AB	
13246	21390	5AB	
10705	20668	2BD	
10697	20667	3BD	
10659	20660	1BD±	
10646	20656	5BD	
10619	20653	6BD	
10446	20607	7BD±	
10434	20606	D	al < D?
10403	20594	4BD	
10374	20592	2AB	
8832	19882	a	?
4140m	17294	4dc	
4186m	17329	7aA	
4233m	17344	4AB	
4288m	17373	8BD	
4325m	17378	7BD	
4427m	17414	5aA	
5598m	18118	4Ca	
9715m	20239	7BD	
9775m	20268	7BD	
9795m	20280	A	
9858m	20297	3Ca	
10345	20581	6aA	
10554	20624	8BD	
10577	20628	7BD	
10740	20682	2AB	
10786	20691	8Ca	
13110	21366	4Ca	
13129	22093	3Ca	
13145	22095	3Ca	
13157	22097	3aA	

Munima

17

114720	18745	6 gf	
C 10521	18452	8 gf	
C 10493	18438	5 hg	
C 10454	18421	2 hg	?
C 10448	18420	sl ch?	
C 10343	18387	2 hg	
C 10264	18363	8 hg	
C 10256	18360	3 gf	
C 10192	18338	4 fe	
C 9457	18063	7 ed	
9437	18053	5 ed	
9428	18051	3 ed	
9402	18041	2 ed	
9386	18035	3 fe	Poor
9379	18034	4 fe	
9311	18004	h	
9249	17979	4 hg	
8276	17628	6 hg	Poor
8254	17621	3 hg	
15193m	22461	4 hg	
15166m	22455	2 hg	
9345C	19993	3 hg	
9189m	19958	3 ed	
9166m	19953	7 fe	
9159m	19952	3 ed	
9128m	19947	3 ed	
9121m	19946	3 ed	
9105m	19944	4 ed	
8475m	19602	sl ch	Poor

8454 m	19599	3 Kh	
8481	19590	2hg	Pow
8352	19569	4hg	
8385	19562	4gf	
8279	19558	4fe	
8154	19548	5fe	
7666 m	19260	5cd	
7636	19251	3cd	
7576	19237	4fe	
7538	19230	5gf	
7529	19225	6hg	
7501	19216	7hg	
7480	19213	8hg	
7460	19205	7hg	Pow
7450	19203	7hg	
7427	19180	9hg	Pow
7408	19159	3fe	
7404	19157	8fe	
7400	19153	7fe	
7389	19137	ved	
7378	19123	4cd	
7138	18869	3dc	
7093	18861	4dc	
7061	18855	4cd	
6950	18821	6 Kh	
6931	18819	2 Kh	Pow
6226	18470	7cd	

6169	18453	3fe	
6093	18435	3hg	
5969	18383	7hg	
5441	18069	4dc	
5435	18068	7ed	
5383	18041	2ed	
5346	18030	2fe	
5289	17970	7hg	
✓ 15236	22483	4gf	
19913	21663	3hg	
19962	21675	7hg	
8387	19588	4kh	
m 18313	21687	2ed	Poor
15129	22436	1hg	
15243	22484	2ed	
m 15175	22457	3hg	
m 9254	19975	8hg	
m 9158	19952	4fe	
m 9149	19951	3ed	
m 9085	19942	3ed	
m 9046	19929	8ed	
m 8899	19898	6dc ±	Very br
m 8880	19895	6dc ±	" "
8500	19605	5Kh	poor
8411	19591	4hK	
8357	19571	6hg	
8318	19564	8hg	
8291	19560	4fe	Poor
8285	19559	4fe	Very poor

} too far from minimum

m 8255	19548	5 fe	
m 7006	18831	2 hg	
m 6979	18826	2 hg	
6 930	18819	5 kh	
6211	18468	7 ed	
6180	18456	4 de $\pm$	Pov
6092	18435	8 kh	
6042	18404	h	Pov
5950	18329	5 fe	
15976 m	23257	sl < k	
15907 m	23235	4 kh	
15871 m	23225	2 hg	
15825	23206	9 hg	
15776	23190	7 fe	
15585	22823	5 kh	
15617	22868	k $\pm$	
15628	22871	h	Pov
23669	22819	h $\pm$	Pov
16705	24168	3 ed	
16340	23619	7 hg	
16208	23528	6 ca	
15932	23248	3 kh	
15882	23229	8 kh	
15850	23219	3 hg	
15775	23190	2 fe	
15593	22834	2 kh	

26340	24670	3AB	
26197	24513	5hg	Poor
26187	24510	5Kh	Poor
23743	22842	d e K	Poor
8380	17660	3 ta	
9740	18280	5fe	Very poor
9791	18221	7cb	
10735	18540	6cb	
11674	18811	5fe	
11700	18825	2cb	
11764	18861	3cb	
11813	18883	d	
11832	18889	8fe	Very poor
12388	19189	6gf	
12397	19195	3gf	
12934	19449	4cb	
12983	19467	4cb	
	203740		
15407	20371	1aA	} 2
164130	20607	8dc	
16425	20611	d c	Poor
16516	20652	9cb	
16523	20659	6cb	
17500	20961	2aA	
17509	20964	3aA	✓
20387	21825	2ed	✓
20551	21868	5ta	✓ poor
21738	22199	5ed	Very "
22569	22423	8gt	

The observations
of plates 8380 - 22569 inc,
should go with
5 Hercules, page 40.
They were recorded
here accidentally
(Sayer)

Chart for field of π Hydrae

• B

series

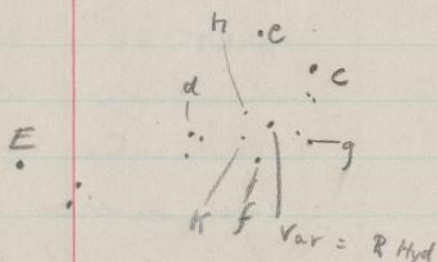
D, B, A, a, c, d, e, f, g,
h, k

• A

• D

• a

Identical AM 5412

(14^h - 15^o)

Identical AM 14817

Compare with RA 85 Jt. Rg. at 14^h - 23° 30'

$5 = 10.94$

g

5-7-4

5-5-4

5-6-4

10.20

10.42

$4 = 9.76$

h

5-3-4

= 5

5-15-5

10.76

10.99

k

= 5

5

10.94

11.18

$$13^h 26^m 00^s$$

B =

CD - 22° 9855 (-22° 30' 3; 13^h 12^m 5)

5020 4.11 3.33 95

- A =

CD - 27.9278 (-27.281; 13 24^m 28^s) = HIP 5090 6.8m = 6.55 A2

A =

CD - 25.9900 (-25 52' 13 29 53)

5120 5.77 5.49 A2

CD - 25.9863 (-25 56' 2 13 25 59)

Adopted pg. magnitudes for field of R Hydra

B 6.8

D 5.6

E 4.1

g 10.4

h 11.0

K 11.2

16252c	20569	4ml
16455	20629	4ba
16483	20637	7dc
✓ 16556	20683	2fe
17557	20986	4kh ?
17640	21015	2cb
17720	21052	7ba
19073	21476	5fe
19153	21490	8fe
20515	21856	7dc
20527	21861	6±
22287	22342	5LK
22529	22407	flashed=l
10436 m	20606	8dc ?
10562 m	20625	4cb
10603	20651	6dc
10669	20661	7fe
10687	20665	8fe
10708	20668	5fe
12042	21037	3ba
12052	21038	3ba
12062	21039	3ba
12070	21042	2ba
13325	21401	flashed=l
✓ 13342	21404	4ml

Note: In series of
Comparison star 6 is found
to be too near in magnitude
comparison to 6 of value in
estimates. Therefore throw
6 out of the scale.

0 Pon

17586c	20995	2fe	
17637	21010	4dc	
17645	21016	5dc	
17648	21017	26a	
17652	21020	46a	
17683	21041	26a	
17798	21094	4fe	
19025	21453	2fe	
19315	21524	2gf	
20518	21858	36a	
22176	22323	2gf	
22359	22362	5mk	Poor
22579	22424	2Q	
4870m	17725	2fe	
4887m	17728	3fe	
4927m	17745	8ed	
4969	17760	3dc	
4989	17767	2dc	
5038	17792	6fe	
5097	17815	1fe	
5106	17817	2fe	
5581	18112	3lk	Poor
5600	18118	8lk	Poor
5707	18124	16a	
9951	20302	4hg	
11711	20995	3fe	
11876	21017	c	
11894	21019	50b	
12151	21051	76a	

8416 c	17680	Pld sun sm	
8489 c	17707	2 lh	e
8512	17717	3gt	
8543	17738	7cd	
8572	17754	2dc	
8584	17759	5dc	Poor
8611	17770	8ed?	
8635	17784	4ba	
8650	17791	6fe	Poor
8666	17797	4fe	Poor
9548	18107	g	VPoor
9673	18175	3ba	
9707	18185	8cb	
9714	18188	7dc	
9744	18204	2dc	
9785	18220	4ed	
9801	18227	4fe	
15144	20253	3dc	
15189	20271	4ed	
15211	20281	4fe	
15227	20285	3fe	
15234	20286	4fe	
15250	20294	2fe	
15264	20298	2fe	
16406	20604	5cb	
16423	20609	1ba	
16531	20667	3ed	Poor
17516	20966	4ml	

12220	21064	2dc	
12246	21068	3dc	
12256	21069	5dc	
13445	21438	3fe	Pon
13452	21440	5fe	"
8419c	17700	4mL	
8515c	17716	h	
8515	17718	39f	
8547	17739	8fe	
8575	17755	4dc	
8587	17760	3dc	
8618	17773	5cd	
8707	17808	4fe	
9554	18109	5mL	
9639	18139	9dc	
9740	18200	6dc	
9791	18221	7fe	
10766	18547	4hg	
14989	20210	76a	
15128	20246	26a	
15156	20255	4dc	
15179	20268	7ed	
15232	20286	3fe	
15202	20277	6fe	
15185	20270	6fe	
15181	20269	4ed	
15277	20302	3fe	

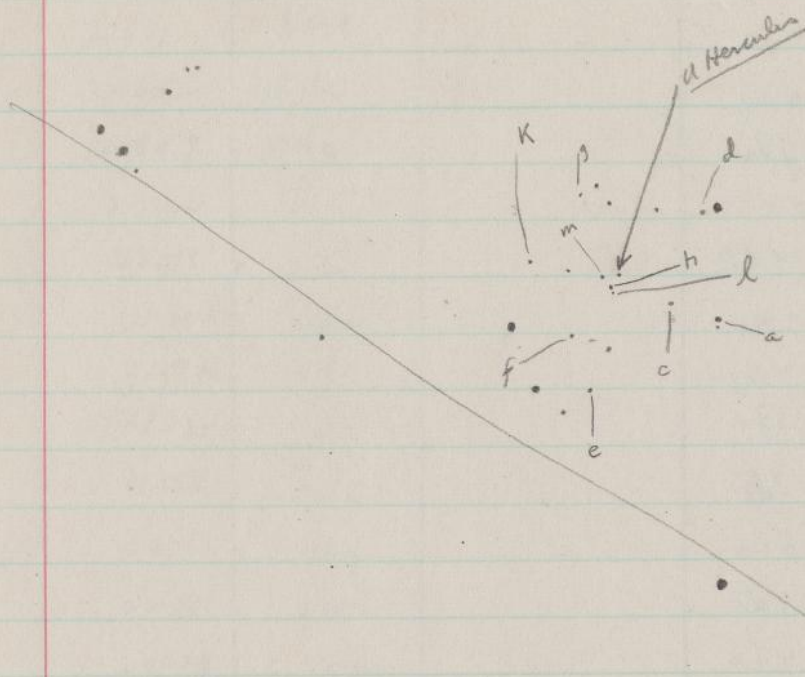
16413	20607	2ta	
16425	20611	86a	
16516	20652	5dc	
16523	20657	2dc	
17509c	20964	l ±	
17644	21016	C	
17693	21044	3ca	
17779	21090	5fe	
20387	21825	5fe	
20551	21868	4dc	
22175	22323	4hg	
22451	22381	2ml	
16454	20629	4ca	
16477	20636	4ca	
16486	20638	6dc	
16557	20683	3fe	
17573	20991	2fe	
17621	21015	8fe	
	21062	6dc	
20469	21846	4dc	
20524	21859	4ca	
20679			
22210	21909	2ed	Poor
22235	22328	lch	"
	22335	h	Poor
22330	22354	l	

245580	23155	2dc
252210	23518	6fc
25253	23554	4hg
25926	24306	7dc
25928	24307	5dc
26341	24670	4lh
2647	24678	3kh
26351	24683	4hg
26370	24696	8fe
26373	24700	3dc
26397	24723	8ca
26407	24748	4dc
26420	24762	4fe
25905	24283	6fo
25920	24298	5fe
25924	24303	2dc
25147	23467	3fo
25195	23498	4fc
25206	23506	8d
25229	23522	3fe
25244	23547	2gf
24541	23053	2dc
24666	23117	2dc

Pov

P

Field of α Herculis 162119 Taken from
AC 16320



Series a, c, d, e, f, g, h, k, l, m.

See p 11

Plate	JD	Est	
14069 c	19928	3 cb	
14075 c	19929	6 cb	Poor
14127 c	19949	a ±	
14142	19953	96a	"
14160	19959	46a	
14171	19962	46a	
14179	19964	56a	
14213	19975	8 cb	
14226	19979	5 cb	poor
15144	20253	7aA	
15211	20281	3aA	
15227	20285	3aA	
15234	20286	3aA	
15250	20294	36a	
15264	20298	26a	
✓ 88	20306	7 cb	
4330m	17378	e	poor
4353	17391	4 cb	
4366	17394	3 cb	
4454	17429	206	
✓ 4485	17433	3 cb	
4870	17725	2 cb	
4887	17728	2 cb	
4927	17745	1 cb	
✓ 4969	17760	2e	
5359	18034	26a	
5428	18065	8 cb	
5528	18098	3 cb	Poor

76610	17466	5cb	V Poor
7702	17437	c	"
7758	17454	c	"
8489	17707	e	
8512	17717	d	
8572	17754	2cb	
9414	18045	2ba	
9466	18065	8cb	
8474	17760	2e	
8505	17716	e±	
8515	17718	3ed	
8547	17739	5cb	Poor
8575	17755	e	
15277	20302	5ba	
15297	20308	3cb	
15307	20317	6±	Very Poor
94130	18045	2ba	
9192	19958	4ba	"
7560	17349	e	
		3ba	
	22842	8ba	
23795	22855	4ba	
24727	23166	7cb	
24775	23202	e	
25147	23467	2ba	
25195	23498	4ba	
25206	23506	3ba	
25229	23522	2cb	

23758

24741

25721

22845

23175

23518

3aA

2cb

8cb

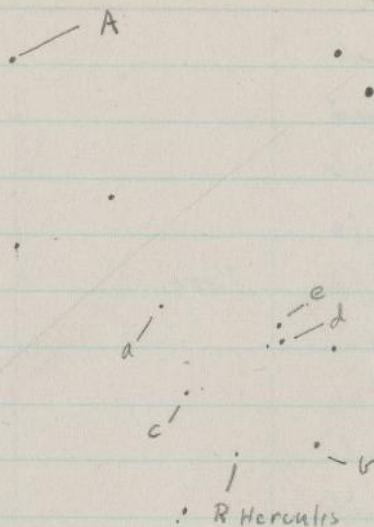
Plate Gentes

$16^h + 17^h + 15^m + 30^s$
AC + AM series

Comparison field for

R Hercules

35



Series : A, a, b, c, d, e.

stars a and c are from
standard sequence

$4 = 8^m 6^s$				7.5	
a	= 7			9.60	9.78
c	= 8			10.52	10.74
b	8-5-7	8-4-7	10.06	10.15	10.10
A	7-4-4	7-2-4	9.24	9.42	9.33
					9.49

Comp. plate AC 16320. Honda field (RA 85, 25)
RA = $16^h 0$ $\delta = +17.5$

SHerculis 164715

Variable Star with arbitrary
sequence marked on AM 6431

Plate	JD	Est	
X 9951 m	20302	4ab	
9865 m	20299	7ed	
9449	20031	3cb	
9368	20007	7fe	
7619c	17377	5fe	Poor
7560c	17349	3ba	
4353 m	17391	8gf	
4330 m	17378	3dc	
4293 m	17374	2cb	
✓ 4268	17360	2ba	
X✓ 4222	17342	a±	
	20326	3ba	
15288c	20306	6dc	
	20298	3ed	
✓ 14263a	19999	6gf	Poor
✓ 15311	20318	b	"
15307	20317	2ba	"
15297	20308	5ed	Very Poor
15294	20307	5dc	" "
✓ 15277	20302	5ed	"
8479	17700	g	
8463	17690	5fe	"
8448	17686	f	
8456	17687	5fe	
✓ 8416	17680	8ed	
7546	17342	8ba	
24665	20317	4ed	
11844	18893	d	
13035	19491	3gf	

S Hercules

Plate Centers $\pm 0^{\circ}0$, $+15^{\circ}+30^{\circ}$ $16^{\circ}, 17^{\circ}$ AC+AM
37

Plate	ID	Est	
16455	20629	4cb	
16556	20683	5cb	
17449	20950	2aA	✓
18425	21248	c±	
18631	21296	e±	✓
20515	21856	70a	
20527	21861	46a	
6926	18818	8ed	
10436	20606	7ed	✓
11562	20625	8ed	
10603	20651	26a	
10669	20661	26a	
10687	20665	8cb	✓
	22179	66a	
	22190	~~206~~	
6472	17026	36a	
6498	17036	6	
6511	17040	7cb	
6521	17045	8cb	
6531	17048	8cb	
6577	17063	36a	
6598	17092	26c	Poor
6665	17097	9	
7420	17295	8fe	
7428	17301	3ed	
7483	17318	26a	
7503	17327	2aA	
8287	17029	36a	✓

8305	17632	36a	✓
8361	17653	36b	✓
9744	18204	2ed	
9785	18220	36a	
9801	18227	26a	
9849	18242	2aA	
10636	18505 ²	2fe	
10657	18512	e	
10688	18525	8dc	
10704	18530	16a	
10781	18552	46a	
11670	18809	4ed	
11709	18827	4dc	
11715	18831	7dc	
11752	18858	6dc	
11802	18880	c#	
11826	18886	6dc	✓
12376	19179	d	
12390	19189	79f	✓
15366	20359	26a	
15395	20369	8cda	
15426	20377	8ed	
15488	20392	1fe	
16406	20604	7dc	
6936	18819	8ed	
6980	18826	4dc	
7003	18830	26b	

7028	18842	c	
7076	18858	66a	
7106	18863	7dc	
7176	18886	3dc	
9484	20035	10b	
10005	20343	46a	
10014	20346	46a	
10027	20350	36a	
10051	20358	26a	
10052	20358	30b	
10796	20692	2ed	
10821	20695	5ef	
10840	20697	8gf	
11711	20995	6ed	✓
14862	22163	8cb	
14872	22168	8cb	✓
6461	17024	dt	
6513	17042	70bt	
6543	17052	7cb	
6579	17063	c±	Poor
	17081	3fe	
6639	17087	5gf	
7410	17293	7gf	
7456	17307	5ed	
7504	17327	a	
8251	17619	4ed	
	17625	4dc	
	17641	36a	
8334	17642	36a	✓

{ See pages 21 for additional observations
which were recorded there thru accident }

S Heroulius

16454c	20629	2cb	
16477	20636	8dc	
16557c	20683	5ed	
17467	20954	4aA	
17573	20991	8dc	
17621	21005	4gt	
18428	21241	8cb	
	21246	5cb	
20469	21846	5ed	Very poor
20524	21859	8cb	
21642	22169	3dc	
22625	22449	5ba	
6512c	17042	7ba	
6530c	17048	4ba	
6570c	17061	4cb	
6613	17079	2ed	Poor
7455c	17307	7dc	
7539	17341	4ba	
7575	17352	8ba	
7587	17365	1aA	
7605	17374	8dc	
8455	17681	6cbf	V Poor
10681	18521	4ed	
10816	18567	3ba	
11675	18811	3ed	
11714	18830	7dc	

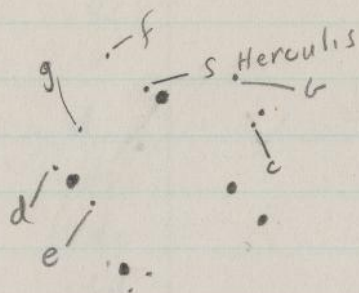
11685	18821	dt	
		~~7dc~~	
13014	19480	5fe	
15267	20300	1cb	
15282	20304	8dc	
15298	20308	5cb	
15319	20327	5ba	
15382	20367	7dc	
16405	20604	6dc	
16528	20661	2ba	
17368	20923	3ed	
17539	20980	4ba	Pon
18347	21223	3cb	Pon
18570	21276	1ba	
20366	21821	4fe	
	22179	3dc	
21757	22199	et	
22669	22483	2dc	
	17019	c	
3667m	17021	8dc	
3687m	17032	2ba	
3818	17079	2ed	
3858	17096	2cg	
	17298	5fe	
4303	17375	3cb	
4753	17658	4ba	
4795	17698	gt	
6367	18505	2ed	
6378	18507	4cd	

6411	18513	c
6430	18523	4cb
6491	18529	b
6942	18820	d
6962	18823	3dc
6970	18824	4dc
7034	18848	3ba
705 ⁶	18854	4ba
7068	18856	2ba
7119	18861	2ba
	18865	6b
7146	18878	3cb
7149	18879	4dc
7194	18892	7ed
7422	19178	et
9441	20020	7cb
~~9870~~		~~3cb~~
~~9864~~	20299	c
9882	20304	6dc
9988	20339	2ba
10029	20352	3ba
10033	20353	4bat
10748	20679	c
10757	20680	4cb
10795	20689	2ed
10831	20696	4fe
10829	20697	8gf
11688	20993	8dc
11773	20995	7gf

14859 ~~km~~	22162	6
14871 ~~km~~	22168	6
16434	20624	7dc
17469	20954	2a
17581	20993	8dc
18496	21259	6t
20451	21840	3ed
20541	21866	36a
21648	22170	56a
21797	22215	1fe
10426 ~~km~~	20605	8dc
10613	20652	36a
10649	21656	26a
10670	20661	6
10691	20665	36a
14284	21818	2ed
10920	22186	26
14926	22188	666
14980	22193	3ed

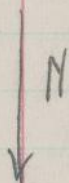
Comparison field for
S Hercules: 164715

Marked on AM 6431



Series:

A, a, g, c, d, e, f, g.



Comparison field. H. 5 R. C. 9. Plate AM 6431

7.5

A	E 12	E 10	7.49	7.49	7.49	7.5
a	I 3 H	I 3 H	8.92	8.92	8.92	9.06
b	I 2 H	I 1 H	8.96	9.00	8.98	9.12
c	I 1 H	= I	9.00	9.04	9.02	9.16

X Ophiuchi

183306

Variable with arbitrary
Sequence marked on AC 17916
and AC 19972

Plate	JD	Est	
16727c	20756	1cb	
16753	20762	2cb	
16975	20813	~~3ed~~	9fe re-ed ("d" repeated)
17780	21090	~~2ed~~	7fe re-ed
17931	21132	9cb	
18095	21170	2fe	
✓ 18149	21178	8gf	
18946	21423	~~2ed~~	8fe re-ed
19080	21477	1cb	
✓ 19170	21492	~~3ed~~	Pen 3ec
20249	21782	4cb	
20274	21790	9cb	
20281	21791	b	
20316	21802	8cb	
20484	21848	4ef	
21439	22092	c	
	22098	c±	
21486	22109	7cb	
21586	22115	9cb	
21632	22166	8 ^e fc	
21676	22179	3ec	
22634	22455	6cb	
22705	22509	4ec	
22749	22523	3ec	
22764	22527	6fe	
18072m	20739	e	
12348	21094	3ec	
12356	21098	7ec	
12368	21100	7ec	

12625	21158	8fe
12636	21159	9fe
13536	21465	2cb
14386	21824	16a
14914	22185	4ec
14919	22186	2ec
76200	17377	16b
7668	17408	2cb
7680	17417	5cb
7695	17435	2cb
7715	17439	2cb
7727	17441	c
7730	17442	1cb
7767	17455	9ec
7794	17460	4ec
8601	17718	1cb
8630	17783	7ec
8649	17790	4ec
	17792	7ec
	17802	e±
10569	18474	2ec
	18495	3gf
	21088	3ec
17836	21107	9ec
17981	21144	3ec
19016	21449	3cb
19031	21459	3cb

Pon

X Ophiuchi

19064	21468	3cb
19229	21504	8fe
20215	21763	6ec
←	~~21807~~ 20334	6
20360	21819	2cb
21524	22120	7cb
21516	22121	9cb
21663	22175	4ec
22677	22490	2cb
7719	17440	2cb
7805	17465	4ec
8513	17717	e
8556	17746	3cb
8590	17762	2cb
8642	17786	5ec
	17796	3gf
10532	18456	6ec
	18484	5gf
16680	20735	3ec
16807	20775	4cb
17770	21088	9
17803	21095	8ec
19015	21449	3cb
19041	21462	1cb
19048	21466	3cb
19221	20152	6ec
20182	21753	8gf
20351	21812	4cb

Pon

21496	22112	3c6
22647	22463	6c6
22671	22483	5c6

4546	17459	5ec
4941	17785	4c6
4962	17759	2c6
4995	17765	2c6
5021	17786	4ec
5071	17804	2fe
5087	17807	8gt
6126	18446	16a
6144	18444	4ec
6166	18452	4ec
6172	18454	2ec
6192	18457	e
6251	18477	2fo
6257	18478	4fc
	18494	5gt
6325	18496	8gt
11694	20748	7ec
11269	20768	1c6
13410	21426	e
15826	21865	2g
16935	20808	7fc
18450	21425	6fc

V Poo

X ophiuchi

19112	21483	2c6
19179	21494	5ec
20196	21757	8fc
20201	21759	4fe
	21758	6ec
20203	21760	5ec
20210	21761	5ec
20253	21783	9c6
20261	21787	6
20267	21789	7c6
20275	21790	8c6
20279	21791	7c6
20286	21793	6c6
	21795	16a
20299	21796	7c6
20305	21797	6
20456	21842	ec
21635	22167	2c6
22744	22522	7ec
1291		
17916	20773	6c6
12343	21093	8ec
12357	21098	8ec
	21101	3c6
12392	21105	9ec
12675	21161	4ec
13338	21403	5gt
13499	21452	2c6
17916	21128	4c6

Poor

X. Ophiuchi

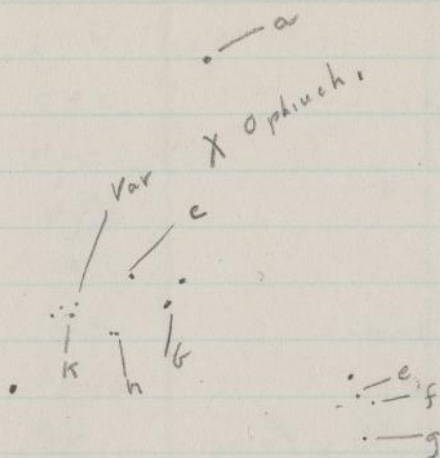
51

13508	21454	6cb
	21456	4cb
	21460	3cb
	21462	3cb

Minima

19972	21676	2gf	✓	
18719	21314	5hg	✓	Very Poor
	21317	3hg	✓	
	21672	8hg	✓	
21004	21983	2hg	✓	"
	17907	8hg	✓	"
18753	21322	6hg	✓	
21129	22002	5hg	✓	"
22959	22607	g	✓	
22948	22602	5hg	✓	
22970	22609	g	✓	
22984	22613	5gf	✓	"
23012	22621	2hg	✓	
18711	21312	5hg	✓	"
	21259	4gf	✓	
18608	21284	2gf	✓	
23062	22642	6hg	✓	
		~~2cd~~		

Chart for X Ophiuchi 183306



Series

a, b, c, e, f, g, h, k

Comparison field. that of RX Herculis (Brook 9a, 211)

b	a - 0.318 - a)	6.90 ✓	6.90	6.90 ✓
c	e'3e, d'9c, e'1c,	8.01, 7.97, 8.07 ✓	8.02	8.10 ✓
e	d'2e', d'2e'	8.86, 8.86 ✓	8.86	8.99
g	f6d', f4d', f3d'	9.29, 9.38, 9.46 ✓	9.35	9.51 ✓
h	f1d', f1d'	9.66, 9.66	9.66	9.85 ✓

S Ursae Minoris 153378

Variable with
sequence marked on AC 8436

Plate No	JD	Est	
5334 c	16760	6 dc	
6360 c	16768	3 cb	Rev
5662 c	16818	8 cb	
5852 c	16863	7 dc	
5876 c	16868	d	Very poor
5930	16877	7 ed	
5963	16884	7 fe	" "
6960	17159	4 cb	"
6914	17149	8 cb ±	
7609	17375	7 dc	
7633	17389	2 cb	
7716	17439	4 cb	
7778	17458	5 cb	
	17729	5 dc	
	17760	3 bc	
	17767	4 bc	V poor
8720	17814	6 bc	
	18055	4 dc	
	18067	2 cb	
	18102	7 cb	
	18134	3 cb	" "
10294	18374	4 cb	
	18388	5 cb	
	18404	2 ba	
	18431	4 ba	
	18484	6 dc	
10606	18488	3 dc	" "
	18491	3 dc	"

	19323	3 cb	—?
	20650	260	
16667.	20727	260	
	20966	260	
	21035	260	
	21272	560	
	21282	760	
	21323	360	Very Poor
	21585	160	
	21626	960	
	21643	660	
	21951	260	
	21957	260	
	21993	9dc	
	22001	4dc	
	22260	660	
	22313	4dc	
23009c	22620	860	
20720	21921	860	
	22341	2ed	
	22643	2 cb	Very poor
	18111	4cb	
	19067	6cb	
	19094	5dc	" "
19308	19409	2cb	
	→	2cb	
	19439	3dc	
	19441	2dc	" "

S Ursae Minoris

13513	19732	5cb	
	19735	5cb	
	20631	c	Poor
	20696	6cb	
	20954	3cb	
	21021	3cb	
	21308	8cb	
	21352	2cb	
	21595	7cb	
	21661	2cb	
	21672	2cb	
	18751	8cb	
	17677	3cd	
	18425	16a	
	21989	8dc	
	20641	6dc	
	20688	4cb	
	21003	8cb	
	21010	8cb	
	21051	3cb	
	21304	4cb	
	21363	7dc	
	21368	3cb	
	21676	5dc	
	21924	36a	
	22351	e±	
	22353	e±	
	16770	26c	

	16781	3cb	
	16782	3cb	
5460c	16785	6cb	
	16800	8cb	
5637	16816	8cb	
5977	16887	c ±	Poor
	17076	8dc	
	17096	3cb	Very Poor
	17103	c	
	17114	2cc	
	17124	7dc	
6814c	17128	c	
	17131	6dc	
	17150	3cb	
	17366	4 ed	
7655	17405	6dc	
	17438	3cb	
	17455	3cb	
7824	17472	9cb	
	17716	5dc	
	17757	3cb	
	17765	3cb	
8698	17803	6cb	
	18061	6dc	
	18118	~~2cb~~	
	18135	4cb	
	18366	3cb	
	18420	b	
	18486	5dc	
	18489	2dc	

S Ursae Minor

22944 c	22604	7 cb
	19008	2 cb
16669 c	20727	2 cb
	20983	8 cb
17664 c	21035	3 cb
18543 c	21271	7 cb
	21336	3 cb
	21570	3 dc
	21627	26 a
	21875	3 dc
		76 b
	16858	3 cb
	17131	c
	17144	7 cb
	17152	4 cb
17478	17717	6
	17724	5 dc
	18089	c
		6 cb
	18107	4 cb
	18131	4 cb
	18366	c
	18386	2 ab
	18406	3 ab
	18425	3 ab
	18438	4 ab

poor

very poor

19971	c	
20021	c	
20334	5dc	Very poor
20961	2cb	"
21028	2cb	"
21280	7cb	
21338	2cb	"
21585	2cb±	
21633	4cb	
21691	3dc	
22001	7dc	
22311	c	
20624	7dc	" "
20941	7dc	" "
21318	8cb	
21655	4cb	
21923	2ca	
21988	3cb	
22335	7dc	
22634	4cb	
16754	8dc	
16767	2cb	
16782	3cb	
16783	5cb	
16785	3cb	
16786	7cb	
16802	3ca	
16816	1ca	
16844	3cb	

5891 c	16872	2dc	
	17081	5dc	
	17114	1cb	Poor
	17124	5dc	
	17129	4dc	u2
	17151	4cb	
	17152	3cb	
	17159	3cb	
	17164	9dc	
	17158	3cb	
	17169	1cb	
	17190	2cb	
	17173	c	
	17175	1cb	
	17391	3cb	
	17437	7cb	
	17457	7cb	
	17462	8cb	
	17494	4cb	
	17508	5dc	Very Poor
	17720	5dc	
	17739	2(6)q	
	17760	5(6)c	"
	17784	7(6)c	
	17786	6cb	"
	17865	3cb	"
	17817	3cb	
	17836	4cb	"

17845	5dc	
18078	6dc	
18119	5dc	
18139	4dc	
18364	4dc	
18371	3dc	
18371	c	noon
18419	2ba	
18420	3ba	
18421	2ba	
18421	3ba	
18423	3ba	
18433	3ba	
18435	1ba	
18454	4dc	
18459	4dc	
18469	2dc	
18987	4dc	
18988	2dc	noon
18993	3dc	
18995	4dc	
19052	6dc	
19065	7dc	

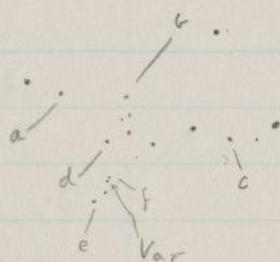
19740	4cl	
19734	4cl	
19728	1cl	Poor
19726	7cl	
19718	7cl	
19715	7cl	Very Poor
19705	8cl	
19697	6cl	
19692	5cl	
19677	8dc	
20017	6cl	Very Poor
20039	5cl	
20068	2cl	" "
20010	2cl	
20072	7dc	
20076	8dc	
20107	2cd	
20333	7dc	<u>Very poor</u>
20376	3cl	
20393	3cl	
20404	7cl	
20411	6cl	" "
20641	6dc	
20689	7cl	
20727	2cl	"

20957	26x	
20966	46x	
21003	8d	
21262	306	
21262	306	
21262	506	
21270	706	
21270	706	
21272	206	Poor
21282	16a	
21304	806	
21312	806	
21312	506	"
21333	206	
21364	6du	✓
21545	6ed	
21578	7ed	
21633	16a	
21661	206	
21676	606	
21908	606	
21910	26a	
21929	36a	
21985	26a	
22000	3du	Poor

2206 v	7dc	
22252	6dc	
22254	8dc	
22254	6dc	
22265	6dc	Poor
22307	3dc	
22334	2dc	
22627	6dc	
22630	5dc	
22630	2dc	
22632	4dc	
22632	2dc	

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Chart for

S Ursae Minoris
153378

Series a, b, c, d, e, f.

AC 8436

Plate Centers

 $14^h + 75^\circ$ $+ 90^\circ$ all $12^h + 75^\circ$ $16^h + 75^\circ$ $18^h 75^\circ$ Comparison stars determined from Kqwen
for R Camelop. H.A. 84 p 61 (AC 21024)

a	c5a'	9.35 ~	9.51 ~
b	d3e'	10.16 ~	10.37 ~
c	f1d	10.76 ~	10.99 ~

R Cygni 193449

Identified on AC 12770
with arbitrary sequence

AC	20908	21965	4 fe	
		21928	76a	
	20667	21908	66a	
✓	20505	21852	1 fe	✓
	12766	19372	26a	
	19432	21543	d Lf	
	9520	18099	8 fe	
	12216	19022	f	
	12710	19344	26a	
	12724	19342	56a	
		19354	76a	
		20246	4 ed	
	15180	20268	2 ed	
	15259	20302	f	
	16410	20627	c ±	
		20649	76a yellow	
		20685	5 ed	
		20702	5 fe	
		21046	6 dr	
		21109	2 dc	
		21476	1 dc	
		21485	d	
		21495	d	
		19863	f	
		17317	6 fe	
		17683	2 dc	
		17709	5 dc	

8530c	17730	2 de
	18185	8 fe
	18193	4 fe
	18496	d
	18507	6.5 de cc
	18506	2 de
	18527	8 de
	18540	5 de
	18552	5 de
	18569	1 de
	18579	8 fe
	18584	3 fe
	18586	5 fe
	18587	4 fe
	18589	4 fe
	18593	2 fe
	18602	f
	18606	f
	18988	4 fe
	20283	7 ed
	20605	5 fe
	2109	5 fe
	21094	3 de
	21105	8 ed
	21934	7 de
	21870	2 de
	21467	8 ed
	20632	2 de

R Cygni

20684	e
21488	6 fe
21859	7 fe
21896	7 ba
21925	4 de
1779	5 de
17739	4 de
18100	e
18183	4 fe
18193	3 fe
18508	7 de
18540	8 de
18547	6 de
18568	d
18600	f
18982	f
20601	f
21037	5 de
21044	8 de
21082	7 de
21092	3 de
21870	8 de
21877	3 ba
22336	e
21909	3 ba
21490	8 fe
21481	1 de
21132	e

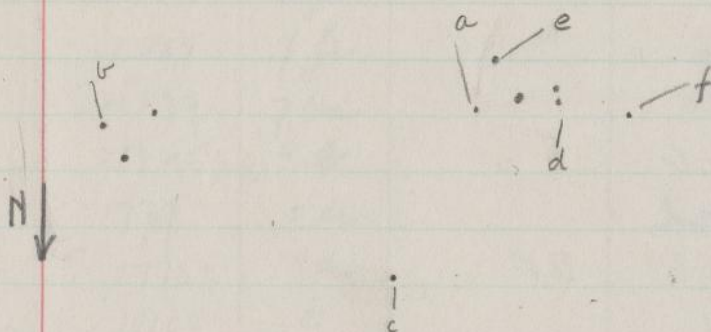
R Cygni

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21059	7de	
20694	d ±	
18605	f	
17318	3fe	
17720	1cb	
17748	6ed	
17750	6"??	VP
18494	d	VP
18505	5de	
18520	5de	"
18531	7de	
18547	8de	
18555	1de	
18556	2de	
19336	d	
19342	c ±	
19346	c ±	
20607	d ±	
20650	d ±	
21078	4de	VP
21097	3de	VP
21105	1de	
21871	8de	

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Chart for R Cygni 193449



Series a, b, c, d, e, f.

AC 12770

Plate Centers

$18^h, 19^h, 20^h \quad +45^\circ$
 $18^h, 19^h, 20^h \quad +60^\circ$

Comp. Stars		Pg. m. (Kise)
a =	RD 49.3059	7.41
b =	49.3033	8.62
c =	50.2819	8.70

d from sequence RA 84 $20^h 0$ $+46^\circ 30'$

d = 3-2-2.

$3 = 9.49$ $d = 9.34$
 $2 = 8.72$

RS Cygni 200938 P=413
 Var & sequence marked on
 AC 4116

AC 4116

16416	36a	✓
19378	6cb	
19372	16a	
21386	3dc	
21231	d	
21318	3dc	
20940	2cb	
16406	6±	✓
16410	9cb±	✓
16426	16a±	✓
16423	46a	✓
16799	4cb	✓
16803	3cb±	✓
20547	8dc±	✓
20556	3dc	✓
⁷ 21814	5cb	✓
21824	6cb	✓
22153	2cb	
22180	6cb	
22604	8cb	✓
21823	8cb±	✓
16044	46a	✓
19261	3cb	✓ ?
19263	7dc	✓ ?
19268	1dc	✓ ?
19281	5cb	✓
19294	3cb	✓
19692	1cb	✓ ?

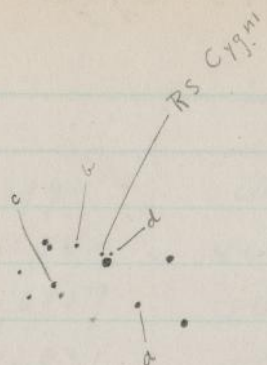
19694	3 de	✓ ?
19713	c	✓
20093	c	✓ ?
20121	4 de	✓ ?
20129	3 cb	✓
21360	4 cb	
21779	2 cb	± 2 p
22197	9 cb	
22220	3 ab	
22228	8 cb	
22240	3 ab	
22569	7 cb	
16017	2 ba	
16030	1 ba	
16032	3 ba	
16052	2 ba	
16057	9 cb	
16407	7 cb	
16409	3 ba	
16412	3 ba	
16415	6 ba	
16417	3 bat	
16422	1 ba	
16428	4 bat	
16444	6 ba	
16457	3 ba	
16462	5 ba	

5494	16793	1 cl
5546	16802	4 cl
	16817	1 ba
	16831	5 ba ±
	17207	7 cl
	21765	6 cl
	21825	7 cl
	22199	7 cl
	22244	8 cl
	22599	3 ba
	22606	2 ba
	22621	7 cl
	16793	6 cl
	16794	6 cl
	16800	7 cl
	16817	3 ba
	19237	3 de
	19262	4 de
	19269	5 de
	19292	3 de
	19678	5 de
	19684	2 de
	19694	1 de
	19705	2 de
	19710	2 de
	20075	4 cl
	20097	7 cl

RS Cygni

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20105	4 de	
21397	4 de	
21764	2 de	
21824	7 de	
21825	8 de	
22250	40 G ±	
22601	3 ba	
22611	2 ba	Poor
16056	2 ba	"
16799	6 de	
20954	7 de	
22215	2 ba	±
22228	1 ba	±
22570	4 de	
22590	3 ba	



Field of RS Cygni

N
↓

Series a, b, c, d.

Marked on plate

AC 4116

Companion stars - field B8 (HA 71)

					Mean	7.5.
a	11-5-10	11-8-10	9.22	9.13	9.18	9.33
b	16-3-13	=16	10.11	10.27	10.19	10.40
c	18-7-17	18-3-16	10.68	10.82	10.75	10.98
d	23-5-19	23-5-19	11.93	11.93	11.93	12.07

RS Cygni

22984	2c	✓
22991	8cb	
23030	6'cb	✓
24246	4c	
24274	7cb	
23069	2cb	✓
22998	8cb	✓
24678	3ba	✓
20329	6	✓
22964	2cb	✓
23044	2ba	
23387	5cb	✓
23773	5cb	✓
24256	7cb	
24261	3cb	
24288	3ba	
22999	4cb	
22977	6±	superimposed? reject!
22985	7cb	
23031	1ba	
23780	7cb	

B