

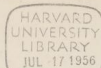
KG  
11365  
954

Book XXX  
Standard Photographic  
magnitudes.



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## North Polar Sequence

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## Scale Measures

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## North Polar Sequence

## Scale Measures

## North Polar Sequence

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Tuesday, July 26, 1910.

## Remeasurement of bright images

M H 235

Scale from  
C 17493

Images 1 1st scale only	1st scale remeasured	Images 2 1st scale only	1st scale remeasured
386 1821	24 24 225 12	386	
227 2730	38 31 305 01	225 21225 24 27	260 31
225 4751	48 51 510 00	227	length another image
28 4751	47 50 525 10	24	
29 5756	52 55 535 01	26 27	2.2 25 1.24 245 .10
30 5761	59 62 615 10	29 2181 312 852 9 327 2 21	
31 6770	62 67 700 00	30 32 33 36 39 32 35 357 3 31	
32 6764	64 67 6265 65 120	31 39 42 38 41	415 .01
33 7477 74	75 12	32 39 42 38 41	45 .01
34 7511 24	825 12	33 41 44 39 42	430 11
35 8184 31	835 21	34 49 52 49 52	520 00
36 8790 89	895 01	35 54 57 50 53 50 53 543 3 11	
24 2023	19 22 225 10	36 57 60 57 60	600 00
37 8191 93	920 11	37 57 60 57 60	600 00
362 1922	19 22 920 00		

M H 235

July 27

Images 3

	July 26	Mean
31	8.7	8.6 8.65 10 8.30 8.48 -2.2
32	9.1	9.0 9.05 10 9.05 9.05 0.0
33	9.7	9.9 9.80 11 9.9 9.85 0.1
34	10.8	10.8 10.80 00 11.4 11.0 3.3
35	11.2	11.4 11.30 11 11.6 11.45 1.2
36	11.8	11.6 11.45 12 11.9 11.68 3.2
37	11.9	11.9 11.90 00 11.9 11.90 0.0

A. J. H.

Tuesday, July 26, 1910.

## Remeasurement of bright images, cont

M H 235

1-4	Images 3 1st scale only	1st scale remeasured	Images 4 1st scale only	1st scale remeasured
-10	386	3538 36 39 8 01 385 20	386 241 24	2.0 23 2.35 01
+75	227 33 41	36 39 400 11	227 28 23	2.0 23 2.30 00
+70	225 57 62	618 63 625 01	225 41 44	4.1 44 4.40 00
+45	24 36 39	3538 385 10	24 1.3 1.4	1.30 41.3
+10	28 67	66 69 680 11	24 1.3 1.4	1.6 19 1.8 21 1.9 21
-25	29 70 73 72	725 10	28 41	4.6 44 4.75 0 4.95 10
+15	30 78 81 79	790 22	29 53 56	5.6 57 5.6 59 5.80 2 11
+40	31 83 86	830 00	30 57 60	5.7 60 6.00 0.0
-42	32 89 92 89	905 21	31 60 63	6.0 63 6.0 67 6.60 2 21
+10	33 99		32 65 71 68	6.75 12
-45	34 114		33 75 78 71	7.45 43
-70	35 116		34 87 87 87	8.70 00 7.8
-25	36 119		35 88 91 87	8.95 12
-50	37 119		36 89 92 96	9.20 00
	362 38 41	3740 405 10	37 97 97	

These measures and those on page 4 were made in order to test the validity of corrections for time based on measures with Scale P. They are not to be employed in discussion as they are probably not still true. It should have been remeasured in third exp. with second scale, but will have to remain as they are.

But see opposite page for measures on July 27. Groups fainter than 8 are especially difficult to compare with this scale. Hence the large accidental error.

A. J. H.

Tuesday, July 26, 1910

Five Mic Screen  
Count of mic.

Horizontal

mm	No.	mm	No.
20	15	60	43
70	51	100	72
100	72	140	100
120	86	170	121
140	100	210	150
190	136	254	180
210	150		
240	171		
10 inches	254	180	

Vertical

20	14	20	14
50	34	40	28
100	69	80	55
140	96	120	82
170	117	150	103
200	137	180	123
220	150	210	143
10 inches	254	173	
		240	164
		254	173

Mean Vertical 18.0 to inch

Mean Horizontal 17.3 to inch

Mean of all 17.65 to inch

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Scale measured on North Polar Sequence.  
M H 196

Scale P

Images 1

3-1	1st scale (10)	2nd scale (10)	3rd scale (10)	4th scale (10)	5th scale (10)	6th scale (10)	7th scale (10)	8th scale (10)	9th scale (10)	10th scale (10)
+ 4.10	36	2.745	2.802	43	6.9	7.0	7.07	36	6.3	6.0
4.60	227	2.017	2.017	170	44	7.6	7.0	7.4	7.33	36
5.45	225	2.052	2.052	2.45	45	7.6	7.6	7.60	10	4.08
4.77	360	2.148	2.118	1.80	46	7.9	7.7	7.80	11	2.27
5.38	408	2.245	2.206	2.27	47	7.9	7.8	7.85	10	2.8
	24	t p			48	7.9	7.8	7.85	10	2.9
5.35	28	3.027	3.025	2.60	49	8.4	8.1	8.2	8.23	2.25
5.15	37	3.431	3.502	3.15	50	8.1	8.2	8.15	10	3.0
	30	2.766	2.047	2.67	51	8.3	8.3	8.30	00	3.1
5.58	81	3.714	3.704	3.40	52	9.1	9.0	9.05	10	3.2
5.65	92	3.850	3.7	3.60	53	9.2	9.2	9.25	01	3.3
5.95	33	3.535	3.205	3.50	54	9.7	9.5	9.60	12	3.4
6.15	84	3.934	3.835	3.55	55	9.7	9.3	9.63	23	3.5
5.55	35	4.239	4.205	4.25	56	9.7	9.7	9.70	00	3.6
6.20	36	4.4	4.6	4.65	57	9.6	9.6	9.65	01	3.7
+ 4.90	37	5.049	5.0	4.95	58	10.24	8.50	10.24	37	
	38	5.5	5.2	5.30	59	9.2	9.20	9.20	00	
	39	5.7	5.4	5.70	60	9.2	9.20	9.20	00	
	40	6.6	6.3	6.40	61	9.7	9.65	9.65	01	
	41	6.5	6.3	6.40	62	9.7	9.65	9.65	01	
	42	6.9	6.9		63	9.7	9.7	9.70	00	
	43	6.9	6.9		64	9.7	9.7	9.70	00	

Images 3

Measurements difficult.

+ 3.9  
9.7  
± .086

Wednesday, July 27, 1910

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Scale measures on North Polar Sequence

M X 196

Images 2

2-1	Exp. 1.	2-1	Exp. 1.	2-1	Exp. 1.	2-1	Exp. 1.
+2.5	2.20 386	2.724 2.825	2.45 1	1.35	6.9 42	7.2 73	7.25 01
-05	2.45 425	2.724 2.824	2.40 00	+13	7.07 43	7.0 74 72	7.20 220
-05	1.70 227	1.9 16 2.0 17	1.65 01	+22	7.33 44	7.5 72 76	7.55 10
+03	1.70 362	2.3 2.0 2.0 2.1 18	1.83 210	+50	7.60 45	7.6 7.6	7.60 00
-07	2.27 408	2.7 2.4 3.2 2.6 22	2.20 221	-03	7.80 46	7.7 7.9	7.80 11
				-05	7.85 47	7.8 7.8	7.80 00
				+10	7.85 48	7.9 8.0	7.95 10
+05	2.60 28	3.0 2.7 3.9 2.6	2.65 10	-03	8.23 49	8.1 8.4 8.1	8.20 12
+18	3.15 29	3.4 3.1 3.5 3.7 3.4	3.33 221	+35	8.15 50	8.6 8.4	8.50 11
+13	2.47 30	3.0 2.7 3.2 2.9	2.80 21	+40	8.30 51	8.7 9.0 9.0	8.90 11
+10	3.40 31	3.7 3.4 3.9 3.6	3.50 21	-10	9.05 52	8.9 9.0	8.95 10
+23	3.60 32	4.0 3.7 4.3 4.1 3.8	3.83 221	00	9.25 53	9.2 9.3	9.25 01
+57	3.80 33	4.3 4.0 4.6 4.4 4.2	4.07 222	00	9.60 54	9.6 9.6	9.60 00
+65	3.85 34	4.4 4.1 4.7 4.5 4.3		+37	9.85 55	9.9 9.9	9.90 00
+62	4.25 35	5.2 4.9 5.5 5.4	4.8 4.87 10.1	+30	9.70 56	10.0 10.0 10.0	10.00 20
+140	3.65 36	5.5 5.2	4.9 5.05 2.1				
+30	4.95 37	5.5 5.2	5.3 5.25 0.1				
+75	4.80 38	5.7 5.4	5.7 5.55 2.1	+40	8.50	8.9 8.9	8.90 00
-50?	5.75 39	5.7 5.4	5.0 5.20 2.2	+05	9.20	9.3 9.2	9.25 10
-05	6.10 40	6.4 6.1	6.0 6.05 1.0	+10	9.20	9.3 9.3	9.30 00
+00	6.40 41	6.4 6.1	6.0 6.05 1.1	+05	9.65	9.7 9.7	9.70 00
				+10	9.80	9.9 9.9	9.90 00
				+05?	9.80?	9.9 9.9	9.85 01

Images 34, 39, 40, and 41 very poor for all exposures

81.67  
±.08

Wednesday, July 27, 1910.

Scale measures on North Polar Sequence.

Scale M

M.C. 456

Polar Sequence

Exp. 1.  
ScaleExp. 1. P.C.  
Scale

a	h <sup>1</sup> 9.6 9.8	A 1.2 1.4 1.4
a <sup>3</sup>	h <sup>2</sup> 9.3 9.5	F 5.6 5.8 5.6 5.70 1.1
a <sup>4</sup>	h <sup>3</sup> 10.0 10	a <sup>2</sup> 6.5 6.7 6.8 6.75 1.0
a <sup>5</sup> 1.3 1.5	h <sup>4</sup> 10.1	a <sup>4</sup> 6.8 7.0 7.2 7.00 0.0
b <sup>1</sup> 1.9 2.1	h <sup>5</sup> 10.3	a <sup>5</sup> 7.1 7.7
b <sup>3</sup> 2.9 3.1	3.1	a <sup>1</sup> 4.9 5.1 5.6 5.35 3.2
c <sup>1</sup> 3.2 3.4	3.4	b <sup>1</sup> 8.3
c <sup>3</sup> 3.9 4.1	4.1	b <sup>2</sup> 9.6
c <sup>4</sup> 4.6 4.8 4.7	4.75 0.1	c <sup>1</sup> 9.6
c <sup>5</sup> 2.9 3.1	3.1	c <sup>2</sup> 10.0
c <sup>3</sup> 4.4 4.6	4.50 1.1	c <sup>3</sup> 10.3
c <sup>4</sup> 5.0 5.3	5.15 2.1	c <sup>4</sup> 9.7
c <sup>5</sup> 4.8 5.0 5.4	5.20 2.2	b <sup>3</sup> 9.0
d 5.5 5.7 5.7	5.70 0.0	
e 5.7 5.9 5.7	5.80 1.1	
f 6.6 6.8 6.7	6.75 0.1	
f <sup>2</sup> 7.0 7.2 7.3	7.25 0.1	
f <sup>3</sup> 7.9		
g 8.6		
h 8.8		
i 8.7		
b <sup>2</sup> 2.8 3.0		

$$\frac{+3}{8}$$

$$\frac{9}{8}$$

$$\pm 100$$

$$\frac{+6}{8}$$

$$\frac{16}{14}$$

$$\pm 108$$

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Prismatic comparisons are very hazy and difficult to measure



Wednesday, July 27, 1910.

## Scale measures of North Polar Sequence

2.37

Scale M

MC 456

Exp. 2.  
1st scale 2nd scaleExp. 2. P.C.  
1st scale 2nd scale

a'	.	h'	8.5
a'	.	i'	8.7
a'	.	k'	9.6
a'	2.8 3.0	k'	9.5
a'	1.3 1.5	k'	10.0
b'	1.7 1.9	k'	m.s.
b'	2.6 2.8	k'	m.s.
b'	2.6 2.8	k'	m.s.
c'	2.8 3.0	k'	m.s.
c'	3.7 3.9	k'	m.s.
c'	4.4 4.6 4.7	k'	0.1
c'	2.7 2.9	k'	2.9
c'	4.2 4.5	k'	4.35 2.1
c'	4.6 4.8 4.9	k'	4.85 0.1
c'	4.9 5.1 5.2	k'	5.10 0.0
c'	4.9 5.1 5.2	k'	5.25 1.2
c'	5.7 5.9 5.7	k'	5.80 1.1
c'	6.3 6.5 6.5	k'	6.50 0.0
c'	7.5	k'	7.5
c'	7.7	k'	7.7
c'	8.6	k'	8.6

$$\begin{array}{r} +6 \\ -4 \\ 14 \end{array} \begin{array}{r} 70 \\ 10 \\ \hline \pm .071 \end{array}$$

looped

2.50 a.s.d.

Wednesday, July 27, 1910.

## Scale measures of North Polar Sequence

Scale M

MC 456

Exp. 4.  
1st scale 2nd scaleExp. 4 P.C.  
1st scale 2nd scale

a'	1.5 1.7	i'	10.2
b'	2.6 2.8	k'	10.1
b'	2.6 2.8	k'	m.s.
b'	2.8 3.0	k'	m.s.
c'	3.6 3.8	k'	m.s.
c'	4.4 4.6 4.6	k'	0.0
c'	4.3 4.5 4.5	k'	0.0
c'	2.7 2.9	k'	2.9
c'	3.7 4.1	k'	4.1
c'	5.3 5.5 5.5	k'	5.50 0.0
c'	5.4 5.6 5.6	k'	5.60 0.0
c'	5.3 5.5 5.6	k'	5.55 1.0
c'	5.8 6.0 6.1	k'	5.85 2.1
c'	6.6 6.8 6.9	k'	6.85 0.1
c'	7.6	k'	7.6
c'	8.2	k'	8.2
c'	8.5	k'	8.5
c'	8.9	k'	8.9
c'	8.7	k'	8.7
c'	9.6	k'	9.6
c'	9.6	k'	9.6
c'	10.1	k'	10.1

$$\begin{array}{r} +3 \\ -2 \\ 14 \end{array} \begin{array}{r} 5 \\ 5 \\ \hline \pm .036 \end{array}$$

$$\begin{array}{r} +3 \\ -4 \\ 6 \end{array} \begin{array}{r} 7 \\ 7 \\ \hline \pm .117 \end{array}$$

looped

2.50 a.s.d.



Wednesday, July 27, 1910.

Scale measures on North Polar Sequence.

Scale M

MC 456

Polar Sequence

Exp. 3.  
1st scale 2nd scale

2nd scale

Exp. 3. P.C.  
1st scale 2nd scalek<sup>1</sup> 9.7

A 1.3 1.5 1.5

k<sup>2</sup> 9.6

F 5.55 5.6 5.55 1.0

k<sup>3</sup> 10.0a<sup>1</sup> 4.9 5.1 5.0 5.00 1.0a<sup>2</sup>

1.3 1.5 1.5

a<sup>2</sup> 6.0 6.2 6.6 6.40 1.2b<sup>1</sup> 2.2 2.4 2.4a<sup>3</sup> 6.8 7.0 7.0 7.00 1.0b<sup>2</sup> 2.9 3.1 3.1a<sup>4</sup> 7.6b<sup>3</sup> 2.8 3.0 3.0b<sup>1</sup> 7.5c<sup>1</sup> 2.9 3.1 3.1b<sup>2</sup> 9.0c<sup>2</sup> 3.8 4.0 4.0b<sup>3</sup> 9.7c<sup>3</sup> 4.6 4.8 4.7c<sup>1</sup> 9.3c<sup>4</sup> 2.8 3.0 3.0c<sup>2</sup> 9.8c<sup>5</sup> 4.0 4.2 4.6c<sup>3</sup> 9.9c<sup>6</sup> 4.6 4.8 4.7c<sup>4</sup> 9.1c<sup>7</sup> 4.8 5.0 4.9c<sup>5</sup> 1.3d<sup>1</sup> 5.3 5.5 5.4c<sup>6</sup> 1.3e<sup>1</sup> 5.8 6.0 5.7f<sup>1</sup> 6.7 6.9 6.8g<sup>1</sup> 7.6h<sup>1</sup> 8.3i<sup>1</sup> 8.7j<sup>1</sup> 9.0k<sup>1</sup> 8.9

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+6  
14.52  
±.086

3.17 A.B.R.

Wednesday, July 27, 1910.

Scale measures on North Polar plate MC 456

Scale M

MC 456

Sequence S

Exp. 1  
1st scale 2nd scaleExp. 1. P.C.  
1st scale 2nd scaleExp. 4  
1st scale 2nd scaleExp. 4. P.C.  
1st scale 2nd scale

a 4.9 5.1 5.2 5.15 1.0

B 9.7 1.0

a 3.7 4.0 4.0

D 2.6 2.8 2.8

b 5.4 5.6 5.6 5.60 1.0

E 4.1 5.2 5.10

b 4.5 4.7 4.7

E 4.2 4.2 4.2

c 6.2 6.4 6.7 6.55 1.0

d 5.6 6.0 5.9

c 5.7 6.0 5.9

d 5.7 6.0 5.9

d 6.1 6.3 6.4 6.35 1.0

e 5.7 6.0 5.8

d 5.7 6.0 5.8

e 5.7 6.0 5.8

e 6.9 7.1 6.9 7.00 1.2

f 6.7 6.9 6.7

e 6.7 6.9 6.7

f 6.7 6.9 6.7

f 6.7 6.9 6.7 6.90 1.2

g 7.2

f 6.6 6.8 6.7

g 7.2

g 7.2

h 7.9

g 7.2

h 7.9

h 7.9

i 7.9

h 7.9

i 7.9

i 7.9

j 7.9

i 7.9

j 7.9

j 7.9

k 7.9

j 7.9

k 7.9

k 7.9

l 7.9

k 7.9

l 7.9

l 7.9

m 7.9

l 7.9

m 7.9

m 7.9

n 7.9

m 7.9

n 7.9

n 7.9

o 7.9

n 7.9

o 7.9

o 7.9

p 7.9

o 7.9

p 7.9

p 7.9

q 7.9

p 7.9

q 7.9

q 7.9

r 7.9

q 7.9

r 7.9

r 7.9

s 7.9

r 7.9

s 7.9

s 7.9

t 7.9

s 7.9

t 7.9

t 7.9

u 7.9

t 7.9

u 7.9

u 7.9

v 7.9

u 7.9

v 7.9

v 7.9

w 7.9

v 7.9

w 7.9

w 7.9

x 7.9

w 7.9

x 7.9

x 7.9

y 7.9

x 7.9

y 7.9

y 7.9

z 7.9

y 7.9

z 7.9

z 7.9

a 7.9

z 7.9

a 7.9

Images in this exposure  
faded.All photometric comparisons are fuzzy and difficult to  
measure.

A.B.R.

Wednesday, July 27, 1910.

Scale measure on North Polar Sequence MC 456

Scale M

MC 456

Sequence S

Eff. 2.  
1st and 2nd  
scale scaleEff. 2.P.C.  
1st and 2nd  
scale scaleEff. 3.  
1st and 2nd  
scale scaleEff. 3.P.C.  
1st and 2nd  
scale scale

$\alpha$ 2.3 2.5 2.5	B top	$\alpha$ 2.6 2.8 2.8	B 2.7 2.9
$\beta$ 1.9 2.1 2.1	E 4.7 <sup>4.9</sup> 4.9 4.9 5.0	$\beta$ 2.8 2.2 2.2	E 4.0 4.2
$\gamma$ 2.7 2.9 2.9	$\alpha$ 8.8	$\gamma$ 2.1 2.3 2.3	$\alpha$ 8.7
$\delta$ 3.9 4.1 4.1	$\beta$ 8.7	$\delta$ 3.6 3.8 3.8	$\beta$ 8.4
$\epsilon$ 3.7 3.9 3.9	$\gamma$ 8.8	$\epsilon$ 3.5 3.7 3.7	$\gamma$ 8.5
$a$ 4.2 4.4 4.7	$\delta$ 9.8	$a$ 4.0 4.2 4.2	$\delta$ 10.1
$b$ 4.9 5.1 4.9	$\epsilon$ 9.8	$b$ 4.2 4.4 4.7	$\epsilon$ 9.7
$c$ 6.0 6.2 6.0	$a$ 10.0	$c$ 5.6 5.8 5.9	5.9 5.1 2
$d$ 6.2 6.4 6.4	6.4 6.0 0.0	$d$ 5.7 5.9 5.9	5.9 0.0
$e$ 6.7 6.9 6.8	6.8 5.0 1.1	$e$ 6.4 6.6 6.7	6.7 0.1 1
$f$ 6.8 7.0 6.8	6.9 0.1 1	$f$ 6.2 6.4 6.7	6.5 5.2 1
$g$ 7.2		$g$ 7.0 7.2 7.2	7.2 0.0
$h$ 7.9		$h$ 7.1 7.9	
$i$ 7.9		$i$ 7.9	
$l$ 8.1		$l$ 7.9	
$m$ 8.9		$m$ 9.0	
$n$ 9.1		$n$ 9.2	
$o$ 10.0		$o$ 10.0	
$p$ 10.5		$p$ 10.5	

Copied

Copied

3.55 A.D.R.

Wednesday, July 27, 1910.

Copied this page.

Measure of distances in mm of stars from center of plate.

MC 456

Numbered edge at top.

+ toward numbered edge  
- away from

Polar Sequence

Increasing,  
measured  
distance

Eff. 1.

Eff. 2.

Eff. 3

Eff. 4.

with + sign	A 592	A -592	-872	-116
also there	A 422	A' -662	-912	-1182
without sign	B' -462	A' -672	-99	86
	B' -522	A' -852	-1072	-1312
	B' 742	A' +122	-26	-57
	C' -10	B' -662	-962	-126
	C' 242	B' -732	-1042	97
	C' 252	B' 722	-832	-1022
	C' 132	B' -86	-70	-112
	D' 172	A' -322	-682	-88
	F' +152	C' -222	-662	-86
	F' +112	C' +152	-242	-50
	F' +9	C' -502	-692	-952
	G' 622 + 62	C' -44	-76	-108
and fainter	C' -48	-82	-113	
	C' 462	D' -222	-58	-83
	F' 722	E' -212	-54	-85
	F' 752	F' -172	-49	-79
	A' -452	F' -15	-51	-79
	A' +36	F' -31	-57	-82
	C' +442	G' -22	-56	-87
	C' -372	H' -22	and fainter -56	and fainter -87
	C' -232	and fainter -22	F' -762	-912
				-1132

Wednesday, July 27, 1910

This page  
copiedMeasure of distance in mm of stars from  
centre of plate.

Sequence S

Exp 1.	Exp 2	Exp 3	Exp 4.
B 116	+102	+58	+37
E 115	+88	+54	+23
d +98	+71	+38	+7
$\beta$ +66	+50	+72	-26
Y +77	+622	+832	-262
S +67	+432	+182	-302
e +70	+462	+222	-322
a + <del>54</del> <sup>83</sup>	+58	+242	-132
b + <del>63</del> <sup>77</sup>	+51	+18	-162
c +84	+60	+282	-152
d +94	+67	+34	+32
e +74	+848	+14	-17
f +73	+48	+13	-19
g +77	+50	+16	-15
h +73	+45	+13	-192
i + <del>68</del> <sup>77</sup>	+42	+9	-224
j + <del>66</del> <sup>77</sup>	+51	+17	-14
m +74	+49	+14	-182
n +74	+97	+14	-174
o +78	+45	+14	-184
p			

4.25 A.D.Jr.

Wednesday, July 27, 1910

Five Nine Seven

Count of Stars in Portion of Seven  
Measured with Micrometer by Miss Cushman

mm	H
20	15
40	29
<sup>3</sup> X in 75	54

mm	V
75	54

	H
20	15
50	36
75	54

	V
mm	
30	21
75	50

Mean	H	<sup>4</sup> 54	<sup>3</sup> 54	<sup>3</sup> 54	13	18.0
"	V	50	<sup>3</sup> 50	<sup>3</sup> 50		16.7
					Mean	17.35





Thursday, July 28, 1910.

Scale measures on North Polar Sequence

on Hikos

Scale P

R 2217

1909 Aug. 23 12<sup>h</sup> 46<sup>m</sup> 14<sup>s</sup> 50<sup>th</sup> C57 sec  
18 inches on 24 inch1st and  
scale ends  
(1) (2)and  
scale49 tp  
53 ns

28	5.2 <sup>49</sup> 4.7	4.80 .11
29	5.2 <sup>49</sup> 4.9	4.90 .00
30	5.7 <sup>54</sup> 5.3	5.35 .01
31	5.8 <sup>55</sup> 5.7	5.60 .11
32	5.8 <sup>55</sup> 5.8	5.65 .12
33	6.2 <sup>57</sup> 6.2	6.05 .12
34	6.6 <sup>53</sup> 6.4	6.35 .10
35	6.7 6.7	6.70 .00
36	6.7 6.7	6.70 .00
37	6.8 <sup>65</sup> 6.8	6.73 .12
38	7.2 7.0	7.10 .11
39	7.1 7.0	7.05 .10
40	7.7 7.7	7.70 .00
41	8.1 7.9	8.00 .11
42	8.5 8.3	8.40 .11
43	tp	
44	8.7 8.9	8.80 .11
45	9.1 9.0	9.05 .10
46	9.4 9.2	9.30 .11
47	9.3 9.3	9.30 .00
48	9.9? 9.7?	9.85? .10

Images are poor, slightly  
mired.41) 30  
± .007

Thursday, July 28, 1910.

by Arglander's method

Scale measures on North Polar Sequence on  
plate with and without fine wire screen.

MC 481

Images of sps. without screen compared by Arg. method  
with images of sps. with screen.s' 5 a<sup>3</sup> 1 c<sup>1</sup>d<sup>1</sup> 2 a<sup>4</sup>a<sup>1</sup> 1 c<sup>2</sup>c<sup>2</sup> 0 a<sup>5</sup>c<sup>2</sup> 4 b<sup>1</sup>d<sup>1</sup> 1 b<sup>3</sup>d<sup>2</sup> 2 b<sup>2</sup>f<sup>1</sup> 1 f<sup>2</sup>b<sup>3</sup> 3 f<sup>2</sup>f<sup>2</sup> 1 g

g

2 49

g 1 f<sup>1</sup>g 2 h<sup>1</sup>h 2 f<sup>2</sup>

c

7.70 a<sup>5</sup> 3 (c<sup>3</sup>) 2 b<sup>1</sup> 8.07 7.87 8.94 .068.07 b<sup>1</sup> 5 (2) 1 b<sup>2</sup> 8.62 8.57 8.54 .0310.14 d<sup>1</sup> 4 (f<sup>3</sup>) 0 e 10.63 10.54 10.52 .11v (f<sup>3</sup>) 5 f<sup>1</sup> 10.99 10.49 .0310.99 f<sup>1</sup> 2 (h<sup>2</sup>) 2 f<sup>2</sup> 11.52 11.19 11.26 .0710.99 f<sup>1</sup> 4 (h<sup>2</sup>) 0 h<sup>2</sup> 11.52 11.39 11.46 .07(h<sup>2</sup>) ns f<sup>2</sup> ns7.00 a<sup>3</sup> 1 (c<sup>1</sup>) 2 a<sup>4</sup> 7.20 7.10 7.05 .057.00 a<sup>4</sup> 1 (c<sup>2</sup>) 0 a<sup>5</sup> 7.70 7.30 7.56 .044 b<sup>1</sup> 8.07 7.67 "9.65 c<sup>3</sup> 3 (f<sup>2</sup>) 1 g<sup>1</sup> 10.14 9.95 10.00 .0510.53 e 4 (g<sup>1</sup>) 1 f<sup>1</sup> 10.99 10.93 10.96 .0210.99 f<sup>1</sup> 2 (h<sup>1</sup>) 2 f<sup>2</sup> 11.52 11.19 11.26 .07

0.14

A.D.L.



Friday, July 29, 1910.

North Polar Sequence. Estimates by Argelander's method  
of bright images in terms of faint images.Cephid  
Images of Epp. 1. compared with images of Epp. 2.

53) 13.753 2 55 13.95 06  
 55 0 34 14.07 06  
 56 not seen  
 14.01

49) 12.302 1 49 12.40 22  
 49 0 29 12.65 05  
 49 5 31 12.75 15  
 12.60

52) 13.283 1 52 13.35 07  
 52 2 32 13.40 08  
 13.28

51) 12.152 4 51 13.15 05  
 51 1 31 13.25 13.15 05  
 13.10

56 not seen

Friday July 29, 1910.

North Polar Sequence. Estimates by Argelander's  
method of bright images in terms of faint images.Cephid  
Images of Epp. 2. comp. by Arg. method with images of Epp. 1.

42) 10.102 6 42 11.20 21 48) 12.142 2 48 12.34 01  
 10.56 37 5 42 11.06 07 48 0 28 12.30 12.30 02  
 42 1 40 11.06 07 48 3 29 12.65 12.35 02  
 10.53 24 4 42 10.90 06 12.38  
 10.49 38 6 21 42 10.67 23  
 10.99

54) 13.40 32 3 54 13.70 02  
 54 1 33 13.75 13.65 02  
 13.68

43) 10.56 36 2 5 43 11.06 05 23  
 43 2 43 11.12 10.96 25 33  
 43 3 22 5 12.14 11.01 55  
 11.84  
 11.29

45) 10.56 36 2 8 45 11.36 23 05  
 11.16 40 3 45 11.46 13 05  
 45 2 22 5 12.14 11.94 35  
 11.44  
 11.79  
 11.59

46) 11.16 40 8 5 46 11.66 24 45  
 12.14 02 5 1 46 12.24  
 46 1 28 12.30 12.20 13  
 46 3 29 12.65 12.35 23  
 12.07  
 45  
 12.11

44) 10.56 36 2 8 44 11.36 23 20  
 44 0 40 11.16 11.16 38 40  
 44 2 22 5 12.14 11.94 38  
 44 5 28 12.30 11.80 36 24  
 11.44  
 11.79  
 11.56

49) 12.142 2 49 12.34 02  
 49 0 28 12.30 12.30 02 06  
 49 2 29 12.65 12.45 02 09  
 12.38

51) 12.15 29 3 51 12.95 05  
 51 2 31 13.25 13.85 05  
 13.50



Friday, July 29, 1910.

North Polar Sequence. Estimates of bright  
images in terms of faint images.

Exp. 2

M H 196

Images of Exp. 3 compared with images of Exp. 2.

$$\begin{array}{r} 53 \quad 13.40 \quad 22 \quad 2 \quad 53 \quad 13.60 \quad 2 \\ 53 \quad 0 \quad 33 \quad 13.75 \quad 13.75 \quad 2 \\ 53 \quad 3 \quad 34 \quad 14.07 \quad 13.77 \quad 26 \\ \hline 13.71 \end{array}$$

$$\begin{array}{r} 55 \quad 13.75 \quad 33 \quad 3 \quad 55 \quad 14.05 \quad 27 \\ 55 \quad 5 \quad 34 \\ 55 \quad 0 \quad 35 \quad 14.19 \quad 14.19 \quad 27 \\ \hline 14.12 \end{array}$$

$$\begin{array}{r} 52 \quad 13.25 \quad 31 \quad 1 \quad 52 \quad 13.35 \quad 27 \\ 52 \quad 2 \quad 32 \quad 13.40 \quad 13.20 \quad 28 \\ \hline 13.28 \end{array}$$

$$\begin{array}{r} 50 \quad 12.15 \quad 29 \quad 2 \quad 50 \quad 12.85 \quad 25 \\ 50 \quad 3 \quad 31 \quad 13.25 \quad 12.95 \quad 25 \\ \hline 12.90 \end{array}$$

$$\begin{array}{r} 47 \quad 12.14 \quad 225 \quad 2 \quad 47 \quad 12.34 \quad 22 \\ 47 \quad 0 \quad 28 \quad 12.30 \quad 12.30 \quad 26 \\ 47 \quad 2 \quad 29 \quad 12.65 \quad 12.45 \quad 27 \\ \hline 12.58 \end{array}$$

Friday, July 29, 1910.

North Polar Sequence. Estimates of bright images  
in terms of faint images.

M H 204

Images of Exp. 1 compared by Argeland's method  
with differences  $\times \beta$ .

$$\begin{array}{r} 42 \quad 11.20 \quad 22 \quad 6 \quad 42 \quad 11.20 \quad 22 \\ 42 \quad 38 \quad 6 \quad 42 \quad 10.89 \quad 22 \\ 42 \quad 3 \quad 48 \quad 11.16 \quad 10.86 \quad 22 \\ \hline 10.98 \end{array}$$

$$\begin{array}{r} 48 \quad 12.14 \quad 225 \quad 2 \quad 48 \quad 12.34 \quad 27 \\ 48 \quad 1 \quad 28 \quad 12.30 \quad 12.20 \quad 27 \\ \hline 12.27 \end{array}$$

$$\begin{array}{r} 50 \quad 30 \quad 2 \quad 50 \\ 50 \quad 2 \quad 31 \end{array}$$

$$\begin{array}{r} 50 \quad 12.30 \quad 29 \quad 2 \quad 50 \quad 12.50 \quad 22 \\ 50 \quad 1 \quad 29 \quad 12.65 \quad 12.55 \quad 22 \\ \hline 12.52 \end{array}$$

$$\begin{array}{r} 57 \quad 12.15 \quad 29 \quad 2 \quad 51 \quad 12.85 \quad 22 \\ 57 \quad 0 \quad 30 \quad 12.87 \quad 12.87 \quad 22 \\ 51 \quad 1 \quad 31 \quad 13.25 \quad 13.15 \quad 27 \\ \hline 12.96 \end{array}$$

$$\begin{array}{r} 52 \quad 13.25 \quad 31 \quad 1 \quad 52 \quad 13.35 \quad 27 \\ 52 \quad 3 \quad 32 \quad 13.40 \quad 13.10 \quad 28 \\ \hline 13.22 \end{array}$$

$$\begin{array}{r} 47 \quad 11.16 \quad 488 \quad 5 \quad 47 \quad 11.66 \quad 27 \\ 47 \quad 0 \quad 225 \quad 12.14 \quad 12.14 \\ 47 \quad 1 \quad 28 \quad 12.30 \quad 12.20 \quad 27 \\ \hline 11.73 \\ 12.28 \end{array}$$

$$\begin{array}{r} 49 \quad 12.30 \quad 28 \quad 1 \quad 49 \quad 12.40 \quad 22 \\ 49 \quad 2 \quad 29 \quad 12.65 \quad 12.45 \quad 23 \\ \hline 12.42 \end{array}$$

$$\begin{array}{r} 55 \quad 13.75 \quad 33 \quad 2 \quad 55 \quad 13.95 \quad 22 \\ 55 \quad 1 \quad 34 \quad 14.07 \quad 13.97 \quad 21 \\ \hline 13.96 \end{array}$$

55) not seen



Friday, July 29, 1910.

Estimates of bright images in terms of faint images.  
North Polar sequence.

M H 204

Images of Eff. 1 compared with images of Eff. 2

44	11.6408	2	44	11.36	41	53)	12.8730	2	53	13.07	04
44	3	225	12.14	11.84	07		53	1	31	13.25	04
44	2	28	12.30	12.10	33					13.11	
				11.77							

45	11.6408	4	45	11.56	34	34)	13.2531	1	54	13.35	12
45	1	225	12.14	12.04	14		54	0	32	13.40	07
45	42	28	12.30	12.10	24		54	1	33	13.75	18
				11.90						13.77	

46	225				
11.6408	5	46	11.66	24	
46	3	225	12.14	11.84	06
46	1	28	12.30	12.20	30
				11.90	

43	11.6408	1	43	11.26	07	11.26	06
10.49	386	6	43	11.09	19	23	
43	7	225	12.14	11.44		12	
43	0	28	12.30	11.50	22	18	
				11.32			

Friday, July 29, 1910.

Estimates of bright images in terms of faint images.  
North Polar sequence.

M H 204

Images of Eff. 3 compared with images of Eff. 2.

47	12.3028	1	47	12.40	02	46	12.3028	1	46	12.40	02
47	2	29	12.65	12.45	13	46	2	29	12.65	12.45	03
				12.42						12.42	

42	11.6408	1	42	11.26	41	49	12.3028	2	49	12.50	02
11.60324	8	42	11.40	02	01	49	1	29	12.65	12.55	03
42	6	225	12.14	11.54	12					12.52	
42	8	28	12.30	11.50	08						
				11.42							

45	12.3028	2	48	12.50	02	50	12.3028	4	50	12.70	01
48	2	29	12.65	12.45	03	50	0	29	12.65	12.65	01
				12.48		50	1	30	12.87	12.77	06
										12.71	

43	11.6408	4	43	11.56	03	55	13.7533	3	55	14.05	09
43	5	27	11.92	11.42	11	14.07	34	1	55	14.17	03
43	7	28	12.30	11.60	07	55	0	38	14.19	14.19	05
				11.53						14.14	

45	11.6408	7	45	11.86	14	58	13.2531	1	58	13.35	03
45	1	225	12.14	12.04	04	58	1	32	13.40	13.30	02
45	2	28	12.30	12.10	12					13.32	
				11.93							
				12.00							

Friday, July 29, 1910.

Estimates of bright images in terms of  
faint images.

M.D. 204

Images of Eff. 3 comp. by arg. method with  
images of eff. 2.

2  
53 253 1 2 54 13.45 02  
53 0 32 13.40 02  
53 2 33 13.75 16  
13.47

53 253 1 2 53 13.45 05  
53 0 32 13.40 12  
53 1 33 13.75 15  
13.50

54 253 1 2 54 13.95 01  
54 1 34 13.97 01  
13.96

1214  
44 225 1 44 12.84 08  
44 1 28 12.20 08  
12.72

1.19  
A.D.R.

Friday, July 29, 1910.

North Polar Sequence

2.37 PERIOD H11

I 28177; having 6 exposures of different lengths.

Scale M

Eff. A, 32<sup>m</sup>  
1st and  
scale endsrecalculated  
near this image.C<sup>1</sup> 4.04 2.46 4.40 2.2C<sup>2</sup> 4.74 5.3 5.10 2.2C<sup>3</sup> 4.9 5.7C<sup>4</sup> 5.65 5.7 5.75 0.1C<sup>5</sup> 5.86 6.1 6.05 0.1

d 5.75 5.7 5.85 1.0

e 6.26 6.5 6.45 0.1

f 6.46 6.8 6.85 1.0

f<sup>1</sup> 6.97 7.2 7.15 1.0

g 7.0

h 7.3

i 7.6

k<sup>1</sup> 9.0k<sup>2</sup> 8.9k<sup>3</sup> 9.3k<sup>4</sup> 9.6k<sup>5</sup> 9.7

l 9.8

m 10.0

n 9.6

o 9.8

p

Eff. B, 16<sup>m</sup>  
1st and  
scale endsC<sup>1</sup> 5.1 5.6 5.7 5.65 0.1C<sup>2</sup> 5.7 5.9 5.7 5.80 1.1C<sup>3</sup> 6.1 6.3 6.6 6.45 1.2C<sup>4</sup> 6.4 6.6 6.7 6.65 0.1C<sup>5</sup> 6.5 6.7 6.8 6.75 1.0

d 6.2 6.4 6.8 6.60 2.2

e 6.8 7.0 7.0 7.00 0.0

f 7.1

f<sup>1</sup> 7.8

g 7.6

h 7.5

i 9.2

k<sup>1</sup> 9.5k<sup>2</sup> 9.8k<sup>3</sup> 9.8k<sup>4</sup> 10.1k<sup>5</sup> 10.5

l 8.7

m 10.3

$$\begin{array}{r} +8 \\ -6 \\ 10)14 \\ \hline \pm .088 \end{array}$$

$$\begin{array}{r} +7 \\ -5 \\ 14)12 \\ \hline \pm .086 \end{array}$$

Friday, July 29, 1910.

North Polar Sequence. Scale measures on plate having 6 exposures of different lengths.

Scale M

Plate #54

I 28177

Exp. C, 8<sup>m</sup>  
1st and 2nd  
scale scale

c'	6.2646.6	6.50 i.
c <sup>2</sup>	6.5666.7	6.65 o.
c <sup>3</sup>	6.8707.0	7.00 o.
c <sup>4</sup>	7.0727.0	7.10 i.
c <sup>5</sup>	7.3	
d	7.3	
e	superficial	$\frac{+3}{-2}$ 8)5 #362
f'	8.2	
f <sup>2</sup>	8.7	
f <sup>3</sup>	8.9	
f	9.4	
g	9.6	
h	9.7	
i	10.0	
k <sup>2</sup>	defective	
k <sup>3</sup>	10.1	
k <sup>4</sup>	10.2	

Exp. D, 4<sup>m</sup>  
1st and 2nd  
scale scale

c'	6.7696.8	6.85 i.
c <sup>2</sup>	7.0727.2	7.20 o.
c <sup>3</sup>	7.6	
c <sup>4</sup>	7.7	
c <sup>5</sup>	7.8	
d	7.8	
e	superficial	
f'	8.7	
f <sup>2</sup>	9.1	
f <sup>3</sup>	9.7	
f	9.9	
g	10.0	
h	10.1	

Friday, July 29, 1910.

North Polar Sequence. Scale measures on plate having 6 exposures of different lengths.

Scale M

Plate #54

I 28177

Exp. E, 2<sup>m</sup>  
1st and 2nd  
scale scale

c'	6.9717.2	7.15 i.
c <sup>2</sup>	7.8	
c <sup>3</sup>	8.3	
c <sup>4</sup>	8.4	
c <sup>5</sup>	8.4	
d	8.6	
e	8.9	
f'	9.2	
f <sup>2</sup>	9.9	
f <sup>3</sup>	10.2	
f	10.3	
g	10.3	

Exp. F, 1<sup>m</sup>  
1st and 2nd  
scale scale

c'	7.6	
c <sup>2</sup>	8.3	
c <sup>3</sup>	8.8	
c <sup>4</sup>	8.8	
c <sup>5</sup>	8.9	
d	9.2	
e	9.7	
f'	10.1	

Friday, July 29, 1910.

North Polar Sequence. Estimates of images  
2 compared with other images.M<sup>H</sup> 230Comparison of images X<sup>2</sup> with images P<sup>1</sup>

39) 123028 3 39 12.50 02  
 39 1 291265 12.55 00  
 12.52

41) 127533 1 41 13.85 02  
 41 0 341407 14.07 20  
 41 5 351419 13.69 18  
 13.87

43) 14975 3 43 14.49 00  
 14.31 36 1 43 14.41 00  
 43 0 371455 14.55 06  
 43 4 381470 14.50 01  
 14.56  
 49

49) 14939 8 49 15.71 22  
 49 1 401537 15.27 22  
 15.49

55) 16045 2 55 16.26 10  
 55 1 461617 16.07 09  
 16.16

42) 14084 1 42 14.17 01  
 42 0 351419 14.19 03  
 42 2 361431 14.11 05  
 14.16

48) 14939 1 48 15.01 12  
 48 6 401537 14.77 12  
 14.89

50) 153740 1 50 15.47  
 50 4 411543 15.23

47) 14939 4 47 15.31 22  
 47 5 401537 14.87 22  
 15.09

53) 16045 2 53 16.26 20  
 53 3 461617 15.87 19  
 16.06

Friday, July 29, 1910.

North Polar Sequence. Estimates of images  
2 compared with other images.M<sup>H</sup> 230Comparison of images X<sup>2</sup> with images P<sup>1</sup>

54 too poor

51) 14939 2 51 15.11 02  
 51 2 401537 15.17 09  
 15.14

Y 16045 3 Y 16.36 20  
 Y 2 461617 15.99 19  
 16.16

B 16045 3 B 16.36 20  
 B 2 461617 15.97 19  
 16.16

653740 1 65 15.47 17  
 65 5 411543 15.13 12  
 15.30

7) 16045 1 7 16.27 09  
 7 2 471629 16.09 09  
 16.18

5) 16045 3 5 16.36 19  
 5 0 461617 16.17 00  
 5 3 471629 15.99 18  
 16.17

8) 16045 1 8 16.16 08  
 8 2 461617 15.97 09  
 16.08

E not seen

40) 158730 4 40 13.27 00  
 40 2 311325 13.05 02  
 13.16

52) 157842 1 52 15.88 06  
 52 0 431592 15.92 02  
 52 0 441600 16.00 06  
 52 1 451606 15.96 02  
 15.94



Friday, July 29, 1910.

North Polar Sequence.

Mk 230  
Comparison of images <sup>29</sup> with images <sup>27</sup>.

44	14.55	2	44	14.75	07
44	2	38	14.70	14.60	08
				14.68	

45	14.53	2	45	14.75	13
45	4	38	14.70	14.50	12
				14.62	

46	14.50	2	46	15.10	24
46	0	39	14.91	14.91	05
46	8	40	15.07	14.57	29
				14.86	

Friday, July 29, 1910.

North Polar Sequence

Mk 230 <sup>2</sup>  
Comparison of images <sup>2</sup> with images <sup>3</sup>

39 no computer.

40 225 1 40

40 0 28 12.30 12.30 02.

40 4 29 14.65 12.25 03  
12.28

41 12.65 29 1 41 12.75 04

41 2 30 12.87 12.67 04  
12.71

48 12.87 30 1 48 12.97 10

48 0 31 13.25 13.25 18

48 4 32 13.40 13.00 09  
13.01

48 14.07 34 2 48 14.27 08

48 0 35 14.19 14.19 00

48 2 36 14.31 14.11 08  
14.19

54 too poor

43 12.25 31 3 43 13.55 13

43 1 32 13.40 13.20 12  
13.42

49 14.30 36 1 49 14.41 02

49 1 37 14.55 14.45 02  
14.43

52 14.39 3 52 15.21 12

52 4 40 15.37 14.97 12  
15.09

53 14.39 6 53 15.51 22

53 3 40 15.27 15.07 22  
15.29

49 13.25 31 1 44 13.25 03

44 1 32 13.40 13.20 02  
13.32

51 14.38 1 51 15.00 14

51 2 39 14.91 14.71 15  
14.86

Friday, July 29, 1910

## North Polar Sequence.

M<sub>A</sub> 230

Comparison of image 2 with 3

$$\begin{array}{r} 55 \text{ 14.9 } 28 \text{ 6 } 55 \\ 55 \text{ 1 } 39 \text{ 14.91} \end{array}$$

$$\begin{array}{r} 46 \text{ 14.07 } 34 \text{ 2 } 46 \\ 46 \text{ 1 } 35 \text{ 14.19} \end{array}$$

$$\begin{array}{r} 45 \text{ 14.56 } 37 \text{ 3 } 4 \\ 4 \text{ 1 } 38 \text{ 14.90} \end{array}$$

$$\begin{array}{r} 47 \text{ 14.07 } 34 \text{ 2 } 47 \\ 47 \text{ 0 } 35 \text{ 14.19} \\ 47 \text{ 2 } 36 \text{ 14.31} \end{array}$$

$$\begin{array}{r} 7 \text{ 14.57 } 40 \text{ 1 } 7 \\ 7 \text{ 1 } 41 \text{ 15.63} \end{array}$$

$$\begin{array}{r} 5 \text{ 15.37 } 40 \text{ 1 } 5 \\ 5 \text{ 2 } 41 \text{ 15.63} \end{array}$$

$$\begin{array}{r} 14 \text{ 14.91 } 39 \text{ 7 } 13 \\ 13 \text{ 1 } 40 \text{ 15.37} \end{array}$$

$$\begin{array}{r} 5 \text{ 14.91 } 39 \text{ 7 } 5 \\ 5 \text{ 1 } 40 \text{ 15.37} \end{array}$$

$$\begin{array}{r} 8 \text{ 14.91 } 29 \text{ 8 } 8 \\ 8 \text{ 0 } 40 \text{ 15.37} \\ 8 \text{ 3 } 41 \text{ 15.63} \end{array}$$

$$\begin{array}{r} 50 \text{ 14.65 } 37 \text{ 1 } 50 \\ 50 \text{ 2 } 38 \text{ 14.90} \end{array}$$

$$\begin{array}{r} 45 \text{ 13.25 } 31 \text{ 4 } 35 \\ 45 \text{ 0 } 32 \text{ 14.40} \\ 45 \text{ 4 } 33 \text{ 13.75} \end{array}$$

Images 3 are much sharper  
than image 2, and difficult  
to compare.

Friday, July 29, 1910.

## North Polar Sequence.

M<sub>A</sub> 230

Comparison of image 2 with image 4

$$\begin{array}{r} 40 \text{ 13.25 } 31 \text{ 2 } 40 \\ 40 \text{ 1 } 32 \text{ 13.70} \end{array}$$

$$\begin{array}{r} 43 \text{ 14.17 } 35 \text{ 1 } 43 \\ 43 \text{ 2 } 36 \text{ 14.31} \end{array}$$

$$\begin{array}{r} 41 \text{ 13.70 } 32 \text{ 2 } 41 \\ 41 \text{ 0 } 33 \text{ 13.75} \\ 41 \text{ 3 } 34 \text{ 14.07} \end{array}$$

$$\begin{array}{r} 44 \text{ 14.19 } 35 \text{ 2 } 44 \\ 44 \text{ 1 } 36 \text{ 14.31} \end{array}$$

$$\begin{array}{r} 42 \text{ 13.75 } 33 \text{ 2 } 42 \\ 42 \text{ 2 } 34 \text{ 14.07} \end{array}$$

$$\begin{array}{r} 49 \text{ 14.91 } 39 \text{ 1 } 49 \\ 49 \text{ 5 } 40 \text{ 15.37} \end{array}$$

$$\begin{array}{r} 48 \text{ 14.90 } 38 \text{ 1 } 48 \\ 48 \text{ 0 } 39 \text{ 14.91} \\ 48 \text{ 7 } 40 \text{ 15.37} \end{array}$$

$$\begin{array}{r} 55 \text{ 15.78 } 42 \text{ 1 } 55 \\ 55 \text{ 0 } 43 \text{ 15.72} \\ 55 \text{ 1 } 44 \text{ 16.00} \end{array}$$

$$\begin{array}{r} 53 \text{ 15.61 } 41 \text{ 1 } 53 \\ 53 \text{ 2 } 42 \text{ 15.78} \end{array}$$

$$\begin{array}{r} 50 \text{ 14.91 } 39 \text{ 4 } 50 \\ 50 \text{ 5 } 40 \text{ 15.37} \end{array}$$

$$\begin{array}{r} 47 \text{ 14.90 } 38 \text{ 1 } 47 \\ 47 \text{ 1 } 39 \text{ 14.91} \end{array}$$

$$\begin{array}{r} 52 \text{ 15.37 } 40 \text{ 3 } 52 \\ 52 \text{ 1 } 41 \text{ 15.63} \end{array}$$

Friday, July 29, 1910.

## North Polar Sequence.

M<sub>X</sub> 230

Comparison of Image 2 with image 4.

15842 2 γ 159243 1 η  
 γ 0 43 1592 η 1 44 16.00  
 γ 2 44 16.00

5149139 6 51 51 2 40 15.37  
 51 2 40 15.37

5159243 2 β  
 β 1 44 16.00

5156348 2 8  
 8 1 42 15.78

4514935 3 45  
 45 0 36 14.31  
 45 1 37 14.55

46145537 4 46  
 46 2 38 14.90

157842 3 β  
 β 1 43 15.92

54 too poor

149139 5 α  
 α 3 40 15.37

3.46

A.B.H.

Saturday, September 3, 1910

## North Polar Sequence.

Scale Measures on Plates taken with and without  
 Fine Fine Screen. Exp. 5<sup>m</sup>M<sub>C</sub> 539

Scale M

Exp. 1 Without Screen

Cor. for Time  
 +0.05

(1)	(1)	(2)	(2)	(1)	(1)	(2)	(2)
2.40	a <sup>3</sup>	2.40	2.40	2.40	2.40	2.40	2.40
3.65	a <sup>4</sup>	3.65	3.65	3.65	3.65	3.65	3.65
4.05	a <sup>5</sup>	4.05	4.05	4.05	4.05	4.05	4.05
4.95	a <sup>6</sup>	4.95	4.95	4.95	4.95	4.95	4.95
5.83	a <sup>7</sup>	5.83	5.83	5.83	5.83	5.83	5.83
6.25	a <sup>8</sup>	6.25	6.25	6.25	6.25	6.25	6.25
6.75	a <sup>9</sup>	6.75	6.75	6.75	6.75	6.75	6.75
6.90	a <sup>10</sup>	6.90	6.90	6.90	6.90	6.90	6.90
6.95	a <sup>11</sup>	6.95	6.95	6.95	6.95	6.95	6.95
7.15	a <sup>12</sup>	7.15	7.15	7.15	7.15	7.15	7.15
7.35	a <sup>13</sup>	7.35	7.35	7.35	7.35	7.35	7.35
7.95	a <sup>14</sup>	7.95	7.95	7.95	7.95	7.95	7.95
8.25	a <sup>15</sup>	8.25	8.25	8.25	8.25	8.25	8.25
8.80	a <sup>16</sup>	8.80	8.80	8.80	8.80	8.80	8.80
9.05	a <sup>17</sup>	9.05	9.05	9.05	9.05	9.05	9.05
9.25	a <sup>18</sup>	9.25	9.25	9.25	9.25	9.25	9.25
9.35	a <sup>19</sup>	9.35	9.35	9.35	9.35	9.35	9.35
9.75	a <sup>20</sup>	9.75	9.75	9.75	9.75	9.75	9.75
9.95	a <sup>21</sup>	9.95	9.95	9.95	9.95	9.95	9.95
10.90	a <sup>22</sup>	10.90	10.90	10.90	10.90	10.90	10.90

Cor. for  
 Time

Ar. Dis. (dist. scales) and 2-

16) 4  
 ± 0.25+8  
 10  
 52) 78  
 ± 0.35



Saturday, September 3, 1910

5<sup>h</sup> 45<sup>m</sup> North Polar Sequence  
 scale M MC 539 (faint mine screen) Cont.

Expt. 2 without screen 60"

	(1) (1)	(2) (2)	(1) (1)	(2) (2)	
c <sup>1</sup> 2 <sup>79</sup> 2.729	2.90 00 ..	47 53.55	5.6	5.55	1.0.
c <sup>2</sup> 3 <sup>37</sup> 3.436	3.65 10 ..	225 -			
c <sup>3</sup> 3 <sup>39</sup> 3.739	3.90 00 ..	227 -			
c <sup>6</sup> 3 <sup>40</sup> 3.941	4.05 01 ..	362 4.850	4.9 4.9	4.93	1.00
c <sup>7</sup> 3.8403.840	4.00 10 ..	386 4.850	4.9	4.95	0.1.
d <sup>1</sup> 4 <sup>24</sup> 4.345	4.45 01 ..	408 5.658	5.7 5.7	5.73	1.00
e <sup>1</sup> 4.2454.245	4.746 4.57 1.10	4 <sup>17</sup> 1.9 1.719		1.90?	00.
f <sup>1</sup> 4.951	5.252 5.17 1.00	f <sup>2</sup> 2.729 6.28		2.85?	1.0.
f <sup>2</sup> 5.860	5.858 5.87 1.11				
f <sup>3</sup> 6.769	6.863 6.83 1.00				
g <sup>1</sup> 6.971	6.970 7.00 1.10				
h <sup>1</sup>	7.676 7.60 .. 00				
i <sup>1</sup>	7.57.6 7.55 .. 1.0				
k <sup>1</sup>	8.080 8.00 .. 00				
k <sup>2</sup>	7.979 7.90 .. 00				
k <sup>3</sup>	8.627 8.65 .. 01				
k <sup>4</sup>	8.989 8.90 .. 00				
k <sup>5</sup>	8.989 8.90 .. 00				
l <sup>1</sup>	9.89.0 9.05 .. 10				
l <sup>2</sup>	9.89.2 9.35 .. 12				
m <sup>1</sup>	9.39.1 9.20 .. 11				
n <sup>1</sup>	9.77.7 9.70 .. 00				
p <sup>1</sup>	10.110.1 10.10 .. 00				
q <sup>1</sup>	- 0.8				
r <sup>1</sup>	- 0.8				

Av. Den. between 2 scales

$$\frac{16.710}{2.067}$$

$$\begin{array}{r} +14 \\ 12 \\ 66 \end{array} \frac{2.6}{2.6} \pm 0.09$$

Saturday, September 3, 1910

North Polar Sequence  
 scale M MC 538 1 Cont.

Expt. 3 without screen 1/2 m

	(1) (1)	(2) (2)	Cor. faintness
a <sup>1</sup> -			-0.05
f <sup>1</sup> 3.638	3.8 a.		3.75
a <sup>1</sup> 3.830	3.0 a.		2.95
a <sup>2</sup> 4.74.9	4.9 a.		4.85
a <sup>3</sup> 4.14.3	4.3 a.		4.25
a <sup>5</sup> 4.04.2	4.5	4.35	4.30
b <sup>1</sup> 5.75.9	5.8	5.75	5.70
b <sup>2</sup> 6.66.8	6.7	6.75	6.70
c <sup>1</sup>	7.2		7.15
c <sup>2</sup>	7.7		7.65
c <sup>3</sup>	7.9	+2.5	7.85
d <sup>1</sup>	8.3	6.7	8.25
e <sup>1</sup>	8.3	±.117	8.25
f <sup>1</sup>	8.8		8.75
f <sup>2</sup>	9.6		9.55
f <sup>3</sup>	9.5		
g <sup>1</sup>	-		
2.25	-		
2.27	8.4		8.35
1.77	8.8		8.75
3.62	8.5		8.45
3.86	8.8		8.75
4.08	9.1		9.05
5.6	7.9		7.85
7.8			

Saturday, September 3, 1910

## Scale M North Polar Sequence

April 1910.

MC 539 Cont.

Exposure 4 with Screen 60"

(1) (1)	(2) (2)	(1) (1)	(2) (2)
a <sup>1</sup> 1517 1315	160 <sup>1</sup> 12... 197	7.4 74	7.40 .. 00
a <sup>3</sup> 17 <sup>1</sup> 19	19 <sup>1</sup> 2... 225	8.8 88	8.80 .. 00
a <sup>4</sup> 21 <sup>23</sup> 33 <sup>35</sup>	240 11... 227 6971 6971	6.8 69	6.98 11 20
a <sup>5</sup> 24 <sup>26</sup> 32 <sup>35</sup>	255 02... 362 6972 6970	6.9 68	6.92 11 01
b <sup>1</sup> 33 <sup>35</sup> 34 36	355 10... 386 68 <sup>80</sup> 6871	6.9 69	6.95 00 11
b <sup>2</sup> 38 40 38 40	400 00... 418	7.6 76	7.60 .. 00
c <sup>1</sup> 49 51 47 49	49 49 49 51 12 11		
c <sup>2</sup> 56 58 55 57	56 56 56 57 10 11		
c <sup>3</sup> 58 60 57 59	58 57 58 55 2 10 1		
c <sup>4</sup> 62 63 60	58 59 59 58 2 0 2 1		
c <sup>7</sup> 62 60 63	62 62 62 8 10 1 1		
d <sup>1</sup> 63 63 65	66 65 65 8 12 0 1		
d <sup>2</sup> 67 68 67 0	67 68 68 5 12 0 0		
e <sup>1</sup> 70 72	73 72 72 3 0 1 0		
f <sup>1</sup>	78 79 78 5 .. 0 1		
f <sup>3</sup>	85 84 84 5 .. 1 0		
g	88 88 88 0 .. 0 0		
h	89 89 89 0 .. 0 0		
i	89 89 89 0 .. 0 0		
k <sup>1</sup>	98 98 98 0 .. 0 0		
k <sup>2</sup>	95 94 94 5 .. 1 0		
k <sup>3</sup>	100 101 100 5 .. 0 1		
k <sup>4</sup>	101 100 100 5 .. 1 0		
k <sup>5</sup>	101 101 .. 0 2		
l			

An. Cor. betw 2 results

.0127  
2.193+24  
-23  
11) 47  
±.061

Saturday, September 3, 1910

## Scale M North Polar Sequence

North Polar Sequence

MC 539 Cont.

Exp. 1 (8+1)

Exp. 5 without screen 5" (44.1 ft)

(1)	(2)	(3)	(4)	(5)
a <sup>1</sup> 19 21	21 21	c <sup>6</sup> 685 67	c <sup>6</sup> 685 67	
a <sup>3</sup> 35 37	37 37	c <sup>7</sup> 690 72	c <sup>7</sup> 690 72	
a <sup>5</sup> 47				
a <sup>6</sup> 40	40 40			
a <sup>7</sup> 49	49 49			
a <sup>8</sup> 57	57 57			
b <sup>1</sup> 62	62 62			
b <sup>2</sup> 67	67 67			
b <sup>3</sup> 71	71 71			
b <sup>4</sup> 73	73 73			
b <sup>5</sup> 74	74 74			
b <sup>6</sup> 75	75 75			
b <sup>7</sup> 76	76 76			
b <sup>8</sup> 77	77 77			
b <sup>9</sup> 78	78 78			
b <sup>10</sup> 79	79 79			
b <sup>11</sup> 80	80 80			
b <sup>12</sup> 81	81 81			
b <sup>13</sup> 82	82 82			
b <sup>14</sup> 83	83 83			
b <sup>15</sup> 84	84 84			
b <sup>16</sup> 85	85 85			
b <sup>17</sup> 86	86 86			
b <sup>18</sup> 87	87 87			
b <sup>19</sup> 88	88 88			
b <sup>20</sup> 89	89 89			
b <sup>21</sup> 90	90 90			
b <sup>22</sup> 91	91 91			
b <sup>23</sup> 92	92 92			
b <sup>24</sup> 93	93 93			
b <sup>25</sup> 94	94 94			
b <sup>26</sup> 95	95 95			
b <sup>27</sup> 96	96 96			
b <sup>28</sup> 97	97 97			
b <sup>29</sup> 98	98 98			
b <sup>30</sup> 99	99 99			
b <sup>31</sup> 100	100 100			
b <sup>32</sup> 101	101 101			
b <sup>33</sup> 102	102 102			
b <sup>34</sup> 103	103 103			
b <sup>35</sup> 104	104 104			
b <sup>36</sup> 105	105 105			
b <sup>37</sup> 106	106 106			
b <sup>38</sup> 107	107 107			
b <sup>39</sup> 108	108 108			
b <sup>40</sup> 109	109 109			
b <sup>41</sup> 110	110 110			
b <sup>42</sup> 111	111 111			
b <sup>43</sup> 112	112 112			
b <sup>44</sup> 113	113 113			
b <sup>45</sup> 114	114 114			
b <sup>46</sup> 115	115 115			
b <sup>47</sup> 116	116 116			
b <sup>48</sup> 117	117 117			
b <sup>49</sup> 118	118 118			
b <sup>50</sup> 119	119 119			
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b <sup>52</sup> 121	121 121			
b <sup>53</sup> 122	122 122			
b <sup>54</sup> 123	123 123			
b <sup>55</sup> 124	124 124			
b <sup>56</sup> 125	125 125			
b <sup>57</sup> 126	126 126			
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b <sup>79</sup> 148	148 148			
b <sup>80</sup> 149	149 149			
b <sup>81</sup> 150	150 150			
b <sup>82</sup> 151	151 151			
b <sup>83</sup> 152	152 152			
b <sup>84</sup> 153	153 153			
b <sup>85</sup> 154	154 154			
b <sup>86</sup> 155	155 155			
b <sup>87</sup> 156	156 156			
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b <sup>91</sup> 160	160 160			
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b <sup>104</sup> 173	173 173			
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b <sup>214</sup> 283	283 283			
b <sup>215</sup> 284	284 284			
b <sup>216</sup> 285	285 285			
b <sup>217</sup> 286	286 286			
b <sup>218</sup> 287	287 287			
b <sup>219</sup> 288	288 288			
b <sup>220</sup> 289	289 289			
b <sup>221</sup> 290	290 290			
b <sup>222</sup> 291	291 291			
b <sup>223</sup> 292	292 292			
b <sup>224</sup> 293	293 293			
b <sup>225</sup> 294	294 294			
b <sup>226</sup> 295	295 295			
b <sup>227</sup> 296	296 296			
b <sup>228</sup> 297	297 297			
b <sup>229</sup> 298	298 298			
b <sup>230</sup> 299	299 299			
b <sup>231</sup> 300	300 300			
b <sup>232</sup> 301	301 301			
b <sup>233</sup> 302	302 302			
b <sup>234</sup> 303	303 303			
b <sup>235</sup> 304	304 304			
b <sup>236</sup> 305	305 305			
b <sup>237</sup> 306	306 306			
b <sup>238</sup> 307	307 307			
b <sup>239</sup> 308	308 308			
b <sup>240</sup> 309	309 309			
b <sup>241</sup> 310	310 310			
b <sup>242</sup> 311	311 311			
b <sup>243</sup> 312	312 312			
b <sup>244</sup> 313	313 313			
b <sup>245</sup> 314	314 314			
b <sup>246</sup> 315	315 315			
b <sup>247</sup> 316	316 316			
b <sup>248</sup> 317	317 317			
b <sup>249</sup> 318	318 318			
b <sup>250</sup> 319	319 319			
b <sup>251</sup> 320	320 320			
b <sup>252</sup> 321	321 321			
b <sup>253</sup> 322	322 322			
b <sup>254</sup> 323	323 323			
b <sup>255</sup> 324	324 324			
b <sup>256</sup> 325	325 325			
b <sup>257</sup> 326	326 326			
b <sup>258</sup> 327	327 327			
b <sup>259</sup> 328	328 328			
b <sup>260</sup> 329	329 329			
b <sup>261</sup> 330	330 330			
b <sup>262</sup> 331	331 331			
b <sup>263</sup> 332	332 332			
b <sup>264</sup> 333	333 333			
b <sup>265</sup> 334	334 334			
b <sup>266</sup> 335	335 335			
b				





Monday, September 5, 1910

## North Polar Sequence

Scale M	MC 539 (Continued)	Exp. 4 with screen uprated	Mean of 2 sets of obs.
Page 44	(1) (1)	(2) (2)	
4.95	C 4.7 <sup>49</sup> 4.749	4.90 00..	4.92 03.02
5.67	C 5.4 <sup>56</sup> 5.557	5.65 01..	5.66 01 01
5.85	C 5.9 <sup>61</sup> 5.860	6.05 10..	5.95 10 10
5.98	C 5.9 <sup>61</sup> 5.961	6.10 00..	6.04 06 06
6.28	C 6.5 <sup>65</sup> 6.163	6.40 11..	6.34 06 06
6.58	D 6.4 <sup>66</sup> 6.365	6.55 01..	6.56 02 01
6.85	C 6.7 <sup>69</sup> 6.749	6.867 6.82 11.01	6.84 01 02
7.23	F 6.9 <sup>69</sup> 6.921	7.271 7.12 00.10	7.18 05 06
7.85	F 7.9 7.8	7.85 10	7.85 00 00
8.45	F 8.4 8.4	8.40 00	8.42 03 02
8.80	G 8.7 8.8	8.75 10	8.78 02 03
8.90	H 8.8 8.9	8.85 01	8.88 02 03
8.90	I 8.9 8.9	8.90 00	8.90 00 00
9.80	K 9.7 9.7	9.70 00	9.75 05 05
9.45, 9.4	K <sup>2</sup> 9.3 9.4	9.3 00	9.40 10 00 10
10.05	K <sup>3</sup> 10.1 10.0	10.05 10	10.05 00 00
10.05	K <sup>4</sup> 10.0 10.0	10.00 00	10.02 03 02
10.1	K <sup>5</sup> 10.2 10.2	10.20 00	10.15 05 05
7.40	197 -	7.575 7.50 00	7.45 05 05
8.80	225	8.788 8.75 10	8.78 02 03
6.98	227 6.9687.0	6.970 7.00 10.0	6.99 01 01
6.92	362 6.8687.0	6.869 6.92 11.0	6.92 00 00
6.95	386 6.8668	6.868 6.85 20.0	6.90 05 05
7.60	408 -	7.776 7.65 10	7.67 02 03

The second set of measures made after 10.15 on 4.47

Monday, September 5, 1910

## North Polar Sequence

Scale M	MC 539 (Continued)	Exp. 1 without screen 5" uprated	Exp. 5 without screen 5" uprated		
Mean of 2 sets	(1) (1)	(2) (2)	Exp. 1-Exp. 5		
5.72 01 06 C	5.557	5.6 5.65 10	5.78 C 5.860	5.8 5.90 11	25
6.30 10 10 C <sup>2</sup>	6.264	6.4 6.40 00	6.20 C 6.567	6.7 6.70 00	30
6.15 05 05 C <sup>3</sup>	6.668	6.8 6.80 00	6.10 C 6.769	6.8 6.85 10	05
6.88 02 03 C <sup>6</sup>	6.769	6.9 6.90 00	6.85 C 7.072	7.3 7.25 01	35
6.98 01 05 C <sup>7</sup>	6.870	7.1 7.15 01	6.90 C -	7.3	25
7.20 11 10 D		7.3	7.10 D	7.4	10
7.35 05 10 E		7.4	7.30 E	7.5	10
7.90 11 10 F		7.9	7.90 F	8.0	12
8.25 05 05 F <sup>2</sup>		8.3	8.20 F <sup>2</sup>	8.5	20
8.78 02 03 F <sup>3</sup>		8.8	8.75 F <sup>3</sup>	8.8	20
9.00 11 10 G		9.0	9.00 G	9.2	20
9.25 05 05 H		9.3	9.20 H	9.7	40
9.40 05 10 I		9.5	9.30 I	9.8	30
9.90 00 00 K		9.9	9.90 K	10.1	20
9.90 00 00 K <sup>2</sup>		9.9	9.90 K <sup>2</sup>	10.1	20
K <sup>3</sup>		-	-	10.2	-
K <sup>4</sup>		-	-	-	-
7.88 02 03 197	7.9	7.85 197	8.1		20
8.98 02 03 225	9.0	8.95 225	9.3		30
7.58 02 03 227	7.6	7.55 227	7.7		10
7.10 10 10 362	7.8	7.60 362	7.8		20
7.55 15 15 386	7.7	7.40 386	7.8		10
7.95 02 03 408	8.0	7.95 408	8.3		30
					21/400
					-0.190

An. Ser. 10.2 10.2

An. Ser.

1st of obs. 2nd of obs.  
+15 +810  
-7 -810  
56.22 49.161  
±.039 ±.033+1.00  
-1.88  
42.208  
±.0450

Wednesday, September 7, 1910

april

## North Polar Sequence

MC 539 (Continued)

Measure of faint stars repeated with  
different scale. Additional stars 248, 279, 292  
included

Scale C 7493

Exp 2 Without Screen

Exp 4 With Screen

K <sup>3</sup>	12.4		124. 0		g	12.5	12.7	1260 L1	
K <sup>4</sup>	12.7	12.7	1270 00		K	12.7	12.8	1275 01	
K <sup>5</sup>	12.7	12.7	1270 00		L	12.8	12.8	1280 00	
L	12.8	12.8	1280 00		K	12.6	12.7	1265 01	
m	13.1	13.2	1315 01		K <sup>2</sup>	13.1	13.3	1320 L1	
n	13.1	13.1	1310 00		K <sup>3</sup>	13.9	14.0	1395 L0	
o	13.7	13.7	1370 00		K <sup>4</sup>	14.1	14.0	1405 L0	
p	14.1	14.1	1410 00		K <sup>5</sup>	14.0	14.2	1410 L1	
q	-					248	12.8	12.9	1285 01
						279	13.7	13.6	1365 L0
w	13.2	13.1	1315 01			292	13.1	13.2	1315 L0
w'	13.3	13.5	1340 L1						
x	13.4	13.3	1335 01		f'	10.8	10.7	1075 01	
f'	13.6	13.7	1365 01		f <sup>2</sup>	11.5	11.6	1155 L0	
f <sup>3</sup>	14.0	13.9	1395 01		f <sup>3</sup>	12.1	12.3	1220 L1	
g'						386	10.3	10.3	1030 00
						408	11.2	11.2	1120 00
348	11.3	11.2	1125 L0			197	10.8	11.0	1090 L1
279	12.1	12.0	1205 L0			227	10.6	10.6	1060 00
292	11.5	11.5	1150 00						
g	10.4	10.4	1040 00						
K	11.0	10.9	1095 01						
L	10.8	10.8	1080 00						
K <sup>2</sup>	11.8	11.8	1180 00						
K <sup>3</sup>	11.7	11.7	1170 00						

band set given  
made after both exposure  
had been measured once.  
This comp. for light lost  
John G. Wolbach Library, Harvard-Smithsonian Institution

band set measures  
made after both exposures  
had been measured once.  
This was the better result.

$\frac{7.74}{7.13}$   
 $\pm 0.036$

Wednesday, September 7, 1910

## North Polar Sequence

MC 539 Cont.

Scale C 7493

Exp. 1

Exp. 5

Exp. 10 - (5)

197	11.6		11.8		20
227	11.0		11.3		30
386	10.9		11.2		30
408	11.8		12.08		20
248	13.5		13.6		10
279	13.7		14.2		50
292	13.3		13.7		.
g	12.8		13.0		20
K	13.2		13.2		00
L	13.2		13.4		20
K	13.7		13.9		20
K <sup>2</sup>	13.8		13.5		10
f <sup>3</sup>	12.3		12.8		50
L	10.8		10.9		10

131-280  
-0.22

The images of these two exposures are less comparable with Scale C 7493 than the images on the other exposures.

Three measures made in order to determine the true correction to be applied to Exp 2 and 4. The correction is nearly the same as that found with Scale M.

copied p 55

North Pole Sequence

MC 542 With and Without Fine Mic Screen

Exp. 1 Without Screen 5<sup>m</sup>

Copied

Mean

Man	not scale	scale	scale	Man	not scale	scale	Man	not scale	scale	Man
6.90 10	C	6.6.69	6.9	6.6.69	6.9	0	13.6	13.7	13.65 0	
7.35 15 15	C <sup>2</sup>	7.2 7.5 7.5	7.50 10	6.9 7.2 7.2	7.20 10	14.1	14.1	14.0	14.05 10	
7.60 15 15	C <sup>2</sup>	7.5 7.7 7.5	7.65 12	7.2 7.7 7.7	7.55 10	14.6	14.6	13.6	13.60 10	
7.70 11 2	C	7.6 7.9 7.7	7.80 12	7.3 7.6 7.6	7.60 10	14.3 ?	14.2	14.25 ?		
7.85 11 10	C	7.7 8.0 7.7	7.85 12	7.6 7.9 7.8	7.85 10	13.9	14.0	13.95 10		
8.02 02 13	d	7.8 8.1 7.9	8.00 12	7.8 8.1 8.0	8.05 10	14.2	14.2	14.25 10		
8.02 02 03	e	7.8 8.1 7.9	8.00 12	7.9 8.2 7.9	8.05 12	9.0	8.9	8.95 0.2		
8.66 14 14	f	8.0 8.3 8.2	8.15 12	8.1 8.4 8.1	8.20 10	11.2	11.0	11.0 1.2		
9.65 0 1	g	9.6	9.7	9.7	9.8 9.6 9.7	8.65 11	8.1, 8.2, 8.7	8.65 1.2		
10.30 1 2	h	10.4	10.4	10.4	10.3 9.6 9.8	8.70 10	8.0 8.3 8.4	8.58 1.4		
10.70 0 0	i	10.7	10.7	10.7	10.6 9.8 9.8	8.85 10	8.0 8.3 8.6	8.35 1.0		
13.90 0 0	j	13.9	13.9	13.9	14.0 9.2	9.2	9.2	9.10 1.2		
11.00 1 2	k	11.1	11.1	11.1	11.4	11.4	11.3	11.35 0.2		
11.75 0 2	l	11.8	11.7	11.7	11.9	11.9	11.8	11.80 0.0		
11.75 0 2	m	11.8	11.7	11.7	11.9	11.9	11.4	11.50 1.4		
12.55 1 0	n	12.5	12.6	12.6	12.7	12.7	12.6	12.65 1.0		
12.70 1 2	o	12.8	12.8	12.8	12.9	12.9	12.8	12.85 1.0		
12.80 1 1	p	12.9	12.9	12.9	13.0	13.0	12.9	12.95 1.0		
12.80 0 0	q	12.8	12.8	12.8	12.9	12.9	12.8	12.85 1.0		
13.05 0 1	r	13.0	13.1	13.1	13.2	13.2	13.1	13.15 1.0		
13.25 0 1	s	13.2	13.3	13.3	13.4	13.4	13.3	13.35 1.0		
13.45 1 0	t	13.5	13.6	13.6	13.7	13.7	13.6	13.65 1.0		
13.70 0 0	u	13.7	13.8	13.8	13.9	13.9	13.8	13.85 1.0		
13.65 1 0	v	13.7	13.8	13.8	13.9	13.9	13.8	13.85 1.0		



Thursday, September 7, 1910.

Capit

North Polar Sequence

MC 542 With and without Fine Wire Screen.

Scale from  
C 17493

Exp. 3 With Screen

	2nd scale	Range scale	Mean	2nd scale	Range scale	Mean
C'	8.1	8.1	8.10 00	no S.		
C <sup>2</sup>	9.0	9.4, 9.5	9.30 10			
C <sup>3</sup>	9.6	9.6	9.60 00			
C <sup>4</sup>	9.8	9.6	9.70 10			
C <sup>5</sup>	9.8	9.7	9.75 01			
D	9.8	9.9	9.85 01			
E	10.0	10.0	10.00 00			
F'	10.7	10.7	10.70 00	199	defect in film reject measure	
F <sup>2</sup>	11.5	11.6	11.55 10	225	12.6	12.60 00
F <sup>3</sup>	12.3	12.3	12.30 00	227	10.4	10.45 01
G	12.4	12.6	12.50 11	362	10.6	10.55 01
H	12.5 reject	12.9, 12.8	12.85 10			
I	12.8	12.8	12.80 00	386	10.4	10.5 01
K'	13.5	13.5	13.50 00	488	11.0	11.3, 11.0 121
K <sup>2</sup>	13.2	13.4	13.30 10	248	13.1, 13.1	13.10 00
K <sup>3</sup>	13.8	13.9	13.85 01	279*	13.4	13.20 12
K <sup>4</sup>	14.1	F	14.1 00	292	13.2	13.3 01
K <sup>5</sup>	14.2	14.2	14.20 00			
L	14.0	no S.	14.0 00			
M	no S.	no S.				
N	no S.	no S.				

\* This image appears peculiar  
and is probably defective.  
Repeat the measure.

+15  
-12  
50) 27  
± 0.50

Thursday, September 8, 1910. 55

North Polar Sequence

MC 542 With and without Fine Wire Screen.

Scale from  
C 17493

Exp. 4 Without screen

	2nd scale	Range scale	Mean	2nd scale	Range scale	Mean
Exp. 1	8.80	35	C'	9.1	9.2	9.15 10
Exp. 1	9.75	15	C <sup>2</sup>	9.8	10.1, 9.8	9.90 10
	10.25		C <sup>3</sup>	refused	refused	227
	10.50		C <sup>4</sup>	too poor	not reject film	362
	10.55	05	C <sup>5</sup>	10.6	11.6	10.60 00
	10.75	02	D	10.7	8.7, 10.8	10.73 01
	11.00	20	E	10.8	10.8	10.80 00
	11.50	00	F'	11.4	11.6	11.50 10
			F <sup>2</sup>	12.0	12.3, 12.2	12.17 10
	12.55	10	F <sup>3</sup>	12.7	12.6	12.65 10
	12.85	15	G	13.0	13.0	13.00 00
	13.15	10	H	13.3	13.2	13.25 10
	13.15	00	I	13.2	13.1	13.15 01
	13.70	10	K'	13.8	13.3	13.70 00
	13.80	05	K <sup>2</sup>	13.8	13.9	13.85 01
			K <sup>3</sup>	no S.	no S.	362
			F	no S.	F	386
			L			408
			M			248
			N			279
	13.85		N	no S.		292

+14  
-13  
48) 27  
± 0.56

+120  
-62  
20(+58)  
4-1 703

Sum 58  
70. 20  
Mean 18

omitings 23  
19  
01  
for (any) remove the above signs

There is no evidence that  
the day changed between Exp. 1 and Exp. 4.  
The corrections to be made.



Friday, September 9, 1910

Chief

North Polar Sequence  
M.C. 547, with and without fine wire screen.Scale from  
C 17493

Exp. 3 2nd scale	with screen Range 2nd scale	Mean	2nd scale	Range 2nd scale	Mean
C 89	9.1	9.00 ± 1	197	11.6	11.55 ± 2
C 97	9.6	9.65 ± 0	225	13.0	13.00 ± 0
C 101	9.9	10.00 ± 1	227	12.8	10.75 ± 1
C 105	10.2	10.40 ± 1	362	11.1	11.05 ± 0
C 104	10.5	10.45 ± 1	386	10.8	10.85 ± 1
d 10.5	10.6	10.55 ± 0	488	11.9	11.95 ± 0
e 10.7	10.7	10.70 ± 0	248	13.5	13.45 ± 0
f 11.3? <sup>11.6</sup> <del>absolutely exposed</del>		11.45 ± 2	279	unexposed	-
g 12.2	12.2	12.20 ± 0	272	13.7	13.70 ± 0
f 12.6	12.5	12.55 ± 1			+11
g 13.1	12.9	13.00 ± 1			-11
h 13.2	13.2	13.20 ± 0			46.22
i <sup>13.6</sup> <del>13.2</del> <sup>13.1</sup>		13.15 ± 1			± 0.48
k 14.0	14.2	14.00 ± 0			
k 13.8	13.3	13.80 ± 0			
k F	14.1	14.1 ±			
l 2.8	no.				
k F	F				
l 2.8					

Friday, September 9, 1910. 59

Chief

North Polar Sequence  
M.C. 547, with and without fine wire screen.Scale from  
C 17493

Exp. 1 p.50	Exp. 4 p.50	2nd scale	Range 2nd scale	Mean	2nd scale	Range 2nd scale	Mean	p.50 Exp. 1	p.50 Exp. 4
9.45	85	C	10.2	10.4	10.30 ± 1	197	12.3	12.2	12.25 ± 0
10.45	20	C	10.8	10.7	10.75 ± 2	225	13.1	13.1	13.10 ± 0
10.70	15	C	10.8	10.9	10.85 ± 1	227	11.9	11.7	11.80 ± 1
10.85	10	C	10.9	11.0	10.95 ± 0	362	11.9	11.6	11.77 ± 0
11.00	15	C	11.2	11.1	11.15 ± 2	386	11.8	11.9	11.85 ± 1
11.35	25	d	11.0	11.2	11.10 ± 1	408	12.3	12.9	12.10 ± 0
11.39	17	e	11.5	11.5	11.50 ± 0	248	13.8	13.8	13.80 ± 0
11.90	12	f	11.8	11.8	11.80 ± 0	279	no.		
12.75	22	g	12.6?	12.5	12.55 ± 2	272	no.		
13.20	15	f	13.1	13.0	13.05 ± 1				
13.90	55	g	13.4	13.3	13.35 ± 2				
13.90	15	h	13.8	13.7	13.75 ± 2				
13.80	25	i	13.8	13.7	13.75 ± 2				
		k	no.						
		k	no.						
		k	no.						
		k	no.						
		l							

+11  
-11  
42.24  
± 0.57  
Sum -92  
No. 20  
mean -0.4

Sum missing C' -167  
No. 14  
mean -0.9

No. (1-4) across fine wire.

Images more intense on this than on the other exposures, and more difficult to compare with scale.

The differences between Exps. 1 and 4 show systematic variation for bright and faint stars, the bright stars appearing fainter and the faint stars brighter on Exp. 4. This is exactly what should be looked for in view of the greater intensity of the images on exposure (4). There seems to be no evidence of change in the sky. Do not apply any correction to Exps. 2 and 3.



Saturday, September 10, 1910.

## North Polar Sequence

MC 528, four exposures at different declinations.

23.23  
Scale M

Exp. 1.  $\pm 90^\circ$   
1st scale 2nd scale

a <sup>1</sup>	1.5 <sup>2</sup> 1.7 <sup>2</sup>	h <sup>1</sup>	9.9
a <sup>2</sup>	3.0 <sup>2</sup> 3.2 <sup>2</sup>	i <sup>1</sup>	9.6
a <sup>3</sup>	3.4 3.6	k <sup>1</sup>	F
a <sup>4</sup>	3.2 3.4	k <sup>2</sup>	F
F	1.8 2.0		
f <sup>1</sup>	3.7 3.9		
f <sup>2</sup>	4.0 4.2		
f <sup>3</sup>	3.2 3.4		
c <sup>1</sup>	5.6 5.8 5.6 5.7 5.2		
c <sup>2</sup>	6.1 6.2 6.1 6.6 6.5 6.38 $\pm 2.1$		
c <sup>3</sup>	6.7 6.9 6.7 6.8 6.2		
d <sup>1</sup>	7.0 7.2 7.4 7.3 7.1		
d <sup>2</sup>	7.9 7.4 7.4 7.4 7.0 7.0		
f <sup>1</sup>	8.0 - 8.0		
g <sup>1</sup>	9.2		
1907	7.9		
2227	7.7		
362	7.7		
386	7.7 7.7 7.7 7.7 7.0 7.0		
408	8.3		
225	9.5		
f <sup>2</sup>	9.0		
f <sup>3</sup>	8.9		

$$\frac{+6}{-7}$$

$$\frac{12}{73}$$

$$\pm 106$$

Saturday, September 10, 1910.

## North Polar Sequence

MC 528, four exposures at different declinations.

Scale M

Stars identified on paper print - D 13324  
Sequence C at  $+90^\circ$   
1st scale 2nd scale

a	5.8 <sup>2</sup> 6.0	any	a	6.3 6.5 6.6 6.55 6.0
b			c	7.3
c	8.2	any	d	7.7
d	6.4 <sup>2</sup>	bad	f <sup>1</sup>	5.9 6.1 6.2 6.28 $\pm 1.1$
e	8.9 <sup>2</sup>		z	5.7
f	9.0 <sup>2</sup>		B	5.8 6.0 5.9 5.95 6.2
f <sup>2</sup>	tripos		Y	5.7 5.9 6.4 5.95 6.0
h	9.7 <sup>2</sup>	bad	z	7.1
d	tripos	framed	n	8.6
B	tripos		o	9.3
f	tripos		h <sup>2</sup>	tripos 7.5
g			h	8.9
i	2.9 <sup>2</sup>		k	9.5
n	9.5 <sup>2</sup>			
o	9.6 <sup>2</sup>			
k	F			
h <sup>1</sup>	8.3 <sup>2</sup>			

these images are so bad as to be almost impossible to measure.

checked

Saturday, September 10, 1910.

North Polar Sequence.

MC 528, Four exposures at different declin

Scale M

Exposure 2, +77.6		2nd scale
1st scale	2nd scale	
a' 1.5? 1.7?	197	5.8
a' 1.7? 1.9?	225	6.9
a' off edge	227	6.6 pm
a' 6.6 pm	362	7.3
F off edge	386	7.3?
b' 4.0 4.2 5.0	408	9.2?
b' 4.9 5.1 5.2 5.15 2.0		
b' off edge		
c' 3.9? 4.1		
c' 6.6 pm		
c' 6.6 pm		
d	79?	±.050
e	84?	
f'	9.5?	
g'	9.9	
h'	10.0	
g	* F	
h		

Images very bad.

Saturday, September 10, 1910.

North Polar Sequence.

MC 528, Four exposures at different declinations

Scale M

Exposure 2, +79.2		2nd scale
1st scale	2nd scale	
a' 1.7? 1.9?	197	7.9
a' 2.9? 3.1?	227	7.5
a' 2.1? 2.3?	362	7.7
a' 2.9 3.1	386	7.4
F 1.2? 1.4?	408	8.2
b' 4.6 4.8	225	9.2
b' 5.3 5.5		
b' 6.6 pm		
c' 5.7 5.9 5.7 5.80 1.2		
c' 5.8 6.0 5.8 5.90 1.2		
c' 6.0 6.2 6.5 6.85 2.1		
d 7.0 7.2 7.0 7.10 1.2		
e	7.2	
f'	8.0	+4
g'	8.6	-5
f'	8.9	8.7
g	9.4	±.112
h	9.7	
i	9.7	
b'	not found	
h'	10.2	

Saturday, September 10, 1910.

## North Polar Sequence

MC 528, Four exposures at different declinations

Scale M

Sequence C at  $+19.2$  (Exp. 2)

	1st scale	2nd scale
a	5.8	6.0 5.9
c		7.4
$\alpha$	4.1 4.3 4.6	4.45 1.2
$\beta$	4.3? 4.5? very bad	
$\gamma$	4.6? 4.8? very bad	
$\delta$		7.8 very bad
$\epsilon$		7.7
b		9.8
$\eta$		8.6
$\kappa$		9.8
e		8.5
f		8.6
h		9.0
d		7.7
f'	5.0 5.2 5.5	5.35 1.1

$$\begin{array}{r} +3 \\ -3 \\ \hline 10 \end{array} \begin{array}{r} 5 \\ 5 \\ \hline 10 \end{array} \begin{array}{r} 1 \\ 1 \\ \hline 2 \end{array}$$
 $\pm 0.150$ Sequence C at  $+86.4$  (Exp. 3)

	1st scale	2nd scale
a	6.3 6.5 6.6	6.55 1.0
f	4.5 4.7 4.8	4.75 1.0
$\beta$	5.7 5.4 5.7	5.55 2.1
$\gamma$	5.0 5.2 5.5	5.35 2.1
$\delta$		7.3
$\alpha$	5.3 5.5 5.5	5.50 0.0
$\epsilon$		7.9
c		7.7
d		7.5
h		8.7
e		8.5
f		8.7
$\kappa$		9.3
$\eta$		8.4
b		9.2

$$\begin{array}{r} +2 \\ -2 \\ \hline 10 \end{array} \begin{array}{r} 6 \\ 6 \\ \hline 12 \end{array} \begin{array}{r} 1 \\ 1 \\ \hline 2 \end{array}$$
 $\pm 0.080$ 

Saturday, September 10, 1910.

## North Polar Sequence

MC 528, Four exposures at different declinations

Scale M

Exposure 3,  $+86.4$ 

	1st scale	2nd scale
a'	1.0? 1.2?	197 7.9 poor
a <sup>2</sup>	2.6 2.8 good	225 9.6
a'	1.1? 1.3? very bad	227 7.9 poor
a <sup>5</sup>	1.9 2.1 bad	362 7.8 bad
F	6.4 poor	386 7.1 poor
b'	4.6 4.8 4.9	485 0.1
b <sup>2</sup>	5.6 5.8 5.7	575 0.1
b <sup>3</sup>	5.6 5.7 5.8	575 0.1
c'	5.3 5.5 5.3	540 1.2
a <sup>2</sup>	5.7 5.9 5.5	575 0.1
c <sup>3</sup>	5.9 5.7 5.6	585 1.2
d	6.9 7.1 5.8	645 1.2
e		7.4 bad
f'	8.3	+9
f <sup>2</sup>	8.8	-8
f <sup>3</sup>	9.2	197 17
g	9.0	$\pm 1.21$
h	9.0	
i	10.1	
b'	m.s.	
b <sup>2</sup>	m.s.	

## General Remarks

The images when good are in sharp focus and difficult to compare with scale. When poor, are nearly circular but out of focus.

0.21  
2.9.2



Saturday, September 10, 1910.

Measure of distances of images from center of plate.  
 MC 526, four exposures at different declinations

## Polar Sequence

Exp. 1, +90° Dist in mm.	Exp. 2	Exp. 3	Exp. 4
a' -56	-32h	+22h	+56h
a <sup>2</sup> 45	+49h	+68h	+95h
a <sup>4</sup> +75h	+92h	+118h	off plate
a <sup>5</sup> +34h	+54h	+84h	+115
F +71h	+94h	+123h	off plate
b' -48	-19	+15	+46
b <sup>2</sup> -54	-25	+8	+40
b <sup>3</sup> +77h	+104h	off plate	off plate
c' -13	+19	+51	+83
c <sup>2</sup> +24h	+48	+78h	+109
c <sup>3</sup> +24	+50	+84h	+115
d +15	+44	+74	+108
e +10	+38	+71	+104
f' +14	+42	+71	108 <sup>exp. from table</sup>
f <sup>2</sup> +10	+38	+70	off plate
f <sup>3</sup> +8	+36	+68	+100
g +6	+34	+66	+99
h +8h	+32	+64	+98
197 14h	+31	+90	+93
225 +7h	+35	+67	+99
227 +7h	+35	+67	+99
362 +5	+36	+58	+90
386 -4	+26	+52	+89
408 6h	+31	+60	+95

Saturday, September 10, 1910 67

Measure of distances of images from center of plate.  
 MC 528

## Sequence C

Exp. 1 Dist in mm.	Exp. 2	Exp. 3	Exp. 4
a -76	-47	-15	+19
c -82	-53	-20	+10
d -78	-49	-19h	+18h
e -75	-55	-23h	+15h
f -84	-55	-24h	+16h
f <sup>2</sup> -111	-82	-50	-18
f <sup>3</sup> -116	-97	-55	-27h
h -78	-48	-20h	+24h
α -93	-64	-31	4h
β -108	-90	-47	-15
γ -113	-94	-52	-20
ζ -88	-64	-27	+5
η -92	-62	-30	+2
θ -94	-65	-33	8h
κ -92	-63	-31	1h

0.44  
 a. 8.2h

Tuesday, September 12, 1910.

April

North Polar Sequence

I 36786, With and without Operated Tim.

a. 12

Scale M

Mean	Exp. 3 at scale	50 m	Measured at scale	1st scale	2nd scale	Measured at scale	Mean
410 00	0	39	41.2	39	41.2	197	6.215
460 05 55	0	44	46.47	46.51	44.2	44.7	4.55
505 05 55	0	48	50.52	51.02	48.50	50.52	3.97
512 23 03	0	48	50.52	51.02	48.50	50.52	3.97
556 05 09	0	51	56.57	55.58	55.57	56.55	3.86
560 05 05	d	53	56.56	55.52	54	56	57.55
588 02 22	e	56	58.59	58.51	58.10	58.59	2.48
660 00 00	f	65	67.65	66.12	63	65	67.60
702 02 03	g	68	70.70	70.00	69	71	70.510
750 11	f	74	76	76	74	76	10.1
770 11	g	76	78	78	76	78	10.1
790 10	h	79	81	81	79	81	10.1
815 10	i	81	83	83	81	83	10.1
855 01	k	86	88	88	86	88	10.1
875 01	k	88	90	90	88	90	10.1
895 01	k	90	92	92	90	92	10.1
945 10	k	95	97	97	95	97	10.1
970 10	k	97	99	99	97	99	10.1
985 10	m	99	101	101	99	101	10.1
1005 10	n	101	103	103	101	103	10.1

Images elongated

Monday, September 12, 1910.

April 7<sup>th</sup>

North Polar Sequence

I 36786, With and without Operated Tim.

Scale M

Mean	Exp. 2, 5 at scale	50 m	Measured at scale	1st scale	2nd scale	Measured at scale	Mean
692 07 00	0	67	69.67	68.15	67	69.67	6.30
710 10	0	71	73	73	71	73	6.40
750 12 10	0	74	76	76	74	76	6.50
770 00	0	77	79	79	77	79	6.60
775 10	0	77	79	79	77	79	6.70
790 10	0	79	81	81	79	81	6.80
805 01	0	80	82	82	80	82	6.90
840 11	0	83	85	85	83	85	7.00
880 10	0	86	88	88	86	88	7.10
935 10	0	93	95	95	93	95	7.20
960 11	0	96	98	98	96	98	7.30
985 10	0	99	101	101	99	101	7.40
1005 10	0	101	103	103	101	103	7.50

Images very sharp, and difficult to measure.

Monday, September 12, 1910.

Capitol

North Polar Sequence.

I 36786, With and without Perforated Film.

Scale M

Mean	Exp. 4, with screen 60 <sup>m</sup> with scale	Re-measured with scale	with scale	Re-measured with scale	Mean
7.18 05 02	0' 7.2	6.97 7.2	7.15 0	197 9.2	9.0
7.75 0 2	0' 7.8	7.7	8.6 8.9	8.8	8.85 10
8.05 0 1	0' 8.0	8.1	408 9.8	9.7	9.75 02
8.25 10	0' 8.3	8.2	248	unperforated	
8.40 10	0' 8.4	8.4	279		+42 -83 247 12.5 ± 0.52
8.05 1 2	0' 8.5	8.2	292	n.s.	
8.10 00	0' 8.8	8.8			
9.05 0 1	0' 9.4	9.3	9.3		
9.95 0 1	0' 10.0	9.9			
10.1 1 2	0' F	10.1			
	g				
	h				
	i				
	k				

Images elongated.

Monday, September 12, 1910.

North Polar Sequence.

I 36786 With and without Perforated Film.

Scale M

Exp. 2. 069 Exp. 2. 069-Exp. 2.	Exp. 5. 5 <sup>m</sup> with scale	Re-measured with scale	with scale	Re-measured with scale	Mean	with scale	Re-measured with scale	Mean	Exp. 2	Exp. 5-Exp. 2.
6.92 08	0' 6.87 7.0 7.0 00 00	7.2 7.0 2	7.7	8.4	8.4	8.4 00	8.35	05		
7.10 40	0' 7.5	7.5 7.5 00	8.6	8.1	8.2	8.15 10	7.95	20		
7.50 20	0' 7.7	7.7 7.7 00	408	8.8	8.8	8.8 00	8.75	15		
7.70 10	0' 7.8	7.8 7.8 00	242	n.s.	F		9.95			
7.75 05	0' 7.8	7.9 7.8 00			7.9					
7.90 10	0' 8.0	8.1 8.0 00	292		+80 -40 320 170 ± 0.34	10.10				
8.05 05	0' 8.1	8.2 8.15 10								
8.40 20	0' 8.6	8.7 8.6 00								Sum + 208
8.80 20	0' 9.0	9.1 9.0 00								No. 15
9.35 05	0' 9.8	9.4 9.5 10								Mean Diff + 14
9.50 30	0' 9.8	9.9 9.8 00								
9.85 15	0' 10.0	10.0 10.0 00								
	0' 10.0	10.1 10.0 00								
	0' F	F								

The difference 0.14 seems to be real. As the time between exp. 3 and (4) (middle times) was about 60<sup>m</sup> or half the full time of exposure, apply the correction -0.07 to measures of third exposure, leaving the second exposure uncorrected.

1.14

2.38



Wednesday, September 21, 1910.

## North Polar Sequence

I 36792, with and without screen of perforated tin.

23.40

Scale M

Expt. 4 - Expt. 1	Expt. 1 lat. and scale	Mean Expt. 4 2nd scale	Expt. 4 2nd scale	Expt. 1 lat. and scale	Mean Expt. 1 2nd scale	Expt. 1 2nd scale	Expt. 4 2nd scale	Expt. 4 - Expt. 1
30	C'	7.0	7.12 12.11	7.3	7.23	4.08	9.6	9.56 14.0 2.3
20	C'	7.9	7.86 14.13	7.9	7.83	3.82	8.9	8.9 14.0 8.9 0
20	C'	8.2	8.22 14.17	8.4	8.33	3.42	9.0	9.0 14.0 8.9 0
1	C'	8.4	8.4 14.01	8.5	8.43	2.27	9.0	9.0 14.0 8.9 0
2	C'	8.5	8.56 14.17	8.7	8.63	2.25	9.0	9.0 14.0 8.9 0
1	d	8.6	8.62 14.01	8.7	8.63	1.97	9.2	9.2 14.0 8.9 0
L	e	9.0	8.96 14.13	8.9	8.83			
3	f'	9.3		9.6	9.53			
L	f''	9.9	9.82 14.17	9.8	9.73			
	f''	4.0 F						

Apply Correction  $\frac{+0.7}{2} = -.04$  to Expt. 3

Remark for both exposures:

Images very sharp - difficult to compare with scale.

A.D.H.

Wednesday, September 21, 1910

## North Polar Sequence

I 36792, with and without screen of perforated tin.

Scale M

Expt. 2	Expt. 2 lat. and scale	Measured lat. and scale	Expt. 2 lat. and scale	Measured lat. and scale	Mean
3.75 1.0	C' 3.53 7.0	3.7	3.6 5.0	3.8	1.97
4.45 05.05	C' 3.9 4.1	4.7	4.4 4.2	4.4 4.6	4.50 1.1
5.02 02.03	C' 4.9 5.1	4.9	5.0 5.0	5.0 5.0	3.82 6.8 7.0 7.0 0.0
5.76 02.41	C' 5.7 5.6	5.7	5.6 5.7	5.7 5.7	3.86 6.6 6.8 6.8 0.0
5.88 04.03	C' 5.8 5.7	5.9	5.8 5.7	5.8 5.7	4.08 7.7
6.18 05.09	d 6.0 6.2	6.0	6.1 6.2	6.2 6.2	9.0
6.72 13.12	e 6.7 6.9	6.8	6.5 6.7	6.6 6.7	9.9
7.32 08.07	f' 7.4	7.3	7.2 7.3	7.2 7.3	9.6
7.80 2.2	f'' 7.7	7.3			
8.20 0.0	f'' 8.2	8.2			
8.65 0.1	g 8.6	8.7			
8.85 1.0	h 8.9	8.8			
9.05 1.0	i 9.1	9.0			
9.50 0.0	k 9.5	9.5			
9.47 1.0	k' 9.3	9.6, 9.5			
9.95 1.0	k'' 9.9	10.0			
F	F	F			
10.10 1.0	k'' 10.1	10.1			
	l	10.1			

Images very poor.

A.D.H.

Wednesday, September 21, 1910.

## North Polar Sequence

I 36792, with and without screen of perforated tin.

Scale M

Mean		Exp. 3 with scale	Permeasured with scale		Permeasured with scale	Mean.
8.40 0° 0'	C'	8.4	8.4	197	10.1	10.05 10
8.75 0° 2'	C'	8.8	8.7	362	9.9	9.85 10
9.10 1° 2'	C'	9.2	9.0	386	9.9	9.85 10
9.33 2° 21'	C'	9.5	9.1, 9.4	488	no	no
9.60 1° 2'	C'	9.7	9.5			
9.75 0° 2'	d	9.8	9.7			
9.90 1° 0'	e	9.9	9.9			
10.10 0° 0'	f'	10.1	10.1			
						$\frac{+8}{-6}$ $\frac{20774}{\pm .061}$

0.17  
9.50 9.8

Wednesday, September 21, 1910.

## North Polar Sequence

I 36799 with and without screen of Perforated Tin.

0.18  
Scale M

Exp. 4 - Exp. 1		Exp. 1 with scale	Mean with scale	Exp. 4 with scale	Exp. 4 with scale	Exp. 1 with scale	Mean with scale	Exp. 4 with scale	Exp. 4 with scale	Exp. 4 - Exp. 1
20	C'	6.76 6.7	6.65 0.1	6.68 6.9	6.85 0.1	197	5.5	8.56 0.6 0.6	8.6	1
1	C'	7.5	7.54 0.03	7.6	7.57	225				
0	C'	7.7	7.68 0.02	7.7	7.67	207	2.27	8.6	8.62	
1	C'	7.8	7.84 0.04	7.9	7.88	362	3.4	8.4	8.4	
1	C'	8.1	7.94 0.06	7.9	7.88	386	3.2	8.15 0.05	8.1	1
0	d	8.0	8.00 0.01	8.0	7.99	408	3.8	8.84 0.04	8.8	0
3	e	8.6	8.45 0.15	8.3	8.3					
0	f'	8.7	8.71 0.04	8.7	8.72					
3	f'	9.3	9.17 0.13	9.4	9.34					
1	f'	9.5	9.28 0.22	9.4	9.27					
0	g	9.9	9.45 0.45	9.9	10.0					
.	h	F	10.1 0.1	10.0	10.11					
.	i		10.0	10.0	10.11					
.	k'									

$$\frac{+5}{-7}$$

$$\frac{14}{-0.3}$$

$$\frac{12}{9}$$

$$\frac{14}{-0.3}$$

Do not cover

Wednesday, September 21, 1910.

## North Polar Sequence.

I 36799, with and without screen of perforated tin.

Exp. 2, without screen.

Scale M

Mean	Exp. 2 with and without screen		Remeasured with and without screen		Exp. 2 with and without screen		Remeasured with and without screen		Mean
	with screen	without screen	with screen	without screen	with screen	without screen	with screen	without screen	
3.15 10	C	2.9.31	3.1.	3.0.82	3.2	1.97	6.8 6.2	6.0 6.10 12	5.9 <sup>61</sup> 6.6 very poor
3.70 11	C	3.4.06	2.6.	3.6.38	3.8	2		1.97	6.1.63 6.4
4.15 12	C	4.0.42	4.2.	3.9.41	4.1	3.62	5.5.7 5.9	5.80 11	5.7.69 5.8
4.30 12	C	4.2.44	4.4.	4.0.42	4.2	3.86	5.1.63 5.7	5.9.5.60 11	5.8.5.7
4.56 12.06	C	4.1.16 4.7.47	4.6.3	4.1.42 4.7	4.50.22	4.88	6.7.69 6.9	6.90 00	6.8.7.69
4.90 12.25	D	4.8.50 4.9	4.95.12	4.7.49 4.8	4.85.10	2.48	8.5		8.3
5.60 00.00	E	5.35.57	5.60.11	5.4.64	5.6	5.60.00	2.79	8.8	9.0
6.6.4	F	6.7.9 6.8	6.75.20	6.5.42 6.7	6.6.68	2.92	8.7	8.6	8.65 10
7.02 08.27	G	7.0.72 7.0	7.10.12	6.7.69 7.0	6.95.00				
7.70 12	H	7.8		7.6					
7.95 12	I	8.0		7.9					
8.10 12	J	8.2		8.0					
8.55 12	K	8.7		8.4					
8.80 11	L	8.7		8.9					
9.00 00	M	9.0		9.0					
9.20 00	N	9.2		9.2					
9.70 00	O	9.7		9.7					
9.75 10	P	9.7		9.8					
9.90 00	Q	9.9		9.9					
9.90 00	R	9.9		9.9					
10.05 10	S	10.1		10.0					
10.0 1	T	F		10.0 def.					
1.90 00	U	9.9		9.9					
10.15 12	V	10.2		10.1					

Images elongated and very difficult to measure.

A. S. H.

Wednesday, September 21, 1910.

## North Polar Sequence

I 36799, with and without screen of perforated tin.

Exp. 3, with screen.

Scale M

Mean	Exp. 3 with and without screen		Remeasured with and without screen		Exp. 3 with and without screen		Remeasured with and without screen		Mean
	with screen	without screen	with screen	without screen	with screen	without screen	with screen	without screen	
7.70 00	C	7.7	7.7		1.97	9.6	9.6		9.60 00
8.00 12	C	8.1	7.9		3.62	9.0	8.9		8.95 02
8.35 02	C	8.4	8.3		3.86	9.0	9.0		9.00 00
8.65 10	C	8.7	8.6		4.88	9.7	9.8, 9.6		9.53 221
8.80 12	C	8.9	8.7		2.48	8.8			
8.65 10	D	8.7	8.6						
9.10 12	E	9.2	9.0						
9.50 12	F	9.6	9.4						
9.80 00	G	9.8	9.8						
10.20 00	H	10.2	10.2						

Images elongated on this exposure in about the same degree as they are elongated on Exposure 2.

A. S. H.



Wednesday, September 21, 1910.

## North Polar Sequence

I 36881, with and without screen of perforated tin.

Scale M

Exp. 5 - Exp. 1	Exp. 1	mean	Exp. 5	mean	Exp. 5 - Exp. 1
	with scale	with scale	with scale	with scale	
20	C <sup>1</sup>	6.618 6.9 6.85 0.1	6.971 7.0 7.05 10	197 8.9 8.80 10 11 8.6 8.67	$\pm$
2	C <sup>2</sup>	7.5 7.44 0.05	7.3 7.29	362 8.4 8.20 10 11 8.1 8.17	$\pm$
2	C <sup>3</sup>	7.9 7.84 0.05	7.7 7.79	356 8.2 8.20 10 11 8.1 8.17	-
1	C <sup>4</sup>	7.8 7.80 0.02	7.9 7.89	408 9.0 8.80 10 11 8.7 8.77	$\pm$
1	C <sup>5</sup>	8.1 8.05 0.05	8.0 8.09		$\pm 5$
0	d	7.9 7.84 0.05	7.9 7.89		$\frac{-20}{-15}$
1	e	8.3 8.30 0.02	8.2 8.29		$\frac{-15}{-0.9}$
2	f <sup>1</sup>	8.7 8.64 0.05	8.5 8.59		
0	f <sup>2</sup>	9.0 8.94 0.05	9.0 8.99		
2	f <sup>3</sup>	9.6 9.54 0.05	9.4 9.49		
1	g	9.6 9.70 0.04	9.7 9.79		
1	h	9.9 9.90 0.02	10.0 10.09		
.	i	10.1 10.10 0.02	10.2		

Apply Cor.  $\frac{+0.9}{2} = +.04$  to Exp. 3

Remarks for both exposures:

Images small - difficult to measure.

Exposure 3, about 30", not measured. Length of exposure uncertain.

A. D. H.

Wednesday, September 21, 1910.

## North Polar Sequence

I 36801, with and without screen of perforated tin.

Exposure 2, without screen.

Scale M

mean	Exp. 2	mean	Exp. 2	mean	Exp. 2
	with scale	with scale	with scale	with scale	with scale
3.80 0.0	C <sup>1</sup>	3.6 3.8	3.8 3.8	3.8 3.8	197 5.9 6.2 6.15 10
4.15 1.0	C <sup>2</sup>	3.9 4.1	4.1 4.1	4.2 4.2	362 5.8 6.0 5.8 5.9 10
4.72 10 22	C <sup>3</sup>	4.7 4.7	4.6 4.6	4.6 4.6	376 5.7 5.9 5.8 5.8 10
4.92 05 22	C <sup>4</sup>	4.7 4.9	4.9 4.9	5.0 4.95 10	408 6.7 7.0 6.95 10
5.02 17 08	C <sup>5</sup>	4.8 5.0	4.9 4.9	5.0 5.0	424 7.0 7.0 7.0 7.0 10
5.60 10 05	d	5.3 5.5	5.6 5.6	5.5 5.5	448 7.9 8.0 7.9 7.9 10
5.88 12 02	e	5.7 5.7	5.8 5.8	5.7 5.7	470 8.0 8.0 8.0 8.0 10
6.60 20 20	f <sup>1</sup>	6.2 6.4	6.4 6.4	6.3 6.3	490 8.1 8.1 8.1 8.1 10
7.05 00 10	f <sup>2</sup>	6.9 7.1	7.0 7.0	7.0 7.0	510 8.2 8.2 8.2 8.2 10
7.55 5 12	f <sup>3</sup>	7.6 7.6	7.6 7.6	7.6 7.6	530 8.3 8.3 8.3 8.3 10
7.85 1 10	g	7.9 7.9	7.9 7.9	7.9 7.9	550 8.4 8.4 8.4 8.4 10
8.05 1 10	h	8.1 8.1	8.1 8.1	8.1 8.1	570 8.5 8.5 8.5 8.5 10
8.40 0 00	i	8.4 8.4	8.4 8.4	8.4 8.4	590 8.6 8.6 8.6 8.6 10
8.85 1 10	k <sup>1</sup>	8.9 8.9	8.9 8.9	8.9 8.9	610 8.7 8.7 8.7 8.7 10
8.75 2 10	k <sup>2</sup>	8.7 8.7	8.7 8.7	8.7 8.7	630 8.8 8.8 8.8 8.8 10
9.15 0 10	k <sup>3</sup>	9.2 9.2	9.2 9.2	9.2 9.2	650 8.9 8.9 8.9 8.9 10
9.65 0 10	k <sup>4</sup>	9.6 9.6	9.6 9.6	9.6 9.6	670 9.0 9.0 9.0 9.0 10
9.70 0 00	k <sup>5</sup>	9.7 9.7	9.7 9.7	9.7 9.7	690 9.1 9.1 9.1 9.1 10
9.6 0 10	l	9.6 9.6	9.6 9.6	9.6 9.6	710 9.2 9.2 9.2 9.2 10
9.80 0 00	m	9.8 9.8	9.8 9.8	9.8 9.8	730 9.3 9.3 9.3 9.3 10
10.10 0 00	n	10.1 10.1	10.1 10.1	10.1 10.1	750 9.4 9.4 9.4 9.4 10
10.00 0 00	o	10.0 10.0	10.0 10.0	10.0 10.0	770 9.5 9.5 9.5 9.5 10
10.00 0 00	p	10.0 10.0	10.0 10.0	10.0 10.0	790 9.6 9.6 9.6 9.6 10

Images much elongated.

A. D. H.

Wednesday, September 21, 1910.

## North Polar Sequence

I 36801, with and without screen of perforated tin.

Exposure 4 with screen.

2.42  
Scale M

Mean	Expt. 4 2nd scale	Measured 2nd scale	Expt. 4 2nd scale	Measured 2nd scale	Mean
7.60 .00	c <sup>1</sup> 7.6	7.6	197 9.4	9.2	9.50 ± 2
7.85 1.0	c <sup>2</sup> 7.9	7.8	362 9.0	9.0	9.50 .00
8.17 ± 1.0	c <sup>3</sup> 8.0	8.3, 8.2	386 8.9	9.0	8.95 ± 0
8.50 .00	c <sup>4</sup> 8.5	8.5	486 9.6	9.5	9.55 ± 0
8.70 .00	c <sup>5</sup> 8.7	8.7			
8.65 1.0	d 8.7	8.6			
8.95 ± 1.0	e 8.9	9.0			+4
9.50 .00	f 9.5	9.5			$\frac{-6}{2.9710}$
9.70 .00	f 9.7	9.7			±.134
10.10 .00	f 10.1	10.1			
	g 10.5				

Image elongated

3.05  
Q.S.H.

Wednesday, September 21, 1910. 81

## North Polar Sequence

I 36806, with and without screen of perforated tin.

Scale M

Expt. 4 - Expt. 1	Expt. 1 1st and 2nd scales	Mean 1st and 2nd scales	Expt. 4 2nd scale	Expt. 4 2nd scale	Expt. 1 1st and 2nd scales	Expt. 4 2nd scale	Expt. 1 1st and 2nd scales	Expt. 4 2nd scale
25	c <sup>1</sup> 6.9 7.1	7.0	7.05 ± 0	6.8	4.96	38.6 8.2	8.32 13.13 8.6	8.4 8.50 1.1 ± 30
10	c <sup>2</sup>	7.5	7.52 ± 0	7.4	7.52	40.8 8.9	8.44 14.0 9.1	8.47 20
20	c <sup>3</sup>	7.8	7.72 ± 0	7.6	7.67	197 8.8	8.62 15.0 8.5	8.43 30
10	c <sup>4</sup>	7.9	7.82 ± 0	8.0	8.01	36.2 8.3	8.82 ± 0 8.7	8.4 8.55 12.25 ± 5
10	c <sup>5</sup>	8.0	7.94 ± 0	7.9	7.92			+9
10	d	8.0	8.04 ± 0	8.1	8.01			-16
00	e	8.2	8.19 ± 0	8.2	8.18			15 - 7
10	f	8.7	8.72 ± 0	8.8	8.78			-8.5
	g	9.1	9.1 ± 0	9.1	9.1			+27
20	g	9.3	9.32 ± 0	9.5	9.30			+145
10	h	9.8	9.66 ± 0	9.7	9.52			15 - 145
20	h	9.9	9.80 ± 0	10.1	9.89			15 - 145
	i	10.5						+0.3
	k	10.5						

Apply No Correction to Expt. 3

Images on both exposures sharp, and difficult to measure.

Q.S.H.

Wednesday, September 21, 1910.

## North Polar Sequence

I 36806, with and without screen of perforated tin.

Scale M

Mean		Exp. 2		Remeasured		Exp. 2		Remeasured		Mean
		with screen	and scale	with screen	and scale	with screen	and scale	with screen	and scale	
3.80 12	c	3.79	3.9	3.537	3.7	3.7	6.7	6.8	6.8	6.8
4.05 10	c	3.9	4.1	3.8	4.0	3.62	6.2	6.5	6.45	6.45
4.52 02 22	c	4.6	4.8	4.85	4.6	4.8	4.8	5.8	6.0	5.8
4.92 08 27	c	4.9	5.1	5.0	4.6	4.8	4.8	6.8	6.9	6.8
5.35 05 05	c	5.1	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
5.86 02 04	d	5.8	5.5	5.3	5.4	5.33	5.1	5.6	5.4	5.4
5.90 02 00	e	5.8	6.0	5.8	5.9	5.8	5.9	5.8	5.9	5.8
6.80 02 00	f	6.6	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
7.28 12 23	g	7.0	7.2	7.4	7.3	7.3	7.3	7.3	7.3	7.3
7.75 02	g	7.8			7.7					
8.00 00	g	8.0			8.0					
8.45 01	h	8.4			8.5					
8.55 21	i	8.4			8.7					
8.95 02	k	9.0			8.9					
8.85 02	h	8.9			8.8					
9.50 00	k	9.5			9.5					
9.70 00	h	9.7			9.7					
	h	unfocused			10.1					
	h	film defective			g' film defective					
9.85 10	m	9.9			9.8					
10.20 00	m	10.2			10.2					
10.15 02	o	10.2			10.1					
	p				10.5					

A.D.H.

Wednesday, September 21, 1910.

## North Polar Sequence.

I 36506, with and without screen of perforated tin.

Scale M

Mean		Exp. 3		Remeasured		Exp. 3		Remeasured		Mean
		with screen	and scale	with screen	and scale	with screen	and scale	with screen	and scale	
7.70 12	c	7.8		7.6		197	9.7			9.8 9.75 ± 0
8.15 02	c	8.2		8.1		362	9.4			9.4 9.40 ± 0
8.50 21	c	8.4		8.6		386	9.5			9.5 9.50 ± 0
8.70 00	c	8.7		8.7		408	film defective			
8.80 00	c	8.8		8.8		408	9.8	near defective film	9.9	9.85 ± 0
8.90 00	d	8.9		8.9						
9.30 00	e	9.3		9.3						
9.70 00	f	9.7		9.7						
10.00 00	g	10.0		10.0						
	F									

Images on Exposures 2 and 3 are elongated in about the same degree.

4.36  
2.9.26





Monday, September 26, 1910.

## North Polar Sequence.

M.C. 558, With and without photographic screen

E 8337

Scale M

mean		Exp. 2 with scale	with screen	measured with scale	measured with scale	diff.	mean
6.68 ± 0.02	C	6.46 6.7	6.65 ± 0.1	6.56 6.7	6.70 ± 0.02	197	8.3
7.10 ± 0.05	C	6.9 7.1	7.20 7.15 ± 0.1	6.87 7.1	7.05 ± 0.1	225	9.4
7.27 ± 0.02	C	7.0		7.6 7.2		227	8.0
7.70 ± 0.0	C	7.7	$\frac{+1}{+2}$	7.7		312	8.3
7.65 ± 0.0	C	7.7	$\frac{+1}{+2}$	7.6	$\frac{+1}{+2}$	2025	8.1
7.90 ± 0.0	d	7.9		7.9		468	8.8
7.80 ± 0.0	e	7.8		7.8		248	9.9
8.75 ± 0.0	f	8.7	8.7	8.7	8.8	279	n.s.
9.05 ± 0.0	g	9.0		9.1		292	n.s.
9.60 ± 0.0	h	9.6		9.6			
9.85 ± 0.0	i	9.8		9.9			
10.15 ± 0.0	j	10.1		10.2			
9.90 ± 0.0	k	9.9		9.9			
	l	n.s.					
	m						
	n						
	o						
	p						
	q						
	r						
	s						
	t						
	u						
	v						
	w						
	x						
	y						
	z						

A. D. H.

Monday, September 26, 1910.

## North Polar Sequence.

M.C. 560, With and without photographic screen

E 8337

Scale M

Measured				Re-measured				
wt	nd	wt	nd	wt	nd	wt	nd	
scale	scale	scale	scale	scale	scale	scale	scale	Mean
4.80 ± 0	C	4.6 4.8	4.8 ± 0	4.6 4.8	4.8 ± 0	197	6.6 6.8 6.9	6.85 ± 0.1
4.92 ± 0.02	C	4.8 5.0 4.9	4.95 ± 0.1	4.7 4.9 4.9	4.9 ± 0.0	225	8.2	8.3
5.12 ± 0.02	C	4.9 5.1	5.15 ± 0.1	4.9 5.1	5.1 ± 0.0	227	6.4 6.6 6.2	6.40 ± 0.1
5.48 ± 0.02	C	5.3 5.5 5.5	5.50 ± 0.1	5.3 5.5 5.4	5.45 ± 0.1	362	6.4 6.6 6.6	6.60 ± 0.1
5.50 ± 0.0	C	5.2 5.4 5.6	5.50 ± 0.1	5.3 5.5 5.5	5.50 ± 0.1	386	6.5 6.5 6.5	6.50 ± 0.1
5.88 ± 0.02	C	5.8 6.0 5.8	5.90 ± 0.1	5.7 5.9 5.8	5.8 ± 0.1	468	6.8 7.0 7.0	7.00 ± 0.1
5.92 ± 0.02	C	5.8 6.0 5.9	5.95 ± 0.1	5.8 6.0 5.9	5.9 ± 0.1	248	8.6	8.7
6.60 ± 0.0	C	6.3 6.6 6.7	6.60 ± 0.1	6.3 6.6 6.7	6.60 ± 0.1	279	9.2	9.2
7.18 ± 0.02	C	7.0 7.2 7.2	7.20 ± 0.1	6.9 7.1 7.2	7.15 ± 0.1	292	8.9	8.9
7.90 ± 0.0	C	7.9		7.9				
8.10 ± 0.0	C	8.1		8.1				
8.50 ± 0.1	C	8.4		8.6				
8.40 ± 0.1	C	8.5		8.3			10.2	10.1
8.95 ± 0.0	C	8.9		9.0			10.3	
8.90 ± 0.0	C	8.9		8.9				
9.55 ± 0.1	C	9.6		9.5				
9.90 ± 0.0	C	9.9		9.9				
9.75 ± 0.1	C	9.8		9.7				
9.85 ± 0.1	C	9.8		9.7				
10.00 ± 0.1	C	10.1		9.9				
10.2 ± 0.2	C	n.s.		10.2				
	C	n.s.						

$$\frac{+16}{-127}$$

$$\frac{60}{243}$$

$$\pm 0.60$$

Monday, September 26, 1910.

North Polar Sequence.  
M C 560, north and without photoglyphic screen.

Scale M

Eclips. 2		Eclips. 2		Eclips. 2		Eclips. 2	
Mean	def.	c' def.	X	measured	nd scale	measured	nd scale
7.90 i <sup>1</sup>	c <sup>2</sup>	7.8	8.0	197	8.8	1.9	8.85 i <sup>1</sup>
7.95 i <sup>0</sup>	c <sup>2</sup>	7.9	8.0	225	10.0	10.0	10.00 i <sup>0</sup>
8.15 o <sup>2</sup>	c <sup>6</sup>	8.2	8.1	227	8.7	8.7	8.70 i <sup>0</sup>
8.25 i <sup>0</sup>	c <sup>1</sup>	8.3	8.2	262	8.8	8.8	8.80 i <sup>0</sup>
8.55 o <sup>2</sup>	d	8.6	8.5	286	8.6	8.7	8.65 o <sup>1</sup>
8.60 o <sup>0</sup>	e	8.6	8.6	288	9.6	9.5	9.55 o <sup>1</sup>
9.10 o <sup>0</sup>	f <sup>2</sup>	9.1	9.1				
9.70 o <sup>0</sup>	f <sup>2</sup>	9.7	9.7				
10.15 i <sup>0</sup>	f <sup>3</sup>	10.1	10.2				
F	F	F	F				

A.D.H.

Tuesday, September 25, 1910 89

North Polar Sequence.

3.15  
Scale from  
C 17493Measured to determine the brightness of  
Additional Stars.

M H 230

See Book XXVII, 297H

Eclips. 2		Eclips. 2		Eclips. 2		Eclips. 2	
Mean	def.	c' def.	X	measured	nd scale	measured	nd scale
7.90 i <sup>1</sup>	c <sup>2</sup>	7.8	8.0	197	8.8	1.9	8.85 i <sup>1</sup>
7.95 i <sup>0</sup>	c <sup>2</sup>	7.9	8.0	225	10.0	10.0	10.00 i <sup>0</sup>
8.15 o <sup>2</sup>	c <sup>6</sup>	8.2	8.1	227	8.7	8.7	8.70 i <sup>0</sup>
8.25 i <sup>0</sup>	c <sup>1</sup>	8.3	8.2	262	8.8	8.8	8.80 i <sup>0</sup>
8.55 o <sup>2</sup>	d	8.6	8.5	286	8.6	8.7	8.65 o <sup>1</sup>
8.60 o <sup>0</sup>	e	8.6	8.6	288	9.6	9.5	9.55 o <sup>1</sup>
9.10 o <sup>0</sup>	f <sup>2</sup>	9.1	9.1				
9.70 o <sup>0</sup>	f <sup>2</sup>	9.7	9.7				
10.15 i <sup>0</sup>	f <sup>3</sup>	10.1	10.2				
F	F	F	F				

A.D.H.





Wednesday, September 28, 1910.

## North Polar Sequence

Measures to determine brightness of Additional Stars

Scale P

MK 232

First set of images  
2nd scaleRemeasured  
2nd scale

Mean

in B&amp;V VIII, 21

Second set of images  
First meas.  
- mean

k <sup>5</sup>	5.9	5.9	5.90 ± 0.0	05
l	6.2	6.2	6.20 ± 0.0	20
m	5.9	6.1, 6.1	6.53 ± 0.1	08
n	7.0	6.9	6.95 ± 0.1	05
o	7.0	7.0	7.00 ± 0.0	05
p	7.5	7.6	7.55 ± 0.1	05
q	8.0	8.0	8.00 ± 0.0	05

n	6.7	6.7	6.70 ± 0.0	
n	6.8	6.8	6.80 ± 0.0	
o	6.7	6.8	6.75 ± 0.1	
p	7.1	7.2	7.15 ± 0.1	
q	7.7	7.8	7.75 ± 0.1	

$$\begin{array}{r} +2 \\ -6 \\ \hline 25/8 \\ \pm 0.32 \end{array}$$

Wednesday, September 28, 1910

## North Polar Sequence

Measures to determine brightness of Additional Stars

Scale P

MK 232

First set of images  
2nd scaleSecond set of images  
1st scale 2nd scaleRemeasured  
1st scale 2nd scale

Mean

First  
meas.  
- mean

00	k <sup>5</sup>	3.8	3.5	3.5 a.	k <sup>5</sup>	4.0	3.7	3.7 a.	3.60 ± 0.1	10		
00	l	3.9	3.6	3.6 a.	l	4.0	3.7	3.7 a.	3.65 ± 0.1	05		
65	m	4.6	4.3	4.4	4.35 ± 0.1	m	4.2	3.9	4.2, 4.65 ± 0.2	4.20 ± 0.15	50	
25	n	4.8	4.5	4.8	4.65 ± 0.2	n	4.9	4.6	4.60 ± 0.1	4.62 ± 0.03	22	
05	o	4.8	4.5	4.6	4.55 ± 0.1	o	4.6	4.3	4.5	4.40 ± 0.1	4.48 ± 0.03	02
05	p	5.6	5.3	5.6	5.45 ± 0.2	p	5.6	5.3	5.5	5.40 ± 0.1	5.42 ± 0.03	08
	q	nearly superfluous			q							

m	4.8	4.5	4.8	4.50 ± 0.1	m	4.2	4.5	4.8	4.55 ± 0.1	4.52 ± 0.03	03
n	4.9	4.6	4.8	4.70 ± 0.1	n	4.8	4.5	4.8	4.65 ± 0.1	4.68 ± 0.03	03
o	4.7	4.4	4.6	4.50 ± 0.1	o	4.6	4.3	4.7	4.54 ± 0.1	4.50 ± 0.03	00
p	5.2	4.9	4.9	4.90 ± 0.1	p	5.1	4.8	5.0	4.90 ± 0.1	4.90 ± 0.03	00
q	5.6	5.3	5.7	5.60 ± 0.1	q	5.7	5.4	5.7	5.55 ± 0.1	5.58 ± 0.03	00

$$\begin{array}{r} +6 \\ -6 \\ \hline 18/12 \\ \pm 0.67 \end{array}$$

$$\begin{array}{r} +10 \\ -10 \\ \hline 20/20 \\ \pm 1.00 \end{array}$$

$$\begin{array}{r} +5.5 \\ -4.5 \\ \hline 20/100 \\ \pm 0.45 \end{array}$$

Wednesday, September 28, 1910.

## North Polar Sequence

Measures to determine brightness of Additional Stars

M.H. 232

Scale P

First scales - Mean (on both sides, etc.)	Third set of images and scales Remeasured and scales Mean	Fourth set of images and scales Remeasured and scales Mean	First Mean
23	65 7.1 7.1 7.10 00	65 6.1 6.1 6.10 00	15
10	6 7.4 7.5 7.45 01	6 6.2 6.1 6.15 02	15
05	m 7.6 7.6 7.60 00	m 6.3 6.4 6.35 00	40
20	m 7.9 7.9 7.90 00	m 6.9 7.0 6.95 00	05
15	o 8.0 7.9 7.95 01	o exposed	
20	p 8.2 9.2 9.20 02	p 7.7 7.8 7.75 00	15
	g 8.2 9.2 9.20 02	g 8.1 8.2 8.15 00	20
	m' 7.7 7.8 7.75 00	m' 6.9 7.0 6.95 00	
	n' 8.0 8.1 8.05 01	n' 6.9 7.0 6.95 00	
	o' 7.9 7.9 7.90 00	o' 6.7 6.9 6.80 01	
	p' 8.2 8.2 8.20 00	p' 7.2 7.2 7.20 00	
	g' 9.3 9.8 9.30 00	g' 7.8 7.7 7.75 01	
	$\frac{+2}{-2}$ 20 4 ±.020	$\frac{+1}{-8}$ 22 9 ±.041	

4.22  
A.D.H.

Thursday, September 29, 1910.

## North Polar Sequence.

3.32

Scale M

M.C. 594, with and without screens of Superficial Ten.

Mean	First Off. with and without rate scale	Remeasured with and without rate scale	last and scale scale	Remeasured last and scale scale	Mean
5.10 05 05	C 4.760 5.1 5.05 01 4.95 01 5.15 01 197	4.4	7.8	7.8	7.67 27.46
5.90 05 05	C 5.759 5.9 5.90 00 5.86 00 5.90 00 225	8.9	8.9	8.90 00 00	
6.42 03 03	C 6.10 6.4 6.5 6.40 00 6.1 6.3 6.6 6.45 02 227	7.5	7.4	7.45 05 00	
6.72 03 03	C 6.75 6.7 6.8 6.75 01 6.75 01 6.8 6.75 01 262				
6.78 03 02	C 6.5 6.7 6.8 6.75 00 6.5 6.7 6.9 6.70 01 316	7.3	7.3	7.25 01 6.9 7.1	7.2 03 02
6.95 05 05	C 6.7 6.9 6.9 6.90 00 6.8 7.0 7.0 7.00 00 408	7.9	7.9	7.90 00 00	
7.18 03 02	C 6.9 7.1 7.2 7.15 00 7.0 7.2 7.2 7.20 00				
7.75 05 05	C 7.7 7.8 7.75 00 7.7 7.8 7.75 00				
8.15 05 05	C 8.1 8.2 8.15 00 8.1 8.2 8.15 00				
8.60 05 05	C 8.6 8.7 8.65 00 8.6 8.7 8.65 00				
9.00 05 05	C 9.0 9.1 9.05 00 9.0 9.1 9.05 00				
9.65 05 05	C 9.6 9.7 9.65 00 9.6 9.7 9.65 00				
9.80 05 05	C 9.8 9.9 9.85 00 9.8 9.9 9.85 00				
10.2 05 05	C 10.2 10.3 10.25 00 10.2 10.3 10.25 00				
9.85 05 05	C 9.8 9.9 9.85 00 9.8 9.9 9.85 00				

Images rather sharp.

A.D.H.



Thursday, September 29, 1910.

## North Polar Sequence

MC 594, with and without sun of Refracted Time.

Scale M

C<sub>1</sub>2nd Exp. with sun  
1st 2nd  
with with

Re-measured

Mean  
for 100.

	1st	2nd	Mean
C <sup>1</sup>	8.2	8.6	8.10 12
C <sup>2</sup>	8.7	8.8	8.75 10
C <sup>3</sup>	9.0	9.0	9.00 00
C <sup>4</sup>	9.2	9.1	9.15 02
C <sup>5</sup>	9.5	9.3	9.40 12
d	9.8	9.9	9.85 01
e	9.9	9.8	9.85 10
f <sup>1</sup>	n.s.		
f <sup>2</sup>			
f <sup>3</sup>			
f <sup>4</sup>			
f <sup>5</sup>			
f <sup>6</sup>			
f <sup>7</sup>			
f <sup>8</sup>			
f <sup>9</sup>			
f <sup>10</sup>			

197 n.s.

227

327 10.0 10.0 10.00 00

+

386 10.1 10.1 10.10 00

408

$$\begin{array}{r} +4 \\ -4 \\ 1075 \\ \hline \pm 044 \end{array}$$

3.59  
A.D. H.

Friday, September 30, 1910.

## North Polar Sequence

MC 595

2.44  
Scale M

Exposure 1

1st 2nd  
with with

	1st	2nd
C <sup>1</sup>	4.8	5.0
C <sup>2</sup>	5.7	5.8
C <sup>3</sup>	6.0, 6.2, 6.5, 6.3	
C <sup>4</sup>	6.5	6.7
C <sup>5</sup>	6.6	6.7
d	6.8	7.0
e	6.8	7.0
f <sup>1</sup>	7.8	
f <sup>2</sup>	8.6	
f <sup>3</sup>	9.0	
f <sup>4</sup>	9.6	
f <sup>5</sup>	9.9	
f <sup>6</sup>	9.9	
f <sup>7</sup>	n.s.	
f <sup>8</sup>	n.s.	
f <sup>9</sup>	n.s.	
f <sup>10</sup>	n.s.	

1st 2nd  
with with

197 7.8

225 6.9 9.5

227 6.9 7.3

386 7.0 7.4

408 8.2

248 n.s.

279 n.s.

292 n.s.

These measures were interrupted by visitors and could not be resumed on the same day. Repeat.

Friday, September 30, 1910 interrupted before  
beginning measure  
Monday, October 3, 1910.

## North Polar Sequence

Scale M

MC 595, with and without screen of perforated tin.

Mean		Exposure 1		Remeasured		at	2nd	Remeasured	Mean
		with screen	with screen	with screen	with screen			with screen	
5.10 .5 05	C <sup>1</sup>	48.49	5.3	5.2	41.50	5.1	05.11	197	8.0
5.92 12 03	C <sup>2</sup>	57.59	5.9	5.9	58.10	5.9	5.95	327	7.5
6.42 03 02	C <sup>3</sup>	62.64	6.5	6.45	61.6	6.6	6.56	386	7.3
6.58 07 13	C <sup>4</sup>	65.67	6.6	6.5	62.49	6.6	6.50	418	8.2
6.75 15 65	C <sup>5</sup>	67.69	6.7	6.80	65.67	6.7	6.70	225	9.3
7.02 03 02	C <sup>6</sup>	69.71	7.0	7.05	68.70	7.0	7.00	248	10.2
7.20 15 05	C <sup>7</sup>	69.71	7.2	7.15	70.72	7.3	7.25	292	+
7.90 00	C <sup>8</sup>	7.9		7.9				279	n.s.
8.50 11	C <sup>9</sup>	8.4	+5	8.6	+7				
9.10 00	C <sup>10</sup>	9.1	$\frac{-5}{1.170}$	9.1	$\frac{-6}{1.173}$				
9.60 00	C <sup>11</sup>	9.6	$\pm .012$	9.6	$\pm .081$				
9.90 00	C <sup>12</sup>	9.9		9.9					
9.90 00	C <sup>13</sup>	9.9		9.9					
	C <sup>14</sup>								
	C <sup>15</sup>								
	C <sup>16</sup>								

A.D.H.

Monday, October 3, 1910.

## North Polar Sequence

Scale M

MC 595, with and without screen of perforated tin.

Mean		Exposure 2		Mean
		with screen	with screen	
C <sup>1</sup> 9.2		9.3		9.25 .1
C <sup>2</sup> 9.8		9.8		9.80 .0
C <sup>3</sup> 10.1		10.1		10.10 .0
C <sup>4</sup> F				
C <sup>5</sup> F				
C <sup>6</sup> F				
C <sup>7</sup> F				
C <sup>8</sup> F				
C <sup>9</sup> F				
C <sup>10</sup> F				
C <sup>11</sup> F				
C <sup>12</sup> F				
C <sup>13</sup> F				
C <sup>14</sup> F				
C <sup>15</sup> F				
C <sup>16</sup> F				
C <sup>17</sup> F				
C <sup>18</sup> F				
C <sup>19</sup> F				
C <sup>20</sup> F				
C <sup>21</sup> F				
C <sup>22</sup> F				
C <sup>23</sup> F				
C <sup>24</sup> F				
C <sup>25</sup> F				
C <sup>26</sup> F				
C <sup>27</sup> F				
C <sup>28</sup> F				
C <sup>29</sup> F				
C <sup>30</sup> F				
C <sup>31</sup> F				
C <sup>32</sup> F				
C <sup>33</sup> F				
C <sup>34</sup> F				
C <sup>35</sup> F				
C <sup>36</sup> F				
C <sup>37</sup> F				
C <sup>38</sup> F				
C <sup>39</sup> F				
C <sup>40</sup> F				
C <sup>41</sup> F				
C <sup>42</sup> F				
C <sup>43</sup> F				
C <sup>44</sup> F				
C <sup>45</sup> F				
C <sup>46</sup> F				
C <sup>47</sup> F				
C <sup>48</sup> F				
C <sup>49</sup> F				
C <sup>50</sup> F				
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C <sup>67</sup> F				
C <sup>68</sup> F				
C <sup>69</sup> F				
C <sup>70</sup> F				
C <sup>71</sup> F				
C <sup>72</sup> F				
C <sup>73</sup> F				
C <sup>74</sup> F				
C <sup>75</sup> F				
C <sup>76</sup> F				
C <sup>77</sup> F				
C <sup>78</sup> F				
C <sup>79</sup> F				
C <sup>80</sup> F				
C <sup>81</sup> F				
C <sup>82</sup> F				
C <sup>83</sup> F				
C <sup>84</sup> F				
C <sup>85</sup> F				
C <sup>86</sup> F				
C <sup>87</sup> F				
C <sup>88</sup> F				
C <sup>89</sup> F				
C <sup>90</sup> F				
C <sup>91</sup> F				
C <sup>92</sup> F				
C <sup>93</sup> F				
C <sup>94</sup> F				
C <sup>95</sup> F				
C <sup>96</sup> F				
C <sup>97</sup> F				
C <sup>98</sup> F				
C <sup>99</sup> F				
C <sup>100</sup> F				

A.D.H.

Monday, October 3, 1910.

## North Polar Sequence.

Scale M		MC		593, with and without screen of perforated tin		593, with and without screen of perforated tin		593, with and without screen of perforated tin	
Mean		Exposure 1.		Re-measured		Re-measured		Mean	
		1st scale	2nd scale	1st scale	2nd scale	1st scale	2nd scale		
5.05 05 05	C	4.85 05 20	5.05 10	4.95 11	4.95 10	1.97	7.7	7.70 00	
5.95 10 10	C	5.8 6.0	5.9 5.95	5.8 6.0	5.9 5.95	2.25	8.9	8.90 00	
6.24 08 04	C	6.0 6.2	6.20 00	6.0 6.2	6.20 00	3.27	7.3	7.30 00	
6.54 08 08	C	6.0 6.1	6.1 6.48	6.0 6.1	6.1 6.48	3.86	7.3	7.30 00	
6.60 08 08	C	6.3 6.4	6.3 6.4	6.3 6.4	6.3 6.4	4.08	7.9	7.95 10	
6.92 02 03	C	6.7 6.9	6.9 7.0	6.7 6.9	6.9 7.0	4.28	7.7	7.70 00	
7.18 03 02	C	7.0 7.2	7.1 7.15	7.0 7.2	7.1 7.15	4.79	7.3	7.30 00	
7.80 00 00	C	7.8	7.8	7.8	7.8	4.92	9.9	9.90 00	
8.25 10 10	C	8.3	8.3	8.3	8.3	5.22	9.9	9.90 00	
8.75 02 02	C	8.8	8.8	8.8	8.8	5.71	9.9	9.90 00	
8.95 10 10	C	8.9	8.9	8.9	8.9	6.0	9.9	9.90 00	
9.20 10 10	C	9.1	9.1	9.1	9.1	6.4	9.9	9.90 00	
9.25 01 01	C	9.3	9.3	9.3	9.3	6.8	9.9	9.90 00	
10.05 10 10	C	10.1	10.1	10.1	10.1	7.2	9.9	9.90 00	
9.90 00 00	C	9.9	9.9	9.9	9.9	7.6	9.9	9.90 00	

A.D.H.

Monday, October 3, 1910.

## North Polar Sequence.

Scale M		MC		593, with and without screen of perforated tin.		593, with and without screen of perforated tin.		593, with and without screen of perforated tin.	
Mean		Exposure 2		Re-measured		Re-measured		Mean	
		1st scale	2nd scale	1st scale	2nd scale	1st scale	2nd scale		
5.05 05 05	C	7.9	8.0	7.9	8.0	1.97	7.7	7.70 00	
5.95 10 10	C	8.5	8.4	8.5	8.4	2.25	8.9	8.90 00	
6.24 08 04	C	8.7	8.7	8.7	8.7	3.27	7.3	7.30 00	
6.54 08 08	C	8.8	9.1, 9.0	8.8	9.1, 9.0	3.86	7.3	7.30 00	
6.60 08 08	C	8.9	8.9	8.9	8.9	4.08	7.9	7.95 10	
6.92 02 03	C	9.3	9.3	9.3	9.3	4.28	7.7	7.70 00	
7.18 03 02	C	9.6	9.6	9.6	9.6	4.79	7.3	7.30 00	
7.80 00 00	C	9.9	9.9	9.9	9.9	5.22	9.9	9.90 00	
8.25 10 10	C	9.9	9.9	9.9	9.9	5.71	9.9	9.90 00	
8.75 02 02	C	9.9	9.9	9.9	9.9	6.0	9.9	9.90 00	
8.95 10 10	C	9.9	9.9	9.9	9.9	6.4	9.9	9.90 00	
9.20 10 10	C	9.9	9.9	9.9	9.9	6.8	9.9	9.90 00	
9.25 01 01	C	9.9	9.9	9.9	9.9	7.2	9.9	9.90 00	
10.05 10 10	C	9.9	9.9	9.9	9.9	7.6	9.9	9.90 00	
9.90 00 00	C	9.9	9.9	9.9	9.9	8.0	9.9	9.90 00	

Images on second exposure are sharper than images on first exposure.

A.D.H.



Monday, October 3, 1910.

## North Polar Sequence.

Scale M MC 594, with and without screen of perforated tin.

p.p.	Mean	Efficiency %		(without screen)		Re-measured		Mean	p.p.
		with screen	without screen	with screen	without screen	with screen	without screen		
510	5.05 02 05	c	4.7 49	5.1 50 01	4.9 51	5.1 50 01	197	7.8	7.9
570	5.92 02 03	c	5.7 49	5.9 59 00	5.8 60	5.9 59 00	225	8.9	8.9
642	6.34 01 02	c	6.1 63	6.4 63 50	6.2 60	6.4 63 50	227	7.3	7.4
672	6.65 10 02	c	6.6 68	6.7 67 50	6.3 65	6.6 65 50	266	7.4	7.4
678	6.75 05 05	c	6.7 69	6.7 67 50	6.5 67	6.7 67 50	408	7.9	7.9
675	6.95 02 02	d	6.8 70	6.9 65 02	6.8 70	6.9 65 02	248	9.7	9.8
718	7.10 00 00	e	6.9 71	7.1 70 00	6.9 71	7.1 70 00	292	9.9	9.9
775	7.65 10	f	7.7	7.6	277				
815	8.05 10	g	8.1	8.0					
860	8.80 02 02	h	8.6	8.9, 8.9	Mean. (sump. 0.01)				
900	9.10 02	g	9.0	9.2	c	5.08 02 02			
965	9.70 01	h	9.7	9.7	c	5.91 01 01			
970	9.25 01	i	9.2	9.3	c	6.38 04 04			
102	10.05 01	k	10.0	10.1	c	6.68 04 03			
985	9.90 00	k	9.9	9.9	c	6.76 02 01	197	7.6	7.9
		k			d	6.95 02 00	225	8.9	00 00
					e	7.14 04 04	227	7.4	05 05
					f	7.70 05 05	386	7.3	09 09
					g	8.10 05 05	408	7.6	00 00
					h	8.70 10 10	248	9.7	00
					i	9.05 05 05	292	9.9	00
					j	9.68 02 02			
					k	9.22 02 03			
					k	10.12 08 07			
					k	9.88 03 03			

A.D.H.

Monday, October 3, 1910.

## North Polar Sequence

Scale M MC 594, with and without screen of perforated tin.

Efficiency %	with screen	without screen	Mean	p.p.	Mean
c	8.1	8.2	8.15	10	8.10 8.12 03 02
c	8.9	8.8	8.85	10	8.75 8.80 05 05
c	9.0	9.1	9.05	01	9.00 9.02 03 02
c	9.2	9.1	9.15	02	9.15 9.15 00 00
c	9.3	9.3	9.30	00	9.40 9.35 05 05
d	9.8	9.8	9.80	00	9.85 9.82 02 03
e	10.0	9.9	9.95	02	9.85 9.90 05 05
f		10.1	10.17	02	10.10

1977	= 3.	n.s.			
235					
287	10.0	10.0	10.00	00	10.00 10.00 00 00
385	10.1	10.1	10.10	00	10.10 10.10 00 00
406					

197 0.01

235

227 10.0

386 10.1

408

$$+2$$

$$\frac{10.1}{10.15}$$

$$\pm 0.048$$

A.D.H.

Monday, October 3, 1910.

## North Polar Sequence.

Scale M m C 596, with and without series of perforated tin.

Mean	Exposure 2		without series		Remeasured		Mean
	1st scale	2nd scale	1st scale	2nd scale	1st scale	2nd scale	
5.00 05 05 c	4.749	5.049510	4.951	5.050510	197	7.7	7.70 00
5.00 00 00 c	5.608	5.851010	5.608	5.850510	225	8.9	5.90 00
6.24 04 05 c	6.740	6.563638	5.961	6.862010	227	7.4	7.40 00
6.48 02 03 c	6.163	6.661660	6.264	6.564511	286	7.2	7.20 00
6.64 01 02 c	6.567	6.7	6.700	6.563676	428	8.0	7.95 01
6.92 02 00 d	6.769	6.9	6.900	6.870	6.9	9.5	9.55 10
7.12 03 02 e	7.072	7.1	7.150	6.971	71	7.1010	10.10 00
7.70 00 f	7.7		7.7	272	9.7	9.7	9.70 00
8.20 11 f	8.0	+4	8.1	+5			
8.75 01 f	8.8	$\frac{18}{11}$	8.7	$\frac{5}{10}$			
8.95 10 g	8.9	$\pm 0.01$	9.0	$\pm 0.02$			
9.20 00 h	9.2		9.2				
9.40 00 i	9.4		9.4				
9.95 10 k	9.9		10.0				
9.50 00 k	9.5		9.8				
10.15 10 k	10.1		10.2?				

a.D.H.

Monday, October 3, 1910.

## North Polar Sequence.

Scale M m C 596, with and without series of perforated tin.

Mean	Exposure 1		Remeasured		Mean
	1st scale	2nd scale	1st scale	2nd scale	
c	7.3		7.4		7.55 10
c	7.9		7.7		7.50 11
c	8.0		8.0		8.50 00
c	8.2		8.0		8.10 12
c	8.2		8.1		8.15 01
d	8.6		8.6		8.60 00
e	8.8		8.8		8.80 00
f	9.0		9.1		9.05 01
f	9.5		9.5		9.80 00
f	10.1		10.1		10.10 00
g					
h					
i					

197	9.2	9.3	9.25 01
225	10.1	10.2	10.15 10
227	8.5	8.8	8.80 00
286	8.9	8.9	8.90 00
408	9.8	9.7	9.75 12
248			

a.D.H.

$$\begin{array}{r} +4 \\ -5 \\ \hline 30/10 \\ \pm 0.33 \end{array}$$







Tuesday, October 4, 1910

## North Polar Sequence

Scale M M C 612 with and without screen of fine wire gauge

Exposure	scale	without screen	Mean
C <sup>1</sup>	4.3 45	4.8 47	4.74
C <sup>2</sup>	4.8 50	5.2 50 11	5.20
C <sup>3</sup>	5.5 57	5.6 58 10	5.70
C <sup>4</sup>	5.7 59	6.1 60 11	6.00
C <sup>5</sup>	5.8 60	6.2 61 11	6.12
C <sup>6</sup>	6.4 66	6.7 66 01	6.72
C <sup>7</sup>	6.8 70	6.9 68 01	6.78
C <sup>8</sup>	7.6	7.7	7.65
C <sup>9</sup>	8.2	8.3	8.25
C <sup>10</sup>	8.9	8.7	8.80
C <sup>11</sup>	9.3	9.2	9.25
C <sup>12</sup>	9.3	9.3	9.30
C <sup>13</sup>	9.3	9.4	9.35
C <sup>14</sup>	10.1	10.1	10.10
C <sup>15</sup>	9.9	10.1	10.00
C <sup>16</sup>	11.5	11.5	11.50
C <sup>17</sup>	7.7	7.7	7.70
C <sup>18</sup>	9.0	9.0	9.00
C <sup>19</sup>	6.9 71	6.9 70 11	7.00
C <sup>20</sup>	6.9 71	7.0 70 10	7.05
C <sup>21</sup>	7.9	7.9	7.90
C <sup>22</sup>	defective	defective	
C <sup>23</sup>	11.5	11.5	11.50
C <sup>24</sup>	10.6	10.6	10.60

Tuesday, October 4, 1910

## North Polar Sequence

Scale M M C 612 with and without screen of fine wire gauge

Exposure	scale	with screen	Mean
C <sup>1</sup>	7.9 81	8.0	7.95
C <sup>2</sup>	8.7 84	8.6	8.65
C <sup>3</sup>	8.8 80	8.8	8.80
C <sup>4</sup>	9.0 87	9.0	9.00
C <sup>5</sup>	9.1 81	8.9	8.90
C <sup>6</sup>	9.6 88	9.5	9.55
C <sup>7</sup>	9.6 88	9.6	9.60
C <sup>8</sup>	10.1	10.1	10.10
C <sup>9</sup>	10.1	10.1	10.10
C <sup>10</sup>	10.1	10.1	10.10
C <sup>11</sup>	10.1	10.1	10.10
C <sup>12</sup>	10.1	10.1	10.10
C <sup>13</sup>	10.1	10.1	10.10
C <sup>14</sup>	10.1	10.1	10.10
C <sup>15</sup>	10.1	10.1	10.10
C <sup>16</sup>	10.1	10.1	10.10
C <sup>17</sup>	10.1	10.1	10.10
C <sup>18</sup>	10.1	10.1	10.10
C <sup>19</sup>	10.1	10.1	10.10
C <sup>20</sup>	10.1	10.1	10.10
C <sup>21</sup>	10.1	10.1	10.10
C <sup>22</sup>	10.1	10.1	10.10
C <sup>23</sup>	10.1	10.1	10.10
C <sup>24</sup>	10.1	10.1	10.10

Tuesday, October 4, 1910

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## North Polar Sequence

Scale M M 6.13 with + without screen of fine wire gauge

	Exposure 1			without screen		Mean
	1st scale	2nd scale	100 scale	2nd scale (unexposed)	Mean	
c <sup>1</sup>	4.6 4.8	4.8 <sup>46</sup> / <sub>100</sub>	4.5 4.7	4.8	4.75 10	4.78 02 03
c <sup>2</sup>	5.4 5.6	5.6 <sup>54</sup> / <sub>100</sub>	5.4 5.6	5.6	5.60 00	5.60 00 00
c <sup>3</sup>	5.7 5.9	5.8 <sup>58</sup> / <sub>100</sub>	5.7 5.9	5.9	5.90 00	5.88 03 02
c <sup>6</sup>	5.9 6.1	6.0 <sup>60</sup> / <sub>100</sub>	6.0 6.2	6.3	6.25 01	6.28 02 03
c <sup>7</sup>	6.0 6.2	6.1 <sup>61</sup> / <sub>100</sub>	6.1 6.2	6.2	6.20 00	6.15 05 00
d	6.6 6.8	6.7 <sup>67</sup> / <sub>100</sub>	6.7 6.9	6.9	6.90 00	6.85 05 05
e	6.9 7.1	7.0 <sup>70</sup> / <sub>100</sub>	7.0 7.2	6.9	6.95 01	7.00 05 05
f <sup>1</sup>		7.6		7.7	7.65 01	
f <sup>2</sup>		8.1		8.3	8.20 11	
f <sup>3</sup>		8.8		8.8	8.80 00	
g		9.1		9.0	9.05 10	
h		9.5		9.5	9.50 00	
i		9.5		9.5	9.50 00	
k <sup>1</sup>		10.1		10.1	10.10 00	
k <sup>2</sup>		10.1		10.0	10.05 10	
k <sup>3</sup>		11.0		f.		
197 t.f		7.6 t.f		7.7	7.65 01	
225		9.1		9.1	9.10 00	
227 6.9 7.1		7.0 <sup>70</sup> / <sub>100</sub>	6.9 7.1	7.1	7.10 00	7.08 03 02
226 7.0 7.2		7.2 <sup>72</sup> / <sub>100</sub>	7.0 7.2	7.2	7.20 00	7.20 00 00
408		8.0		8.1	8.05 01	
248	<sup>+6</sup> / <sub>3</sub>	9.7		9.8	9.75 10	
279	19.77	11.5		11.5	11.50 00	
292	<sup>+6</sup> / <sub>3</sub>	9.9		9.9	9.90 00	

$$\begin{array}{r}
 + 83 \\
 44 \overline{) 138} \\
 \underline{88} \\
 50
 \end{array}$$

Tuesday, October 4, 1910

Copied

## North Polar Sequence

Scale M M 6.13 with + without screen of fine wire gauge

	Exposure 2			Mean	Scale B fine wire gauge one objective
	1st scale	2nd scale	unexposed		
c <sup>1</sup>	8.2	8.2		8.20 00	
c <sup>2</sup>	8.8	8.9		8.85 01	
c <sup>3</sup>	9.0	9.1		9.05 01	
c <sup>6</sup>	9.3	9.3		9.30 00	
c <sup>7</sup>	9.1	9.2		9.15 10	
d	9.7	9.7		9.70 00	
e	9.9	9.9		9.90 00	
f <sup>1</sup>	n.s.	F			
f <sup>2</sup>					
f <sup>3</sup>					
g					
h					
i					
k <sup>1</sup>					
k <sup>2</sup>					
k <sup>3</sup>					
197 10.1		10.2		10.15 10	
225					
227 9.7		9.8		9.75 10	
226 10.0		10.1		10.05 01	
408	n.s.	n.s.			
248					
279					
292					

$$\begin{array}{r}
 + 4 \\
 20 \overline{) 80} \\
 \underline{40} \\
 40
 \end{array}$$



Friday, October 7, 1910

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale P.

M H 235

For First Measure, see Book XXII, 213, 214

First set of images  
1st and  
scale scaleRe-measured  
1st and  
scale scale

Mean

Foot  
mean  
- mean

k <sup>s</sup>	6.158 5.9 5.85 0.1	6.0 5.9 5.9	5.80 1.1	5.82 0.0 0.2 23
l	6.26 5.9 5.95 0.2	6.2 5.9 6.1	6.00 2.1	5.98 0.2 0.2 07
m	6.26 6.1 6.05 0.1	6.5 6.2 6.1	6.15 0.2	6.10 1.5 0.5 30
n	6.26 5.6 6.1 6.60 2.1	6.1 <sup>4.6</sup> 6.6 6.9 6.7	6.62 2.35 1	6.61 0.1 0.1 11
o	6.26 5.8 6.65 2.2	6.9 6.6 6.9	6.75 2.1	6.70 0.5 0.5 15
p	7.6 7.6 .a	7.4 7.4 .a	7.50 1.2 0.5	
g	7.0 7.0 .a	7.9 7.9 .a	7.95 0.2 0.0	

m'	6.7 6.4 6.7 6.55 2.1	6.6 6.3 6.7	6.50 2.2	6.52 0.2 0.2
n'	6.7 6.5 6.7 6.65 2.2	6.7 6.6 6.8	6.70 2.1	6.68 0.3 0.2
o'	6.7 6.5 6.7 6.65 2.2	6.8 6.5 6.7	6.60 2.1	6.62 0.3 0.2
p'	7.2 7.2 .a	7.0 7.0 .a	7.10 1.2	
g'	7.6 7.6 .a	7.7 7.7 .a	7.65 0.1	

$$\begin{array}{r} +10 \\ -7 \\ \hline 16777 \\ \pm 106 \end{array}$$

$$\begin{array}{r} +11 \\ -12 \\ \hline 18723 \\ \pm 128 \end{array}$$

$$\begin{array}{r} +54 \\ -53 \\ \hline 24707 \\ \pm 095 \end{array}$$

a.d.h.

Friday, October 7, 1910

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale P

M H 235

Second set of images  
1st and  
scale scaleRe-measured  
1st and  
scale scale

Mean

Foot  
mean  
- mean

k <sup>s</sup>	4.0 3.7 . 3.7 a.	4.3 4.1 .	4.0 a.	3.85 1.2 10
l	4.7 4.4 . 4.4 a.	4.6 4.3 .	4.3 a.	4.35 0.2 15
m	4.7 4.4 . 4.4 a.	4.6 <sup>4.3</sup> 4.7 4.4 4.37 1.00	4.38 0.2 0.2 18	
n	4.9 4.7 4.8 4.75 1.0	4.9 4.6 4.7	4.65 0.1	4.70 0.5 0.5 10
o	4.8 4.5 4.6 4.55 1.0	4.9 4.6 4.7	4.65 0.1	4.60 0.5 0.5 05
p	5.6 5.8 5.5 5.40 1.1	5.6 5.3 5.4	5.35 1.0	5.38 0.2 0.2 03
g	5.9 5.6 5.7 5.70 1.1	5.8 5.5 5.8	5.65 1.2	5.68 0.2 0.2 07

m'	4.7 4.4 4.6 4.50 1.1	4.8 4.5 4.5	4.50 0.2	4.50 0.2 0.0
n'	4.9 4.6 4.7 4.65 0.1	4.9 4.6 4.8	4.70 1.1	4.68 0.3 0.2
o'	4.9 4.6 4.7 4.65 0.1	4.9 4.6 4.8	4.70 1.1	4.68 0.3 0.2
p'	5.2 4.9 4.9 4.90 1.0	5.0 4.7 4.9	4.70 1.1	4.85 0.5 0.5
g'	5.7 5.4 5.4 5.40 1.0	5.7 5.4 5.8	5.60 1.2	5.60 0.2 0.0

$$\begin{array}{r} +5 \\ -6 \\ \hline 19706 \\ \pm 056 \end{array}$$

$$\begin{array}{r} +9 \\ -8 \\ \hline 2177 \\ \pm 081 \end{array}$$

$$\begin{array}{r} +55 \\ -58 \\ \hline 24713 \\ \pm 047 \end{array}$$

a.d.h.

Friday, October 7, 1910.

## North Polar Sequence

measured to determine brightness of Additional Stars

Scale P

M<sub>H</sub> 235

Third set of images

Re-measured

First meas.  
- mean

1st scale	2nd scale	Mean	
k <sup>5</sup> 7.6	7.6	7.60 00	00
l 7.7	7.7	7.70 00	05
m 7.8	7.7	7.70 00	10
n 7.3	7.3	7.30 00	40
o 7.4	7.3	7.35 01	30
p 7.2	7.2	7.20 00	10
q F	ns.		
rd 8.1	8.2	8.15 10	
re 8.6	8.7	8.70 11	
rf 8.3	8.2	8.25 10	
rg 8.6	8.6	8.60 00	
g' F	F		

$$\frac{+2}{-3} \\ 20 \overline{) 5} \\ \pm 0.25$$

All measures are uncertain.

Friday, October 7, 1910.

## North Polar Sequence

measured to determine brightness of Additional Stars

Scale P

M<sub>H</sub> 235

Fourth set of images

Re-measured

Third meas.

1st scale	2nd scale	Mean		Mean	- Mean
k <sup>5</sup> 6.4 6.1 6.1	6.10 00	6.2 5.9 6.0 5.95 10	6.02 08 07	13	
l 6.5 6.2 6.3	6.25 01	6.5 6.2 6.2 6.20 00	6.22 03 03	08	
m 6.6 6.3 6.7	6.50 22	6.4 6.1 6.3 6.20 11	6.35 15 05	00	
n 7.0 6.7 6.7	6.85 12	7.0 6.7 7.1 7.0 6.7 7.1 7.0 6.7 7.1	6.89 04 04	16	
o 7.1	7.1 .a	7.3 7.3 .a	7.20 1 m 1	15	
p 7.9	7.9 .a	7.9 7.9 .a	7.90 0 0	00	
q 8.5?	8.5? .a	8.8 8.8 .a	8.65 1 2	25	
rd 6.9 6.6 6.6	6.60 00	6.7 6.7 6.9 6.9 6.9 6.9 6.9 6.9	6.65 05 05		
re 7.1	7.1 .a	6.9 6.9 .a	7.00 1 2		
rf 6.9	6.9 .a	7.0 7.0 .a	6.95 1 0		
rg 7.7	7.7 .a	7.4 7.4 .a	7.65 1 2		
g' 8.0	8.0 .a	7.9 7.9 .a	7.95 1 2		

$$\frac{+5}{-3} \\ 10 \overline{) 8} \\ \pm 0.80$$

$$\frac{+8}{-8} \\ 13 \overline{) 16} \\ \pm 1.20$$

$$\frac{+85}{-1343} \\ 24 \overline{) 184} \\ \pm 0.75$$

A. D. W.

Friday, October 7, 1910.

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale P

M 8 196

No.	First set of image. 1st and 2nd scale scale	Remeasured 1st and 2nd scale scale	Mean
43	<del>46</del> 46 41.2	5.1 4.8 5.0 4.9 21	4.75 15 15
44	5.0 4.7 4.9 4.8 21	4.9 4.6 4.8 4.7 21	4.75 05 05
45	<sup>4.9 5.0</sup> 4.7 5.0 5.0 4.9 21	5.6 5.2 5.1 5.2 12	5.05 15 15
47	<sup>5.0</sup> 5.0 5.7 5.2 5.5 22	5.7 5.4 5.7 5.5 21	5.52 22 22
48	5.5 5.2 5.9 5.5 23	5.7 5.4 5.1 5.2 21	5.40 15 15
51	6.5 6.2 6.3 6.25 21	6.4 6.1 6.1 6.1 20	6.18 07 08
53	6.7 6.4 6.8 6.6 22	6.7 6.8 6.8 6.8 20	6.70 12 20
	<sup>6.0</sup> 5.7 5.4 5.8 5.6 22	5.8 5.7 5.8 5.75 10	5.68 21 07
49	5.9 5.6 5.9 5.75 21	6.0 5.9 5.9 5.8 21	5.78 02 02
46	5.7 5.4 5.6 5.5 21	6.0 5.7 5.8 5.75 10	5.62 12 13
50	6.0 5.7 6.0 5.85 12	6.0 5.7 6.0 5.85 12	5.85 20 20
52	6.7 6.4 6.8 6.6 22	6.7 6.4 6.7 6.55 21	6.58 02 02

$$\begin{array}{r} +22 \\ -22 \\ 24 \overline{) 44} \\ \pm .183 \end{array}$$

$$\begin{array}{r} +10 \\ -12 \\ 24 \overline{) 22} \\ \pm .100 \end{array}$$

$$\begin{array}{r} +94 \\ -96 \\ 24 \overline{) 190} \\ \pm .079 \end{array}$$

Measures very uncertain - image not comparable with probe.

A. D. H.

Friday, October 7, 1910.

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale P

M 8 196

No.	Second set of image. 1st and 2nd scale scale	Remeasured 1st and 2nd scale scale	Mean
45	<sup>5.1 5.0</sup> 5.4 5.1 4.9 5.0 21	5.3 5.0 5.0 5.0 20	5.02 22 22
44	<sup>5.1 5.0</sup> 5.4 5.1 4.9 5.0 21	5.4 5.1 4.9 5.0 21	5.02 22 22
47	<sup>5.4 5.5</sup> 5.6 5.3 5.5 5.4 21	5.7 5.4 5.6 5.5 21	5.45 25 25
48	<sup>5.4 5.5</sup> 5.7 5.4 5.8 5.6 22	5.7 5.4 5.8 5.6 22	5.61 21 21
51	<sup>6.7</sup> 6.7 6.4 6.5 6.45 21	5.7 5.6 5.9 5.75 21	5.72 22 23
53	<sup>6.7</sup> 6.7 6.6 6.8 6.7 21	6.7 6.4 6.5 6.45 21	6.30 15 15
	<sup>6.7</sup> 6.7 6.6 6.8 6.7 21	6.7 6.6 6.8 6.7 21	6.65 25 25
49	5.9 5.6 5.8 5.7 21	5.9 5.6 5.9 5.75 21	5.72 22 23
46	6.0 5.7 6.1 5.9 22	6.4 6.1 6.1 6.1 20	6.00 22 10
50	5.9 5.6 5.8 5.7 21	5.9 5.6 5.8 5.7 21	5.70 22 22
52	6.0 5.7 5.9 5.8 21	6.1 5.8 6.0 5.9 21	5.85 05 05
	6.7 6.6 6.8 6.65 22	6.7 6.6 6.7 6.65 21	6.65 22 22

$$\begin{array}{r} +17 \\ -15 \\ 24 \overline{) 32} \\ \pm .114 \end{array}$$

$$\begin{array}{r} +11 \\ -11 \\ 24 \overline{) 22} \\ \pm .092 \end{array}$$

$$\begin{array}{r} +58 \\ -47 \\ 24 \overline{) 97} \\ \pm .040 \end{array}$$

A. D. H.



Friday, October 7, 1910.

Scale P. Measures  
m H 200m H 196 Third at 1/2 major  
2nd  
scale

none seen

First  
not  
seenh<sup>c</sup>

Saturday, October 8, 1910

Measures with gauge to determine  
thickness of wire used in covers of  
fine wire gauge.

Wire A

Wire B

0028

0026

0028

0037

0028

0037

0028

0036

0028

0037

0028

0036

0028

0037

0028

0037

0028

0037

0028

0036

0.0028 in.

366

0.0037 in.

Saturday, October 8, 1910.

## Fourth Polar Sequence.

Measurements determine brightness of Additional Stars

M H 200

Scale from  
C 17493

First set of images 1st scale 2nd scale	Second set of images 1st scale 2nd scale	Mean
h <sup>5</sup> 13.2	h <sup>5</sup> 4.7 4.8	4.75 10
l 4p	l 4.9 5.3, 5.0	5.07 22
m F	m 5.7 5.7	5.70 00
n	n 5.8 5.8	5.80 00
r	any four r 5.1 5.4	5.25 12
p	p 6.0 6.0	6.00 00
g	any four g 7.2 7.2	7.20 00
m' 20.0	m' 5.5 5.8, 5.4	5.67 210
n'	n' 6.0 6.0	6.00 00
r'	r' 5.7 5.8	5.75 10
p'	p' 6.0 6.0	6.10 11
g'	g' 7.2 7.2	7.20 00

$$\begin{array}{r} +6 \\ -9 \\ 26 \end{array} \bigg/ 15 \\ \pm 0.58$$

A. S. W.

Saturday, October 8, 1910.

## North Polar Sequence.

Measurements determine brightness of Additional Stars

M H 204

For First measure, see BARKER, 162, 163

Scale P

First set of images 1st scale 2nd scale	Second set of images 1st scale 2nd scale	Mean	First set - mean
h <sup>5</sup> 5.4 5.1 4.9 5.0 21	4.9 4.6 4.9 4.7 5.2 1	4.88 12 13	23
l 5.6 5.3 5.5 5.4 21	5.5 5.2 5.5 5.3 5.2 1	5.38 12 13	36
m 6.0 5.7 5.6 5.6 10	5.7 5.4 5.5 5.4 5.0 1	5.55 10 12	03
n 5.9 5.6 5.8 5.7 21	5.8 5.5 5.6 5.5 5.1 0	5.62 08 07	08
r 5.8 5.5 5.8 5.6 12	5.7 5.4 5.7 5.5 5.2 1	5.60 15 25	25
p 6.5 6.1 6.6 6.7 6.4 31 12	6.0 6.3 6.1 6.2 0 12	6.34 14 14	14
g 7.0 6.7 6.8 6.7 5 10	6.7 6.6 6.8 6.7 0 11	6.72 03 22	22
m 6.0 5.7 5.8 5.7 10	5.7 5.5 5.7 5.6 0 11	5.68 07 18	
n 6.2 6.0 6.2 6.0 11	6.6 6.3 6.1 6.2 0 12	6.15 05 05	
r 6.1 5.8 6.0 5.9 21	5.9 5.6 6.0 5.8 0 12	5.85 06 25	
p 6.3 6.1 6.2 6.5 6.3 21 12	6.7 6.7 6.0 6.5 6.3 21 12	6.48 17 15	
g 7.0 7.0 7.0 2	6.9 6.9 6.9 2	6.95 0 12	

$$\begin{array}{r} +16 \\ -15 \\ 26 \end{array} \bigg/ 31 \\ \pm 1.19$$

$$\begin{array}{r} +14 \\ -16 \\ 27 \end{array} \bigg/ 30 \\ \pm 12.5$$

$$\begin{array}{r} +88 \\ -98 \\ 24 \end{array} \bigg/ 78 \\ \pm 0.78$$

Measurements very doubtful; images poor; difficult to compare.

A. S. W.

Saturday, October 8, 1910.

## North Polar Sequence

Measures to determine brightness of additional stars.

Scale P

M H 224

	Third list of magnitudes 1st and 2nd scales	Re-measured 1st and 2nd scales	Mean.	First mean - Mean
k <sup>5</sup>	5.0 <sup>47 48</sup> 5.2 4.9 4.9 2.130	5.0 4.7 4.8 4.75 1.0	4.82 08 08	12
l	5.7 5.1 5.2 5.30 1.2	5.5 5.2 5.0 5.10 1.1	5.20 10 12	20
m	5.7 5.1 5.8 5.70 1.1	5.8 5.5 5.7 5.60 1.1	5.65 08 05	10
n	5.9 5.6 5.9 5.75 2.1	5.9 5.6 5.8 5.70 1.1	5.72 03 02	03
o	5.7 5.8 5.7 5.85 2.1	5.6 5.3 5.5 5.40 1.1	5.548 07 02	07
f	6.4 <sup>6.1 6.0</sup> 6.5 6.46.32 2.021	6.5 6.2 6.1 6.15 0.2	6.24 08 01	07
g	6.9 6.6 6.7 6.65 0.1	6.9 6.6 6.7 6.65 0.1	6.65 00 00	15
ni	6.0 5.7 6.0 5.85 1.2	6.0 5.7 5.6 5.65 1.0	5.75 10 12	
o	6.2 <sup>6.1 6.0</sup> 6.5 6.22 3.013	6.1 5.8 6.1 5.95 2.1	6.08 08 12	
2	6.0 5.7 5.9 5.80 1.1	6.0 5.7 6.0 5.85 1.2	5.82 02 03	
f	6.6 6.3 6.4 6.35 2.2	6.6 6.3 6.2 6.25 1.0	6.30 05 05	
g	6.8 6.8 6.8 6.8 0.1	6.7 6.6 6.7 6.65 0.1	6.72 08 07	

$$\begin{array}{r} +18 \\ -17 \\ \hline 21 \end{array} \begin{array}{r} 35 \\ \hline \pm 1.25 \end{array}$$

$$\begin{array}{r} +11 \\ -9 \\ \hline 24 \end{array} \begin{array}{r} 28 \\ \hline \pm 0.82 \end{array}$$

$$\begin{array}{r} +81 \\ -78 \\ \hline 27 \end{array} \begin{array}{r} 159 \\ \hline \pm 0.66 \end{array}$$

1 2 3 4 5  
M H 225

0.0

-0.5  $\Sigma =$  mean Read. (2) and (3) ~~XXXX~~ 1.25  
 $\Sigma =$  diff from mean (1) (2) and (3) -  
 for correcting means not including (1)

A. S. H.

Saturday,

Copied

## North Polar Sequence

Scale meas. of sequences. Repeated in Book XXXVII, 205-10

Scale P

M H 225

	1st scale	2nd scale	Re-measured (2) (1) (3)	See plotting in H. J. J. C'm mean (10) (2) (3)	Re-measured (2) (1) (3)	1st scale	2nd scale	(2)
Mean	5.5 <sup>5.5 5.5</sup> 5.5 1.9	1.82 27 18 12	1.6 1.35 1.7	1.70 1.51 1.6	2.7 2.9 2.8	2.0 2.1	1.7	
1.82 27 18 12	2.5	2.2 1.55 1.7	2.35 2.20 2.3	2.2 2.79	2.7	2.4	2.4	
1.82 27 18 12	2.7	2.4 1.55 1.7	2.95 2.84 2.9	2.9 m'	3.3	t. 6	3.0	
2.31 27 27 07	2.9	2.6 1.73 2.4	3.35 3.25 3.3	3.3 m'	3.7	t. 6	3.4	
2.19 27 27 07	2.8	2.5 1.77 2.3	3.70 3.60 3.7	3.7 o'	3.6	t. 6	3.3	
2.40 10 10 20	2.8	2.5 2.30 2.4	3.40 3.30 3.4	3.4 f'	3.8	t. 6	3.5	
2.23 27 27 07	3.0	2.7 2.60 2.6	4.15 4.05 4.1	4.3 g'	4.3	t. 6	4.0	
2.73 12 7 28	3.2	2.9 2.60 2.7	5.68 12 03 11	5.68 5.80 4.8	5.8	5.5	5.65 12	
2.70 20 10 10	3.2	2.9 2.60 2.7	5.92 08 03 12	5.80 6.00 4.9	6.2	5.9	6.0 5.95 10	
2.98 23 22 05	3.6	3.3 2.75 2.9	6.23 07 12 07	6.30 6.30 5.0	6.3	6.0	6.2 6.10 11	
3.31 12 09 09	3.7	t. 6. 3.4 3.13 3.4	6.45 00 05 05	6.40 6.45 5.1			6.5	
2.95 12 25 15	3.2	t. 6. 2.9 2.85 3.1	6.82 03 01 12	6.72 6.85 5.2			6.9	
3.60 12 22 10	3.9	t. 6. 3.6 3.50 3.7	6.80 10 01 12	6.70 6.70 5.3	6.9	6.6	7.0 6.80 12	
4.40 12 10 20	4.7	4.4 4.6 4.50 1.40 4.4	7.27 13 23 02	7.2 7.20 5.4			7.3	
4.55 22 42 05	4.8	4.5 4.6 4.55 1.04 4.0 4.60	7.62 03 02 22	7.6 7.65 5.8			7.6	
4.80 10 10 43	5.0	4.9 4.9 4.90 0.0 4.70 4.70	7.72 13 22 02	7.7 7.75 5.6	t. f.		7.7	
4.97 12 12 44	5.3	5.0 5.2 5.10 1.1 4.90 4.95	7.83 07 23 12	7.8 7.80 5.7			8.8	
5.35 15 15 46	5.7	5.4 5.6 5.50 1.1 5.30 5.35	8.85 20 25 25	8.9 9.05 5.8			8.6	
5.32 12 12 46	5.5	5.2 5.6 5.35 1.1 5.30 5.30						
5.62 12 12 46	5.7	5.4 5.6 5.50 1.1 5.55 5.55						

See next Page for ft data

See next Page for ft stars

After the above means have been copied, in proper order, the means which do not include means made in Book XXXVII will have to be corrected. (see plotting

in previous page April 19, 1911.





Monday, October 10, 1910

Perforated Tin Screen Made with 2 inch Square  
Lattice

Count of Holes

Numbers in 10 inches

H	%
142	150
149	150
150	
150	
150	

The number of holes in this screen  
is 15.0 to the inch in each direction

Saturday, October 8, 1910

Fine Wire Screen Screen (B)

Count of Holes (222.2 in.)

2.2 marks about 0.5 inch apart. Counts from side marks to  
Side marks. Distance 51 mm. 2 inches by 300 mm scale  
allowing 39.37 inches  
to the inch, 1 ft. = 2.078 m

13	18	West.	16
15	14	16	16
14	12	15	16
16	18	16	15
15	15	14	14
15	13	16	16
14	14	15	14
16	14	16	15
14	16	16	16
14	14	15	15
13	14	14	16
15	16	16	16
17	15	14	14
13	14	16	16
13	15	17	14
15	14	13	15
235	236	11	14

Mean 235  
4.68 in m m

243

242

Mean 242.5  
4.66 in m m

Mean both ways, 239.0  
4.69 in m m

An examination of marks, October 10, shows that one additional  
wire in 51 mm was probably counted in one direction and  
2 additional wires in the other direction, making a probable  
mean of 237.5 in 2.078 inch, or 118.3 to the inch: (4.66 to m m)

Mean 237.5

Saturday, October 8, 1910

Count of Wires in Time Gauge (140 to 160) Serial

Exposure distance each way 51 millimetres  
or 2 inches on the wooden rule.Allowing 39.37 <sup>cm to the inch</sup> <sup>inches</sup> to the <sup>inch</sup> <sup>to the inch</sup>, 51 mm = <sup>2.008</sup> 2.017 in

Horizontal

Vertical

21	18	17	18
17	20	16	19
17	17	19	17
16	17	16	17
19	17	18	16
18	18	18	16
17	17	18	16
17	19	18	18
19	17	17	18
17	17	17	18
18	18	17	15
17	18	15	17
17	16	17	18
17	17	17	17
19	17	19	16
17	19	16	15
<u>283</u>	<u>282</u>	<u>275</u>	<u>271</u>

Mean 282.5

Mean 273.0

Mean both ways 277.8 in 2.017<sup>8</sup> inch 5.464 the m m  
 Examination of marks on the 10 shows that 2 additional wires  
 in the 51 mm were probably counted in each direction so that  
 the actual number of wires in 2.017<sup>8</sup> inch would be about 275.8  
 137.9 & inch 5.414 the m m



Monday, October 10, 1910

Count of Wires in Fine Gauge (1405 in)

23.15  
Scale PCorrect  
Aug 12.5-61st 2nd  
scale scale

g 2.0 1.7

h 2.0 1.7

i 3.0 1.7

k<sup>1</sup> 2.7 2.4k<sup>2</sup> 2.6 2.3k<sup>3</sup> 2.7 2.4Report.  
Probably wrong value  
k<sup>4</sup> 1.8 1.5k<sup>5</sup> 3.0 2.7

l 3.2 2.9

m 3.2 2.9

n 3.7 3.4

o 3.4 3.1

p 4.0 3.7

q 4.7 4.4

r 4.7 4.4 4.6 4.50<sup>21</sup>s 5.1 4.8 4.8 4.80<sup>00</sup>t 5.2 4.9 5.0 4.95<sup>20</sup>u 5.6 5.3 5.2 5.25<sup>10</sup>v 5.6 5.3 5.3 5.30<sup>00</sup>w 5.7 5.4 5.7 5.55<sup>21</sup>

A.D.H.

Tuesday, October 11, 1910

North Polar Sequence.

M.H. 225 Repeated.

1st 2nd  
scale scalex 6.6 6.3 6.50<sup>00</sup>

y 7.1

z 7.3

s 7.1

e 7.6

h 7.7

n 7.6

o 7.9

x 8.2

l 7.9

u 8.1

v 9.9

s 9.2

o 8.9

x 9.6

p 9.0

f 9.0

o 9.2

t 7.3

v 9.1

o 9.0

x 9.3

y 9.8

o 9.6

1st 2nd  
scale scale

279 2.6 2.3

292 2.0 1.7

m' 3.2 2.9

n' 3.6 3.3

o' 3.2 2.9

p' 3.6 3.3

q' 4.6 4.3

48 5.8 5.5 5.7 5.60<sup>11</sup>49 6.0 5.7 5.9 5.80<sup>11</sup>50 6.5 6.2 6.4 6.30<sup>11</sup>51 6.6 6.3 6.5 6.40<sup>11</sup>52 6.6 6.3 6.5 6.40<sup>11</sup>53 6.9 6.6 6.8 6.70<sup>11</sup>

54 7.2

55 7.6 2.22<sup>08</sup>

56 7.7

57 8.8

58 8.9

x 6.

Stars brighter than x (42)  
are difficult to measure with  
scale P.



Tuesday, October 11, 1910.

## North Polar Sequence.

9.13  
Scale P Measures to determine brightness of Additional Stars.

	1st and 2nd scale scale	1st and 2nd scale scale
f <sup>3</sup>	4.9 4.6	4.6 a.
g	5.6 5.3 5.4	5.3 5.2 i
h	5.9 5.6 5.8	5.7 5.0 i
i	5.8 5.1 5.9 5.7 5.5 ii	
k <sup>1</sup>	6.4 6.1 6.1	6.1 0.0
k <sup>2</sup>	6.6 6.3 6.6	6.4 5.2 i
k <sup>3</sup>	7.0 6.7 6.8	6.7 5.0 i
k <sup>4</sup>	7.1	
k <sup>5</sup>	7.3	
l	7.4	
m	7.7	
n	7.9	
o	7.9	
p	8.6	
q	9.1	
r	9.3	
s	9.3	
t	F	

A. D. H.

Tuesday, October 11, 1910.

## North Polar Sequence.

Scale R M Measures to determine brightness of Additional Stars.

	1st and 2nd scale scale	1st and 2nd scale scale
f <sup>3</sup>	3.8 4.0	4.0 a.
g	4.5 4.7 4.7	4.7 0.0
h	5.2 5.4 5.5	5.4 5.0 i
i	5.1 5.3 5.6 5.5 5.4 ii	
k <sup>1</sup>	5.8 6.1 5.9	5.7 5.2 i
k <sup>2</sup>	6.0 6.2 6.2	6.2 0.0
k <sup>3</sup>	6.8 7.0 6.9	6.7 5.2 i
k <sup>4</sup>	7.8	
k <sup>5</sup>	7.7	
l	7.8	
m	7.9	
n	8.6	
o	8.6	
p	9.0	
q	9.7	
r	9.7	
s	9.8	
t	10.0	
u	10.0	
v	10.3	
w	10.8	

3.34  
A. D. H.



Wednesday, October 12, 1910.  
Columbus Day.

North Polar Sequence.

Measures to determine brightness of Additional Stars.  
C 17112

Scale from  
C 17493

See only	1st scale	2nd scale
second scale	$f^3$	7.0
	$g$	7.1
	$h$	7.8
	$i$	7.9
	$k$	8.7
	$k^2$	9.0
	$k^3$	9.2
	$k^4$	10.3
	$k^5$	10.8
	$l$	11.0
	$m$	11.1
	$n$	11.3
	$o$	11.9
	$p$	12.7
	$q$	13.2
	$r$	13.2
	$s$	13.3
	$t$	13.6
	$u$	13.8
	$v$	14.0
	$w$	14.5

A.D.V.

Wednesday, October 12, 1910.

North Polar Sequence.

Measures to determine Brightness of Additional Stars.  
C 17539

Scale P

1st scale	2nd scale
$f^3$	6.2
$g$	6.5
$h$	6.6
$i$	6.8
$k$	6.9
$k^2$	7.0
$k^3$	7.3
$k^4$	7.6
$k^5$	7.7
$l$	7.7
$m$	7.9
$n$	8.1
$o$	8.0
$p$	8.7
$q$	9.0
$r$	9.3
$s$	9.5

Images elongated - difficult to compare with scales.

A.D.V.

Wednesday, October 12, 1910.

## North Polar Sequence

Measure to determine brightness of additional stars

Scale M

I 349<sup>27</sup>/<sub>24</sub>

	1st and 2nd scale		2nd scale
f <sup>3</sup>	5.9 <sup>4</sup> 6.3	6.20 ± 1	225
g	6.5 6.8	6.75 0.1	248 7.6
h	6.7 6.9	6.90 0.0	279 8.1
i	7.3		292 7.8
k <sup>1</sup>	7.8		m <sup>1</sup> 9.2
k <sup>2</sup>	7.8		m <sup>1</sup> 9.5
k <sup>3</sup>	8.3		s <sup>1</sup> 9.4
k <sup>4</sup>	8.7		f <sup>1</sup> 9.5
k <sup>5</sup>	8.8		g <sup>1</sup> 9.9
l	8.9		
m	8.9		
n	9.5		
o	9.3		
p	9.9		
q	10.0		

Images are poor.

A.D.H.

## North Polar Sequence

Measure to determine brightness of additional stars

Scale M

I 35399

	1st and 2nd scale		2nd scale
f <sup>3</sup>	6.6 6.8 6.9	6.85 0.1	248 7.9
g	7.0 7.2 7.3	7.05 0.1	279 8.5
h	7.6		292 8.0
i	7.7 7.7		m <sup>1</sup> 9.7
k <sup>1</sup>	8.0		n <sup>1</sup> 9.9
k <sup>2</sup>	8.4		s <sup>1</sup> 10.0
k <sup>3</sup>	8.7		f <sup>1</sup> 9.8
k <sup>4</sup>	9.0		g <sup>1</sup> F
k <sup>5</sup>	9.0		
l	9.0		
m	9.8		
n	9.8		
o	9.7		
p	10.0		
q	F		

Images poor.

A.D.H.

Wednesday, October 12, 1910.

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale M

I 35797

	1st and 2nd scale	2d scale
$f^3$	6.345 6.7	6.60 $\pm$ 1
$g$	6.769 6.8	6.85 1.0
$h$	7.072 7.1	7.15 0.1
$i$	7.6	m' 9.0
$k^1$	7.9	m' 9.5
$k^2$	7.9	o' 9.1
$k^3$	8.3	p' 9.3
$k^4$	8.7	q' 9.9
$k^5$	8.8	
$l$	8.9	
$m$	8.9	
$n$	9.2	
$o$	9.6	
$p$	9.9	
$q$	10.0	
$r$	F	

A. D. H.

Wednesday, October 12, 1910.

## North Polar Sequence

Measure to determine brightness of Additional Stars.

Scale M

I 34926

	1st and 2nd scale	2d scale
$f^3$	6.264 6.7 <sup>6</sup>	6.50 $\pm$ 1
$g$	6.668 6.8	6.80 0.0
$h$	6.876 7.0	7.00 0.0
$i$	7.5	m' 9.0
$k^1$	7.7	m' 9.2
$k^2$	7.8	o' 9.1
$k^3$	7.9	p' 9.2
$k^4$	8.6	q' 9.8
$k^5$	8.7	
$l$	8.8	
$m$	8.8	
$n$	9.1	
$o$	9.0	
$p$	9.8	
$q$	9.9	
$r$	F	

A. D. H.



Wednesday, October 12, 1910.

## North Polar Sequence.

Measures to determine brightness of Additional Stars.

Scale M

MC 194

	1st scale	2nd scale		1st scale	2nd scale
f <sup>o</sup>	5.79	5.8	585	1.0	225
g	6.06	6.5	635	2.1	248
h	6.87	6.8	690	1.1	279
i	6.7				292
k <sup>1</sup>	7.1				m' 5.5
k <sup>2</sup>	7.4				m' 8.9
k <sup>3</sup>	7.8				o' 8.8
k <sup>4</sup>	8.2				p' 9.0
k <sup>5</sup>	8.0				g' 9.5
l	8.3				
m	8.6				
n	8.6				
o	8.9				
p	9.5				
q	9.8				
r	9.9				
s	9.9				
t	10.0				
u	9.9				

A. D. N.

Wednesday, October 12, 1910.

## North Polar Sequence.

Measures to determine brightness of Additional Stars.

Scale from

MC 114

C 17493

Use only

second scale

	1st scale	2nd scale		1st scale	2nd scale
f <sup>o</sup>	7.4	7.4	248	5.8	
g	8.0	8.0	279	9.5	
h	8.3	8.7	292	8.8	
i	8.0	8.4	m'	11.8	
k <sup>1</sup>	8.9	9.2	m'	16.8	
k <sup>2</sup>	8.9, 9.7, 9.5	9.6	o'	11.8	
k <sup>3</sup>	9.6	10.2	p'	11.6	
k <sup>4</sup>	10.7		g'	12.5	
k <sup>5</sup>	10.9				
l	10.7				
m	11.0				
n	11.8				
o	11.8				
p	12.5				
q	13.1				
r	13.0				
s	13.1				
t	defective				
u	13.0				
v	F				
w	F				

Stars brighter than h are difficult to measure on account of halo.

A. D. N.

Wednesday, October 12, 1910.

## North Polar Sequence

Measures to determine brightness of Additional Stars.

Scale from  
C17493

Use only second scale

	1st scale	2nd scale
f <sup>2</sup>	8.7	8.8
g	8.8	9.0
h	9.4	9.6
i	9.3	9.7
k <sup>1</sup>	9.8	10.2
k <sup>2</sup>		10.0
k <sup>3</sup>		11.3
k <sup>4</sup>		11.4
k <sup>5</sup>		11.4
l		11.5
m		11.9
n		12.3
o		12.7
p		12.9
q		13.4
r		13.2
s		13.4
t		13.3
u		13.5

A. D. W.

Wednesday, October 12, 1910.

## North Polar Sequence

Measures to determine brightness of Additional Stars.

Scale from  
C17493

Use only second scale

	1st scale	2nd scale
f <sup>2</sup>	9.0, 9.7,	
g	9.5	9.9
h	9.8,	10.5,
i		10.6
k <sup>1</sup>		10.8
k <sup>2</sup>		11.0
k <sup>3</sup>	#	11.8
k <sup>4</sup>		12.2
k <sup>5</sup>		12.1
l		12.4
m		12.6
n		12.9
o		12.9
p		13.2
q		13.4
r		14.0
s		
t		

A. D. W.

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	Second						Pennsylvania		
	first appearance		without survey	first appearance		without survey	second scale		
mean	1st scale	2nd scale	mean	1st scale	2nd scale	mean	1st scale	2nd scale	
4.15 ± 0	f <sup>1</sup>	3.941	-	4.1	4.042	-	4.2	2.25 8.7	
4.70 00	b <sup>2</sup>	4.547	-	4.7	4.547	-	4.7	2.27 7.5	
3.80 00	a <sup>5</sup>	3.637	-	3.8	3.637	-	3.8	2.26 7.5	
5.88 12	c <sup>1</sup>	5.5857	5.75 ± .59	5.59	5.59	5.82	4.08	7.7	
6.64 06	c <sup>2</sup>	6.63566	6.63582	6.57	6.7	6.7	2.48	9.3	
6.78 12	c <sup>3</sup>	6.64467	6.65 ± 6.87	6.8	6.9	2.77	9.8		
6.92 07	c <sup>4</sup>	6.67908	6.85 ± 6.97	6.9	7.0	2.92	9.1		
6.92 12	c <sup>5</sup>	6.66868	6.85 ± 6.97	7.0	7.05	1.97	7.7		
7.05 12	d	6.87069	6.95 ± 7.07	7.1	7.15	-	-		
7.35 ± 1	e	7.2	7.5	-	-	-	-		
7.65 10	f <sup>1</sup>	7.7	+5 14.711	7.6	+4 12.78	-	-		
8.10 ± 1	f <sup>2</sup>	8.0	±0.99	8.2	±0.67	-	-		
8.55 ± 0	f <sup>3</sup>	8.5	-	8.6	-	-	-		
8.80 00	g	8.8	-	8.8	-	-	-		
9.00 00	h	9.0	-	9.0	-	-	-		
8.90 00	i	8.9	-	8.9	-	-	-		
9.65 01	k <sup>1</sup>	9.6	-	9.7	-	-	-		
9.60 00	k <sup>2</sup>	9.6	-	9.6	-	-	-		
9.85 10	k <sup>3</sup>	9.9	-	9.8	-	-	-		
10.10 00	k <sup>4</sup>	10.1	-	10.1	-	-	-		
10.00 00	k <sup>5</sup>	10.0	-	10.0	-	-	-		

+141  
-151  
58.8

292  
±0.50

Wednesday, October 19, 1910.

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Thursday, October 20, 1910

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## North Polar Sequence.

21.45

Scale M

MC 657, with and without image gauge screen (140 to

Mean		Exp. without screen		with screen		Remeasured		Mean	
Scale	Mean	Scale	Mean	Scale	Mean	Scale	Mean	Scale	Mean
4.60 0.0	C	3.8 4.0	4.0	3.8 4.0	4.0	1.97	6.1 6.8	6.5 6.8	6.75 0.0
4.92 0.0	C	4.4 4.5	4.5	4.4 4.5	4.5	2.25	6.5	6.5	6.50 0.0
5.20 0.0	C	4.9 5.1	5.1	4.9 5.1	5.1	2.5	6.8	6.8	6.80 0.0
5.55 0.0	C	5.0 5.5	5.5	5.0 5.5	5.5	2.8	6.8	6.8	6.80 0.0
5.42 1.0	C	4.8 5.4	5.4	4.8 5.4	5.4	3.0	6.8	6.8	6.80 0.0
5.78 0.0	C	5.6 5.7	5.7	5.6 5.7	5.7	3.4	6.8	6.8	6.80 0.0
5.95 0.0	C	5.7 5.9	5.9	5.7 5.9	5.9	3.6	6.8	6.8	6.80 0.0
6.32 0.0	C	6.7 6.9	6.9	6.7 6.9	6.9	3.8	6.8	6.8	6.80 0.0
7.60 0.0	C	7.6	7.6	7.6	7.6	4.0	6.8	6.8	6.80 0.0
7.85 0.1	C	7.8	7.8	7.8	7.8	4.2	6.8	6.8	6.80 0.0
8.45 0.1	C	8.4	8.4	8.4	8.4	4.4	6.8	6.8	6.80 0.0
8.70 0.0	C	8.7	8.7	8.7	8.7	4.6	6.8	6.8	6.80 0.0
8.60 0.0	C	8.6	8.6	8.6	8.6	4.8	6.8	6.8	6.80 0.0
9.15 1.0	C	9.1	9.1	9.1	9.1	5.0	6.8	6.8	6.80 0.0
9.05 0.1	C	9.0	9.0	9.0	9.0	5.2	6.8	6.8	6.80 0.0
9.65 0.1	C	9.6	9.6	9.6	9.6	5.4	6.8	6.8	6.80 0.0
9.80 0.0	C	9.8	9.8	9.8	9.8	5.6	6.8	6.8	6.80 0.0
9.95 1.0	C	9.9	9.9	9.9	9.9	5.8	6.8	6.8	6.80 0.0
10.1 0.0	C	10.1	10.1	10.1	10.1	6.0	6.8	6.8	6.80 0.0

Images are not very comparable — the images are very good, but less intense than those of scale.

A. 2. 8.

Thursday, October 20, 1910

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## North Polar Sequence

Scale M

MC 657 cont.

Exp. with screen		Remeasured		Mean	
Scale	Mean	Scale	Mean	Scale	Mean
C	7.6	7.5	7.55 0.1		
C	8.3	8.1	8.20 1.2		
C	8.5	8.4	8.45 1.0		
C	8.6	8.6	8.60 0.0		
C	8.5	8.6	8.55 1.0		
C	8.8	8.9	8.85 0.1		
C	8.8	8.9	8.85 0.1		
C	9.6	9.6	9.60 0.0		
C	9.9	9.9	9.90 0.0		
C	F	F	F		
197	9.7	9.7	9.70 0.0		
225					
227	9.0	9.0	9.00 0.0		
386	9.2	9.2	9.20 0.0		
428	9.9	9.9	9.90 0.0		
248					
279					
292					

22.15

A. 2. 8.

Thursday, October 20, 1910.

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## North Polar Sequence

Scale M

MC 658, north and without wire gauge (120 to an inch), in front of plate

Mean		Exposure without screen		Remeasured		Mean
		1st	2nd	1st	2nd	
4.35 02	C <sup>1</sup>	4.2 4.4	4.4	4.1 4.3	4.3	4.32
4.90 05 05	C <sup>2</sup>	4.7 4.9	5.0	4.9 5.1	5.0	4.90
5.30 05 05	C <sup>3</sup>	4.9 5.1	5.4	5.2 5.4	5.3	5.30
5.42 05 07	C <sup>4</sup>	5.2 5.4	5.6	5.5 5.7	5.6	5.42
5.88 07 08	C <sup>5</sup>	5.1 5.3	5.6	5.4 5.7	5.5	5.88
5.95 00 00	d	5.7 5.9	6.0	5.9 6.1	6.0	5.95
5.92 03 02	e	5.7 5.9	6.0	5.9 6.1	6.0	5.92
6.78 07 08	f	6.7 6.9	7.0	6.9 7.1	7.0	6.78
7.22 03 01	g	7.0 7.2	7.2	7.2 7.4	7.3	7.22
7.85 10	h	7.8		7.8		7.85
8.25 10	i	8.3		8.3		8.25
8.70 10	j	8.7		8.7		8.70
8.65 10	k	8.7		8.7		8.65
9.20 12	l	9.3		9.3		9.20
9.00 10	m	9.0		9.0		9.00
9.70 00	n	9.7		9.7		9.70
9.80 00	o	9.8		9.8		9.80
10.00 00	p	10.0		10.0		10.00
10.20 00	q	10.2		10.2		10.20
T	r	F		F		T
F	s	F		F		F

a.g.g.

Thursday, October 20, 1910.

Copied

## North Polar Sequence

Scale M

MC 658, cont.

Mean		Exposure with screen		Mean
		1st	2nd	
7.9	C <sup>1</sup>	7.8	7.85	7.9
8.4	C <sup>2</sup>	8.3	8.35	8.4
8.7	C <sup>3</sup>	8.7	8.70	8.7
8.8	C <sup>4</sup>	8.8	8.80	8.8
8.8	C <sup>5</sup>	8.8	8.80	8.8
9.0	d	8.9	8.95	9.0
9.0	e	8.9	8.95	9.0
9.7	f	9.7	9.70	9.7
10.0	g	10.0	10.00	10.0
10.3	h	10.3		10.3

197	7.7	7.6	7.6	7.6
225	9.6	9.6	9.6	9.6
227	9.5	9.5	9.50	9.5
386	9.6	9.6	9.60	9.6
408	9.9	9.9	9.90	9.9

$$\begin{array}{r} +1 \\ 24 \overline{) 24} \\ \hline \pm .017 \end{array}$$
22,43  
A.D.H.



Monday, October 31, 1910.

## North Polar Sequence.

Scale M 4-inch Cooke (original number E 7559) L 203

	1st scale	2nd scale	2nd scale
A	.	.	197 8.6
B	.	.	225 .
C	1.5 1.7	1.7 a.	227 6.3
D	1.9 2.1	2.1 a.	386 7.9
E	1.9 2.1	2.1 a.	408 8.9
F	2.9 3.1	3.1 a.	248
G	3.5 3.7	3.7 a.	279
a'	2.7 2.9	2.9 a.	292
a <sup>2</sup>	3.0 3.2	3.2 a.	
a <sup>3</sup>	3.8 4.0	4.0 a.	1 <sup>2</sup> 9.2
a <sup>4</sup>	4.3 4.5	4.5 a.	1 <sup>3</sup> 9.7
a <sup>5</sup>	4.7 4.9	4.9 a.	9 10.1
b'	5.6 5.8 5.7	5.75 a.	th F
b <sup>2</sup>	6.3 6.5 6.6	6.55 a.	is F
b <sup>3</sup>	6.1 6.3 6.6	6.45 a.	
c'	6.7 6.9 6.8	6.85 a.	
c <sup>2</sup>	7.5	7.5 a.	
c <sup>3</sup>	7.7	7.7 a.	
c <sup>4</sup>	6.8 7.0 6.8	6.90 a.	
c <sup>5</sup>	7.8	7.8 a.	
c <sup>6</sup>	7.8	7.8 a.	
c <sup>7</sup>	8.0	8.0 a.	
d	8.0	8.0 a.	
e	8.1	8.1 a.	
f'	8.6	8.6 a.	

Stars fainter than c<sup>2</sup> difficult  
to compare with scale.

3.33

A. D. R. f.

$$\frac{+4}{12.9} = 0.31$$

Monday, October 31, 1910.

## North Polar Sequence

Scale M 4-inch Cooke (original 7560) L 204

	1st scale	2nd scale	2nd scale
A	.	.	197 9.3
B	1.1 1.3	1.3 a.	225 .
C	2.5 2.7	2.7 a.	227 9.1
D	3.6 3.8	3.8 a.	386 9.0
E	3.8 4.0	4.0 a.	408 9.3
F	4.6 4.8	4.8 a.	
G	4.9 5.1	5.1 a.	
a'	3.7 4.2 4.6 4.4 <sup>3.22</sup>		
a <sup>2</sup>	4.6 4.8 4.9	4.85 a.	f' 9.7
a <sup>3</sup>	5.6 5.8 5.7	5.75 a.	f <sup>2</sup> 10.0
a <sup>4</sup>	5.7 5.9 5.9	5.90 a.	f <sup>3</sup> n.s.
a <sup>5</sup>	6.2 6.4 6.6	6.50 a.	
b'	7.0 7.2 7.0	7.10 a.	
b <sup>2</sup>	7.6		
b <sup>3</sup>	7.1		
c'	7.7	$\frac{+7}{14.3} = 0.93$	
c <sup>2</sup>	7.7		
c <sup>3</sup>	8.2		
c <sup>4</sup>	7.9		
c <sup>5</sup>	8.3		
c <sup>6</sup>	8.6		
c <sup>7</sup>	8.8		
d	8.9		
e	9.0		

Images small and difficult to compare  
with scale for images fainter than c'.

3.45

A. D. R.



Monday, October 31, 1910.

## North Polar Sequence

Scale M 4-inch Cooke (original number E 4563)  $\phi 2.67$ 

	1st 2nd scale scale	2nd scale
A	.	197 9.2
B	$\phi$	225 .
C	2.1 2.3 2.3 a.	227 8.8
D	2.9 3.1 3.1 a.	386 8.8
E	3.6 3.8 3.8 a.	408 9.7
F	4.0 4.2 4.2 a.	
G	4.2 4.4 4.4 a.	
a'	3.9 4.1 4.1 a.	
a''	3.7 4.1 4.5 4.30 2.2	f' 9.0
a'''	4.5 5.0 5.1 5.05 0.1	f'' 9.6
a''''	5.4 5.6 5.6 5.60 0.0	f''' 9.9
a'''''	5.7 6.0 5.8 5.90 0.1	f'''' F
b'	6.6 6.8 6.7 6.75 0.2	
b''	7.3 7.3 a.	
b'''	6.9 7.1 6.9 7.02 0.2	
c'	7.6	
c''	8.0 $\pm 5$	
c'''	8.0 $\pm 5$	
c''''	7.5	
c'''''	8.1	
d'	8.5	
d''	8.6	
d'''	8.7	
d''''	8.8	

3.55  
a. D.H.

Tuesday, November 1, 1910

## North Polar Sequence

22.35  
Scale M 4-inch Cooke (original number E 7571)  $\phi 2.12$ 

	1st 2nd scale scale	2nd scale
A	.	197 9.1
B	.	225 .
C	1.8 2.0 2.0 a.	227 8.8
D	2.5 2.7 2.7 a.	386 8.9
E	2.9 3.1 3.1 a.	408 9.6
F	3.8 4.0 4.0 a.	
G	4.1 4.3 4.3 a.	
a'	3.6 3.8 3.8 a.	
a''	4.5 4.7 4.8 4.75 2.0	f' 9.1
a'''	4.8 5.0 5.0 5.00 0.0	f'' 9.5
a''''	4.8 5.1 5.5 5.525 2.22	f''' 9.8
a'''''	5.8 6.0 5.9 5.95 0.2	
b'	6.5 6.7 6.8 6.75 0.2	
b''	7.3	
b'''	7.0	
c'	7.5 $\pm 5$	
c''	8.0 $\pm 0.92$	
c'''	8.2	
c''''	7.3	
c'''''	7.9	
d'	8.3	
d''	7.6	
d'''	8.5	
d''''	8.7	

22.45  
a. D.H.

Tuesday, November 1, 1910.

## North Polar Sequence.

Scale M 4-inch Cooke (original number E) L 217

1st sub scale reads	2nd scale reads
A-E to bright	197 . 74 74.2
F	225
G	227 to close to 225
a'	386 6.8 7.0 7.00 io
a'' line	408 . 7.7 7.7 ia
a <sup>3</sup> 1.8 2.0 2.0 a.	
a <sup>2</sup> 1.8 2.0 2.0 a.	
a <sup>5</sup> 2.6 2.8 2.8 a.	
b' 3.0 3.2 3.2 a.	
b'' 3.9 4.1 4.1 a.	
b <sup>3</sup> 4.0 4.2 4.2 a.	
c 4.6 4.8 4.7 4.75 oi	
c <sup>2</sup> 5.6 5.8 5.6 5.7012	
c <sup>3</sup> 5.9 6.1 5.9 6.0012	
c <sup>4</sup> 4.5 4.7 4.7 4.70 oi	
c <sup>5</sup> 5.7 5.9 5.7 5.8012	
c <sup>6</sup> 6.0 6.2 6.0 6.1012	
c <sup>7</sup> 6.0 6.2 6.3 6.25 oi	
d defective	
e 6.7 6.9 6.8 6.8510	
f 7.0 7.2 7.3 7.85 oi	
f <sup>2</sup> 7.8	
f <sup>3</sup> 8.0	
g	

h 8.7

i 8.7

k' 9.1

k'' 9.0

k<sup>3</sup> 9.6k<sup>4</sup> 9.7k<sup>5</sup> 9.5

l 10.0

272 9.0

279 9.4

245 8.9

m 10.1

Pole not in center

plates

23.59  
a. 2.2

Tuesday, November 1, 1910

## North Polar Sequence.

Scale M 4-inch Cooke L 218

1st sub scale reads	2nd scale
A	197 8.0
B	225
C	227 to close to 225
D tp	386 7.8
E 1.7 1.9 1.9 a.	408 8.3
F from	248 9.5
G from	279 9.9
a' tp	272 9.5
a <sup>2</sup> 3.3 3.5 3.5 a.	f' 8.0
a <sup>3</sup> from	f <sup>2</sup> 8.5
a <sup>4</sup> 3.9 4.1 4.1 a.	f <sup>3</sup> 8.8
a <sup>5</sup> 4.6 4.8 4.7 4.80 io	g 9.20
b' 5.5 5.7 5.6 5.65 io	h 9.1
b <sup>2</sup> 6.0 6.2 6.3 6.25 oi	i 9.3
b <sup>3</sup> 5.7 5.9 5.8 5.85 io	k 9.9
c' 6.3 6.5 6.6 6.55 io	k <sup>2</sup> 9.9
c <sup>2</sup> 6.8 7.0 6.9 6.95 oi	k <sup>3</sup> F
c <sup>3</sup> 6.9 7.1 7.2 7.15 io	k <sup>4</sup> n.s.
c <sup>4</sup> 6.1 6.3 6.6 6.4512	
c <sup>5</sup> 6.5 7.0 6.9 6.95 oi	
c <sup>6</sup> 7.3	
c <sup>7</sup> 7.5	
d 7.6	
e 7.9	

23.10  
a. 2.2

Tuesday, November 1, 1910.

## North Polar Sequence

Scale M 4-inch Cooke L 219

	1st and 2nd scale	2d scale
D	1.1 1.3 1.3 a.	197 8.5
E	1.2 1.4 1.4 a.	386 8.1
F	2.0 2.2 2.2 a.	408 8.6
G	2.7 2.9 2.9 a.	248 9.9
a	1.9 2.1 2.1 a.	279 .
a <sup>2</sup>	3.1 3.3 3.3 a.	272 9.9
a <sup>3</sup>	3.1 3.3 3.3 a.	
a <sup>4</sup>	3.7 3.9 3.9 a.	
a <sup>5</sup>	4.0 4.2 4.2 a.	
b <sup>1</sup>	5.2 5.4 5.6 5.50 i.	g 9.6
b <sup>2</sup>	6.2 6.4 6.3 6.50 i.	h 9.7
b <sup>3</sup>	5.8 6.0 5.8 5.90 i.	i 9.8
c <sup>1</sup>	6.2 6.4 6.7 6.55 i.	h' F.
c <sup>2</sup>	6.9 7.1 7.0 7.05 i.	
c <sup>3</sup>	7.4 7.4 i.	
c <sup>4</sup>	6.1 6.3 6.1 6.20 i.	
c <sup>5</sup>	7.2	
c <sup>6</sup>	7.7	
c <sup>7</sup>	7.7	
d	7.9	
e	7.9	
f <sup>1</sup>	8.3	
f <sup>2</sup>	8.8	
f <sup>3</sup>	9.1	

23.21

A.D.H.

Tuesday, November 1, 1910.

## North Polar Sequence

Scale M 4-inch Cooke L 226 Pole not in center.

	1st and 2nd scale	2d scale
F	1.2 1.4 1.4 a.	197 7.8
G	1.7 1.9 1.9 a.	386 7.2
a <sup>1</sup> tp		408 7.9
a <sup>2</sup> tp		248 9.4
a <sup>3</sup>	2.5 2.7 2.7 a.	279 9.7
a <sup>4</sup>	2.9 3.1 3.1 a.	292 defective
a <sup>5</sup>	3.0 3.2 3.2 a.	
b <sup>1</sup> tp		g 8.9
b <sup>2</sup> tp		h 9.2
b <sup>3</sup>	4.0 4.2 4.2 a.	i 9.1
c <sup>1</sup>	5.2 5.4 5.6 5.50 i.	h' 9.7
c <sup>2</sup>	5.7 5.9 5.8 5.85 i.	h <sup>2</sup> 9.6
c <sup>3</sup>	6.0 6.2 6.2 6.20 i.	h <sup>3</sup> 9.9
c <sup>4</sup>	6.8 7.0 7.1 7.05 i.	h <sup>4</sup> n.i.
c <sup>5</sup>	6.9 7.1 7.0 7.05 i.	h <sup>5</sup>
c <sup>6</sup>	7.4 7.4 i.	
c <sup>7</sup>	7.7 7.7	
d	7.9 7.9	
e	7.9 7.9	
f <sup>1</sup>	8.3 8.3	
f <sup>2</sup>	8.8 8.8	
f <sup>3</sup>	9.1 9.1	

The images are elongated.

$$\frac{+10}{8} \\ 24 \overline{) 18} \\ \pm 0.75$$

23.33  
A.D.H.

Tuesday, November 1, 1910.

## North Polar Sequence

Scale M 4-inch Cooke L 230

	1st scale	2nd scale	2nd scale
C	1.2 1.4	1.4 a.	197 9.1
D	2.0 2.2	2.2 a.	386 87
E	2.0 2.2	2.2 a.	408 9.3
F	tf		248
G	tf		292
a'	2.9 3.1	3.1 a.	
a''	tf		
a'''	4.6 4.8	4.8 a.	
a <sup>4</sup>	tf		1' 9.0
a <sup>5</sup>	4.6 4.8 4.9	4.8 5.0	1' 9.7
b'	5.9 6.1 6.0	6.0 5.10	1' 10.1
b''	6.8 7.0 6.9	6.9 5.02	2' 2.5
b'''	tf		2'
c'	7.0 7.2 7.0	7.0 1.12	2'
c''	7.5	7.8 a.	
c'''	7.9	7.9 a.	
c <sup>4</sup>	6.9 7.1 6.9	7.0 1.12	
c <sup>5</sup>	7.7		
c <sup>6</sup>	8.1	$\frac{+4}{-2}$	
c <sup>7</sup>	8.2	$\frac{10}{10} 7$	
d	8.4	$\pm .076$	
e	8.6		

23.44  
a. S. N.

Tuesday, November 1, 1910.

## North Polar Sequence

Scale M 4-inch Cooke L 250 Pole not at center

	1st scale	2nd scale	2nd scale
D	tf		197 8.3
E	1.2 1.4	1.4 a.	386 7.9
F	2.0 2.2	2.2 a.	408 8.5
G	2.7 2.9	2.9 a.	248 10.0
a'	2.3 2.5	2.5 a.	292 F
a''	tf		
a'''	4.2 3.4	3.4 a.	
a <sup>4</sup>	3.7 3.9	3.9 a.	
a <sup>5</sup>	4.0 4.2	4.2 a.	9 9.7
b'	4.8 5.0 5.3	5.15 5.1	9.9
b''	5.8 6.0 5.9	5.95 5.02	10.0
b'''	5.4 5.6	5.7 5.65 5.1	10.3
c'	6.0 6.2 6.1	6.15 5.12	10 F
c''	6.7 6.9 7.0	6.95 5.12	
c'''	7.0 7.2 7.0	7.20 5.12	
c <sup>4</sup>	6.0 6.2 6.0	6.10 1.12	
c <sup>5</sup>	6.5 7.0 6.9	6.95 5.12	
c <sup>6</sup>	7.5		
c <sup>7</sup>	7.7	$\frac{+3}{-7}$	
d	7.9	$\frac{16}{10} 10$	
e	7.9	$\pm .062$	
f'	8.1		
f <sup>2</sup>	8.3		
f <sup>3</sup>	9.3		

23.55  
a. S. N.



Wednesday, November 2, 1910.

## North Polar Sequence.

22.43

Scale M 4 inch Cooke L 211 (E 7570)

	1st scale	2nd scale		2nd scale
A			197	8.7
B			386	8.1
C	46		488	8.9
D	2.2 2.4	2.7 a.	227	8.1
E	2.5 2.7	2.7 a.		
F	2.7 2.9	2.9 a.		
G	3.9 4.1	4.1 a.		
a <sup>1</sup>	2.9 3.1	3.1 a.		
a <sup>2</sup>	3.7 3.9	3.9 a.	f <sup>1</sup>	8.6
a <sup>3</sup>	4.5 4.7 4.9	4.80 5.1	f <sup>2</sup>	9.1
a <sup>4</sup>	4.8 5.0 5.2	5.00 5.0	f <sup>3</sup>	9.6
a <sup>5</sup>	4.8 5.0 5.3	5.15 5.1	g	9.8
b <sup>1</sup>	5.7 5.9 6.1	6.00 5.1	h	no.
b <sup>2</sup>	6.9 7.1 7.3	7.05 1.0	i	10.1
b <sup>3</sup>	6.3 6.5 6.7	6.50 0.0	k <sup>1</sup>	
c <sup>1</sup>	6.9 7.1 7.3	7.05 1.0		
c <sup>2</sup>	7.7	7.7 a.		
c <sup>3</sup>	7.7	7.7 a.		
c <sup>4</sup>	6.8 7.0 7.2	7.00 a.		
c <sup>5</sup>	7.5			
c <sup>6</sup>	7.9	+5 -4		
c <sup>7</sup>	7.9	14) 9 ± 0.64		
d	8.0			
e	8.1			

22.53

A. S. X.

Wednesday, Nov. 2, 1910.

## North Polar Sequence.

Scale M 4 inch Cooke L 213 (E 7572)

	1st scale	2nd scale		2nd scale
A			197	9.2
B			386	8.7
C	2.1 2.3	2.3 a.	488	9.6
D	2.9 3.1	3.1 a.	227	8.9
E	3.1 3.3	3.3 a.		
F	4.0 4.2	4.2 a.		
G	4.4 4.6 4.8	4.60 0.0		
a <sup>1</sup>	3.8 4.0	4.0 a.		
a <sup>2</sup>	4.8 5.0 5.2	5.10 5.1	f <sup>1</sup>	9.6
a <sup>3</sup>	4.7 5.0 5.1	5.22 5.22	f <sup>2</sup>	9.9
a <sup>4</sup>	5.6 5.8 5.7	5.75 5.75	f <sup>3</sup>	no.
a <sup>5</sup>	6.1 6.2 6.3	6.42 5.22	g	
b <sup>1</sup>	6.5 7.0 6.9	6.95 5.2	h	
b <sup>2</sup>	7.6		i	
b <sup>3</sup>	7.2	+9 -8 ± 1.00	k <sup>1</sup>	
c <sup>1</sup>	7.7		k <sup>2</sup>	
c <sup>2</sup>	8.0		k <sup>3</sup>	
c <sup>3</sup>	8.2		k <sup>4</sup>	
c <sup>4</sup>	7.7			
c <sup>5</sup>	8.4			
c <sup>6</sup>	8.6			
c <sup>7</sup>	8.7			
d	8.6			
e	8.9			

Images very small and difficult to measure.

23.04

A. S. X.

Wednesday, November 2, 1910.

## North Polar Sequence

Scale M 4-inch Cooke (E 7573) L 214

	1st scale	2nd scale	2nd scale
A			197 8.8
B	0.9 1.1	1.1 a.	386 8.5
C	1.4 1.6	1.6 a.	408 8.9
D	2.0 2.2	2.2 a.	227 8.7
E	2.0 2.2	2.2 a.	
F	3.3 3.5	3.5 a.	
G	3.5 3.7	3.7 a.	
a <sup>1</sup>	3.1 3.3	3.3 a.	
a <sup>2</sup>	3.8 4.0	4.0 a.	f <sup>1</sup> 8.9
a <sup>3</sup>	4.0 4.2 4.3	4.2 5.0	f <sup>2</sup> 9.3
a <sup>4</sup>	4.2 4.4 4.5	4.4 5.0	f <sup>3</sup> 9.7
a <sup>5</sup>	5.5 6.7 5.7	5.7 6.0	g 10.0
b <sup>1</sup>	5.8 6.0 6.0	6.0 7.0	
b <sup>2</sup>	6.8 7.0 7.0	7.0 8.0	
b <sup>3</sup>	6.6 6.8 7.0	6.9 8.1	
c <sup>1</sup>	6.8 7.0 7.0	7.0 8.0	
c <sup>2</sup>	7.7	7.7 a.	
c <sup>3</sup>	7.8	7.8 a.	
c <sup>4</sup>	6.9 7.1 7.0	7.0 8.0	
c <sup>5</sup>	7.8		
c <sup>6</sup>	8.0	+4 -1	
c <sup>7</sup>	8.2	16) 5 ±.031	
d	8.2		
e	8.6		

3.3.13  
A. B. H.

Wednesday, November 2, 1910.

copied

## North Polar Sequence

Scale M 4-inch Cooke L 222 <sup>13</sup> exposures

3: 1st exposure	1st scale	2nd scale	2nd scale
C	not complete		197 exposures
D	" "		386 us
A			408
B	2.0 2.2	2.2 a.	227 tp
E	4.3 4.5	4.5 a.	
F	4.8 5.0 5.0	5.0 5.0	
G	4.9 5.1 5.1	5.1 5.0	
a <sup>1</sup>	5.2 5.5 5.6	5.5 5.0	
a <sup>2</sup>	5.1 5.5 5.5	5.4 5.1	d 9.1
a <sup>3</sup>	5.9 6.0 6.0	6.0 5.0	e 9.4
a <sup>4</sup>	6.3 6.5 6.5	6.5 6.0	f <sup>1</sup> 9.5
a <sup>5</sup>	6.6 6.7 6.7	6.7 6.2	f <sup>2</sup> 10.1
b <sup>1</sup>	7.3		
b <sup>2</sup>	7.9	+3 -3	
b <sup>3</sup>	7.5	17) 6 ±.086	
c <sup>1</sup>	8.0		
c <sup>2</sup>	8.6		
c <sup>3</sup>	8.7		
c <sup>4</sup>	7.8		
c <sup>5</sup>	8.7		
c <sup>6</sup>	not exposed		
c <sup>7</sup>	8.9		

2.9.13

Wednesday, November 2, 1910.

Capit

North Polar Sequence.

Scale M 4-inch Cooke L222

4. 2nd Exposure  
1st scale 2nd scale

A 197 9.9

B 1.9 2.1 2.1 a. 386 m.s.

C 1.7 4.9 4.9 4.90 408

D 4.7 4.9 4.9 4.90 227 9.3

E 4.8 5.0 4.7 4.85 2.1

F 5.0 5.2 5.5 5.35 2.1

G 5.0 5.2 5.3 5.25 2.1

a' 5.2 5.4 5.5 5.45 2.1

a'' 4.9 5.1 5.5 5.35 2.2 2.0

a''' 5.8 6.0 5.9 5.95 2.2

a'''' 6.1 6.3 6.4 6.35 2.0

a''''' 6.6 6.8 6.6 6.70 2.2

b' scratched

b'' 7.9 +8

b''' 7.4 20 17

b'''' 8.3 ±.085

c' 8.5

c'' 8.9

c''' 7.9

c'''' 8.7

c''''' 8.9

c'''''' 8.9

A. D. K.

Wednesday, November 2, 1910 171

Capit

North Polar Sequence.

Scale M 4-inch Cooke L222

5. 3rd Exposure  
1st scale 2nd scale

A 197 9.8

B 1.9 2.1 2.1 a. 386 m.s.

C 3.7 4.9 4.9 4.90 408 m.s.

D 4.7 4.6 4.6 4.6 a. 227 9.4

E 4.2 4.4 4.4 a.

F 4.6 4.8 5.0 4.90 2.1

G 6.2 6.4 6.6 6.6 2.1 Repeat. Marg in.

a' 5.1 5.3 5.5 5.40 2.1

a'' 4.9 5.1 5.5 5.35 2.2 2.0

a''' 5.7 5.9 6.0 5.95 2.0

a'''' 5.8 6.0 6.0 6.00 2.0

a''''' 6.0 6.2 6.1 6.15 2.0

b' 7.0 7.2 7.4 7.35 2.2 2.0

b'' 8.0

b''' 7.4 +7

c' 8.0 18 18 ±.100

c'' 8.7

c''' 9.0

c'''' 7.8

c''''' 8.2

c'''''' 8.9

c'''''''' 8.9

A. D. K.

Wednesday, November 2, 1910.

Cepheid

North Polar Sequence.

Scale M

4-inch Cooke  $\Delta 222$ 6 = 4<sup>th</sup> exposure  
1st and  
2nd scale2nd  
scale

A .

197 9.9

B 1.8 2.0 2.0 a.

386 ~~9.4~~

C 3.7 3.9 3.9 a.

408 F

D 4.0 4.2 4.2 a.

227 9.8

E 4.0 4.2 4.2 a.

F 5.0 5.2 5.3 5.25 a.

G 5.2 5.4 5.6 5.50 a.

a' 4.7 <sup>4.9 5.0</sup> 4.5 5.3 5.1 5.08 5.12 a.

a'' 4.8 5.0 5.0 5.50 a.

d 9.1

a''' 5.6 5.8 5.9 5.50 a.

e 9.2

a'''' 5.8 6.0 6.3 6.00 a.

f 9.7

a'''' 5.9 6.1 6.0 6.05 a.

f<sup>2</sup> 9.3

b' . 7.4

f<sup>3</sup> 9.0

b'' . 7.4

f<sup>4</sup> 9.0

b''' . 7.6

f<sup>5</sup> 9.0

c' 8.2

c'' 8.7

c''' 8.9

c'''' 7.3

c'''' 8.6

c'''' 8.9

c'''' 8.9

c'''' 8.9

23.59  
A. D. R.

Wednesday, November 2, 1910 173

Cepheid

North Polar Sequence.

Scale M

4-inch Cooke  $\Delta 222$ 7 = 5<sup>th</sup> exposure  
1st and  
2nd scale2nd  
scale

A .

197 9.8

B 1.9 2.1 2.1 a.

386 9.6

C 2.9 3.1 3.1 a.

408 9.8

D 3.6 3.8 3.8 a.

227 9.4

E 3.9 4.1 4.1 a.

F 4.7 4.9 5.0 4.95 a.

G 5.1 5.3 5.4 5.35 a.

a' 4.8 5.0 5.0 5.00 a.

a'' 4.8 5.0 5.0 5.00 a.

d 9.0

a''' 5.6 5.8 5.9 5.75 a.

e 9.1

a'''' 6.0 6.2 5.9 6.05 a.

f 9.8

a'''' 5.7 5.9 5.8 5.85 a.

f<sup>2</sup> 9.5

b' 7.0 7.2 7.2 7.20 a.

f<sup>3</sup> 9.0

b'' 7.4

f<sup>4</sup> 9.0

b''' 7.4

f<sup>5</sup> 9.0

c' 8.2

c'' 8.7

c''' 8.9

c'''' 7.3

c'''' 8.6

c'''' 8.9

c'''' 8.9

c'''' 8.9

A. D. R.



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North Polar Sequence

Scale M

4-inch Cooke L 222

8 = 6<sup>th</sup> exposure  
int. and  
extra scale2<sup>nd</sup>  
scale

A	.	197 10.0
B	2.0 2.2 2.2 a.	386 9.8
C	superfused	408 10.1
D	3.9 4.1 4.1 a.	227 9.7
E	4.1 4.3 4.3 a.	
F	4.9 5.1 5.3 5.20.1	
G	5.7 5.9 5.8 5.85.10	
a'	5.2 5.4 5.1 5.25.22	
a <sup>1</sup>	4.7 4.9 5.1 5.00.21	d 9.3
a <sup>2</sup>	5.8 6.0 6.1 6.00.00	e 9.5
a <sup>3</sup>	6.2 6.4 6.3 6.60.22	f 9.8
a <sup>4</sup>	6.2 6.4 6.4 6.40.10	f <sup>2</sup> m.s.
b <sup>1</sup>	7.0 7.2 7.3 7.25.01	f <sup>3</sup>
f <sup>2</sup>	7.9	
f <sup>3</sup>	7.6 $\frac{+8}{-5}$	
c'	8.2 16/13 $\pm .081$	
c <sup>2</sup>	8.7	
c <sup>3</sup>	9.0	
c <sup>4</sup>	7.9	
c <sup>5</sup>	8.7	
c <sup>6</sup>	9.0	
c <sup>7</sup>	9.0	

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North Polar Sequence

Scale M

4-inch Cooke L 222

9 = 7<sup>th</sup> exposure  
int. and  
extra scale2<sup>nd</sup>  
scale

A	.	197 10.0
B	2.1 2.3 2.3 e.	386 9.8
C	3.0 3.2 3.2 a.	408 m.s.
D	4.0 4.2 4.2 a.	227 9.6
E	4.6 4.8 4.9 4.85.01	
F	5.2 5.4 5.5 5.45.01	
G	superfused	
a'	4.9 5.1 5.2 5.15.21	
a <sup>1</sup>	4.9 5.1 5.2 5.15.21	d 9.4
a <sup>2</sup>	6.0 6.2 6.2 6.20.00	e 9.2
a <sup>3</sup>	6.3 6.5 6.7 6.60.21	f 10.0 defective?
a <sup>4</sup>	6.2 6.4 6.7 6.55.21	f <sup>2</sup> m.s.
b <sup>1</sup>	7.0 7.2 7.3 7.25.01	f <sup>3</sup>
b <sup>2</sup>	7.9	
b <sup>3</sup>	7.7 $\frac{+5}{-5}$	
c'	8.1 16/10 $\pm .062$	
c <sup>2</sup>	8.7	
c <sup>3</sup>	8.9	
c <sup>4</sup>	7.0	
c <sup>5</sup>	8.7	
c <sup>6</sup>	9.2	
c <sup>7</sup>	9.0	

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North Polar Sequence

Scale M

4-inch Cooke L 222

10<sup>2</sup> 8<sup>th</sup> exposure  
int. red  
scale scale

A . 197 9.9

B 4<sup>th</sup> 386 9.7

C 3.2 3.4 3.4 a. 408 n.s.

D 3.9 4.1 4.1 a. 227 9.7

E 4.8 5.0 5.0 5.00.00

F off edge —

G " " —

a' 4.9 5.1 5.4 5.25.12

b' 5.1 5.3 5.3 5.30.00

a<sup>2</sup> 5.9 6.1 6.3 6.20.21

a' off edge —

a<sup>2</sup> 6.1 6.9 6.3 6.85.10

b' 7.0 7.2 7.3 7.25.01

b' 7.9

b' off edge —

c' 8.1

c' 8.6

c' 8.9

c' 7.9

c' 8.0

c' 8.9

c' 9.0

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North Polar Sequence

Scale M

4-inch Cooke L 222

11 = 9<sup>th</sup> exposure  
int. red  
scale scale

A 197 n.s.

B off edge 386 9.6

C 3.1 3.3 3.3 a. 408 n.s.

D 3.8 4.0 4.0 a. 227 9.7

E off edge —

F " " —

G " " —

a' 4.9 5.1 5.4 5.25.12

a<sup>2</sup> 5.0 5.3 5.6 5.65.11a<sup>2</sup> off edge —

a' off edge —

a<sup>2</sup> 6.8 7.0 7.0 7.00.01

b' 7.6

b' 8.0

b' off edge —

c' 8.2

c' off edge —

c' " " —

c' 8.0

c' off edge —

c' off edge —

c' 8.9

A. D. W.



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## North Polar Sequence.

2.54

4-inch Cooke L 222

+ is toward marked end.

Distances in mm from centre of plate

2<sup>nd</sup> exposure 1<sup>st</sup> exp. 3<sup>rd</sup> exp. 4<sup>th</sup> exp. 5<sup>th</sup> exp.

A	.	.	.	.	.
B	+84n	+97n	+73n	+65n	+63
C	.	.	.	+114n	+121n
D	.	.	.	+97n	+80n
E	+80n	+95n	+69n	+60n	+56
F	45n	64n	27n	-9n	-14h
G	-26n	43n	-14	-21h	-37h
a <sup>1</sup>	.	.	15n	67n	<del>48n</del>
a <sup>2</sup>	-96n	.	-81n	-66n	-55n
a <sup>3</sup>	75n	94n	57n	-38n	-23n
a <sup>4</sup>	51n	69n	34n	-19n	-18h
a <sup>5</sup>	79n	98n	+62n	+44n	+29n
b <sup>1</sup>	.	.	82n	61n	<del>44n</del>
b <sup>2</sup>	.	.	83n	64n	<del>46n</del>
b <sup>3</sup>	43n	61n	24n	4n	-14
c <sup>1</sup>	80n	.	63n	43n	25n
c <sup>2</sup>	77n	86n	48n	30n	12n
c <sup>3</sup>	67n	85n	43n	29n	12n
c <sup>4</sup>	83n	.	+66n	+48n	+34n
c <sup>5</sup>	55n	74n	36n	17n	1h
C <sup>6</sup>	73n	93n	55n	36n	18n
C <sup>7</sup>	78n	.	60n	41n	23n

Wednesday,

Copied

L 222

2<sup>nd</sup> exp. 1<sup>st</sup> exp. 3<sup>rd</sup> exp. 4<sup>th</sup> exp. 5<sup>th</sup> exp.

d	70n	89n	52n	33n	15n
e	73n	91n	54n	35n	17n
f	73n	94n	53n	35n	17n
g	74n	93n	56n	37n	19n
h	.	.	<del>46n</del>	.	.
197	76n	95n	56n	37n	19n
227	74n	93n	56n	37n	18n
386	79n	.	60n	41n	23n
408	79n	.	60n	41n	24n



Wednesday, November 2, 1910.

chief

## North Polar Sequence.

Trinch Cooke L 222

	Distances in mm from center				
	6 <sup>th</sup> exp.	7 <sup>th</sup> exp.	8 <sup>th</sup> exp.	9 <sup>th</sup> exp.	10 <sup>th</sup> exp.
A					
B	+67l	+74l	+86l	+100l	+115l
C	+85n	+75n	+65n	+62	+64l
D	+63n	+49n	+36n	+33	+39l
E	+59l	+67l	+79l	+94l	+108l
F	-31	+50l	69l	88l	.
G	-55	+72l	92l	77	.
a'	+29	+13n	-11l	+29l	46l
a <sup>2</sup>	-49	-50l	-63l	-69l	-83l
a <sup>3</sup>	-16	-37l	-44l	-62	99l
a <sup>4</sup>	-32l	-49l	69l	86l	-82l.
a <sup>5</sup>	+21	+29l	+44l	-61l	77l
b'	+24	6n	14l	32l	52l
b <sup>2</sup>	+26	9n	13l	31l	49l
b <sup>3</sup>	-33	+57l	71l	90l	.
c'	5n	+120l	32l	51l	69l
c <sup>2</sup>	9l	+26l	46l	65l	82l
c <sup>3</sup>	10l	+27l	47l	66l	84l
c <sup>4</sup>	+35	+29l	+46l	+58l	75l
c <sup>5</sup>	-20	+38l	57l	77l	94l
c <sup>6</sup>	-5l	+21l	40l	59l	76l
d'	-7n	+17l	35l	55l	72l

Wednesday, November 2, 1910.

chief

## North Polar Sequence.

Trinch Cooke L 222

	6 <sup>th</sup> exp.	7 <sup>th</sup> exp.	8 <sup>th</sup> exp.	9 <sup>th</sup> exp.	10 <sup>th</sup> exp.
d	+9l	+25l	43l	63l	80l
e	+7l	+22l	41l	60l	77l
f'	+9l	+24l	42l	61l	78l
f <sup>2</sup>	+10	+22l	41l	60l	77l
f <sup>3</sup>					
f					
177	-2l	+18l	38l	56l	75l
227	+5	+20l	39l	59l	75l
336	+6n	+14l	34l	52l	70l
408	+9	+17l	36l	54l	72l

Wednesday, November 2, 1910.

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## North Polar Sequence.

4-inch Cooke L222

Distances in mm from centre.

11<sup>th</sup> exp. 12<sup>th</sup> exp. 13<sup>th</sup> exp.

A

B

C +71h

+84h

+96h

D +52h

+68h

+85h

E

F

G

a' 766h

86h

a<sup>2</sup> -99ha<sup>3</sup> 99ha<sup>4</sup>a<sup>5</sup> +96hb<sup>1</sup> 70h

91h

b<sup>2</sup> 69h

89h

b<sup>3</sup>

c' 99h

c<sup>2</sup>c<sup>3</sup>c<sup>4</sup> 94hc<sup>5</sup>c<sup>6</sup> 96hc<sup>7</sup> 90h

A. D. H.

Wednesday, November 2, 1910. 185

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## North Polar Sequence.

4-inch Cooke L222

Distances in mm from centre.

11<sup>th</sup> exp. 12<sup>th</sup> exp.

d

e 98h

f 99h

g 97h

h

i

j

k

197 95h

227 96h

386 90h

408 91h

4.01

A. D. H.

Saturday, November 5, 1910.

Capit

North Polar Sequence

22.40  
Scale N

AC 10310, Class T' Pole and Pleiades

Polar Sequence 1st 2nd 3rd scale scale scale			Page 188	2nd scale	Page 188	Mean
Mean						
0.75 20 A	0.9 0.7	0.7 a.. 0.8	19.11 10.2	10.2	10.20 00	
3.10 12 B	3.2 3.0 2.6 3.2	3.10 1.1 3.10	22.8 Antares			
4.18 13 17 C	4.0 3.8 4.6 4.2	4.00 2.2 4.35	38.6 9.9	9.9	9.90 00	
4.92 12 10 D	5.2 4.8 4.7	4.80 2.0 5.05	40.8 5			
5.22 12 02 E	5.6 5.2 5.2	5.20 2.0 5.25				
5.75 05 25 F	6.0 5.9 5.7	5.80 1.2 5.70				
5.75 12 10 G	5.9 5.5 5.1	5.65 1.2 5.85	9.9	9.8	9.85 10	
5.82 05 22 H	6.3 5.9 5.7	5.85 1.0 5.80	10.2	10.3	10.25 01	
6.28 07 28 a	6.7 6.3 6.4	6.35 1.0 6.20				
6.50 01 00 b	6.8 6.4 6.6	6.50 1.1 6.50				
6.68 02 02 c	7.0 6.6 6.7	6.65 0.1 6.70				
7.65 11 10 d	7.7 7.3 7.7	7.75 0.1 7.55				
7.81 17 28 e	8.3 7.9 8.0	7.95 1.0 7.80				
8.58 13 02 f	8.9 8.3 8.6	8.55 1.0 8.6				
8.88 08 07 g	8.3	8.45				
8.55 10 01 h	8.5	8.6				
8.95 01 01 i	8.0	8.9				
9.00 00 01 j	9.0	9.0				
8.60 00 01 k	8.6	8.6				
9.20 00 01 l	9.2	9.2				
9.55 01 01 m	9.6	9.5				
9.60 00 01 n	9.6	9.6				
9.60 00 01 o	9.6	9.6				

A. D. W.

Saturday, November 5, 1910. 187

Capit

Pleiades

Scale N

AC 10310, Class T' Pole and Pleiades

Mean	Pleiades 1st 2nd 3rd scale scale scale		Page 187	1st 2nd 3rd scale scale scale	Page 187	Mean
0.90 00 a	1.1 0.9	0.9 a.. 0.9	L 2.1 1.9	1.9 a.. 2.0	1.95 20	
1.70 12 b	2.0 1.8	1.8 a.. 1.6	B 2.8 2.6	2.6 a.. 2.7	2.65 01	
2.55 10 c	2.7 2.5	2.5 a.. 2.6	Y	6.8 6.4 6.5	6.45 01 6.60 6.52 01 6.6	
3.42 02 03 d	3.6 3.4 3.8 3.4	3.40 0.0 3.45	S	8.8 8.4 8.3	8.35 0.1 8.40 8.38 02 12	
1.70 00 e	1.9 1.7	1.9 a.. 1.7	E	8.6 8.2 8.2	8.20 0.0 8.35 8.28 03 17	
3.98 08 07 f	3.9 3.7 4.5 4.1	3.90 2.2 4.05	G	7.1 6.7 6.7	6.70 0.0 6.70 6.70 00 00	
4.62 03 22 g	5.0 4.6 4.7	4.65 0.1 4.60				
5.82 11 11 h	6.0 5.6 5.7	5.65 0.1 6.00				
6.20 05 05 i	6.7 6.3 6.2	6.25 1.0 6.15				
6.70 05 25 j	8.2 6.8 6.7	6.75 0.1 6.65				
6.80 00 00 k	7.3 6.9 6.7	6.80 1.2 6.80				
7.42 07 08 l	7.7 7.3 7.4	7.35 1.0 7.50				
8.08 03 02 m	8.5 8.1 8.0	8.05 1.0 8.10				
8.25 05 45 n	8.7 8.3 8.3	8.30 0.0 8.20				
8.38 03 02 o	8.7 8.3 8.4	8.35 1.0 8.40				
8.70 00 p	8.7	8.7				
8.90 00 q	9.9	9.9				
8.80 12 r	8.9	8.7				
9.05 01 s	9.0	9.1				
9.25 01 t	9.2	9.3				
10.05 01 u	10.2	10.1				
10.15 02 v	10.2	10.1				
5.45 15 15 w	5.7 5.3 5.3	5.30 0.0 5.60				

Stars brighter than C  
have short tails.

$\pm \frac{7}{15}$ 30/15 $\pm 0.50$	$\pm \frac{7}{15}$ 30/15 $\pm 0.50$
---	---

Stars brighter than C  
have short trails.

A. D. W.

Saturday, November 5, 1910.

Capit  
10/10

AC 10310, Class T' Pole and Pleiades.

Scale N

Polar Sequence remeasured.

	1st scale	2nd scale	3rd scale	2nd scale
A	1.0 6.8		0.8 a..	197 10.2
B	2.3 3.1	3.5 3.1	3.0 0..	227 unperfected
C	4.6 4.4	4.7 4.3	4.35 0.2.	386 9.9
D	5.6 5.2	4.9	5.05 .21	408
E	5.7 5.3	5.2	5.25 .10	
F	6.2 5.8	5.6	5.70 .12	
G	6.3 5.9	5.7	5.85 .10	
a	6.3 5.9	5.7	5.80 .12	
a <sup>2</sup>	6.7 6.3	6.1	6.20 .12	e 9.3
a <sup>3</sup>	6.9 6.5	6.5	6.50 .00	f' 11.3
a <sup>4</sup>	7.2 6.8	6.6	6.70 .12	
a <sup>5</sup>	7.9 7.5	7.6	7.55 .20	
b <sup>1</sup>	8.3 7.9	7.7	7.80 .12	
b <sup>2</sup>		8.6	8.6 .12	
b <sup>3</sup>	8.8 8.4	8.5	8.45 .01	
c <sup>1</sup>		8.6		
c <sup>2</sup>		8.9		
c <sup>3</sup>		9.0		
c <sup>4</sup>		8.6		
c <sup>5</sup>		9.2		
c <sup>6</sup>		9.7 <sup>5</sup>		
c <sup>7</sup>		9.8 <sup>6</sup>		
d		9.6		

A.D.V.

Saturday, November 5, 1910. 189

Capit  
10/10

AC 10310 Class T' Pole and Pleiades

Scale N

Pleiades remeasured

	1st scale	2nd scale	3rd scale	1st scale	2nd scale	3rd scale
a	1.1 0.9		0.9 a..	2.2 2.0		2.0 a..
a'	1.7 1.6		1.6 a..	2.9 2.7		2.7 a..
b	2.8 2.6		2.6 a..	Y	7.0 6.6 6.6	6.60 .00
b'	3.7 3.5 3.3 3.4		3.45 1.0.	S	8.7 8.3 8.5	8.40 .11
b <sup>2</sup>	1.9 1.7		1.7 a..	E	8.8 8.4 8.3	8.35 .02
C	4.1 3.9 4.6 4.2		4.05 1.2.	f	7.2 6.8 6.6	6.70 .12
d	4.9 4.5 4.7		4.60 .11			
d'	6.2 5.6 5.6		5.60 .00			
e	6.6 6.2 5.8		6.00 .22			
e'	6.7 6.3 6.0		6.15 .12			
f	7.1 6.7 6.6		6.65 .10			
g	7.3 6.9 6.7		6.80 .12			
h	7.7 7.3 7.7		7.50 .22			
h'	8.6 8.2 8.0		8.10 .21			
i	8.6 8.2 8.2		8.20 .00			
i'	8.9 8.5 8.3		8.40 .12			
j <sub>1</sub>		8.7				
j <sub>2</sub>		9.9				
j <sub>3</sub>		8.7				
j <sub>4</sub>		9.1				
j <sub>5</sub>		9.3				
k		10.1				
		10.1				

$$\begin{array}{r} +15 \\ 32 \end{array} \begin{array}{r} 15 \\ 29 \end{array} \\ \hline \pm .891$$
23.34  
A.D.V.



Saturday, November 5, 1910.

Copied

A I 8690 Class T' Pole and Pleiades

Scale N

	Polar Sequence			Remeasured		
	1st scale	2nd scale	3rd scale	1st scale	2nd scale	Mean
A	2.826	2.6	2.1	2.927	2.72	2.65 01
B	6.82 <sup>+6.3</sup> <sub>5.9</sub>	6.2	6.20 .21 ±0	6.8646.0	6.20.22	6.20 00.57
C	7.874 7.7	7.65	7.21	7.076 7.7	7.65.01	7.60 05.05
D	8.480 8.2	8.10	8.1	8.652 8.1	8.15.12	8.12 02.03
E	8.884 8.5	8.45	8.1	8.824 8.6	8.50.11	8.48 03.02
F	8.8			8.7		8.75 01
G	8.9			8.9		8.90 00
a <sup>1</sup>	8.8			8.8		8.80 00
a <sup>2</sup>	8.9			8.9		8.90 00
a <sup>3</sup>	9.3			9.2		9.25 10
a <sup>4</sup>	defective			defective		
a <sup>5</sup>	9.3			9.9		9.85 01
b <sup>1</sup>	10.2			10.2		10.20 03
b <sup>2</sup>	2.5					

$$\begin{array}{r} +40 \\ -29 \\ 20 \\ \hline \pm 0.25 \end{array}$$

Images are poor for stars brighter than D.

See Remark Page 192

A.D.H.

Saturday, November 5, 1910. 191

copied

A I 8690 Class T' Pole and Pleiades

Scale N

Pleiades

	Pleiades			Remeasured		
	1st scale	2nd scale	3rd scale	1st scale	2nd scale	Mean
a <sup>3</sup>	4.230	3.0	2.1	3.20 3.0	3.0	3.00 00
a <sup>1</sup>	5.561 4.7	4.90.22		5.147 4.8	4.75.10	4.82 08.02
b <sup>1</sup>	6.157 5.7	5.70.00		6.157 5.7	5.70.00	5.70 00.00
b <sup>2</sup>	7.541 6.8	6.95.12		7.672 7.0	7.10.12	7.02 01.03
b <sup>2</sup>	4.846 5.046 4.8	4.67 ±1.1		5.248 4.8	4.80.00	4.74 07.06
c	8.511 8.1	8.10.00		8.511 8.2	8.15.10	8.12 02.03
d	8.682 8.3	8.25.01		8.581 8.3	8.20.11	8.22 00.23
d <sup>1</sup>	8.7			8.7		8.75 10
e	9.1			8.9		9.00 12
e <sup>1</sup>	9.3			9.2		9.25 10
f <sup>x</sup>	9.6			9.5		9.55 02
g	9.7			9.7		9.70 00
h	10.1			10.1		10.10 00
h <sup>1</sup>						

2	5.753 4.9	5.10.22	5.753 5.0	5.15.12	5.12 02.03
3	6.763 6.0	6.15.12	6.460 5.8	5.90.11	6.02 13.12
4	9.2		9.4		9.00 11
5	F		F		F
6	m.3		m.3		
7	9.5		9.6		9.55 10

23.55

A.D.H.

all stars brighter than c have poor images

See Remark Page 192

Monday, November 7, 1910.

expt

North Polar Sequence.

Scale N

A I 8696, Class T' Pole and Pleiades

Polar Sequence

at end end  
scale scale scale

Re-measured

at end end  
scale scale scale

Mean

A	3.4323.104	3.00 L.	3.6343.104	3.40.00	3.05 25.00
B	6.9 6.0 6.7	6.60 .11	7.0666.6	6.60 .00	6.60 20.00
C	8.0 7.6 7.6	7.60 .00	7.8747.3	7.35 .02	7.48 20.12
D	8.7 8.3 8.0	8.15 .12	8.7 8.3 8.2	8.25 .10	8.20 25.45
E	8.4 8.1 8.2	8.15 .10	8.1 8.3 8.3	8.30 .00	8.22 27.09
F	8.9		8.8		8.95 20
G	8.9	$\frac{+3}{10)8}$ 2.080	8.9	$\frac{+1}{10)2}$ 2.020	8.80 21
a'	8.9		8.9		8.90 00
a''	8.9		9.0		8.95 10
a'''	9.4		9.2		9.30 12
a''''	9.3		9.3		9.30 00
a'''''	9.7		9.9		9.80 26
b'	9.9		10.0		9.95 20
b''					
b'''					

$$\begin{array}{r} +40 \\ -90 \\ 26)150.58 \\ \hline \pm .18 \end{array}$$

Images are poor, but comparable in the two better regions.

Remark January 25, 1911. Examination of these two plates shows that magnitudes of stars fainter than the scale reading 9.0 are very poor owing to the coarse grain of the film. Reject all readings fainter than 9.0

A.D.R.

Monday, November 7, 1910.

expt

North Polar Sequence

Scale N

A I 8696

Pleiades

at end end  
scale scale scale

Re-measured

at end end  
scale scale scale

Mean

a	3.6343.104	3.40.00	3.73.53.935	3.50.00	3.45 25.05
a'	5.450 4.9	4.95 .02	5.75.3	5.3 .00	5.12 17.17
b'	6.359 5.7	5.80 .12	6.95.5.7	5.60 .21	5.70 10.10
b''	7.470 6.9	6.95 .02	7.57.1.7.2	7.15 .10	7.05 12.10
b'''	5.147 4.9	4.80 .21	5.46.4.8	4.75.2.3.4.2	4.78 02.23
c	7.975 7.6	7.55 .10	7.37.4.7.6	7.00 .11	7.52 00.22
d	8.410 8.0	8.00 .00	8.48.0.3	8.15 .21	8.08 08.07
d'	8.834 8.6	8.50 .11	9.01.6.7.7	8.65 .01	8.58 08.07
e	8.9		8.7		8.80 11
e'	9.0		9.0		9.00 00
f	9.3		9.2		9.25 10
g	9.3		9.3		9.30 00
h	9.9		9.9		9.90 00
h'	5.854 5.3	5.35 .02	5.75.3.5.0	5.15 .12	5.25 10.12
h''	6.359 5.9	5.90 .00	6.76.3.5.7	6.00 .22	5.95 05.05
h'''	9.2		9.1		9.15 01
h''''	9.9		9.8		9.85 10
i	9.5		9.5		9.50 01
i'	9.5		9.5		9.50 01
i''	9.5		9.5		9.50 01
i'''	9.5		9.5		9.50 01
i''''	9.5		9.5		9.50 01
i'''''	9.5		9.5		9.50 01
i''''''	9.5		9.5		9.50 01
i'''''''	9.5		9.5		9.50 01
i''''''''	9.5		9.5		9.50 01
i'''''''''	9.5		9.5		9.50 01
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i'''''''''''''''''''''	9.5		9.5		9.50 01
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i'''''''''''''''''''''''''''''''''	9.5		9.5		9.50 01
i''''''''''''''''''''''''''''''''''	9.5		9.5		9.50 01
i'''''''''''''''''''''''''''''''''''	9.5		9.5		9.50 01
i''''''''''''''''''''''''''''''''''''	9.5		9.5		9.50 01
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i'''	9.5		9.5		9.50 01
i''	9.5		9.5		9.50 01
i'''	9.5		9.5		9.50 01
i''	9.5		9.5		9

Tuesday, November 8, 1910.

Cepheid

North Polar Sequence

0.44

Scale N

AC 12056, with and without wire gauge  
screen over aperture.

Exposure without screen.

1st 2nd 3rd  
scale scale scale

p 196

2nd  
scale p 196

mean

1.35 ± 0.3	A	1.2 1.0	1.0 a. . 1.7	197 9.9	9.9	9.90 ± 0
3.35 ± 0.14	B	3.7 5.3 5.4	3.45 1.0 3.25	227 9.6	9.6	9.60 ± 0
4.38 ± 0.22	C	4.6 4.7 4.3	4.35 ± 0.1 4.40	386 9.6	9.7	9.65 ± 0.1
4.52 ± 0.23	D	4.7 4.5 4.7	4.60 ± 0.1 4.65	408 10.2	10.1	10.15 ± 0.2
5.20 ± 0.05	E	5.7 5.3 5.0	5.15 ± 0.12 5.25			
5.71 ± 0.21	F	5.7 5.4 5.6	5.50 ± 0.1 5.72			
5.79 ± 0.21	G	6.6 6.2 5.8	6.20 ± 0.22 5.78			
5.80 ± 0.15	H	5.9 5.5 5.8	5.65 ± 0.22 5.95			
5.78 ± 0.07	I	5.9 5.5 5.7	5.80 ± 0.12 5.95	2 9.7	9.8 af?	9.75 ± 0.05 defunct?
6.19 ± 0.01	a <sup>3</sup>	6.8 6.1 5.9	6.18 ± 0.22 6.20	f <sup>1</sup> 9.8	9.9	9.85 ± 0.1
6.75 ± 0.00	a <sup>4</sup>	7.2 6.8 6.7	6.75 ± 0.02 6.75	f <sup>2</sup> ~ 5		
7.02 ± 0.02	a <sup>5</sup>	7.6 7.2 6.9	7.05 ± 0.22 7.00			
7.60 ± 0.00	b <sup>1</sup>	7.7 7.5 7.6	7.55 ± 0.10 7.65			+2.28 -2.01 587 436 ±.075
8.15 ± 0.00	b <sup>2</sup>	8.6 8.2 8.0	8.10 ± 0.14 8.20			
8.28 ± 0.12	b <sup>3</sup>	8.5 8.1 8.2	8.15 ± 0.10 8.40			
8.42 ± 0.08	c <sup>1</sup>	8.7 8.3 8.4	8.35 ± 0.10 8.50			
8.85 ± 0.1	c <sup>2</sup>	8.8	8.9			
9.05 ± 0.1	c <sup>3</sup>	9.0	9.1			
8.50 ± 0.10	c <sup>4</sup>	8.7 8.3 8.5	8.40 ± 0.11 8.60			
9.10 ± 0.1	c <sup>5</sup>	9.2	9.0			
9.25 ± 0.1	c <sup>6</sup>	9.3	9.2			
9.30 ± 0.1	c <sup>7</sup>	9.4	9.2			
9.30 ± 0.0	d	9.3	9.3			

+228  
-208  
587 ± 36  
± 0.75

A. S. R.

Tuesday, November 8, 1910.

Cepheid

North Polar Sequence

Scale N

AC 12056, with and without wire gauge screen  
over aperture

Exposure with screen.

1st 2nd 3rd  
scale scale scale

Remeasured

1st 2nd 3rd  
scale scale scale

Mean

A	3.9 3.7	3.7 a. .	3.9 3.7	3.7 a. .	3.70 ± 0
B	6.7 6.3 6.3	6.30 ± 0.0	6.7 6.3 6.1	6.20 ± 0.1	6.25 ± 0.05
C	7.2 6.7 6.7	6.88 ± 0.21	7.5 7.1 6.7	6.70 ± 0.2	6.89 ± 0.01
D	7.8 7.4 7.6	7.50 ± 0.1	7.7 7.3 7.6	7.45 ± 0.2	7.48 ± 0.23
E	8.0 7.6 7.7	7.70 ± 0.1	8.2 7.8 7.7	7.75 ± 0.2	7.72 ± 0.03
F	8.6 8.3 8.6	8.38 ± 0.21	8.7 8.3 8.3	8.30 ± 0.0	8.34 ± 0.24
G	8.8 8.4 8.6	8.50 ± 0.1	8.8 8.4 8.6	8.50 ± 0.1	8.50 ± 0.00
a <sup>1</sup>	8.7 8.3 8.3	8.30 ± 0.0	8.8 8.4 8.4	8.35 ± 0.2	8.28 ± 0.23
a <sup>2</sup>	8.8 8.3 8.6	8.40 ± 0.21	8.7 8.3 8.5	8.40 ± 0.1	8.40 ± 0.00
a <sup>3</sup>	8.8		9.0 8.6 8.8	8.70 ± 0.1	8.75 ± 0.05
a <sup>4</sup>	9.2	+11 -13 23) 24 109	9.0		9.10 ± 0.1
a <sup>5</sup>	9.5		9.4	+10 -9 19) 19 ± 0.06	9.40 ± 0.1
b <sup>1</sup>	9.8		9.8		9.80 ± 0.0
b <sup>2</sup>	9.5		F		F ± 0.2
b <sup>3</sup>	9.5				

+42  
-43  
26) 85  
± 0.33

A. S. R.



Tuesday, November 7, 1910.

Copied  
right

Scale N

AC 12056

Expansion without screen

Remastered

1st and  
2nd scale2nd  
scale

A	1.917	1.7 a..	197 9.9
B	3.533 3.632	3.25 1.0 a.	227 9.6
C	4.412 4.714 4.6	4.40 2.2	286 9.7
D	5.652 4.9	5.05 2.2	418 10.1
E	5.753 5.2	5.25 1.0	
F	6.6 <sup>6.7</sup> 6.4 <sup>6.0</sup> 5.7 <sup>5.7</sup> 5.9 <sup>5.9</sup> 5.2 <sup>5.2</sup> 5.1 <sup>5.1</sup>		
G	6.5 <sup>6.1</sup> 5.6 <sup>5.7</sup> 5.9 <sup>5.9</sup> 5.8 <sup>5.8</sup> 5.2 <sup>5.2</sup> 5.1 <sup>5.1</sup>		
a'	6.5 <sup>6.1</sup> 5.6 <sup>5.7</sup> 5.9 <sup>5.9</sup> 5.8 <sup>5.8</sup> 5.2 <sup>5.2</sup> 5.1 <sup>5.1</sup>		
a <sup>2</sup>	6.5 6.1 5.7	5.95 1.2	d 9.3
a <sup>3</sup>	6.7 6.3 6.1	6.20 1.2	e 9.8
a <sup>4</sup>	7.3 6.9 6.6	6.75 2.2	f' 9.9
a <sup>5</sup>	7.5 7.1 6.9	7.00 1.2	
b'	8.2 7.6 7.7	7.65 0.1	
b <sup>2</sup>	8.6 8.2 8.2	8.20 0.0	
b <sup>3</sup>	8.9 8.5 8.3	8.40 1.1	
c'	8.8 8.4 8.6	8.50 2.1	
c <sup>2</sup>	8.9		
c <sup>3</sup>	9.1		
c <sup>4</sup>	8.9 8.5 8.7	8.60 2.1	
c <sup>5</sup>	9.0		
c <sup>6</sup>	9.2		
c <sup>7</sup>	9.2		

\*Image 2 defective?

$$\begin{array}{r} +24 \\ -22 \\ 39 \end{array} \begin{array}{r} 46 \\ 46 \\ 28 \end{array} = 0188$$
1.26  
A.S.M.

Tuesday, November 8, 1910.

Copied

Scale N

AC 12078, large and small apertures

1st Exp. full aperture

1st and 2nd  
scale scales scales

N 199

2nd  
scale

N 199

Mean

Mean	A	0.2 0.0	0.0 a..	0.6	197	10.5		
530 2.3	B	2.6 2.4	2.4 a..	2.8	227	10.1	10.2	10.15 1.0
235 0.2	C	3.533 3.935	3.40 1.1	3.50	286	10.2	10.2	10.20 0.0
3.45 2.5 15	D	4.033 4.541	3.95 3.1	4.05	418	10.2		
4.07 0.5 15	E	4.331 4.743 4.3	4.23 1.1	4.50				
4.39 1.4 11	F	5.147 4.7	4.70 1.0	4.75				
4.72 2.2 13	G	5.652 4.9	5.05 2.2	5.10				
5.08 2.2 12	a'	5.450 4.7	4.55 2.2	4.75				
4.80 1.5 18	a <sup>2</sup>	5.955 5.6	5.55 1.0	5.98	d	9.2	9.9	9.85 0.1
5.76 2.2 22	a <sup>3</sup>	5.955 5.6	5.55 1.0	5.95	e	10.2	10.2	10.20 0.0
5.75 2.2 20	a <sup>4</sup>	6.5 6.4 5.7 5.2	5.90 2.1 2.1	5.95	f'	9.8		
5.92 2.2 23	a <sup>5</sup>	7.3 6.9 6.8	6.85 1.0	6.80				
6.82 2.0 22	b'	7.6 7.2 7.0	7.10 1.2	7.10				
7.10 0.1 22	b <sup>2</sup>	8.2 7.7 7.9	7.40 0.0	7.95				
7.92 2.2 13	b <sup>3</sup>	8.6 8.2 8.3	8.20 0.1	7.95				
8.10 1.5 15	c'	8.8 8.4 8.6	8.50 2.1	8.45				
8.48 1.2 12	c <sup>2</sup>	8.9		9.0				
8.95 1.0	c <sup>3</sup>	9.7		9.7				
9.70 0.0	c <sup>4</sup>	8.9 8.5 8.6	8.55 1.0	8.50				
8.52 1.2 22	c <sup>5</sup>	9.6		9.6				
9.60 0.0 22	c <sup>6</sup>	9.8		9.8				
9.80 0.0	c <sup>7</sup>	9.7		9.7				
9.75 1.0								

$$\begin{array}{r} +157 \\ -173 \\ 52 \end{array} \begin{array}{r} 320 \\ 320 \\ 320 \end{array} = 062$$

A.S.M.



Tuesday, November 8, 1910.

Capit

North Polar Sequence.

Scale N

AC 12078 with large and small apertures

Exp. with small aperture.  
1st 2nd 3rd  
scale scale scaleRemeasured  
1st 2nd 3rd  
scale scale scale

Mean

A	4.2 <sup>14</sup> 4.7 <sup>13</sup> .	4.15 2.1.	4.1 3.9 4.8 <sup>8</sup> 4.5	4.27 <sup>12</sup>	4.21 0.6 0.6
B	6.7 <sup>6</sup> 6.0	6.15 6.2	6.7 <sup>6</sup> 6.1	6.30 1.2	6.18 0.5 0.2
C	7.5 <sup>7</sup> 6.8	6.95 1.2	7.5 <sup>7</sup> 6.8, 6.8	6.90 1.1	6.92 0.3 0.2
D	7.7 <sup>7</sup> 7.5	7.40 1.1	7.7 <sup>7</sup> 7.5, 7.6	7.47 1.1	7.44 0.4 0.3
E	7.8 <sup>7</sup> 7.6	7.50 1.1	7.8 <sup>7</sup> 7.4 7.7	7.55 1.1	7.52 1.2 0.3
F	8.4 <sup>8</sup> 8.1	8.05 1.1	8.5 8.1 8.2	8.15 1.0	8.10 1.5 0.5
G	8.7 <sup>8</sup> 8.2	8.25 1.0	8.7 <sup>8</sup> 8.3 8.6	8.45 1.2	8.35 1.2 1.0
a <sup>1</sup>	8.4 <sup>8</sup> 8.0	8.00 1.0	8.3 <sup>8</sup> 8.3 8.3	8.15 1.1	8.08 0.8 0.7
a <sup>2</sup>	8.7 <sup>8</sup> 8.4	8.35 1.0	8.8 8.4 8.4	8.40 1.0	8.38 1.2 0.2
a <sup>3</sup>	8.9 <sup>8</sup> 8.6	8.55 1.0	8.9 <sup>8</sup> 8.7	8.60 1.1	8.58 1.3 0.2
a <sup>4</sup>	8.8		8.9		8.85 0.1
a <sup>5</sup>	9.4	+7 -10	9.3	+13 -18	9.35 0.1
b <sup>1</sup>	9.6	20 <sup>17</sup> ±0.85	9.7	25 <sup>17</sup> ±.124	9.65 0.1
b <sup>2</sup>	9.9		10.0		9.95 1.0
b <sup>3</sup>	10.0		10.1		10.05 0.1
c <sup>1</sup>	10.2		10.2		10.20 0.0
c <sup>2</sup>	F		F		F
c <sup>3</sup>					
c <sup>4</sup>	10.2		10.3		10.25 1.2
c <sup>5</sup>					
c <sup>6</sup>					
c <sup>7</sup>					

+83  
-16  
34<sup>17</sup> 119  
±0.44

a. D. H.

Tuesday, November 7, 1910.

Capit

North Polar Sequence.

Scale N

AC 12078

Let exp. remeasured  
1st 2nd 3rd  
scale scale scale3rd  
scale

A	8.8 6.6	0.6 2.1.	197
B	2.5 2.3	2.3 2.1.	327 10.2
C	3.6 3.4 4.0 3.6	3.50 1.1	386 10.2
D	4.0 3.4 7.4 3.	4.15 2.3.	406
E	4.8 6.4 9.4 5.	4.85 0.2.	
F	5.0 4.6 4.9	4.75 2.1	
G	5.6 5.2 5.0	5.10 1.2	
a <sup>1</sup>	5.2 4.7 4.7	4.75 0.2	
a <sup>2</sup>	6.6 5.5 8.5 5.8 5.8 5.2 2.2		d 9.9
a <sup>3</sup>	6.4 6.0 5.9	5.95 0.2	e 10.2
a <sup>4</sup>	6.5 6.1 5.8	5.95 1.2	f 10.5
a <sup>5</sup>	7.3 6.9 6.7	6.80 1.2	
b <sup>1</sup>	7.6 7.2 7.0	7.10 1.2	
b <sup>2</sup>	8.4 8.0 7.9	7.95 0.2	
b <sup>3</sup>	8.7 8.2 7.3 7.7	7.95 3.3 1.	
c <sup>1</sup>	8.7 8.3 8.6	8.45 1.2	
c <sup>2</sup>	9.0		
c <sup>3</sup>	9.7		
c <sup>4</sup>	8.8 8.6 8.6	8.50 1.1	
c <sup>5</sup>	9.6		
c <sup>6</sup>	9.8	+18 -25	
c <sup>7</sup>	9.8	24 <sup>17</sup> 43 ±.126	

3.40  
a. D. H.

Wednesday, November 9, 1910.

C. J. H.

North Polar Sequence.

23.20

Scale N

AC 12086, with large and small apertures

Mean	1st aperture not used with scale	2nd scale	2nd scale	Mean
1.35 10 A	1.5 1.3	1.3 a...	1.4	1.97 ~ 5
3.15 12 10 B	2.4 3.2 3.2 2.7	3.05 2.1	3.25	2.27 10.1
4.19 12 29 C	4.6 4.6 4.1 4.7 4.3	4.7 4.2 4.2 4.2 4.0	4.10	3.86 16.0
4.78 02 21 D	5.1 4.7 4.9	4.70 .11	4.77	4.08 ~ 2
5.15 05 05 E	5.6 5.2 5.2	5.20 .00	5.10	
5.72 07 08 F	6.0 5.6 5.7	5.65 .01	5.70	
6.05 07 03 G	6.6 6.7 5.8 6.0	6.12 .12 2.0	5.98	
5.70 22 29 a <sup>1</sup>	6.3 5.9 5.7	5.70 .11	5.80	
6.50 22 20 a <sup>2</sup>	6.5 6.5 5.9	6.25 .11	6.00	d 9.7
6.62 22 03 a <sup>3</sup>	6.5 6.5	6.50 .00	6.50	10.0
6.80 05 05 a <sup>4</sup>	7.3 6.9 6.8	6.85 .10	6.75	f ~ 2
7.35 11 12 a <sup>5</sup>	7.7 7.3 7.6	7.45 .12	7.25	
7.62 03 22 b <sup>1</sup>	7.7 7.5 7.8	7.65 .12	7.60	
8.45 10 02 b <sup>2</sup>	8.9 8.6 8.6	8.55 .10	8.35	
8.32 03 22 b <sup>3</sup>	8.8 8.4 8.3	8.35 .01	8.30	
8.65 05 25 c <sup>1</sup>	8.7		8.60	
9.02 11 01 c <sup>2</sup>	8.9		9.1	
9.35 21 01 c <sup>3</sup>	9.2		9.5	
8.46 02 21 c <sup>4</sup>	8.7 8.7 8.6	8.48 .22 1	8.45	
9.40 11 01 c <sup>5</sup>	9.3		9.5	
9.65 01 01 c <sup>6</sup>	9.6		9.7	
9.70 00 01 c <sup>7</sup>	9.7		9.7	

+23  
-19  
37 42  
2.114

A. D. H.

Wednesday, November 9, 1910.

C. J. H.

North Polar Sequence.

Scale N

AC 12086, with large and small apertures

Mean	1st aperture not used with scale	2nd scale	2nd scale	Mean
A 1.6 1.4	1.4 a...	1.97		
B 3.5 3.2 3.2	3.25 10.1	2.27	10.0	
C 4.0 3.8 4.4 4.2 4.3	4.10 2.12	3.86	9.9	
D 5.0 4.8 4.7 4.8	4.77 1.20	4.08		
E 5.6 5.2 5.0	5.10 .11			
F 6.0 5.7	5.80 .11			
G 6.6 5.7 5.8	6.12 .12 2.0			
a <sup>1</sup> 6.3 5.9 5.7	5.70 .11			
a <sup>2</sup> 6.4 6.0 6.0	6.00 .00	d 9.7		
a <sup>3</sup> 6.9 6.5 6.6	6.55 .10	e 10.0		
a <sup>4</sup> 7.2 6.8 6.7	6.75 .01			
a <sup>5</sup> 7.7 7.3 7.2	7.25 .10			
b <sup>1</sup> 7.7 7.5 7.7	7.60 .11			
b <sup>2</sup> 8.7 8.3 8.4	8.35 .10			
b <sup>3</sup> 8.7 8.3 8.3	8.30 .00			
c <sup>1</sup> 8.8 8.4 8.7	8.60 .22			
c <sup>2</sup> 9.1				
c <sup>3</sup> 9.5				
c <sup>4</sup> 8.8 8.4 8.5	8.45 .01			
c <sup>5</sup> 9.5				
c <sup>6</sup> 9.7				
c <sup>7</sup> 9.7				

+140  
-18  
367 34  
2.094

A. D. H.

Wednesday, November 9, 1910.

Cephid

## North Polar Sequence

Scale N

AC 12086, with large and small apertures

	2nd exposure 1st 2nd 3rd scale scale scale	Remeasured 1st 2nd 3rd scale scale scale	Mean
A	4.240 5.41	4.65 0.1.	3.75 31.20
B	6.264 6.2	6.30 1.1	6.30 00 00
C	7.472 7.0	7.57 1.2	7.08 02 03
D	7.775 7.6	7.55 1.0	7.55 01 00
E	8.278 7.7	7.75 0.1	7.78 03 02
F	8.783 8.0	8.15 1.2	8.28 13 12
G	8.884 8.5	8.45 0.1	8.48 03 02
a <sup>1</sup>	8.793 8.4	8.35 1.0	8.28 07 05
a <sup>2</sup>	9.086 8.7	8.65 0.1	8.53 07 05
a <sup>3</sup>	8.9	8.8	8.85 1.0
a <sup>4</sup>	9.0	9.2	9.10 1.1
a <sup>5</sup>	9.6	9.7	9.65 0.1
b <sup>1</sup>	9.9	9.8	9.85 1.0
b <sup>2</sup>	10.2	10.2	10.20 00
b <sup>3</sup>	10.3	10.3	
c <sup>1</sup>	F	F	F
c <sup>4</sup>	10.6		

0.00  
Q.D.Wr.
$$\begin{array}{r} +37 \\ -23 \\ 28 \end{array} \begin{array}{r} 158 \\ 158 \\ 158 \end{array} \pm 0.53$$

Wednesday, November 9, 1910.

Cephid

## North Polar Sequence

Scale M

I 36924 with large and small apertures

	2nd exposure 1st 2nd 3rd scale scale scale	Remeasured 1st 2nd 3rd scale scale scale	Mean
a <sup>3</sup>	6.010, 6.7 6.2 6.32 11.1	6.3 6.2 6.4 6.50 1.1	6.31 01 01
a <sup>5</sup>	6.769 7.0 6.95 1.0	6.7 7.0 7.0 7.0 1.1	6.98 03 02
b <sup>1</sup>	7.2	7.0	7.10 1.1
b <sup>2</sup>	7.3	7.7	7.75 0.1
c <sup>1</sup>	7.9	7.9	7.90 0.0
c <sup>2</sup>	8.3	8.2	8.25 1.0
c <sup>3</sup>	8.6	8.7	8.65 0.1
c <sup>4</sup>	8.8	8.8	8.80 0.0
c <sup>7</sup>	8.9	8.9	8.90 0.0
d	9.0	9.0	9.00 0.0
e	9.5	9.3	9.40 1.1
f <sup>1</sup>	9.8	9.8	9.80 0.0
f <sup>2</sup>	10.1	10.1	10.10 0.0
f <sup>3</sup>	10.5		
g <sup>1</sup>	9.7	9.7	9.70 0.0
h <sup>1</sup>	9.2	9.0	9.10 1.1
i <sup>1</sup>	9.7	9.7	9.70 0.0

$$\begin{array}{r} +4 \\ -1 \\ 4 \end{array} \begin{array}{r} 113 \\ 113 \\ 113 \end{array} \pm 0.33$$

$$\begin{array}{r} +1 \\ -1 \\ 4 \end{array} \begin{array}{r} 113 \\ 113 \\ 113 \end{array} \pm 0.33$$

$$\begin{array}{r} +53 \\ -39 \\ 32 \end{array} \begin{array}{r} 113 \\ 113 \\ 113 \end{array} \pm 0.30$$

Images on second exposure are much sharper than those on first.



Wednesday, November 9, 1910.

Copied

## North Polar Sequence.

Scale M

I 36924, with large and small apertures.

Mean	1st Exposure 1st and 2nd scale	Re-measured 1st and 2nd scale	2nd scale	Re-measured 2nd scale	Mean
3.00 ± 0.0	3.83.0	3.0 a.	2.85.0	3.0 a.	197 7.1
3.45 ± 0.1	3.83.4	3.4 a.	3.82.5	3.5 a.	327 and 225 taken together
4.15 ± 0.1	4.04.2	4.2 a.	3.94.1	4.1 a.	386 6.9
5.10 ± 0.0	4.85.0	5.2	4.85.0	5.2	510.21
5.08 ± 0.2	4.85.0	5.2	4.85.0	5.2	408 7.6
5.70 ± 0.0	5.65.8	5.7	5.65.7	5.6	279 9.7
6.02 ± 0.3	6.02.2	6.0	6.02.2	6.0	292 9.3
6.35 ± 0.2	6.24.6	6.4	6.16.3	6.3	630.00
6.46 ± 0.2	6.24.6	6.4	6.24.6	6.4	640.00
6.72 ± 0.2	6.56.7	6.7	6.56.7	6.7	675.00
6.95 ± 0.2	6.76.7	7.0	6.76.7	6.9	690.00
7.50 ± 0.1	7.5	7.5	7.5	7.5	
7.70 ± 0.1	7.7	7.7	7.7	7.7	
8.30 ± 0.2	8.3	8.3	8.3	8.3	
8.55 ± 0.2	8.6	8.6	8.6	8.6	
8.75 ± 0.2	8.8	8.8	8.8	8.8	
8.90 ± 0.1	8.9	8.9	8.9	8.9	
9.35 ± 0.1	9.3	9.3	9.3	9.3	
9.60 ± 0.1	9.6	9.6	9.6	9.6	
9.85 ± 0.1	9.7	9.7	9.7	9.7	
10.00 ± 0.0	10.0	10.0	10.0	10.0	
10.10 ± 0.0	10.1	10.1	10.1	10.1	

$$+ \frac{69}{-15}$$

$$36 \sqrt{157}$$

$$\pm 0.28$$
0.36  
A.D.W.

Thursday, November 10, 1910.

Copied

## North Polar Sequence.

22.39  
Scale N

AC 12094 with large and small apertures.

Mean	1st Exposure 1st and 2nd scale	2nd scale	Re-measured 2nd scale	Mean
0.20 ± 1	A 0.70.5	0.5 a.	0.7	197 9.7
2.45 ± 1	B 2.7.5	2.5 a.	2.4	327 9.1
3.32 ± 0.2	C 3.63.4	3.3	3.35	386 9.3
4.08 ± 0.2	D 4.13.4	4.0	4.05	408 9.9
4.52 ± 0.05	E 4.54.3	4.5	4.43	4.0
5.08 ± 0.03	F 5.65.2	5.0	5.05	5.05
5.25 ± 0.12	G 5.76.3	5.2	5.20	5.20
5.10 ± 0.10	H 5.56.1	5.1	5.15	5.15
5.20 ± 0.05	I 5.78.3	5.2	5.25	5.25
5.84 ± 0.12	J 6.40.5	5.8	5.82	5.82
6.18 ± 0.12	K 6.76.3	6.1	6.15	6.15
6.65 ± 0.12	L 7.26.3	6.6	6.65	6.65
7.25 ± 0.05	M 7.67.2	7.2	7.20	7.20
7.70 ± 0.05	N 8.07.6	7.7	7.75	7.75
7.75 ± 0.12	O 8.39.7	7.8	7.85	7.85
8.18 ± 0.03	P 8.68.2	8.2	8.20	8.20
8.48 ± 0.03	Q 8.84.6	8.5	8.45	8.45
8.65 ± 0.02	R 8.95.8	8.6	8.65	8.65
8.70 ± 0.02	S 8.62.8	8.7	8.70	8.70
8.80 ± 0.10	T 9.08.6	8.8	8.80	8.80
8.90 ± 0.02	U 8.99.7	8.9	8.90	8.90
9.00 ± 0.03	V 9.0	9.0	9.0	9.0

$$+ 14$$

$$- 14$$

$$39 \sqrt{30}$$

$$\pm 0.17$$
0.36  
A.D.W.



Thursday, November 10, 1910.

Copied  
H. 1000

## North Polar Sequence

Scale N

AC 12094, with large and small apertures

Dark exposure  
1st and 2nd  
scale scale scaleRemeasured  
1st and 2nd  
scale scale scale

Mean

A	3.129	2.9 a..	3.20 3.0	3.0 a..	2.95 ± 0
B	5.75.0 5.4	5.35.10	5.85.4 5.3	5.35.01	5.35.00
C	6.66.2 5.9	6.05.21	6.54.1 5.8	5.95.12	6.00 ± 0.05
D	7.06.9 6.7	6.80.11	7.26.8 6.7	6.75.01	6.78 ± 0.02
E	7.67.4 6.3 7.0	7.00.20 2.0	7.57.1 6.9	7.00.11	7.50 ± 0.00
F	7.77.5 7.7	7.60.11	7.97.5 7.7	7.60.11	7.60 ± 0.00
G	8.07.6 7.8	7.70.11	8.27.8 7.8	7.80.00	7.75 ± 0.05
a <sup>1</sup>	7.97.6 7.6	7.55.10	7.77.3 7.7	7.50.22	7.52 ± 0.02
a <sup>2</sup>	7.97.5 7.7	7.60.11	7.97.5 7.6	7.60.11	7.60 ± 0.00
a <sup>3</sup>	8.68.2 8.4	8.30.11	8.68.2 8.3	8.35.01	8.28 ± 0.02
a <sup>4</sup>	8.61.2 8.5	8.35.21	8.81.4 8.4	8.40.00	8.38 ± 0.02
a <sup>5</sup>	9.01.6 8.9	8.75.21	8.82.4 8.4	8.82.01	8.82 ± 0.05
b <sup>1</sup>	9.1		9.2		9.15 ± 0
b <sup>2</sup>	defective		too far		
b <sup>3</sup>	9.7	$\frac{+11}{-14}$ 2.104	9.8	$\frac{+14}{-14}$ 2.076 ± 0.00	9.75 ± 0
c <sup>1</sup>	9.9		9.9	average defective	9.90 ± 0.00
c <sup>2</sup>	10.21		10.4		10.30 ± 1
c <sup>3</sup>	(10.3 do not use - too faint)		F		F
c <sup>4</sup>	10.0		9.9		9.95 ± 0.02
c <sup>5</sup>	(10.3 do not use - too faint)		F		P

Measures of C<sup>3</sup> and C<sup>5</sup> are not to be used - too faint.

A. D. H.

Thursday, November 10, 1910.

Copied  
H. 1000

## North Polar Sequence

Scale N

AC 12094, with large and small apertures

1st exposure  
1st and 2nd  
scale scale scaleRemeasured  
1st and 2nd  
scale scale scale

Mean

A	0.9 0.7	0.7 a..	9.7 9.6
B	2.6 2.4	2.4 a..	2.2 9.4
C	3.5 3.3 7.9 3	3.30.00	3.86 9.2
D	4.1 3.9 4.7 4.3	4.10.20	4.08 9.9
E	4.7 4.7 5.0 4.6 4.5	4.60.02	
F	5.6 5.6 5.7 4.9 5.0 5.05 ± 0.2 3.0		
G	5.7 5.3 5.0	5.15.12	
a <sup>1</sup>	5.7 5.3 5.1	5.20.11	
a <sup>2</sup>	5.6 5.2 5.1	5.15.02	d 9.0
a <sup>3</sup>	6.4 6.4 5.6 5.7	5.82.12 ± 1	e 9.3
a <sup>4</sup>	6.6 6.2 5.9	6.05.22	f 9.6
a <sup>5</sup>	6.8 6.4 6.7	6.55.21	f' 9.9
b <sup>1</sup>	7.7 7.3 7.3	7.30.00	f' 10.2
b <sup>2</sup>	8.0 7.6 7.7	7.65.01	g 10.4?
b <sup>3</sup>	7.9 7.5 7.8	7.65.12	
c <sup>1</sup>	8.5 8.1 8.2	8.15.10	
c <sup>2</sup>	8.7 8.3 8.6	8.45.12	
c <sup>3</sup>	9.0 8.6 8.7	8.65.01	
c <sup>4</sup>	8.4 8.0 8.2	8.10.11	
c <sup>5</sup>	8.9		
c <sup>6</sup>	8.9		
c <sup>7</sup>	9.0		

 $\frac{+23}{-19}$   
3.97 ± 0.8
23.26  
A. D. H.

copied

Mean

[illegible]
$$\begin{array}{r} +183 \\ -215 \\ \hline 48 \overline{)396} \\ \underline{+083} \end{array}$$
$$\begin{array}{r} +9 \\ -7 \\ \hline 17 \overline{)15} \\ \pm 288 \end{array}$$
$$\begin{array}{r} +3 \\ -4 \\ \hline 12) \overline{) 1} \\ \underline{12} \end{array}$$

Chief

Mean

$\lambda^3$	9.1	9.5, 9.6	9.45 $\pm$ 0.2
$\lambda^5$	9.7	9.7	9.70 $\pm$ 0
$\lambda^6$	10.8	10.6	10.70 $\pm$ 0.1
$\lambda^7$	11.3	11.6	11.45 $\pm$ 0.2
$\lambda^8$	11.9	11.9	11.90 $\pm$ 0
$\lambda^9$	12.7	12.6	12.65 $\pm$ 0.1
$\lambda^{10}$	12.9	12.9	12.90 $\pm$ 0
$\lambda^{11}$	13.0	13.1	13.00 $\pm$ 0
$\lambda^{12}$	12.9	13.0	12.95 $\pm$ 0
$\lambda^{13}$	13.3	13.3	13.30 $\pm$ 0
$\lambda^{14}$	13.4	13.5	13.45 $\pm$ 0.1
$\lambda^{15}$	14.1	14.1	14.10 $\pm$ 0
$\lambda^{16}$		14.2	
$\lambda^{17}$	14.1	14.3	14.1 $\pm$ 0.1
$\lambda^{18}$			
$\lambda^{19}$	13.5	13.7	13.75 $\pm$ 0.1
$\lambda^{20}$	12.7	12.6	12.65 $\pm$ 0
$\lambda^{21}$	12.5	12.5	

$$\begin{array}{r} +9 \\ -7 \\ \hline 29 \overline{) 16} \\ \pm .055 \end{array}$$

3.25

Tuesday, November 15, 1910.

## North Polar Sequence.

3.32		Scale M		MC 713, with and without screen A.		on skydial glass			
Mean		Exposure without screen A		A		1st and 2nd scale		Remeasured	
4.92 02 03		C		4.949 4.9 4.9 0.0		4.850 4.9 4.9 0.2		197	
5.88 00 02		C		5.757 5.8 5.8 5.0		5.760 5.8 5.8 0.2		386 6.9 7.1 7.4	
6.20 05 05		C		5.7 6.1 6.2 6.15 1.0		6.163 6.2 6.25 1.0		227	
6.55 00 00		C		6.2 6.4 6.7 6.55 3.1		6.365 6.6 6.55 1.0		325	
6.68 02 03		C		6.4 6.6 6.8 6.70 2.1		6.567 6.8 6.65 1.0		408	
6.72 02 03		d		6.7 6.9 6.9 6.90 0.0		6.870 6.9 6.95 0.2		248	
7.12 09 07		e		6.7 7.1 7.3 7.20 0.1		6.870 7.1 7.05 0.1		279	
7.70 1.1		f		7.8		7.6		292	
8.10 0.0		g		8.1		8.1		25.160	
8.50 1.1		h		8.6		8.4		+4	
8.80 0.0		i		8.8		8.8		14.8	
9.10 0.0		j		9.1		9.1		2.057	
8.90 0.0		k		8.9		8.9		197	
9.60 0.0		l		9.6		9.6		225	
9.65 0.1		m		9.6		9.7		227 7.0 7.2 7.2	
10.10 0.0		n		10.1		10.1		386 6.9 7.1 7.0	
+53		o		10.3		10.3		408	
-42		p		10.3		10.3		248	
32) 95		q		10.3		10.3		279	
±.030		r		10.3		10.3		292	
		s		10.3		10.3		9.6	

A. D. R.

## North Polar Sequence

MC 713		cont.			
Exposure with screen A		A		Mean	
2nd scale		1st and 2nd scale		Remeasured	
7.9		7.9		7.90 0.0	
8.6		8.5		8.55 0.2	
8.9		8.7		8.80 1.2	
8.8		8.9		8.85 0.1	
8.8		8.7		8.95 0.2	
9.3 diff.		9.2		9.25 1.0	
9.3		9.2		9.25 1.0	
9.9		9.9		9.90 0.0	
F		F		9.60 0.0	
F		F		197 10.0	
F		F		225 -	
F		F		227 9.5	
F		F		386 9.7	
F		F		408 F	
F		F		348	
F		F		279	

3.48  
O. D. R.+4  
-4  
22) 8  
±.036

Friday January 13, 1911

## North Polar Sequence

Scale M MC 803 4 Exposures of 7<sup>m</sup> 8<sup>m</sup> 6<sup>m</sup> 4<sup>m</sup>

1st Exposure

11.15	1st Scale	2nd Scale	12.00	Re-measured 1st Scale	2nd Scale	Mean	
a <sup>1</sup>	3.638	.	3.8 a.	3.8 40	.	4.0 a.	3.90 ±1
a <sup>3</sup>	4.0 42	.	4.2 a.	4.5 47	.	4.7 a.	4.45 ±3
b <sup>1</sup>	5.6 5.8	5.6	5.70 ±2	5.8 68	5.6	5.80 ±2	5.75 ±5 ±5
b <sup>2</sup>	5.9 6.1	6.2	6.15 ±0	6.1 6.3	6.4	6.35 ±0	6.25 ±1 ±0
c <sup>1</sup>	6.9 7.1	7.0	7.05 ±1	6.8 7.0	6.9	6.95 ±1	7.00 ±5 ±5
c <sup>2</sup>	.	7.3		7.0 7.2	7.3	7.25 ±1	7.25 ±2 ±3
c <sup>3</sup>		7.7			7.7		7.70 ±0
c <sup>6</sup>		7.8			7.8		7.80 ±0
c <sup>7</sup>		7.8			7.8		7.80 ±0
d		7.9			8.0		7.95 ±0
e		8.1			8.20		8.15 ±0
f <sup>1</sup>		8.7			8.8		8.75 ±0
f <sup>2</sup>		8.2			9.7 <sup>3</sup>		9.25 ±1
f <sup>3</sup>		9.9			7.9		9.90 ±0
f <sup>5</sup>		9.9			9.9		9.90 ±0
g							F
h							
i							
k <sup>1</sup>							
k <sup>2</sup>							
k <sup>3</sup>							
k <sup>4</sup>							
k <sup>5</sup>							
l							
386	8.4			8.7			8.55 ±1
197	8.7			8.8			8.75 ±0

Friday January 13, 1911.

## North Polar Sequence Cont.

Scale M MC 803 4 Exposures of 7<sup>m</sup> 8<sup>m</sup> 6<sup>m</sup> 4<sup>m</sup>

1st Exposure

Re-measured

	1st Scale	2nd Scale	1st Scale	2nd Scale	Mean
408	unexposed	unexposed			unexposed
248					
279					
292					
25	4.9 5.1	5.2 5.15 ±0	4.8 5.0	5.1 5.05 ±1	5.10 ±5 ±5
11.25	22.7	8.3 8.3 ±2	8.3 8.3	8.3 8.3 ±2	8.30 ±0 ±0
225			12.05	F F	F
		8.15 ±.06		10.15 ±.08	20.5 ±.06



Friday January 13, 1911

looked

Scale M MC 803 Cent.

2nd exposure

11.25	1st Scale	2nd Scale	12.05	1st Scale	2nd Scale	Mean
d <sup>1</sup>						
a <sup>3</sup>						
L <sup>1</sup>						
L <sup>2</sup>						
C <sup>1</sup>	4.8 5.0	4.9 4.95 0.2	4.7 4.9	5.0 4.95 0.1	4.95 00 00	
C <sup>2</sup>	5.1 5.3	5.5 5.45 0.1	4.9 5.1	5.5 5.30 0.2	5.35 05 05	
C <sup>3</sup>	5.6 5.8	5.7 5.75 0.2	5.6 5.8	5.7 5.75 0.2	5.75 00 00	
C <sup>6</sup>	5.8 6.0	5.8 5.90 0.2	5.8 6.0	5.9 5.95 0.2	5.92 02 03	
C <sup>7</sup>	5.9 6.1	5.9 6.05 0.2	5.8 6.0	5.8 5.90 0.2	5.95 05 05	
d	5.9 6.1	6.3 6.20 0.1	6.0 6.2	6.0 6.10 0.2	6.15 05 05	
e	6.2 6.4	6.7 6.55 0.1	6.2 6.4	6.5 6.45 0.1	6.50 05 05	
L <sup>1</sup>	6.9 7.1	6.9 7.05 0.2	6.9 7.1	6.9 7.05 0.2	7.00 00 00	
L <sup>2</sup>		7.6		7.7	7.65 01	
L <sup>3</sup>		7.7		8.0	7.95 00	
L <sup>4</sup>		8.3		8.2	8.25 00	
L <sup>5</sup>		8.5		8.6	8.55 00	
L <sup>6</sup>		8.6		8.5	8.55 00	
L <sup>7</sup>		9.2		9.2	9.10 01	
L <sup>8</sup>		8.8		8.9	8.85 01	
L <sup>9</sup>		9.1		9.3	9.20 01	
L <sup>10</sup>		9.7		9.8	9.85 00	
L <sup>11</sup>		def.		9.8?	9.8? 00	
L <sup>12</sup>						
386	6.4 6.6	6.8 6.70 0.1	6.7 6.9	6.7 6.80 0.2	6.75 05 05	
197	6.9 7.1	7.0 7.05 0.2	7.0 7.2	7.0 7.10 0.2	7.08 02 02	

Friday Jan. 13, 1911.

looked

Scale M MC 803 Cent.

2nd exposure

1st Scale	2nd Scale	Mean
408	7.4	7.5 7.45 01
248	8.9	8.8 8.85 10
249	7.2	9.2 9.20 00
292	8.9	8.9 8.90 00
25		
227	6.6 6.8	6.8 6.80 00 6.80 00 00
225	8.4	8.3 8.35 01
22/18 + 0.8		22/18 + 0.8 48/12.5 + 0.4

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Friday January 13, 1911

## North Polar Sequence

Scale M. MC 803 Cent

11.40 3rd Exposure

	1st Scale	2nd Scale	1st Scale	2nd Scale	mean
C <sup>1</sup>	1.9 2.1	2.1 a.	1.9 2.1	2.1 a.	2.10 00
C <sup>2</sup>	2.9 3.1	3.1 a.	2.6 2.8	2.8 a.	2.95 12
C <sup>3</sup>	3.1 3.3	3.3 a.	3.0 3.2	3.2 a.	3.25 10
d	3.7 3.9	3.9 a.	3.7 3.9	3.9 a.	3.90 00
e	4.2 4.4	4.4 a.	4.0 4.2	4.2 a.	4.30 12
f <sup>1</sup>	4.7 4.9	4.8 4.85 10	4.8 5.0	4.9 4.95 12	4.90 25 05
f <sup>2</sup>	5.4 5.6	5.4 5.50 12	4.9 5.1	5.4 5.52 12	5.38 12 12
f <sup>3</sup>	5.9 6.1	6.2 6.15 10	.	5.9 5.9 a.	6.02 13 12
g	6.5 6.7	6.8 6.75 10	6.4 6.6	6.8 6.70 11	6.72 03 22
h	6.9 7.1	6.9 7.00 12	6.8 7.0	6.9 6.95 12	6.98 02 12
i	6.8 7.0	6.8 6.98 12	6.9 6.9	6.8 6.85 10	6.88 02 12
k <sup>1</sup>		7.6	7.6	7.60 00	
k <sup>2</sup>		7.6	7.3	7.45 21	
k <sup>3</sup>		7.9	8.0	7.95 10	
k <sup>4</sup>		8.3	8.3	8.30 00	
k <sup>5</sup>		8.2	8.2	8.20 00	
l		8.4	8.4	8.40 00	
m		8.7	8.7	8.80 21	
n		8.9	8.8	8.85 10	
n <sup>1</sup>		8.9	8.9	8.90 00	
o		8.9	8.9	8.90 00	
o <sup>1</sup>		8.9	8.9	8.90 00	
p <sup>1</sup>		9.2	9.2	9.20 00	
p <sup>2</sup>		8.9	8.9	8.90 00	
q <sup>1</sup>		9.7	9.7	9.70 00	
q <sup>2</sup>		9.7	9.6	9.65 10	

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## North Polar Sequence

Scale M. MC 803 Cent

3rd Exp Re-measured

	1st Scale	2nd Scale	1st Scale	2nd Scale	mean
r		9.8 9.8 a	9.8	9.8	9.80 00
s		too far	too far	too far	
t		.	.	.	
u		.	.	.	
v		.	.	.	
w		.	.	.	
x		.	.	.	
y		.	.	.	
z	3.6 3.8	3.8 a.	3.4 3.6	3.6 a.	3.70 12
aa	supposed	supposed	supposed	.	
ab	4.0 4.2	4.2 a.	3.9 4.1	4.1 a.	4.15 02
ac	4.8 5.0	4.9 4.95 02	4.8 5.0	5.1 5.05 01	5.00 05 05
ad	4.9 5.1	5.3 5.20 21	4.9 5.1	5.6 5.35 22	5.28 03 07
ae	too far	too far	too far	too far	
af	too far	too far	too far	too far	
ag	6.9 7.1	7.1 7.10 00	6.8 7.0	7.0 7.00 00	7.05 05 05
ah	.	7.8 7.8 a	7.8	7.8 a	7.80 00
ai	7.2	7.6 7.6 a	.	7.3 7.3 a	7.45 21

Images of our best nebulae

Friday January 13, 1911

North Polar Sequence

Scale M. MC803 cont.

Exp. No. (1-4)	4th Exposure		Re-measured	
	1st Scale	2nd Scale	1st Scale	2nd Scale
390 -0.82 a'	4.5	4.7	4.6	4.8
445 -0.47 a''	4.7	4.9	4.8	5.0
575 -0.75 b'	6.2	6.4	6.2	6.4
625 -0.80 b''	6.9	7.1	6.9	7.1
700 -0.70 c'		7.7		7.7
728 -0.62 c''		7.9		7.9
770 -0.25 c'''		7.9		8.0
780 -0.50 c''''		8.3		8.3
780 -0.40 c''''		8.3		8.1
795 -0.70 d'		8.6		8.7
815 -0.50 e		8.6		8.7
875 -0.70 f'		8.9		8.9
925 -0.55 f''		9.2		9.7
990 +0.0 f'''		9.6		10.0
		10.0		
855 -0.20 386		8.7		8.8
875 -0.20 197		8.9		9.0
446 . 408		9.6		9.6
830 -0.45 227		8.8		8.7
7 225				9
-0.85				
570 12.0 0 a''	5.8 6.0	5.8	5.9 6.1	5.9 6.00 1.2
				5.95 0.5 0.5
-85.6 + 10 18.846 - 4.7				
	10.5 a. 0.5		12.35	10.7 ± 0.1
				58.70 ± 0.05

Sight was poor &amp; changed during exposure of this plate





