

KG

11365

982

E. F. Leland

KG 11365.9 82

Mr. Wilson 60-inch telescope.

Plates Mr. W. 100 and 196.

Mr. W. ~~100~~ 196.

Measure, with scale of 16-inch, each image of stars
of sequence ten, calling these images a, b, c. ^c_a ^c_b

Estimate intervals of successive numbers.

First of above estimates were made through glass
and in order of number. Make second estimates
with film side up, and in order of distance.

Estimate each image c in terms of image b of
stars of sequence.

Mr. W. ~~196~~ 100.

Estimate intervals of successive stars of sequence

Enlargement of Mr. W. ~~196~~ 196.

Measure position, as in H.C. 48 No. 1, of these images
of each star in region within 10' of pole.

Estimate magnitude in terms of polar sequence.

April 5, 1910

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1CG 113 65.982



February 20, 1907
 Map of Sky — $0^h + 60$
 Examination for variables.

AC 2153 superposed on D 12554 fr. AC 6645

Var.

- 1 This object is bright on AC 2153 and faint on AC 1943. It is a known variable = γ Cephei
- 2 Bright on AC 2153; faint on AC 1943. Do not find it faint on any other plate. The image may be defective. it is near edge of plate.
- 3 Bright on AC 2153 and AC 1943 Faint on AC 4618
This is a known variable = η Cephei.
- 4 Bright on AC 2153 - faint on AC 4618
This is a known variable = ν Cassiopeiae

Announced by
 H. S. L. July 1907
 Circ 130.

Bright on AC 2153 and AC 4618. Faint on AC 2019
 This object is $DM + 56^{\circ} 28' 29''$ $23^h 35^m 8.2^s$ $+ 56^{\circ} 4' 6''$ Variability confirmed by W. P. F. New. (See BK 33 p 15 for meas)

- 6 Bright on 2153 AC - faint on AC 6866
 This is a known variable = ρ Cassiopeiae

March 8, 1907
Map of Sky - $0^h + 60^\circ$

AC 1971 superposed on D 12554 = AC 6645-

Var

7 Bright on AC 1971 and faint on AC 2153
This is a known variable = δ Cassiopeiae

8 Bright on AC 1971 and faint on AC 2153
This is a known variable. = δ Cassiopeiae
000451

9 Faint on AC 1971 and Bright on AC 1943
Do not find it bright on any other
plate. It may be a defective image on 1943

δ Cephei. also found

The positive is poor - not showing faint stars.
Mr. King will make another.

Sept. 1907
Map of Sky - $0^h + 60^\circ$

AC ³²²³~~4524~~ superposed on D 12633 = AC 1943

~~The~~ An examination of this plate shows a great many defects on the positive. No variables marked.

AC 1883 superposed on D 12633 = AC 1943

Map of sky $21^h - 60^\circ$

April - 1907

AM 3649 superposed on D 12587 = AC 4397

Var.

10 Faint on AM 3469. Bright on AM 3483
This object is R. U Sagittarii.

11 Bright on AM 3649. Faint on AM 3483
This is a known variable. ~~X~~ Paronis
R Z Sagittarii

12 Bright on AM 2870 and AM 3803. Faint on
AM 1064 and AM 3875. This star surely
shows a slight variation ^{as Conf by H. S. L.} may be an
Algol. Not known.

13 Bright on AM 3649 and B. 10190. Faint on
AM 4625 and B. 31926. Not known.
It is C.D.M. - $50^\circ 13' 51''$ $21^\circ 46' 12.4''$ - $50^\circ 31.8'$
Faint on B 23178. (Conf by J.C. + L.D.W.)

14 Bright on AM 3649 and AM 4481. Faint on
AM 3875 and AM 4375. Known?

15 Bright on AM 3649 and AM 4481. Faint on
AM 3875 and AM 4375. This star seems to
show slight variation. Known?

Map of sky $21^h - 60$

April 1907

AM 2291 superposed on B 12587
 Var.
 16 R U Sagittarii.

17 Bright on AM 3649 and AM 1064. Faint on
 AM 2291 and AM 4375. ~~Known~~ ^{New} ~~7~~ C DM-4514237
 213 10.2-48 35.0 Confirmed by L.B.W. on B30785, 32044, 23118, 24484,
 26096, 17565 + 11813

18 This object is No 11 (See previous page)

19 Object at 20 51.2 - 48 53

Map of sky $21^h - 60'$

June - 1907

¹⁰⁶⁴
 AM ~~2291~~ superposed on B 12587

Var

Variation of
 both 1911-1912 comp.
 by L. D. W. Sept. 1907
 in these plates.

- 19 Bright on AM 1064 and AM 2291.
 Faint on AM 3786 and AM 4375. Known?
 Either this star or the one below ^{19th} changes - Am not sure -
- 20 The same as No 11 & No 18 Known.
- 21 This star is brighter on positive.
 probably defective?
- 22 Bright on AM 1064 and AM 4206. Faint on
 AM 3786 and AM 4481. Known?

Map of Sky $21^h - 60^\circ$

June - 1907

AM 4206 superposed on D 12578

Jan
1
23

Map of sky $9^h + 60$

Aug 14, 1907

AC 4800 superposed on D 12610 - AC 3625
 Var

24 This object is DM +55° 1409 $10^h 37^m 29.4^s + 55^\circ 48.4'$
 It is bright on AC 4800 and AC 6276 - faint on
 AC 7324, 6093 + 5825, I 8359, 21846, 30480, 15131, 8213
 and 16651 examined. A confirm variation of
 this star on these six I plates - L.W.R. June 11 1908.

Many objects marked on the above plate
 but proved to be defects. the positive is
 very poor.

AC 7324 superposed on D 12610 - AC 3625

Var

25 Bright on AC 7324 + 6276.
 Faint on AC 6093, 5825 + 4182.
 This object is R. Urs. Majoris.

No other variable found on this plate.
 (7324)

Bn. object = R. S. Camelo pardalis -

Map of sky $9^h + 60$

Aug 1907

AC 5825 superposed on D 12610

Var

26 Faint on AC 5825. Bright on all other plates examined. Possibly defective image

26⁺ +50 1590 This object is bright on AC 4830 + 6276
Faint on 3246, 3625 + 4792 I Plates?

Y Draconis found - also W Ursae Major

Map of sky 20 - 30

Aug. 1907

AM 1954 superposed on D 12586 - AM 1463

Var

27 Bright on AM 1954 and AM 4373⁴³⁸⁹, Faint on
AM 1044 and AM 2924 Var?

x 28 This object is bright on AM 1954 and AM 3794
Faint on AM 4389 and AM 4387, 4640 and 615
Conf. on B 21414, 23854, 27522 and 21340 by L. D. Mills.
Approx Pos. 19 35.4 - 42.8
Approx pos. 1875 - 19 35.4 - 42.10 - checked - L.D.W.

AM 2807 superposed on D 12586 - AM 1463

Var

29 Bright on AM 2807 and 4373 Fk on AM 1954 and 1044
Probably known?

30 Faint on 2807, 2924, 4465; Br. on enlargement -
Probably defect.

31 Bright on 2807 Faint on AM 1463
Very bright object. probably known.

32 This object seems to show slight variation.
examined on AM 4640, 1044, 4389, 4373 & 2866

33 Bright on AM 4465, 2866, 3794; Faint on AM 1044, 4389, & 2807
Variable?

Map of sky $20^h - 30^h$

Oct 1907

am 2807 superposed on B 12586.
 34 Defective image?

35 Bright on AM 4373 + 4465; Faint on AM 2807
 4389 + 4640 Known?

June 16, 1908.

36 Found while confirming variation of No 28.
 Br. on B 29299 and 19516 Ft on B 16292 + 13939
 Pos 19 ^h 30.6 - 45 ^m 52 (approx) I confirm variation of
 this star on these four plates. L.D. Wells June 17, 1908

37 Object bright on B 21340 - faint on B 27522.
 Approx Pos 19 ^h 16.2 - 39 ^m 30
 Plates B 19516, 29878, 27522, 29456, 37043, 37118, 17372 +
 21340 examined.
 I confirm variation of this star on these
 plates & check approx Pos 19 ^h 16.2 - 39 ^m 30
 L.D. Wells June 22, 1908

Object bright on AM - 4169 ft on 4381
 Bright on B 28172, faint on B 21340 + 21409. on
 examination - proves to be a double. Southern speech
 19 36.4 - 43 0 (approx) Shows variation.

Object br on ^{am} 4169, 2616 - ft on am 4613 + 4369
 - 46 1229 ^h 18 ^m 30.4
 Approx Pos 18 ^h 46 35.6 (Marked on B 11759)
 Br on B 11759. Ft on B 29488 Identification checked on
 B 11759. Variation confirmed on B 11759, B 29488 and am 1345
 am 3922, am 3859, am 4613, am 1364. These plates show great
 change. L.D. Wells. Sept. 14 1909

Map of sky $18^h + 60$

Feb - 1908

- AC 4918 superposed on D12632 = AC 3629
- 36 Faint on 4918 and 4896 Bn on 5026 and 4868
Approx Pos. $18^h 43.9^m + 60^{\circ} 38'$. New.
- 37 This object shows a slight variation. Examination
of I Plates shows variation of 5 tenths of a mag.

38

Map of Sky 20-30

Aug. 1908

Object bright on AM 5002 (superposed on B 12586) and AM 4991 Faint on AM 3679 + 2290
Faint on B 21288 + 19347 Br. on B 32306 + B 21522

Object is - Southern and preceding of two close stars either of which might be - $39^{\circ} 13' 08.2$

Both seem The northern seems to show slight change. I confirm variation of C.D.M. - $39^{\circ} 13' 08.2$ - L.D.W. Nov. 19 1908
Both ~~southern~~ stars appear to change on four B plates noted above - The stars are not separated on the A.M. plates.

Object faint on 5002 and 3679 Br. on AM 819 and AM 2122 Bright on B 21288 and B 27629. Faint on B 19347 + B 32306
Approx Pos. $19^{\circ} 11.4 - 40.26 =$ C.P.D. $40^{\circ} 8913$ $19^{\circ} 11.4 - 40.26$ 10.8
I confirm variation of C.P.D. - $40^{\circ} 8913$ L.D.W. Nov. 19 1908

~~Object - faint on AM 5002 and AM 3679 Br. on AM 1708 and 2095, and 3884 Bright on B 21288 + B 21522
faint on B 19347 + B 25398 Approx Pos $19^{\circ} 16.1 - 39$~~

Object faint on AM 5002 and AM 3884 Br. on AM 2996 + 2122 Br. on B 21288 + 19347 + B 22517 + B 32306 + B 23854

This object is - $38^{\circ} 13' 50.4$ $19^{\circ} 21.18 - 38.20.4$ Magn. 10.0
I confirm variation of C.D.M. - $38^{\circ} 13' 50.4$ L.D.W. Nov. 19 1908

Three close stars in almost same R.A. a little south of above star. I suspect one of variations

Object faint on AM 5002 + AM 2290 Br. on AM 3728 + 2941 + 3884 Faint on B 21288 Br. on B 19347

From 22517 + Br. on B 32306 Approx Pos $19^{\circ} 18.0 - 35.35$ (1875)

I confirm variation of star in approx 1875 pos. $19^{\circ} 18.0 - 35.35$ on B plates. L.D.W. Nov. 19 1908

Found also - R.U. Sagittarii R.R. Sagittarii
R.T. Sagittarii R + S Microscopii

Map of sky 20^h 0^m

March- (1908)

AM 2094 superposed on B 13190. AM 1439
Var.

- 1 Object faint on 2094 Br on 1462 and 946 =
- $18^{\circ} 56' 41''$ $20^h 9^m 39.0$ - $18^{\circ} 7' 4''$ (Marked on B 28507)
New! Algol. Faint on AM 3617 2967 7732 7991 575 77094
I 29669 Variation confirmed March 26th 1908 L D W.

2 Defective image?

- 3 Faint on 2274 - Br on 2094 (Marked on B 28507)
Approx Pos 1855 $20^h 6.8$ - $13^{\circ} 21'$ New!
B 28507, Variation confirmed March 26 1908 L D W.
B 28507, 29669, 29663, 6145, 33546, 21073, 18983, 9898, 19092, 17718, 21525 + 29662

- 4 Br. on 1462 - Ft on 946 (Found on 1462) Marked on
17^h [B 26321]

- 5 Objects bright on 1462 + 946 - faint on 2094 2274 + 3162 =
+ $1^{\circ} 40' 03''$ $19^h 20' 16.5$ + $1^{\circ} 45' 5.95$ New. Southern and
preceding of two close stars. Variation confirmed March 30th 1908 L D W.
Br. on I 31949 + 32033 Ft on I 18454 + 31771 these plates show great change in magn. of star.
- 6 Ft on 2094 Br on all others examined
Algol + $18^{\circ} 40' 31''$ $19^h 13'$ 19.1 + $18^{\circ} 39' 8''$

7 = U Sagittae.

- 8 Ft on 2094, 946, 3162. Br on 2274

Map of Sky 20° 0'

March: 1908

AM 2094 superposed on D 13190 = AM 1439

Var

9 Image ft on 2094 and 3162. Bright on 2274 and 1462
 19^h 44.3 + 13° 35' (Approx 1855)

Chart plate I 26097, 23462, 27769, 15870, 23643 prove star to be variable.
 Br. on I 23462 + 3 L.D.W. April 4 1908
 Pl. " I 15870

10 Faint on 2094, 946 and 3171. Bright on 2274 -
 + 17° 41.93 19° 54' 27.1 + 17° 58.9

11 Object faint on 2094 and bright on 2274 + 624
 + 9° 41.54 19° 27' 21.4 + 9° 2.7 Seems to show slight variation
 on ac Plates but cannot confirm on I Plates

12 Object faint on 2094 and 3162. Br. on 946 and 1968 = + 2° 39.45
 19° 31' 1.7 + 2° 44.8 Cannot confirm variation on I Plates.

13 Object bright on 2094 and 3162 Pl. on 1462, 2274 and 624
 Pos. 20^h 5.7 + 5° 52' (Approx 1855) Faint on I 8876 and
 I 18654 Br. on I 23297^B, 19529 and 8876
 Variation confirmed March 25 1908 L.D.W.

14 Object ft on 2094 + 2274 - Br. on 2133

15 Object ft on 3788. Br. on 2094

16 - This object = - Lyrae
 " = S & Aquilae

Map of Sky 20^h 0°

April - 1908

Am 2094

17 Object faint on 2094 2925 + 2726. Br on 1947 + 2120 =
Y Delphinus

18 Object faint on 2094, 2716 + 5116. Br on 2274 + 464

 $\alpha = X$ Aquilae

Am 2274 superposed on B13190 = Am 1439

1 Object faint on Am 2274 br on 2094
This is R Aquilae.2 Object faint on Am 2274. Br on 2094 and all
plates examined below - +8 3974 18 59 46.5 +8 55.7 magn 8.6 No trace
Am 3517 of this object on Am 2274. Film not defective.

Also examined " 3171, 801, ac 6334, ac 6437, ac 6467, ac 6486, ac 6494, ac 6572
 B 24345, B 23106 " 3004, 584, ac 6614, ac 6707, ac 6804, ac 6878, ac 6990, ac 7657
 B 19525, B 23504, " 1540, 549, ac 7721, ac 7787, ac 7829, ac 7838, ac 7992, ac 8562
 I 4138, B 23703 " 1537, ac 8645, ac 8699, ac 8727, ac 8988, ac 8995, ac 1842
 I 2009, I 15451 " 1955, ac 1750, ac 1745, ac 1638, ac 1609, ac 1608, ac 1547
 I 18402, I 23442, " 1920, ac 1538, ac 965, ac 916, ac 849, ac 848, ac 417, ac 363
 I 25431, I 25702 " 877, ac 339, ac 52, ac 4935, ac 3995, ac 3941, ac 3929, ac 3741
 I 2273, I 23430 " 876, ac 3674, ac 3612, ac 3008, ac 2954, ac 2911, ac 2905
 B 26329, I 18621 " 811, ac 2817, ac 2789, ac 2674, ac 2623, ac 1931, ac 1921, ac 1879
 B 20625, + B 30072
 and finds a
 variation of about
 0.5
 ac 4976, ac 5062, ac 5083, ac 5150, ac 5208, ac 5258, ac 5302, ac 5344
 ac 5394, ac 5453, ac 4945, ac 5620, ac 5604, am 181, ac 2594, am 746, am 2925
 am 2120, ac 1947, am 464, am 2591, am 2716, am 2808, am 2867, am 3861
 ac 2021, ac 2133, am 2161, am 486, am 3569, + am 2270

Map of Sky 20^h 0°

21

April - 1908

AM 2274 cont.

3

4

5

6

7 Object bright on AM 2274, 2867. Faint on 2094, 1592, 2726
 Examined on ~~X~~ Plates I 1906, I 7002, I 15725, ^B 29482, B 21418, I 23185

I 20279, I 19442, ^B 28463, 1830570, I 15869 (Pos $19^h 57.3 + 3^{\circ} 26'$ ¹⁸⁵⁵ Offset)

These plates show variation in star at approx 1855 per. $19^h 57.3 + 3^{\circ} 26'$
 L.W. April 28th 1908

Br. on I 15183.

Ft. " B 29482

Map of Sky $8^h + 30$

Jan 5, 1910

~~May 1908~~

AC 2436 superposed on D13192 = AC 3363

8

- 1 Object faint on AC 2436, bright on AC 3363
Faint on AC 3206 and AC 3398 Examined 25
plates and do not find it bright on
any of them. Is image defective on AC 3363?

- 2 Object faint on AC 2436 - bright on AC 3363
Faint on all other plates examined - may
be defective image.

AC 4520 superposed on D13192

- 1 Object bright on AC 4520 ft on AC 2436 +
AC 3206 + 8154 Do not find object on any
other plate. Defect?

2

AC 5852 superposed on D13192

- 1 Bright on AC 5852 ft on AC 4520 + 5896
Br on AC 2886 Known?

AC 2893 superposed on D13192

- 1 Object bright on 2893 faint on 3201
Bright on 7207 faint on 3398 Known?

S Gemmorum?

Map of Sky 8 + 30

March 1910

AC 2293 (cont)

2 Object faint on 2893 bright on 3398
faint on 7207 bright on 5515 Known?
J Gemini

3 Object faint on 2893 bright on ³²⁰⁶~~5515~~
~~and 7207~~ faint on 7207 b on 3201 Known?
U Gemini

Measures to find position of var. at
 $19\ 35.\overset{h}{\cancel{4}} - 42\ \overset{m}{\cancel{8}}$ (approx)

A3933

August 25 1909

	x	y	x	y	mean x	mean y	Diff x	Diff y	Diff x x 0.4
var	8.38	5.00			8.39	4.99			
a	13.49	10.38	13.48	10.38	13.48	10.38	+5.09	+5.39	+27.5 ⁴
b	16.91	0.10	16.90	0.09	16.90	0.10	+8.51	-4.89	+46.0 ⁴
c	6.03	5.61	6.05	5.60	6.04	5.62	-2.35	+0.61	-12.7 ²
var.	8.40	4.99	8.38	4.99					

$$a = C \text{ DM} - 42\ 14423\ 19\ 35\ 58.6 - 42\ 3.9$$

$$b = \quad \quad - 42\ 14426\ 19\ 36\ 16.3 - 42\ 14.0$$

$$c = \quad \quad - 42\ 14414\ 19\ 35\ 18.1 - 42\ 7.3$$

$$\sqrt[3]{\frac{25.2}{8.4}}$$

$$\sec 42^\circ 8'.4 = \frac{1}{.74151} = 1.35 \times 4 = 5.40$$

$$a = \begin{array}{r} 19\ 35\ 58.6 \\ + \quad \quad 27.5 \\ \hline 19\ 35\ 31.1 \end{array} \quad \begin{array}{r} - 42\ 3.9 \\ + \quad \quad 5.4 \\ \hline - 42\ 9.3 \end{array} \quad b = \begin{array}{r} 19\ 36\ 16.3 \\ + \quad \quad 46.0 \\ \hline 19\ 35\ 30.3 \end{array} \quad \begin{array}{r} - 42\ 14.0 \\ + \quad \quad 4.9 \\ \hline - 42\ 9.1 \end{array}$$

$$c = \begin{array}{r} 19\ 35\ 18.1 \\ - \quad \quad 12.7 \\ \hline 19\ 35\ 30.8 \end{array} \quad \begin{array}{r} - 42\ 7.3 \\ + \quad \quad 0.6 \\ \hline - 42\ 7.9 \end{array}$$

$$\text{Pos. var.} = 19\ 35\ 30.7 - 42\ 8.8$$

Measures to find position of var. at
Approx 19^h 16.1 - 39 30

September 1909

A 6017

	x	y	x	y	mean x	mean y	Diff x	Diff y	Diff x x.52
σ.	12.70	7.45			12.72	7.42			
a	4.95	0.80	49.79	0.85	4.96	0.82	-7.76	-6.60	-40.4
b	12.35	14.10	12.35	14.12	12.35	14.11	-0.37	+6.69	-1.9
c	19.98	6.95	19.99	6.98	19.98	6.96	+7.26	-0.46	+37.8
σ.	12.75	7.40	12.70	7.40					

$$a = -39^{\circ} 13.261 \ 19 \ 16 \ 47.0 - 39 \ 32.8 \ 8.5$$

$$b = -39^{\circ} 13.257 \ 19 \ 16 \ 8.4 - 39 \ 25.3 \ 9.9$$

$$c = -39^{\circ} 13.255 \ 19 \ 15 \ 28.0 - 39 \ 39.0 \ 9.0$$

$$\begin{array}{r} 3 \ 9.71 \\ 32.4 \end{array}$$

$$39^{\circ} \ 32.4 = \frac{1}{.77118} = 1.3 \times 4 = 520$$

$$a = 19 \ 16 \ 47.0 - 39 \ 32.8 \quad b = 19 \ 16 \ 8.4 - 39 \ 25.3$$

$$\begin{array}{r} - \quad 40.4 \quad - \quad 6.6 \quad - \quad 1.9 \quad + \quad 6.7 \\ \hline - \quad 39 \ 39.4 \\ \quad \quad \quad 26.2 \end{array}$$

$$c = 19 \ 15 \ 28.0 - 39 \ 39.0$$

$$+ \quad 37.8 \quad - \quad 0.5$$

Reject — See p. 28.

Measures to determine position of var. at
Approx $19^h 30^m 45^s$

R. Waterbury Recorder.

September 11, 1909

	γ	γ	γ	γ	mean x	Mean y	Diff x	Diff y	Diff $x \times 5.6$
2141									
α	4.98	5.31			4.98	5.30	+1.21	-3.30	+6.3
α	6.20	1.99	6.18	2.00	6.19	2.00	+3.32	+3.70	+18.6
β	8.29	8.99	8.30	9.00	8.30	9.00	-0.69	+3.78	-3.9
γ	4.30	8.05	4.28	8.10	4.29	8.08			
δ	4.99	5.30	4.98	5.29					

$$\alpha = -45^\circ 13353 \quad 19 \ 30 \ 40.6 - 45 \ 54.8'$$

$$\beta = -45 \ 13356 \quad 19 \ 30 \ 51.8 - 45 \ 48.0'$$

$$\gamma = -45 \ 13351 \quad 19 \ 30 \ 29.6 - 45 \ 46.6'$$

$$3 \ 149.4$$

$$49.8$$

$$\sec. \ 45^\circ \ 49.8 = \frac{1}{.69679} = 1.4 \times 4 = 5.6$$

$$\begin{array}{rcl} \alpha = 19 \ 30 \ 40.6 & - & 45 \ 54.8 \\ + & & 6.3 - 3.3 + \\ \hline 19 \ 30 \ 34.3 & - & 45 \ 51.5 \end{array} \quad \begin{array}{rcl} \beta = 19 \ 30 \ 51.8 & - & 45 \ 48.0 \\ + & & 18.6 + 3.7 \\ \hline 19 \ 30 \ 33.2 & - & 45 \ 51.7 \end{array}$$

$$\begin{array}{rcl} \gamma = 19 \ 30 \ 29.6 & - & 45 \ 46.6 \\ - & & 3.9 + 3.8 \\ \hline 19 \ 30 \ 33.5 & - & 45 \ 50.4 \end{array}$$

$$\text{Pos. var.} = 19 \ 30 \ 33.7 - 45 \ 51.5$$

Measures to determine position of
var. at approx 19 16.1-39 30

H. J. S. Recorder

Sept. 8, 1909

A 6017

	x	y	x	y	Mean x	Mean y	Diff x	Diff y	Diff x x 52
v	10.30	12.40			10.28	12.39			
a	18.00	9.10	18.01	9.12	18.00	9.11	+7.72	-3.28	+40.1
b	10.50	16.45	10.50	16.48	10.50	16.46	+0.22	+4.07	+1.1
c	2.97	3.00	2.97	2.99	2.97	3.00	-7.31	-9.39	-38.0
v	10.25	12.38	10.28	12.40					

$$a = -39^{\circ} 13261 \quad 19 \ 16 \ 47.0 - 39 \ 32.8$$

$$b = -39 \ 13257 \quad 19 \ 16 \ 8.4 - 39 \ 25.3$$

$$c = -39 \ 13255 \quad 19 \ 15 \ 28.0 - 39 \ 39.0$$

$$\begin{array}{r} 3 \overline{) 97.1} \\ 324 \end{array}$$

$$\sec 39^{\circ} 32.4 = \frac{1}{77118} = 1.3 \times 4 = 5.20$$

$$a = 19 \ 16 \ 47.0 - 39 \ 32.8 \quad b = 19 \ 16 \ 8.4 - 39 \ 25.3$$

$$\begin{array}{r} + \quad 40.1 \quad - \quad 3.3 \quad + \\ \hline 19 \ 16 \ 6.9 - 39 \ 29.5 \end{array} \quad \begin{array}{r} + \quad 1.1 \quad + \quad 4.1 \\ \hline 19 \ 16 \ 7.3 - 39 \ 29.4 \end{array}$$

$$\begin{array}{r} c = 19 \ 15 \ 28.0 - 39 \ 39.0 \\ - \quad 38.0 \quad - \quad 9.4 \\ \hline 19 \ 16 \ 6.0 - 39 \ 29.6 \end{array}$$

$$\text{Pos var} = 19 \ 16 \ 6.7 - 39 \ 29.5$$

Measures to determine position of var.
at approx 20^h 6.8-13^m 23^s ~~20~~

E.F.S. Rec.

Sept 11, 1909

Q 2617				Mean x	Mean y	Diff x	Diff y	Diff x x 4
x	y	x	y					
4.60	14.85	~~4.58~~		4.58	14.82	+10.48		
1 14.99	7.30	14.98	7.28	14.98	7.29	+10.48	-7.53	+43.0
2 1.60	33.45	1.58	33.40	1.59	33.42	-2.99	+18.60	-12.3
3 2.65	0.95	2.60	0.90	2.62	0.92	-1.96	-13.90	-8.0
2 4.58	14.80	4.58	14.80					

$$1 = -13^{\circ} 56' 21'' \quad 20^{\text{h}} 7^{\text{m}} 33.2^{\text{s}} - 13^{\circ} 30' 4''$$

$$2 = -13^{\circ} 56' 17'' \quad 20^{\text{h}} 6^{\text{m}} 38.4^{\text{s}} - 13^{\circ} 4' 5''$$

$$3 = -13^{\circ} 56' 18'' \quad 20^{\text{h}} 6^{\text{m}} 43.2^{\text{s}} - 13^{\circ} 36' 9''$$

$$3 \quad 171.8$$

$$23.9$$

$$\text{Sec } 13^{\circ} 23.9' = \frac{1}{97279} = 1.03 \times 4 = 4.12$$

$$\begin{array}{rcl}
 1 = 20^{\text{h}} 7^{\text{m}} 33.2^{\text{s}} - 13^{\circ} 30' 4'' & 2 = 20^{\text{h}} 6^{\text{m}} 38.4^{\text{s}} - 13^{\circ} 4' 5'' & \\
 + \quad \quad \quad 43.0'' & + \quad \quad \quad 12.3'' & \\
 \hline
 20^{\text{h}} 6^{\text{m}} 50.2^{\text{s}} - 13^{\circ} 22' 9'' & 20^{\text{h}} 6^{\text{m}} 50.7^{\text{s}} - 13^{\circ} 23' 1'' & \\
 3 = 20^{\text{h}} 6^{\text{m}} 43.2^{\text{s}} - 13^{\circ} 36' 9'' & & \\
 - \quad \quad \quad 8.0'' & - \quad \quad \quad 13.9'' & \\
 \hline
 20^{\text{h}} 6^{\text{m}} 51.2^{\text{s}} - 13^{\circ} 23' 0'' & &
 \end{array}$$

$$\text{Meas Pos. } 20^{\text{h}} 6^{\text{m}} 50.7^{\text{s}} - 13^{\circ} 23' 0'' (1855)$$

Measures to determine position of var at
approx $20^h 5^m 5.7 + 5^{\circ} 5' 2$

H. J. S. Rec.

Sept 17, 1909

A 997				Mean x	Mean y	Diff x	Diff y	Diff x x 40	
x	y	x	y	6.72	7.60				
1	13.05	8.99	13.03	9.00	13.04	9.00	+ 6.32	+ 1.40	+ 25.3
2	1.28	27.05	1.30	27.10	1.29	27.08	- 5.43	+ 19.48	- 21.7
3	1.55	-15.65	1.58	~~15.65~~	1.56	-15.62	- 5.16	²³ ~~- 8.22~~	- 20.6
x	6.75	7.60	6.70	7.60					

$$1x = +5 \ 4448 \ 20 \ 6 \ 10.2 + 5 \ 53.2$$

$$2x = +6 \ 4470 \ 20 \ 5 \ 20.9 + 6 \ 11.5$$

$$3 = +5 \ 4444 \ 20 \ 5 \ 20.0 + 5 \ 29.9$$

$$3194.6$$

$$31.5$$

$$5^{\circ} \ 31.5 = \frac{1}{99536} = 1.0 \times 4 = 4.0$$

$$1 = 20 \ 6 \ 10.2 + 5 \ 53.2$$

$$2 = 20 \ 5 \ 20.9 + 6 \ 11.5$$

$$+ \quad \quad \quad 25.3 + \quad \quad \quad 1.4 -$$

$$21.7 + \quad \quad \quad 19.5$$

$$20 \ 5 \ 44.9 + 5 \ 51.8$$

$$20 \ 5 \ 42.6 + 5 \ 52.0$$

$$3 = 20 \ 5 \ 20.0 + 5 \ 29.9$$

$$- \quad \quad \quad 20.6 - \quad \quad \quad 23.2$$

$$20 \ 5 \ 40.6 + 5 \ 53.1$$

$$\text{Pos. var} = 20 \ 5 \ 43.0 + 5 \ 52.3 \ (1855)$$

40

Map of Sky $2^h + 30$

No 11

Dec 31, 1909

AC 2173 superposed on D 13188 = AC 124

1 Object faint on AC 2173 bright on AC 6868.
Bright on AC 2162, faint on 5307, 6 on 5317 New? =

2 Object bright on AC 2173, faint on 5317 and 5307
Bright on AC 2162 New? = 2 39.0 + 47 43 (Cassiopeia)

3 Object faint on AC 2173, bright on 5307 & 5317
Faint on 6868 New? = R Trianguli

4 Object faint on AC 2173 and AC 5317 & 5307
Bright on AC 2162 and AC 124 New? = γ Andromeda

AC 5307 superposed on D 13188

1 Object faint on 5307 bright on 2173 & 6868

Image defective? on 5307 var?

DM. +30° N 28 2 32.4 +30 34.8 (1655) 519

Found independently by W.B.F. on Spectrum plate
and conf. by L.D.W. - Jan 27, 1911 -

F 37629

Four plates examined - one new variable found

Map of Sky $14^h + 30$

August 26, 1911

ac 8439 superposed on D 13185 = ac 1105-

Does not show faint enough stars.

Nova Persii

ac 11801 superposed on D 13185

Doesn't show the faint stars.

ac 11584 superposed on D 13185

ac 11645 superposed on D 13185

ac 1545 + 6232 examined

i Object br on ac 1545 ft on 11645 + 6362 + 11584

Br. on 8435 + 1105 Known?

 $+46^{\circ} 18' 17''$ $12^{\circ} 38' 18''$ $+46^{\circ} 18' 2''$ (1855) Magn 5.5

Above plates examined. no new variables discovered

Measures of stars in Pol. Seq.

June 1, 1910

MC 172	
83 Sc 1	Sc 2
26 ~~8.5~~	
27 8.9	
30 9.2	
34	12.9
35	12.7
36	12.9
	13.1

MC 261	
26 8.8	
27 9.0	
30 9.3	
29	10.9
31	11.6
32	11.1
33	12.3
34	12.6
35	12.7
36	12.9
37	13.1

MC 299	
26 8.5	
27 9.1	
30 9.3	
29	11.1
31	11.7
32	11.2
33	12.1
34	12.5

MC 299 (cont)	
83 Sc 1	Sc 2
35 12.5	12.5
36 12.7	12.7
37 13.0	13.0
38 9	9

MC 172	
83 Sc 1	Sc 2
26 8.3	
27 9.2	
27 8.7 w.s	
30 9.5	
30 9.4 w.s	
34	12.7
35	12.8
36	13.0

MC 261	
26 8.2	
27 9.1	
30 9.1	
29	11.0
31	11.5
32	11.2
33	12.3
34	12.5
35	12.7
36	12.8
37	13.1

Measures of stars in Pol. Seq.

June 1, 1910

MC 299	
Sol	ser
26	8.8
27	9.1
30	9.2
29	11.2
31	11.7
32	11.2
33	12.3
34	12.6
35	12.7
36	12.9
37	13.1
38	7

2
19
7
8

01
02
03
04
05
06
07
08
09
10

Measures of MC Isocromatic plates.
Polar Seq. and other stars. (see instructions
at beginning of book)

Isoc. Scale. Δ'' D
Changed from B¹⁰
to May 9, 1911. by W.R.P.

March 19, 1910

MC 299

pc S₂₂

a	B _m	8.1	
b	5.5	9.3	11.0
b ₂	6.3	10.2	11.8
c	6.7 7.2	10.6	12.2
d	8.0		
e	7.7		
f	8.2		
g	9.5		
h	9.8		
k	10.3?		
k ₂	9.6		
k ₃	10.5?		

H.R. 2609

X

7.1

H.R. 6811

S

9.8

* 3

9.7

11 =

X

9.1

H.R. 4686

X

8.2

H.R. 14 = 6.4.9

9.3

H.R. 8938

X

7.8

* 8 5.1

9.7

* 9 5.3

9.9

H.R. 7394

X

8.2

424

B

B

10 5.1

8.8

17 5.9

9.7

11.5

19 7.3

7.1

12.9

See MC 261

20 6.1

10.2

12.8

18 7.1

12.8

21 7.8

12.9

23 7.2

12.5

MC 261

pc S₂₂

B	7.9	
4.9	9.3	10.5
5.4	10.1	11.9
5.7	10.5	12.3
6.9		
6.7		
7.1		
9.3		
9.7		
10.2		
9.9		
10.3		

7.1

In new edge of plate

9.5

B

9.3

B

8.1

B

9.3

B

7.1 7.8

9.7

10.0

7.8

8.0

B

B

B

B

9.5

11.3

B

9.5

12.7

6.1

12.3

5.0

10.1

12.8

6.1

12.7

6.2

12.3

6.1

12.7

Measures of MC Iso plates

MC 299

PC Sec

March 19, 1910

MC 261

PC Sec

a 8.1

b 5.9 9.5

b₂ 6.3 10.2

c 7.1 10.5

d 8.0

e 7.8

f 8.1

g 9.5

h 9.8

k 10.2

k₂ 9.7k₃ 10.4

1 7.2

2 9.9

3 9.7

4 9.0

5 8.3

6 4.9 9.2

7 8.2

8 5.0 9.8

9 5.2 10.0

10 4.2 10.2

11 4.2 10.2

12 5.9 9.8

13 7.2 12.8

14 6.0 10.2

15 7.2 12.8

16 7.1 12.8

17 7.0 12.7

18 5.1 8.8

a 8.1

b 4.8 9.5 10.9

b₂ 5.4 10.2 11.7

c 5.7 10.2 12.3

d 7.0 10.2 12.3

e 6.7

f 7.2

g 9.3

h 9.7

k 10.2

k₂ 9.9k₃ 10.2

For near edge.

9.5

9.2

8.1

9.1

9.2

9.7

9.9

7.9

B 9.5 11.3

6.3 12.8

5.0 10.0 12.8

6.1 12.8

6.3 12.9

6.0 12.8

Measures of Polar Seg- and other stars MC Plates-

March 19, 1910

MC
~~on 254~~

a	PC
b	4.9
b ₂	5.8
c	6.2
c	7.2
d 5.3	9.4
e 5.7	9.1
f 6.1	9.5
g 7.3	
h 7.7	
k 8.1	
k ₂ 8.0	
k ₃ 8.5	
1	6.8
2	7.1
3	7.7
4	5.9
5	4.9
6	7.3
7	Tor near edge
8	7.0
9	9.1
10	6.3

See p. 155

Measures of Polar Seq and other stars MC Plate - (Iso)

Iso. scale $\times 2$ March 22, 1910

MC 172		pc	Sec. 2
H.R. 286	a 4.7 4.6-4.65	9.1	
13 =	b 6.2 6.0-6.10	10.1	11.9
15 =	b ₂ 6.6 6.5-6.55		12.5
16 =	c 7.1 7.0-7.05		12.8
~~22 =~~	d 8.1 8.1-8.10		
	e 7.8 7.9-7.85		
	f 8.3 8.2-8.25		
	g 9.7 9.8-9.85		
	h 10.0 10.00		11.7
	k 10.0		12.2
	~~k₂ 9.9 9.9~~		11.7
	k ₃ 10.0		12.7
H.R. 424		4.8	
" 6789	10.0		
" 6811	" "	10.5	11.9
17	6.0 6.1-6.05	10.2	11.7
" 7394	4.7 4.7 4.70	9.0	
14	5.0 4.9 4.95	9.5	11.3
19	7.3 7.3 7.30		
20	6.3 6.2 6.25	9	12.5
11	B _n	9.6	11.2
" 4686	B _n	8.9	10.8
18	7.2 7.2-7.20		13.0
21	7.5 7.7 7.60		
23	7.1 7.1 7.10		12.7
10	5.2 5.1 5.15	9.8	11.2

~~x₄~~
~~x₅~~
~~c~~

Measures of Polar seg. and other stars (Iso)

Iso. scale X 2

March 22, 1910

		Sol		Su.2
		MC 172	PC	
H.R. 286	a	4.6	9.1	
13 =	b	6.0	10.0	11.9
15 =	b ₂	6.3		12.5
16 =	c	7.0		12.7
22 =	d	7.9		
	e	8.1		
	f	8.2		
	g	9.8		
	h	9.9		
	K	F		
	K ₂	9.9		
	K ₃	F		
H.R. 424	B.		4.8	
" 6789	B.			
" 6811	B.		9.9	11.9
17	6.1		10.2	11.9
" 7394	4.7		8.9	
14	4.9		9.6	11.2
19	7.3			
20	6.2		12.1	12.3
11	B.			11.3
" 4686	B.		8.8	10.8
18	7.2			12.9
21	7.7			
23	7.1			12.8
10	5.1		9.3	11.2

Measures of Polar seg. and other stars.

March 23, 1910

MC 254

a B	PC 4.7
b ₁ B	6.8
b ₂ B	7.2
c B	7.5
d 5.6	8.9
e 5.9	9.3
f 6.2	9.7
g 7.3	
h 7.7	
K 8.1	
L 8.9	
K ₂ 8.2	

K₃ 8.5
K₄ 8.8

HR 424 B	B 4.9
" 6789 OH phase	
" 6811 B	7.2
17 B	7.5
" 7394 B	6.7
14 B	7.3
19 4.9	8.3
20 4.7	8.1
11 B	6.0
" 4686 B	5.0
18 4.9	8.1
21 5.2	8.5
23 5.3	8.8
10 B	5.9

MC 293

a B	PC 4.9 4.7
b ₁ B	6.7 6.1
b ₂ B	6.4
c B	7.2 6.7
d 4.7	6.7
e 5.1	8.0
f 5.3	8.3
g 6.7	8.7
h 7.1	
K 7.7	
K ₂ 7.7	

K₃ 8.0

L 8.4

HR 424 B	B
" 6789 OH pl.	
" 6811 B	6.8
17 B	6.8
" 7394 B	6.0
14 B	6.7
19 B	7.7
20 B	7.5
11 B	5.3
" 4686 B	B
18 B	7.3
21 B	7.9
23 4.6	8.0
10 B	5.1

Cont on p 154

Measures of Polar seg and other stars.

Sc. B Q

MC 285

March 23, 1910

HR 286	a	B.	pc			34
	b.		6.1			K5 35 8.9
	b ₂		6.6			36
	c		7.5			37 9.2
	d	4.8	8.9		n	38 9.5
	e	5.2	9.3		o	39 9.5
	f	5.5	9.7		h.	40 9.9
	g	7.1			g	41 10.2
	h	7.3				42 10.2
	k	7.9				43 7
	l	9.0				44 .
	k ₂	8.1				45 .
	k ₃	8.4				46
	k ₄	8.7				47
HR	424	B.	B			
	6789	Off pl.				
	6811	B	7.1			
	17	B	7.5			
	7394	B	6.5			
	14	B	7.3			
	19	4.8	8.5			
	20	B	8.3			
	11	B	6.0			
	4686	B.	5.0			
	18	B	8.1			
	21	5.2	8.7			
	23	5.1	8.8			
	11	B	5.8			

MC 293 cont. fr. p. 155

Sc 1

Sc =

34 = K 4 8.0

35 = K 5 8.1

~~36 = b p. 155~~

37 = m 8.5

38 = m 8.7

39 = o 8.9

40 = f 9.3

41 = g 9.6

42 = n 9.7

43 = d 9.9

44 = t 9.9

45 = u n.s.

46 = v

47 = w n.s.

Measures of Polar Seq-and other stars.

50 Sc "B" Q

March 24, 1910

MC 81		pc	HR 424 B		pc
a B		4.7	6789 Off pl.		B
b ₁ B		6.1	6811 B		6.2
b ₂ B		6.4	17 B		6.7
c B		6.7	7394 B		5.9
d		7.7	14 B		6.5
e		8.0	19 B		7.7
f 4.7		8.5	20 B		7.5
g 5.8		9.5	11 B		5.2
h 6.1		9.8	4686 B		B
k 6.7		10.3	18 B		7.2
k ₂ 6.9			21 B		7.5
k ₃ 7.1			23 B		7.7
k ₄ 7.4			10 B		5.1
k ₅ 7.5					
l 7.8					
l 7.9					
37 m 8.0					
38 n 8.4					
39 o 8.5					
40 p 8.9 9.0					
41 q 9.2					
42 r 9.3					
43 s 9.5					
44 t 9.7					
45 u 9.7					
46 v 9.8					
47 w 9.9					

Measures of Polar seq. and other stars.

March 24, 1910

MC 81			PC		
a	B	4.6	HR 6789 Off pl.		
b ₁	B	6.1	6811	B	6.1
b ₂	B	6.4	17	B	6.8
c	B	6.8	7394	B	5.9
d	B	7.8	14	B	6.6
e	B	8.1	19	B	7.6
f	B	8.5	20	B	7.5
g	5.8	9.5	11	B	5.1
h	6.0	9.8	4686	B	4.7
k	6.8	9.9	18	B	7.1
k ₂	6.9	10.3	21	B	7.3
k ₃	7.1		23	B	7.7
k ₄	7.5		10	B	5.0
k ₅	7.8				
36. l	7.9				
37	8.1				
38	8.4				
o	39	8.5			
1. 40	8.9	9.1			
41	9.3				
42	9.2				
43	9.5				
44	9.6				
45	9.7				
46	9.9				
47	10.0				
HR 424	B	B			

Measures of Polar seg. and other stars

March 24, 1910

MC 293			HR 6787 Off pl.		
		P.C.			P.C.
a	B	4.7	6811	B	
b	B	5.9	17	B	6.9
c		6.3	7394	B	6.1
d	4.7	6.8	14	B	6.8
e	5.0	7.9	19	B	7.6
f	5.3	8.3	20	B	7.7
g	6.8		11	B	5.2
h	7.0		4686	B	4.7
k	7.6		18	B	7.3
k ₂	7.5		21	B	7.9
k ₃	7.8		23	B	8.0
k ₄	8.1		10	B	5.0
k ₅	8.2				
l	8.4				
m	37 8.7				
n	38 8.9				
o	39 8.9				
p	40 9.3				
q	41 9.5				
r	42 9.7				
	43 9.9				
	44 10.0				
	45 F				
	46 F				
	47 F				
HR 424	B	B			

Measures of Pol. seq and other stars

March 26, 1910

MC 285

		pc
a	B	4.8
b	B	6.0
c	B	7.5
d	4.9	9.0
e	5.1	9.3
f	5.6	9.7
g	7.2	
h	7.5	
k	7.9	
k ₂	8.0	
k ₃	8.4	
k ₄	8.8	
k ₅	8.9	
l	9.0	
m	9.1	
n	9.5	
o	9.5	
p	10.0	
q	10.2	
r	9	
s	9	
t	9	
u	9	
v	9	
w	9	

HR 424 B B

6787 off pl.

HR 6811	B	pc
		7.0
17	B	7.7
7394	B	6.3
14	B	7.5
19	4.7	8.4
20	B	8.5
11	B	6.1
4686	B	5.1
18	B	8.2
21	4.9	8.7
23	4.8	8.8
10	B	5.9

Measures of Polar sequence on M.W. 196 (See instructions beginning of Book)

Plate measured glass side up.

Iso. scale $\times 2$ Plate 196 (M.W.)		P.C.	Sec 2	April 4, 1910		P.C.	Sec 2
a = Left image	24 B	7.9		b = Right image	B	8.0	
" "	28 B	9.9		" "	B	9.7	
" "	29 5.1	10.1	11.8	" "	5.2	10.2	
" "	30 5.4 4.9		12.7	" "	5.3		12.7
" "	31 5.7		12.9	" "	5.7		12.9
" "	32 5.9		13.0	" "	5.9		13.1
" "	33 6.1		13.1	" "	6.2		13.2
" "	34 6.4		13.2	" "	6.4		
" "	35 6.7			" "	6.5		
" "	36 6.9			" "	6.7		
" "	37 7.2			" "	7.1		
" "	38 7.5			" "	7.5		
" "	39 7.7			" "	7.6		
" "	40 8.1			" "	8.0		
" "	41 8.4			" "	8.5		
" "	42 8.7			" "	8.7		
" "	43 8.9			" "	9.0		
" "	44 9.0			" "	9.2		
" "	45 9.2			" "	9.5		
" "	46 9.5			" "	9.7		
" "	47 9.7			" "	9.8		
" "	48 9.9			" "	10.0		
" "	49 10.1			" "	10.1		
" "	50 10.3			" "	10.3		12.7
" "	51		12.8	" "	10.5		12.7
" "	52		12.7	" "			12.7
" "	53		12.9	" "			12.9
" "	54		13.0	" "			13.1
" "	55		13.1	" "			13.1

Estimates of P.C. or $\bar{c}$ in terms of image b

Estimates of P.C.s

April 5, 1910

MW 196

MW 196

28c 3 29f c
29c 3 30f c
30c 2 31f c
31c 1 32f c
32c 2 33c
33c 2 34c

45f 3 28c 1 46f
49f 1 29c 2 50f
51f 1 30c 1 52f
51f 2 31c 0 52f
52f 2 32c 1 53f
53f 0 33c 1 54f
54f 2 34c 1 55f?

28c 4 29c
29c 2 30c
30c 2 31c
31c 2 32c
32c 3 33c
33c 2 34c

45f 3 28c 2 46f
49f 1 29c 1 50f
51f 1 30c 2 52f
51f 2 31c 1 52f
52f 3 32c 0 53f
53f 1 33c 1 54f
54f 2 34c 2 55f

Estimated intervals between stars
in Polar Seq.

M _W 196 (Glass side up)			April 5, 1910	M _W 196 (Glass up - film up)		
a = Left hand image	28	4 29		b = Right image	28	3 29
" " "	29	1 30			29	2 30
" " "	30	4 31			30	3 31
" " "	31	1 32			31	2 32
" " "	32	3 33			32	2 33
" " "	33	2 34			33	3 34
" " "	34	2 35			34	2 35
" " "	35	1 36			35	2 36
" " "	36	3 37			36	3 37
" " "	37	3 38			37	4 38
" " "	38	2 39			38	3 39
" " "	39	3 40			39	3 40
" " "	40	4 41			40	5 41
" " "	41	3 42			41	2 42
" " "	42	2 43			42	3 43
" " "	43	1 44			43	1 44
" " "	44	2 45			44	1 45
" " "	45	3 46			45	3 46
" " "	46	1 47			46	2 47
" " "	47	2 48			47	1 48
" " "	48	3 49			48	1 49
" " "	49	3 50			49	2 50
" " "	50	2 51			50	2 51
" " "	51	1 52			51	2 52
" " "	52	2 53			52	2 53
" " "	53	2 54			53	1 54
" " "	54	1 55			54	1 55

Measures of Polar seg. on M.W 196

Doo. sc. R. 2 Film up				April 5, 1910			
Left - a			PC	Sc. 2	B		Sc. 2
28	4.7		19.9		28	4.8	
"	33	5.9		13.0	33	6.0	12.9
"	32	5.8		13.0	32	5.8	12.8
"	46	9.7		11.7	46	9.8	11.8
"	35	6.5			35	6.4	
"	30	5.2		12.7	30	5.2	12.7
"	29	5.0	10.3	11.9	29	5.0	10.2
"	47	9.9			47	9.8	
"	53	F		13.0	53	F	13.0
"	38	7.3			38	7.5	
"	54	F		13.1	54	F	13.1
"	42	8.9			42	9.0	
"	48	10.1			48	10.0	
"	52	F		12.7	52	F	12.7
"	51	F		12.5	51	F	12.5
"	45	9.5			45	9.5	
"	34	6.2			34	6.2	
"	57	F			57	F	
"	58	F			58	F	
"	31	5.7		12.8	31	5.7	12.8
"	56	F			56	F	
"	43	9.1			43	9.2	
"	37	7.1			37	7.0	
"	36	6.7			36	6.7	
"	55	F			50	10.1	
"	59	F			49	10.0	
"	50	10.2			44	9.5	
"	49	10.0			40	8.1	
"	44	9.2			41	8.5	
"	40	8.5			39	7.8	
"	39	7.8					

Estimated intervals between images
of Polar Seq. on M.W 196 - film up.

M.W. 196	April 5, 1910
a = Left image	b = Right image
28 3 29	28 4 29
29 2 30	29 3 30
30 3 31	30 3 31
31 2 32	31 2 32
32 2 33	32 3 33
33 3 34	33 2 34
34 3 35	34 3 35
35 2 36	35 1 36
36 2 37	36 2 37
37 3 38	37 3 38
38 3 39	38 2 39
39 4 40	39 3 40
40 ³ 4 41	40 ⁵ 4 41
41 2 42	41 2 42
42 3 43	42 2 43
43 2 44	43 3 44
44 1 45	44 2 45
45 2 46	45 2 46
46 2 47	46 1 47
47 1 48	47 2 48
48 2 49	48 3 49
49 2 50	49 2 50
50 1 51	50 2 51
51 2 52	51 1 52
52 2 53	52 3 53
53 2 54	53 2 54
54 1 55	54 2 55

Estimated intervals between stars in
Polar Seq. MW 100

			<u>April 6, 1910</u>		
MW 100			55	3	56
28	3	29	56	2	57
29	2	30	57	2	58
30	3	31	58	1	59 ~~24.6~~ ?
31	1	32			
32	2	33			
33	4	34			
34	2	35			
35	3	36			
36	3	37			
37	2	38			
38	2	39			
39	3	40			
40	3	41			
41	2	42			
42	4	43			
43	1	44			
44	1	45			
45	2	46			
46	2	47			
47	3	48			
48	2	49			
49	3	50			
50	1	51			
51	3	52			
52	0	53			
53	4	54			
54	1	55			

Estimated intervals between images
in Polar Seq. on MW 10.0

April 7, 1910

28, 3 29

56, 1 57

29, 3 30

57, 2 58

30, 3 31

58, 0 59

31, 1 32

32, 3 33

33, 2 34

34, 2 35

35, 2 36

36, 3 37

37, 2 38

38, 2 39

39, 3 40

40, 3 41

41, 2 42

42, 3 43

43, 1 44

44, 1 45

45, 2 46

46, 3 47

47, 2 48

48, 2 49

49, 2 50

50, 2 51

51, 3 52

52, 1 53

53, 4 54

54, 2 55

55, 2 56

April 12, 1910

Remeasures of P.C. of HR 4686, Nos 13 + 15 on
mc 285

4686 5.2

13 7.0

15 7.5

Estimated intervals between
images in Polar seq. on plate 200

		April 18, 1910	
		Film	
		MTW 200 (Glass side up)	
Image 1	28, 3 29		Image 2 28 4 29
" "	29, 2 30		" " 29 2 30
" "	30, 3 31		" " 30 3 31
" "	31, 1 32		" " 31 2 32
" "	32, 2 33		" " 32 3 33
" "	33, 3 34		" " 33 3 34
" "	34, 2 35		" " 34 2 35
" "	35, 2 36		" " 35 1 36
" "	36, 3 37		" " 36 2 37
" "	37, 2 38		
" "	38, 3 39		
" "	39, 4 40		Image 3 28 3 29
" "	40, 3 41		" " 29 4 30
" "	41, 3 42		" " 30 3 31
" "	42, 2 43		" " 31 2 32
" "	43, 1 44		" " 32 4 33
" "	44, 2 45		" " 33 2 34
" "	45, 1 46		" " 34 1 35
" "	46, 3 47		" " 35 1 36
" "	47, 1 48		
" "	48, 3 49		
" "	49, 3 50		
" "	50, 3 51		
" "	51, 3 52		
" "	52, 0 53		
" "	53, 5 54? → Per. shape		
" "	54 ?		
" "	55, 3 56		

Scale measures of Polar Seq.

Iso. Sc. ~~B~~ "Q"				April 13, 1910			
NW 200							
Imr. 1	Sc. 1	P.C.	Sc. 2		Sc. 1	P.C.	Sc. 2
28	B	8.9		~~Imr. 2~~ 8.9	B	9.0	
29	B	9.3			B	9.3	
30	B	9.7			B	9.6	
31	4.9	10.2			4.7	10.1	
32	5.0	10.3			4.7	10.3	
33	5.2		12.1		4.9		12.2
34	5.5		12.7		5.2		12.7
35	5.8		12.9		5.6		12.9
36	6.1		13.1		5.9		13.1
37	6.3				6.1		
38	6.6				6.4		
39	6.8				6.7		
40	7.0				7.0		
41	7.4				7.3		
42	7.6				7.5		
43	7.9				7.8		
44	8.1				8.0		
45	8.3				8.3		
46	8.5				8.5		
47	8.8				8.9		
48	9.0				9.1		
49	9.2				9.3		
50	9.5				9.7		
51	9.7				9.8		
52	10.0				10.1		
53	10.0				10.2		
54	?						
55	?						
56							

Estimated intervals between stars in Polar Seg.

Film exp.

MW 200

April 13, 1910

Image 1	28	3	29
" "	29	2	30
" "	30	4	31
" "	31	1	32
" "	32	3	33
" "	33	3	34
" "	34	1	35
" "	35	2	36
" "	36	3	37
" "	37	2	38
" "	38	1	39
" "	39	3	40
" "	40	4	41
" "	41	2	42
" "	42	3	43
" "	43	1	44
" "	44	1	45
" "	45	2	46
" "	46	3	47
" "	47	1	48
" "	48	3	49
" "	49	3	50
" "	50	4	51
" "	51	3	52
" "	52	1	53
" "	53	?	
" "	53	3	54b
" "	54b	?	55
" "	55	2	56

Image 2	28	4	29
" "	29	2	30
" "	30	4	31
" "	31	2	32
" "	32	3	33
" "	33	3	34
" "	34	2	35
" "	35	1	36
" "			
" "			
" "			
" "			
Image 3	28	4	29
" "	29	3	30
" "	30	4	31
" "	31	1	32
" "	32	3	33
" "	33	3	34
" "	34	1	35
" "	35	1	36

Estimates of ft images in terms
of bright images.

April 13, 1910

MW 200

Image 2	⁸ 28	3	⁶ 49	2	⁸ 29
" "	29	2	51	0	30
" "	30	2	52	2	31
" "	31	3	54 ²	0	32
" "	32	2	55	1	33
" "	33	1	56	~~2~~	34

Image 2	28	4	49	1	29
" "	29	1	51	1	30
" "	30	3	52	1	31
" "	31	3	54 ²	1	32
" "	32	2	55	2	33
" "	33	2	56	0	34

Estimated intervals between
stars in Polar Seq.

April 14, 1910

Film exp. NW 204

Image 1 - 28 3 29

" " 29 2 30

" " 30 3 31

" " 31 1 32

" " 32 3 33

" " 33 4 34

" " 34 2 35

" " 35 2 36

" " 36 2 37

" " 37 4 38

" " 38 2 39

" " 39 4 40

" " 40 3 41

" " 41 3 42

" " 42 2 43

" " 43 3 44

" " 44 2 45

" " 45 1 46

" " 46 2 47

" " 47 2 48

" " 48 3 49

" " 49 2 50

" " 50 3 51

" " 51 3 52

" " 52 1 53

" " 53 3 54^a

" " 54^a 1 54^b

" " 54^b 2 55

Image 2 28 3 29

" " 29 1 30

" " 30 3 31

" " 31 1 32

" " 32 2 33

" " 33 3 34

" " 34 3 35

" " 35 3 36

" " 36 3 37

" " 37 3 38

" " 38 2 39

" " 39 4 40

" " 40 3 41

" " 41 2 42

" " 42 3 43

" " 43 2 44

" " 44 3 45

" " 45 2 46

" " 46 2 47

" " 47 1 48

" " 48 3 49

" " 49 2 50

" " 50 3 51

" " 51 2 52

" " 52 1 53

Estimated intervals between Stars in Polar Seg.

April 14, 1910

MW 204

Image 3	28	4	29
" "	29	2	30
" "	30	2	31
" "	31	2	32
" "	32	2	33

Image 3	28	3	29
" "	29	1	30
" "	30	3	31
" "	31	1	32
" "	32	2	33

Estimated intervals between
stars in Polar seq

M.W. 204

April 14, 1910

Image 1

28	4	29
29	3	30
30	3	31
31	2	32
32	3	33
33	3	34
34	2	35
35	2	36
36	2	37
37	3	38
38	3	39
39	5	40
40	3	41
41	2	42
42	3	43
43	3	44
44	2	45
45	2	46
46	2	47
47	2	48
48	3	49
49	3	50
50	2	51
51	3	52
52	1	53
53	3	54a
54a	1	54b
54b	2	55

Image 2

28	3	29
29	2	30
30	4	31
31	1	32
32	2	33
33	2	34
34	3	35
35	2	36
36	1	37
37	3	38
38	2	39
39	4	40
40	3	41
41	3	42
42	2	43
43	2	44
44	3	45
45	3	46
46	3	47
47	2	48
48	3	49
49	2	50
50	3	51
51	3	52
52	2	53

Measures of ft stars in Polar Seq.

Apr 18, 1910

Iss. scale $\frac{1}{2}$ MC 186

39 12.5
40 13.0
41 13.3
42 $\frac{1}{2}$

MC 345

39 12.3
40 12.7
41 13.1
42 12.8

MC 348

39 12.5
40 13.0
41 13.3
42 12.5
38 12.8
37 12.1

MC 356

39 11.8
40 12.8
41 12.7
42 13.0
43 13.2
44 13.3

MC 354

39 12.3
40 12.7
41 13.0
42 13.3
43 ms

38 12.1

37 11.8

MC 252

39 11.5
40 12.0
41 12.4
42 12.7
43 12.9
44 $\frac{1}{2}$

MC 253

39 11.3
40 11.7
41 12.0
42 12.4
43 12.7
44 12.9
45 13.1

MC 194

39 12.1
40 12.7
41 12.9
42 13.1
43 13.3

44 $\frac{1}{2}$

MC 173

39 12.5
40 13.0
41 13.3
42 $\frac{1}{2}$

38 12.3
37 12.0

MC 143

39 12.3
40 12.7
41 12.9
42 13.2
38 11.9

Scale measures of Polar Seq. on MC Plate
having short exposure.

April 19, 1910

MC 292			MC 251		
		pc			pc
	a	B 4.9		B	6.0
	b	B 6.3		B	7.8
	c	B 7.2		5.1	8.8
	d	4.7 8.7		6.3	9.9
	e	5.0 9.1		6.7	
	f	5.3 9.5		7.1	
	g	6.9		8.4	
29 =	h	7.3		8.6	
31 =	k	8.1		9.2	
		9.0			
36	l	~~8.9~~		9.8	
		7.7			
37	m	~~9.7~~		10.1	
		7.7			
38	n	~~9.9~~		10.3	
		7.7			
30		7.4		~~30.1~~	~~6.3~~
32		8.2		32	9.2
33		8.5		33	9.5
34		8.9		34	9.7
35		9.1		35	10.0

Scale meas. of Polar seq.

April 20, 1910

MC 241

a	B	pc 5.9
b	B	7.7
c	4.9	8.5'
d	6.1	
e	6.3	
f	6.9	
g	8.2	
h	8.5	
k	9.1	
l	9.8	
m	10.0	
n	10.7	
30	8.5'	
32	9.1	
33	9.3	
34	9.6	
35	9.8	

MC 143

B	pc 5.2
B	6.9
B	7.5'
B	8.5'
B	8.7
4.9	9.1
6.2	10.0
6.5	10.3
7.2	
8.1	
8.5'	
8.9	
39	9.2
40	9.6
41	9.9

Measures of prismatic companions

Reg. 5+15

Apr. 21, 1910

MC 157

PC

HR 1576

5.3

b

PC

10.0

7.0

" 1580

5.1

c

10.2

7.3

" 1638

13

d

8.0

" 1676

4.7

e

8.3

" 1684

6.4

Stan.

4 5.2

9.7

5 5.2

9.5

1 5.2

9.6

2 5.1

9.7

6 5.3

9.9

10

8.9

24 5.2

9.7

25

8.9

21

9.5

22

8.9

16

9.3

20

9.5

MP

1

7.1

2

9.9

3

7.8

4

8.1

5

7.4

6

9.3

7

9.3

Scratched. 8

10.0

9

F

10

9.5

or 64

9.8

Measures of prismatic companions

Reg. 5 + 15

April 21, 1910

MC 157

P.C.

H.R. 1576	P.C. 5.1	b	10.1
1580	5.0	c	10.3
1638	13	d	8.1
1676	4.6	e	8.4
1684	6.2		

Stem 4	9.5
5	9.3
1	9.5
2	9.5
6	9.8
10	8.8
24	9.7
25	9.0
21	9.5
22	9.1
16	9.2
20	9.3

mp 1	6.9
2	9.8
3	7.9
4	8.1
5	7.5
6	9.5
7	9.3
8	9.9
9 9.0	9
10	9.5
0	9.7

Measures of prismatic companions of stars in Polar Seq.

Polar Seq. "Q"

April 27, 1910

MC 348

PC
22 11.9
24 12.2
25 = f 12.7
23 11.7

MC 252

23 10.8
22 10.7
24 11.0
f 11.6
30 12.7
31 12.0
227 11.2
225 12.7
28 12.0

MC 253

22 Sc2
24 10.5 Sc1
f 10.9 9.2
28 12.2
29 12.7
30 13.0
227 10.7

MC 194

22 11.7
24 12.0
f 12.4
28 12.8
29 13.1
23 11.7
227 12.1
225 13.2

MC 173

22 11.7
24 12.1
f 12.5
28 12.9
29 13.2
23 11.9
227 12.1
225 13.0

MC 354

22 11.8
24 12.1
f 12.5
28

227 12.1
225 13.1

23 11.7

MC 356

22 11.3
22 10.9
24 11.7
f 12.1
227 11.5
225 13.0
23 11.2

MC 143

29 13.0
22 11.4
24 11.8
f 12.3
227 11.9
225 13.0
23 11.3

Measures of prismatic companions of stars in Polar Seq.

Geo. Sc. 12.

April 29, 1910

MC 143	
	pc
21	11.5
22	11.7
23	11.7
24	12.0
25	12.4
26	12.9
27	13.2
227	11.8
225	13.0

MC 253	
	Sec. 2
21	8.7
22	8.9
23	8.9
24	10.7
25	11.2
26	11.8
27	12.2
227	9.0
225	
229	
230	

MC 252	
21	10.7
22	10.9
23	11.0
24	11.4
25	11.9
26	12.3
27	12.7
227	11.3
225	12.8
	13.0

MC 348	
	pc
21	11.8
22	12.0
23	12.1
24	12.4
25	12.7
26	13.1
27	F
227	12.2
225	X

MC 194	
21	11.6
22	11.8
23	11.9
24	12.2
25	12.5
26	12.9
27	13.1
227	12.1
225	13.0

MC 354	
	pc
21	11.7
22	12.0
23	12.0
24	12.3
25	12.7
26	13.1
27	F
227	12.1
225	13.1

MC 173

21	12.0
22	12.2
23	12.5
24	12.8
25	13.1
26	
27	
227	12.5
225	

MC 356

21	10.8
22	11.1
23	11.2
24	11.7
25	12.1
26	12.5
27	12.9
227	11.7
225	12.9

Measures of secondary images

Iso. Sc. B. "D"

May 18, 1910

Pol. Deg

MC 200

	Imm. 1	Imm. 2
16	B	6.7
24	B	6.3
27	B	8.5
197	B	6.8
408	B	7.9

	Imm. 3
197	6.7
408	7.7
27	8.3
16	5.0
24	6.3

	Imm. 2
408	7.7
197	6.9
27	8.7
24	6.3
16	5.0

	Imm. 3
24	6.6
408	7.6
16	5.0
197	6.8
27	8.3

MC 241

		P.C.
18	5.0	8.5
19	5.3	8.9
26	7.1	10.0
27	7.6	F
22		9.3
24		9.7
25		10.1

27	7.7	F
26	6.9	9.9
25		10.0
24		9.5
22		9.2
19	5.2	9.0
18	5.0	8.7

MC 251

18	5.7	9.2
19	5.9	9.5
26	7.4	F
27	8.0	F
22		9.7
24		10.0
25		F

Measures of stars in Polar Seq.

May 18, 1910

MC 251			MC 253		
		pc			pc
18	5.7	9.3	28		12.3
19	6.0	9.5	29		12.7
22		9.9	30		13.0
24		10.1			
25		9			
26	7.5				
27	8.0				

MC 292		
		pc
18	8.1	7.9
19		8.2
22		8.8
24		9.1
25	5.7	9.5
26	6.2	
27	6.6	

27	6.7	
26	6.3	
25		9.7
24		9.3
22		8.9
19		8.1
18		7.9

Measures of prismatic companions
of stars in Pol. Seg. also star images.

May 30, 1910

mc 143

	pc	Sec	Star in	Sec
7	6.8		B	
10	7.3		B	
13	8.5		B	
15	9.1		B	
16	9.3		B	
18	9.7	10.9	4.7	
19	9.9	11.2	5.0	
227	10.5	11.7	6.9	
21	9.8	11.3	5.3	
22	10.0	11.7	5.6	
23	10.1	11.7	5.7	
24		12.0	6.0	
25		12.3	6.4	
26		12.8	6.9	
27		13.1	7.3	
28			7.8	
29			8.2	
30			8.4	
31			8.9	
32			9.2	10.7
33			9.5	11.1
34			9.9	11.5
35			10.0	11.7
36			10.3	11.9
June 19, 1910 386	10.1	11.8	6.0	
362	10.3	11.9	6.1	
225		12.7	7.5	
408		12.3	6.7	
197		12.0	6.2	

Meas. of p.c. of stars in polar seg. also
star images.

May 30, 1910

MC 173

Sc 1 PC	Sc 2	St.	Sc 2
7 7.8			
10 8.2			
13 9.5	10.7		
15 9.9	11.3		
16 9.7	11.5		
18 10.0	11.7	5.8	
19 10.1	11.8	6.1	
227	12.3	7.8	
21 10.5	11.8	6.2	
22	12.1	6.7	
23	12.2	6.6	
24	12.5	7.1	
25	12.7	7.3	
26	13.1	8.0	
27		8.7	
28		9.0	
29	9.3		10.7
30	9.5		10.9
31	9.9		11.3
32	10.0		11.5
33	10.3		11.7
34			12.0
35			12.2
36			12.3
June 10, 386	12.3	7.2	7.7
362	12.3	7.3	
225	13.0	9.2	
408	12.9	8.0	
197	12.5	6.8	

Measures of p.c and star images
in Pol. Seq.

June 2, 1910

Mc 194		Sc 2	Sc 1	Sc 2
Sc 1 PC			St.	
7	7.1			
10	7.7			
13	8.9			
15	9.3	10.6		
16	9.4	10.7		
18	9.7	11.3		
19	9.9	11.5		
227	10.5	11.9	6.9	
21	9.9	11.5	5.2	
22	10.1	11.7	5.5	
23	10.3	11.8	5.7	
24		12.1	6.1	
25		12.3	6.5	
26		12.7	7.1	
27		13.0	7.5	
28		8.1		
29		8.5		
30		8.9		
31		9.3	10.6	
32		9.4	10.8	
33		9.5	11.1	
34		9.7	11.6	
35		9.9	11.8	
36		10.1	11.8	
June 10 1910 386	10.1 7.4	11.7	6.2	10
362	10.3	11.9	6.7	
225		12.9	8.3?	
408		12.5	7.2	
197		12.3	6.3	

Measures of pc and star images in Polar Seq.

June 6, 1910

Mc 252	Sc 1 pc	Sc 2	St. inv.	Sc 2
7	5.1			
10	5.7			
13	6.8			
15	7.2			
16	7.7			
18	8.2			
19	8.5			
207	9.7			
21	9.0			
22	9.3			
23	9.5			
24	9.8	11.5	5.1	
		14.9		
25	10.2	12.7	5.4	
26		12.3	5.9	
27		12.7	6.3	
28		13.1	6.9	
29			7.3	
30			7.5	
31			8.2	
32			8.5	
33			8.9	
34			9.2	12.9
35			9.3	11.0
36			9.5	11.3
386	9.5	11.2	5.2	
362	9.7	11.3	5.3	
225		12.7	6.5	
408	10.0	11.5	6.0	
197	9.7	11.5	5.3	

Measures of p.c + star images in Polar Seq.

June 6, 1910

MC 253

	p.c	Sc. 2	St. im.	Sc. 2	St. im.
7	4.9				
10	5.3				
13	6.3				
15	6.7				
16	6.9				
18	7.3				
19	7.7				
227	9.3	11.1			
21	8.1				
22	8.4				
23	8.7				
24	9.0	10.7			
25	9.4	11.2	5.0		
26	9.9	11.7	5.4		6.0
27	10.2	12.0	5.9		6.6
28		12.3	6.3		7.0
29		12.7	6.8		7.3
30		13.0	7.0		7.7
31			7.4		7.9
32			7.5		8.2
33			8.0		8.7
34			8.3	10.7	9.0
35			8.5	10.9	9.0
36			8.7	10.9	9.2
June 10, 1910 386	9.0				13
362	9.2				13
225	9.1				6.5
408	9.9	11.2			5.2
197	9.1	10.8			5.0

Measures of pc and star images in Polar Sequences

June 6, 1910

MC 348		pc	St. in	St. in
7	6.2	5.2	5.2	
10	7.0			
13	8.3			
15	8.9			
16	9.3	10.9		
18	9.7	11.3		
19	10.2	11.7	5.9	
227		12.3	7.2	
21		11.9	6.2	
22		12.2	6.3	
23		12.3	6.7	
24		12.5	7.1	
25		12.8	7.4	
26		13.0	7.9	
27			8.4	
28			8.8	
29			9.2	
30			9.5	
31			9.7	
32			9.8	
33		10.1		11.5
34				11.7
35				12.0
36				12.3

June 10, 1910	386	12.0	6.7
	362	12.8	6.9
	225	12.7	8.3
	408	11.5	7.2
	197	12.7	7.2

Measures of pc and star images in Pol. Seq.

June 9, 1910

MNC 354				
	pc	Seq	Strim.	Seq
	B	B	B	B
7	6.1	B	B	B
10	6.8	B	B	B
13	8.1	B	B	B
15	8.7	B	B	B
16	9.0	10.7	B	B
18	9.5	11.0	B	B
19	9.8	11.4	5.1	B
227	F	12.3	6.7	B
21	10.2	11.7	5.9	B
22	F	12.0	6.2	B
23	F	12.2	6.3	B
24	F	12.5	6.7	B
25	F	12.8	7.1	B
26	F	F	7.7	B
27	F	F	8.3	B
28	F	F	8.7	B
29	F	F	9.1	10.7
30	F	F	9.3	10.6
31	F	F	9.5	11.0
32	F	F	9.5	11.2
33	F	F	9.7	11.6
34	F	F	10.0	11.8
35	F	F	10.2	11.9
36	F	F	10.5	12.1
386	F	11.9	6.2	B
362	F	12.2	6.7	B
226			8.5	B
408	10.2	11.9	7.8	B
197		12.5	6.9	

Scale measures of secondary images.

22 May 196

June 8, 1910

NW 196		Sec
16	6.1	
24	8.2	
27	9.7	11.7
28	10.1	11.7
30		12.7
32		13.0
197	8.2	
408	9.4	10.9
227	7.9	
362	8.4	
386	8.0	
225	10.0	11.5
225	10.1	11.7
386	8.1	
362	8.5	
227	8.1	
408	9.6	11.0
197	8.1	
32		12.9
30		12.7
28	9.9	11.5
27	9.9	11.7
24	8.1	
16	6.1	

Measures of pc and star images in
Polar Sey.

June 10, 1910

MC 356				
	PC	Sec	St. in	Sec
7	5.1	B	B	B
10	6.1	B	B	B
13	7.1	B	B	B
15	7.5	B	B	B
16	7.9	B	B	B
18	8.3	B	B	B
19	8.7	B	B	B
227	10.0	11.7	6.1	B
21	9.2	11.0	B	B
22	9.5	11.3	B	B
23	9.8	11.5	5.0	B
24	10.0	11.8	5.6	B
25	F	12.0	6.0	B
26	F	12.4	6.4	B
27	F	12.8	7.0	B
28	F	F	7.4	B
29	F	F	8.0	B
30	F	F	8.2	B
31	F	F	8.7	B
32	F	F	9.0	B
33	F	F	9.3	11.0
34	F	F	9.6	11.3
35	F	F	9.8	11.5
36	F	F	10.0	11.7
386	9.8	11.7	5.0	B
362	10.1	11.8	5.3	B
225	F	F	7.1	B
227	F	12.1	6.3	B
177		11.9	5.9	B

Estimates of both star images in
terms of br. pc

June 14, 1910

MW 196

Left inv.

45	1	27 pc	2	28 pc
46	2	27 "	1	28 "
47	2	28 "	1	29 "
48	3	28 "	2	29 "
49	2	29 "	2	30 "
50	2	29 "	3	30 "
51	0	29 "	3	30 "
52	1	30 "	1	31 "
53	2	31 "	1	32 "
54	1	33 "	1	34 "

Right inv.

45	0	27 pc	1	28 "
46	3	27 "	0	28 "
47	1	28 "	2	29 "
48	1	28 "	3	29 "
49	1	29 "	3	30 "
50	1	29 "	2	30 "
51	4	29 "	2	30 "
52	0	30 "	1	31 "
53	0	32 "	1	33 "
54	2	33 "	0	34 "

Estimates of star images in terms of α p.c.

June 14, 1910

Left-

45	2	27 pc	1	28 pc
46	3	27 "	1	28 "
47	1	28 "	2	29 "
48	2	28 "	1	29 "
49	2	29 "	2	30 "
50	1	29 "	2	30 "
51	0	29 "	3	30 "
52	1	30 "	1	31 "
53	2	31 "	2	32 "
54	1	33 "	2	34 "

Right-

45	1	27 pc	2	28 pc
46	2	27 "	1	28 "
47	1	28 "	1	29 "
48	2	28 "	3	29 "
49	0	29 "	2	30 "
50	2	29 "	2	30 "
51	3	29 "	1	30 "
52	1	30 "	1	31 "
53	1	32 "	1	33 "
54	2	33 "	1	34 "

Estimates of ft images in terms
of hr p.e

MTW 200

hr	in	hr
28	4	49
16	1	34
27	2	48
197	3	41
227	3	42
386	3	41
362	2	41
408	1	43
408	2	43
362	2	41
386	2	41
227	3	42
197	2	41
27	2	48
28	3	49

16 1 34

27 2 48 1 28

197 3 41 4 408

227 3 42 0 386

386 3 41 0 197

362 2 41 3 408

408 1 43 3 27

408 2 43 4 27

362 2 41 4 408

386 2 41 0 197

227 3 42 1 386

197 2 41 3 408

27 2 48 1 28

28 3 49 1 29

Scale measures of second set of secondary images

June 20, 1910

NW 200

(Image 3) 16 5.1
 24 6.7
 27 8.7
 28 9.1
 29 9.7 9.3 10.8
 30 9.5 11.1
 31 10.0 11.7
 32 10.2 11.9
 33 12.3
 34 12.7
 35 12.9
 197 6.9
 408 7.3
 227 6.7
 362 6.8
 386 7.0
 225 8.7

16 5.0
 24 6.8
 27 8.5
 28 8.9
 29 9.4 11.0
 30 9.5 11.2
 31 9.9 11.5
 32 10.1 11.8
 33 12.2
 34 12.5
 35 12.8
 197 7.0
 408 7.2
 227 6.7
 362 6.8
 386 6.9
 225 8.9

Estimates of ft. star images in
terms of secondary images
June 20, 1910

MW 204

Left-image

45	2	408	3	28
46	2	408	2	28
47	1	27	1	28
48	2	28	3	29
49	3	28	2	29
50	1	29	2	30
51	2	30	0	31
52	2	31	2	32
53	1	32	0	33
54	2	33	ns	34

Right-

54	3	33	ns	
53	0	32	3	33
52	2	31	0	32
51	3	30	0	31

Image defective

50				
49	4	28	1	29
48	2	28	2	29
47	2	27	0	28
46	3	408	1	28
45	3	408	2	28

Estimates of ft star images in terms of secondary images

June 21, 1910

MW 204

Left

45	2	408	3	28
46	3	408	2	28
47	2	27	2	28
48	~~2~~	28	3	29
49	1	28	2	29
50	3	28	1	29
51	1	30	2	31
52	2	31	1	32
53	0	32	1	33
54	1	33		

Right

45	2	408	2	28
46	3	408	1	28
47	2	27	1	28
48	2	28	2	29
49	3	28	1	29

Image defective? 50

51	2	30	0	31
52	2	31	1	32
53	1	32	3	33
54	3	33		

Measures of So. Polar Sequence

(Provisional)

June 22, 1910

Scale "M"

B20426			B20426			Also Magn.	
Se1	Se2	PC	Curve	Pr. Magn.	Se1	Se2	Pr. Curve + Pr. Curve + 5.14
a		4.9	.	.	j	7.8	0.86 13.88
b		5.3	1.26	6.56	η	8.0	0.84 13.98
c	1.0 1.2	5.7	1.18	6.88	θ	8.5	0.79 14.43
d	1.2 1.4	6.1	1.10	7.20	λ	8.8	0.75 14.69
e	1.5 1.7	6.3	1.06	7.36	μ	8.7	0.77 14.61
f	1.8 ^{2.0} B	6.9	0.96	7.86	π	9.1	0.73 14.97
g	2.0 ^{2.2} B	7.2	0.93	8.13	σ	9.7	0.68 15.52
h	2.7 ^{2.9} B	7.5	0.90	8.40	ρ	9.3	0.71 15.15
k	3.1 3.3	7.9	0.85	8.75			
l	3.3 3.5	8.5	0.79	9.29			
m	3.6 3.8	8.7	0.77	9.47			
n	3.7 3.9 3.8 3.85	9.2	0.72	9.92			
o	3.8 4.0 3.9 3.95	9.5	0.70	10.20			
p	4.1 4.3 4.2 4.25	9.9	0.66	10.56			
q	4.2 4.4 4.3 4.35						
r	4.4 4.6 4.7 4.65						
s	4.8 5.0 5.0 5.00	Pr. Curve + Pr. Curve + 5.14					
t	5.1 5.3 5.1 5.20	1.28	11.62				
u	5.7 5.4 5.3 5.35	1.25	11.74				
v	5.7 5.9 5.7 5.80	1.16	12.10				
x	6.0 6.2 6.1 6.15	1.09	12.38				
y	6.2 6.4 6.3 6.35	1.04	12.53				
z	6.3 6.5 6.5 6.50	1.01	12.65				
α	6.5 6.7 6.7 6.70	0.99	12.83				
β	7.1	0.94	13.18				
γ	7.2	0.93	13.27				
δ	7.3	0.92	13.36				
ε	7.7	0.88	13.72				

Measures of S. Polar Seq. (Provisional)

June 22, 1910

B 20781	Sel	Seq	Pr.	Curve	magn.		Pr.	Curve	magn.	Abs. magn.
a			5.5				8.7	0.30	14.15	
b			6.0	0.61	6.61		8.9	0.28	14.33	
c	1.7	1.9	6.3	0.58	6.88		9.3	0.25	14.70	
d	1.9	2.1	6.5	0.55	7.05		9.7	0.20	15.05	
e	2.2	2.4	7.0	0.50	7.50		9.7	0.20	15.05	
f	2.3	2.5	7.3	0.46	7.76		9.9	0.18	15.23	
g	2.7	2.9	7.6	0.42	8.02		10.1	0.15	15.40	
h	3.1	3.3	8.1	0.37	8.47					
k	3.3	3.5	8.5	0.32	8.82					
l	3.5	3.7	8.9	0.28	9.18					
m		3.7								
n		3.9								
o	3.9	4.1	4.2	4.15						
p	4.6	4.8	4.8	4.80						
q	4.9	5.1	4.8	4.95						
r	5.1	5.3	5.2	5.25						
s	5.3	5.5	5.3	5.40						
t	4.9	5.1	5.2	5.15						
u	5.5	5.7	5.7	5.60						
v	6.0	6.2	6.0	6.10	0.60	11.85				
x	6.3	6.5	6.4	6.45	0.56	12.16				
y	6.5	6.7	6.7	6.70	0.53	12.38				
z		7.0			0.50	12.65				
α		7.4			0.44	12.99				
β		7.7			0.40	13.25				
γ		7.9			0.39	13.44				
δ		8.0			0.38	13.53				
ε		8.5			0.32	13.97				

Scale measures of No. Pol. Seg.

Scale P

August 2 1910

MW 232				
	1	2	3	4
227	2.9	2.0	3.9	3.3
225	-	2.8	5.1	4.2
362	2.7	1.9	4.0	3.1
386	2.7	0.9	3.9	3.1
W.S. 24	4.0	3.1	5.6	4.8
28	3.8	2.9	5.3	4.6
29	4.1	3.1	5.7	4.9
30	4.0	3.1	5.7	4.9
31	4.8	3.8	6.7	6.2
32	5.0	3.9	6.3	5.3
33	5.3	4.0	6.5	5.6
24	2.7	1.8	3.9	2.9
26				
27				
34	5.9	4.1	6.8	5.9
35	6.1	4.2	7.0	6.2
36	6.2	4.4	7.1	6.3
37	6.2	4.6	7.3	6.5
38	6.7	4.9	7.7	6.8
39	6.9	5.0	7.8	7.0
40	7.3	5.2	8.5	7.5
41	7.8	6.2	9.1	8.0
42	8.1	6.8	9.2	8.1
43	8.2	6.3	F	8.5
44	9.0	6.8	F	8.7
45	9.1	6.7	F	8.7
46	9.0	6.9	-	8.9

*Image 227

Scale measures of No. Pol. Seq.

August 2, 1910

m2v 282

	F 1	2	3	4
47	9.0	7.0		
48	9.0	7.2	F	F
49	F	7.5	F	F
50	F	7.8	F	F
51	F	7.9	F	F
52	F	8.5	F	F
53		8.7		
54		9.0		
55		9.1		
α		8.1		
β		8.9		
γ		9.0		
δ		9.2		
ϵ		9.5		
ζ				
η				
κ				

Scale measures of No. Pol. Seg.

Sc P

August 4, 1910

MW 230					
	1	2	3	4	5
227	3.0	2.0	3.9	2.9	
225	4.0	2.9	5.0	4.0	
362	2.8	1.9	3.8	2.9	
386	3.0	2.0	3.8	3.1	
24	2.7	1.8	3.9	2.7	
28	4.0	2.8	5.1	3.8	
29	4.3	3.1	5.4	4.2	4.0
30	4.3	3.1	5.8	4.3	4.0
31	5.2	3.6	6.1	5.1	4.8
32	5.3	3.7	6.3	5.1	4.9
33	5.5	3.9	6.5	5.3	5.0
34	5.7	4.0	6.8	5.9	5.5
35	6.0	4.1	6.9	6.2	6.0
36	6.2	4.2	7.1	6.3	6.0
37	6.3	4.6	7.2	6.3	6.1
38	6.6	4.8	7.5	6.7	6.3
39	6.8	4.9	7.7	6.9	6.5
40	7.0	5.2	8.3	7.2	
41	7.6	5.6	8.9	8.0	
42	7.9	5.8	F	8.2	
43	8.1	6.1	F	8.3	
44	8.3	6.3	F	9.0	
45	8.7	6.3	F	8.9	
46	8.9	6.7	F	F	
47	F	6.9	F	F	
48	F	7.0	F	F	
49	F	7.1	F	F	

Scale measures of No. Pol. Seq.

Se. P

August 4, 1910

MW 230

50	$\frac{1}{7}$	$\frac{2}{7.3}$	$\frac{3}{7}$	$\frac{4}{7}$
51	$\frac{7}{7}$	$\frac{7.5}{7}$	$\frac{7}{7}$	$\frac{7}{7}$
52	$\frac{7}{7}$	$\frac{7.9}{7}$	$\frac{7}{7}$	$\frac{7}{7}$
53	$\frac{7}{7}$	$\frac{8.1}{7}$	$\frac{7}{7}$	$\frac{7}{7}$
54	$\frac{7}{7}$	$\frac{8.5}{7}$	$\frac{7}{7}$	$\frac{7}{7}$
55	$\frac{7}{7}$	$\frac{8.8}{7}$	$\frac{7}{7}$	$\frac{7}{7}$

56 $\frac{7}{7}$ 57 $\frac{7}{7}$ 58 $\frac{7}{7}$ α 7.6 β 8.3 γ 8.5 δ 8.3 ϵ $\frac{7}{7}$ ζ 8.8 η 8.9

Near edge 197 2.8 1.8 3.8 2.9

Estimates of brightness to find amount
of variation in 456 2829- found in examining
map of sky.

March 6, 1908

I 15799	8.9	ac 656	7.9
" 23947	9.2 88	" 919	8.9
" 9750	8.1	" 1167	8.1
" 21564	8.6		8.3
" 9716	8.6		
" 11592	8.6		
" 9732	8.5		
" 21047	8.3		
" 16272	8.5		
" 13332	8.4		
" 6886	8.3		
" 9009	8.6		
" 4488	9.0		
" 9328	8.2		
" 26012	8.6		
" 27374	8.1		
" 31207	8.6		
" 29365	8.6		
" 25637	8.0		
" 23500	8.5		
" 21519	8.0		
" 18744	8.2		
" 11465	8.7		
" 25557	8.8		
" 7359	8.8		
" 9352	8.1		
ac 2153	7.7		
" 4618	8.4		
" 2019	8.7		
" 427	8.9		

August 4, 1910

Scale measures of No. Pol. Seq.

Scale 17493C)

Se. P.

August 6, 1910

(Se. 17493C)

MW 2.05

Se. 1

Se. P.

Se. 1

Se. 2

225 1.0

227 B

386 B

362 B

24 B

28 1.0

29 1.3

30 1.4

31 2.0

32 2.1

33 2.3

34 2.5

35 3.1

36 3.2

37 3.2

38 3.8

39 4.1

40 4.7

41 5.1

42 5.3

43 5.5

44 6.0

45 6.2

46 6.5

47 6.7

48 7.0

49 7.5

50 8.1

408

2.0 1.7

2.1 1.8

2.0 1.7

2.1 1.8

2.1 1.8

2.7 2.4

3.0 2.7

3.1 2.8

3.2 2.9

3.2 2.9

3.7 3.4

3.8 3.5

4.0 3.7

4.8 4.5

4.9 4.6

5.1 4.8

5.2 4.9

5.3 5.0

5.6 5.3

5.6 5.3

5.9 5.6

6.2 5.9

6.5 6.2

p. 214 Mean.

1.6 1.65 1.0

1.7 1.75 0.1

1.8 1.75 1.0

1.9 1.85 0.1

1.9 1.85 0.1

2.5 2.45 0.1

2.8 2.75 1.0

2.8 2.80 0.0

3.0 2.95 1.0

2.9 2.90 0.0

3.5 3.45 0.1

3.6 3.55 1.0

3.8 3.75 1.0

4.3 4.40 1.1

4.5 4.55 0.1

4.7 4.75 0.1

4.8 4.85 0.1

4.9 4.95 0.1

5.3 5.30 0.0

5.4 5.35 1.0

5.6 5.60 0.0

5.8 5.85 2.1 0

6.0 6.10 1.1

51 8.2

52 8.5

53 8.9

54 9.3

55 9.5

56 10.0

57 10.1

58 10.3

2 8.1

B

E

J

J

7

O

K

O

W

W

O

O

4

X

O

u

P

U

Y

Z

6.5

6.7

6.6

7.1

7.4

7.7

8.8

9.0

6.4

7.1

7.3

7.0

7.5

7.6

7.8

8.0

8.7

9.2

9.2

?

8.8

?

9.2

8.9

8.1

8.9

8.9

9.1

9.7

9.9

9.0

		$\bar{x} = 2.14$	Mean.
6.2	6.0	6.10	1.1
6.7	6.4	6.7	0.0
6.6	6.3	6.9	2.1
7.1	6.8	7.1	0.0
7.4	7.1	7.3	0.1
7.7	7.4	7.4 ⁷	0.0
8.8	8.5	8.8	0.0
9.0	8.7	9.0	0.0
6.4	6.1		
7.1	6.8		
7.3	7.0		
7.0	6.7		
7.5	7.2		
7.6	7.2		
7.6	7.3		
7.8	7.5		
8.0	7.7		
8.7	8.4		
9.2	8.9		
8.8	8.5		
8.2	8.9		
8.9	8.6		
9.1	8.8		
9.1	8.8		
9.4	9.4		
9.6	9.6		
9.8	9.8		

$$\frac{62.27}{\pm 0.4}$$

Scale measures of No. Pol. Seq.

Scale P.

August 6, 1910

MN 225

28 1.9 1.6

29 2.0 1.7

30 2.1 1.8

31 2.2 1.9

32 2.2 1.9

33 2.8 2.5

34 3.1 2.8

35 3.1 2.8

36 3.3 3.0

37 3.2 2.9

38 3.8 3.5

39 3.9 3.6

40 4.1 3.8

41 4.6 4.3

42 4.8 4.5

43 5.0 4.7

44 5.1 4.8

45 5.2 4.9

46 5.6 5.3

47 5.7 5.4

48 5.9 5.6

49 6.1 5.8

50 6.3 6.0

51 6.3 6.0

52 6.7

53 6.9

54 7.1

55 7.3

56

7.7 7.4

57

8.8 8.5

58

9.0 8.1

 α

6.3

 β

7.0

 γ

7.3

 δ

7.0

 ϵ

7.5

 ζ

7.3

 η

7.4

 θ

9.0

 π

9.1

 κ

7.9

 ϕ

7.8

 ρ

8.8

 σ

9.0

 τ

9.1

 ψ

?

 λ

7.8

 ν

9.0

 μ

8.0

 ϕ

8.9

 χ

9.2

 ϕ

8.8

 ω

?

 ν

9.5

No
Sc. Measures of Polar Seg-

Scale P

August 12, 1910

NW 232

	1	2	3	4		1	2	3	4
227	2.9	B	4.0	3.1	51	~~8.7~~	7.8	-	-
225	-	2.7	5.1	4.2	52	-	8.3		
362	2.7	1.8	4.0	3.0	53	-	8.5		
386	2.9	1.9	3.7	3.1	54	-	9.0		
24	2.7	2.0	3.9	2.9	55	-	9.1		
28	3.9	3.0	5.3	4.3	α		7.9		
29	4.1	3.2	5.6	4.9	β		8.8		
30	4.1	3.1	5.7	4.8	γ		9.1		
31	4.7	3.8	6.1	5.3	δ		8.7		
32	5.0	3.8	6.3	5.3	ϵ		7		
33	5.2	3.9	6.4	5.6	ζ				
34	5.8	4.0	7.0	6.0	η				
35	6.0	4.2	7.1	6.2	λ				
36	6.1	4.3	7.2	6.3					
37	6.1	4.6	7.3	6.5					
38	6.8	4.9	7.9	6.8					
39	7.0	4.9	8.0	7.0					
40	7.3	5.1	8.5	7.5					
41	7.9	6.0	9.0	8.0					
42	8.2	6.2	F	8.1					
43	8.2	6.3	F	8.4					
44	8.5	6.7	F	8.8					
45	8.9	6.7	F	8.9					
46	9.1	6.9	F	9.0					
47	9.1	7.0	F	F					
48	9.2	7.2	F	F					
49	F	7.5	F	F					
50	F	7.7	F	F					

Sc. Measures of No. Polar. Seq.

Scale P.

August 12, 1910

MN 230

	1	2	3	4		1	2	3	4
227	2.9	1.8	3.9	2.9	51	F	7.5	F	F
225	4.0	2.7	5.1	3.9	52	-	7.9	-	-
362					53	-	8.2	-	-
386	2.9	1.7	3.8	3.0	54	-	8.7	-	-
Near edge 24					55		8.8		
28	4.0	2.8	5.1	4.0	α		7.4		
29	4.2	3.0	5.2	4.1	β		8.3		
30	4.2	3.0	5.5	4.1			8.5		
31	5.0	3.2	6.0	4.9	γ		8.2		
32	5.2	3.2	6.2	5.1	ε		8.7		
33	5.3	3.3	6.5	5.3	δ		8.8		
34	5.7	3.8	6.9	6.0	η		-		
35	5.9	4.0	7.0	6.1					
36	6.1	4.1	7.1	6.3					
37	6.3	4.2	7.3	6.5					
38	6.5	4.2	7.5	6.7					
39	6.7	4.6	7.8	7.0					
40	7.1	5.0	8.2	7.3					
41	7.7	5.4	9.0	8.0					
42	8.0	5.9	F	8.3					
43	8.3	6.1	F	8.7					
44	8.3	6.2	F	8.9					
45	8.5	6.3	F	9.0					
46	8.7	6.7	F	F					
47	F	6.9	F	F					
48	F	7.0	F	F					
49	-	7.2	-	-					
50	-	7.5	-	-					

Sc. Measures of No. Pol. Seq.

Scale P

August 13, 1910

MN 235

	1	2	3	4		1	2	3	4
224	3.1	2.0	3.8	3.0	51	7	7.7	7	7
225	4.1	2.9	4.9	4.0	52	"	8.0	"	"
362	3.0	1.9	3.9	3.0	53	"	8.0	"	"
386	3.0	1.9	3.7	2.9	54	"	8.5	"	"
24	2.9	2.0	3.7	3.0	55	"	8.9	"	"
28	4.1	2.9	5.1	3.9	α		7.7		
29	4.3	3.1	5.3	4.2	β		8.7		
30	4.9	3.2	5.7	4.9	γ		8.9		
31	5.1	3.6	6.1	5.1	δ		8.5		
32	5.1	3.7	6.2	5.2	ϵ		7		
33	5.3	3.9	6.7	5.6	ζ		8.9		
34	5.7	4.0	7.0	5.9	η		7		
35	5.9	4.1	7.2	6.1	197	2.9	2.0	3.9	2.9
36	6.1	4.2	7.3	6.3					
37	6.3	4.7	7.5	7.7					
38	6.5	4.9	8.0	6.7					
39	6.6	5.0	8.0	7.0					
40	7.0	5.2	9.0	7.4					
41	7.5	5.9	7	8.0					
42	7.8	6.1	7	8.2					
43	8.0	6.4	7	8.7					
44	8.4	6.6	7	8.8					
45	8.7	6.7	7	9.0					
46	9.0	6.8	7	7					
47	9.0	7.0	7	7					
48	9.0	7.1	7	7					
49	7	7.3	7	7					
50	7	7.6	7	7					

Estimates to determine variation
in Mr Metcalfs ~~star~~ star at 8 30 + 17 30

Apr 14 1910

I 24185

~~14.7~~
13.7

I 31091

~~14.9~~
13.9

I 32902

~~15.0~~
14.0

I 30154

~~14.7~~
13.7

I 31087

~~15.1~~
14.1

I 35191

~~15.0~~
14.0

I 28283

~~15.0~~
14.0

I 35197

~~14.8~~
13.8

I 17177

~~14.5~~
13.5

I 35221

~~14.4 ?~~
13.4

I 20745

Too poor

I 31089

~~14.5~~
13.5

I 35209

~~14.4~~
~~15.0~~
13.4

I 34477

~~15.0~~
14.0

I 34454

~~14.9~~
13.9

220

Mar. 5, 1910

Sc. B

I 7724

16 6.8

Prov. 21 7.3

22 6.9

Sc. C

I 16773

16 ?

21 ?

22 7.9

1907phae.proj..983L