

1872phae.proj. 57  
KG  
11365  
676

*C. S. Peirce's*  
*Photometric Observations*  
*Vol. 1.*

1872 February 17<sup>th</sup> to March 22<sup>d</sup>. 1872

*— Original Record —*



K G 11365.676







b

ar fourth

autometer 38.6    38.6  
                  140.3    39.7  
                          39.1

1.0

0.7 smaller than  $L^{\frac{1}{2}}$ 

small near the fourth

aster 162.0    18.0  
          21.1    21.1  
          19.5

2.4

2.1 may smaller than  $L^{\frac{1}{2}}$

Star first

Photometer 88.6









# In Pleiades

Star First

Ph	134.0	46.0	0.7
	<del>70.7</del>	70.7	0.1
			<u>0.4</u>

Star Third

Photometer	141.5	38.5	74.5
	44.6		

0.9

Alt. 42°

Star Third

Alt.			
Photometer	114.5	65.5	0.2
	34.0	poor	<u>1.3</u>
			0.7

Star First

Photometer	48.4	
	123.2	56.8
	52.6	0.5

Third Star - 3 / Less than 1/2

Time 10.  
 Colour Circle 7  
 Diaphragm No. 2  
 Telescope No. 2

γ Orions	0.15		ε-ζ	m
δ "	0.25			
δ "	0.45			
			δ-ζ	0.30

0.4	5.4
0.13	1.8
	1.1
	1.7



Star  $\gamma$  Orionis

Alt. 37

Photometer 64.5		
112.4	67.6	6

Mean 66.0	0.2
-----------	-----

Star  $\gamma$  Orionis

Alt.

Photometer 91.0		0.0
108.0	72.0	0.1

0.1

Star  $\epsilon$  Orionis

Alt.

Photom. 118.0	62.0
61.5	

61.7	0.3
------	-----

Star  $\epsilon$  Orionis

Alt.

Pho. 88.2		0.0
122.4	57.6	0.4

0.2

Star  $\delta$  Orionis

Alt. 37

Photometer 132.6	47.4
50.0	

48.7	0.6
------	-----

Star  $\delta$  Orionis

Alt

Phot. 56.0		0.4
113.2	66.8	0.2

0.3

Time 10.40

Obs C. 4. P

Group

Alt 50°

$\xi$	Comp of $\xi$	Diff
.45	.85	.40
.25	.85	.60
.15	1.40	1.25
50	1.35	.85
60	1.55	.95
65	1.65	1.00
65	1.35	.70
55	2.15	1.60
		.20
		.25

- .1

7.7

0.17

Comp of  $\xi$  minus  $\xi$ 

—

What is here called  $\xi$  is probably  $\xi$ . The comp is 30. Argelander's magnitudes are 4.3 and 5

$$\begin{array}{r} 3.625 \\ 5 \\ \hline 8.625 \end{array} \quad 4.3$$



Star 3 Geminor

$$\begin{array}{r|l}
 \text{Phot. } 61.0 & 0.3 \\
 89.1 & \cancel{99.8} \quad 0.0 \\
 \hline
 & 0.15
 \end{array}$$

Star Companion of 3

$$\begin{array}{r|l}
 \text{Phot } 148.1 & 31.9 \quad 1.4 \\
 32.1 & 1.4 \\
 \hline
 & 1.40
 \end{array}$$

$$\text{Diff } 1.25$$

Star 3 Geminor

$$\begin{array}{r|l}
 \text{Phot. } 52.0 & 0.5 \\
 128.5 & 51.5 \quad 0.5 \\
 \hline
 & 0.50
 \end{array}$$

$$\text{Diff } 0.35$$

Star Companion of 3

$$\begin{array}{r|l}
 \text{Phot. } 143.9 & 39.1 \quad 1.0 \\
 27.4 & 1.7 \\
 \hline
 & 1.35
 \end{array}$$

$$\text{Diff } 0.85$$

Star 3 Geminor

$$\begin{array}{r|l}
 \text{Phot } 129.0 & 51.0 \quad 0.5 \\
 45.2 & 0.7 \\
 \hline
 & 0.60
 \end{array}$$

Star, Companion of 3

$$\begin{array}{r|l}
 \text{Phot } 149.0 & 31.0 \quad 1.4 \\
 27.8 & 1.7 \\
 \hline
 & 1.58
 \end{array}$$

$$1.25$$

$$85$$

$$95$$

$$33.05$$

$$1.02$$

$$0.95$$

1872 Feb. 17

Time 11

Telescope

Scaphragm

Jan Hole

Group

Altitude  $49^{\circ}$ 

Colour Circle

Star 3 Geminor

Phot	125.0	55.0	0.4
	40.0		0.9
			<u>13</u>
			0.65

Star Companion of 3

Phot	149.5	30.5	0.5
	26.8		1.8
			<u>13</u>
			1.65

1.0

Star 3 Geminor

Phot	52.1		0.8
	137.1	42.9	0.5
			<u>13</u>
			0.65

Star Companion of 3

Phot	133.2	poor	46.8	0.7
	23.2	poor		2.0
				<u>27</u>
				1.35

.7

Star

Phot	48.3		0.6
	126.6	53.4	0.5
			<u>0.55</u>

Star

Phot	158.1	21.9	2.2
	23.4		2.1
			<u>2.15</u>

1.6





3 Geminor

Companion

Phot ~~57.0~~

1	28.0	1.6
4	11.5	<del>1.6</del> 3.5
7	31.8	1.4

Phot

19.3	<del>2.4</del>	0.8
16.8	2.7	-0.8
22.8	2.1	0.7

Phot

2	23.2	2.1
5	39.2	2.0
		1.0

Phot

23.2	2.1	0.0
18.6	2.1	0.5

Phot.

3	12.5	<del>3.3</del>
6	30.0	1.5

Phot

20.0	<del>2.3</del>	-1.0
20.3	2.3	0.8

1872 Feb. 19

Time

Obs. C. G. P.

Group

Altitude  $64^{\circ}$ 

Sky

Telescope No. 2

Diaphragm No. 2

Focus screw

Colour circle

Pin hole No. 4

Est Colour

Est mag.

Remarks. Very calm. Natural stars appear to alter into brilliant ~~all~~ all the time. There may be a haziness in the sky but this is doubtful.

Altitude of  $\gamma$  Leonis 66.5. $\gamma$  64.0

} Leonis 70.0

5-2 0.581  
Löllner

1.1  
10/2.5  
2.3



# $\gamma$ Leonis

Phot - 482	48.2	0.6
113.5	66.5	0.2
66.1		0.2
51.6		0.5
46.6		0.7
114.2	60.8	0.3
90.0		0.0
61.6		0.3
70.5		0.1
107.5	72.5	0.1
76.9		0.1
89.5		0.0
65.2		0.2
111.1	68.9	0.2
60.2		0.3
61.1		0.3

Mean 0.2

# $\gamma$ Leonis Star

Phot. 147.0	33.0	1.3
20.2		2.3
147.0	33.0	1.3
32.8		1.3
144.8	85.2	1.2
33.7		1.3

3 Leonis		Mean 1.3
45.6		0.7
<u>134.2</u>	45.8	0.7
45.2		0.7
<del>121.6</del>		
131.8	48.2	0.6
		<hr/>
		Mean 0.7

$\eta$  is 1.1 fainter than  $\gamma$   
 $\zeta$  is 0.5 fainter than  $\gamma$

Seidel makes

$\gamma$	2.3	
$\zeta$	3.3	diff 1.0
$\eta$	3.3	diff 1.0

$\zeta$  is not plainly brighter than  $\eta$

1872 Feb. 24

Obs. C. S. P

Altitude  $70^{\circ}$ I. Ky.  
Telescope No. 2

Diaphragm No. 2

Focus screw

Colour circle

Pin hole No. 3

Est. colour

Est. mag

Group 1

Remarks. A geminorum is much whiter than B

B *Geminorum*

Phot. 69.5 0.14  
85.4 0.01

0.07

A *Geminorum*

Phot 39.6 0.99  
40.0 0.97  
98

B *Geminorum*

132.0 85.0 0.01  
90.1 0.00  
0.00

A *Geminorum*

53.0 0.49  
51.3 0.56  
0.52

B

74.0 0.09  
72.0 0.12

A *Geminorum*

47.0 0.69  
39.0 1.01

B

71.5 0.12  
81.0 0.03

a

50.2 0.38  
40.3 0.95

52

0.09



B gemmorum

Phot, 43.6 ~~48.2~~ 0.82  
 119.3 60.7 0.30

A gemmorum

Phot 27.3 ~~11.3~~ 1.7  
 113.7 66.3 0.20  
 32.0

## Feb, 27, 1872 Artificial stars

149.2	39.8				
142.6	37.4				
150.7					
147.3					
120.0	60.0	0.131	111.3	68.7	0.18
55.2	55.2	0.43			
67.8	67.8	0.17			
94.2	94.2	0.00			
59.4	59.4	0.33			
70.6	20.6	0.13			
127.4	52.6	0.50			
135.2	44.8	0.77			
60.7	60.7	0.30			
61.2	61.2	0.29			
129.5	50.5	0.57			
117.9	62.1	0.28			
53.0	53.0	0.49			
51.0	51.0	0.56			
103.2	76.8	0.06			
101.7	78.3	0.05			
89.5	89.5	0.01			
89.1	89.1	0.01			
112.0	<del>88.0</del>	0.01			
100.5	79.5	0.04			
60.7	60.7	0.30			
87.6	87.6	0.01			
131.3	48.7	0.62			

Star Sirius seen through a window

Feb. 27, 1872  
U.S.C. & P.

Altitude  $30^{\circ}$

Telescope No. 4. Diaphragm No. 4

31.8	31.8	<del>1.40</del>				
18.9	18.9	2.45	+		09	+3
164.3	15.7	2.86		-	36	-6
14.0	14.0	3.11	+	*	361	+19
165.0	14.0	3.11	+		361	+19
	12.6	3.32	+		1600	+40
160.8	19.2	2.42			2500	-50
	2.6 13.2	3.22	+		900	+30
164.2	15.8	2.84		-	64	-8
	17.5	2.62		-	784	-28
164.6	15.0	2.96	+		16	+4
	14.9	2.97	+		25	+5
163.2	16.8	2.71		-	2441	-21
	14.6	3.01	+		86	+9
160.2	19.8	2.36		31	36	-56
	14.8	2.97	+		25	+5
164.0	15.0	2.96	+		16	+4
<del>164</del>	14.3	3.06	+		196	+14
164.1	15.9	2.84		-	64	-8
	13.7	3.14	+		284	+22
		<u>19) 55<sup>19</sup> 43</u>			<u>11099</u>	<u>174</u>
		2.92-			558	3.06
					1617	177
					24.8	



150.2	29.8	1.53	151.3	28.6	1.61	
150.6	29.4	1.6	154.3	25.7	1.82	
	31.0	1.45		29.0	1.58	
	32.7	1.35		22.6	2.09	
153.6	26.4	1.8	158.0	22.0	2.15	33
157.0	38.0	1.32		25.1	1.87	
	18.2	2.5	155.0	25.0	1.98	15
140.0	40.0	0.90	156.6	23.4	2.02	
150.8	29.2	1.6		31.2	1.44	
	29.5	1.5		27.6	1.68	
	27.2	1.7	150.5	29.5	1.55	
144.8	35.2	1.20	157.0	22.0	2.15	
144.0	36.0	0.72		27.1	1.72	
	30.0	1.5		13) 23.6°C		
	30.0	1.5		1.82		
143.5	36.5	1.14				
	27.5	1.7				
147.4	32.6	1.35				
?	24.3	1.9				
	29.6	1.5				
148.0	42.0	0.88				
149.5	30.5	1.48				
	36.5	1.14				
	29.0	1.5				

March 3  
star Orionis

U. S. C. S. P.

Altitude  $43^{\circ}$  Telescope No. 2 Diaphragm 2  
Colour circle 188 Pin hole No. 3

Remarks  
Rather cloudy

1.6 1.75  
2.07

$\delta$   
~~Rho 45.9~~  
~~80.4~~

$\epsilon$   
~~49.8~~

$\epsilon$   
~~Rho 49.8~~

$\zeta$   
~~67.9~~

$\delta$	mag	$\epsilon$	mag	$\zeta$	mag
41.7	0.89	35.3	1.20	46.9	0.69
38.4	1.04	73.0	0.10	46.2	0.71
34.2	1.26	41.4	0.90	53.3	0.48
39.8	0.97	45.9	0.73	55.3	0.43
41.2	0.91	53.0	0.49	56.1	0.41
<hr/>					
38.7	1.03	50.0	0.59	63.7	0.24
<hr/>					
56.3	0.10	58.2			
22.3	2.11	32.0	1.39	44.0	

Mean  $\delta = 5$

1.014

0.682

0.844

$\delta$  1.014 | 0.47  
 $\epsilon$  0.682 | 0.14  
 $\zeta$  0.544 |



March 3

Telescope No. 2

pinhole No. 4

diaphragm 1

35 20  
44  
23 78  
30

131  
16  
1 13  
14

$\lambda$  Orionis

phat		mag	$\phi_1$	mag	$\phi_2$	mag		
136.6	43.4	0.82	31.6	1.41	37.0	1.11	334	1.11
	48.2	0.64	33.0	1.33	38.6	1.03	300	1.00
	47.3	0.67	33.6	1.29	37.4	1.06	302	1.01
	66.1	0.20	33.3	1.31	34.4	1.25	276	.92
	58.9	0.34	38.2	1.05	37.0	1.11	250	.83
	66.3	0.19	31.2	1.44	33.6	1.29	2.92	.97
	48.7	0.63	38.3	1.04	46.3	0.71	2.37	.79
	57.2	0.38	41.8	0.89	39.8	0.97	2.24	.75

4.3

$\phi_1 - 1$	$\phi_2 - 1$	$\phi_1 - \phi_2$
0.59	0.29	0.30
0.69	0.39	0.30
0.61	0.38	0.23
= 1.12	1.06	0.06
[ 0.71	0.77	- 0.06
= 1.25	1.10	- 0.15
= 0.41	0.08	0.33
= 0.51	0.59	- 0.08

From mean

$\lambda$	$\phi_1$	$\phi_2$
-0.29	+0.30	$\pm 0.00$
- .36	+ .33	+ .03
- .34	+ .28	+ .05
- .72	+ .39	+ .33
- .49	+ .22	+ .28
- .78	+ .47	+ .32
- .17	+ .25	- .08
- .37	+ .14	+ .22

Rej

March 3<sup>rd</sup> 1872

O. ba C. G. P.

Stars near Gemma

Telescope

Altitude

diaphragm

pm hole

Colour arc

Remarks.



# Geminorum

$\eta$	$\mu$	mag	$\mu$	mag	$\nu$	mag
1	14018	39.2	46.0	0.72	24.6	1.91
2		45.6	55.3	0.43	23.7	2.99
3		45.7	60.5	0.30	29.0	1.58
4		40.0	52.0	0.52	29.9	1.52
5	good	45.7	54.1	0.40	30.0	1.51
6		39.6	56.4	0.30	27.6	1.58
7		46.5	76.0	0.07	19.6	2.38
8		40.8	54.0	0.40	21.0	2.24
9		42.5	65.6	0.20	20.5	2.29
10		48.2	41.0	0.92	20.0	2.34
11		39.9	66.7	0.19	27.8	1.60
12		39.4	67.5	0.17	26.3	1.78
13		30.5	56.2	0.40	23.6	2.00

13) 11.69

.899

525

.404

24.88

1.914

$\mu$  Geminorum

0.404

Arg

3

Saebel

3.24

Perice

3.12

$\eta$

"

0.899

3.38

3.50

3.62

$\nu$

"

1.914

4.58

4.63

40  
1.80  
1.51

1303

.74

0.654

3.37

3.37

2.72

1.91

4.63

March 3, 1872

Telescope No. 2 Pin hole 3 Diaphragm 2.

B geminos

	mag
37.0	1.1
26.7	1.5
33.3	1.30 (1.32)
28.9	1.59
47.3	0.68
38.0	1.05
31.9	1.39

dilly

0.06
- 0.15
0.56
0.44
0.62
0.39
- 0.03
<hr/> 2.07
1.8
2) 1.89
0.27

a geminos

	mag
35.8	1.17
28.7	1.09
25.2	1.86
23.3	2.03 (2.09)
20.5	2.39
31.1	1.44
32.9	1.33



March 3, 1872

105.2 748

Uls. C. G. 8

*Starr. geminorum*

Telescope No. 2      Diaphragm No. 1  
Pin hole No. 3

Pin hole No. 2

$\beta$	$\sigma$	$v$	$K$	$L$
69.7	0.14	19.3	2.41	2.20
71.9	0.14	17.9	2.87	1.96
87.2	0.00	19.6	2.38	1.80
80.3	0.03	22.1	2.14	1.96
83.8	0.04	19.8	2.36	2.04
		2.312	2.330	1.992
$\beta - \sigma$	$v - \sigma$	$K - \sigma$	$L - \sigma$	$B5 - \sigma$
2.3	0.0	-0.1	-0.2	1.1
2.5	-0.2	-0.7	-0.6	2.6
2.4	-0.2	-0.3	-0.6	1.8
2.1	+0.1	0.0	-0.1	2.6
2.2	0.0	0.0	-0.4	2.1
				1.10
				1.35
				1.28
				1.9
				1.24

## gemini

$\beta$	mag.	$\alpha-\beta$	$\sigma$	mag	$\alpha$	mag	$\alpha-\beta$	mag			
80.3	0.03	-0.01	19.0	2.44	2.39	78.4	-1	0.07	2.28	20.1	2.33
74.8	0.05	+0.56	19.0	2.44	1.80	48.3	0.64	1.84	18.7	2.48	
74.3	0.08	+0.14	18.2	2.54	2.31	64.5	-1	0.23	2.25	18.7	2.58
71.2	0.12	+0.57	16.1	2.80	2.09	46.2	0.71	2.13	15.8	2.84	
78.3	0.05	+0.52	20.0	2.34	1.77	50.5	0.57	2.05	17.5	2.62	
66.3	0.19	+0.58	15.2	2.93	1.36	50.5	0.57	1.77	20.0	2.84	
62.4	0.27	+0.45	16.7	2.72	2.00	46.0	0.72	2.04	16.4	2.76	
67.2	0.18	+0.47	17.2	2.76	2.09	48.0	0.65	1.45	22.5	2.10	
71.8	0.12	+0.38	19.2	2.42	1.92	52.9	-1	0.50	1.99	18.6	2.59
71.1	0.13	+0.10	17.9	2.58	2.35	64.3	0.23	1.80	23.3	2.03	
<del>128</del>	<del>0.128</del>	<del>0.55</del>		<del>2.597</del>				<del>4.84</del>			
	1.23										2.447

$\beta$	mag.	$\alpha-\beta$	$\sigma$	mag	$\alpha$	mag	$\alpha-\beta$	mag
81.8	4.10	<del>1.4</del>	3.8					
12.5	3.43	12.9	3.37					
14.0	3.10	15.5	2.89					
14.8	3.09	13.9	3.11					
13.4	3.49							
Arg	3.362	Seidel	3.090					
1.44	0.36							
1.06	1.33							
4	1.99	1.93						
3.5	2.13	2.15						
5	2.37	2.18						
4.3	2.33							
5	3.36							
5	3.09							

$\beta$	mag.	$\alpha-\beta$	$\sigma$	mag	$\alpha$	mag	$\alpha-\beta$	mag
1.44	0.36							
1.06	1.33							
4	1.99	1.93						
3.5	2.13	2.15						
5	2.37	2.18						
4.3	2.33							
5	3.36							
5	3.09							



March 6, 1872

## Aurigae Group IX &amp; XI

14 B ~~18 B~~ 18 B e  $\gamma$   $\eta$   $\mu$ 

17.2 2.66 11.8 3.47 38.6 1.03 28.4 1.62 30.0 1.51 16.4 2.76  
 16.0 2.81 12.7 3.30 45.7 1.70 25.9 1.81 33.8 1.23 15.8 2.84

$$\begin{array}{r} 2.73 \\ 2.25 \\ \hline 4.98 \end{array}$$

6

$$\begin{array}{r} 3.38 \\ 2.25 \\ \hline 5.63 \end{array}$$

6

$$\begin{array}{r} 0.85 \\ 3.10 \\ 2.25 \\ \hline 3.10 \\ 3.4 \end{array}$$

$$\begin{array}{r} 1.71 \\ 2.25 \\ \hline 3.96 \\ 4 \end{array}$$

$$\begin{array}{r} 1.37 \\ 2.25 \\ \hline 3.62 \\ 4.3 \end{array}$$

$$\begin{array}{r} 2.80 \\ 2.25 \\ \hline 5.05 \\ 6.5 \end{array}$$

	Perice	Arg.	Should be
14 B	5.0	6	5
18 B	5.6	6	6.5
$\gamma$	4.0	4	4
$\eta$	3.6	$4.3 = 3\frac{3}{8}$	4.3
$\mu$	5.1	$6.5 = 5\frac{5}{8}$	5
$\lambda$	5.3	5	5.6
s.p $\gamma$	5.8	<del><math>5.6 = 5\frac{3}{8}</math></del>	6.5
s.f $\gamma$	6.5	6	6.7
$\gamma$	5.7	6.5 =	6.5



Her 14 B 52°

$\lambda$	sp g	sf g	g
14.0 3.10	11.2 3.58	8.3 4.22	11.8 3.47
14.5 3.03	(7.3 4.7)		
	<i>clouds</i>		

3.06  
2.25  
 5.31  
 5

3.58  
2.25  
 5.83  
 5.6

4.22  
2.25  
 6.47  
 6

3.47  
2.25  
 5.72  
 6.5

1872, March 8.

C. G. P. Obs

Telescope No 2 Diaphragm No 1 Pin-hole

Remarks

Windy night, lamp not trimmed very well  
At first without any Diaphragm

No. diaphragm

Mean of note	1.19	.53
No 1	1.72	1.52
No 2	2.71	0.99

Diaphragm No 1

180.0  
111  
4

$\mu$ Geminor	mag
$+106.3 = 73.7$	0.09
$-120.2 = 59.8$	0.32
$+79.0$	0.05
$-70.8$	0.13
$+76.3$	0.06
$-72.9$	0.10
<u>74.8</u>	0.08
69.1	0.16
76.1	0.07
$105.8 = 74.2$	0.09
$114.0 = 66.0$	0.20
$126.9 = 53.1$	0.49

$\eta$ Geminor.	mag
$-36.2$	1.15
$+132.3 = 47.7$	0.66
$-37.9$	1.06
$+49.5$	0.60
$-41.6$	0.90
$+75.0$	0.08
$108.2 = 71.8$	0.12
$119.2 = 60.8$	0.29
<u>52.2</u>	0.51
66.1	0.20
$133.9 = 49.1$	0.72
$143.2 = 36.8$	1.12
$132.0 = 48.0$	0.65
$135.8 = 44.2$	0.78

0.45

0.29

No diaphragm

148.0	32.0	1.39
147.4	32.6	1.35
143.6	36.4	1.14
142.0	38.0	1.06
147.8	32.2	1.37

~~1.26~~

136.2	43.8	0.80
139.2	40.8	0.93
145.8	34.2	1.26
151.7	28.3	1.63
141.0	39.0	1.01
Diaphragm 2		1.13

154.7	25.3	1.19	1.20	1.85
152.2	27.8	1.17		1.66
155.8	24.2	1.19		1.95
150.0	30.0	1.10		1.51
151.8	28.2	1.16		1.64
		1.62		1.72

161.7	18.3	2.52
163.8	16.2	2.89
165.0	15.0	2.96
164.4	15.6	2.87
160.7	19.3	2.41
		2.71



## No Diaphragm

143.4	36.6	1.13
146.2	33.8	1.28
150.1	29.9	1.52
152.0	28.0	1.65
148.6	31.2	1.48

20.5

195

1.39

1.404

148.6

## Pinhole 3

No dia	Dia 1	Dia 2
1.262	1.722	2.710
1.136	1.778	
1.404	1.968	
	1.628	

1.774

1.774

2.710

Pinhole 2

Pinholes

18  
120

Dia 1

2.354

0.410

## Pinhole 3 Pinhole 2 Pinhole 5

1.774	2.35	0.41
3.73	4.40	0.08
-1.96	-2.05	+ .33
1.77	2.35	0.41
2.20	2.87	0.75
-0.43	-0.52	-0.34
	-0.34	
	-0.43	

## Diaphragm No. 1, pin. hole 3

154.2	25.8	1.82
156.7	23.3	2.03
154.6	25.4	1.85
152.1	27.9	1.86
150.12	29.8	1.53

889

1.788

## Diaphragm No. 1 pin hole No. 2

163.3	16.7	2.72
155.8	24.2	1.95
161.9	18.1	2.55
158.9	21.1	2.23
159.8	20.2	2.32

177

2.384

## No. 3 pin hole

152.0	28.0	1.65
152.8	27.2	1.71
157.0	23.0	2.05
157.8	22.2	2.13
159.6	20.4	2.30

184

1.968

## No. 5 pin hole

122.1	57.9	0.36
114.7	65.3	0.20
127.0	53.0	0.49
135.6	44.4	0.88
115.0	85.0	0.21

205

0.440

## No. 3

146.2	33.8	1.88
148.8	31.2	1.44
148.6	31.4	0.42
155.9	24.1	1.95
157.0	23.0	2.05

314  
628

1.628

The Telescope clear aperture	inch 1.41	by 149.2	2984
Diaphragm No 1	1.44	0.170	0.340 2644
No 2	.52	2840	-8680 8664

Theoretically

$$\text{Diff of No Dia} \times \text{No 1} = 0.66$$

$$\text{" " " " No 2} = 2.18$$

$$\text{" " No 1} \times \text{No 2} = 1.52$$

3979

9.5998 9.5998

9.4223 9.9377

9.8225 0.3379

.6645 2.177

Pinhole 3

No D	D 1	D 2
1.26	1.62	2.72
1.12	1.68	
1.39		

D 1

Pinhole

2

3

5

2.18

1.62

0.74

1.68

1.80

1.16

7.7

1.26

1.65

2.72

.39 1.46

By obs.

$$\text{Diff of No dia} \times \text{No 1}$$

$$\text{" " " " No 2}$$

$$\text{" " No 1} \times \text{No 2}$$

$$\text{light by light}$$

115

1.57

1.2

4.24

0.197

.627

2.69

0.51

1.45

0.94

Incorrect

0.39

1.46

1.07

March 8

0.51

1.45

0.94

March 16

0.48

1.70

1.22

March 16

0.48

1.70

1.22

Previous page

0.39

1.46

1.07

Mean

0.495

1.575

1.08



March 8.  
Star. Regulus

The other star is  $\gamma$  The small one A

Telescope N<sup>o</sup> 2 Diaphragm N<sup>o</sup> 2 pin hole  
N<sup>o</sup> Diaphragm

35.0	<del>1.21</del>	1.21	
31.3	<del>1.44</del>	1.43	
32.2	1.36	1.34	1.34

26.1	1.8
20.9	2.2
22.1	2.1
	<hr/> 2.0

36.3	1.14	
29.0	1.58	1.1
28.9	1.59	1.44

41.2	0.91	
37.9	1.06	
29.2	1.57	1.18
Diaphragm N <sup>o</sup> 1		1.6

Diff of 1 & 2

1.0

Should be 1.5

67.6	0.17	
50.8	0.56	
54.6	0.45	0.39

54.9	0.44	
47.4	0.69	0.48
59.2	0.33	

N<sup>o</sup> 2

29.1	1.57	
30.0	1.51	
27.3	1.70	1.59

1.34	0.39	Diff	No 1 & No 2
1.44	0.48		
1.18			
1.59	0.44	Previous	0.95
<hr/> 1.39	March 16		0.94
	$\gamma$ Leonis		1.22
	Mean 1.08		1.21



$$\begin{array}{r}
 \alpha \text{ with } 2) \quad 1.39 \text{ mhl} \quad 0.44 \\
 \quad \quad \quad 1.08 \quad \quad 1.08 \\
 \hline
 \quad \quad \quad 0.31 \quad \quad 1.52 \\
 \gamma \text{ with } 1 \quad 0.83 \text{ prints} \quad 2.04 \\
 \hline
 \text{Diff} \quad 0.52 \quad 0.52
 \end{array}$$

Diaphragm No. 1 next star circle

$$\begin{array}{r}
 47.8 \quad 0.65 \\
 39.2 \quad 1.00 \quad 383 \\
 31.8 \quad 0.53 \quad 66 \\
 38.0 \quad 1.00 \quad 3.81 \\
 49.8 \quad 0.59 \quad 0.766
 \end{array}$$

Diff Regulus &  $\gamma$

$$\text{Dia 1} \quad 0.4$$

$$\text{" } 2) \quad 0.7$$

According to Seidel 1.1

$$\begin{array}{r}
 27.4 \quad 1.09 \\
 44.9 \quad 0.75 \quad 268 \\
 43.2 \quad 0.83 \quad 2.66 \quad 0.893
 \end{array}$$

$$\begin{array}{r}
 44.8 \quad 0.75 \\
 40.5 \quad 0.94 \\
 53.0 \quad 0.49 \quad 219 \quad 0.730 \quad 238 \\
 \quad \quad \quad \quad \quad \quad 93 \\
 \quad \quad \quad \quad \quad \quad 337 \\
 \quad \quad \quad \quad \quad \quad 83
 \end{array}$$

Diff of 1 & 2

$$\begin{array}{r}
 24.0 \quad 1.96 \\
 23.2 \quad 2.04 \quad 564 \\
 28.2 \quad 1.84 \quad 188 \\
 \quad \quad \quad 578 \quad 1.880
 \end{array}$$

Should be 1.3  
1.3

$$\begin{array}{r}
 21.8 \quad 2.16 \\
 25.2 \quad 1.86 \quad 57 \\
 18.1 \quad 2.55 \quad 190 \\
 \quad \quad \quad 2.190
 \end{array}$$

$$2.1$$

$$\begin{array}{r}
 38.2 \quad 1.05 \\
 40.8 \quad 0.93 \\
 43.8 \quad 0.80 \quad 278 \quad 0.927
 \end{array}$$

$$\begin{array}{r}
 \text{Dia 1} \quad \text{Dia 2} \quad \text{Dia 1} \quad \text{Dia 2} \\
 0.39 \quad 1.34 \quad 0.766 \quad 1.880 \\
 0.48 \quad 1.44 \quad 0.893 \quad 2.190 \\
 0.44 \quad 1.18 \quad 0.930 \quad 4.070 \\
 \quad \quad 1.59 \quad 0.927 \quad 2.035 \\
 \quad \quad 1.39 \quad 3.316 \quad 1.206 \\
 \quad \quad \quad 0.829 \quad \text{with}
 \end{array}$$

Leonis  
to D  
 $\eta$

Dia 2  
 $\alpha$

Dia 1  
 $\gamma$

36.3  $\eta$  43.3 28.8

27.1 47.7 28.0

29.8 47.1 31.8

25.8 pow 46.8 33.5

30.6 45.3 27.5

27.9 44.1 pow 26.3

$\beta$

$\zeta$

$\alpha$   $\gamma$   $\eta$   
1.14 0.82 1.60

1.72 0.66 1.65

1.53 0.68 1.40

1.82 0.69 1.30

1.47 0.75 1.69

1.66 0.79 1.78

3.34 4.36 3.42

1.56 .73 1.57

1.08 .47

0.48 2.06

0.25

$\gamma - \alpha = 0.25^m$

$\eta - \alpha = 1.58$

Dia 2

$\alpha$

$\gamma$

16.8 18.0

22.5 18.0

22.5 26.0

28.3 24.6

36.5 20.3

31.2

Waked  
eye

6.375

5.15

Clear ap

5.105

2.06  
0.25  
1.81  
60  
1.21

73  
68

1.21  
4.12  
2.91

Dia 2

-1.66

2-3

25

2.42

2.17

6 7.90

2-3

86

25

14

39

2.42

2.39

4.81



Seidel

0.52	48	$\alpha$	1.22	<del>1.46</del> 1.31	1.68
<del>0.52</del>	73	$\gamma$	2.28	<del>1.40</del> 1.74	2.93
0.25	121	$\eta$	3.32	2.98 3.24	2.5
1.29	.60				
.43	1.58				
	.98		6.29		
			2.10		

$$\alpha + .43 = \beta$$

$$6.82$$

$$\frac{\alpha + \beta}{2} + \frac{1.21}{2} = \eta$$

$$\frac{\alpha + \beta + \gamma}{3} = 2.10$$

$$\alpha + \beta + \gamma = 6.29$$

$$\alpha + \gamma - 2\eta = 1.96$$

$$\alpha - \gamma = -.43$$

$$\alpha + \gamma = 3.54$$

$$\alpha - \gamma = -.43$$

$$2\alpha = 3.11$$

$$\alpha = 1.55$$

$$3\eta = 6.29$$

$$\eta = 2.09$$

$$3\eta = 6.29$$

$$2.75$$

$$2\gamma = 3.97$$

$$\gamma = 1.99$$

3	4	3.56
		3.64
		3.60

31	897.20
20	
64	

6.82
1.96
3) 8.78
2.93
6.29
3.36
-.43
3.79
1.89

6.82
2.91
9.73
3.24

6.29
3.24
3.05
.43
3.48
2.62
1.31

$$1.74$$

2.93
1.46



1872 March 15  
Obs. C. S. R.

g. e. s. p  $\eta$   $\theta$   $\sigma$  Hydrae.

Telescope 2

Diaphragm 1

pin hole. 5

Altitude

Colour Circle 12°

Remarks.

<sup>2</sup>  
p Hydrae

1.

$\eta$

$\theta$

37.5 1.09

29.5 1.55

27.5 1.89

25.2 1.86

27.4 1.79

287

1.574

J. Hydræ

 $\epsilon^2$ 

8

126.2 - 53.8

0.47

90.0

0.00

50.0

0.58

54.4

0.45

47.8

0.65

57.9

0.36

---

 2.51  
 0.502

0.502

1.574

1.072

3.39

---

 4.46

Mag 8

$\eta$  Hydrae

52.5 0.50

52.9 0.52

40.0 0.96

35.9 1.17

41.5 0.90

402

0.804

 $\epsilon$  Hydrae

47.5 0.67

55.3 0.43

63.8 0.25

50.5 0.57

~~45.0 0.76~~

56.9 0.39

54.7 0.45

 $\Sigma$  2.73

.460

 $\eta$  4.359 $\epsilon$  4.015 $\sigma$  4.379 $\tau$  4.700 $\tau^2$  4.602Comp of  $\tau$  6.710 $\phi$  Hydrae

47.7 0.66

46.7 0.69

43.7 0.81

34.6 1.24

46.0 0.72

412

.824

 $\tau$  Hydrae

31.3 1.43

36.0 1.17

40.3 0.96

35.6 1.18

35.9 1.17

40.2 0.96

 $\Sigma$  6.87

1.145



p Hydree

41.3 0.91

52.0 0.52

39.0 1.01

35.6 1.18 1362  
 .905

N.B T, has a comp. North of it  
 mag of Companion 9.7

T<sub>2</sub> Hydree

35.8 1.18

34.6 1.25

43.0 0.85

38.2 1.05

~~39.0 1.01~~

39.0 1.01

40.5 0.94

628'0

1.047

Companion of T,

19.0 2.44

9.7 3.87

31

3.155

905  
 4.16  
 3.555

Groups 28 & 29  
Numbers from 125 to 146 inclusive

67 Urs. Maj.

		New maps	8 Can. Ven.	
25.0	1.88	1.98	37.4	1.09
22.0	2.15	<del>2.2</del> 2.26	46.6	0.70
23.2	2.04	<del>2.1</del> 2.14	43.3	0.82
24.2	1.95	2.05	44.9	0.76
24.3	1.94	2.05	44.3	0.78
	<u>9.96</u>	<u>48</u>		<u>4.15</u>
	1.992	2.10		0.830

	Mag	
37	5	1.952
8	4.4	830
6	5.4	1.350
9	6	2.418
	<u>20.8</u>	<u>6.540</u>
	5.2	1.648
		<u>5.2</u>
		3.552

	S 33			
67 Urs Maj	5.54	5.21	5.42	
8 Can Ven	4.38	4.95	4.26	
6 " "	4.90	4.57	4.78	5.42
9 " "	5.97	5.64	5.85	<u>2.1</u>
				5.31

5.54	5.21
<u>4.38</u>	<u>4.78</u>
	4.98

5.54	5.21
<u>4.90</u>	<u>4.98</u>
10.44	10.19
5.22	5.00

6 Can Ven

~~60.75~~ Can Ven

35.3	1.20	1.26
35.1	1.21	1.28
35.0	1.20	1.28
30.0	1.51	1.60
25.4	1.62	1.71
<hr/>		2.3
	1.75	
	1.350	1.42

9 Can Ven

17.9	2.58	2.72
20.0	2.34	2.47
20.0	2.34	2.47
19.7	2.37	2.51
18.9	2.46	2.60
<hr/>		2.77
	209	
	2.418	2.55

67 hrs maj 2.10 + 51

8 Can Ven 0.81 - 78

6 " " 1.42 - 17

9 " " 2.55 + 86

mean of last 3 } 1.59



283.B. No diaphragm

(Groups 27 &amp; 28)

(65. Double preceding component measured)

Ursa Mag.

March 16

9.15  
Time of obs.

283 B. X, 65. 67. 349 B. 2 can. Ven.

New Groups XXIII. and XXIV.

		Wear map	X		Wear map	283.B.	
43.3	0.82	0.83	41.4	0.90	0.91	18.3	2.52
poor. 38.3	1.04	1.06	poor. 38.2	1.05	1.06	21.5	2.19
35.1	1.21	1.22	poor. 37.8	1.07	1.08	19.8	2.36
37.2	1.10	1.11	47.8	0.65	0.66	21.6	2.18
37.9	1.06	1.08	47.2	0.68	0.68	17.3	2.165
	23	30		435	0.88		190
	1.046	1.06		0.870	36		2.380
	1.585	1.52		1.575	+0.52		
	1.034	1.46		495			
	1.529			0.375			

349.B find 4 stars not very unequal in

N <sup>o</sup> 1 =	16.2	2.8	2.9	6 Can. Ven.		29 B Can. Ven.			
	14.8	3.0		31.0	1.45	1.47	14.4	3.04	3.08
2 =	18.0	2.6	2.4	poor. 26.9	1.73	1.76	18.2	2.54	2.58
poor. 21.1		2.2		32.3	1.37	1.39	20.1	2.33	2.36
3 =	16.1	2.8	2.5	33.2	1.31	1.33	18.9	2.46	2.49
	21.0	2.2		37.0	1.11	1.12	21.1	2.23	2.26
4 =	12.0	3.4	3.1		197	207		260	169
	15.2	2.9			1.395	1.41		2.520	
									2.42

During first set Obs. thinks the lamp may have altered.



Observed with 2 apophragm No 2

6 Can Ven 29 B Can Ven 4 Can Ven.  
(67 is Double)

new meas	65 per.	65 foll.	67 per	67 foll
2.58	18.2 2.54	3.14 14.0 3.10	26.9 1.76 1.73	13.8 3.17 3.13
2.53	18.6 2.49	3.35 12.7 3.30	32.8 1.34	19.7 2.41 2.37
2.72	17.0 2.69	3.11 14.2 3.07	25.9 1.83 1.81	18.1 2.59 2.55
2.75	16.5 2.75	3.20 13.6 3.16	26.3 1.80 1.78	16.2 2.83 2.79
2.53	18.6 2.49	3.39 12.5 3.34	31.1 1.46 1.44	18.1 2.54 2.50
31.1	296 119	97	321 310	354 334
+2.62	2.592 3.24	3.194	1.64 1.620	2.71 2.668

4 Can. Ven.	2 Can. Ven.
14.5 3.03 3.07	23.3 2.03 2.05
18.4 2.51 2.55	24.0 1.96 1.92
20.3 2.31 2.34	27.6 1.68 1.70
22.4 2.11 2.13	27.4 1.69 1.72
23.0 2.05 2.08	28.9 1.59 1.61
201 110	3.95 2.07
2.402 2.28	1.790 1.81

B Can. Ven.	1.41 -50 -67 -17
G Can. Ven.	1.64 -27 -15 +12
2 CV	1.81 -10 -7 +3
4	2.28 +37 +21 -16
29 B	2.42 +51 +65 +18
	456
mean	1.91
y	-0.46
x	+0.52
Gsp	3.24
3 Can. Ven.	3.32
1.10	
1.21	
for 3 Can. Ven.	
1.58	
2.26	
0.70	

4 has another star North foll it 15.4 2.9

119,2

Mrs. Maj.

 $\eta$  3.9.E

$\eta$		3		g		E	
74.2	0.08	49.6	0.59	20.0	2.34	50.0	0.58
64.2	0.23	53.8	0.47	18.3	2.52	53.6	0.47
61.4	0.28	47.1	0.68	18.3	2.52	47.7	0.66
75.0	0.08	51.1	1.55	25.1	1.87	62.3	0.27
60.8	0.30	48.0	0.65	20.1	2.33	53.9	0.47
	97		295		1158		235
	0.194		0.588		2.316		0.470
	1.246		1.246		1.246		1.246
	1.440		1.834		3.562		1.716

Seidel

1058	0.470	E	1.62
.529	0.588	$\eta$	1.93
1.775	0.194	$\eta$	1.65
1.246			2.20
			1.733
			1.55



0.60	49	1.73	1.51	1.06	1.70	0.585	1.06
1.09	1.24	1.73	1.52	2.18	2.28	0.60	1.09
2.33				2.28	2.33		
				1.52			
				0.76			



z. g with diaphragm No 2

z

poor 43.3 0.83

g

22.3 2.1  
21.9 2.2

g without any diaphragm

g'

55.9 0.41  
59.8 0.32  
46.3

g. Diaphragm No. 1

39.5 0.99

g with diaphragms

No 2				No 1			
None				None			
20.0	2.34	50.5	0.57	40.3	0.95	49.2	0.61
25.2	1.86	49.6	0.59	40.0	0.96	51.1	0.55
17.5	2.62	46.5	0.70	38.7	1.03	59.4	0.33
19.6	2.38	44.8	0.76	36.7	1.12	50.6	0.56
21.2	2.22	45.2	0.75	32.3	1.25	55.1	0.43
<hr/>				<hr/>			
2.28	2.284	0.679	1.062	2.284	1.062	0.496	248
1.07	0.586	0.498	586	1.062	586	0.496	496
1.21	1.698	0.588	0.476	1.062	0.476	0.496	

g

No 2	None	No 1	None
16.5	40.2	31.6	47.8
22.1	53.7	35.0	52.0
	44.0		
21.7	50.1	34.9	61.6
24.4	71.6	<del>54.9</del> 49.7	

Pinhole	Prod of Diam.	log Mag	Mag	Reduction Pinhole 6	Reduction to 1
1	1.464	2.166	5.44	<del>5.27</del> 3.74	0.00
2	658	1.818	4.57	<del>4.48</del> 2.87	0.87
3	358	1.554	3.90	<del>3.73</del> 2.20	1.54
4	125 ?	1.097	<del>2.78</del>	.11 1.06	2.68
5	0948	.977	<del>2.35</del>	<del>.08</del> 0.75	2.99
6	0475	.677	<del>1.70</del>	<del>.00</del> 0.00	3.74

0.31

1.45

3.74  
75



1872 March 18

# Smallest telescope

Aperture 1 1.0 centimetres  
 " 2 0.5  
 " 3 0.28  
 " 4 0.16

1030  
 1041  
 1030  
 4152  
 1038  
 1463

## Telescope 2

Clear aperture 3.7 centimetres  
 Diaphragm 1 2.6 "  
 " 2 1.3 "

### Pinhole 1

61.329 61.286  
 60.291 60.247  
 1.038 1.041

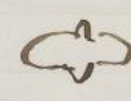
### Pinhole 2

61.209 61.190  
 60.392 60.385  
 817 805

### Pinhole 3

907 042  
 308 445  
 599 597

### Pinhole 4

Very irregular   
 60.974 60.935  
 60.578 60.620  
 396 315

### Pinhole 5

60.955 919  
 654 604  
 301 315

### Pinhole 6

60.892 60.911  
 653 694  
 219 217



# New Groups xx & xxii

March 18, 1872

Obs. C. P. P

Bright moon - light & thin light clouds

Var mags

Telescope N<sup>o</sup> 2

Diaphragm

Colour Circle

N.B.

North

pen-hole

South

Between $\mu$ & 33 fl.	1	25.1	1.87	15.1	2.94
Northern 21.8 2.2	2	21.8	2.16		
Southern	3	22.9	2.06	15.2	2.93
	4	20.9	2.25	14.9	2.97
	5	19.0	2.44	13.9	3.11

a Star <sup>35</sup> Leo. Min 25.7 1.8 accidentally observed

S<sup>4</sup> Obs. to be always rejected on account of clouds.

Remarks -  $\mu$ . Reddish. Between  $\mu$  & 33 fl. there are 2 little stars of which readings will be taken above

Northern 25.1 No diaphragm pen mag. 1.9  
Southern 15.1 2.9

No diaphragm. pen-hole. N<sup>o</sup> 5  
Other Leo. Min. Reddish.

N.B.  
one between w & 47  
N<sup>o</sup> 5

Comp of  $\lambda$

Between  $\lambda$  &  $\mu$

17.5	2.62	15.3	2.91
13.3	2.91		
	2.76		

1	26.7	1.75
2	18.4	2.51
3	22.3	2.12
4	17.3	2.65
5		2.26

Remark when last set was taken it was getting clonchy.  
last set to be rejected  
Stratus clouds

1	0.23
14	0.84
Comp $\mu$	2.06
32H	1.25
32	2.19
38	2.24
31	0.64
	7.77
	1.11



Groups 23. & 25

$\mu$  especially out because  
could not be made to resemble  
Star.

$\lambda$ ,  $\mu$ . Comp of  $\mu$ . 33 fl. U. ca. Maj. 31.32. & another 38  
Leo. Min. & w. 210 B. 47.49. & another U. ca. Maj.

$\lambda$

$\mu$

Comp. of  $\mu$ .

33 fl.

No Diaphragm

Pin-hole No. 4

1 60.9 0.32 0.29 -  
2 54.8 0.47 0.44 -  
3 50.5 0.60 0.57  
4 49.6 0.63 0.59 -  
~~68.3 0.16~~

5 48.2 0.68 0.63  
mean 0.54 1.92

Pinhole corr. 310.47  
32 0.23 0.18

Pin-hole. 5

1 27.1 1.81 1.72  
2 23.0 2.16 2.05  
3 24.2 2.05 1.95  
4 21.1 2.35 2.23  
5 18.8 2.61 2.5

3 2.56 1.99  
1.9 2.19

210 B. North.

No. 5

1 24.0 1.96  
2 19.0 2.44  
3 21.7 2.17  
4 19.2 2.42  
5 2.25<sup>99</sup>

Pin-hole No. 3

53.6 51 0.47 -  
50.0 62 0.58  
50.1 62 0.58  
49.0 65 0.61  
33.8 1.28

Pinhole corr. 0.56  
310.61 1.45  
No. 5 0.89

No. 5

57.8 39 0.36  
48.0 69 0.65  
47.2 72 0.68  
45.7 77 0.73  
32.8 1.34

not rej .61  
rej .69 (best)

210 B. South.

No. 5

17.7 2.60  
14.4 3.04  
16.7 2.72  
15.0 2.96  
2.83<sup>332</sup>

Pin-hole No. 5

21.6 2.30 2.18  
26.0 1.90 1.80  
26.0 1.90 1.80  
23.5 2.12 2.01

15.3 2.19  
24.0 2.07 1.9  
2.06 1.95

other. 38 Leo min

No. 5

24.2 2.05 1.95  
21.5 2.31 2.19  
25.7 1.92 1.82  
21.1 2.35 2.23  
18.8 2.61 2.5

2.25 2.05

Pin-hole. 5

36.4 1.20 1.14  
36.5 1.20 1.13  
30.8 1.41 1.46  
36.8 1.18 1.12

28.6 1.6  
27.4 1.7  
26.7 1.85

1.23 1.21

No. 5 pin-hole.

34.9 1.22  
29.1 1.57  
28.8 1.60  
31.0 1.45  
23.9 1.46

47  
15

33.9 1.27  
28.3 1.63  
24.9 1.88  
29.0 1.38  
not rej 1.49  
rej 1.70 (over)



49

Other. 51 Urs Maj

1	29.9	1.52	20.1	2.33
2	30.6	1.47	20.6	2.28
3	33.8	1.28	19.9	2.35
4	28.3	1.63	19.4	2.40
5		1.93		

Seidel makes

λ Urs Maj 3.11

μ " 3.21

I adopt his λ as  
my μ is probably  
out. But to my eye  
μ is decidedly the  
brighter. But he makes  
red stars faint.

XXIII

1.47

Aug. Adopted

2.34

XXV

3.16

75

λ Urs Maj	C.S.P. 3.11	4.26	3 $\frac{3}{8}$	3.90	ω Urs Maj	4.41	5.56	5 5.20
Comp Betw λ and μ	5.71	6.86	-	6.50	210 B north	5.20	6.35	6 5.99
μ Urs Maj	5.9	7.0	-	6.6	210 B south	5.78	6.93	6 6.57
Between μ and 33 H	5.03	6.18	-	5.52	47 Urs Maj.	4.44	5.59	5 5.23
	5.90	7.05	-	6.69	49 " "	4.65	5.80	5 5.21
Comp of μ	4.90	6.05	-	5.69	51 " "	5.29	6.44	6 6.08
33 H Urs Maj	4.16	5.31	5	4.95	Betw ω and 47	5.21	6.36	- 6.00
32 Leon. Min	4.94	6.09	6	5.73				
31 " "	3.56	4.71	4 $\frac{3}{8}$	4.35				
38 " "	3.64	4.79						
	5.00	6.15	6	5.79				

3.21  
2.06  
1.15

This Other Urs Maj. is really a cluster but C.S.P. measures the brightest star in it

21	37	34
31	77	42
9		
15	59	
56		
59		
57		
44		
34		
326		
36		

1.138



## Artificial stars

## Pinholes

Lamp No 1

No 2

Both

Mag light  
2.10 0.836 .146  
2.84 1.130 074  
1.74 0.693 203  
220

2.97 1.186

2.052 0.819 .152  
2.77 1.102 079  
1.732 0.605 207  
1.60 635 231  
0.12

22.0 2.15  
21.2 2.22  
~~25.3~~  
21.2 2.22

23.7 1.99  
24.4 1.93  
2.102 51  
2.102 51  
2.102 51

11.3 3.56  
15.5 2.89  
~~21.2~~  
15.2 2.93

16.9 2.70  
15.9 2.83  
2.84 335  
2.982 491  
2.97

27.5 1.69  
26.8 1.74  
25.3 1.85  
~~26.0~~  
26.0 1.80  
28.2 1.63  
1.742 371  
40 752  
1.782

Pinholes

2

1

6

5

4

140  
69  
199  
206

2.62 856 .139  
2.91 1.158 70  
1.782 1.709 195  
209

13.8 3.13 8.2 4.25 9.6 3.90 35.3 1.20 27.1 1.172 29.8 1.53  
17.8 2.59? 11.4 3.54 8.3 4.22 33.4 1.30 26.6 1.175 21.6 2.18  
12.9 3.27 10.6 3.70 9.9 3.82 45.5 1.74 37.5 1.09 22.6 2.09  
14.1 3.09 12.4 3.36 8.8 4.10 40.0 0.96 25.0 1.88 20.7 2.27  
13.6 3.16 13.1 3.23 7.6 4.42 30.4 1.49 22.8 2.07 20.5 2.29  
13

65  
59  
24

368

46

69

17.42  
1.09  
8.51

83  
53  
36

Rejecting

3.16

Not rejected

3.05

3.62

4.09

1.14

1.70

2.21

Reduction

1.54

87

0.00

3.74

2.99

2.68

4.70

4.84

4.89

Compare Zero

4.59

4.49

4.09

4.88

(4.65)

4.75

4.78

4.59

4.2

4.90

4.88

4.81

# Results for Pinholes

Artificial star obs. with all pinholes

Nos 1 2 3 did not look like star; therefore they were not supposed to give good results.

Pinhole	Magn. obs.	Theoretical reduction to Pinhole 1.	m	Corr for zero
6	1.14	3.74	4.88	4.90
5	1.86	2.99	4.85	4.88
4	2.21	2.68	4.89	4.81 or 4.83
[ 3	3.16	1.54	4.70	<del>4.78</del>
2	3.62	0.87	4.49	4.59
[ 1	4.09	0.00	4.09	4.21





March 21, 1872

W. L. C. G. P.

Telescope

Diaphragm

pin hole

Remarks. Moon very near, very windy. Seeing very bad.

Lamp went out after <sup>the 2<sup>nd</sup></sup> reading of Leo. Min. & was relit

0.394

pin hole 5

another Leo Min

~~38 Leo Min~~

pin hole 5

1 | 17.8 2.83

2 | 17.0 2.72

3

4

5

Had to give up on account of stars coming past zenith

# Group 23 & 24

$\lambda$ ,  $\mu$ , 33  $\mu$ , Urs Maj, 32 & 38 Leo min 149 B.  
36  $\mu$ , 39  $\mu$ , X, of 394 Urs Maj.

$\lambda$	$\mu$	33 $\mu$	32 Leo min
<del>41.8</del> <del>0.57</del> pin hole 5 Diaphragm 1	pin hole 6 Diaphragm 2	pin hole 5 no diaphragm	pin hole 5
1 41.8 0.89	37.1 1.10	22.7 2.25	14.2 3.17
2 43.2 0.83	38.0 1.06	27.0 1.75	14.9 3.28
3		2.00	3.22
4 0.86	1.06		
5 0.50	Corr dia 1.58		
0.36	Corr pinhole + 50		
	+ 75		
	+ 125		

38 Leo min	X Urs Maj.	39 $\mu$ .	36 $\mu$
pin-hole 5	pin hole 5	pin-hole 5	pin-hole 5
Diaphragm 1	Diaphragm 2		
1 29.8 1.67	26.0 1.83	22.6 2.24	24.4 2.02
2 30.0 1.54	29.5 1.64	22.0 2.18	23.3 2.11
3 1.60			

5 X Urs Maj	0.36	0.16	0.20
$\mu$ "	+ 125	- .89	+ 1.88
33 $\mu$ "	2.00	1.21	0.79
32 Leo min	3.22	1.99	0.23
38 "	1.60	.69	0.91



Groups 30 & 31

March 21 1872

8, 9, 10, another, 12, 15, 17, 11, 20, 19, 23. Can. Ven.

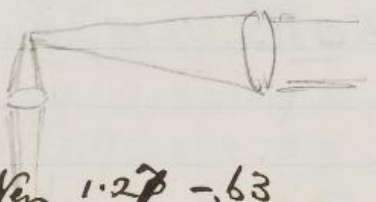
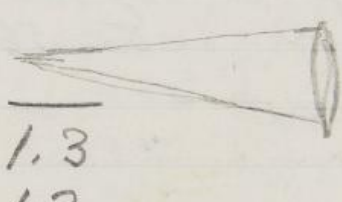
8	9	10	another = 6H
diaphragm 1			
pin hole 5	pin. 5	pin hole 5	pin 5 hole
1 30.5 1.48 1.56 16.5 2.93 2.91 20.4 2.42 2.43 17.4 2.77 2.79			
2 30.6 1.48 1.55 16.2 2.88 2.95 22.6 2.24 2.20 21.0 2.28 2.36			
3 30.9 1.46 1.53 15.8 3.11 3.01 19.8 2.57 2.49 20.0 2.38 2.47			
4 31.1 1.54 1.52 18.3 2.64 2.67 19.8 2.57 2.49 18.3 2.64 2.67			
5 29.2 1.62 1.65 15.0 3.00 3.13 20.7 2.45 2.40 19.9 2.58 2.48			
1.51 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56			
1.51 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56 1.56			

12	17	118.
2		
pin hole 5	pin hole 5	pin hole 5
1 24.7 2.05 2.01 15.6 3.08 3.04 20.2 2.40 2.45 26.1 1.91 1.89		
2 26.7 1.88 1.84 17.5 2.79 2.77 19.7 2.56 2.51 27.0 1.75 1.82		
3 33.1 1.32 1.39 16.0 2.86 2.98 16.3 2.90 2.93 25.3 1.93 1.96		
4 35.3 1.20 1.26 16.6 2.94 2.89 19.9 2.58 2.48 31.0 1.47 1.53		
5 32.4 1.37 1.44 16.1 2.87 2.96 18.0 2.66 2.71 25.6 1.95 1.93		
2.0 1.56 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44		
1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44 1.44		

1	2	3	4	5
pin holes	pin 5 hole	pin 5 hole	pin 5 hole	pin 5 hole
1 32.3 1.36 1.44 19.8 2.57 2.49 22.0 2.26 2.18 16.0 2.98 2.86 24.6 2.02				
2 35.5 1.19 1.25 18.0 2.60 2.71 21.8 2.28 2.36 13.9 3.30 3.46 27.6 1.77				
3 34.4 1.56 1.57 16.2 2.88 2.95 19.6 2.53 2.55 15.3 3.08 3.04 24.3 2.05				
4 31.0 1.47 1.46 20.3 2.41 2.44 22.1 2.25 2.19 18.0 2.71 2.60 27.5 1.78				
5 29.8 1.67 1.61 17.6 2.80 2.76 20.1 2.46 2.39 18.0 2.71 2.60 28.3 1.72				
2.33 2.87 1.47 1.52 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.35				
1.47 1.52 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.35				
2.60 1.56 2.91 1.83 .31 .27 1.52 1.08 2.60 1.52 1.08 2.60				
1.52 1.08 2.60 1.52 1.08 2.60 1.52 1.08 2.60 1.52 1.08 2.60				



# Extinction of Artificial Stars.

					
1	0.3				1.3
2	0.6	8 Can Ven	1.27 - .63		1.2
		9	2.93 + 1.03		
3	0.3	10	2.40 0.50		1.0
4	0.2	GH	2.55 0.65		1.1
5	0.2	12	0.38 - 1.54		1.1
6	0.1		9.51		1.0
7	0.0		1.90	1.90	1.3
8	0.1	23 Can Ven	2.35 + 0.4	1.14	1.0
9	0.1	20 "	1.47 - .84		1.2
10	0.0	19 "	2.67 + .36		0.6
		14 "	1.83 - .48		
		15 "	2.95 + .64		
		16 "	2.61 + .30		
	0.17		6) 13.88		

84  
36  
120

17.0 is too bright for  
135 is too faint  
18.0 is much too bright

- 1.08  
+ 0.17  
- 0.91  
- 0.455

Zero.

Readings have generally been on  
minus side but if more than 90° on  
+ side.

1.88  
1.52  
36

2.91 1.83  
2.98 1.87 1.11  
1.52 1.56  
3 4  
1.58 1.60 1.03  
1.08  
2.63

## New groups xxv &amp; xxvi

1872 March 22

Groups 29. &amp; 30

12.14.10, 9.8.56.13.60.13.11.77.13.81.13.92.13

$$\begin{array}{r} 36 \\ 1.16 \\ \hline 1.52 \end{array}$$

Remarks 12 has a small comp. South Pit.  
 Very bright moonlight, windy & hazy, but definition  
 good. 60B Reddish 12' has an altitude of 50° Clouds increas-  
 ing at the beginning of 5th reading

12 Can Ven

12 Can Ven

6 fl

Diaphragm 2

Dia./

Pin-hole 6

Pin-hole 5

Pin-hole 6

1- 33.5 1.34 1.36 1.32

2 39.7 1.02 1.03 0.99

3 39.3 1.04 1.01

4 33.3 1.35 1.33

5 39.1 1.05 1.02

$$\begin{array}{r} 0.67 \\ 1.16 \\ \hline 1.13 \\ 1.14 \\ \hline 1.52 \\ \hline 1.39 \end{array}$$

10 76 1.14

$$\begin{array}{r} 1.16 \\ 76 \\ \hline 1.92 \end{array}$$

Pin-hole 6

1 25.8 1.88 1.91 2.17

2 23.1 2.13 2.14 2.13

3 24.0 2.03 2.06 2.11

4 22.3 2.19 2.22 19.0

5 24.1 19.52 0.5 19.9

$$\begin{array}{r} .38 \\ 2.07 \end{array}$$

54.1 0.48 0.49

50.9 0.57 0.59

61.3 0.30 0.31

57.3 0.39 0.40

49.7 0.62 0.63

$$\begin{array}{r} 0.48 \\ 0.47 \\ \hline 0.47 \\ 0.48 \\ \hline 0.36 \\ \hline 0.12 \end{array}$$

$$\begin{array}{r} 0.48 \\ 76 \\ \hline 0.28 \\ 36 \\ \hline 0.64 \end{array}$$

$$\begin{array}{r} 0.47 \\ 0.48 \\ \hline 0.47 \\ 0.48 \\ \hline 0.36 \\ \hline 0.12 \end{array}$$

Pin-hole 6

2.25 2.28 37.6 1.12 1.13

2.29 2.32 44.2 0.85 0.83

2.31 2.34 38.5 1.08 1.09

2.54 2.58 40.0 1.00 0.86

2.47 43.6 0.85

$$\begin{array}{r} 2.47 \\ 199 \\ \hline 2.40 \end{array}$$

25.2 1.94 1.96

26.5 1.82 1.85

23.8 2.15 2.08

23.6 2.07 2.10

29.0 1.64 1.66

$$\begin{array}{r} 9.35 \\ 1.87 \end{array}$$

56 B

No Diaphragm

Pin-hole 6

20.7 2.36 2.30

22.6 2.16 2.12

20.2 2.41 2.35

21.1 2.31 2.26

21.6 2.26 2.21

$$\begin{array}{r} 2.25 \end{array}$$



60.13

11 North

~~another~~  
4 South

87 B

Pin hole 6

Pin 6

Pin 6

Pin 6 hole

1	39.4	1.03	1.01	15.8	18.2	2.64	2.58	21.4	2.28	2.23
2	33.3	1.36	1.33	18.0	2.66	2.60	2.27	27.6	1.74	1.70
3	33.6	1.34	1.31	19.1	2.53	2.47	2.55	26.2	1.85	1.81
4	32.5	1.40	1.37	16.9	2.80	2.73	2.03	25.2	1.93	1.89
5	37.1	1.10	1.12	20.2	2.41	2.35	2.19	24.7	1.97	1.93
		1.14		20.1	2.42	2.36	1.61			4.56
		1.23			2.51		2.32			1.91
					2.50					

81 B

92 B

Pin 6

Pin 6

1	22.3	2.19	2.14	32.7	1.40	1.36
2	22.1	2.21	2.16	28.2	1.70	1.66
3	28.18	1.75	1.62	28.1	1.64	1.67
4	22.1	2.21	2.16	28.5	1.68	1.64
5	23.8	2.05	2.01	25.6	1.90	1.86
		47			31.9	
		2.12			1.64	

Observer had a violent headache.

1.90	1.14	0.48
1.52	1.52	0.76
0.38	0.38	1.24
		-0.28
		0.36
		-0.64

102

-0.51

-39  
1.87

6.96	-1.70
3.9	+ .56
6.57	+ .76
1.31	+1.09
	- .69

12 Can Ven

GH

10

9

8

-0.51	-1.80	S6B	2.25 + 25 ✓
1.87	+0.58	GoB	1.23 - 77 ✓
2.07	+0.78	11n	2.50 + 50
2.40	+0.11	11s	2.32 + 32
0.62	-0.67	77B	1.91 - 09 ✓
6.45		81B	2.12 + 12 ✓
1.29		92B	1.64 - 36 ✓
			7) 13.97
			2.00

diff 0.71





















