

KG
11365
677

C. S. Peirce's
Photometric Observations

Vol 2

1872 May 4th to July 8th

Original Record

KG 1136⁵/₆ 77

α	Alpha	
β	Beta	
γ	Gamma	
δ	Delta	
ϵ	Epsilon	
ζ	Zeta	
η	Eta	
θ or ϑ	Theta	
ι	Iota	
κ	Kappa	
λ	Lambda	
μ	Mu	
ν	Nu	
ξ	Xi	
$\omicron$	Omicron	
π	Pi	
ρ	Rho	ψ Psi
σ	Sigma	ω Omega
τ	Tau	
υ	Upsilon	
ϕ	Phi	
χ	Chi	

2

UUL
35

C. S. Peirce's
Photometric Observations

Vol 2

1872 May 4 to 1872 July 8

KG 11365-1677

HARVARD
UNIVERSITY
LIBRARY
JUL 2 1956

1954	1955
8.10	8.10
11.1	11.1
12.1	12.1
13.1	13.1
14.1	14.1
15.1	15.1
16.1	16.1
17.1	17.1
18.1	18.1
19.1	19.1
20.1	20.1
21.1	21.1
22.1	22.1
23.1	23.1
24.1	24.1
25.1	25.1
26.1	26.1
27.1	27.1
28.1	28.1
29.1	29.1
30.1	30.1
31.1	31.1
32.1	32.1
33.1	33.1
34.1	34.1
35.1	35.1
36.1	36.1
37.1	37.1
38.1	38.1
39.1	39.1
40.1	40.1
41.1	41.1
42.1	42.1
43.1	43.1
44.1	44.1
45.1	45.1
46.1	46.1
47.1	47.1
48.1	48.1
49.1	49.1
50.1	50.1
51.1	51.1
52.1	52.1
53.1	53.1
54.1	54.1
55.1	55.1
56.1	56.1
57.1	57.1
58.1	58.1
59.1	59.1
60.1	60.1
61.1	61.1
62.1	62.1
63.1	63.1
64.1	64.1
65.1	65.1
66.1	66.1
67.1	67.1
68.1	68.1
69.1	69.1
70.1	70.1
71.1	71.1
72.1	72.1
73.1	73.1
74.1	74.1
75.1	75.1
76.1	76.1
77.1	77.1
78.1	78.1
79.1	79.1
80.1	80.1
81.1	81.1
82.1	82.1
83.1	83.1
84.1	84.1
85.1	85.1
86.1	86.1
87.1	87.1
88.1	88.1
89.1	89.1
90.1	90.1
91.1	91.1
92.1	92.1
93.1	93.1
94.1	94.1
95.1	95.1
96.1	96.1
97.1	97.1
98.1	98.1
99.1	99.1
100.1	100.1

Cap1 Cap2 Cap0.

1872. May 4th night. Group 26 & 28

	8 Can Ven	9 Can Ven	10 Can Ven	GH Can Ven	12 Can Ven	
1	cap 1. pin 5	cap 0. pin 6	cap 0. pin 6	cap 0. pin 6	pin hole 6	cap
1	41.3 41.4 0.91	+30.3 30.4 1.51	29.9 30.0 1.53	41.3 41.4 0.91	+88.2 88.3	0.0
2	36.2 36.3 1.17	35.4 35.5 1.20	39.0 39.1 1.02	32.8 32.9 1.35	34.5 34.4	1.2
3			34.0 34.1 1.29	36.2 36.3 1.16	+29.9 30.0	1.5
4	1.04	1.52	1.35	1.28	1.14	1.57
5	76	11	99	127	13	1.1
6	0.28	1.87	1.29	1.14	1.36	1.6
	38					1.2
	-0.10					0.5

	15 Can Ven	17 Can Ven	XXVI	XXVIII	
1		pin hole 6. cap 0.	8	23	0.98
1	33.4 33.5 1.32	+37.5 37.6 1.09	9	20	0.16
2	28.2 28.3 1.65	+33.0 33.1 1.34	10	19	1.11
3	27.9 28.0 1.67	31.4 31.5 1.44	GH	14	0.31
4			12	15	1.55
5				17	1.29
6				5.39	5.06
				0.51	0.84
				0.90	
				0.33	
				0.61	0.44
				0.84	0.60
				0.77	0.27
				0.63	0.53
				1.61	0.37
					0.45

Focussed photometer before measuring.

15 is a little fainter than 17

23 at full mag. is fainter than 20

Telescope No 3.

View	23 Can Ven	20 Can Ven	19 Can Ven	11 H Can Ven
circ 2	pin hole 6 cap 0	pin 6 cap 0	pin hole 6 cap 0	pin hole 6 cap 0
0.00	+40.4 40.5 0.95	+46.3 46.4 0.71	+137.3 137.4 0.86	65.2 65.3 0.21
0.76				
1.26	42.4 42.5 0.87	71.7 71.8 0.11	35.8 35.9 1.98	+68.2 68.3 0.16
1.53	36.7 36.8 1.13	~~65.7~~ 65.8 1.20	34.0 34.1 1.29	63.6 63.7 0.25
	<u>29.5</u>	<u>1.08</u>	<u>.33</u>	<u>0.62</u>
.55	1.10	.36	1.11	~~0.57~~
1.18		<u>0.16</u>		0.31
1.62				
1.26				
.76				
0.50				
1.60				
-1.10				

Taking 12 Can Ven at 2.59

$$XXVI = 4.20 \quad \text{Mag } 4 = 3.69$$

+ 08
 + 64
 + 21
 + 59
 + 65
 + 39

After the 1st obs. on 12, used pin hole 5

May 4th, 1872, Sat. night.
Group 32 and 34

	γ Bootae.	149 B B	F 219 B.	114 B. B.	β Bootae	408 B		
	cap 2. pins 5				cap 2. pins 6	cap 0		
1	+34.1	34.2	1.28	21.1 21.2 22.5 30.9 31.0 1.47	25.5 25.6 18.6 45.0 45.1 0.77	32.1	3	
2	30.5	30.6	1.49	25.8 25.9 18.3 24.4 24.5 1.95	26.0 26.1 18.2 42.7 42.8 0.86	32.4	32	
3	-40.4	40.3	0.96	28.3 28.2 1.66 33.1 33.0 1.34	31.9 31.8 1.42 52.8 52.7 0.51	48.9	4	
4	-37.6	37.5	1.10	19.5 19.4 ~~1.68~~ 16.6 16.5 ~~2.83~~ 2.79	19.6 ~~1.66~~ 2.42	47.3 47.2 0.68	42.2	42
5		1.83		3.42	6.79	2.76	2.82	
6		1.21	2.28	1.85	1.70	1.69	1.60	
		2.28	2.45	7	3.42		1.22	
		1.07		1.72	1.71		1.70	

μ Bootae
cap 1 pins 6

1.68
2.26

Seidel Diff

-0.82

1	+35.0	35.1	1.23	γ Bootae - 1.07	3.07	4.14
2	51.1	51.2	0.55	β Bootae - 0.82	3.47	4.29
3	-48.8	48.7	0.63	μ Bootae + 0.16	4.05	3.89
4	-42.1	42.0	0.89			

XXXII

XXXIV

5	3.30	γ Bootae - May 4	-1.07	β Bootae - May 4	-0.82	+8
6	.82	149 B	1.72	408 B	0.88	
	2.07	F 219	1.71	μ	0.16	
	0.69	114 B	1.69	ν	0.32	
	3.0	XXXII - May 4	3.89	ν_2	0.31	
	0.31		1.01	φ	0.67	
				XXXIV - May 4	1.42	
				μ Coronae	0.26	
					0.6	

3.29

M

8	B Bootae	V Bootae	Q Bootae	M Bootae	Between V & 149 B Bootae
0	pin h. 6	cap 1. pin 6	cap 0. pin 6	cap d. pin 6	cap 0. pin 5.5
1	32.2 1.39	36.6 36.7	1.14 42.2 42.3 0.88	47.9 48.0 0.66	25.5 25.6 1.86
4	32.5 1.37	46.2 46.3 0.72	43.2 43.3 0.83	45.0 45.1 0.76	22.0 22.1 2.16
7	49.0 0.62	43.3 43.2 0.84	54.4 54.3 0.46	52.2 52.3 0.52	38.2 38.1 1.07
	42.3 0.88	51.5 51.4 0.55	52.2 52.1 0.52	62.3 62.2 0.27	18.9 18.8 2.51
	<u>.26</u>	<u>3.25</u>	<u>2.69</u>	<u>2.21</u>	<u>7.80</u>
	1.06	<u>0.81</u>	<u>0.67</u>	<u>0.55</u>	<u>3.60</u>
	0.88 r.r. bad	<u>2.11</u>		<u>3.6</u>	<u>7.0</u>
		<u>0.70</u>		<u>0.19</u>	<u>1.90</u>
		<u>38</u>		<u>1.55</u>	<u>3.92</u>
		<u>0.32</u>	<u>0.66</u>	<u>0.52</u>	<u>1.96</u>
			<u>0.36</u>	<u>0.36</u>	
			<u>.30</u>	<u>0.16</u>	

γ Bootae - May 4	-1.15	3.07
B " "	-0.90	3.47
M " "	+0.14	4.05

-1.91	10.59
- .64	3.53
-0.64	
<u>4.17</u>	

May 4 = 4.17

Jaskins May 4 = 4.17

γ Bootae	3.02	β Bootae	3.27
149 B	5.89	408 B	5.05
F 219	5.88	M	4.31
114 B	5.86	γ_1	4.49
		γ_2	4.48
		ϕ	4.84

In 4th obs. forgot to change pin hole from 5 to 6 until β
1st time measured M. Borealis instead of M Bootae

V Bootae 2. forgot to put on cap at 2nd obs
V Bootae orange colored star

May 4th 1892

Y Bootal 1
capo pin 5

1 -313 312 146

Cap 1 hen hole 5

-25.6 25.5 18.7

capo 1 pin 6

398 397.9 99

capo 2 pin 6

-16.6 16.5 27.9

capo 0. pin 5

+318 319 141

Cap 1. pin 5

+262

capo 2. pin 6

+315

capo 2 pin 6

+185

Y Bootal 2

capo 0. pin hole 5

-390 389.1 03

-268 26.7 177

41.5 41.4 091

-20.0 19.9 11

292

+20.9

+317

+20.0

Y, Bootal

Pinhole 6

1/2

9 16

Cap 0

pinhole 5

1.53+

0.77

1.50+

0.74+

-.03

-10.

1

5

1.90+

1.14

1.94

1.18 6ad

+.04

-3.

1

6

1.02:

1.20

+.18

+11.

2

6

2.33:

2.41

+.08

+1.

1.50

0.74

1.57

0.81

1.90

1.14

1.98

1.21

1.10

1.12

1.17

1.19

2.34

2.41

✓ Bootal 2

✓ Bootal 1

✓ Bootal 2

cap 1 pin 5

cap 1 pin 5

- 31.6 31.5 1.44 - 13

- 256 25.5 1.87 - 3

- 288 28.7 1.62 - 36

+ 309 31.0 1.47 - 10

+ 229 23.0 2.08 + 18

+ 224 22.5 2.12 + 14

29.0? 28.9? 1.61? + 4

- 39.0 38.9 (1.03) - 54

- 25.6 25.5 1.87 - 3

- 26.8 26.7 1.77 - 21

29.2 29.3 1.58 + 1

+ 26.2 26.3 1.80 - 10

+ 20.9 21.0 2.27 - 29

1.49

1.50:

1.90 2.08

1.53 1.41

0.37 .67

46

3.62

1.905

1.94

1.94 2.27

1.50 1.03

44 1.29

3.78

1.945 6.20

✓ Bootal 2

✓ Bootal 1

cap 2

✓ Bootal 2

pin 6

359 35.8 1.19⁺²

- 21.6 21.5 2.22 - 12

- 20.7 20.1 2.36 - 5

+ 338 33.9 1.29⁺¹²

+ 21.1 21.2 2.25 - 9

+ 18.3 18.4 2.55 + 11

- 41.5 41.4 0.91⁻²⁶- 16.6 16.5 2.79⁺⁴⁵

- 20.0 19.9 2.39 - 2

+ 31.7 31.8 1.42⁺²⁵

+ 18.5 18.6 2.53 + 19

+ 20.0 20.1 2.36 - 5

.81

1.20

2.45

1.12

1.33

2.45

1.02

1.43

1.79

2.45

1.00

2.33:

2.44

1.20

1.21

1.66

2.415

.38

.38

1.22

1.22

1.60

Sun. evening May 5th, 1872.

Groups 34 & 35.

	β Bootae	408 B Bootae	M Bootae	γ Bootae	ϕ Bootae
	Cap 2. pin h. 5	Cap 0. pin h. 6	Cap 2. pin h. 6	Cap 0 pin h. 6	0 cap. pin h.
1	-22.5 22.4 2.13	~~-33.7 33.6 1.31~~ ~~-23.7 23.3 2.05~~ +34.5 34.6 1.25	-23.3 23.2 2.06	-50.7 50.6 0.57	-42.6 42.5 0.8
2	+23.4 23.5 2.04	~~+13.7 13.8 3.17~~ * 1.31	+22.8 22.9 2.09	+40.4 40.5 0.95	+36.3 36.4 1.1
3	-26.8 26.7 1.77	-23.2 23.1 2.07	-23.3 23.2 2.06	-47.2 47.1 0.69	-46.7 46.6 0.7
4					
5	1.22	1.08	1.29	2.07	2.21
6	1.52	1.22	1.52	1.52	1.74
	0.30	1.60		0.54	

	γ 2 Bootae	β Bootae	Seidel	μ has a 1 st comp which Seidel must have included
	Cap 0. pin h. 6	- .38	3.47	
1	-45.0 44.9 0.77	μ " +.44	4.05	
2	+41.8 41.9 0.89	Diff .82	0.58	+ .24 3.28 3.27
3	-42.2 42.1 0.88	τ Hercules 0.11	3.65	4.10 4.31
4		Diff β Bootae 49	0.18	31 3.36
5	254	" " 33	40	7 4.18
6	85			3.85

* obs. with pin hole 5 by accident
 * cloudiness strongly suspected
 * measured accidentally with pin hole 5

Sky slightly hazy

lat	T Iherculis	Q Iherculis	V Iherculis	F 270 Iherculis
in 4.6	cap. 2 pin 4.6	cap 1 pin 4.6	cap 1 pin 4.6	cap 0 pin 4.6
0.87	31.2 33.1 1.46	49.8 49.7 0.60	36.8 36.7 1.14	31.0 39.9 1.47
1.16	+24.1 24.2 19.7	+47.5 47.6 0.67	+38.9 39.0 1.02	+28.2 28.3 1.65
0.71	-22.8 22.7 2.11	-19.3 19.2 2.47		

2.74
0.91

1.71
1.52
0.19

1.54
1.89
1.60
0.28
3.43

0.63
36
0.27

3.74
1.20
38
0.87
0.63
38
0.25

1.08
36
0.72

1.56

β Bo - 38 3.47 1.60
M " + 44 4.05 0.11
T " + 11 3.65
+ 1.7 11.17
+ 0.6 3.72
3.66

1.7 Faking 3.66 = May 5
xxxiv = 4.29
Telling 4.17 = May 4
xxxiv = 4.41
Adoph 4.35

xxxiv
 β - 0.30
408B 1.29
M 0.54
V₁ 0.72
V₂ 0.82
Q 0.91
398 3.80
xxxiv - May 5 0.63
0.66

xxxv
T Herc - May 5 0.10 - .49
Q " 0.27 - .41
U 0.72 + .04
F270 1.56 + .88
2.65
xxxv - May 5 0.66
5.274
.68

3.66 + some suspicion of haze in this neighborhood
May 5 = 3.74
May 4 = 4.13

at 12 m. past 9 altitude of F 270 Iherculis was
51 1/2 at the same time V Iherculis was 47 1/2

F 270 Iherculis is the preceding of 2

Extinction of Artificial Star

$$\begin{array}{rcl}
 -0.9 & +1.2 \\
 -0.8 & +1.1 \\
 -0.7 & +0.8
 \end{array}$$

	Seidel	May 4	May 5	Diff				
γ Boötæ	3.07	-1.15		4.22			4.22	
β Boötæ	3.47	-0.90	-0.38	4.37	3.85	3.27	4.17	3.65
μ Boötæ	4.05	+0.17	+0.44	3.88	3.61	4.24	4.05	3.77
ϵ Herculis	3.65		+1.1		3.54			3.54
				.47	200		43	17
				4.16	3.67		4.15	3.65

	β Boötæ	μ Boötæ
May 4	3.26	4.33
May 5	3.29	4.11
	3.27	4.21

May 21st 1872.

May 21st, 1872.
Color circle set at 22°.

Stars of Ursa Major
Groups 22 & 20

	Star 59			Star 58 ⁺			Star 56			
	Pinhole 6, cap 0.			Pinhole 6, cap 0			Pinhole 6, cap 0			Pin
1	+38.5	38.6	1.04	+26.8	26.9	1.76	+47.0	47.1	0.69	+43.4
2	+41.1	41.2	0.92	+38.7	38.8	1.03	+69.8	69.9	0.14	+50.8
3	+44.8	44.7	0.78	-35.1	35.0	1.23	-68.1	68.0	0.17	-40.2
4	-39.8	39.7	0.99	-32.6	32.5	1.37	-63.7	63.6	0.24	-51.3
Int 5	+26.3	26.4	(1.49) 1.80	+33.2	33.3	1.33	+51.3	51.4	0.55	+39.5
Int 6	-32.7	32.6	1.07	-29.2	29.1	1.60	-49.5	49.4	0.61	-39.3
Means	0.96			1.22			0.20			

	210 B northern one			Ω a			λ			μ*		
	Pinhole 6, cap 0			Pinhole 6, cap 0			Pinhole 6, cap 2			Pinhole 6		
1	+35.2	35.3	1.21	+71.0	71.1	0.12	+48.4	48.5	0.64	+60.2	60.3	
2	+35.8	35.9	1.18	+95.2	95.3	0.01	+54.6	54.7	0.45	+65.7	65.8	
3	-34.2	34.1	1.28	-85.7	85.6	0.01	-48.2	48.1	0.55	-75.2	75.1	
4	-35.2	35.1	1.22	-57.3	57.2	0.38	-42.6	42.5	0.87	-60.8	60.7	
5	+32.6	32.7	1.36	+47.4	47.5	0.67	+38.7	38.8	1.03	+47.3	47.4	
6	-25.9	25.8	1.27	-56.0	55.9	0.42	-41.5	41.4	0.91	-52.4	52.3	
Means	1.23			0.15			0.65			1.52		
	+ cap 1 by accident						0.87					

* Southern most star

Following μ is a star of which this is the nearest

Majoris. Full moon sky very bright & clear
twilight Time 8 3/4 P.M.

	Star 57	Star south of Ψ	Star 49	Star 47
	Pin hole 6. cap 0	Pin hole 6. cap 0	Pin hole 6. cap 0	Pin hole 6 cap 0
3.4	43.5 0.83	+35.0: 35.1 1.22	+59.8 59.9 0.32	+65.3 65.4 0.21
0.8	50.9 0.56	+40.1 40.2 0.97	+55.7: 55.8 0.42	+69.6 69.7 0.14
1.2	40.1 0.97	-32.5 32.4 1.38	-45.6 45.7 0.74	-57.9 57.8 0.37
1.3	51.2 0.55	-38.8 38.7 1.04	-54.6 54.5 0.45	-47.7 47.6 0.67 ^{rej}
5.95	39.6 1.00	+30.0 30.1 1.53	+44.7 44.8 0.77	+46.4 46.5 0.71
	0.68	1.25	0.37	0.29
9.3	39.2 1.02	-28.9 28.8 1.62	-48.8 48.7 0.63	-51.9 51.8 0.53
	0.72	1.17	0.46	0.25

	Companion of NE 33 H	32	38.18
	Pin hole 6 cap 0	Pin hole 6 cap 1	Pin hole 6 cap 0
60	3 0.31 +45.0 45.1 0.76 ^{rej}	+54.3 54.4 0.46	+42.7 42.8 0.86
5.8	0.20 +39.0 39.1 1.02	+57.1 57.2 0.38	+37.5 37.6 1.09
15	1 0.07 -37.0 36.9 1.13	-45.8 45.7 0.74	-33.2 33.1 1.34
60	7 0.30 -38.1 38.0 1.07	-44.7 44.6 0.78	-34.0 33.9 1.29
7	4 0.68 +29.7 29.8 1.55	+38.4 38.5 1.05	+30.5 30.6 1.49
	0.27 -35.1 35.0 1.26	-41.5 41.4 0.65	-34.2 34.1 1.28
52	3 0.52	0.60	1.13
	0.23	0.24	
	0.29		

Every star seems to have a faint companion on right supposed to be due to reflection on the glass. Strong suspicion of clouds 5th time going round

* NE is a very red star.

Star 38						
Pin hole 6, cap 2 cap 1. Pin hole 6						
1	+48.5	48.6	^{rej} 0.64	+36.1	36.2	^{rej} 1.17
2	+35.0	35.1	1.22	+71.5	71.6	0.12
3	-40.2	40.1	0.97	-69.3	69.2	0.15
4	-33.7	33.6	1.31	-60.1	-60.0	0.32
5	+29.2	29.3	1.58	+54.7	54.8	0.45
6	-30.3	30.2	1.22	-60.2	60.1	0.32
			1.18			0.16
			~~1.32~~			~~0.36~~
			-0.34			-0.20

-0.87	1.29
-0.20	-0.62
+0.24	-0.18
1.07	
1.13	
1.18	
<u>2.58</u>	
0.42	

after the first obs. of star 38
it was measured with cap 0.

0.33 subtr from mean of 5 & 6 on account
of clouds. This correction is the mean from above
8th obs. generally bad.

In reduction it has been regarded as false
that the first obs. of 38 seen min was with cap 2. For
it could not have been seen with that cap.

$$\text{Mean } XXII - \text{Mean } XX = 0.60$$

Group XXII		Diff from mean	mag.
59 hrs maj.	0.96	+0.18	5.19
58	1.22	+0.44	5.45
56	0.20	-0.58	4.43
57	0.72	-0.06	4.95
504	1.17	+0.39	5.40
49	0.46	-0.32	4.69
47	0.25	-0.53	4.48
210 B	1.23	+0.45	5.46
	<u>6.21</u>		
mean	0.78		

Group XX		Seidel	mag.
λ hrs maj	-0.87 -1.05	3.10	3.36
μ "	-1.29 -1.47	3.21	2.94
Comp μ "	1.07 +0.89		5.30
33H	0.24 +0.06		4.47
32 Leon min	1.13 +0.95		5.36
38 "	1.18 +1.00		5.41
5 "	-0.20 -0.38		4.03
(31?)	<u>3.62</u>		
	2.36		
	<u>1.26</u>		
Mean	0.18		

Whence mag 21 = 4.23

May 26 - Very fine night

Cap 2	Cap 0	Cap 0	Above x	Pxvii G9
- 48.9 ^{48.8}	- 67.2 ^{67.1}	- 46.2 ^{46.1}	- 35.1 ^{35.0}	- 42.8 ^{42.7}
+ 44.0 ^{44.1}	+ 69.0 ^{69.2}	+ 55.2 ^{55.3}	+ 33.9 ^{34.0}	+ 42.4 ^{42.5}
0.63	0.18	0.73	1.23 ^{1.36}	0.86
0.80	0.15	0.43 ^{1/2}	1.29 ^{1.44}	0.87
0.72	0.16	0.63	1.26	0.87
1.52	4.63	4.63	4.63	4.63
~~2.24~~	4.79	5.26	5.89	5.50
- .80			56.5	DM 6.2
3.83			.6	.7
4.63 = May 26				x South of two
				Worth
				+ 30.8 ^{30.9}

The star above x
may perhaps be
DM 48° 2506 called
there 6.5 but it is not
certain. It is

Pxvii G9 is
DM 49° 2604
marked 6.2
and another
star visible
to naked eye
is DM 49° 2883
marked 5.8

but it is not
easy to make
out. ~~which~~
stars were
measured.

1.47
4.63
6.10

1.65

Recorder absent!

Group 89 & 37

DM 45° 2521
6.5DM 44° 2695
6.5

nplark	74 47 (red)	S of last	S of last	Between 74 & 52 but S
Cap 0	Cap 0	Cap 0	Cap 0	Cap 0
-37.0 ^{36.9}	-67.0 ^{66.9}	-39.4 ^{39.3}	-32.3 ^{32.2}	-31.5 ^{31.4}
	+54.4 ^{54.5}	+34.2 ^{34.3}	+29.6 ^{29.7}	+30.4 ^{30.5}
	0.19	1.01	1.39	1.44
	0.45	1.27 ^{12.7}	1.55 ^{16.5}	1.50 ^{16.4}
1.13 ^{12.5}	0.32	1.14	1.47 ^{14.7}	1.47 ^{14.6}
4.63	4.63	4.63	4.63	4.63
5.76	4.95	5.77	6.10	6.10

This star seems
to be

DM 44° 2652

6.5

But I suspect

DM 45° 2504

6.3 was the
one seen with
naked eye.

SP
5 of 2

1 of 2

+26.2^{26.3} +50.5^{50.6}

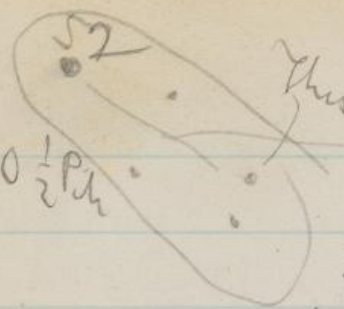
1.80
4.63
6.43

0.57
4.63
5.20

DM 5.8
1.6

3.1
86 87
2.6 57
83 114

52	52	Σ 2063	Anon	42
Cap 2	Cap 1	Cap 0	Cap 0	Cap 3
-32.9 ^{32.8} +25.2 ^{25.3}	-55.6 ^{55.5} +50.7 ^{50.8}	-45.5 ^{45.4} +46.5 ^{46.6}	-64.3 ^{47.9} +47.8 ^{47.9} +47.2 ^{47.3}	-37.2 ^{37.1} +85.8 ^{85.9} (Cap 1)
1.36	0.43	0.75	0.66	1.12
1.88 ^{1.87} ^{1/3} ^{1.8}	0.56	0.71 ⁸¹	0.68 ⁵⁸	1.16 ^{1.52}
1.49 ^{1.57} 1.52 ^{1.63}	0.50	0.73 ⁷³	0.67	- .04
1.52	0.36	4.63	4.63	+ .01
-0.03	+0.14	5.36	5.30	- .02 (Cap 1)
4.63	4.63			.36
4.60	4.77			- .38
				4.63
				4.25
1.24	3	5.36 + .46	0.59	
1.62	1.36	5.30 + .40		
.50	1.88	4.25 - .65		
1.12	4	4.67 - .23		
		19.58		
		4.90		
1.62	43			
.50	1.88			
1.12	1.45			


 52
 10 $\frac{1}{2}$ Ph
 This
 Dust
 about
 that
 between
 52063 &
 known
 Near 52

Near 52

Cap 0

-47.3 47.2

DM 47° 2400 Marked 6.3

This region is quite incorrect
in the Uranometria - Many
Small stars omitted.

0.68

4.63

5.31

6.3

1.0

42 Here 38 - 65 - 76

52 + 5 - 22 - 33

52063 73 + 46 + 35

dal 67 + 40 + 29

nt 52 (notols) 84 + 57 + 46

4) 107

27

5) 191

0.35

0 - 80

7 16

74 32

63

Box 126

Box 87

Box 114

Box 157

0.32

May 26 — I take advantage
of the superb night to make some
observations of southern sky

Milky way about Scorpio & br.
Moon rose unfortunately just
at this time

For pair of stars $3 \ 3\frac{1}{2}$. Western
brightest S of ϵ Scorpii. This makes
 μ Scorpii apparently. East of ϵ and
S of α are two 4 mag.

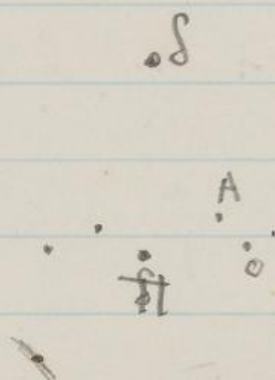
ω is a pretty wide pair
a $5\frac{1}{2}$ ^(4.56) nearly in a line from α through
 τ and making right angle with ϵ .

Moon having risen no other is
visible between ϵ and τ

The square 20° - 30° Dec 240° - 250° RA
correctly represented

Star given by fig between A & δ not seen
 But a 5 and a 6 to the E of δ

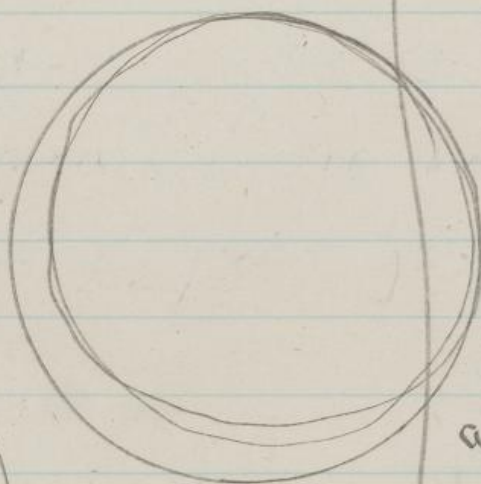
Naked
 Eye
 view



With comet
 Seeker
 inverted

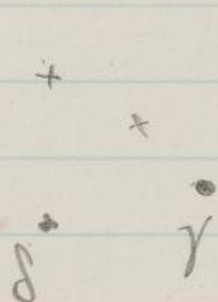


Stars below 6^m omitted



λ Serpi has
 5^m 2° E of it
 a little S. &
 and another
 twice as far
 a little to W.
 η Sagittarii is en-
 tirely out of place
 being a good deal
 more to W.

Star α of δ Sagittarii should be 5 in
stead of 6



There is another δ_{24}^1 above δ & γ
nearer γ .

There is a remarkably bright
cluster east of λ Scorpii a little
north $\frac{2}{3}$ of way to ϵ Sagittarii but
n of line

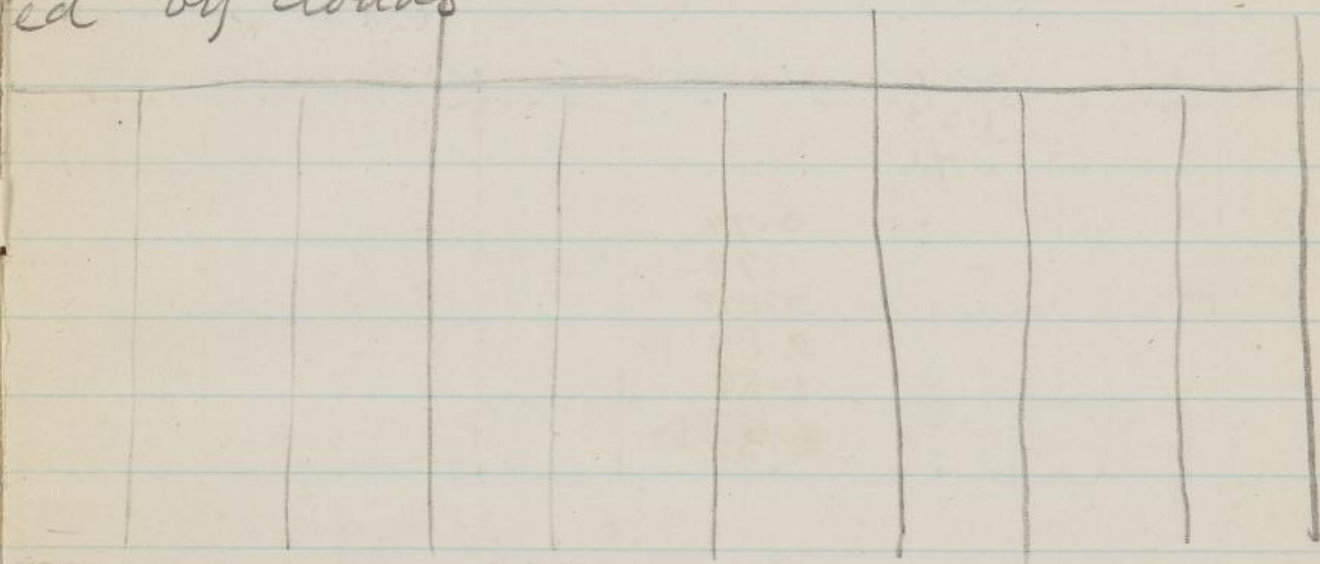
To see the whole tail of Scorpio
plainly here as I do tonight is
quite unusual.

May 29th 1872,
Loudon 39641.

Obs. interrupted

No moon bright sky but lighter flying
 clouds from which the observer fears interference
 color ~~circle~~ 38°

ed by clouds



May 28. 1872. Groups 38 & 39

	L Herculis			Y			X		
	cap 2 Pin hole 6			cap 0 Pin hole 6			cap 0 Pin hole 6		
1	+21.0	21.1	2.26	+27.3	27.4	1.72	+22.9	23.0	2.08
2			<u>1.52</u>						
			0.74						
3				0.74					
				1.72					
4				2.08					
				2.89					
5				1.51					
6				~~2.32~~					

P 1769 n. of 2

obs. interrupted by clouds.

1									
2									
3									
4									
5									
6									

Clear still night no moon
Color circle 51°

Star above x	74	Star south of 74	P. 1769 S. of 2
capo pin hole 6	capo pin hole 6	capo pin hole 6	

+15.6	15.7	2.89	+30.2	30.3	1.51	+16.6	16.7	2.76	+20.4	20.5	2.32
-------	------	------	-------	------	------	-------	------	------	-------	------	------

Thursday

E " Decoration Day "

May 30 1872

Night clear no moon
stars twinkling somewhat windy, no clouds

groups 89 and 41

cap. 2, pinhole 6 1 Hercules			y Hercules Cap. 0. pinhole 5			x Hercules cap 0 pinhole 5		
1	+25.0	25.1 1.67	+30.9	31.0 1.47	+31.3	31.4 1.44		
2	-30.7	30.5 1.49	-28.5	28.5 1.64	-24.4	24.3 1.97		
3	+29.1	29.2 1.59	+34.0	34.1 1.28	+27.5	27.6 1.70		
4	-23.5	23.7 2.24	-34.5	34.4 1.26	-30.9	30.8 1.47		
5	+30.7	30.8 1.48	+32.5	32.6 1.37	+25.0	25.1 1.90		
6	-29.2	29.1 1.66	-34.5	34.7 1.24	-32.0	31.9 1.41		
c.c. color 46°			color 58°			color 47°		
1.57			1.38			1.65		

P. seventeen 59 South Between East & 2 North. Same — South

capo. pinhole 5			capo pinhole 5			capo pinhole 5			
1	+19.5	19.6	2.42	+21.3	21.4	2.23	+17.6	17.7	2.64
2	-23.9	23.8	2.01	-25.0	25.9	1.43	-19.9	19.8	2.40
3	+18.8	18.9	2.49	+20.3	20.4	2.33	+19.2	19.3	2.45
4	-19.6	19.5	2.43	-22.8	22.7	2.11	-19.1	19.0	2.48
5	+20.3	20.4	2.33	+21.1	21.2	2.25	+17.5	17.6	2.65
6	-23.3	23.2	2.06	-23.4	23.3	2.05	-18.9	19.0	2.48
c.c. color 52° ^{17.5} 2.29			color 49° ^{8.6} 2.13			color 46 ^{31.0} 2.52			

all the last observations seen very good &
have been quite free from influence of clouds

Color Grade 50°

* 741 Hercules			P ⁺ XVII			Growth 59		
cap. o pinhole	o		cap. o pinhole	o		cap. o pinhole	o	
+22.9	+28.0	2.10	+24.1	28.2	1.66	+19.6	+19.7	2.41
-20.7	20.6	2.81	-36.0	35.9	1.18	-22.5	22.5	2.12
+22.0	22.1	2.16	+30.8	30.9	1.47	+17.2 [†]	17.3	2.68
-18.7	18.6	2.53	-24.0	27.9	1.68	-15.5	15.4	2.93
+21.2	21.3	2.24	+34.0	34.1	1.29	+17.1	17.2	2.70
-21.2	21.1	2.26	-29.4	29.7	1.55	-17.4	17.3	2.68

color 45° 2.26

color 62° 1.47

color 94° 2.68

3.50

F 328 1st

F 328 2nd

Z (Cancer Z)

cap. o pinhole	o		cap. o pinhole	o		cap. o pinhole	o	
+20.7	20.8	2.39	+17.5	17.6	2.65	+15.8	15.4	2.93
-18.3	18.2	2.55	-15.0	14.9	3.01	-14.3	14.2	3.11
+16.9	17.	2.72	+15.4	15.5	2.93	+22.6	22.7	2.11
-22.9	22.8	2.10 ^u	-15.8	15.7	2.69	-14.5	14.4	3.08
+16.2	16.3	2.81	+19.0	18.9	2.49 ^u	+15.7	15.6	2.68
-20.6	20.5	2.82	-14.3	14.2	3.11	-14.4	14.3	3.10

* color 55° 2.47

color 65° 2.85

color 95° 3.02

† This workman is no higher than 4 or 5 stars a less power work

The same continued.

360 B				386 FF*				P. eenevken 85°			
	Capo	pinhole 0		capo	pinhole 0		capo.	pinhole 0		capo.	pinhole 0
1	+18.4	18.5	2.54	+17.1	17.2	2.70	+26.6	26.7	1.77		
2	-23.5	23.4	2.05	-19.3	19.4	2.14	-28.3	28.4	1.64		
3	+19.1	19.2	2.46	+17.3	17.4	2.57	+29.9	30.	1.58		
4	-19.7	19.6	2.42	-18.3	18.2	2.58	-29.0	28.9	1.61		
5	+21.3	22.4	2.13	+17.6	17.7	2.64	+31.8	31.9	1.41		
6	-21.6	21.5	2.22	-20.0	19.9	2.39	-28.0	27.9	1.65		
color 52°			182	color 55°			342	color 59°			364
			2.30				2.57				

86
35
7

79
18

3.83 3.83
05 -1.78
3.78 3.61

* Clouds, which occasionally obscure the small stars & under the observations don't split.
+ Long interruption in account of clouds 15 min?

Southernmost

of 3 stars above
cap 0. pinkish

+19.0	19.1	2.47	vi
-15.9	15.8	2.88	
+14.9	15.0	2.99	
-15.3	15.2	2.96	
+15.1	15.2	2.96	
-15.0	14.9	3.01	

color 227°

$$\begin{array}{r} 0.21 \\ -0.22 \\ \hline 2.99 \end{array}$$

2.96

Middle one

cap 0. pinkish

+25.2	25.3	1.60	3
-22.9	22.8	2.10	
+21.9	22.0	2.17	
-23.7	23.6	2.03	
+23.0	23.1	2.07	
-30.7	30.6	1.49	vi

color 82°

$$\begin{array}{r} 5.66 \\ -1.94 \\ \hline 2.03 \end{array}$$

Northernmost

cap 0. pinkish

+20.3	20.4	2.33	
-20.4	20.8	2.34	
+15.9	16.0	2.85	
-17.6	17.5	2.66	
+16.9	17.0	2.72	
-14.6	14.5	3.07	vi

color 45°

$$\begin{array}{r} 1.97 \\ 3.97 \\ \hline 2.66 \end{array}$$

XXXXX

May 26

May 26
corr.

L	0.05	-1.78	(3.83)	3.83	0.00	4.08	-25
Y	1.38	-0.45	5.16	4.79	.37	5.04	+12
X	1.65	-0.18	5.43	5.26	.17	5.51	-08
abv x	2.26	+0.43	6.04	5.89	.15		-10
	1.47	-0.36	5.25	4.95	.30		+05
	2.68	+0.85	6.46	6.10	.36		+11
	2.29	+0.46	6.07	5.80	.57		+32
	2.13	+0.30	5.91	5.20	.71		+46
	2.52	+0.69	6.30	6.43	-13		-38

16.743

1.83

$$\begin{array}{r} 5.8 \\ 1.74 \\ \hline 2.5 \end{array}$$

Tuesday - (Just heard Schury against the French Arms. Com.)

May 31. 1872. 10³/₄ P.M. Night clear, no moon
very bright, moonless night Gentle breeze. no clouds

Group 31 and 49

Orion 2. Cygni		Orion 1. Cygni		Orion 1. following	
cap 3	pinhole 5	cap 0	pinhole 5	cap 2	pinhole 5
1 colour 91°		colour 49°		colour 85°	
2 +151.9	152.0	1.67	484.7	134.8	0.76
3 -146.5	146.4	1.31	123.5	123.4	0.40
4 -30.1	30.0	1.52	-34.9	34.8	1.24
5 +28.8	28.9	1.61	+33.2	33.3	1.21
6 colour 71°		colour 54°		colour 70°	
1.71	2.11	3.61	3.61	1.43	1.13
1.53	1.53	1.22	1.22	1.28	1.28
1.52	1.52	1.22	1.22	1.24	1.24

182 B. Between 2 & 120 B Cygni

1 colour 79°		2 colour 31°		3 colour 79°	
cap 0	pinhole 5	cap 0	pinhole 5	cap 1	pinhole 5
1 colour 79°		colour 31°		colour 79°	
2 +144.6	144.7	1.21	+138.2	138.3	2.20
3 -139.0	138.9	0.93	-160.5	160.4	2.42
4 -29.9	29.8	1.55	-20.2	20.1	2.35
5 +26.8	26.9	1.76	+22.7	22.8	2.10
6 colour 70°		colour 45°		colour 75°	
1.52	1.52	1.51	1.51	1.28	1.28
1.36	1.36	1.28	1.28	1.16	1.16

Second time around began to be pretty windy

Colour twice 30°

Key value.

175 B.			between 175 B & 55 B. 165 B					
cap. o.	pinhole o		cap. o.	pinhole o		cap. o.	pinhole o	
1	colour 30°		colour 40°			colour 50°		
2	+161.6	18.3	2.56	+169.2	16.7	2.76	+151.9	15.2
3	-158.4	21.7	2.20	-156.1	14.0	1.99	-148.9	31.2
4	-18.2	18.1	2.59	-15.0	14.9	9.01	-21.8	31.7
5	+20.0	2.01	2.56	+18.5	18.6	2.53	+28.2	28.3
6	colour 35°		colour 50°			colour 60°		
	270	171	2.43	286	10.29	2.57?	1.68	1.93
	27			29			1.73	1.58:
	13			257				

120 B

~~F. Egan~~

cap. o.	pinhole o		cap. o.	pinhole o		cap. o.	pinhole o	
1	colour 30°		colour 44°			colour 40°		
2	+149.1	30.8	1.48	+153.2	25.7	1.85	+157.8	22.1
3	-140.1	30.8	1.53	-148.9	31.2	1.46	-158.9	26.2
4	-29.0	28.9	1.61	-30.6	30.5	1.50?	-28.9	23.8
5	+28.3	33.4	1.32	+20.7	30.8	1.48	+20.2	2.3
6	colour 55°		colour 35°			colour 145°		
	170	212	3.07	1195	181	1.60:	232	32
	17	1.53	1.02:	176			23	
	1.53						2.05	2.08

24 243
154 138
+1.30 1.13

hs hs

Lal. Goussagg. B. 1 st			The Same 2 nd			Lal. Between		
capo. pinhole 5			capo. pinhole 5			capo. pinhole 5		
column 33			column 33 -			column 33		
2	+159.2	159.3	2.30	+148.2	148.3	1.42	+149.0	149.1
3	-165.0	164.9	2.98	-141.5	141.7	1.06	-150.0	155.9
4	-25.0	24.9	1.91	-32.7	32.6	1.37	-28.8	28.7
5	+19.3	19.4	2.44	+28.7	28.8	1.62	+22.8	22.9
6	Column 33°		Column 33°		Column 33°		Column 33°	
			2.87					
				1.52	1.47			3.16
				1.5	1.37			1.79

There is something very bad about this set
Difficult to say what it is owing to.

	2.55
150.0	3.33
	2.13
	2.73
150.0	2.73
	2.68

1875 Feb 2 This owing first to
the retention of the star between
178B & 165B and also to having
observed the wrong star between
e and 120B Geni.

Note on Stars of XLIX

1873 Oct 9.

2.27	Between e x. 120B	is DM 47° 3004	6.2	Corr.	5.73
1.60	99B 1 st	47 2939	5.8		5.32
2.08	99B 2 nd	47 2945	6.8		6.31
2.37	Lal S 99B 1 st	47 2937	6.2		5.73
1.37	2 nd	46 2793	5.8		5.32
1.79	Lal Between		5.8		5.32
	Very doubtful				
	but in Contemporary reduction it is				
	called	47 2916			

Mean LI +1.30

Mean XLIX +1.73

XLIX - LI = +.43

Colour Circle set for each * at its own colour. Time

Group 23. 24. Light-clear, still, close

Gamnia, Ursae Maj. Ori.

65 - preceding

cap 2. pinhole 6 cap. 2. pinhole 6 cap. 0. pinhole 0

* 1	colour	54°	colour	70°	colour	130°	
2	180.0 48.9	0.63	180.0 22.8	2.48	180.0 44.1	0.80	120
3	-131.2 131.1	0.63	-137.3 137.2	2.48	135.0 134.9	0.80	25
4	+52.0 -51.9	0.53	-16.8 16.7	2.76	-41.8 41.7	0.90	
5	+72.8 72.9	0.10	+21.1 21.2	2.25	+39.1 39.2	1.01	?
6	+133.2 133.3	0.78	+160.4 160.5	2.66		0.90	
		19.4		16.7	color	3.52	
		0.65		2.56		4.42	
	Color	1.07	Color	0.51			

4B. Can pens 29B

6 Can Ken

cap. o pinhole o cap. o pinhole o cap. pinhole

1	colour 50°	colour 55°	colour 55°	1
2	180.0 26.7 -151.4 151.3 1.62	180.0 21.5 -158.6 158.5 2.22	180.0 42.9 -137.2 137.1 0.83	2
3	-21.1 21.0 2.27	-15.3 15.2 2.96	-30.0 29.9 1.54	3
4	+25.6 25.2 1.89	+17.3 17.4 2.67	+32.3 32.4 1.38	4
5	278	185	77	5
6	1.93 bad 2.92	2.62 bad	1.26	6
	1.24	1.03	1.03	
	3.17 bad 2.63	3.65 bad	2.29	

949 B. consists of 9 small stars judged to be 6 small

* Gann. Ur. May after first observation considered

45 (being more blue)

66 B P xvn 254

13
16

Monday June 10th 1872. Moon about 3 days old
 L Lyra. E Lyra ~~to~~ N.P. ^{for the breeze light clouds} & Lyra ~~A.F.~~ S.F.

cap 1 Pin hole 6 Pin hole 6 cap 1

1	color	40 too bright to be measured	color	45		color	50	
2			-138.6	41.5 138.5	0.91	-141.0	39.1 140.9	1.02
3			-41.4	41.3	0.92	-40.1	-40.0	0.98
4			+43.5	43.6	0.82	+38.9	39.0	1.02
5			+125.9	54.0 126.0	0.57	+136.4	43.5 136.5	0.83
6				31.32 0.78 Cap (0.36) 0.24 0.66			107 11 3.85 0.96 36 0.60	

13

16 *

P 17 254

cap 0 Pin hole 6

cap 0 Pin hole 6

cap 0 Pin hole 6

1	color	80		color	50		color	50	
2	-142.0	38.1 141.9	1.07	-145.4	34.7 145.3	1.25	-155.7	24.4 155.6	1.96 wj
3	-47.0	46.9	0.70	-39.6	39.5	1.00	-32.0	31.9	1.41
4	+47.5	47.6	0.67	+50.8	50.9	0.56	+30.0	30.1	1.53
5	+129.0	50.9 129.1	0.56	+137.7	42.2 137.8	0.88	+148.3	31.6 148.4	1.43
6	+126.1	53.8 126.2	0.47	+131.2	48.2 131.3	0.85	+151.4	28.5 151.5	1.64
	80	69	3.47		87	4.34	178	297	2.04
	74		2.40	0.99	48	3.89	18	159	1.50
			0.60	89		0.77	1.51		slightly
			0.98						
			1.38						

Pin was not 13
 growing brighter every
 measures

* This star is brighter
 * Interruption here

nd's

Groups 44 & 45 which being visible can be avoided 9.30 P.M.

66 B

84 B

22 B

cap o Pin hole 6

cap o Pin hole 6

cap o. Pin hole 6

color 50

color 40

color 65

$$\begin{array}{r} 21.7 \\ -158.4 \quad 158.3 \quad 2.20 \end{array}$$

$$\begin{array}{r} 27.6 \\ -152.5 \quad 152.4 \quad 1.70 \end{array}$$

$$\begin{array}{r} 27.0 \\ -152.2 \quad 152.1 \quad 1.69 \end{array}$$

$$\begin{array}{r} -24.5 \quad 24.4 \quad 1.96 \end{array}$$

$$\begin{array}{r} -26.4 \quad 26.3 \quad 1.80 \end{array}$$

$$\begin{array}{r} -25.1 \quad 25.0 \quad 1.91 \end{array}$$

$$\begin{array}{r} +28.9 \quad 29.0 \quad 1.60 \\ 26.4 \end{array}$$

$$\begin{array}{r} +30.7 \quad 30.8 \quad 1.48 \\ 29.5 \end{array}$$

$$\begin{array}{r} +27.0 \quad 27.1 \quad 1.74 \\ 27.3 \end{array}$$

$$\begin{array}{r} +153.5 \quad 153.6 \quad 1.80 \\ 23.2 \end{array}$$

$$\begin{array}{r} +150.4 \quad 150.5 \quad 1.57 \\ 6.35 \end{array}$$

$$\begin{array}{r} +152.6 \quad 152.7 \quad 1.72 \\ 30.6 \end{array}$$

$$\begin{array}{r} +156.7 \quad 156.8 \quad 2.06 \\ 21.4 \\ 21 \\ 13 \end{array}$$

$$\begin{array}{r} 1.82 \\ 1.8 \\ 1.64 \end{array}$$

$$\begin{array}{r} 1.64 \\ 48 \\ 2.13 \end{array}$$

$$\begin{array}{r} 9.62 \\ 1.92 \end{array}$$

$$\begin{array}{r} 1.82 \\ 1.8 \\ 1.64 \end{array}$$

$$\begin{array}{r} 1.96 \\ 1.76 \\ -0.58 \\ 1.18 \end{array}$$

6 B cygni

10 B cygni

cap o Pin hole 6

color 50

color 55

$$\begin{array}{r} 30.0 \\ -150.1 \quad 150.0 \quad 1.53 \end{array}$$

$$\begin{array}{r} 22.0 \\ -158.1 \quad 158.0 \quad 2.17 \end{array}$$

$$\begin{array}{r} -26.0 \quad 25.9 \quad 1.83 \end{array}$$

$$\begin{array}{r} -26.5 \quad 26.4 \quad 1.80 \end{array}$$

$$\begin{array}{r} +26.5 \quad 26.6 \quad 1.78 \\ 28.5 \end{array}$$

$$\begin{array}{r} +24.2 \quad 24.3 \quad 1.97 \\ 27.2 \end{array}$$

$$\begin{array}{r} +151.4 \quad 151.5 \quad 1.64 \\ 2.78 \end{array}$$

$$\begin{array}{r} +152.7 \quad 152.8 \quad 1.73 \\ 1.00 \end{array}$$

$$\begin{array}{r} 2.78 \\ 1.70 \end{array}$$

$$\begin{array}{r} 3.67 \\ 1.92 \end{array}$$

$$\begin{array}{r} 1.89 \\ 1.9 \end{array}$$

$$\begin{array}{r} 2.13 \\ 2.1 \\ 1.92 \end{array}$$

$$\begin{array}{r} 2.1 \\ 1.71 \end{array}$$

$$\begin{array}{r} 2.1 \\ 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

$$\begin{array}{r} 1.71 \end{array}$$

thru the last
by clouds

July 12 - Night - ^{nearby} clear & still. Moon 5 days old
 clouds in the south - very light - clouds flying

28
 Theta Lyrae

1 Col 61

2

3

4

5

6

1

2

3

4

5

6

120 B

Lal

10B

June 11th 1872 Tuesday. Groups 43+45

401 B Sberculis

420 B Sberculis

Lal

cap 0 Pin hole 6

cap 0. Pin hole 6

cap 0 Pin hole 6

1 color 45° ^{Corr for extinction}

color 35°

color 50°

2 48 -155.3 ^{24.8} 155.2

1.89

48 -156.3 ^{23.8} 156.2

1.98

47 -161.0

3 54 -24.7 ^{24.6} 24.6

1.92

53 -27.2 ^{27.1} 27.1

1.72

53 -18.1

4 59 +24.9 ^{25.0} 25.0

1.90

58 +30.4 ^{30.5} 30.5

1.49

58 +14.9

5 62 +154.6 ^{25.3} 154.7

1.87

62 +151.7 ^{28.2} 151.8

1.65

61 +157.1

6 2.13

1.89

~~54 +151.7~~ ^{28.9} ~~151.8~~

1.41

66 +164.1

2.13

2.13

65 +150.5 ^{29.4} 150.6

1.56

2.13

1.60

2.38

13

16 Lyra

P XVII 254

cap 1 Pin hole 6

cap 0 Pin hole 6

cap 0 Pin hole 6

1 color 70°

color 50°

color 50°

2 41 -141.1 ^{39.0} 141.0

0.95

41 -142.6 ^{37.5} 142.5

1.03

43 +152.0

3 48 -40.8 ^{40.7} 40.7

0.92

48 -45.8 ^{45.7} 45.7

0.71

49 -27.2

4 53 +39.5 ^{39.6} 39.6

0.98

51 +38.7 ^{38.8} 38.8

1.01

53 +28.0

5 55 +137.8 ^{42.1} 137.9

0.87

54 +137.9 ^{42.0} 138.0

0.87

56 +152.6

6 0.93

0.93

3.62

0.90

1.89

93

20

.36

1.00

1.70

44

1

.57

1.1

1.70

0.49

1

.73

1.1

1.70

Color

.16

10 B cycni

~~101 B Xerantha~~

cap 0. Pin hole 6

1	color	50		
2	40	-151.5	151.4	1.55
3	46	-25.2	25.1	1.86
4	50	+22.1	22.2	2.13 ²⁴
5	52	+147.3	147.4	1.35
6	54	+151.0	151.1	1.59

186
19
167

1.59 ²⁰⁰
1.61 31
235
1.59

-0.29
-0.16
-0.45

-0.22¹/₂
+0.90
1.67
1.84
4.41
16.
4.25
1.06

A hand-drawn table on lined paper. The table has 10 columns and 5 rows. The columns are defined by vertical lines, and the rows by horizontal lines. The table is mostly empty, with some faint, illegible markings in the rightmost column.

Star in Scorpio

Nu 4 mag white

β $2\frac{1}{2}$ mag white

α two stars both of the 5 mag both white

δ 2 mag white

π 3 " white

Two $5\frac{1}{2}$ mag stars precede π a 6 mag follows or a little north - this is not in Arg. Arg. a ~~6~~ mag is seen or 3 mag. white

ϵ orange 1st mag. This star is fully a mag fainter than ϵ Lyra is about as bright as Altair not quite so bright

ζ 3 mag white

$3/5$ mag stars N. of ϵ & δ

The preceding one which Arg. calls 6 is perhaps the brightest of the three certainly brighter than following on N. of these and following β & Nu are $5/5$ mag stars one of them $4\frac{1}{2}$

This is X The 6 mag star following
this is seen S. preceding it are 3^{5th}
mag Arg. only has two of them the
3rd may be called 6th is S. of the
other two making nearly an equilat-
eral triangle with them
S white 4th mag. this is not so
bright as the two preceding it marked
4th by Arg. but these are rather 3^{1/2}
both white

It is about 4^{1/2} it has a 5 mag
following it and two 6 mag
somewhat more preceding it S.
two following it about as far
from this as this is from S is
another 4 or 3^{1/2} mag with a 4^{1/2}
N. preceding it.

E 3rd $2\frac{1}{2}$ about as bright as
 S, of it half as much as it
 is from ~~xx~~ τ is a striking close
 pair of stars 4 and 5 τ brighter
 precedes Preceding E about as much
 are 2 5 mag. S, of the pair near-
 ly half as much again as this
 is from E is a 4 mag. closely
 preceded by a 6th and with a
 5th or $5\frac{1}{2}$ a little ~~W~~ of it
 where the tail of Scorpio turns
 to the East the next star is
 a 4th next comes a rather
 yellow 2nd now the tail
 turns north again
 χ and the star near it are
 given by Arg. χ is a bright-
 2nd the one which follows
 is 4th between these and the
 last mentioned in declination
 but following them are 3
 4th mag

the preceding one of these may
be called $3\frac{1}{2}$ somewhat S of λ
is a 6 mag. a brilliant cluster
follows λ .

It is strange that Borchers who has the
cluster about κ which I cannot see
with naked eye tonight should have omitted
this brilliant one as well as others in
the neighborhood. All the following
branch of the milky way here is extraordi-
narily brilliant & diversified with concentra-
tions

Br. has a 6^m between λ ^{Scorp} ~~Antares~~ & γ Astron
This cannot be seen with naked eye & is
not I think more than 7^m.

His 5^m between λ & κ is there
Of 2 5^m for ϵ he has only one apparently
the fol ϵ .

x x

pe

of 2 fol & he has only one

+

+

•

•

•

Corona Australis can barely be
made out on account of haze

P6

June 12th 1872 Wednesday, Groups

I 270						
cap 0 Pin hole 6						
Color 51 Set at 50						
det.	Photo	red	corrected	mag	corr. corrected	for alt. mag.
1	70	-151.6	151.5	1.61	0.00	1.61
2	74	-32.6	32.5	1.37	0.00	1.37
3		+34.6	34.7	1.25		
4		+27.7	27.8	1.69		
			3.22			
		+147.7	147.8	1.39		
Sum			1.64			
			1.6			
			1.48			
			1.46			

V						
cap 2 Pin hole 6						
color 46 set at 50						
67	-157.3	157.2	2.10	0.01	2.11	67
	-27.5	27.4	1.72			
	+25.4	25.5	1.87			
		21.7				
	+158.2	158.3	2.20			
			3.89			
			1.97			
			1.52			
			0.45			
			2.20			
			2.2			
			8			
			Cap			

 Σ 2,063cap 0 Pin hole 6
color 56 Set at 50

64	-148.3	148.2	1.42	0.01	2.20
	-32.7	32.6	1.37		
	+33.4	33.5	1.32		
		31.5			
	+148.4	148.5	1.44		
			1.53		
			1.39		
			1.5		
			1.1		

anon L

cap 2 Pin hole 6
color 51 set at 50

63	-147.7	147.6	1.38	0.01	2.14
	-31.5	31.4	1.44		
	+29.1	29.2	1.59		
		33.6			
	+146.3	146.4	1.31		
			1.72		
			1.43		
			1.5		
			1.1		

24
38
64
53
72
69
22
11
353

Night clear moon about 6 days old
gentle westerly breeze. Began at 8 30 P.M.

35 + 37

Φ

cap 2 Pin hole 6

color 47 1/2 set at 50

$$\begin{array}{r} 24.1 \\ -1560 - 155.9 \\ \hline -331 - 33.0 \\ \hline +32.4 \quad 32.5 \\ \hline +151.7 \quad 151.8 \\ \hline \end{array}$$

$$\begin{array}{r} 1.98 \\ 4.01 \\ 1.34 \\ 1.34 \\ 1.37 \\ 1.66 \\ \hline 2.38 \\ 1.58 \\ 1.46 \\ 1.52 \\ \hline -0.06 \end{array}$$

τ

cap 2 Pin hole 6

color 49 set at 50

$$\begin{array}{r} 27.1 \\ 65 - 153.0 \quad 152.9 \quad 1.74 \quad 4.01 \quad 1.75 \\ \hline -37.1 \quad 37.6 \quad 1.21 \\ \hline +35.4 \quad 35.5 \quad 1.20 \\ \hline +135.2 \quad 135.3 \quad 0.78 \\ \hline \end{array}$$

$$\begin{array}{r} 9.3 \\ 1.23 \\ 1.52 \\ \hline -0.29 \end{array}$$

$$\begin{array}{r} F290 \quad 1.46 + 1.07 \\ \psi \quad 0.45 + 0.06 \\ \Phi \quad -0.06 - 0.45 \\ \tau \quad -0.29 - 0.68 \\ \hline 1.56 \\ 0.39 \end{array}$$

42

cap 0 Pin hole 6

color 65 set at 65

$$\begin{array}{r} 389 \\ -141.2 \quad 141.1 \quad 1.03 \quad 0.01 \quad 1.04 \\ \hline -44.1 \quad -44.0 \quad 0.81 \\ \hline +43.5 \quad 43.6 \quad 0.82 \\ \hline +132.2 \quad 132.3 \quad 0.67 \\ \hline \end{array}$$

$$\begin{array}{r} 383 \\ 0.83 \\ 0.58 \\ \hline 0.25 \end{array}$$

52

cap Pin hole

color 47 set at 50

$$\begin{array}{r} 51.1 \\ 62 - 129.0 \quad 128.9 \quad 0.55 \quad 0.01 \quad 0.56 \\ \hline -55.3 \quad 55.2 \quad 0.44 \\ \hline +45.7 \quad 45.8 \quad 0.74 \\ \hline +122.9 \quad 123.0 \quad 0.39 \\ \hline \end{array}$$

$$\begin{array}{r} 21.2 \\ 0.53 \end{array}$$

$$\begin{array}{r} \Sigma 2063 \quad 1.39 + 49 \\ \text{anom.} \quad 1.40 + 53 \\ 42 \quad 0.28 - 65 \\ 52 \quad 0.53 - 37 \\ \hline 3.60 \\ 0.96 \end{array}$$

Same night
Group XL I and XLIII

F 328 P.

cap 0 Pin hole 6
color 37 set at 50

1	63	-158.9	^{21.2} 158.8	2.25	0.01	2.26	63	-159.2	^{20.9} 159.1	2.28	0.01	2.29
2		-18.6	18.5	2.54				-16.9	16.8	2.75		
3		+20.0	20.1	2.36				+19.8	19.9	2.39		
4		+157.7	^{22.2} 157.8	2.15				+160.5	^{19.4} 160.6	2.44		
				<u>1.30</u>						<u>1.827</u>		
				2.33						2.47		
		^{20.9}						^{27.0}				
		<u>2.6</u>						<u>2.7</u>				

F 328 F

* cap Pin hole
color set at 50

* The following star

Northern most of 3

cap Pin hole
color set at 50

1	62	-160.1	^{20.0} 160.0	2.37	0.01	1.38	62	-159.3	^{20.8} 159.2	2.29	0.01	2.30
2		-18.9	18.8	2.51				-21.6	21.5	2.22		
3		+16.2	16.3	2.81				+19.9	20.0	2.37		
4		+160.4	^{19.5} 160.5	2.43				+156.1	^{23.8} 156.2	2.01		
				<u>2.12</u>						<u>8.9</u>		
				2.53						2.22		
		^{28.2}						^{24.8}				
		<u>2.8</u>						<u>2.7</u>				

middle one of 3

cap Pin hole
color 69 set at 70

1	62	-159.3	^{20.8} 159.2	2.29	0.01	2.30
2		-21.6	21.5	2.22		
3		+19.9	20.0	2.37		
4		+156.1	^{23.8} 156.2	2.01		
				<u>8.9</u>		
				2.22		
				<u>2.7</u>		
				1.49		
		^{9/14.9}				
		<u>1.7</u>				
		1.66				

7

cap Pin hole
color set at 50

63	-161.4	^{18.7} 161.3	2.59	0.01	2.60
	-20.0	19.9	2.39		
	+18.6	18.7	2.52		
	+161.7	^{18.2} 161.8	2.58		
			<u>2.08</u>		
			2.52		

	279	
	<u>28</u>	
	251	

360 B

cap Pin hole
color set at 50

-157.3	^{22.8} 157.2	2.10	0.01	2.11
-24.1	24.0	1.99		
+22.7	23.8	2.01		
+155.8	^{24.1} 155.9	1.98		
		<u>0.8</u>		
		2.02		

	275	
	<u>2</u>	

of this pair is the fainter

Southernmost of 3

cap Pin hole
color set at 50

62	-160.7	^{19.4} 160.6	2.44	0.01	2.45
	-16.9	16.8	2.75		
	+20.3	20.4	2.33		
	+160.0	^{19.9} 160.1	2.39		
			<u>1.93</u>		
			2.48		

	276	
	<u>28</u>	
	8	

Following 3

cap Pin hole
color set at 50

62	-158.2	^{21.9} 158.1	2.18	0.01	2.19
	-20.6	20.5	2.32		
	+17.7	17.8	2.62		
	+160.9	^{19.0} 161.0	2.48		
			<u>1.60</u>		
			2.40		

	268	
	<u>27</u>	

Following last

cap Pin hole
color set at 50

1	62	-145.5	^{34.6} 145.4	1.25	0.01	1.26
2		-30.8 ~~-78.6~~	30.7	1.49		
3		+30.3	30.4	1.51		
4	72	+143.8	^{36.1} 143.9	1.17	0.00	1.17
		1.51		^{1.43} 1.36		

401 B

cap Pin hole
color set at 50

62	-157.6	^{22.5} 157.5	2.12	0.01	2.13
	-22.6	22.5	2.12		
	+24.6	24.7	1.93		
	+158.1	^{21.8} 158.2	2.19		
			³⁶ 2.09		

168 B

color 67 1/2 set at 65

1	-139.1	^{41.0} 139.0	0.93		
2	+40.5	40.4	0.96		
3	+37.4	37.5	1.10		
4	+139.5	^{40.4} 139.6	0.96		
		1.10		^{3.93} 0.99	
				5.8	
				0.41	

206 B

color set at 50

56	-154.4	^{24.7} 154.3	1.93	0.01	1.9
	-26.6	26.5	1.79		
	+27.4	27.5	1.71		
64	+154.0	^{25.9} 154.1	1.83		
			^{32.6} 1.82		

north of 168 B is a star which

Qu whether obs. on right star for 420 B?

420 B
capr Pin hole
color set ar

215
-158.6 158.5 2.22

-21.3 21.2 2.25

+19.1 19.2 2.46

+159.6 159.7 2.34

127
2.32

Lal

color set ar

19.7
-160.4 160.3 2.41

-19.5 19.4 2.44

+17.4 17.5 2.66

+158.0 158.1 2.18

169
2.42

North following 420 B is a star which
reads 155.6 1.96

color set ar

color set ar

1.94

2.06
1.82
2.5

206 B is the Southern most of 2
with color circle at 50 reads 156.8 2.06

Groups XXXVI + XXXVII

June 13th 1872, Thursday,

X obereculis

cap 1 Pin hole 6
color 55 set at 50

1	69	-135.2	^{44.9} 135.1	0.77	.73
2		~~-52.9~~	~~52.8~~	0.50	55
3		+50.1	50.2	0.58	44
4		+126.8	126.9	0.49	63
			^{53.1} 52.3		
		127.8	127.7	0.52	
			^{28.6}		
			0.57		
			0.36		
			0.21		
			Cap		
			Color		

4 obereculis

cap 0 Pin hole 6
color 55 set at 50

69	-150.1	^{30.0} 150.6	1.53
	-31.0	30.9	1.47
	+32.4	32.5	1.37
	+140.5	^{39.4} 140.6	(1.01) 24'
		^{1.2} ~~148.7~~	138
		27.7	34
	+152.2	152.3	1.69
			206
			1.52

49 b obereculis

cap 0 Pin hole 6
color 54 set at 50

1	65	-146.4	^{33.5} 146.5	1.32
2		-36.3	36.2	1.17
3		+39.6	39.7	0.99
4		+139.5	^{40.4} 139.6	0.96
			⁴⁴	
			1.11	
			123	

o 2063

cap 0 Pin hole 6
color 43 set at 50

64	-145.6	^{34.5} 145.5	1.26
	-30.9	30.8	1.48
	+32.4	32.5	1.37
	+145.9	^{34.0} 146.0	1.29
			150
			1.35

11 Moon on the quarter sky moderate
clear not entirely considerable wind.

2 *ob. eraulis*
cap 0 Pin hole 5
color 93 set at 95

69 -150.8 ^{29.3} 150.7 15.8

-25.3 25.2 1.89

+26.7 26.8 1.76

^{31.2}
148.7 148.8 146

26.9

1.67

Color -1.20

0.47

1.86
19

9 *ob. eraulis*
cap 0 Pin hole 6
color 80 set at 80

-143.0 ^{37.1} 142.9 1.12

-32.7 32.6 1.37

+37.6 37.7 1.09

^{39.9}
+140.0 140.1 0.98

83

1.58

1.14

98

0.16

12.7
13

2 *ob. eraulis* thought afterwards not to be so red

l 30 328

cap 0 Pin hole 6
color set at 50

-149.6 ^{30.5} 149.5 1.50

31.4 -31.3 1.5

+31.5 31.6 1.43

^{32.6}
+149.3 149.4 1.37

17.5

1.44

160
16
1.44

42

cap 1 Pin hole 6
color 82 set at 80

-149.4 ^{30.7} 149.3 1.49

-29.2 29.1 1.60

+30.4 30.5 1.50

^{30.7}
+149.2 149.3 1.49

20.8

1.52

36

1.16

98

0.18

16.2
17

Examined the face of ^{group} 36 with corner set at 50 and
found there were no more stars

52

cap 0 Pin hole 6

color 56 set at 50

	-1285	51.6	
1	-1377	128.4	0.57
2	-614	61.3	0.29
3	+61.3	61.4	0.29
		67.9	
4	+112.0	112.1	0.17
		<u>122</u>	
	~~025~~	0.31	
	<u>36</u>		

N. following 52

cap Pin hole

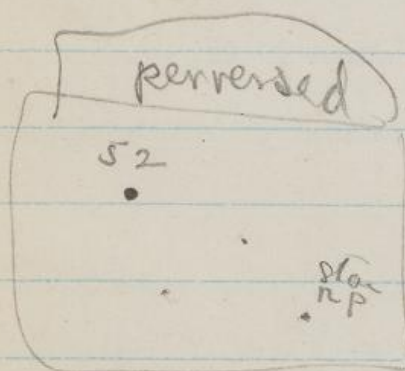
color 76 set at 75

		19.8	
	-1603	160.2	2.40
	-19.9	19.8	2.40
	+21.9	22.0	2.17
		22.9	
	+157.0	157.1	2.09
		<u>106</u>	
	252	2.27	
	<u>25</u>	87	
	27	<u>1.40</u>	

Last time round lamp was blown considerably by the wind.

cup Pin hole
color serat

cap Pin hole
color set at



Groups 44 & 46

ε Lyra North
cap 1 Pin hole
color 50 set at 50

1	-143.5	36.6 143.4	1.16
2	-37.0	36.9	1.13
3	+31.2	31.3	1.39 1.45
4		Cap 1.23 36 0.87	
		1.15 36 0.79	

Repies
last time
round

ε Lyra South
cap 1 Pin hole
color 55 set at 50

57	-141.3	38.8 141.2	1.03
	-39.3	39.2	1.02
	+31.6	31.7	1.36 1.42
		1.14 36 0.78	
		1.03 36 0.67	

Two stars of ε Lyra near
the brighter. This appears
consequently

92 b
cap 0 Pin hole 5
color set at 50

1	-144.0	36.1 143.9	1.17
2	-38.7	38.6	1.04
3	+27.4	27.5	6.5 1.71
4		88 1.29	
		1.11	

105 b
cap 0 Pin hole 6
color set at 50*

	-154.3	25.9 154.2	1.84
	-27.4	27.3	1.72
	+25.6	25.7	1.85
		1.80	
		1.78	

Quite windy

65 b

cap o Pin hole 6

color set at 50

$$\begin{array}{r}
 \begin{array}{r} 25.5 \\ -154.6 \end{array} \begin{array}{r} 154.5 \\ 1.87 \end{array} \\
 -27.2 \begin{array}{r} 27.1 \\ 1.74 \end{array} \\
 +24.9 \begin{array}{r} 25.0 \\ 1.85 \\ \hline 1.91 \end{array} \\
 205 \quad \quad \quad \begin{array}{r} 6 \\ 1.82 \end{array}
 \end{array}$$

ci

1.81

light clouds ill. by moon

84 b

cap o Pin hole 6

color set at 50

$$\begin{array}{r}
 \begin{array}{r} 24.5 \\ -155.6 \end{array} \begin{array}{r} 155.5 \\ 1.95 \end{array} \\
 -20.3 \begin{array}{r} 20.2 \\ 2.35 \end{array} \\
 +19.1 \begin{array}{r} 19.2 \\ 2.40 \\ \hline 2.46 \end{array} \\
 251 \quad \quad \quad \begin{array}{r} 70 \\ 2.23 \end{array} \\
 \hline 21
 \end{array}$$

2.15

reality equal, Southern (conversion not forgotten) about $\frac{1}{10}$
 with former measures must be variable. Measures quite independent

Groombridge

cap o Pin hole 6

color set at 50

$$\begin{array}{r}
 \begin{array}{r} 22.6 \\ -157.5 \end{array} \begin{array}{r} 157.4 \\ 2.12 \end{array} \\
 -21.4 \begin{array}{r} 21.3 \\ 2.24 \end{array} \\
 +18.4 \begin{array}{r} 18.5 \\ 2.54 \\ \hline 90 \end{array} \\
 287 \quad \quad \quad 2.30 \\
 26 \quad \quad \quad \hline 2.18
 \end{array}$$

170 b

cap o Pin hole 6

color set at 50

$$\begin{array}{r}
 \begin{array}{r} 28.3 \\ -157.8 \end{array} \begin{array}{r} 157.7 \\ 1.65 \end{array} \\
 -27.9 \begin{array}{r} 27.8 \\ 1.69 \end{array} \\
 +20.1 \begin{array}{r} 20.2 \\ 2.35 \\ \hline 269 \end{array} \\
 269 \quad \quad \quad 2.12 \\
 90 \quad \quad \quad \hline 2.1 \\
 1.91 \quad \quad \quad \hline 1.67\% \\
 \quad \quad \quad \quad \quad \quad 1.67\%
 \end{array}$$

much blown by wind

~~F~~ 423

~~IX 24~~

cap 0 Pin hole 6

color set at 50

1 -143.4 143.3 1.14

2 -36.2 36.1 1.17

3 +26.3 26.4 1.80

4 $\begin{array}{r} 153 \\ 15 \\ \hline 138 \end{array}$ 1.16

~~IX~~ XIX 240

cap 0 Pin hole 6

color set at 50

-145.0 144.9 1.22

-35.3 35.2 1.22

+22.3 22.4 2.13

~~151~~ 1.22

Stopped on account
of haze (bright cloud)
which became excess (a.e.).

91 b

capo Pin hole 6
color ser at 50

	30.6		
+149.5	149.4	1.49	
-30.9	30.8	1.48	

16 in	1.48
15	

113 b

cap Pin hole
color ser at 50

	31.1		
47 -149.0	148.9	1.46	
-27.5	27.4	1.72	26

17 in	1.59
16	

Tuesday June 18th 1972

ε Lyra North
cap 1 Pin hole 6
alt. set at 50 color

1		+38.3	1.01
		37.0	
2	46	+143.0	1.12
		43.4	
3		-136.6	0.83
		46.8	
4		-133.2	0.70
54		-523	0.52
		<u>0.92</u>	
		36	
		<u>0.56</u>	

82
8
74

ε Lyra South
cap 1 Pin hole 6
color set at 50
alt.

43		+426	0.86
		41.7	
46		+138.3	0.90
		* 51.4	
50		-128.6	0.58
		46.0	
		-134.0	0.73
854		-541	0.47
		<u>307</u>	
71		0.77	77
			36
			<u>41</u>

Southern star of ε Lyra is $\frac{1}{4}$ of a mag. br
* Interrupted by clouds

92 ε Lyra
cap Pin hole
color 70 set at 50

1	alt.	+33.9	1.29
		30.9	
2		+149.1	1.47
3			
		42.9	
4		-137.1	0.85
		-35.5	1.20
		<u>61</u>	
		1.20	

92 ε Lyra
cap 1 Pin hole 6
color 78 set at 80

42	altitude	+38.3	1.06
		34.6	
		+145.4	1.25
		39.9	
		-140.1	0.98
		36.8	1.13
53		-66.8	0.19
		<u>29</u>	
		1.10	1.10
			98
			0.12
			36
			<u>24</u>

* Interrupted again by clouds

Groups ~~44~~ 44 + 45

pretty windy

Moon nearly full not very clear
light clouds interrupted observations repeated

66 b Lyra

84 b Lyra

cap o Pin hole 6

cap o Pinhole 6

color set at 50

color set at 50

alt

+27.4 1.72

22.4

46 +157.6 2.13

28.0

-152.0 1.67

-30.3 1.51

303

1.76

5.83

1.84

alt

+22.7 2.11

23.9

+156.1 2.00

27.3

-152.7 1.72

53 -26.0 1.82

5.83

1.94

lighter

The star considered tonight
at 10 B Cygni was DM +46° 2658
a no other could well have been
taken unless there is variability

16 Lyra

10 b Cygni

cap o Pin hole 6

cap o Pin hole 6

color 48 set at 50

color 48 set at 50

alt

+40.4 0.96

41.9

46 +138.1 0.89

38.1

51 -121.9 0.36

2.21

0.92 1.74

alt

41 +27.9 1.68

26.5

43 +153.7 1.81

30.4*

48 -149.6 1.51

2.00

1.67

* Time 9.45

Two stars which may be 10 b Cygni

The last observation was at 10.00

DM 49° 2929 might be ^{mis}aken for GB (DM mag 6.3)

There is also DM 49° 2968 marked 6.3 but fainter

DM 49° 2959 (6.3) DM 49° 2977 (6.3) ^{than the others}

6 b cygni 3 6 b cygni 2nd p 18 254

cap 0 Pin hole 6 cap 0 Pin hole 6 cap 0 Pin hole 6

color set at 50 color set at 50 color set at 50

alt.							
1	42	+27.1	1.74	+27.1	1.74	+29.6	1.56
		24.5		24.5		28.2	
2		+155.5	1.95	+155.5	1.95	+151.8	1.66
		~~32.2~~					
3		~~+147.8~~	~~1.39~~				
		32.2		26.5		33.2	
4		-147.8	1.39	-153.5	1.79	-146.8	1.33
		208		258		155	
		1.69		1.86		1.52	

189
19

203
20
183

169
17

1.94
2.17
6.99
10
2.03

R Lyrae $\cdot + -0.24$ $- 1.21$
 16 $+0.92$ $- 05$
 201252 1.52 $+ 55$
 6B Cygni 1.69 $+ 72$

 3.89
 ~~1.22~~
 0.97

 10B Cygni 1.67 $+ 70$
 Tol 6B Cygni 1.86 $+ 89$

June 19th 1872. Groups 36 + 38

X oboculus

cap 1 Pin hole 6

color 60 set at 50

Sum of
two adjacent
scales

1 71 +43.6 0.82

37.2

+0.03

2.58

2 +142.8 1.11

64.3

-1.37

2.61

3 -115.7 0.23

+0.55

1.24

4 -59.9 0.32

1.79

248

69

0.62

36

0.26

124
25

4 oboculus

cap 0 Pin hole 6

color set at 50

+26.9 1.76

2.68

+149.5 1.50

-0.05

2.63

-140.7 1.01

-1.10

1.53

-31.0 1.47

+0.70

2.23

174

144

1.60

1.6

g oboculus

cap 0 Pin hole 6

color 79 set at 80

1 +34.6 1.25

331

2 73 +146.9 1.34

1234

3 71 -146.6 1.32

4 -34.0 1.29

120

145

15

130

98

0.32

o oboculus

cap 1 Pin hole 6

color 53 set at 50

+52.7 0.51

54.9

+125.1 0.44

67.8

-112.2 0.17

-81.3 0.03

115

320

0.29

cap 0.36

-0.07

night pretty clear, moon full, gentle S.E. wind

2 δ erculis
cap 0 Pin hole 6
color 61 set at 50

$$\begin{array}{r}
 +41.3 \quad 0.92 \quad 2.01 \\
 36.8 \\
 +143.2 \quad 1.13 \quad - \quad +.42 \quad 2.43 \\
 52.4 \\
 -127.6 \quad 0.52 \quad - .86 \quad 1.57 \\
 +19 \quad 1.76 \\
 -45.3 \quad 0.76 \\
 \hline
 3.33 \\
 92) \quad 0.83
 \end{array}$$

49 δ erculis
cap 0 Pin hole 6
color 59 set at 50

$$\begin{array}{r}
 +37.7 \quad 1.09 \quad 2.34 \\
 33.7 \\
 +146.3 \quad 1.30 \quad +30 \quad 2.64 \\
 38.5 \\
 -141.5 \quad 1.05 \quad -27 \quad 2.37 \\
 -39.5 \quad 1.00 \quad -118 \quad 2.29 \\
 \hline
 44 \\
 124 \\
 13 \quad 1.11
 \end{array}$$

η erculis
cap 2 Pin hole 6
color 60 set at 50

$$\begin{array}{r}
 +39.0 \quad 1.02 \\
 38.4 \\
 +141.6 \quad 1.05 \\
 48.0 \\
 -132.0 \quad 0.66 \\
 -29.6 \quad 1.56 \\
 \hline
 29 \\
 119) \quad 1.07 \quad -0.45 \\
 1.52
 \end{array}$$

271 δ
cap 0 Pin hole 6
color 61 set at 50

$$\begin{array}{r}
 +33.1 \quad 1.34 \\
 37.6 \\
 +142.4 \quad 1.09 \\
 38.0 \\
 -142.0 \quad 1.07 \\
 -31.1 \quad 1.46 \\
 \hline
 96 \\
 138) \quad 1.24
 \end{array}$$

228 b
cap Pin hole
color 58 set ar 50

1 * +36.8 1.13
2 +49.5 0.61
3 +40.2 0.97
4 +43.3 0.83
+40.4 0.96
+44.8 0.77

Groombridge
cap o Pin hole 6
color sur ar 50

+18.3 2.56
23.5
+156.5 2.04
27.5
-152.5 1.71
-22.4 2.13
44
2.11

* Interrupted by clouds

111 +39.7 0.99 1 228 b
80 +46.4 0.71
107 +40.3 0.96 X + 64 50.5 0.57
106 +40.5 0.95 X 72 48.4 0.64 } .60
121 +37.8 1.08 X 44 56.7 0.40
89 +44.3 0.79 39 58.9 0.34 } .37
119 +38.1 1.07 84 45.4 0.75
115 +38.6 1.03 76 47.3 0.68
m) 12.85 (92 69 -49.0 0.62 } 63
12.6
25 71 -48.7 0.63

280
23
212

92
60
37
63
252
0.63

99
92

cap Pin hole
color set at

cap Pin hole
color set at

June 29. Saturday. Groups 46 & 47

106 b

cap 0 Pin hole 6
color 27 set at 30

1	+387	1.04	99
	48.1		
2	+131.9	0.65	55
	41.9		
3	-138.1	0.89	92
		<u>24.6</u>	
4	96	~~82~~	~~1.02~~
	86	Color	1.06
			<u>1.88</u>

groom bridge
cap Pin hole
color 40 set at 50

+22.6	2.12	2.07
22.7		
+157.3	2.11	2.01
21.9		
-158.1	2.18	2.21
		<u>2.10</u>
238.		
<u>24</u>		
214		

27 b is two small stars

ju 19 24

cap Pin hole
color 50 set at 50

1	+36.3	1.16	1.40
	+31.3	1.45	
2	+148.9	1.46	1.36
	46.2		
3	-133.8	0.72	0.75
		<u>51</u>	
4	133	~~1.19~~	~~1.42~~
	<u>117</u>		
5	120		

91 b

cap Pin hole
color 46 set at 50

+322	1.39	1.34
28.6		
+151.4	1.53	1.53
32.6		
-147.4	1.37	1.40
		<u>127</u>
163		~~1.42~~
<u>16</u>	139	
149	86	

170 b
cap Pin hole
color set at 50

$$\begin{array}{r}
 +29.5 \quad 1.57 \quad 1.52 \\
 \quad 289 \\
 +151.1 \quad 1.61 \quad 1.51 \\
 \quad 29.7 \\
 -150.3 \quad 1.55 \quad 1.58 \\
 \hline
 \quad \quad \quad 1.54
 \end{array}$$

$$\begin{array}{r}
 176 \\
 10 \\
 \hline
 158
 \end{array}$$

7 423
cap Pin hole
color set at 50

$$\begin{array}{r}
 +37.8 \quad 1.08 \\
 +36.8 \quad 1.13 \quad -1.08 \\
 \hline
 146.6 \quad 1.34 \quad 1.24 \\
 \quad 38.5 \\
 -141.5 \quad 1.05 \quad 1.08 \\
 \hline
 \quad \quad \quad 1.00 \\
 \quad \quad \quad 1.13
 \end{array}$$

$$\begin{array}{r}
 178 \\
 13 \\
 \hline
 115
 \end{array}$$

Star C cygni is distinctly seen to be double
Star groombridge near 91 b is nothing but
a cluster

113 b
cap Pin hole
color set at 50

$$\begin{array}{r}
 +37.4 \quad 1.10 \quad 1.05 \\
 \quad 35.3 \\
 +144.7 \quad 1.21 \quad 1.11 \\
 \quad 32.5 \\
 -147.5 \quad 1.05 \quad 1.08 \\
 \hline
 \quad \quad \quad 1.08
 \end{array}$$

$$\begin{array}{r}
 137 \\
 14 \\
 \hline
 123
 \end{array}$$

116 b
cap Pin hole
color set at 50

$$\begin{array}{r}
 23.9 \quad 2.00 \quad 1.95 \\
 \quad 20.2 \\
 159.8 \quad 2.35 \quad 2.25 \\
 \quad 240 \\
 -156.0 \quad 1.99 \quad 2.02 \\
 \hline
 \quad \quad \quad 2.07
 \end{array}$$

$$\begin{array}{r}
 230 \\
 24 \\
 \hline
 212
 \end{array}$$

8

cap 2 Pin hole 5
color 40 set at 50

1	+53.6	0.48	.43	0.38
	35.9			
2 2	+144.1	1.18	1.08	0.98
	41.9			
3 3	-138.1	0.91	.94	0.97
				<u>23.3</u>
4 4				0.78
				<u>0.76</u>
				0.02
				<u>1.52</u>
				1.50

267
56

$$\begin{array}{r} 0.95 \\ 10 \\ \hline 85 \end{array}$$

$$\begin{array}{r} 0.53 \\ 1.33 \\ \hline 1.00 \\ 2.85 \\ \hline 0.95 \end{array}$$

65 8

cap Pin hole
color 46 set at 50

	+41.3	0.92	0.87
	39.9		
	*140.1	0.98	0.85
	*151.1		
	42.9		
	-137.1	0.85	0.88
			<u>0.86</u>
		0.92	
	28.9	1.61	
		<u>76</u>	
		85	

* This was accidentally taken

$$\begin{array}{r} 106 \\ 11 \\ \hline 95 \end{array} \quad \begin{array}{r} 102 \\ 110 \\ \hline 95 \\ 107 \\ \hline 102 \end{array}$$

$$\begin{array}{r} 7.75 \\ 1.00 \\ \hline 1.49 \\ 0.69 \end{array}$$

546

cap Pin hole
color 57 set at 50

$$+43.4 \quad 0.83 \quad 0.78$$

$$\begin{array}{r} 34.5 \\ +145.5 \end{array} \quad 1.26 \quad 1.16$$

$$\begin{array}{r} 43.1 \\ -136.9 \end{array} \quad 0.84 \quad 0.87$$

$$\begin{array}{r} 29.1 \\ 0.97 \end{array}$$

$$\begin{array}{r} 109 \\ 8 \end{array}$$

with pin hole 5

2

cap 1 Pin hole
color 52 set at 50

$$+47.7 \quad 0.67 \quad 0.62$$

$$\begin{array}{r} 34.3 \\ +145.7 \end{array} \quad 1.27 \quad 1.17$$

$$\begin{array}{r} 1.79 \\ 90.6 \\ 86 \\ 0.54 \end{array}$$

$$\begin{array}{r} 167 \\ 11. \\ 96 \end{array}$$

$$0.26$$

Clear, calm, moonless

June 30. Sunday

Groups 42 & 43

μ Lyra
cap o Pin hole o
color 39 set at 50

86 Lyra
cap Pin hole
color set at 50

			corr for Lyra	corr for 9.25
1	+43.0 44.4	0.85	73	80
2	+135.6 49.4	0.79	91	69
3	-130.6	0.61	61	64
4	-47.9	0.66	75	78
	-45.9	0.73		85
				81
				85
				294
				0.74

81
0
73

	+31.1 259	1.46	1.34	1.41
	+154.1 288	1.83	1.94	1.73
	-151.2	1.82	1.62	1.65
	-28.7	1.62	1.62	1.74
		182		253
		18		
		1		1.63

401 b is the following one of
a triangle

Broombridge

401 b

cap Pin hole
color 56 set at 50

cap Pin hole
color set at 50

1	+48.9 43.8	0.63	0.58	70
2	+136.2 47.3	0.81	0.71	91
3	-132.7	0.68	0.71	76
4	-53.3	0.49	0.62	54
	-55.9	0.42	0.54	47
			258	338
			0.65	77

	+25.9 220	1.63	1.78
	+158.0 28.6	2.15	2.05
	-151.4	1.63	1.66
	-25.1	1.90	2.02
			3.57
			1.88

58 Lyra
cap Pin hole
color 43 set at 50

+37.8	1.08	.96	1.03
37.1			
+142.9	1.12	1.23	1.02
37.9			
-142.1	1.08		1.11
-37.8	1.08		1.20
			<u>36</u>
	122		1.09
	<u>12</u>		

38 Lyra
cap Pin hole
color set at 50

+28.0	1.67	1.62
30.2		
+149.8	1.52	1.42
34.0		
-146.0	1.29	1.32
-31.9	1.41	1.53
		<u>1.829</u>
	164	1.47
	<u>16</u>	

North of 420 b there is a brighter star

lal
cap Pin hole
color set at 50

+21.3	2.24	2.19
20.5		
+159.5	2.32	2.22
22.5		
-157.5	2.11	2.14
-20.5	2.32	2.44
		<u>95</u>
		2.25
251		
<u>20</u>		

420 b
cap Pin hole
color set at 50

+22.7	2.11	2.06	2.35
21.9			
+158.1	2.18	2.08	2.43
23.0			
46			
11			
-155.5	1.95	1.98	1.7
-34.4	1.96	2.08	1.8
		<u>20</u>	1.18
		2.05	2.28
214			
<u>23</u>			
190			

* 68 b

caps Pin hole
color by ser at 70

1	33.6	1.31	1.26
	28.2		
2	+151.8	1.66	1.56
	33.2		
3	-146.8	1.33	1.36
4	-46.6	0.71	0.83
	+41.5	0.91	1.03
	146		121
	10		1.30

‡ 206 b

caps Pin hole
color 40 ser at 50

+27.1	1.74	1.69
26.9		
+153.1	1.76	1.66
30.4		
-149.6	1.51	1.54
-27.5	1.71	1.83
		272
		~~1.68~~
		1.68

* 68 b is the southern one of 2
 ‡ 206 b is the southern most of 3.

$$\begin{array}{r} 1.30 \\ 73 \\ \hline 0.57 \end{array}$$

$$\begin{array}{r} 0.67 \\ 73 \\ \hline 1.40 \end{array}$$

cap Pin hole
color set at

cap Pin hole
color set at

5B 1.09
3B 1.47
8B 1.63
1.19
1.40

168B 0.58
206B 1.68
401B 1.88
420B 2.05
2al 2.25
8.43
1.09

$$x_{211}(\text{3 stars}) - x_{L111} = - .29$$

W 74
178.93
1.23

$$x_{L11}(\text{4 stars}) - x_{L111} = - .46$$

Group XLVII & XLIX.

8 Cygni

cap 2 Pin hole 5
color set at 50

1	+39.6	1.00	95
	47.7		
2	+132.3	0.67	57
	42.9		
3	-137.2	0.86	89
4	-51.2	0.55	67

30.8
Pin hole 0.77
7.6

+0.01
Cap 2 1.52
1.51

86 8

cap 0 Pin hole 6
color set at 50

+45.9	0.73	68
42.5		
+137.5	0.87	77
45.5		
-134.5	0.75	78
-47.8	0.66	78

87
8
79

21
0.75

The light of 8 makes it hard to

99 b 1st

cap Pin hole
color set at 50

1	+256.4	1.64	1.59
	27.2		
2	+152.8	1.73	1.63
	32.9		
3	-147.1	1.35	1.38
4	-35.3	1.21	1.43
	19.3		2.03
	16.8		1.51
	1.6		
	14.9		

99 b 2nd

cap Pin hole
color set at 50

+261.0	1.82	1.77
25.0		
+155.6	1.91	1.81
28.4		
-151.6	1.64	1.67
-26.0	1.82	1.94
		3.19
		1.80

54 b

cap 0 Pin hole 6

color set at 50

+41.2	1.92	87
42.9		
+137.1	0.65	75
45.6		
-134.4	0.74	77
~~43.5~~	0.83	95
		<u>33.4</u>
		0.84

2

cap 2 Pin hole 6

color set at

+27.0	1.75	1.70
25.8		
+154.2	1.84	1.74
31.4		
-148.6	1.44	1.47
-35.6	1.20	1.32
		<u>22.3</u>
		1.56
		Cap 1.52
		0.04

measure others near it

lat S. of 99 b is the southernmost of 2

lat S. of 99 b

cap Pin hole

color set at 50

+32.9	1.35	1.30	1.51
24.4			
155.6	1.96	1.86	2.18
36.8			
-143.2	1.13	1.16	1.26
-34.7	1.25	1.37	1.39
		<u>1.69</u>	2.34
		1.42	1.58

18.8
<u>1.6</u>
12.8

lat preceding 99 b

cap Pin hole

color set at 50

+29.0	1.60	1.55
24.0		
+155.0	1.99	1.89
29.9		
-150.1	1.54	1.57
-32.6	1.37	1.49
		<u>2.50</u>
		1.63

bal following 998

cap 0 Pin hole 6

color sur ar 50

1	+26.6	1.78	1.73
2	25.5		
	+154.5	1.87	1.77
3	29.9		
	-150.1	1.54	1.57
4	-28.3	1.65	1.77
			4
			1.71

196
19

1208

cap 0 Pin hole 6

color sur ar 50

	+31.5	1.44	1.39
	30.9		
	+149.1	1.47	1.37
	31.4		
	-148.6	1.44	1.47
	-31.6	1.43	1.55
			178
			1.45

166

This was a superb night

Note 1873 Ochr

bal fol 998 & suppose is DU 47° 800H



e
cap 0 Pinhole 6
color 50 set at 50

+40.8	0.94	1.05	0.89
^{37.5} +14.25	1.10	1.22	1.00
^{6.21} -117.9	0.27	0.30	0.30
-51.1	0.55	0.62	0.67
	<u>286</u>	<u>319</u>	<u>286</u>
	76 71	180	0.72:
	<u>8</u>		
	60		

$$\text{Mean XLVII} = +03$$

$$\text{" XLIX} = +1.46 \quad (\text{lat } 5993 \text{ northern alt } +37)$$

$$\text{XLVII} - \text{XLIX} = -1.43$$

July 1st Monday. Groups 40+41

† ~~z~~ herculis
cap 0 Pin hole 6
color set at 50

1	+20.0	2.37	2.32	2.35
	19.0			
2	+161.0	2.48	2.38	2.36
	20.8			
3	-159.2	2.29	2.32	2.36
4	-20.0	2.37	2.49	2.43
	265		2.38	
	27			
	8			

* ~~y~~ 328
cap Pin hole
color 41 set at 50

	+21.4	2.23	2.18	2.21
	23.2			
	+156.8	2.06	2.96	1.94
	21.1			
	-158.9	2.26	2.29	2.33
	-23.6	2.03	2.15	2.19
	238		2.15	
	19			

* ~~y~~ 326 is the preceding of 2
† ~~z~~ herculis is Southern most of 2

p 17 353
cap Pin hole
color 61 set at 50

1	+32.7	1.36	1.31	1.34
	30.1			
2	+149.9	1.53	1.43	1.41
	39.2			
3	-148.8	1.02	1.05	1.09
4	-34.2	1.28	1.40	1.34
			1.30	
	144			
	14			

middle one of 3
cap Pin hole
color set at 50

	+24.5	1.95	1.90	1.93
	23.4			
	+156.6	2.05	1.95	1.93
	26.7			
	-153.3	1.77	1.80	1.81
	-30.3	1.51	1.63	1.57
			328	
	202		1.82	
	2			

+3 -2 +4 -6

Pretty clear very gentle west wind, no moon
3606 Hercules 386 Hercules

cap Pin hole
color 54 set at 50

+239	2.00	1.95	1.88
205			
+159.5	2.32	2.22	2.20
244			
-155.6	1.96	1.99	2.03
-223	2.14	2.26	2.20
		42	
234	2.11		
23			

cap Pin hole
color set at 50

+232	2.06	2.01	2.04
224			
+157.6	2.13	2.03	2.01
254			
-154.6	1.87	1.90	1.94
-220	2.17	2.29	2.23
		23	
229	2.06		
23			

3 Hercules
cap 2 Pin hole 6
color 57 set at 50

+468	0.70	0.65	0.68
471			
+132.9	0.69	0.59	0.57
479			
-132.1	0.66	0.69	0.73
-59.5	0.33	0.45	0.39
		238	
595	0.60		
	1.52		
	-0.92		

?
46 Hercules
cap Pin hole
color 55 set at 50

+42.1	0.88	0.83	0.86
43.0			
+137.0	0.85	0.75	0.73
542			
-125.8	0.46	0.49	0.53
-49.0	0.62	0.74	0.68
		281	
	0.70		

3368 north
cap Pinhole
color set at 50

1	+32.5 26.3	1.37	1.32	1.35
2	+153.7 27.4	1.80	1.70	1.68
3	-152.6	1.72	1.75	1.79
4	-27.0	1.75	<u>1.87</u> 26.4	1.81
	185 15		1.66	

3368 Hercules south
cap Pinhole
color set at

	+24.3 22.4	1.97	1.92	1.95
	+157.6 27.4	2.13	2.03	2.01
	-155.7	1.97	2.00	2.04
	-25.4	1.87	<u>1.99</u> 3.94	1.93
	22 21		1.99	

Amibula
cap Pinhole
color 35 set at 35

1	-	-	-	-
2	-	-	-	-
3	-02.9 -177.1	6.61	6.64	6.68
4	+3.7	6.07	<u>6.19</u> 0.3	6.13
	6.68 6.13 77 77 8.97 7.45 6.90		<u>6.42</u> 0.77 7.19	

2.32	2.38	2.32	2.49
2.18	1.96	2.25	2.15
1.95	2.22	1.99	2.26
1.34	1.83	1.05	1.40
1.90	1.95	1.80	1.63
0.65	0.59	0.69	0.45
0.83	0.75	0.49	0.74
1.32	1.70	1.75	1.87
1.92	2.03	2.00	1.99
1.41	1.27	1.38	1.70
15.79	16.28	15.72	16.68
1.58	1.63	1.57	1.67
+3	-2	+4	-6
			<u>1.58</u> 1.63 1.57 1.67 2.55 1.61

706
71
685

297 & herculis
cap Pin hole
color 47 set at 50

1	+31.2	1.46	1.41	1.44
	326			
2	+147.4	1.37	1.27	1.25
	~~183~~			
	~~+161.7~~			
	329			
3	-147.1	1.35	1.38	1.42
4	-29.3	1.58	1.70	1.64
			17.6	
168			1.44	
18				

336

following the last
cap Pin hole
color set at 50

+17.0	2.72	2.67	2.70	3.03
¹⁸³				
+161.7	2.56	2.46	2.44	2.86
				5.89
				2.94

294
21
65

2.57

The star following 297 & herculis is nearly
north of 336 & herculis

These obs. were perturbed by clouds

2	2.38	+38	June 12	July 30
			+40	+62
F326	2.15	+15	+21	+14
860B	2.11	+11	-10	-10
886B	2.06	+06	+28	+17
Pxv	1.30	-70	-76	-79
	00			
	2.00			

July 2nd Tuesday Groups 45 + 46

+R Lyra

cap Pin hole 6

color 75 set at 75

1	+47.2	0.68	0.63
	70.0		
2	+109.0	0.14	0.04
	61.34		
3	-116.6	0.25	0.28
4	-66.2	0.20	0.32
		127	
	127	0.32	
	.32	- .87	
		- .55	

16 Lyra

cap Pin hole

color 50 Set at 50

	+46.3	0.72	0.67
	40.5		
	+139.5	0.95	0.85
	46.8		
	-133.2	0.70	0.73
	-56.1	0.41	0.53
			278
			0.69

+6 b is one of a triangle of 3 but doubtful if it is the same star before observed

+R Lyra was afterwards thought not to be so

10 b 2nd

cap Pin hole

color set at 50

1	+27.8	1.69	1.64
	230.9		
2	+149.6	1.47	1.37
	337		
3	-146.3	1.30	1.33
4	-34.7	1.25	1.37
		171	
		1.43	

+6 b

cap Pin hole

color set at 50

	+28.5	1.64	1.61
	30.6		
	+149.4	1.49	1.39
	31.7		
	-148.3	1.42	1.45
	~~-26.9~~	~~1.76~~	
	-29.1	1.66	1.72
			217
			1.54

Nearly clear westerly breeze no moon

N 18 254

cap Pin hole
color 54 set at 50

+312 1.46 1.41

33.6
+146.4 1.31 1.21

39.9
-140.1 0.98 1.01

-36.6 1.14 1.26

186
14

89
1.22

* 10 1 18

cap Pin hole
color set at 50

+23.8 2.01 1.96 2.24

25.1
+154.9 1.90 1.80 2.12

26.0
-154.0 1.82 1.85 2.03

-26.4 1.80 1.92 2.06

210
21

1.89

206

21

1.85

3.53

1.88

353

1.88

39

* 10 1 18 & 10 2 2nd are considerable distance from one another

red.

§ Supra companion
cap 0 Pin hole 6
color 46 set at 50

+34.6 1.25 1.20

140
14

§ Supra bright star
cap 1 Pin hole 6
color 48 set at 50

+45.8 0.74 0.69

82
8

36
0.33

106 b Lyra
Cap Pin hole
color set at 50

1	+25.7	1.85	1.80
2	^{18.0} +164.0	2.85	rej
3	^{30.3} -149.7	1.51	1.54
4	-31.5	1.44	1.56
	213	379	19.0
	21	95	1.63
	1.92		

* groombridge
Cap Pin hole
color set at 50

	+225	2.12	2.07
	^{22.0} +157.0	2.17	2.07
	^{218.7} -151.3	1.62	1.65
	-27.0	1.75	1.87
	211		366
	21		1.91

* groombridge suspected to be variable

170 b Lyra
Cap 0 Pin hole 6
color set at 50

1	+27.7	1.69	1.64
2	^{32.3} +147.7	1.39	1.29
3	^{38.2} -141.8	1.06	1.09
4	-28.6	1.63	(Cap kept on by accident)
	36	1.39	
	1.27	1.47	
		1.35	

Observer nervous,
not very well.

η Lyrae

cap 1 Pin hole 6

color 44 set at 50

+47.7	0.67	0.62
^{54.2} +125.8	0.46	0.36
^{74.4} -105.6	0.08	0.11
-83.6	0.01	0.13
		122
34	"	.30
		36
		- .06

δ Lupa

cap 1 Pin hole

color 49 set at 50

+56.8	0.39	0.34
^{58.4} +124.6	0.36	0.26
^{75.0} -105.0	0.08	0.10
-90.0	0.00	0.12
		83
		0.21
		0.36
		- 15

July 6th Saturday Groups 44 + 45

r Lyra

cap 1 Pin hole 6

color 68 set at 70

$$\begin{array}{r}
 \text{alt} \\
 1 \quad 52 + 57.8 \quad 0.37 \\
 \quad \quad \quad 0.36 \\
 2 \quad \quad \quad \hline
 \quad \quad \quad .01 \\
 3 \quad \quad \quad 73 \\
 \quad \quad \quad \hline
 4 \quad - 72
 \end{array}$$

1.66

16 Lyra

cap 0 Pin hole 6

color 47½ set at 50

$$+ .40.8 \quad 0.94$$

Wind blows lamp

cap Pin hole
color set at

cap Pin hole
color set at

Clear, moderate S.E. wind

pu 17 254

cap 0 Pin hole 6
color set ab 50

cap Pin hole
color set ab

cap Pin hole
color set ab

cap Pin hole
color set ab

July 8thMonday ~~Groups~~

r Lyra

ε 1 Lyra

cap 1 Pin hole 6

cap 1 Pin hole 6

color 74 set at 75

color 52 set at 50

$$\begin{array}{r}
 +58.1 \quad 0.36 \\
 +61.2 \quad 0.29 \quad 0.31 \\
 \hline
 66.2
 \end{array}$$

$$\begin{array}{r}
 +113.8 \quad 0.20 \quad 0.10
 \end{array}$$

$$\begin{array}{r}
 -81.4 \quad 0.03 \quad 0.06
 \end{array}$$

$$\begin{array}{r}
 -77.6 \quad 0.05 \quad 0.17 \\
 \hline
 63.4
 \end{array}$$

$$\begin{array}{r}
 1.50 \quad 47 \\
 .16 \quad 16 \\
 \hline
 1.34
 \end{array}$$

$$\begin{array}{r}
 0.18 \\
 -87 \\
 \hline
 -79
 \end{array}$$

$$\begin{array}{r}
 -79 \\
 -36 \\
 \hline
 -1.15
 \end{array}$$

$$\begin{array}{r}
 +47.3 \quad 0.68 \quad 0.63 \\
 +46.5
 \end{array}$$

$$\begin{array}{r}
 +133.5 \quad 0.71 \quad 0.61 \\
 +63.3
 \end{array}$$

$$\begin{array}{r}
 -116.7 \quad 0.25 \quad 0.28
 \end{array}$$

$$\begin{array}{r}
 -59.6 \quad 0.33 \quad 0.45 \\
 \hline
 152 \quad 197
 \end{array}$$

$$\begin{array}{r}
 152 \\
 .57 \\
 \hline
 0.49 \\
 36
 \end{array}$$

$$+ 0.13$$

Owing to oil getting low in lamp these measures are getting worthless

ε 1 Lyra

ε 2 Lyra

cap 2 Pin hole

cap 2 Pin hole

color set at

color set at

$$\begin{array}{r}
 +25.4 \quad 1.87 \quad 1.82 \\
 +26.3
 \end{array}$$

$$\begin{array}{r}
 +153.7 \quad 1.80 \quad 1.70 \\
 +25.5
 \end{array}$$

$$\begin{array}{r}
 -154.5 \quad 1.87 \quad 1.80 \\
 \hline
 206 \quad 21
 \end{array}$$

$$\begin{array}{r}
 1.81 \quad 1.81 \quad 1.81 \\
 \hline
 1.52
 \end{array}$$

$$\begin{array}{r}
 1.52 \\
 \hline
 1.30
 \end{array}$$

$$+ 0.29$$

$$\begin{array}{r}
 +26.0 \quad 1.82 \quad 1.77 \\
 +29.2
 \end{array}$$

$$\begin{array}{r}
 +150.8 \quad 1.59 \quad 1.49 \\
 +32.0
 \end{array}$$

$$\begin{array}{r}
 -148.0 \quad 1.41 \quad 1.44 \\
 \hline
 179 \quad 157 \quad 157
 \end{array}$$

$$\begin{array}{r}
 179 \quad 157 \quad 157 \\
 \hline
 1.57
 \end{array}$$

$$\begin{array}{r}
 1.57 \\
 \hline
 1.52
 \end{array}$$

$$+ 0.05$$

1872phae.proj.:.67

$\epsilon 2^0$ Lynd

r Lyra

cap 2 Pin hole

+29,1 1.60 1.55

$$\begin{array}{r} 260 \\ + 1540 \\ \hline 1800 \end{array}$$

M	35,5		
n	-144,5	1,20	1,23

$\begin{array}{r} 154 \\ 150 \\ \hline 4 \end{array}$

1.50	57	1.50
1.37		
- 87		1.52

$$\begin{array}{r} 0.63 \\ - 0.2 \\ \hline \end{array}$$
$$\begin{array}{r} -1.52 \\ - \hline -0.89 \end{array}$$

$\epsilon 2$ is from 1 to 2 tenths of a mag. brighter than $\epsilon 1$

cup Pin hole

coler set av

$$q_2 + 0.38 + 1.57 \quad 1.49$$

6 wraps 50 & 52

57 сусні

ca 102 Dini holes

capo Pin Hole b

color $52\frac{1}{2}$ sh. wt 50

color 5/ set at 50

alt. +43.8 0.81 scr
1 41 +40.7 0.95 0.76 0.69
2 52 +130.5 0.61 0.51 0.49
3 55 -137.3 0.86 0.89 0.88
4 218
85
28
77
Cup
216
-0.72 0.69
-1.52 1.52
-0.83

48	+705	0.13	0.008	0.05
53	+ ^{77.3} 162.7	0.05	-0.05	-0.07
56	*23.5 -156.5	2.04	+0.55	0.54 u'
		<u>1.52</u> 0.52		<u>52.</u>
			H	0.15:
				-0.01

$$\begin{array}{r} 0.57 \\ 1.52 \\ \hline - 0.93 \end{array}$$

* measured with cap?

* following 59
caps Pin hole
color 498 ur at 50

Star preceding 56
cap Pino hole
color set at 50

$$\begin{array}{r}
 1 \quad + \cancel{48.8} \quad 48.8 \quad 0.63 \quad 0.58 \quad 0.55 \\
 \quad \quad 457 \\
 2 \quad 53 \quad + 1343 \quad 0.74 \quad 0.64 \quad 0.62 \\
 3 \quad \quad \quad \quad \quad \quad \quad \quad \quad \quad + 0.58 \\
 4 \quad \quad \quad \frac{176}{2} \quad 137 \quad 68
 \end{array}$$
$$\begin{array}{r} 53 \quad 43.8 \quad 0.81 \quad 0.76 \quad 0.74 \\ 56 \quad +14.3 \quad 0.99 \quad 0.89 \quad \underline{0.87} \\ \quad \quad \quad \quad \quad \quad \quad \quad \quad +0.80 \end{array}$$

56 cyan
cap Pin hole
color set at 50

$$\begin{array}{r}
 49 \quad +76.3 \quad 0.06 \quad 0.01 \quad -0.02 \\
 \quad \quad \quad 57.2 \\
 54 \quad +122.8 \quad 0.38 \quad 0.28 \quad \underline{26} \\
 \quad \quad \quad \quad \quad \quad 24 \\
 \quad \quad \quad \quad \quad + 0.12
 \end{array}$$

259 B cyan
cap Pin hole
color set at 50

$$\begin{array}{r}
 49 \quad 48.6 \quad 0.64 \quad 0.59 \quad 0.56 \\
 \quad \quad \quad 50.3 \\
 54 \quad +129.7 \quad 0.58 \quad 0.48 \quad \underline{0.46} \\
 \quad \quad \quad \quad \quad \quad + 0.51 \\
 68
 \end{array}$$

232 b
cap Pin hole
color set at 50

$$\begin{array}{r}
 +51.2 \quad 0.55 \quad 0.50 \quad 0.48 \\
 \quad \quad \quad 47.8 \\
 56 \quad +132.2 \quad 0.66 \quad 0.56 \quad \underline{0.55} \\
 \quad \quad \quad \quad \quad + 0.51
 \end{array}$$

By
6

226 b
cap Pin hole
color set at 50

$$\begin{array}{r}
 53 \quad 36.7 \quad 1.14 \quad 1.09 \quad 1.07 \\
 \quad \quad \quad 32.9 \\
 \quad \quad +14.7 \quad 1.35 \quad 1.25 \quad \underline{1.24} \\
 \quad \quad \quad \quad \quad + 1.15 \\
 \quad \quad \quad 13.0 \\
 \quad \quad \quad 12.5
 \end{array}$$

γ Cygni
Cap 2 Pin hole 5
color 57 sub at 60

1	57	+61.8	0.28	0.23	0.22
2	60	+119.5	0.31	0.21	0.20
3				0.21	
4				Pinhole	76
				Cap	-55
					-1.52
					-2.07
				Color	-41
					-2.48

1838
Cap 0 Pin hole 6
color 70 sub at 50

57	+367	1.14	1.09	1.08
	406			
	+139.4	0.96	0.86	0.85
				1.93
				+0.96
	114			
	11			
	103	1.05		

1.27
1.06
33
1.16

166 2

capo	Pinhole 6
color	set at 50

+58.6	0.35	0.30	0.28
-------	------	------	------

62	+124.5	0.43	0.33	0.32
			+0.30	

43
-178
00

capo	Pinhole
color	set at

Groups Observed

45-47 wanted

52-53 wanted

20-21

20-22 Obs (March 18 & May 21)

21-22

22-23

23-24 Obs (March 16 & June 2)

24-2

25-26 March 22

26

26-28 Obs. (March 21 & May 4)

27

28

29

30

31

32

32-34 Obs (May 4)

33

34-35 Obs (May 5)

35-36 Obs. July 20

35-37 (June 12)

36-37 Obs. (June 13)

36-38 (June 19 not less)

37

37-39 Five round (May 26)

38

39

39-41 Obs (May 30)

40-41 July 1

41-43 (June 12)

41

39 One round May 28

Observe 45 carefully especially R Lyrae & 10 B Cygni
& get the right star for each.

42 - 43 Jan 30

43

43 - 45 Oct (June 11)

44 - 45 ^{July 6} Oct (June 10) - 18 44 - 46 [Obs (June 13)]

45 - 46 July 2

46 - 47 [June 29]

46 - 48 July 19

47 - 48 [June 30]

47 - 49 June 30

48

48 - 50 July 30

49

49 - 51 Obs (May 31)

50

50 - 52 July 8

51

51 - 53 July 28

52 - 53 July 31

53

54

55

56

57

58

59

60

