

H. 5

160

Vol. I 345-432

1848.

February to September.

Equatorial.

Prime Vertical

p. 3

KG 11365.160

Sir J. H. Star in Orion

p 356
365

Feb 12 Jan & Laura
 April 12 p. o. Henry
 May 4 Jan & Laura
 Sept 15 Em 65 leti.

Cluster in Hercules

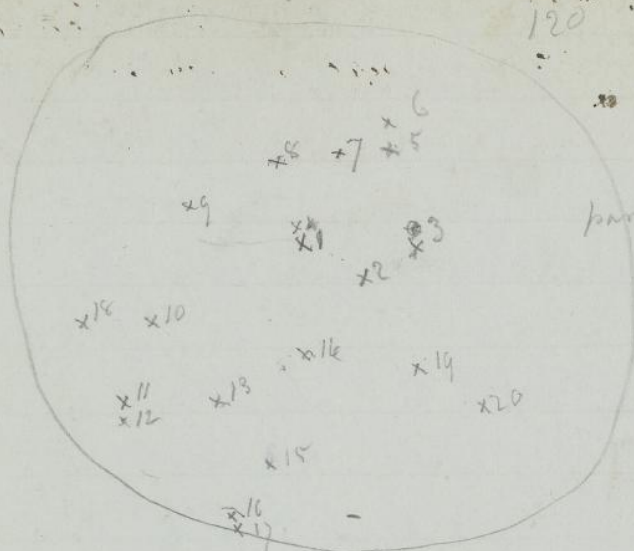
Aug 14
 " 15
 " 23
 Sept 13
 " 18
 " 19



Feb. 9th

North Star

345th



Clouds

1. Corona	6	nt
(3) 2	8	nt
(2) 3	6.7	+
4	17	sp
5	8.9	sf
6	16	sf
7	13.4	sf
8	9	sf
9	16	sf
10	13	nt
11	10	nt
12	13	nt
13	12	nt
14	13	nt
15	14.5	nt
16 & 17	11	nt
18	18	nt

Feb. 9. Jan 23 Estimate of magnitudes of stars about Corona Borealis
Feb. 9th 23rd Jan 1

201 (5)	6	6-7	6	ma
21	8	8	9	8
3	6-7	6-7	7	B
4	17		13	π
5	8.9	10	10	ε
6	16	15	12	γ
7	13.14	12	12	η
8	9	8.9	10	θ
9	16	12	14	δ
10	13	12	13	ξ
11	10		10	γ
12	13		10	δ

a trap

5467

Feb 7 - 13th South N S
 16 45.04.6 157-154.5
 46.00.2 158-155
 46.56 + 156.5-155.5
 47.24 156.7-155.5
 47.52 156.5 155.5
 48.16 347 20
 48.47.5 156.94 155.4
 49.45.3 156.94
 50.43.0 154
 0.77 N-

Est. Jan 4

22.53

21.40

observations of α Lyra in the
 Prime Vertical. with
 Chro. 2557 - fast at meridian transit.
 α Lyra - 11^m 35.55
 Daily rate + 2.03

west 1/2 South

24

20.35.32.7

158-152

36.30

158-152

Circum + 158.5-152

$$\frac{156.5-152}{10} = 0.6$$

$$\begin{array}{r} 158.25 \\ 151.50 \\ \hline 6.75 \\ N+3.37 \end{array}$$

Feb. 12

Sid. + moon - 21.26.41.43
 46.75
 21.27.28.18
 26.30.12.53
 5.02.44.35
 4.59.10.85
 1.59.67
 43.88
 35

Imm - H.C.B. 5.01.54.75
 G.P.B. 5.1.54.22
 27.02.52.43
 21.27.28.18
 5.35.24.25
 4.59.10.85
 34.54.27
 23.93
 25
 Em - H.C.B. 5.34.29.30
 2.43
 G.P.B. 5.34.26.87

Aldebaran

1848. Feby. 14th
 Mc. South
 East. Transit

α Lyrae. East prime vertical.

57- 16 .. 45 .. 7.8
 46 .. 3.7
 46 .. 59
 47 .. 27.3
 47 .. 55
 48 .. 23
 48 .. 50.8
 49 .. 48.3
 50 .. 46

Feb. 16 ± 2 days

St. South
East Transit

Level

N - S

Ther

2557-16 .. 45 .. 13.0
 46 .. 08.5
 47 .. 04.0
 47 .. 32.0
 47 .. 59.9
 28 .. 27.2
 28 .. 55.2
 29 .. 53.0
 50 .. 49.85

+ 143 - 143
 145 - 140.5 +
 + 143.3 - 142
 144.2 - 141.3 +
 + 142.8 - 141.7
 143 - 141.5 +
 + 143 - 141.3
 144 - 140.5 +
 + 142 - 141.7
 143 - 141 +
 333 155
 143.33 141.55
 143.33 143.33
 1.78 N-

5.2
 4.8
 4.7
 4.9
 4.2
 4.4
 4.7
 5 -

St. South
West Transit

Level

N - S

Ther + 29

2557-20 .. 35 .. 40.8
 36 .. 38.3
 37 .. 35.5
 38 .. 04.0
 38 .. 31.2
 38 .. 59.3
 39 .. 27.2
 40 .. 22.8
 41 .. 18.2

+ 147 - 141.5
 147 - 141 +
 + 146 - 142
 147 - 141 +
 + 146 - 142
 147 - 141 +
 + 145.5 - 142.5
 146.5 - 140 +
 + 146 - 141
 147 - 140 +
 650 120
 146.50 141.20
 146.50 146.50
 15.30 N-
 2.65

Sub 1.7²
 NE North
 East Jr
 2557-16-45-20
 46...15.2
 47...11.3
 47...39.7
 48...06.8
 48...35.0
 49...03.2
 50...0.0
50...58.0

Level
 N-S
 + 148.5 - 145
 148 - 146 +
 + 149 - 144.5
 148.3 - 145.5 +
 + 149.5 - 144.3
 148 - 146.0 +
 + 149 - 144.7
 147.5 - 146.3 +
 + 148 - 145.5
 147.3 - 146.2 +

 831 540
 148.31 145.40
 145.39
 12.91
 1.45 N-

Ill. North
 West Jr
 2557-20-35-38.6
 36...36.4
 37...33.4
 38...01.3
 38...29.8
 38...57.2
 39...25.2
 40...21.4
41...16.7

Level
 N-S
 + 149 - 140
 147.5 - 143 +
 + 149 - 140.5
 142 - 147.5 +
 + 146 - 144
 147.5 - 142 +
 + 146 - 143
 146 - 142 +
 + 149 - 140
 146.5 - 142 +

 1685 724
 146.45 142.40
 146.45
 14.45
 2.22 N-

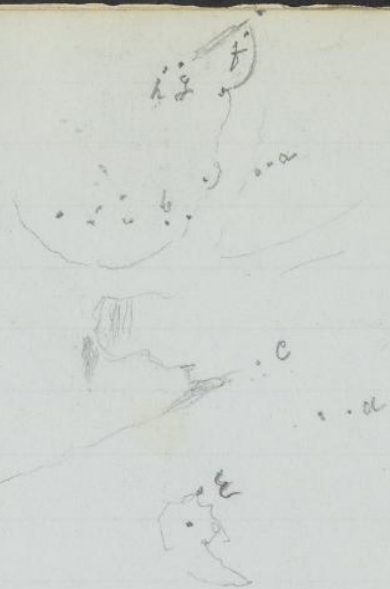
Feb-17- ϵ $\frac{P}{V}$ $\frac{North}{South}$ $\frac{W}{W}$
 16 - $\frac{1}{1}$
 14 - $\frac{1}{0}$
 12 - $\frac{1}{0}$
 9 1 - $\frac{1}{1}$
 8 1 - $\frac{1}{1}$
 3 1 - $\frac{1}{1}$
 2 - $\frac{1}{1}$
 Jan-31 - $\frac{1}{0}$
 28 - $\frac{1}{0}$
 24 - $\frac{1}{1}$
 22 - $\frac{1}{1}$
 21 - $\frac{1}{0}$
 19 1 - $\frac{1}{1}$
 18 - $\frac{1}{0}$
 12 - $\frac{1}{1}$
 11 - $\frac{1}{1}$
 10 - $\frac{1}{1}$
 7 - $\frac{1}{1}$
 6 - $\frac{1}{1}$
 3 1 - $\frac{1}{1}$
 Dec-30 - $\frac{1}{1}$
 29 - $\frac{1}{1}$
 27 - $\frac{1}{1}$
 26 - $\frac{1}{0}$
 23 - $\frac{1}{1}$ $\frac{Imp}{Imp}$
 Nov-10 - $\frac{1}{0}$
 4 - $\frac{1}{1}$
 2 - $\frac{1}{1}$
 13 - 12 15 - 8 14 -

Feb 21sta, b, c, d & e seen 17^{mag}

certain & steadily

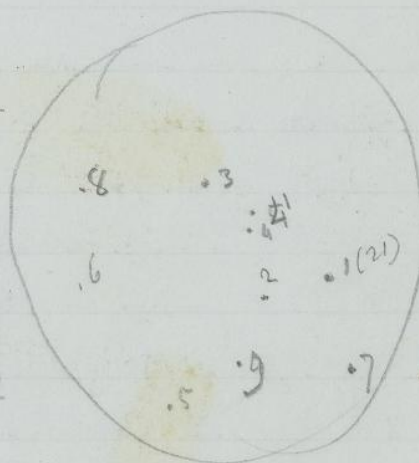
17^{mag} is at the angle where
the spur joins the main branch
g in 10^m h is 12^m.

at c, it is quite dark, the
star is exactly off the lower cap

b is 18^{km}

12 7^m
2 - 9
3 - 12-13
4 - 13
41 - 14
5 - 9-10
6 - 8-7
8 - 10 -
9 - 11 -

	diff	diff
2152	45.080	42.313
	45.087	
	45-140	45-162.314
mean	45-102	42.420
with	48.98	42.349
		pro 7.651
2126	43.176	34.265
	.203	34.213
	.222	34.213
	16.07	34.229
	43.202	34.229
2129	32.837	42.775
	876	42.640
	.950	42.550
	2663	3)1965
	32.888	42.655



diff AR
2126 - 11.433
11.057
11.308
298
266

2128 - 10.300
10.213
10.147

The Cam. position

2125 26.583
26.748
26.626
11657
26.652

2127 - 27.212
.140
.227
27.193

2124 51.362 - 30.057

67.435 56.465
67.282 56.353
818
6.409

2124¹ 53.975 - 30.692 21.3 - 56.375 20.312

Feb 7. 21^h Lino - 50.00 Zero Pas 89.23
 diff dec from (a) one
 small x on preceding edge of m 6 52.38
 52.41
 52.47 wide 57.243 fulling
 57.060
 brightest of the pair, foll. lat a + 2 52.65
 (B) 52.58 on the fine edge as before
 52.56 mean.

birth B & B' 0.522
 0.547
 0.558 5223
 0.538 5.46
 0.518

Feb 7. 21^h results diff dec - diff R. diff dec - diff R.

21+2	north - 48.98	pre - 76.57	n.p.	a + 21 -
21+3	South 63.75	" - 296.88	s.p.	
21+4	" - 13.62	" - 199.43	s.p.	
21+4'	" - 39.75	" - 193.08	s.p.	
21+5	north 233.48	" - 157.71	n.p.	
21+6	" 67.98	" - 387.34	n.p.	
21+7	" - 228.07	" - 64.09	n	
21+8	" 397.80	" 397.80	s.p.	1660
21+9	" - 171.12	" 73.45	n.p.	10.720
				397.8

200.

3 0.39.7

19.3.1

5.3 3.15

233.2 17.1.7

1.20 2.57

3 53 38.8

154 6.24

2.39

July 23 - Pos 179.23
 diff the f.c. 1 = Corionis

122 - 24.82 - 24.63 - 24.72

123 - 40.42 - 40.49 40.45

124 - 37.41 - 37.38 37.40

129 - 33.21 - 33.30 33.25

126 - 30.76 - 30.16 - 30.15 = 30.16

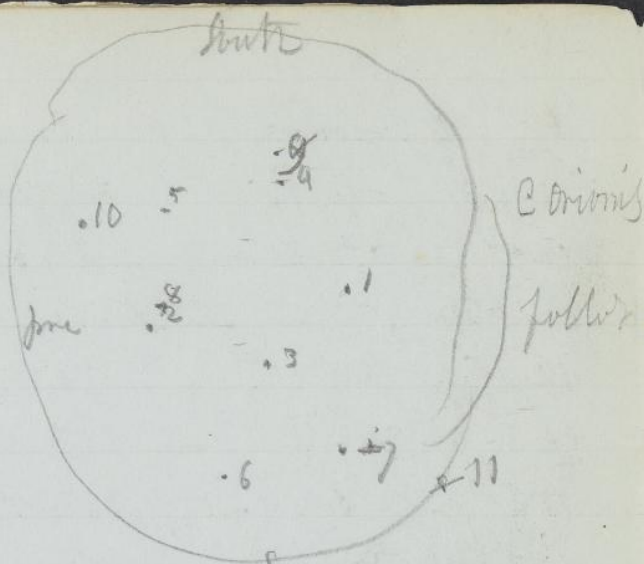
125 - 22.75 - 22.60 22.67

1210 - 10.05 10.05

128 - 22.22 22.22

1211 - 93.11 mf Coinciding 3.11

127 - 57.60 49.96 57.60



1 - 6.7

2 - 8

3 - 8

4 - 8.9

5 - 10.11

6 - 11

7 - 12

8 - 13

9 - 13-16

10 - 11

diff the

125 - 38.29 - 38.29

124 - 32.97 - 32.05 = 32.01

129 - 27.06

1210 - 47.03

128 - 52.96

122 - 56.11 - 56.20 - 56.20 = 56.17

123 - 56.64

127 - 67.70

126 - 73.25

1211 - 70.60

Coin 49.97

49.95

49.97

above the spur
 2 point following
 the old spur at the
 end of the spur
 1/4 of the dist
 15' apart
 meeting 16 Feb 13 m

(193. Spur is 5 end of Deposition branches.)

I Orionis

diff. R

diff. Dec

122	- 252.8	~~~~~	61.70	n.p. ✓
123	- 95.5	~~~~~	66.40	n.p.
124	- 126.0	~~~~~	179.9	s.p.
125	- 273.3	~~~~~	117.1	s.p. ✓
126	- 198.4	~~~~~	232.5	n.p.
127	- 16.0	~~~~~	177.0	n.p.
128	- 277.8	~~~~~	29.6	s.p. ✓
129	- 167.5	~~~~~	229.4	s.p.
1210	- 399.5	~~~~~	29.7	s.p. ✓
1211	- 231.1	~~~~~	206.0	n.f. ✓

Feb 26th fine evening Mr Paine & Mr Eliot were at the observatory. examining nebulae.

Early part of the evening very good
all the previously adopted stars were fully recognized.

The double character of η^o off. pole of south bay is certain, and triplicity is all but sure.

The radiation from root of Mepicarian branch certain as well as on the n.p. side of the Hayenian region, c^1 triple, nearest star is in the direction of the distant companion c^1 6-7^m c^2 11^m c^3 9-10^m η^o at the upper end of the horn is double distance of the horn just less than a corner

Lin 2. H & X is not seen, there is a star 16-17 not very distant from his place. ^{near} on the edge of the neb.

Lin 7 the star just fall β in hope we only see by glimpsing

Feb 7.29

Zero Pos - 269.30

179.30

diff Dec

diff Az

$$\begin{array}{r} 46 \\ 359.30 \end{array}$$
aL 101 - 77.49 n.p. 10^m

90.94 - 90.35

it is dark round them
two stars.

aL 102 - 79.25 n.p. 10.11

100.75

aL 1(3) 38.13 s.p. 14 97.10

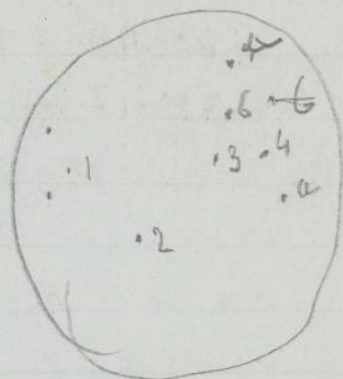
aL 2(4) 50.42 - 25 p 10 80.91

aL 3(5) 37.75 s.p. - 11 74.52

aL 4(6) 37.44 s.p. 15 66.35

aL 5(7) 21.92 s.p. 9.16 - 59.42

aL 6(8) 31.35 s.p. - 18 58.79



Zero

49.82

49.77

49.82

49.83

4

mean 49.81

	diff Dec	diff Az	mag	pos.
aL 1 -	276.8	408.4	10	n.p.
2 -	294.4	509.4	10-11	n.p.
3 -	116.8	472.9	14	s.p.
4 -	6.1	311.0	10	n.p.
5 -	120.6	247.1	11	s.p.
6 -	123.7	165.4	15	s.p.
7 -	278.9	96.1	9-10	s.p.
8 -	184.6	89.8	18	s.p.

$$\begin{array}{r} \text{C' Orionis} \quad h \quad m \quad s \\ 5 \quad 26 \quad 59.62 \end{array} \quad - \quad \begin{array}{r} 0 \quad 57 \quad 22.24 \end{array}$$

$$\begin{array}{r} \theta' \quad \text{---} \quad 26 \quad 55.64 \\ \hline 3.98 \end{array} \quad - \quad \begin{array}{r} 5 \quad 30 \quad 28.08 \\ \hline 33 \quad 05 \quad 84 \end{array} \quad \text{C' north}$$

$$\begin{array}{r} \text{1 Orionis} \quad \text{---} \quad 5 \quad 27 \quad 07.62 \end{array} \quad - \quad \begin{array}{r} 6 \quad 01 \quad 35.56 \end{array}$$

$$\begin{array}{r} \theta' \quad \text{---} \quad 26 \quad 55.64 \\ \hline 11.98 \end{array} \quad - \quad \begin{array}{r} 5 \quad 30 \quad 28.08 \\ \hline 31 \quad 07 \quad 50 \end{array} \quad \text{1 south}$$

308

March 1st

Pas. Zero - 270

diff dec

diff AR

n 2 broken 1 43.75

1 + 5 old acc 32.442

32.40

32.45

8.19

8.60

8.31

8.55

s.p.

take 1 as a centre

Coin 49.86

dec

AR

12 4 83.67 32.70 n.p.

12 5 77.50 31.87 n.p.

12 2 63.58 23.45 n.p.

12 3 89.13 7.80 n.p.

12 6 80.00 53.48 n.p.

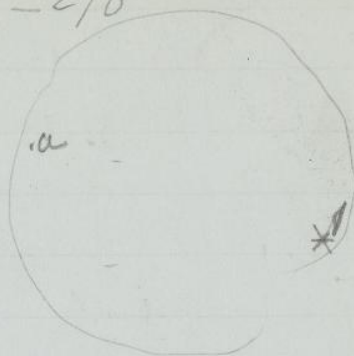
12 7 68.25 66.38 67.67-68.09 n.p.

12 8 67.22 17.31 67.01 s.p.

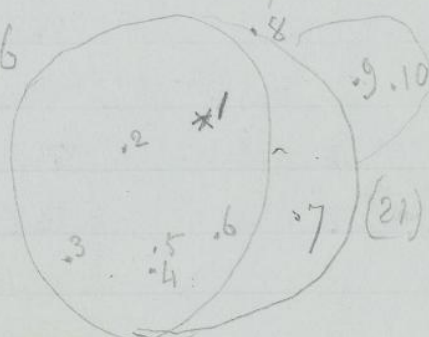
12 9 37.88 93.70 s.p. 93.73

12 10 37.89 101.32 s.p.

12 26 42.77 12.44 s.p.



1 is at the following end of the mid neb.



no 8 is in the lower horn

Coin 49.83

mag

1 - 8.9

2 - 10

3 - 8

4 - 12

5 - 17

6 - 15

7 - 15

8 - 13

9 - 8-9

10 - 13-

26 - 12

It is dark below no 1. all the way to no 2 along w. 5. 6 & 7 heavy light

1st Mant

The stars about 2 below C orionis appear
nebulous, even the small double stars 12 mag are so,
The nebula reaches all the way from the cam
to the field below No 1 & 2 of this night's observation

	diff R	diff Dec	
alt	"	61.0 n.p.a	
1 & 5 old up	414.4	174.2 s.p. 1	$1 = 639^{\text{min}} - 12 = 627^{\text{min}}$ full a -
1 & 4	171.5	- 338.2 n.p.	
1 & 5	179.8	276.5 n.p.	
1 & 2	264.0	137.3 n.p.	
1 & 3	- 420.5	392.8 n.p.	
1 & 6	36.3	301.5 n.p.	
1 & 7	182.4	175.3 n.p.	
1 & 8	171.6	325.4 s.f.	in the lower branch
1 & 9	438.5	119.7 s.f.	
1 & 10	- 514.7	70.8 s.f.	
1 & 26		374.1 s.p.	

The lower branch extends beyond No 8 which is
immersed in the nebula

$$\begin{array}{r}
 \text{alt} \quad 225 \\
 521 - \frac{414}{639} \\
 \quad \quad 12 \\
 \quad \quad 627 \\
 \quad \quad 438 \\
 \quad \quad 105 \\
 \quad \quad 1047
 \end{array}$$

Mars 4th

C 2C 2 orms

24.702

24.698

24.782

24.660

24.790

24.753

6) 4385

247.31

498.14

250.88

5

obs - 248.48

B.A.C - 247.8

1.92

Sun of Mars 252.0

6.12

49.840

49.820

49.800

49.807

49.827

2914

498.19

1848 March 18

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Sid. time M. Nov ^{h m s} 23.44.40.77 at Green.Chron. 1351 March 17^h 9^m 25^s Ann. post 29.7
1351 losing daily 1.01

" " " " 23.45.27.51 at Camb.

^{h m}
8.30
post 28.1
8.29.31.9
8.58
post 28.1
8.57.31.9
23.46.27.51 sid. time
9.42.54.4
1.30.44
9.10.33.96 M.S.T.
8.51
28.1
8.50.31.9
23.45.27.51
9.05.04.4
1.29.8
9.03.35.1 M.S.T.
8.55.45
28.1
8.55.16.9
23.45.27.51
9.09.49.39
1.30.07
9.08.19.32 M.S.T.
9.13
28.1
9.12.31.9
23.45.27.51
9.27.04.39
1.32.90
M.S.T. 9.25.31.49
9.18.15
28.1
9.17.46.9
23.45.27.51
9.32.19.39
1.33.86
M.S.T. 9.30.45.63
9.21.50
28.1
9.21.21.9
23.45.27.51
9.35.54.39
1.34.34
M.S.T. 9.34.20.05

46.74
8.29.31.9
8.44.04.39
1.25.85
8.42.38.54 M.S.T.
9.22.15
28.1
9.21.46.9
23.45.27.51
9.36.19.39
1.24.42
M.S.T. 9.34.44.57
10.45
28.1
10.44.31.9
23.45.27.51
10.59.04.39
1.47.97
M.S.T. 10.57.16.42
9.24.45
28.1
9.24.16.5
23.45.27.51
9.38.49.39
1.34.84
M.S.T. 9.37.14.55
10.04
28.1
10.03.31.9
23.45.27.51
10.18.04.39
1.41.25
M.S.T. 10.16.23.14
11.07
28.1
11.06.31.9
23.45.27.51
11.21.04.39
1.51.57
M.S.T. 11.19.12.82
11.26
28.1
11.25.31.9
23.45.27.51
11.40.04.39
1.54.68
M.S.T. 11.38.9.71

11.55 28.1
11.54.31.9
23.45.27.51
12.9.04.39
1.59.43
M.S.T. 12.07.04.96
11.52.00
28.1
11.51.31.9
23.45.27.51
12.06.04.39
1.58.95
M.S.T. 12.04.05.44
11.55 28.1
11.54.31.9
23.45.27.51
12.09.04.39
11.58
28.1
11.57.31.9
23.45.27.51
12.12.04.39
1.59.93
M.S.T. 12.10.04.46
12.00 28.1
11.59.31.9
23.45.27.51
12.14.04.39
2.00.26
M.S.T. 12.12.04.13
12.12.15
28.1
12.11.46.9
23.45.27.51
12.26.19.39
2.2.26
M.S.T. 12.24.17.13
12.21 28.1
12.20.31.9
23.45.27.51
12.35.04.39
2.3.70
M.S.T. 12.33.00.69

29.7
1.56
28.14

1848 March 18th

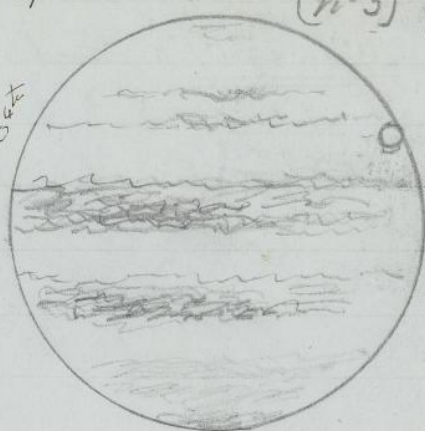
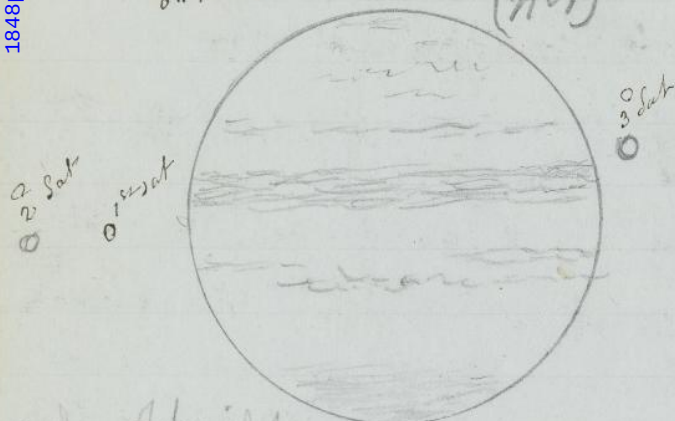
Obs. No. 1357.

h. 42.38 m.s.t. 8.30 h.

Transit of the 3^d Satellite of Jupiter
across his disk.

(No. 1)

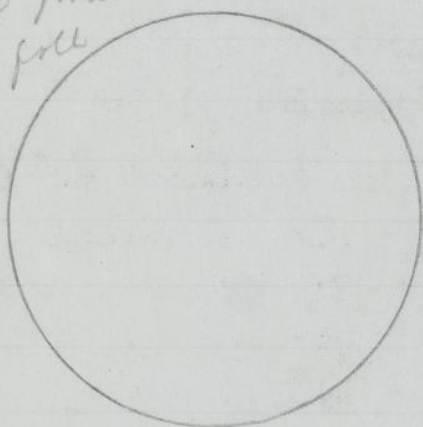
9.10.34 m.s.t. 8.18 (No. 3)



3^d Sat on the disk
is decidedly
brighter than
Jupiter although
it comes on
one of his brighter
belts

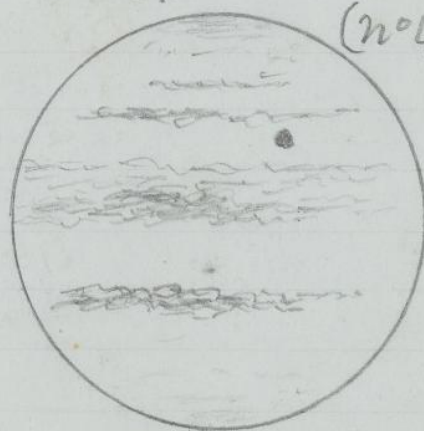
order of brightness

- 1 - first primary nearest the primary
- 2 - first following next the primary
- 3 - second primary
- 4 - second following



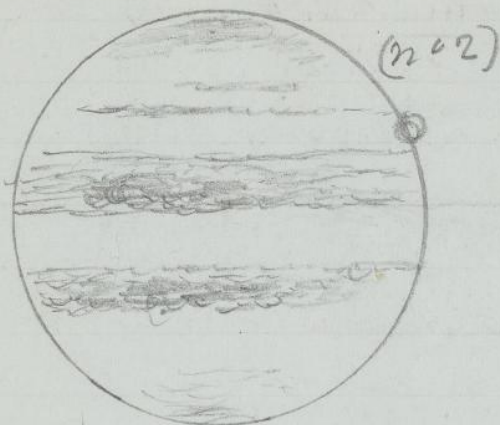
10-3

(No. 4)



For reduction of times of obs. for March 18, see page 361

March 18

^{h m s}
9.03.36 m.s.t. 8.57

Daily rate of 1351 losing 1.01 ^{h m s} at 7.45 Am, 29.7
Chorn. 1351 fast, March 14th at 7.45 Am, 29.7

Chorn 1351
^{h m s}
9.03.35 m.s.t.
at 8.57. half immersed
seems to indent the limb
a little dark above

^{h m s}
9.08.19.32 m.s.t.

9.55.45. Internal contact

^{h m s}
9.25.31 m.s.t.

9.13 I cannot see the sat

^{h m s}
9.30.45.63 m.s.t.

9.18.15. black just coming
on the night side
side of the satellite

^{h m s}
9.34.20.05 m.s.t.

at 9.21.50 Can see the dark
on the satellite plainly

^{h m s}
10.57.16 m.s.t.

10.45



at 9.22.15 almost round
(no 5) darkens fast

^{h m s}
9.37.14.55 m.s.t.

9.24.45. it looks
like a small round
black spot - without
phase - is more
readily seen

^{h m s}
10.16.23.14 m.s.t.

at 10.4 appears perfectly
black. It looks, round
with the power of 140
but doubt of this with
no 4. (micrometer)

10.57.16 m.s.t.

at 10.45 - The satellite is
past the saddle, and continues
black, it runs along equator
in the bright canal

11.19.13 m.s.t.

11.7. The sat. is now more than
3/4 of his journey, is yet black

11.37. broad but not so dark in getting
near the edge - being not yet

12.07.05 m.s.t.

11.55 Spot still seems to right of Satellite.
But it is doubtful whether the sat itself
is seen

11.38.09 m.s.t.

11.26. Black spot well
seen. I fancy it is left

12.04.05.44 m.s.t.

11.52.00 Can just

12.07.04.56 m.s.t.

11.55.00 See the spot
it is near the internal
contact.

March 18th Continued

12..10..04.4 m.s.t.

11.58 ~~Seeing~~ but planet low no spot now visible

12..12..04.1 m.s.t.

12.00 At times the seeing is remarkably good for so low an altitude the spot is not visible.12.68⁰⁰12.66.00 Sat $\frac{1}{2}$ off & is now bright

12..24..17.13 m.s.t.

12.12.15 Last contact bright - George thinks the limb of Jupiter was flattened as the sat went off

12..33..00.7 m.s.t.

12.21. The 3rd Sat is now well off the disc. Distinct enough for a fair comparison. it is not half so bright as No 3 - previous to transit it was brighter - ^{decidedly} No 4 is now in eclipse & therefore cannot be compared. ^{No 2} No 3 appears bluish and is not more than half the size as well as brilliancy, that it was before the transit.

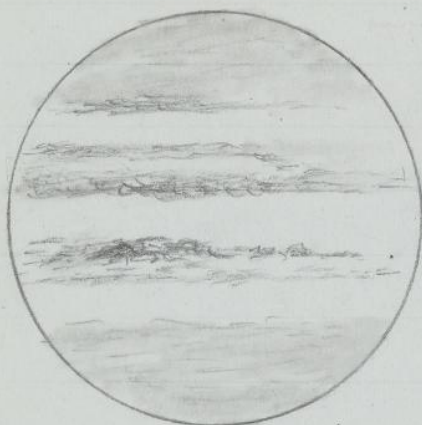
March 22

Orion

h. star? no

365

No 424
7.42.27 m.s.t.
7.45



both
at the poles soft diffused clouds
the Planet is well seen, and
an Emission of the 3^d Satellite was
observed

Clouds rose from the south lower

It was uncommonly fine seeing just as twilight
ended. I saw many stars in the neighbourhood of the
Trapezium of Orion, and Sir John Herschel's star, the sixth
star stood out boldly, it is all but certain that this part
of the nebula is composed of clusters of stars.

The first tendencies of s.p. side, from south cape is
at a right angle to the S.f. side, provided we limit
the region to the brightest portion, but the light is
pretty strong in a southern direction, so that by taking
the whole extent of the cape we lessen the angle to
about 70 or 75 degrees.

Lick time m.m. 22 March 0.00.26.98 Green
46.74
0.01.13.72 Canb.
7.45
7.48.46.28
7.48.46.28
7.42.27.4 M.S.T.

366 March 24 2x Com Stars in sub orion

Dec	Dec	Dec	Dec
84.60	84.52	92.05	69.44
65.87	84.33	91.84	69.56
65.72	84.55	91.95	69.48
65.71	120.0	91.85	36.9
230	84.50	91.7	36.9
65.7	345.0	419.1	194.8
157.7	61.38		194.8
52.2	61.39	729.3	
	61.42	7304	
	61.37	7295	
	61.40	7892	
	51196	729.7	
	613.9	229.7	
	113.9		

a to 61 + 229.7
+ 229.3

biff Dec + 113.9
+ 113.7

61 to 80 + 194.8
194.2

+ 419.1
+ 418.3

80 to 91 + 157.7
+ 157.4

+ 345.0
+ 344.3

March 25^L

11 hrs



1

4

1.2 + 3 nearly equal
1 has a little the
advantage.
4 is decidedly brighter
than it was 4 hours ago
is nearly equal to 2 + 3

March 25th

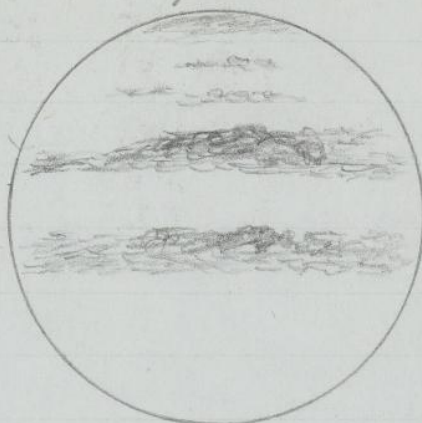
Liv time 424

Satellites numbered in the order of their brightness. 36%

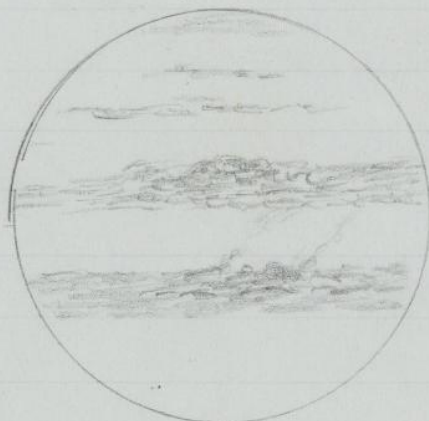
1+2 nearly equal

3 rather less

4 small is fainter than when first seen 1/2 hr ago

h m
7.201
04
0h m
9.01+2 are ~~very~~ equal
4 has increased to as to be scarcely less than 3

7.40



3

0

2 Sat

2

0

1 Sat

1

3rd Sat

4

0

4th Sat

1+2 nearly equal but 1 is brightest

There are two diagonal clouds connecting the two main belts on the following side, they are seen only in glimpses but often repeated & certain.

8.15

1
0

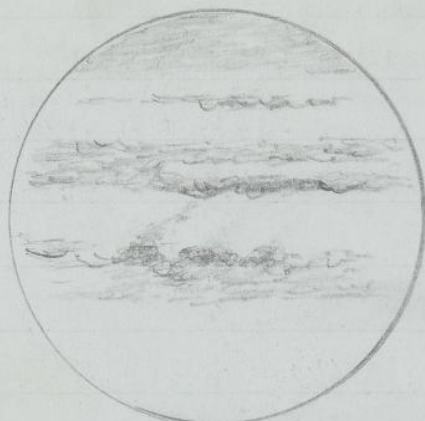
4

0

2+3 are very near
of equal brightness -
1 is a little brighter
4 is 2/3 of 1 -

8.36

368. 1848. March 29. Chro. 424. Sidereal time
Belts of ^{h m} 8.2 ^{h m} Jupiter ^{h m} 7.31.66 m.s.t.



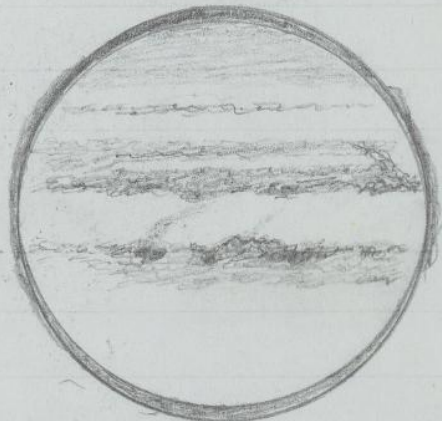
3
0

2
0

4
0
Sat

1
0
Sat

^{h m} 8.20 ^{h m s} 7.49.18 m.s.t.



4
0

2
0

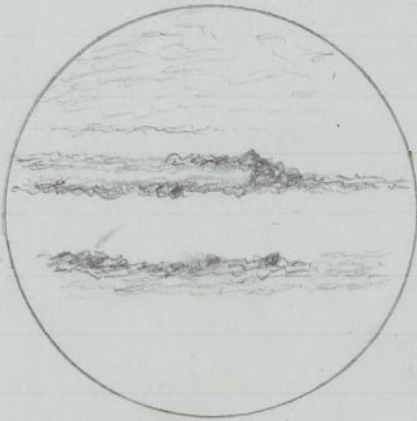
3
0
Sat

1
0
Sat

324
nearly equal

^{h m} 9.3 ^{h m} 8.32.07 m.s.t.

Ca - 10.0.00
424 10.0.20.3



0

1
0

9.03
9.57
19.60
9.57
28.57
4.57

20 7.08

March 29 J.C. fast at 20^h sid. time 18.5 Daily rate gaining 1.15

10.00.00 J.C

9.59.40.6

424 10.00.20.3

424 fast 39.4

1868 March 29th Input

269

h m s occultation of 1st Sat

8..16..12.5 m.s.t.

8..47..3 Contact of limbs

8..18..04.2 m.s.t.

48.55 half contact of center of sat with limb

h m s total occ not observed

8..21..06.7 m.s.t.

8..57.58 - gone entirely, attention absorbed with 3 sat

Eclipse of 3 Sat

h m s

8..14..54.7 m.s.t.

8..45.45 begins to fade

8..16..49.39 m.s.t.

8..47.40 brightens up than half

8..20..22.8 m.s.t.

8..51.14 Total immersion in shadow

$$\begin{array}{r} 2/36.59 \\ 48.29 \end{array}$$

March 29 sid. time m.m. 0..28.02.84

46.74

8..02

39.4

8..01..20.6

0..28..49.6

7..32..31.0

1..14.1

M.S.T. 7..31..16.7

8..

8..20 39.4

8..19..20.6

0..28..49.6

7..50..31.0

1..17.1

M.S.T. 7..49..13.9

9..03

39.4

9..02..20.6

0..28..49.6

8..33..31.0

1..24.1

M.S.T. 8..32.06.9

8..47.03

39.4

8..46..23.6

0..28..49.6

8..17..34.0

1..21.5

M.S.T. 8..16..12.5

8..51..58

39.4

8..51..18.6

0..28..49.6

8..22..29.0

1..22.3

M.S.T. 8..21..06.7

8..45..46

39.4

8..45..05.6

0..28..49.6

8..16..16.0

1..21.3

M.S.T. 8..14..54.7

March 30 sid. time m.m. 0..31..59.39

46.74

0..32..46.13

6..35' 39

8..55' 39

6..34.21

8..54.21

0..32.46

0..32.46

6..01.35

8..21.35

59.2

1..22

M.S.T. 6..00..35.8

M.S.T. 8..20..13

7..30..40

10..35' 39

7..30.01

10..34.21

0..32.46

0..32.46

6..57.15

10..01..35

1..08

1..38

M.S.T. 6..56.07

M.S.T. 9..59.57

7..34.30

39

7..33.51

0..32.46

7..01.05

1..08

6..59.57 m.s.t.

2248. March 30th

21424. Sidereal

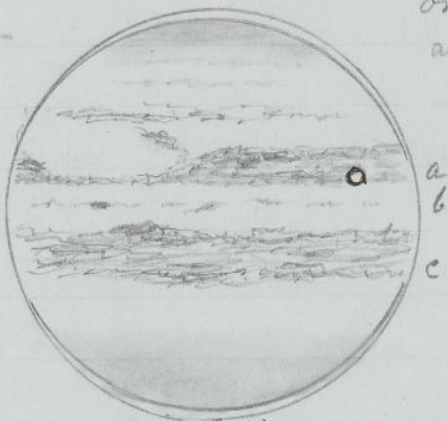
h m s
6.00.36 m.s.t.

6.35

Bright sun shine with
two feet of the telescope
one sat seen on the disc
and two following

a. 1st sat just on the lower
edge of the upper belt.

b. a narrow belt
much broken, with
branches toward the
lower belt



6.16.34 m.s.t.

6.50



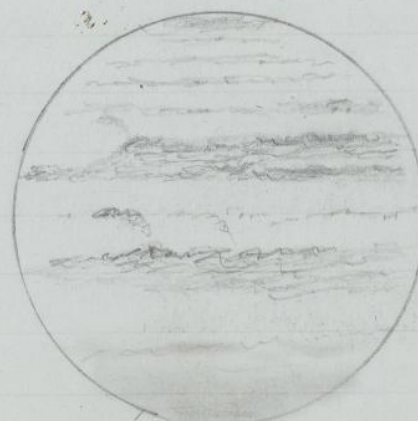
admirable seeing

The satellite on
the disc is seen with
difficulty

bluish below

h m s
6.36.31 m.s.t.

7.10



1st sat invisible
on the disc

Sun set
at 6.57 the sat is
seen on the disc, bright
but small

The upper belt is
divided on the full wd

I cannot see the sat
on the disc

with no 7 the sat
appears a round disc

Diagram of shadow of 1st Sat. Mar-30th

h m s m.s.t.

421 { 7.30.40
6.59.57 m.s.t.
7.34.30

Shadow 1st Sat.
Just contact very much elongated.

Order of brightness

3 0 2 1

7.45

On right hand one

3 0 2 1

no 1 is $\frac{1}{2}$ larger than 2
 $\frac{1}{4}$ larger than 3

a. Shadow of 2nd Satellite, very black

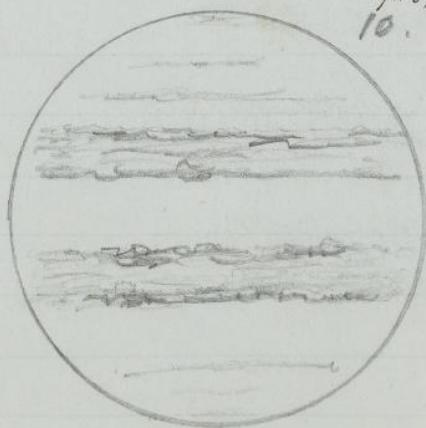
h -
8.55
8.20.13 m.s.t.



The first satellite has
crossed the disc, without
any apparent loss of
light. It was seen for
about 40 or 50 minutes
after it entered

h m s m.s.t.
9.59.57
10.35

Indistinct



372 1848. April 1st Satellites of Jupiter
order of brightness at 8th sid time

3 2.40 !

7.18 am-s.e.

4 3.20 ! 4P13

2,3 & 4 little difference

2,3 & 4 are equal

The only decision diff in the right hand one is brightness
not greatly

0.39..6.2.49
46.22
0.40..39-23
8..00
7.18.21
1..11
7.18.10 am-s.e.

April 3rd Am B Cygnus R 19.24 + 27.38
Day obs Power 146 time not very good

Pos.

Power 146

Time

122.56 - 3

53.145

B

49.50

302.57 -

263

Drorth

78

305.05

268

Holl v

60

125.06

260

79

304.07

140

79

124.16

76

5396

3 12 14

53 215

49 7.92

304.06

49 7.92

380

34.23

55.54

68

23.55

Blancani 1848.25

Sit. 33.5

Pos. 55° 55'

Power 140

3 12 12

124.04

180

55.56

1846 April 1st 3 Cancri Triple Star 18.07 ^{AR 8.03} Power No 6 378

A+B

A+B

Distance

A+B

A+B

AB

A+B

Zero

208.57 s.f.

197.45

50.335

~~49.715~~

49.825

210.45

197.45

457

49.700

815

212.12

196.22

328

714

817

11.5452

413

715

805

210.38

197.17

383

715

815

188

50.00

1916

713

815

Zero of Position 90°

120.34

107.17

50.383

107177

30.34

49.815

49.718

49.815

c

5.64

815



5.57

.104

The positions were taken between the parallel wires.

197.17
36

210.38

3. Cancri.

360

AB

AC

149.22

Dist. 1.0

Dist. 5.6

56

Pos. 342° 45'

Pos. 149° 20'

59.22

374

April 5 a Gemini

No 6

Zero Pos

90 below

270 above

Pos

fol

Position

above

293.32

289.10

289.20

12.02

290.41

below

113.33

109.16

169.20

2.03

110.41

 α^2 Geminorum

Dist. 5.4 504

Pos. 249° 20' 304

Dist

50.310

320

362

353

370

1215

50.343

49.796

5.47

5.36

49.794

794

802

790

800

513980

49.796

1848 April 6th

6.35 m solar at limit

= 7.30 Sid.

day-light

0³0²1⁰

6.55 = 7.55 Sid

0³0²1⁰

112 April 6 Procyon

Feb west of pin

375

Zero
49.792
44.693
44.485
44.533
44.562
44.480
512753
44551
49762
52111
51.0

Pas
89.0 2h
88.15
88.45
88.45
89.27
88.50

nearly on the parallel
preceding

268.15 r h

268.45

268.47

269.29

Comp of Procyon. 1848.26

Dist 51.07 50h

Pos 271.50 4x10.

Zero April 7. New wires to the Micrometer

Pas - 90.02 Procyon & star 14 mag preceding

Sat 10.2

Pas — dist
88.53 - 268.53 — 43.718
88.20 - 268.20 43.635
88.33 - 268.36 43.862
88.30 43.920
43.920

Zero Comp of Procyon. 0.2
49.130 Dist 52.3 1848.27
49.140
49.152 Pos 271.30 51399 53.79 415.09
126 49.140 49.140 20.47
5341
187
52.34

Double star East of pin

Pas
RH RH
36.16 - 216.16
38.05 - 218.04
37.35 - 217.35
21.56
37.18
49.857
49.877
49.877
49.877
49.878
16
49.873

New Zero (8 mag follows Procyon
two fields

50.007
49.873
1.34

49.140
43.920
5.340

Procyon & star 8 mag following Procyon

Dist 82.50
49.873
326.27

Pos 95.0 m f

170.0 W m

Dist 1.3 1848.27

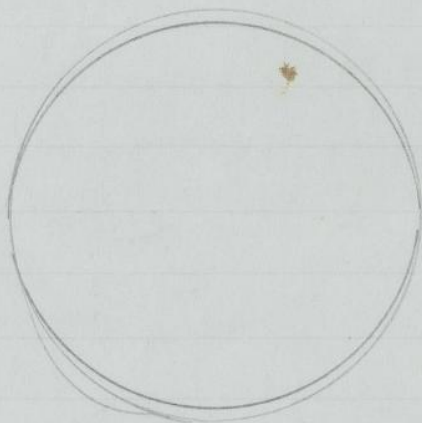
Pos 32.4 ± 1.0 142.40

44.485
44.693
44.533
44.562
44.480
49.792
512753
44551
49762
52111
51.0

376

April 8th

April 24
~~6.35.40 m.s.c.~~
 7.45 hid time
 6.35.40 m.s.c.



April 8th sid. in m.m. 1.07.28.36
 46.74

1.08.15.10

7.45.42

6.36.45

1.08.15.10

6.34.40 m.s.c.

1.08.15

7.50

6.41.45

1.08

6.40.39 m.s.c.

7.31.45

1.14

1.08.15

8.05

6.56.45

1.08

6.55.37 m.s.c.

11.40

1.08.15

10.31.45

1.43

10.30.02 m.s.c.

h m s
 6.40.49 m.s.c.

7.50

2 3

1

4

324 nearly Equ

April 8th Procyon & companions 14 mag

377

	Dist	Pos	Len Dist
g + B	44.572	87.15	
B	44.666	87.45	49.993
	500	267.45	
	465	87.30	
	435		
	598		
	530		
	616		
	635		
	622		

Procyon 1848.27

Dist 53".2 } 47.13
10.06

Pos 272°.30' } 2.06

44.5633
49.993
5.430
53.2

44.666
4.435
49.101
44.170
49.993
5.443

r Leonis Small Star S. 1

Leo	50.307	50.655	RH	LH	
	.03	686	70.55	250.45	250.45
	49.687	49.992	72.30	250.45	252.32
	723	993	71.40		
	687	50.000			
	672	49.990			
	698	49.993			
	49.698				
	49.993				
	3.06				
	2.94				

r Leonis

Dist. 2".9 50hr } 78.1.13
Pos. 108°.20' 20hr }

order of brightness 4

2 & 3 very nearly equal

378

April 10^L Antares

Ins East of pin

n.h.

n

from 400 400

93.77 - 273.23

Zero hrs

50.203

small

89.07 269.67

90°

50.243

87.11 - 267.60

50.317

83.20 263.20

50.313

86.30 - 266.30

50.392

83.00 -

50.387

82.45

50.423

large

83.14

12278

8) 37.33 (84666

503.59

49.941

3.78

50.370

Zero

353

49.976

395

974

363

990

361

960

Dist. 3.8 1504

Pos 275.20' 00h

362

324

50.368

49.981

49.941

3.87

3.78

3.78

4.08

3.88

Dist 3.8 304 G.P.B.

Pos 277°

50.400

400

383

400

361

1048

389

981

4.08

G. P. B. and the companion of Antares April 10^L 400h as follows

Dist 0.39 pos. 83° n.p. Min of 3 ap 9m very quiet

had it being a frosty nig.

Color comprised blue & yellowish orange

G.P.B. Dist. 3.82

0.398
3.82

April 12⁺

379

U - 8.52.6
2557 - 8.51.29.3

2557 - 8.53.0
2419 - 8.55.5.2

Immersion

flying cloud - I frequently obscured and
star not seen

2557 9..13..33 - 4-1 1.23..14.57
 $\begin{array}{r} 1.23..14.57 \\ - 2.5 \\ \hline 9..13..30.5 \\ 1..24..01.3 \\ \hline 7..49..29.2 \\ 1..16.9 \\ \hline 7..48..12.3 \end{array}$

1.24..01.82

Local Time is uncertain

met Caml 7..48..12.3 WEB Im. of 0 Leonis.

380

April 15

No 239

7

April 17thNo 239
7.10h m s
6. 25. 13 m.s.c.order of brightness
4 1 2 0 3

1.. 42.. 57. 33
46. 74
1.. 43. 49. 07
7. 10
6.. 26. 16
1.. 03
6.. 25. 13

The lower belt has many bunches, is narrowest at the leading end, and is connected with a range of small cumulus clouds above it, this range is nearest the lower belt. The southern, or upper hemisphere is darkest. The longitudinal division of the upper belt at the time 7.10 on Saturday is about $1/4$ the diameter advanced on the disc.

April 20th Jupiter
 Dalam Diam
 46.532

381

20. Procyon
 16-17 May S. h Position

44.202

270.50 - 90.10

44.070

275.00 - 105.00

44.237

274.00 - 94.00

44.410

273.15

44.287

Comp. of Procyon

46.467

Dist. 56.5 6.06 } 7000,
 Pos. 266° 45' 30.0 }

6) 1673

44.279

50 0.4

57.61

1.15

56.46

467
 070
 1537
 44.268
 50 0.4
 57.61

Dist * 10 May m.f

17.620

274.55 - 94.56

17.710

275.10 - 95.10

17.890

274.40 94.40

.873

.750

.915

6) 4758

17.793

50.00

322.1

small stars - 8^m
 south of Procyon
 both dec

37.35

Dist of 8th mag S. fol. Procyon

dif. Dec. 12.65

dif. R 0^m 41.0

12.65 126.5
 2.42 2.5
 12 124.2

There are two stars missing in the
 neighbourhood of Procyon - the one mentioned
 by Smyth & the double star in Bevels Zone near Procyon.
 both of 8th mag. Belicini.

15
 20.5
 41
 61.5

April 22

Jupiter

7.50.17 m.s.t.

9.55 Sid time



a, the shadow of the first satellite. the satellite itself is on the disc but is not visible.
b, is the place of the 1st sat.

2..02..40.10

46.74

2..03..26.84

9..55

7..51..34

1..17

7.50.17 m.s.t.

April 23

Daily rate of 2557, gaining 2.0

2..06..36.65

46.74

7..40

24

2557 fast 24.0

2..07..23.39

7..39.36

2..07..23

10..38..30

24

8..07

24

5..32..13

54.4

10..38..06

2..7..23.4

8..06..36

5..31..18.6 m.s.t.

8..30..42.6

1..23.7

2..07..23

5..59..13

58

8..29..18.9

5..58..15 m.s.t.

10..03

24

9..40

24

10..42

24

10..02..36

9..39.36

10..41..36

2..7..23

2..7..23

2..07..23

7..55..13

1..18

7..32..13

1..14

8..34..13

1..24

7..53..55

7..30..59 m.s.t.

8..32..49

8..46..42

24

7..45

2..7

8..46..18

2..7..23.4

5..38

6..38..54.6

7..5.3

6..37..49.3 m.s.t.

April 23 Choo 2557 7.40. The 3 satellite has just entered
on the disc of Jupiter. It is not visible. haze, and broad day light
are shining on the object end of the telescope.

h m s
5.58.15 m.s.c.

8.7



a. The third satellite, it now
appears like a dark spot, of
the size of first sat's shadow
yester eve -

The 3 sat moves along in
a bright channel above
the upper belt.

h m s
7.30.58 m.s.c.

9.40 - 2557

2nd sat. 1st sat 3rd 4th sat

1st & 2nd sat's are not very
diff in brightness

at 10-3 Third satellite
is plainly seen as a black spot.
when last seen it looks ragged,
or of an irregular shape
7.58.54 m.s.c.
10.8 plain, had tailing,
tremulous.

8.06.53 m.s.c.
10.16. Difficult to see
from unsteadiness, at
moment seen distinctly

8.11.52 m.s.c.
10.21. pretty. Very bright
will see, black

8.26.50 m.s.c.
10.30 seeing very bad
can perhaps see the spot

8.32.49 m.s.c.
10.42 1/2 off but horrible seeing G.P.B. (doubtless W.C.B.)

When the 3 sat was coming off the disc at 10.44 - the projection was
of a slate colour. it was decidedly of less magnitude than either of the other
satellites. when just off, clouds came over and hid the planet entirely

h m s
8.34.48 m.s.c.

389 1848. April 24^t - order of brightness of Lepetus Sat

1 3 0 2 4

424 R
11.15 - 0.4
11.11

Dec + elongated neb.
284.50 concentrated suddenly

It seems resolvable near the centre
extent 20' - longer axis is nearly in
the direction of the meridian

AR Dec +
11.48.25 0.36.0 - ~~14.25~~ - 13.48
11.12.25

Diffuse, oblongated. The central portion appears
to have an axis inclined 30 or 40 degrees
n.p. & S of the main nebula. is much
less bright. star n° 1. n.p. is 8-9 mag.
the one s.p. 14 mag. 3-9 mag.

George is confident that he resolves it into
stars. I think that I see them in glimpses
but do not feel sure

424 nearly S.E. line Double neb ←

11.48.25 0.36.0 + 14.25

0.36.00

11.12.25

1859

Double neb. axis on a parallel of declination
George's inclination is right.
star n° 1 is 9 n° 2 10⁺ n° 3 & 4 18 mag
or less. the neb. is diffused & dull

The first two nebulae are objects of interest. The first of them was seen by Herschel only in the part marked in the diagram here given as brighter than the rest.

The second has that same remarkable character belonging to it which characterizes the great nebula in Andromeda &c

386
1048. April 25th Jupiter - ^{4 m} 7.44 mag. 5
! 3 2 4 at 10^h 10^m 10^s

order 1/2 an hour after

! 0 4.2 3

Lat. order 2 brightness
324 are not very different in brightness

Choo No 124
10.11.13

hazy
Clouds - but steady



(N.B. I have made
the upper belt too broad

upper belt
irregular

lower belt more
even & nearly
uniform

The lower or northern region of Jupiter is shaded. There are no belts on it but a pretty uniform shade all over it, or gradually deepening towards the pole.

The upper or southern region has three distinct belts. The next above the great upper Equatorial belt, is in ridges or heaps - the next above is continuous in straight cirrus form, and upper one of all, has a straight edge below, pretty dark on its lower side and somewhat softening to the south pole.

April 25 Sid. time 2.14.29.76
46.74
2.15.16.50

April 27th

387

0 2.1 3

Procyon $\times \frac{16}{18}$ mas

Pos.

Dist

Lino

270.30 - 90.30

55.613

50.0

82.12

269.40 - 89.40

55.403

82.57

270

55.590

82.74

55.740

82.60

55.432

82.63

55.600

8

55.611

55.575

55.630

55.570

Companion of Procyon

Dist 54.4

Pos 270

10 55.48

55.555

55.555

55.555

54.44

740

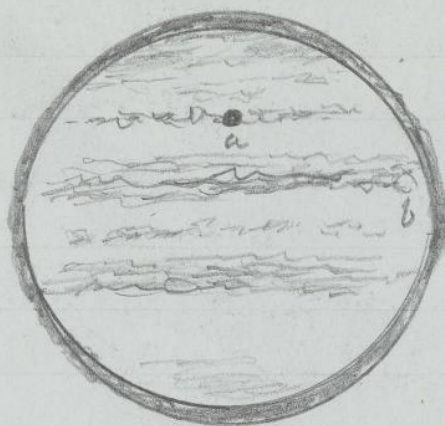
403

1140

55.571

388
1848 April 29th7.43 m.s.c.
10.15 h. 424

4.2 3.1

h m
8.08 m.s.c.
10.40h m
8.09 m.s.c.
10.40
3.2 0 !

a. shadow of 4th Sat
b. 1st Sat bright on
the disc

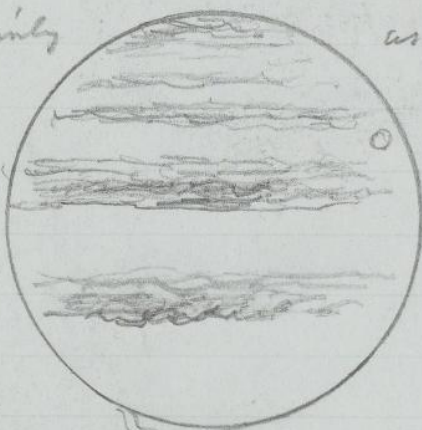
h m
8.28 m.s.c.
at 11. the 1st Sat. is seen
white, on the upper belt
cir. stratus clouds -

h m
8.38 m.s.c.
at 11.10 - I am pretty
confident that I see the Sat.
as a bright white spot on the disc,
indenting the lower edge of the upper
belts, certainly there is no indication
of loss of light, in the satellite.

April 29 sid. t. m. n. 2.30.16.97
46.74
2.31.02.71

April 30 sid. t. m. n.		h m s	
		2.34.12.52	46.74
		2.34.57.26	
11.55	12.00.10	12.17	12.28.30
2.34.59.26	2.34.59.26	2.34.59	2.34.59.3
9.20.00.74	9.23.10.74	9.42.01	9.48.30.7
1.31.74	1.32.58	1.33	1.36.4
9.18.29.00	9.23.38.16	9.40.26	9.46.54.3
12.34.30	12.37.20	12.42.00	10
2.34.59.3	2.34.59	2.34.59	2.34.59.3
9.59.00.7	10.02.21	10.07.01	9.25.00.7
1.38.1	1.38	1.39	1.12
9.57.22.6	10.00.43	10.05.22	7.23.48

30 Apr Tr. of 3rd Sat. Power No 2 = 206 386
 9.18-25 m.s.t. 11.15. The 3 sat- is least bright.
 (See below) 2 ! 0.3 at 12. The limb of Jupiter seems
 to outshine from the sat - the sat is seen round & a dark
 grey separating it from the limb at 12.0.10
 9.26-37.5 m.s.t. 12.3.10 half on the disc is yet seen bright & round.
 9.28-37 m.s.t. 12.6.20 - entirely on. There appears a dark ring surrounding
 the satellite on the preceding side
 9.33-36.5 m.s.t. at 12.10.20. seen plainly as a bright spot
 9.37 m.s.t. 12.14 rather difficult
 to catch,
 9.40 m.s.t. 12.17 invisible.
 clear, not quite steady
 but pretty good seeing
 9.46-54.3 m.s.t. 12.23.30. the belts are
 well seen, but the sat is not seen
 9.58 m.s.t. 12.30 Changed eye piece to No 1 = 140 - nothing seen of the sat
 at times the belts are well seen, Jupiter somewhat disturbed
 9.57-22.6 m.s.t. 12.34.30. I think I see it darkish
 9.59-35 m.s.t. 12.36.45 Certain small & black
 10.00-43 12.37.20 - black, small & round, very small but certain
 10.05-22 m.s.t. 12.42.0. very small and very black, Planet is getting
 rather low, is unsteady
 10.08 m.s.t. 12.45. The spot is larger.
 10.12 m.s.t. 12.49 - The dark part has evidently increased but the
 disturbance is too great to see distinctly
 10.14 m.s.t. 12.57 seen well for an instant, larger & round -
 10.15 m.s.t. 12.52 seen again as last,
 9.29 m.s.t. at 10.424 3rd Sat was brightest 3 2.0!



390-
848May 4th occultation of Aldebaran

Lidwood

Chro No 2557 - 9^h 34^m 05.2^s - 6^hCalculated in
Transit Book9^h 34^m 02.2^sProcyon & Comp. 14th May

Pos

91.15

Meridian reading. per mag. m.

East vernier - 150.442 139.00

West vernier - 330.445 319.00

Magnet. North - 49
South - 229

above 90.102	229.10	236.40	
below 90.005	56	90	W 73.40
	139.5	146.40	
		139.05	E 74.50
		56.5	
145.50			

3906
1848

390
848 May 4th occultation of aldebarran
Lidwood ^{boats}

Several

Chr 2557 - $9.34.05.2 - 6$
 $\underline{-3}$
 $9.34.02.2$

Calculated in
Transit Book

$$\begin{array}{r} 1056 \\ \times 27 \\ \hline 7392 \\ 21120 \\ \hline 28416 \end{array}$$

3-89.55 above
89.55 below
maximum inside

02" 17 2

37.291

174.13 - 89.55 above

390 848

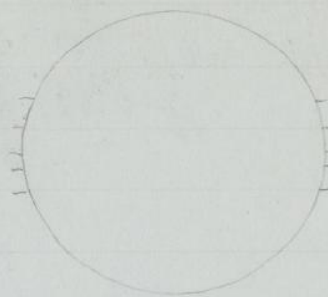
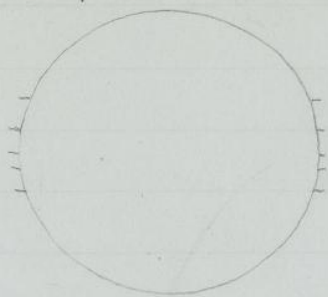
390.
848 May 4th occultation of Aldebaran
Lidwood ^{boats}

Liberal

370
848 May 4th occultation of Aldebaran
Lidereal
Chro No 2557 - $9^{\circ} 34' 05.2'' - 6''$
 3
 $9^{\circ} 34' 02.2''$

Calculated in
Transit Book

Pos



Power No 6 ϵ Bootis Object is well situated &
 tolerably well defined but not good as this
 night is too warm

May 19
 Disk

G P B

Pos

38.05 + 270 n.p.

A orange 3

B Green 7

49.67

49.70

.65

.61

.65

1328

49.656

Zero 49.981
 3.25

37.00

39.00

38.45

39.30

38.90

218 ~

2

37.0

36.40

36.30

36.45

38.30

37.55

3

35.20

Zero of Disk

49.980

980

988

970

986

4

49.981

Disk

No 6 B

ϵ Bootis

49.675

.66

.657

.652

.645

1289

49.658

49.981

3.25

64

210.50 ~ 31.0

212.30

214.15

212.20

214.00

213.15

180

33.15

214.30

214.25

214.00

213.30

215.00

214.15

ϵ Bootis

Disk 3.2 XCM

Pos 326.45'

Zero of Pos 270°

Disk 3.2 G.P.B

Pos 322.00'

392

Power no 6

S Bootis Seeing not above medium perhaps below.

50.115 W.L.B.

.120

.121

108

111

75

50.115

Zero 49.461

Dist 41.34

Zero 49.27

50.125

120

117

088

125

575

50.115

49.981

Dist 1.32

4.06

228.30

229

229

229

231

229.20

cannot estimate as the clouds are dense
 their magnitude

S Bootis

Dist 1.3

W.L.B. 50.4

Pos 130° 40'

Dist 1.3

G.S.B. 50.4

Pos 129° 30'

Pos

231.30

230. —

228. —

230. —

233

230.30

38.16

38.04

38.03

38.02

38.01

38.00

38.00

38.00

38.00

38.00

May 29th

Hind's Star & star S.p. 15 mag 393

7/6516
931

Dist	Pos	Zero	Pos Zero
38.985	326.5 = 146.3	50.73	270.36
38.996	326.25	50.71	
38.610	327.35	50.738	
38.910	328.05	50.71	
39.060	328.10	50.735	
39.060	327.50	50.727	
38.900	327.30	50.738	
39.055	327.30	71.88	adjusted to Zero 50
62.516	38.931	50.727	Hind's new star 49.997 Power 220
56	50.727		50.005
63	11.796		50.015
21	23.6		49.980
	115.60		49.993

It is barely visible to the naked eye. In the Telescope it resembles Antares as seen by the naked eye, power 220 (202. m) Clouds from west. Great Fire at West.

new star 67th
 Perhaps these were taken before the zero was changed they would be wrong
 New 37.95
 40.00
 12.04
 22.4
 11.8

May 31st night clear & fine

Pos
 326.20
 327.24
 329.00
 327.20
 327.30

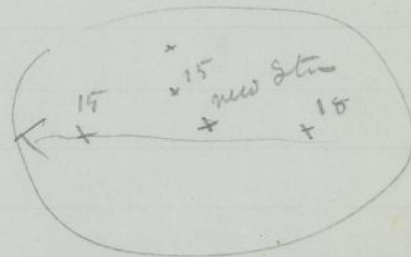
Zero
 41.30
 30

Zero
 40.000
 40.002
 0.000
 49.982
 50.000

Aurora
 small star is S.p.
 Dist 118.1 ? 50.0
 Pos 212.30

On first looking at the star we were

both struck with the depth of its colour. it is of a ruby or carmine & is the brightest colored star we have seen to the best of our recollection.
 Measures of distance discrepant



394

1848, May. 31 - Ring nebula in Lyra

longest axis

42.352

Zero

Position

633

50.015

293°.25

612

294.07

540

7 3 2

525

longest axis 293.46

5/2662

50.01

* 271.24

42532

42.53

22.22

7 4 8

1 5

7 3

Shorter Diameter

56.160

Ring nebula

.152

Longer axis 79.3 Pos 66°

.105

Shorter do 60.4 Pos

.310

.143

Star from furthest part of ring

1850

Dist 95.5 Pos c

5617

Pos. 88.35 from center

50.01

61.6

1 2

60.4

Star 17th mag. - full Position from center of Ring - 271.24 from c

The preceding part of the ring is decidedly brighter than is considerable light within.

The appearance of the ring, is resolvable, but not seen fairly resolved

Dist of full star from the furthest part of the ring

59.875

Dist. zero

59.762

50.016

59.425

59.812

59.410

5/3784

59.857

50.016

9 1 4

1 9

9 5.5

p  full

egg shaped, brightest on the lower side

24.4
37.6
22.6
59

May 30 June 1st Hinds star

dist lens

50.007

38.525

38.500

38.355

38.177

38.155

38.170

38.104

38.158

38.177

38.2331

38.26

50.00

11.74

Cant

117.4

23

115.1

50.015

Hinds new star

$$\left. \begin{array}{l} \text{dist } 115.1 \\ \text{Par } 211.20 \end{array} \right\} \begin{array}{l} 5 \text{ ds} \\ \text{not reliable} \\ \text{apparently} \end{array}$$

147.50

327.30

149.20

329.20

149.15

329.15

38.16

40.00

1.84

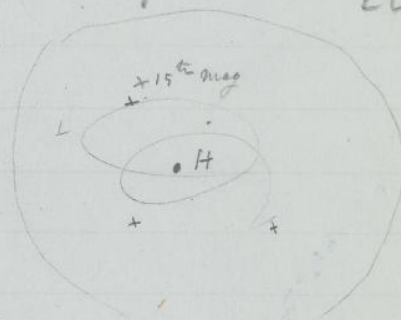
395

148.40

Lens

270.0

269.45



2. ...
amounting to 1" ...

396

June 2 Trial of Telescope Clock

416

from circle

Chro. 2557

11	36	0.0	—	6	10	40.2
----	----	-----	---	---	----	------

40.0

10 16.8

36.6

38 00.0

11 38.0

40.8

40

12 16.6

38.6

medium

39 20

12 55

38.6

46 00

13 37

42

40 40

14 12

35

41 20

14 57.7

39

11. 40 seconds each

6.18 49.7

31.8 hard up to go fast

10.2

50.7

21 35.6

20

hard down

6.4

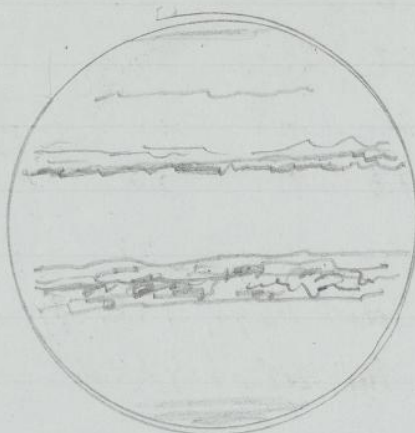
June 2^d

397

8^h m s t.

4

2



3

1

The lower belt is three times the breadth of the upper and has many dark spots, the upper belt is a narrow stripe a little broader on the following side.

Of the Satellites No. 4 is not merely the smallest but it has a less vivid light than the others, its colour is a faint blue or slate.

398

June 2

Hind's Star

Dist

38.218

38.354

335

203

283

393

38.28

38.279

40.00

49.998

1172

11.719

23

114.9

Zero

49.986

49.993

50.001

50.010

50.000

49.999

Pos

327.45

328.05

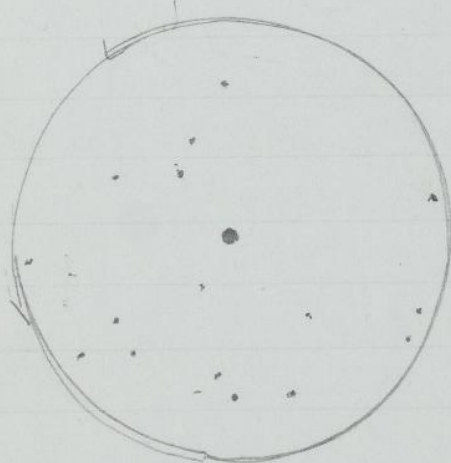
327.45

327.52

Dragon with cave but
not all the stars are located there
are about 20

Dist 114.9+ } 506

Pos. 212.08' } 8.C.H.



not so deep coloured

all but the central are
from 15 to 18 mag.

Saw this star finely on the night
of June 29th. A fine ruby red with
30 companions in field.

Hind new star June 10th

399

Lens 50.005	38.297	^o Pos 328.00'
49.980	38.273	327.55

<u>985</u>	<u>38.220</u>
	38.26
	49.99
	<u>1173</u>
	23
	<u>115.0</u>

Hind New Star 1848.44

Dir. 115.0	} 304 GPM
Pos 212.00'	

Power 140 ?

400 June 12 Dec bernier embraces $6^{\circ} 10'$ 23 feet Refractor
 verniers object south

No 3 Coincides at 0 at 47° - 5 at $53^{\circ} 16'$

No 2 0 - 137 - 5 - 143 - 10

No 1 0 - 227 - 5 - 233 - 10

No 4 0 - 317 - 5 - 323 - 10

Let Horizontal

The spring is
 nearly $40''$ when
 unclamped.

No 1 0 - $175^{\circ} 0' 2''$

No 2 85 - 0 - 0

No 3 355 - 0 - 0

No 4 265 - 0 - 8

Clamping seems not
 to alter the readings

Thence west of Pier

No 1 0 - 140 - 0 - 0

No 2 50 - 0 - 0

No 3 320 - 0 - 10

No 4 230 - 0 - 8

Thence nearly vertical

No 1 0 - 90 - 0 - 0

No 2 0 - 0 - 0 = $35^{\circ} 45'$

No 3 270 - 0 - 0 at the Pole

No 4 180 - 0 - 8

No 1 0 - 45 - 0 - 0

No 2 0 - 315 - 0 - 0

No 3 0 - 225 - 0 - 2

No 4 0 - 135 - 0 - 4

Zel W

III $47^{\circ} 37' 00''$

Zel W

I $47^{\circ} 36' 50'' = 42^{\circ} 23' 10''$ II $47^{\circ} 37' 00'' = 42^{\circ} 23' 00''$ III $47^{\circ} 37' 00'' = 42^{\circ} 23' 00''$ III $47^{\circ} 37' 00'' = 42^{\circ} 23' 00''$

Capella Zel E $45^{\circ} 50' 30''$ III & II
 Grudee $45^{\circ} 50' 00''$

~~63.17.8~~

5.04.20.4 25.7

2.13.5 25.7+

h 0.56.36.0 East vernier

6.02.07.0

5.05.28.0 Star R

5.05.31

2 Arctaj.

8.19.24

II 58.13

2.13

8.17.11

I 47

8.48.58

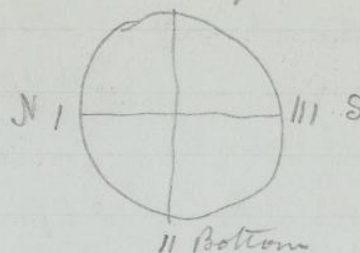
46

Zel E

I $42^{\circ} 22' 24''$ II $42^{\circ} 21' 40''$ III $42^{\circ} 21' 28''$ III $42^{\circ} 22' 24''$

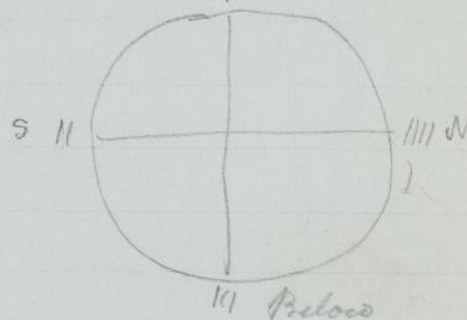
Zel E

III Top



401

Zel W alone



$$\begin{array}{r} 47^{\circ} 45' 32'' \\ 47^{\circ} 34' 08'' \\ \hline 11' 24'' \end{array}$$

Diameter of field
 of lowest micrometer system
 = $11' 24''$

$$\begin{array}{r} 11.45 \\ 6.25 \\ \hline 5.20 \end{array}$$

$$\begin{array}{r} 11.46 \\ 6.30 \\ \hline 5.16 \end{array}$$

$$\begin{array}{r} 8.49 \\ 9.34 \\ \hline 48 \end{array}$$

$$\begin{array}{r} 9.38 \\ 5 \end{array}$$

402

June 13 Y Virgin

Dist	Time	Pos	Pos	Time
50.246	50.016	0.38	0.45	
254	023	2.40	0.40	
255	025	0.40	0.30	
288	017	0.00	1.30	
288	020	1.26	0.00	
263	50.220	5.16	52.165	
260		1.02	0.33	
50.34		50.40		
50.265				
50.020				
2.45				

apparent
lower stars
(month) preceding

G.P. 13 Y Virg

50.322	50.30	177.30
243	50.31	179.30
300	50.305	
240	50.020	
297	2.85	
10.300		
50.020		
2.8		

Y Virginis

Dist Dist = 2.5 } 1000 Yr C.P.
 Pos. 179° 15' }
 Dist. 2.7 } 200 Yr G.P. 13
 Pos. 181° 30' }

ξ Ursae Majoris June 14th 1848

403

W.C.B.	Pos.	Moon light
50.324	51.27	Zero 50.042
.330	51.02	.046
.320	50.12	.046
.302	51.56	.032
.336	52.37	.052
50.322	51.27	5/278
Zero 50.044		50.044
278		

ξ Ursae Majoris

Dist 2.7 } G.R.B

Pos 128° 30' } 5 obs

Dist 3.1 } G.P.B

Pos 129° 45' } 5 obs

$a_4 \approx 5.6$

G P B

49.753

723

718

708

724

126

49.785

50.044

.319

Pos

228.36

231.36

231.00

230.30

229.35

1.05

230.13

1.80

50.13

Zero d

50.056

.050

.035

.034

.045

5/220

50.044

Zero 89° 55'

A m

B-5.6

B s.f.

404

50.010

50.020

116
49.96350.103
50.105Zero
50.043Zero
50.064
058
50.060June 17th

of Corona

50.035

246²

247.30

247

250

247

Dist 0".3

P

the star is

vision not good, but, certainly separated

both within the whole aperture & with 9 in
the separation with the last not so certain

← •

as with 15 in perhaps the seeing was
not so good.

of Corona 1848.46

Pos 293°.0 404 G.P. 13

Dist 0".3

Power 1200?

June 22 - Eve

E dya

Eye pine N^o 6

405

Dist

Zero

Pos

49.730	add	50.050	340.15
.707		.037	338.00
.728		.050	
.733		.055	338.05
.747		.050	338.50
.740			339.30
.710			338.56

49.728
50.048
3.20

C & d

50.305

50.043 32.30

302

043 29.30

305

046 32.00

296

650 31.50

306

042 29.35

50.305

.033 31.05

50.048

.052

2.55

AB Dist 3.1 1848.47

Pos. 21.04'

CD Dist 2.5

Pos 149.00'

AC

Dist 207.1

Pos 172.50'

a & c Both stars

Dist

Pos

28.850

185.58

914

186.30

29.000

187.00

28.92

187.10

50.05

187.18

21.3

187.11

6.2

82.50

207.1

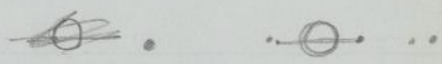
406

June 22 -

Examined Hinde's new star.

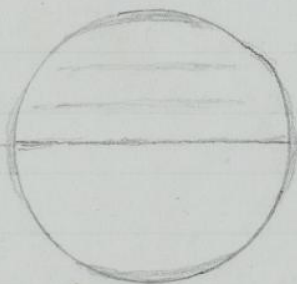
Blazing, Ruby red - not so large as when last seen
 Certainly not above the 6th mag - , central part
 yellowish orange.

The central part is not as bright red as the surround
 highlights which is always the case as with ^{with white centre} ~~Lyra~~ which is beautiful blue

June 26th AM Looked at Saturn seeing ring as
 a thread of light when it is light enough to see to read
 the ring or shadow is very plain as a dark line across the planet
 at each extremity of the ring
 is a light spot I think or else  ..
 They are satellites

June 26
 Monday Morn'g

Saturn

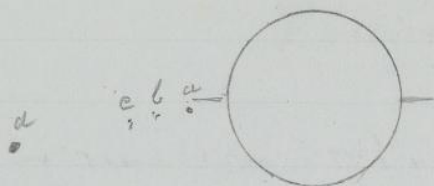


The ring is reduced to a mere thread of light, projecting
 on each side the Planet, an exceedingly narrow, dark band
 is stretched across the disk, of the darkest hue, this [is doubtless
 the shadow of the ^{NO} ring], there are two dark bands above
 well seen, and streaks below not so distinct - not very
 good seeing, clouds obscure the planet entirely, at times
 the faint satellite is seen at the extremity of the horns on each
 side

Thursday morn^g. June 27th

407

Examined Neptune, no satellite visible, there is considerable
cirrus cloud.



(Perhaps)
f. doubtful if a satellite

(These figures of Saturn
have the globe too large
as I think)

a. is situated just at the extremity The ring seems to me
to be seen with whole length but interrupted on the prec side

Companion n.p. Power No 8

June 29th
γ Coronae

color of this star is not so red as γ Cor.

	0.175 = 0.03	
249.0	0.17 = 0.03	
246.0	11 0.03	Zero
248.20	10 0.04	0.142
253.0 large	108 0.03	142
251.0		147
249.30		

Dist 0.3

full aperture

γ Coronae 1868.49

Dist 0.3 G.P.B.

Pos 290.30 5.64

Power 1560

Power No 8 vision very fine companion very
distinct

Antares

50.53	49.78	Zero	87.20
53	79	50.14	85.00
50	76	50.15	85.00
50.52	49.78		87.00
50.14	50.14	Dist = 3.7	87.00
38	3.6		86.15

Antares 1848.49

Dist 3.6 } 6.01

Pos 272.45 } G.P.B.

Power 1560

408
3206June 29th (not very) fine seeingM² BootisThis star was afterwards b^o measured

253

Dist^h

Power No 8.

← .

260

M² Bootis G. H. B. 1848.49

255

Pos 283°.40 Alt.

257.30

255.20

Smaller than two preceds, I think, though from their
 * (ill definition or from closeness) it is not easy to decide. The dis-
 tance is (greater) than that of γ Corone but it is the most
 difficult star I have yet seen, ^(in the present state of atmosphere) but I have no doubt
 of their separation. Very fine seeing

Can count about 30 stars about
 the new star in the same field with is with the lowest
 micrometer eyepiece, & including the smallest visible
 looked at the new star with 1500 (No 8) no sign
 of a disc. The air was tranquil & the companion γ Bootis very well seen.

There are many very minute stars in the same
 field. The color of the star a fine ruby red ~~very~~ pure with the
 central point yellow or golden. The red is deeper & more ^{brilliant}
 pleasing to the eye than that of γ Bootis. As respects the central
 point being differently coloured than the mass of light ~~this~~ is not
 I should say any peculiarity of this star but is what we or-
 dinarily see in other red stars.

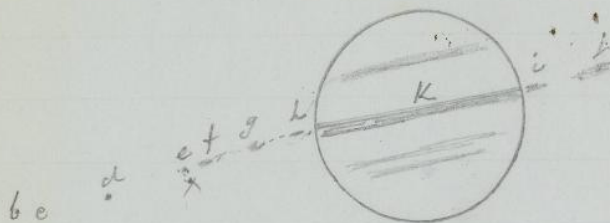
*(The words within the brackets were put in after another examination under
 much better circumstances July 4th)

July 7 Lent C.D. Munkler May 20 of Titianus Journal.

409
3216

Saturn
1848 July 11/12th - Power 140
Linda diff Powers and found 140 best for the Ring

The poles are brightest,
K is 0.4 broad



a is above the plane
b is above
c is the least below
e is in the plane

a. The great satellite.

b & c two pretty bright satellites, the upper one, nearly in the line of the ring, c is below the plane of the ring.

e is a very minute satellite of little below the ring.

f, g & h are brighter portions of the ring appearing like satellites upon it

The shadow of the ring on the planet is very nearly the breadth of a single wire, perhaps a little more - it is not quite black and has no very definite outline

the lower segment is more flattened

f 2 foll ^r Limb	47.323	47.327
	47.332	50.208
	47.127	2881

Equatorial diam 48.312

342

313

48.322

50.208

78.86

Polar diameter 48.460

.502

.496

.528

.525

mean 48.503

50.208

Zero

50.192

212

200

213

203

50.208

Zero

50.216

50.205

50.206

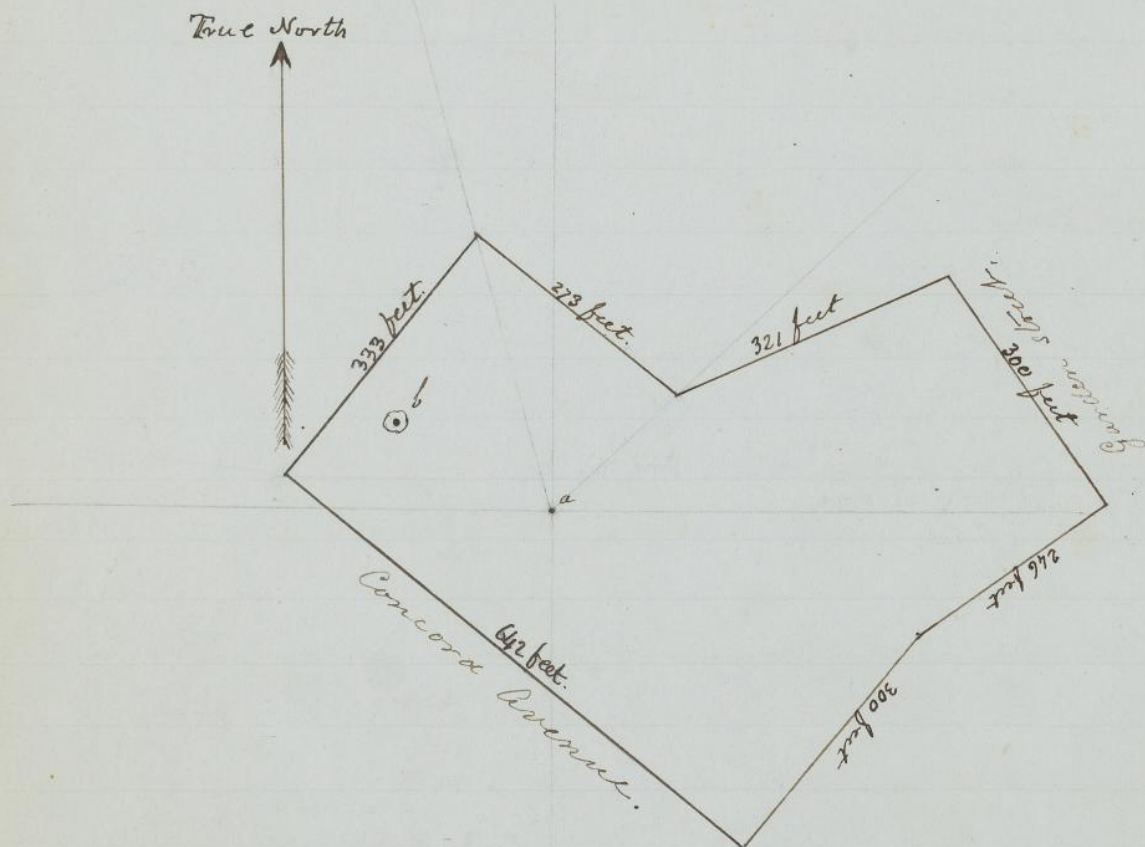
50.209

Mean

420

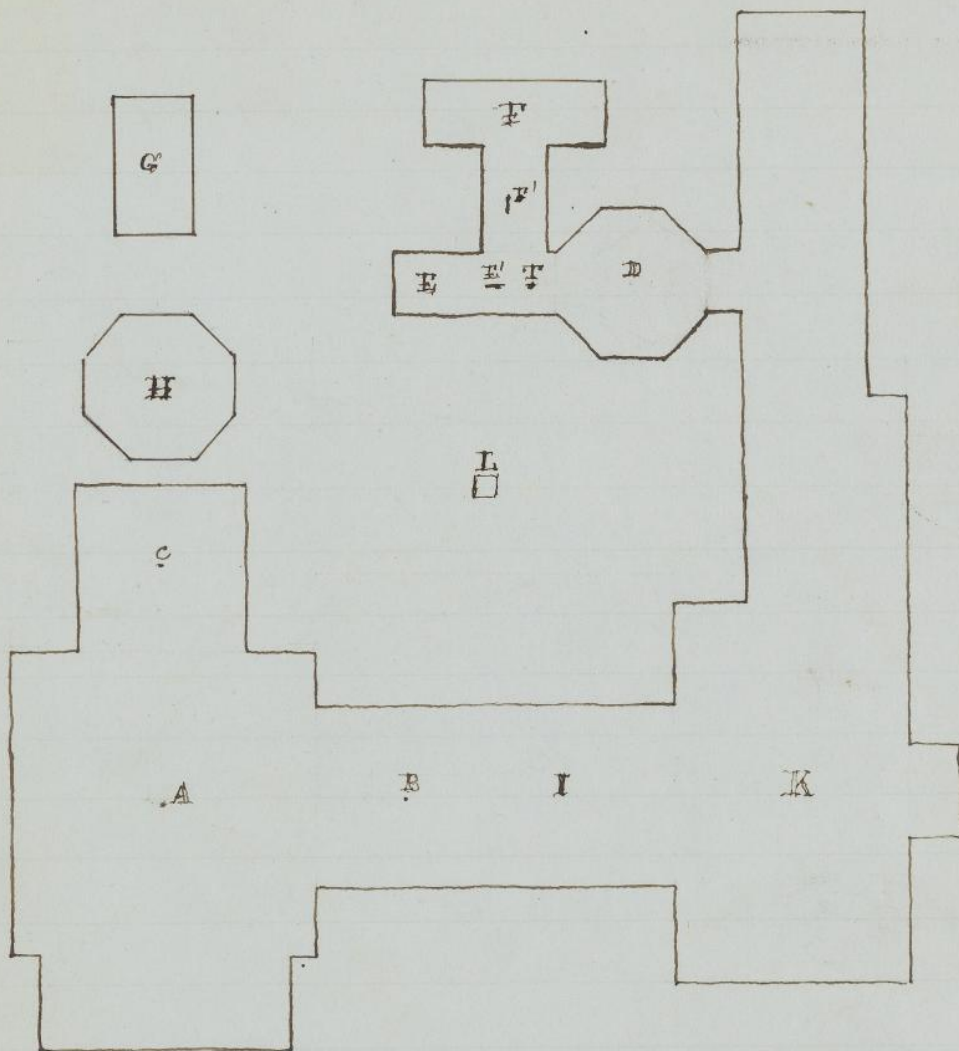
Plan of Observatory Grounds. July 1848.

The dots are for the Dome centre & the Small Equatorial.



Ground Plan of Observatory Buildings 1848 July.

411



0 10 20 30 40 50 feet

412 July 18th

44 Bootis

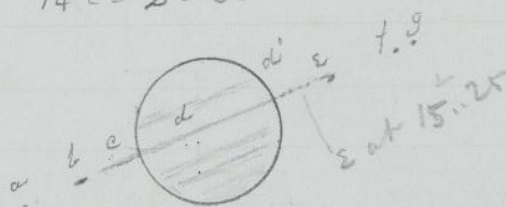
Dist	Zero	Pas
50.645	50.215	299.30
637		300.30
680		300.45
657		301.30
<u>219</u>		<u>301.00</u>
506.55		3.15
502.75		
<u>4.40</u>		300.39

44 Bootis.

Dist. 4.3

50.71.13

Pot. 239.20

July 18
19Saturn
14^h = 2^h.20^m

Seeing not good.

at a is small sat.

b an apparently detached fragment of the ring, it looks like a satellite or two lying in the direction of the plane of the ring

c. the ring is here continuous, broader near the planet

d the dark line across the planet, about as broad as one of our wires of the micrometer say 0.4 - it is not so dark as the wire.

There are three bands, other than d, these are fainter than the middle one and broader, the app^t upper or southern pole of Saturn is much the brighter

d' the ring has the appearance of a succession of globules

e a satellite touching the following extremity of the ring, a very little below the line, is like a mountain projection, brighter than a

July 18
19 Pomeen 806

52.123

Zero

Unsteady

.061

50.262

.033

.231

.105

230

.055

236

236

reset the Zero beam at

52.075

50.035

50.035

20.40

r d 1/100

50.007

49.994

50.001

49.996

50.007

1009

50.002

at 15.25 the sat. Σ is midway between the extreme
of the ring and the limb of the Planet

at 6 + 6 things remain pretty much as before, it is now
very bad seeing

1848.55

44 Bootis Power 860°

11.72 328

Hinds new star

Dist 4.3

Dist. 4.5

504 G.P.B

July 19th

38.16

G.P.B. Zero 50

240.00

Pot. 237.00

327.15

38.32

Hinds new star 1848.55°

327.45

38.24

Dist 4.5 115.27 G.P.B

44 Bootis G.P.B

327.15

38.21

Pot. 212.30 504

49.54

303

327.05

38.25

49.54

305

328.00

38.24

117.6

49.54

303

327.27

38.24

115.2

49.54

304

327.27

38.24

115.2

49.54

301

327.27

38.24

115.2

49.54

302

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

327.27

38.24

115.2

49.54

303

Following
brightest W.C.B.

Corona
49.907

Looked a little for comets
nearly a bright object same dec
as $\frac{1}{2}(\delta + \alpha)$ Cepheids & 2 fields $\frac{1}{2}$ fol.

414

July 20th (No 6)

dist	Antares	Pos
49.705	Zero	87° 10'
680	50.035	89.20
680	035	87.45
685	027	87.00
680	026	89.00
	035	40.15
5) 3430	26	88.03
49.686	50.031	
50.031		
3.45		

comp. procedures
(blazing)
fair distances
better good position

Antares

Dist 3.4 5064 W.C.B.
Pos 272° 00'

to be reserved
36 Ophiuchi (No 6)

dist	Zero	dist	Pos	helium
49.567	50.025	323.55	-	143.55
608	017	324.55	-	144.55
555	017	324.55	-	144.55
578	028	325.00	-	145.00
576	023	323.25	-	143.25
	023	22.10		
12884	8	324.26		
49.577	50.021			
50.021				
4.44				

36 Ophiuchi 1848.55

Pos* 215° 30' ? W.C.B. 5064

Dist 4.3

* does not agree with its calculated place
from sample.

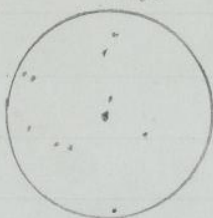
Should be
reserved

July 20th

to be observed
a *Ophiuchi*
a *Herculis*

I count 14 in the field

415



(No 6)

illuminated wires

Dist	Time	Pos. above	h ₀
47.668	50.018	3.15	183.30
.722	.610	3.10	183.00
.693	.025	4.15	-
.660	.025	3.25	-
.690	.070	2.30	-
<u>53433</u>	<u>188</u>	<u>5</u>	<u>16.25</u>
	50.018	3.17	

47.687
50.018
- 23.31
46
22.85 = 22.9

← .6 a 3 mag
a. 6.8 mag

The stars have had a quick
tremulous motion this morn
* *Ophiuchi*
* *Herculis* ? 1848.55

Dist 22.9 501 28.13

Pos 176.45'

no such companion in length

Power 860

Note July 15, 1881. The object observed as above
was *S Herculis*, which is about 10° north of *α Herculis*, the
object originally proposed for observation. The stars in the
neighborhood of *S Herculis* are as represented in the
sketch.

416 July - 25th 2 Ophiuchi Mob - 860

	Zero	Pos	upper meridian
50.180	50.015	350.00	
168	50.007	349.44	} good
142	50.030		
167	50.032	350.35	
152	50.023	349.55	
	<u>107</u>	349.45	
<u>309</u>	50.021	350.00	

50.162
21
1.41

the top of
Zero

49.872

.916

.885

.870

.878

514421

49.884

50.021

.137

Set the micrometer wire
on one star and found
the wire decidedly within
both stars

349.30

Reversed

350.35

349.00

352.00

349.50

350.50

350.20

Zero

90.10

270.10

2 Ophiuchi 1848.56

Pos. 9° 50' 1000y.

Dist. 1.4

Power 860

3 Hercules

Dist 0.8 very bad

Pos. 348° swing

3 Hercules

Dist

50.098

102

122

106

108

136

50.107

50.023

0.84

Pos

50.020 14° 45'

.026 10.00 Swing very bad

50.023

Poor swing

Aug. 14th

Cluster in Herenlie

417

a
e



a to b - 50.878

Pos a from 97

850

120

d is a double stem

50.87

50.87

Dist. Left

50.87
49.96
91

a to c 54.730

26.206 a from d a

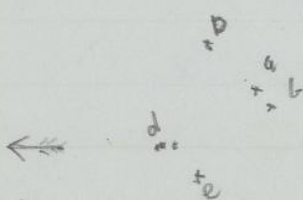
54.73

a to d 54.635

48-228

477

4 P 13



d & D are double pos of d 44.55'

pos of D 146.05 147.0'

Dist of d 50.30 & 50.37

Dist of D 50.40 & 50.35

Comp of d is n.p.

Comp of D is n.f

Aug. 15th

a & b

Dist

Pos

c.d. dist.

Zero

49.115

322.45

48.352

49.950

49.160

121.30

.454

.975

49.143

121.30

.372

.946

49.213

121.00

.325

.955

49.187

120.40

.274

49.956

49.154
49.956
49.956
49.956

49.956
49.956
49.956
49.956

a.c

ad

ac dist.

ad dist.

Pos. 25.10'

47.00

45.380

45.423

30.00

46.40

45.340

45.455

55.10

47.00

.442

.360

49.95

47.00

.455

.360

51.15

47.00

.432

.313

45.400
49.956
49.956
49.956

45.40
49.956
49.956
49.956

418

Aug 15 Cluster in Hercules

d companion

61.40 nearly points to b

57.30

56.50

Wires

Aug 17th

Polaris

Probably not set right in position

Temperature of Room 81

2557	9	52.05.0	at 50.045	10 ^m .01 ^s = 24.00	2 ^h .30.45	8.6418442
		02 06.0	26.045		88.29.50	8.4187223
10	02	29.5	25.045	2.29 = 6.00		7.0605665
	04	35	20.045		in 24	6.0657861
					9.881	9.9947804

Values of the Micrometer revolutions of the G. Refractor

Sept. 17th 1847 Observed time of Polaris passing over each of 55 revolutions
 give at the temperature = 61.5 $r = 9.801$ the first half differing from the
 last by an insensible quantity = 0.01 greatest difference of any observed value
 from the mean of the whole = 1.0 which would result from an error of observing
 the passage of Polaris over the wire amounting to 1/2 time. It also appears
 that there is no systematic irregularity in the successive values of the intervals
 large enough to be detected by this trial.

Dec 27 1848th $r = 9.771$ from 18 revolutions by halves at a time
 no systematic errors.

March 16th 1848 temperature = +16° $r = 9.797$ from 50 revolutions. taken two at
 once. no evidence of irregularity beyond error of observation.

Aug 17 1848 temperature = 82° $r = 9.813$ from three sets of 20th each

Aug 17 ^{Thurs 82°} for value of screw on 5

419

16	18.51	71.05	$20^{\circ} = 8.18.5$
19	15.5	70.05	$= 8.19.0$
19	39.5	69.05	$= 8.19.5$
27	09.5	51.05	
27	34.5	50.05	
27	59.0	49.05	

Thurs 82°

Wing set in position

$2^{\circ}.00$	$2^{\circ}.04.150 = 8.4596714$
4.30	<u>8.4187223</u>
496.5	6.9783437
24.92	$20^{\circ} \underline{5.9866049}$
	$9.813 \quad 0.9917888$

Values of Micrometer

	Temp	r	No of obs	weight	
1847 Dec 27	0	9.771	18	1	Mean of cold values by weight $+12^{\circ}$ $r = 9.791$
" Mar 16	16	9.797	50	3	" hot " " $+70$ $r = 9.806$
1847 Apr 17	61	9.801	55	3	Dif 58 0.015
see above	82	<u>9.813</u>	<u>30</u>	2	coef. of temp. cor. 0.00026
Mean by weight	44	9.799			
Final value of one revolution				$r = \underline{9.800} + \underline{0.00026}(t - 50^{\circ})$	

The dilatation of the screw seems to exceed to increase of focal distance from the expansion of the spirit glass ~~and~~ which is opposite to Struve's result see Mens. Micr. p. XIV.

101.8
420 August 22-

New Star

Dist

Pos

A 7 mag

B 15 - "

34.870

328.20

35.077

329.30

35.130

329.00

35.162

328.37

35.083

328.50

35.233

2357

.955

328.47 = 148.47

35.093

New Star 1848.63

46.937

Dist 116.1 504 MCB

11844

Pos 211.13

237

116.07

Zero

46.940

46.940

46.930

116

46.938

Zero afterwards
adjusted

1848

new Zero

50.025

025

August 23rd - Hint's New Star Power No 1 & No 4 327

Dist

gp. B

Pos

Zero 0

A 7.8

B 15.45

38.165

147.30

A seems to have sensibly de
creased in brightness.

38.157

147.25

38.126

148.00

3)142

147.35

38.147

147.15

44.992

165

the other side of Zero

147.33

61898

115.10

61930

No 4

Zero

No 4 other side of Zero

61663

61.830

50.002

38.186

32491

61.650

49.973

38.225

61.830

61.847

49.998

38.190

49942

2327

49.994

38.310

118.38

61.776

54961

38.260

2.37

49.442

49.992

1171

116.01

61.284

New Star 1848.64

38.234

115.10

235

Dist 115.4 1004 pz

49.992

184

115.49

Pos 212.27

117.55

115.4

234

August 23 Cluster in Hercules

A to f
dist

47.390
.410
.405
.380
.323

47.38
50.00
26.2

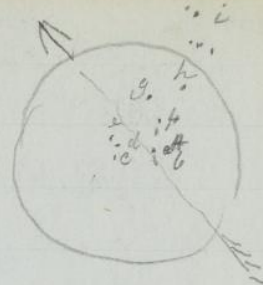
Pos

110.20
111.10
110.55
112.00
111.35
111.12

S.P.

f call no 1

f is a double star



421

A to g
dist

43.155
.203
.152
.233
.188

19.31
43.186
50.00
68.14

Pos

103.35
102.35
104.20
102.55
104.00
17.15
103.4

S.P.

g call no 2

A to h (call h no 3)

dist

41.823 x
575
485
497
572
450
2517

41.503
50.00
55.0

Pos

149.45
149.20
151.10
149.50
157.00
5/251.05
150.13

A to i

dist (no 4)

32.393
573
593
395
390
52344
32.469
50.00
175.31

i has a minute companion
n.p.

Pos

136.50
137.15
137.20
137.10
138.05
36.40
137.20

174.3

422

Aug 29th 1848

y Coronae Power No 8

Aug. 23

R 3..15..00

49.930

150..15

Dec 31st 15°

.918

147..45

150..15

150..18

149..40

938

Double dist ^{44.924} 49.938

y Coronae 1848.66

50.178

Zero

50.000

B² Power 1560

.152

.494

Dist 0".8

182

994

Pos. 210° 20'

50.171

002

49.998

49.998

2173

8.6

Definition at times pretty good but
of uncertain continuance.

at 5th below B = 6thAug 29th2557 22^h Looked at Saturn

5 Satellites seen nearly in a line

1. 2. 3. 4. 5.

brightness

W.C.B. remarks

1 = 7

2 = 3 1/2

Three belts across Saturn does not
look symmetrical but more flattened
below than above

3 = 2

4 = 2 1/2

5 = 1

The dark belt in the middle is steadily seen but not so dark
as heretofore it is not ^{seen} without attention. The ring is seen
on both sides but easiest on the left hand. On the right hand
is no doubt of a bunch at a distance of a semidiameter ^{or exp.}
of Saturn from his limb and another perhaps 1/2 between the ^{or exp.}
of Saturn. ^{on the left impression of the} The belts are irregular like Jupiter's by group
of Saturn. ^{but, pretty sure of my bunch, but very faint & faint of}

4th. Above is the outline apparently of a continent
B.M. and order of brightness of the Satellites.

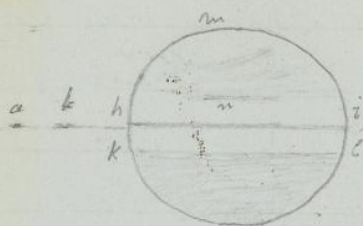
1. 2. 4. 3.



m c b

Aug 29 20^h Sid very clear but

423



G.P.B. remarks, not good seeing though not bad.

at a is certainly a very small bunch not so bright as heretofore. at b suspicious strong of another inequality. at c another supposed bunch & perhaps the ring between c & i is not uniform but exceedingly faint in the present condition of the atmosphere which slightly blurs the edges of the limb &c. with out producing distinct undulations. From b to i the former dark band has changed from being quite conspicuous to being almost faint. but it is thought to be as wide as before. from k to l is a straight termination of a dusky or lead coloured cap over the N pole of saturn. above h i the surface gives indications of being diversified near m being a some what deeper shade. m is perhaps brighter than the rest of the planet. At 0^h 20^m looked again at saturn seeing worse the satellite 5 had sensibly approached the planet but no change was seen in a b & c though barely seen by glimpses.

Aug 30 Hinds New Star Power No 4
Zero

	147.30	G.P.B.	49.997
Dist	Pos	61.740	50.002
61.827	147.50	.790	<u>50.002</u>
.810	147.54	740	
.780	147.10	61.757	
61.806	147.05	50.000	
50.000	147.42	11.757	
11.806		235	
238	147.33	11.522	
115.76			

New Star 1848.66 Power 400

Dist 115.5 } 15' & 13"
Pos 212.30 } 504.
13'

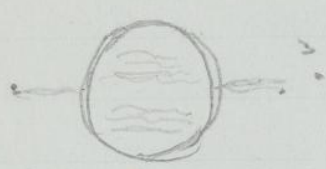
424 1848 Sept. 3
Wednesday

h 1: 2:30 to 3:30

on looking at Saturn at 2:31

! the Ring was seen quite bright, the dark belt which we have seen for some time

part, across the body of Saturn, has disappeared, there is no belt apparent in that place.



The explanation of this belt seems now clear, it was the unilluminated side of the ring, the side on which the sun was shining was turned from us, this is the day of the first reappearance, the Earth and the sun being both above the plane of the ring.

a point of light is seen on the extreme left hand, it resembles a minute globule, it is above the plane of the ring - another is supposed to be seen on the extreme right hand.

At 3:30^m the globule seems to have moved inward toward the planet.

The brightness of the ring is quite astonishing, there appears at times a tendency to run into beads.

The spots we have seen Group attribute to the reflection from the interior edges of the rings.

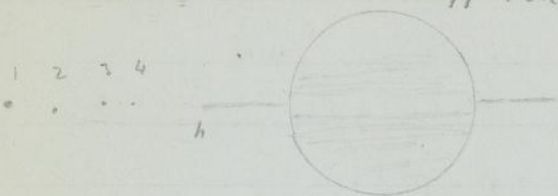
The seeing not good but the ring seen even in the clouds.

Can the Reason of this sudden brightness be the sun's shining on the Snow on the sides of the ring which is just emerging from a winter night of 15 years

1848. Sept 4th P.M.

Reap. of Saturn's Ring between Aug 31.78 ^{gr 425}
and Sept 3.80
Mon Sept 2.28

11^h P.M.



At times fine seeing. always good

4 is very faint & rather closer to the ring than represented. The distance between 3 & 4 seems increasing 3 is pretty faint 2 > 1 5 brightest.

Can just think I see the ring across the planet dark. Instead of the dark Equatorial band, both above & below the equator is dusky, leaving an apparently bright band. But we can see the ring with so much brightness that it is thought to be seen even in the finder.

We had long & earnest gazing for the breaks in the ring. Later thought there might be something at which I could not see. I should not be certain that the ring was evenly illuminated or of equal thickness throughout.

But I could not fix on any one point. and should think that if the spots and breaks which we saw July 10th and 11th were then as strongly now, they must have been seen with out any question of their existence.

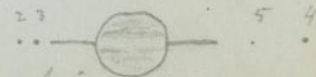
-O Rings perhaps larger at the extremities

Sept 8th Looked at Saturn bad seeing but nothing decided seen. The great Satellite at 11^h just in the plane of the ring with 220 bisected & pretty well seen but not fine

Sept. 9th 10 P.M. Pretty fair vision. Ring may be unequal or interrupted but cannot fix on any point either brighter or less bright than the rest. There is only the vague impression that the ring may not be smooth & even. bright Equatorial belt

1.2 - O 3 4 5 4 very faint. 3 moving towards Saturn

Monday eve. looked at Saturn good seeing no spots seen on the ring Saturn with a bright equatorial band and perhaps the ring seen darkish on the planet 2 faint 5 very faint.



426

1848. Sept-12.

Lunar eclipse

11.55 shadows considerably advanced, a remarkable change of colour. 1st the pale white light of the unobscured part
 2nd slate colour, gradually tinged of a copper colour, and 3rd the edge is a rose red.

Observations of stars γ mag. by H. Lafford

1 11 03.5 Southern 10

1 11 46.5

middle

} South of the centre

1 12 39.7

northern

Sept 12th

Looked at Saturn at 8^h 45^m PM

ring easily seen poor seeing at 1 AM. very bad seeing during eclipse ring seen by glimpses & cannot get near as clear as

Sept 13th 10.30^h Looked at Saturn ring scarcely, if at all, seen; but the air ^{quite} unsteady. The Ring it is thought must have been in the earth's plane between Sept 12th 14^h and Sept 13th 10^h. But the atmosphere has been in a very troubled state of late.

The ring may perhaps show itself quite near the planet.

○ but doubtful. right hand scarcely suspected.

Disap. of Saturn's Ring
 between Aug 1848 Sept 12.80 Gr. m 3rd

and " 13.62

Calculated

mean Sept 13th 22

12.63

(Note added in 1849 from Memory)

During the interval between the 3rd & 12th the ring has been very much brighter so as scarcely to bear comparison with the edge alone. I think it might have been 10 times brighter.

1848 Sept 13th Pch Cluster in Hercules not good 427
 seeing power 141

	Pos	Dist	
a and 2 nd n.f	121°	51.39	0.80
a " 2 nd sp	115	53.40	2.80 double?
a " 1 st sp	102.30	57.17	6.57
a " 2 nd sp	151.15	59.00	8.40
a " 3 rd sp	145.10	62.92	} 12.45 } (n°5) 2 nd n.f
a " 3 rd sp	144.40	63.14	
a " 4 th sp	138.45	65.04	14.44 (n°6)
a " 2 nd sp	138.00	68.20	17.60 (n°4)
			Zero 50.60
			50.56
			50.59

Cluster in Hercules 1st = 0.1

restored zero to 0

163
63.0
50.6
12.4

65.04
150

428

1848.

September 15th

occultation of 68 Ceti

Emission

obs. by WCB. Chro. No 239 —

20.48.40.44 G.P.B. Sid. Time

11.39.03.87

9.09.36.57

1.30.03

9.08.06.53 15% G.P.B.

9.08.06.30 " W.C.B.

obs by G.P.B. - Chro. Lidenal —

20.54.05 — 51

25.5
20.53.39.5

2557 fast

4.59.06

20.48.40.44

by Transit same evening

Sid. Time

Em 9.08.06.30 M.S.T. W.C.B.

9.08.06.53 " G.P.B.

~~At 10.15~~ beats

9.15.41.7 — 6 mean solar time

2.4

9.15.39.3

11.37.59.96

20.53.39.26

4.59.06

20.48.40.20 Sid. W.C.B.

h m s beats

20.54.05 — 51

25.5

20.53.39.5

4.59.06

20.48.40.44

by Transit same evening

Sid. Time

20.57.00

20.53.40

3.20

0.54

2557 — 20.56.00

239 — 9.17.59.5

11.38.00.5

2557 — 20.58.00

239 — 9.19.59.3

11.38.00.7

Sept 18th Cluster in Hercules

$$\begin{array}{r} \text{a to 1} - 30.913 \\ 50.00 \\ \hline 19.09 = \end{array}$$

$$\begin{array}{r} \text{Pos} \\ 29.20 \text{ S.f. } (n^{\circ}7) \\ 29.40 \\ \hline = 150.30 = \end{array}$$

39

$$\begin{array}{r} \text{a to 2} - 41.935 \\ 41.773 \\ 41.732 \\ 41.835 \\ \hline 41.82 \\ 50.00 \\ \hline 81.18 \end{array}$$

$$\begin{array}{r} 41.20 \text{ S.f. } (n^{\circ}8) \\ 41.40 \\ \hline 41.30 = 138.30 \end{array}$$

Note that the star here
misplaced as a zero is the
apparent lower one of the
pair a b

Zero = 50.00

$$\begin{array}{r} \text{a to 3} - 39.600 \\ 39.750 \\ 39.59.0 \\ \hline 39.65 \\ 50.00 \\ \hline 10.35 \end{array} \quad (n^{\circ}9)$$

$$\begin{array}{r} 120.40 \\ 120.00 \text{ n.f.} \\ 120.45 \\ \hline 120.30 = 59.30 \end{array}$$

$$\begin{array}{r} \text{a to 4} - 40.620 \\ 40.675 \\ \hline 40.65 \\ 50.00 \\ \hline 9.35 \end{array} \quad n^{\circ}10$$

$$\begin{array}{r} 69.00 \text{ S.f.} \\ 68.45 \\ \hline 68.50 = 291.10 \end{array}$$

430

Sept-19th Cluster in Hercules

no 12

no 10 - 6 - 46.86 - 33.30
 and a 46.89 - 33.25
 46.87 - 33.27
 31.3

s.f. a star dist .6" Pos from
 no. 11 - 268. or preceding
 very nearly

no 13 - 6 - 46.47 - 66.05
 46.55 - 65.00
 46.57 - 65.02
 34.9

no 14.6 - 46.50 - 69.30. s.f. - but little from f.
 35.0 13 & 14 are abt 7" apart

no. 15-5 - 77.86 - 25.10 s.f. on the extreme outside
 77.57 - 27.15 of the cluster
 27.71
 27.13
 277.1

no. 16.4.5 - 77.08 - 4.30 s.f. outside
 77.22 - 5.45
 77.15 - 5.07
 271.5

no. 17.5 - 75.98 - 350.16 s/p outside
 76.28 - 345.38
 76.35 - 345.46
 16.1
 76.20
 262.0

Sept 19

43

K 20th mag
at 9^h.38^m 63.97 from m

$$\begin{array}{r} 64.07 \\ \text{Clear } 64.02 \\ \hline 140.2 \\ 28 \\ \hline 137.4 \end{array}$$

Sat 9^h.50^m 19th Sept Rk 22

3 65  42 !  5 & 6 very faint 6 most 20
x star

K from m
12^h.00^m

$$\begin{array}{r} 64.36 \\ 64.41 \\ 64.44 \\ \hline 141.40 \\ 29 \\ \hline 141.1 \end{array}$$

pos. of m from N lower limb

269°.05' m is ap. below the ptm

pos of m from of ring.

271.05 N upper limb

pos of plane of ring.
266°.20'

m to nearest limb of Saturn

$$\begin{array}{r} 89.85 \\ 40.00 \\ \hline 39.85 \\ 14.60 \\ \hline 25.25 \\ \hline 25.25 \\ \hline 26.0 \end{array} \quad \begin{array}{r} 252.5 \\ 5.0 \\ \hline 247.5 \\ 8.6 \\ \hline 256.1 \end{array}$$

N

Semidiam. 8
26.0

m from Star

$$\begin{array}{r} 85.10 \\ 85.21 \\ 84.98 \\ \hline 35.10 \\ 72 \\ \hline 344.0 \end{array}$$

m from Star

11^h.55^m

$$\begin{array}{r} 87.33 \\ 87.04 \\ 87.60 \text{ large perisphy} \\ \hline 87.34 \\ 273.4 \\ \hline 266.0 \\ \text{W.C.B. } 1^{\text{h}}.15^{\text{m}} \end{array}$$

m from top side of ring

$$88.40 \times 11.81 = 88.19$$

268°.30'

Zero
50.00
50.0 4

W.C.B.

$$\begin{array}{r} 87.44 \\ 87.51 \\ \hline 12.20^{\circ} \end{array}$$

Pos. 268° 267.45'
following in S.

$$\begin{array}{r} 88.30 \\ 50.00 \\ \hline 38.30 \\ 7.7 \\ \hline 37.53 \end{array}$$

K from m

1^h.35^m

64.53

64.67

dec 64.60

$$\begin{array}{r} 14.60 \\ 2.9 \\ \hline 143.1 \end{array}$$

Zero finally

49.98

New Satellite of Saturn

Sept 19th 13^h.30^m 256° = Dist. from N's centre
by one measure. Satellite follows with.

430
132

398

407

140

267

570

217

 $\frac{398}{407} = 6.47'' = \text{Dist. of M from Saturn}$ $\frac{140}{267} = 4.27'' = \text{Dist. of K}$

3.37

Satellit- of Neptune Oct 11th P.M. Power 860

Sat is 5. p

Satellite will seen. Oh good

2557

21.03

48.17

48.41

.33

24

21.15

35

28

178

48.297

Zero 49.967

1670

33

16.37

319.25

321.05

21.28 } 319.35

320.45

320.05

Mean 320.11

Zero

49.970

465

960

976

Oct 11th M.S. 2 7^h 50^m

Dist 16.4

6.5

Pot 219.50'

Power 860

Satellite will seen

21.10^m
13.21
7.44

50.16

.14

.18

18

min. July 11/12



α Herculis

36 Ophiuchi

~~12 Bootis by 11.11.12~~

New Star.

γ Coronae

γ Coronae

70 Ophiuchi

11.36

	Iuno	1
1	Pallas	1
1	Ceres	1
1	Vesta	1
asteroids 9	Juba	1
5	Flora	1
9	Metei	1
3	Astraea	1
		9

430
132



E 22 5