KG
11365
473

R 31 KG 11365.473

Reduction of photometric observations in this book, so far as previously made in the book, checked by Miss Saunders, Sept., 1878. List of errata found by her pasted below.

Page	h	m		
9	8	52		α Andr. ✓
22+23			did not check	✓ aperture measures
30	8	38		✓ γ Pegasi
37	22	0		✓ Art. star
46	3	18	don't understand 16.74*	
71, 72, 73			" "	✓ Perforated card.
80	6	11		✓ φ Pisc.
81	7	5		✓ γ Ceti
82	7	26		✓ γ Ceti
93	7	35		✓ zero
103	7	50		✓ γ Pegasi
112	Nr. 9			✓ measurement of holes
114	8	53		✓ δ Orionis
116	9	3		✓ δ Orionis (zero)
161	8	2		✓ β Orionis
167	(2)			✓ measures of holes
177				✓ zero
180	9	23		✓ σ Orionis
181	10	0		✓ zero

* Measurements of R3. Record not intelligible.

KG 11365.473

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Jan 1st 1878. Opened Dome at 4 P.m.

Tried to work with photometer G, but the clock would not run.

Photometer H.

19 (H) Cam. P. obs. without clock

6 55 15.3 2.9
37.2
196.7 19.6
216.3 41.5
465.5 10.37
116.37

Clock gives much trouble.

α Ursae Minoris, taken very carefully (without clock)

8 00 23.6 P. obs. 2.8 +.3
28.4 4.8 2.0 −.5
204.3 2.1 −.4
5.2
209.5 100 3.1 +.6
465.8 2.50 18
232.9 .45
116.45

8 09 231 moved altitude

8 15 24.4 S. obs. 2.7 +.1
5.0
29.4 2.3 −.3
204.7 2.4 −.2
5.3
210.0 2.9 +.3
468.5 10.3 9
234.25 .22
117.12 257

Jan 1, 1878

P. obs. Other diagonal

113.9 3.3 +.7
5.6
119.5 2.3 −.3
295.4 4.8 1.8 −.8
300.2 3.0 +.4

829.0 ~~819.0~~ 10.4 22
207.25 ~~409.5~~ 2.60 .55
8 27 ~~204.75~~
S

114.8 5.5 2.5 −.3
120.3 3.0 +.2
294.1 3.2 +.4
5.9
300.0 2.7 −.1

829.2 11.4 1.0
414.6 2.85 .25
207.3

32 H. Cam. without clock P. obs.

8 48 80.4
80.3
160.7 — star at 320° disappears
256.4
335.8 79.4

833.3 159.7
416.65 39.92
208.33

~~8 54~~ Other diagonal

9 6 64.0
167.8 76.2
244.0
348.0 76.0

823.8
411.9 152.2
205.75 38.05

Jan 3d 187~~7~~8. Opened Dome at 4 Physically abt. Photometer I.

5 15 α Lyrae P. obs.

1.06 1072
1.14
1.06
1.06
1.04
36

5 27 α Aquilae

1.52 1370
1.28
1.26
1.47
1.32
185

α Aquilae, & companion at 255° of γ Aquilae

5 37 0.96 P. obs.
0.97 .940
0.89
0.99
0.89
70

5 40 Same S obs.

.70 32
.64 .664
.62
.67
.69

Jan. 3, 187~~7~~8

β Delphini & its companion 12th May.

5 52 2.60 P. obs.
2.63
2.47
2.515
2.42
2.67

2.534

β Delphini & its companion 15th May.

5 55 1.81 P. obs.
1.65
1.95 Lost sight of faint star: seeing been bad.

1.803
2.1

5 58 β Delphini & comp. S. obs.

1.46
1.65
1.66
1.60
1.67
4

1.608

α Cygni. P. sees a second companion, angle 90° greater than the other, distance $\frac{1}{3}$ as greated. [i.e. - 1

6 10 0.88
0.97
4 58
9 16 0.86 dist 2d comp $\frac{2}{3}$ greater A. S. ang 90 greater
1.02
.95

6.18 Lam S. obs. Jan. 3 187~~7~~8

1.03

.89 Reflected image near a

.83 false star formed by light of α Cygni

.9² shining through the prism.

slider moved.

.48. star fell

.62 star set back, but false star not seen.

477 ~~.95~~ .79⁵

0.98 P. obs.

.90 .830

.71

.81

6.30 .75

415

6 34 .80 S. obs. ^refocussed^ false star not conspicuous.

.65

.63 .69²

.63

.75

346

o² Cygni & companion of o² Cygni.

6ʰ 45 2.23 188 2.376

2.34

2.47

2.56

2.28

Jan. 3, 187~~7~~8

6.53 5 obs.

Same,

2,20 2.098

2.42
1.70
2,23
1.94
549

	Σ α Androm	3	11.8	208°	122"	α Androm
300° 28"	δ Androm	1	11	267°	65"	55 Piscium
	μ Androm	4	16	115	45	ψ¹ "
	~~β Androm~~	~~2~~	~~12~~	~~299~~	~~125~~	φ "
	~~α Arietis~~					

8 20 α Andr. P. obs.

2.66 2.140
2.17
1.99
2.05
1.83
570

8 30 S. obs.

1.59
1.93 1.802
1.65
2.10
1.74
401

Photometer H. Jan. 3, 1878

α Andr. P. obs.

8 52 33.7 2.6 .5 −.8
36.3 2.1 +.8
212.2 26 2.0 +.7
214.8 6 −.7
497.0 52 30
248.5 1.30 .75
124.25

8 52 31.7 42 S. obs.
35.9 Shot.
213.1 49
218.0
498.7 91
249.35 2.27
124.67

9 0 123.8 2.5 P. obs. Other diagonal.
126.3 .4 −.8
2.1 +.9
302.2 2.4 2.0 +.8
304.6 49 4 −.8
856.9 1.22 33
428.45 .82
214.23

~~122.9~~ clock stopped S.
9 09 ~~122.9~~ 2.5 −.4
126.4
302.5 1.9
304.4
857.2 44
428.6 1.10
214.30

9 15 34.0 2.6 other diag
36.6
212.0 2.5
214.5 5.1
497.1 1.27
248.55
124.27

Jan. 3, 18~~77~~8

Photometer I. Screw A at 28.61
μ Andr. & companion
9 25 1.63 P. obs.
1.39 1.528
1.59
1.42
1.61
264

9 30 Same S obs
1.12
1.23 81 ~~1.162~~ 1.202
1.32
1.14 Omi begins to cut off
9 42 1.46 ~~1.355~~ 1.360
1.37
1.43
1.18
144

9 50 α Cass P. obs. Angle 13°
304 5.9
361
212.3 5.6
217.9 11.5
496.5 2.87
248.25
124.12

Jan. 3. 187~~7~~8 & Jan. 5

1213 5.6

1269

3009 5.0

3059 10.6

855.10 26.5

427.50

213.75

closed at 10

Jan 5th 1878 Opened Dome at 3 50

[illegible] out to [illegible] 11 mins

seeing bad.

5 45 Photometer I. α Lyrae & companion. P. obs.

1.01 1.038

1.11

0.97

1.03

1.07

1 9

5 49 ζ do

0.73 .774

0.81

0.80

0 80

0.73

3 8 7

Jan. 5, 1878

α Lyrae & star a near ε Lyrae.

5 58 1.33 P. obs.

1.05 1.088

1.08

1.09

0.89

44

α Lyrae & star b near ε Lyrae

6 0 0.34

0.38 .350

0.37

0.33

0.33

25

α Lyrae & star c near ε Lyrae

6 3 0.40

0.40 .370

0.39

0.33

0.33

185

Jan. 5, 1878.

6.5 ζ α Lyrae & a ε Lyrae

1.72 ? 0.72 ~~1.72 decidedly too light~~

0.46 too faint. except dur'g flashes
sight

0.62

0.55 .620

.60

.66

.67

b

0.27

.27 .266

.26

.26

.27

6 18 c

.026 .288

.028

.031

.029

.030

[illegible]

Set to 1.72 to test first reading on a; much too bright.

Screw A at 28.75

Jan. 5, 187~~7~~8

α Delphini & its Companion

2.40 P. obs.
2.20 2.318
2.25
2.35
2.39
159

S obs

6 34 2.44
2.05 inc 2.258
2.36
2.06 inc
2.38
129

Saturn & Iapetus. Iapetus ⅓ distance of Titan; pos. angle 45° greater.

6 43 1.03 P. obs.
0.84 .926
0.87 ⊖
0.96
0.99
463

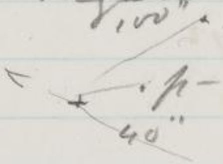
S. obs.

6 46 0.71 .784
0.73
0.76
0.80
0.92
392

Jan. 5, 187~~7~~8

8. 0 ξ Reguli comp 15m seen but faint.

ξ Reg.



β Pegasi & companion

8 20 1.23 P. obs.

1.27 1.164

1.09

1.16

1.07

8 2

8 24 Sds.

1.05 1.074

1.27

1.23

0.94

0.88

37

α Andr. & companion

8 36 2.32 P. obs.

2.43 2.44

1.94

1.79

2.34

72

Jan. 5, 187~~7~~8

8 40 Sod. lamp

1.57 1.57²
1.46
1.54
1.72
1.57
286

8 53 α Androm. Phot H S obs.

34.2 2.6
36.8

211.7 2.2
213.9
496.6 4.8
248.3 1.20
124.15

α Andr.
α Ari.
o Ceti
γ
ν

8 58 other diag. S obs

123.4 2.6
126.0

303.4 2.4
305.6
858.6 5.0
429.3 1.25
214.65

9 03 P obs

123.4 2.2
125.6

303.0 2.4
305.4
857.4 4.6
428.7 1.15
214.35

Jan. 5, 1878

32.2	2.5
34.7	
214.4	2.2
216.6	
497.9	4.7
248.95	1.17
124.48	

9.17 o Ceti

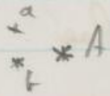
78.2	90.9
169.1	

118.6	10.7
129.3	
298.9	10.9
309.8	
856.6	21.6
428.3	5.40
214.15	

28.9	14.5
43.4	
208.4	7.9
216.3	
497.0	22.4
248.5	5.60
124.25	

9 28 γ Ceti

18.6	28.5
47.1	
198.2	28.9
227.1	
491.0	14.35
122.75	



Aa > Ab

Jan 5 & Jan. 6 1878

13.8
529 39.1
193.8 38.0
231.8
4923 77.1
123.07 19.27

9 40 ν Ceti

267 15.4
421 7.70
688
34.40

clock weights fell off
closed at 950

Jan. 6th 1878 Dome opened at 4.10

~~α Delphini~~ ~~α Aquilae~~
γ Equulei β
δ " ~~γ~~
~~β Aquarii~~
α "
γ "

Tried image reflected from glass plate to first
5 26 α Aquilae P. obs.
190 1.820
173
196
189
182
410

Jan. 6, 1878

Scr. 75

ν Aq. & ν Aq cm 25T

5 38 2.54 2.428
2.40
24.4
~~227~~
2.19
2.57
2.4

548 α Delphini
2.78 2.700
2.99
2.71
2.39
2.63
350

Screw .75

556 2.07 S. obs.
2.25 2.134
2.58
1.91
1.86
67

β Aquarii & companion
6 1 2.48 P. obs.
2.74 2.456
2.43
2.39
2.24 228

Jan. 6 1878

Same S obs. patchy clouds

604 2,01
2,30 2,27
2,50
6,81

15a in cloud and visible
while β is invis to naked eye
Afterwards lost in cloud.

Photometer H.

γ Ceti P. obs.

6 23 47.2
198,3
228,6 30,3
19.3 27 9 Lr. Star then
4934 58.2
123.35 14.55

625 50.2 S obs

198.7 29.7
228.4 29.8
20.4 59.5
4977 14.87
124.42 Clouds

Jan. 9. 187~~7~~8

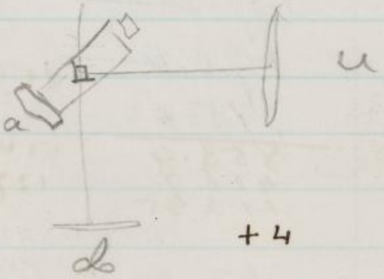
Photometer, H. ε Drac.

6 32	111.2	S. Ps. 260	12.1	−6
	137.2		13.9	+12
	290.0	250	13.3	+6
	315.0		11.7	10
	853.4	510		3.4
	426.7	1275		.85
	213.35			
6 37	17.5	Other diagonal 33.1	17.2	+5
	50.6		15.9	−8
	198.4	33.8	16.3	−4
	(233.8 Under clouds; reject.)		17.5	8
	232.2		7	25
	498.7	669 1672 Clouds prevented further measures.		.62
	249.35			
	124.67			

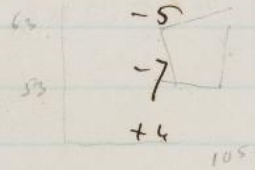
Jan 11 1878

Jan 11th 21h 40m term of aperture of I.

a set at 5,000



U			ab		
54084			105.004		
53,993	0		105,004	11	+4
54.993	25	6	15	11	-10
55	50	7	36	18	-14
56	75	8	64	25	-11
57	100	9	89	28	-11
58	125	10	11,7	26	-8
59	150		14.3	29	-7
60	175		17.2	24	-3
1	200		19.6	24	-4
2	225		22.0	23	-5
3	250		24.3	26	-7
4	275		27.9	21	+4
5	300		30.0	40	0
6	325		34.0	8	+15
67.	350		34.8		-2



upper plate

		u	lo.		
22 20		53994	105008		
1° 38'	.02842	65994	105.352	11.999 +0,341	
		53977	105.013		+.013
1° 31'	.02650	54,313	93.013	12.002 -0.318	
90 7		53.993	105 017		

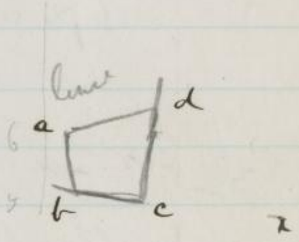
Jan. 14, 1878

s	u
94.400	64.624
94.306	54.624

lower plate

93.262	62.541			
" .323	62.541	9.997	-.00618	0° 21'
" .261	62.535			
103.261	" .649	9.997	+ 0.106	0° 36'
93.267	" .537			90° 15'

	s	u 543
a	93.374	63.361
b	93.434	52.582
c	104.553	52.347
d	104.803	63.516
a	93.377 93.381	63.384 63.408



	x	y			90 12
ab	+.057	-10.802	.0053	18'	91° 31'
bc	+11.119	- .235	.0211	1° 13'	90 4
cd	+ .250	+ 11.169	.0224	1° 17'	88 3
da	-11.426	- .132	.0116	40'	

ac	11.176	11.037	15.707
bd	11.369	10.934	15.773

area abcd = 126.221 - .754 - .308 - 1.320 = 123.84

$15.707^2 = 246.71$

Jan 12th 1878 Contact of I

reflection of lantern in quartz [illegible]

a.S. obs.

	dec.	inc.
1 14	4.01	3.25
	3.74	3.84
	3.67	3.79
	3.55	3.65
	4.00	4.01
	337	1854
	3.674	3.708

Star reduced. P. obs.

1 32 Stray light round edge of diaphragm excluded by paper cap.

	Decr.	Incr.
1 45	3.03	

cut off stray light

	dec.	inc.
1 47	2.82	2.69
	2.97	2.89
	2.70	2.73
	2.72	2.65
	2.61	2.74
	382	370
	2.764	2.740

Jan. 12, 1878

1 54 A.S. do

dec	inc
3.00	3.12
3.19	2.85
2.83	3.33
3.23	3.03
3.15	3.08
40	41
3.080	3.082

2 17 P. do

dec	inc	
3.01	2.55	
2.74	2.37	Image partly concealed by cloud.

2 24

dec	inc	
		3.348
3.04	3.01	2.994
3.99	3.11	
3.35	2.90	
3.09	3.10	
3.27	2.85	
174	497	

Transits with stopwatch. Saturn & 2 objects following.

Saturn to first object	First to second object.
23.0	12.5
38.5	27.0
58.0	40.0
1 18.0	13.3
1 38.0	
19.60	

This should be on page 28. The time was about $6^h 30^m$. Clock running, and perhaps carrying telescope at times

Jan 12th 1878

5.17 Cast ab 5m clouds

1,83

dir	inv.	
1,83	177	1.978
2,00	1,99	1.928
1,92	2,10	
2,19	1,93	
1,95	1,85	
489	464	

~~Constant~~ Constant with 15 inches aperture.

Photometer I. P. obs.

5 30 5,02 5,206

5,22

5,31 ...

5,50

4,98

10 3

S. finds the light from small tubes always too faint

5,38 Compared Aquilae cloudy, low.

1,06

,86 .906

,80

,86

,93

453

S. obs.

goes behind cross of spire of Catholic church soon came out again.

Jan. 12, 1878

5 45 P. obs. Comparison of δ Equulei two bright for comparison with δ by photometer J.

β Delphini & companion of 12th magn.

5 50 2.53 2.502
2.51
2.43
2.42
2.62
251

β Delphini & companion of 12th magn. S. obs.

5 6 55 2.35
2.13 2.148
2.22
2.10
1.94
74

Companion of 15th magn. not seen by S.; not measurable by P.

α Aquarii and companion. P. obs.

6 7 1.75 1.744
1.90
1.64
1.77
1.66
872

Jan. 12, 1878

α Aquar S. obs

6 10 1.89 1.978 .
1.97
2.09
1.93
2.01
489

γ Aquarii & companion S. obs.

6 21 2.35 2.176
2.14
2.05
2.17
2.17
88

See transits on p. 25.

Object following Saturn 20^s (Iapetus?) compared with Saturn

6 45 0.86 S. obs.
0.90 .846
0.81
0.83
0.83
23

Object following Saturn 33^s (very faint) compared with Saturn

6 55 0.42 S. obs.
0.41 .420
0.38
0.42
0.47 0

Jan. 12, 1878

β Pegasi & companion. P. obs.

8 17 1.20 1.072
1.06
0.98
1.17
.95
.36

Screw 28.75.6~~76~~ Set at 28.75

8 22 1.05 S. obs. left eye.
1.18 1.068
1.04
0.98
1.09
34

γ Pegasi & companion P. obs. Two companions,
8 pos. angle of second from the first about 200°, distance
about 15"; fainter than first
γ Pegasi & bright companion
8 33 1.56 1.558
1.51
1.47
1.50
1.75
.79

Jan. 12, 1878

8 36 γ Pegasi & faint comparison.
1.17 1.206
1.33
1.10
1.21
1.22
103

8 38 δ As. br cmp. 13th m
1.23 1.164
1.03
1.01
1.30
1.15
87

δ As ft cmp
8 46 0.83 .790
0.88
0.80
0.71
0.73
45

11

δ Andr. & faint companion (dist. 28") P. bo.
8 57 1.66 23 1.888
1.76 13
2.11 22
2.16 27
1.75 14 49

Jan. 12, 1878

δ Andr. & bright companion P. obs.

9 0 2.51
2.36 2,420
2.32
2.45
2.46

21 0

9 3 1.58 Sobs
1.46 1.576
1.63
1.56
100 1.65
188

9 20 μ Androm P obs
1.51 1.476
1.56
1.27
1.49
1.57
138

β δ Androm comps

a	100	80	12
b	120	35	13
c	200	115	13
d	208	122	11.5
e	270	40	15
f	300	60	12

Jan. 12, 1878

9 32 β Androm a

1.28 1.370
1.39
1.31
1.35
1.52
685

b
9 26 1.18
1.17 1.120
1.11
1.12
1.02
60

c
1.17
1.04 1.112
1.13
1.06
1.16
56

d 11½
1.51 1.368
1.40
1.30
1.31
9 40 1.32
684

Jan. 12, 1878

ε

.97 .904
.81
.82
.94
.98
2

f

1.39 1.288
1.28
1.31
1.30
1.16
9.48 44

~~Jan 13 A 1878.~~
Photometer H. P. obs.

5.49 26 Cygni

27.9 19.9
47.8
207.4 180
225.4

508 5 37.9
254 25 9.47
127.12

116.6 18.9
135.5

297.7 187
316.4
966.2 37.6
483.1 9.40
241.55

6.05 ε Draconis

24.9 ~~6.6~~ 11.6 +8
23.4
48.3 11.8 1.01 +6
203.3 26.1 ~~8.2~~ 13.2.3 +8
229.4 129 +5
505.9 49.5 26
252.95 ~~11.37~~ .67
126.47 12.37

109.9 5.5 +1.1
281
138.0 2.6 −1.8

292.1 29.5 3.3 −1.1
321.6 6.2 +1.8
861.6 57.6 5.8
430.8 14.40 1.45
215.40

Looked at δ Cygni could not see.

Jan. 13, 1878

α Urs. Min.

6 22	34.2	5.9	2.6	−4
	40.1		3.3	+3
	213.5	6.1	3.3	+3
	219.6		2.8	−2
	507.4	12.0		12
	253.7	3.00		.30
	126.85			

S do

	34.1	6.1	2.5	−5
	40.2		3.6	+6
	213.1	6.1	3.5	+5
	219.2		2.6	−4
	506.6	12.2		20
	253.3	3.05		.50
	2 126.65			

6 30	124.6	P. obs. Other diagonal.		
	130.1	5.5	2.0	−7
	303.2		3.5	+8
			3.4	+7
	308.6	5.4	2.0	−7
	866.5	10.9		29
	216.62	2.72		.72

6 36	125.0	5.9	2.0	−.8
	130.9		3.9	1.1
	303.4	5.25	3.6	.8
			1.6	1.2
				39
				.97

308.65 (308.4 / 308.9) All these settings doubtful, taken through clouds. The first is the best, the last two are about equally bad, and worse than the rest.

867.9
~~218.97~~
433.95 11.15
216.99 2.79

Jan. 13, 1878

7 12 π Androm. 6 obs.

118.7 16.8
135.5

298.4 15.7
314.1

866.7 32.5
216.67 8.12

27.2
44.6 17.4
209.6
16.3
225.9

507.3 33.7
126.82 8.42

Star with 6 cusps observed halfway between
β and δ Andromedae brightest at about 220°

λ Arietis Thick haze
7 30 images rather cloudy

Jan. 23 1878

Jan 13th 22h Cont by artif star.

dec	inc	
3,03	244	2~~9~~854
275	3,00	2,662
295	264	
2,64	265	
290	2,58	
427	23 1	

22,09 Sides

dec	inc	
		3,026
292	301	3,052
3,15	305	
3,13	3,00	
319	325	
324	295	
,63		

Jan 14th 1.24 Sides

dec	inc	
404	3,41	3.77^{6}
340	370	3,458
3.40	3,56	
3.90	3,54	
4.40	3,08	
388	224	

Jan. 13, 1878

1 30 Solo

dec.

3.85 5.07

1 43 unfocussed

dec.	inc.	
		3.478
3.50	2.86	~~3.644~~
3.42	3.88	3.442
3.74	3.39	
3.24	3.53	
3.49	3.55	
2.39	2.21	

Photometer I. β Delphini & companion 15th magn.

5 57 2.25 P. obs.

2.58 2.258

2.24

2.11

2.11

1.29

β Delphini & companion 12th magn.

6 2 3.80 3.094

2.68

3.02

2.78

3.19

3.47

Jan. 13, 1878

γ Equulei and companion ; Too faint

ε Pegasi and companion of 14th magn.

6 23 1.67 1.450
1.45
1.32
1.47
1.34
22 5

Seeing .75

γ Aquarii and companion

6 2.03 2.008
1.92
1.99
2.08
2.02
4

Object 230. following Saturn north Japetus.

6 48 0.41
0.36 .422
0.47
0.43
0.44
211

Jan. 14, 1878

8.12 4' Réseau

Object glass cleaned. Shifted to stop.

Jan 14th 1878 Contact of Plate I focussed on centre.

	Decr.	Incr.	P. obs.
22 20	3.67	4.25	3.592
	3.89	4.02	3.964
	3.36	4.04	
	3.56	3.37	
	3.48	4.14	
	29 6	48 2	

Moved ~~diaphragm to make~~ one cap of eyepiece to render divergent pencils concentric.

Very great improvement indeed.

22 40 S.d.f.

dec.	inc.
5.48	5.18

focus has been altered readings too large since direct image is out of focus.

McIntosh reflector in way.

	Decr.	Incr.	P. obs.
	4.04	3.40	3.710
	3.39	3.48	3.448
	3.31	3.58	
	4.02	3.58	
	3.79	3.20	
23 25	35 5	22 4	

Jan. 14. 1878

23.26 Schs left eye

dec.	inc.	4.224
4.07	4.25	4.196
4.60	4.33	
4.05	4.02	
4.29	4.19	
4.11	4.19	
4 2	98	

Jan 15th 1878. Diameter of hole R.3

〃 〃 〃

diam par. to edge	17.1	180° 〃	17.0
45°	17.1	〃 〃	17.0
90°	16.9	270° 〃	16.9
135	16.9	〃 〃	16.9
Mean	17.0	〃 〃	16.95
	16.975	〃 〃	

Screw ~~0.0~~	96.5	96.4 〃 〃	97.7	1.9	5.8
	0.0	0.0	1.2	5.5	9.3
Mean 3.56	3.5	3.6	3.5	3.6	3.5

Microm.	Coincide	par. edge	45°	90°
	7.9	135.3	132.3	35.6
	7.9	34.9	3.2	4.7
	7.9	35.9	5.3	3.7
	8.9	35.0	6.0	4.0
	7.9	35.0	5.8	4.3
	8.10	11	226	223
		135.22	134.52	134.46
		81		

135°	180°	225°	Hard to set [illegible] 270°	
132.1	138.0	135.0	132.4	32.0
35.2	136.8	35.0	32.7	34.4
33.0	132.2	135.00	132.55	64
34.7	135.0			133.2
35.0	133.2			
200	252			
134.00	135.04			

Jan. 15, 1878

127.12	635.60
126.42	632.10
126.36	631.80
125.90	629.50
127.94	639.70
127.90	255.80
124.45	248.90
125.10	250.20

31)3923 60

Mean 126.80

39236/31
31
82
62
203
186
176
155
200
12657

39336/31
31
83
62
213
187
266
248
20
126.80

Measurement of unit plate $\frac{1}{100}$

~~.004~~"	=	.003		.001	271.5	263.4
coin.	8.4	753.0	744.0	.002	509.0	500.9
249.94 = 001"	8.0	52.3				
	7.7	50.0		.001	266.0	257.9
	8.0	50.2		.002	513.9	505.8
	8.2	54.8		.003	758.7	750.6
	3	103				
55.05	8.06	752.06				

filar micrometer

54.90	0-3	1-4	2.5	3-6	4-7	5-8
56.65	754.3	54.0	56.5	56.8	52.0	53.0
55.40	55.8	55.8	56.8	54.0	55.8	54.0
53.90	55.50	54.90	56.65	55.4	53.9	53.5
53.50	6-9	7-10				
53.25	53.9	52.0				
53.35	52.6	54.7				
3600	5325	5335				
754.50						
110						
251.50						

.01" = 34.3 divs.
.5

.005" = 17.5 divs. ± 2lh [illegible] mercury comp by eyepiece micr.

Jan. 15, 1878

.001 by sca

35.3 1 div each line

34.6

34.8 34.79

34.7

35.0

34.3

35.0

35.0

34.4

34.8

479

~~0.0~~ Mic. Screw on Stage

7.2 .001

7.1

7.2 repeated 7.1

6.8

6.8

0.0 $\overset{''}{.01}$

70.2 70.2

140.7 70.5

210.9 70.2 end of line

70.3

later R went over entire scale of .1" and found value 70.24

found Stage micro 70.24

Jan. 15, 1878

11 45 .003" by eyepiece scale R Obs.

4.0	20	4.0	5.5
.55.4	53.7	55.9	7.4
51.4	51.7	51.9	51.9

) eyepiece not in

pushed eyepiece

74°.1 Diam hole

17.0

120 17.0

17.0 at 74°.1

.003" =

3.6	6.1	3.0
54.0	6.6	3.3
50.4	50.5	50.3

Mean 50.4

Moved circle now ~~[illegible]~~ 12h 35m

17.0 ×
16.7
16.7

16.7 correct. 40°.3

windows left outside
and letting it in does satisfy

15°.9 outside 3.00
38.1 inside

16.2
16.6
16.9
16.7
16.7
16.8

Jan. 15, 1878

Moved Micro out doors

3.18 16.9
16.8 ~~16.74~~ 16.73 mean of last nine.
16.9

3 20 16.5
16.6
16.7
16.6 16.78
17.0 mn 16.87
16.8

just out of focus each time

16.8
16.9 16.84
16.8

22.3

16.7
16.8
3 25 17.0 19°.6

5.0 8.0 ~~6~~ 59 50.1
55.0 58.1 6.1
500 501 502

19°.0

15°.2

332

1878 Jan. 16. Photometer I.

β Aquarii & companion n.f. P. obs.

5 40. 2.60 2478

2.31 : 1.01 →

2.18

2.52

2.74

12.39

2.478

A 2875

5 43 272 1. obs.

295 2806

325

251

280 Other companion not seen.

14.03

γ Aquarii P. obs.

5 55 2.46 2486

2.21

2.57

2.59

2.60

43

6 0 2.20 S. obs.

2.17 2054

1.99

1.85

2.06

27

Jan. 16 1878

Object 25 e. fell ½ a little N of ½

6 45 0.58 S obs
.53 0.542
.57
.51
.52
2.71

6 22 0.82 P. obs.
.74 0.730
.72
.64
.73
3.65

6 29 δ Pegasi & companion P. obs.
2.00 1.974

2.14
2.05
1.85
1.83
9.87

Two other companions

Pos. angle	Dist.	Magn.
160°	50"	12.5
130	20	15

6 40 Dist appears much too great S. obs.
1.64 1.446
1.48
1.28
1.44
1.39
7.23

Jan. 16, 1878

ξ Pegasi

Companion seen at first by S.; soon disappeared.

6 54 3,23 P. obs.

2,98 3,094

2,99

3,313

2,94

15.47

~~2.85~~ Other companion; more distant

6 56 2.28 and hence seemingly brighter

2.04 2.168

2.23

2.118

2.11

10.84

Photometer H

8 0 α Androm.

125.2 37 P

128.4

306.3

2.4

308.7 5.6

868.6

217.15 1.40

34.9 2.4 P

37.3

216.7 3.0

219.7 5.4

508.6

127.15 1.35

Jan. 16, 1878

822	o Ceti	P obs.
	1227	125
	135.2	
	301.4	109
	312.3	23.4
	871.6	
	217.90	5.85
	33.1	8.8
	41.9	
	208.6	11.7
	220.3	20.5
	503.9	
	125.97	5.12
842	ν Ceti	
	30.2	12.9
	43.1	
	209.7	13.4
	223.1	26.3
	506.1	
	126.52	6.57
	119.8	13.9
	133.7	
	298.4	14.0
	312.4	
	864.3	27.9
	216.07	6.97

9 0.6 λ Arietis Jan. 16, 1878

110.3 31.1
141.4
287.4 36.7
324.1
863.2 67.8
215.80 16.95

18.6
54.5 35.9
200.6
234.3 33.7
508.0 69.6
127.00 17.40

9 12 19.9 S. obs
54.7 34.8
201.8
233.9 32.1
510.3 66.9
127.57 16.72

9 19 110.9 32.0
142.9
291.5 30.5
322.0
867.3 62.5
216.82 15.62

9 24 φ Pisc, P. obs.
31.3 12.4
43.7
210.6 10.7
221.3
506.9 23.1
126.72 5.77

Jan. 16, 1878

π Andr. P. obs.

9 34 27.6 17.0
44.6
209.7 16.6
226.3
508.2 33.6
127.05 8.40

S. obs.

9 39 29.6 14.7
44.3
208.7 17.6
226.3
508.9 32.3
127.22 8.07

9 42 119.6 15.9 P. obs.
135.5
298.3 15.6
313.9
867.3 31.5
216.82 7.87 S. obs.

9 45 119.2
135.5 16.3
298.7 16.3
315.0
868.4 32.6
217.10 8.15 Therm 9°

Jan 18th 1878. Opened Dome at 3.40

Reading of decl. circle for Venus 176 40
Decl. of " 6 39
183 19

Decl. of β Pisc. Aust. − 33 1
[illegible] 183 19
Setting 150 18

β Pisc. Aust. seems too low to attempt observation of it.

Photometer I

γ Equulei companion not seen

6.0 κ Pegasi comp. brighter than artif. reflected image E.S.P.

μ Cygni comp. seen but very faint

γ Aquarii & companion, P. obs.

6 17
2.70 2724
2.83
2.67
2.613
2.79
13.62

Jan 18, 1878

6 23 γ Aquarii S. obs

	3.24	2.354
	2.44	
	2.19	
	1.86	
	2.04	
	11.77	

Photometer H

	α Pisc.	P. obs.
6 36	88.2	
	161.4	73.2
	272.7	66.7
	339.4	
	861.7	139.9
	215.42	34.97

		S. obs
6 40	89.8	
	163.7	73.9
	273.2	70.5
	343.7	144.4
	870.4	
	217.60	36.10

	~~338.2~~	~~P. obs.~~
6 49	4.3	P. obs.
	72.3	68.0
	182.4	
	249.6	67.2
	508.6	135.2
	127.15	33.80

Jan. 18, 1878

6 53 5.0 68.8 S ba
73.8
180.5 72.4
252.9
512.2 141.2
128.05 35.30

7 34 o Ceti
121.8 11.6
133.4
300.6 10.3
310.9
866.7 21.9
216.67 5.47

30.9 13.2
44.1
209.7 11.3
221.0
505.7 24.5
126.42 6.12

γ Ceti Care made [illegible]
7 46
19.2 35.0
54.2
197.7 35.9
233.6
504.7 70.9
126.17 17.72

Cont →

Rob H γ Ceti Majori Jan. 18 1878 Jordan Y?

18.6		107.2	38.0
53.6	35.0	145.2	
		286.4	37.2
195.4	37.0	323.6	
232.4		862.4	75.2
500.0	72.0	215.60	18.80
125.00	18.00		

Sobs.

19.6	27.3	102.8	43.2
46.9		146.0	
199.2	29.5	284.0	39.6
228.7		323.6	
494.4	56.8	856.4	82.8
123.60	14.20	214.10	20.70

S ψ¹ Piscium

81.0 84.0 n dis 84.0 3 uch. 345° dis.
165.0
262.9 84.3 84.3
347.2
856.1 168.3
214.02 42.07

S

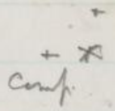
82.0 90.0 l dis. 90.0 3 uch. 160° dis
172.0
259.6 92.3 92.3
351.9
865.5 182.3
216.37 45.57

Jan. 18, 1878

~~8 35~~ P. obs.

76.7 97.9 340 br. 160° disappears
174.6
8 40 256.8 99.0
355.8
863.9 196.9
215.97 49.22

8 43 ~~87.6~~
82.3 85.9 340 br. 340 dis at 110
168.0
262.5 83.4
345.9
858.7 169.1
214.67 42.27
g lits



8 58 and C.H. [illegible] dis

353.6

r ats l blw. /

105.9 39.4 193.8 38.5
145.3 232.3
282.7 40.5 12.1 44.0
323.2 56.1
857.1 79.9 P. obs 494.3 82.5
214.27 19.97 123.57 20.62

9 21

16.2 33.8 104.4 40.6
50.0 145.0
196.4 39.7 281.0 47.3
236.1 328.3
498.7 73.5 858.7 87.9
124.67 18.37 214.67 21.97

2 images appear brighter than

Jan. 18 1878

9 30 λ Arietis

108

17.8 36.8
54.6

199.1 33.8
232.9

504.4 70.6
126.10 17.65

9 31 108.4 38.2
146.6

289.4 33.1
322.7

867.3 71.3
216.82 17.82

ι Trianguli

9 35 102.4 46.7
149.1

278.8 47.9
326.7

857.0 94.6
214.25 23.65

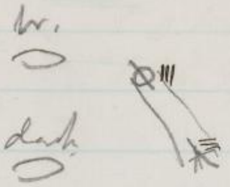
11.6 51.6
63.7

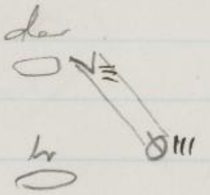
187.2 57.4
244.6

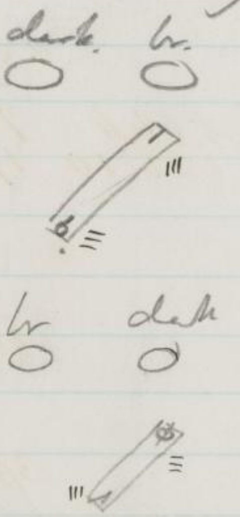
506.6 109.0
126.65 27.25

Jan. 18th, 1878. Plane of polar. of Prism H
23 30

View reflection of window in lens placed on library table. Two images side by side

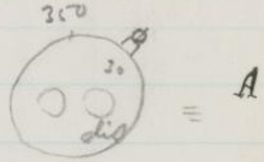




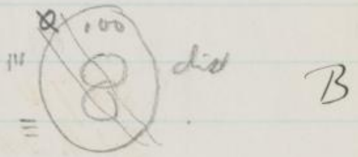


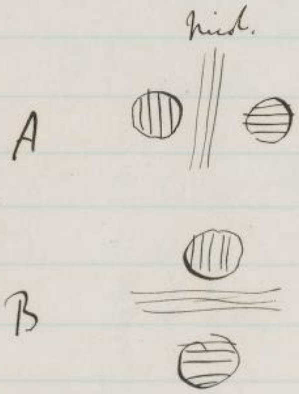
Observed reflection of quartz sph.

∴ nicol plane placed through 8 & 180°



Confirmed





∴ Reading 30° Image dis. polld in plane of second image

" " " " " " " "

∴ Zero 30° corresponds to A polld through B

Jan 19th 1878 Opened dome at 4 00
Cirrostrat – Clouds 5 20

dec		P. obs
198	189	
198	192	
196	190	
203	185	
190	198	
985	54	
1.970	1.908	

	dec	inc.	5.40
S	2.14	2.00	
	1.85	1.87	
	1.87	1.77	
	2.05	1.81	
	2.07	1.89	
	9.98	9.34	
	1.996	1.868	

Photometer H.

	ω Fornacis	P. obs.
5 51	21.3 52.7	31.4
	198.5 231.3	32.8
	503.8	64.2
	125.95	16.05

Jan. 19, 1878

5 53 S obs

19.5 32.8
52.3

198.5 32.7
231.2

501.5 65.5
125.37 16.37

5 57 111.1
143.9 32.8

291.0
320.3 29.3

866.3 62.1
216.57 15.52

6 0 111.3 P. obs.
141.4 30.1

288.6
320.7 32.1

862.0 62.2
215.50 15.55

Photometer I.

ξ Pegasi & companion of 15th magn.

6 17 2.54 P. obs.
2.62 (these three probably not in focus)
4.00
9.18
3.060 Refocussed.
6 25 3.06 2.806
2.99
2.67
2.55
2.76
14.03

Jan. 19 1878

ξ Pegasi & companion of 12th. magn. (pos. angle 32°)
This companion looks fainter than reflected image as last set, on bringing it towards the latter.

6 28 1.98 P. obs.
1.97 2.066
1.99
2.37
2.02
10.33

6 30 Obs. ξ Pegasi 12th mag
2.09 1.996
1.99
1.98
2.00
1.92
9.98

15 m

6 39 2.36 2.482
2.92
2.29
2.28
2.56
12.41

Jan. 19, 1878

ζ Reguli and companion north (pos. angle 15 by catalogue)

1.33 P. obs.

1.19 1.250

1.23

1.33

1.17

6.25

More distant than catalogue makes it.

6 59 2.24 P. obs.

1.86 1.866

1.75

1.72

1.76

9.33

7 43 f Eridani Photometer H. P. obs.

944 61.2 30 dis

155.6

267.5

339.8 72.3

857.3 133.5

214.32 33.37

354.6 79.8

4 3 4. 4

74.4

175.9 79.4

255.3

860.2 159.2

215.05 39.80

8 08 S obs Jan. 19, 1878

431.8
71.8
177.4 75.6 lens dis. ~~350~~ 35°
253.0
356.6 75.2
858.8 150.8
214.70 37.70
8 13 89.8
162.7 72.9
268.2 74.0
342.2
862.9 146.9
215.72 36.72 Looked at θ Eridani too

γ Ceti P. obs.
Index ∨ pos. angle of this index 220°
Diagonal 220° Diagonal 140°
8 24 16.1 36.2 110.3 31.0
52.3 141.3
195.6 38.2 285.9 36.4
233.8 322.3
497.8 74.4 858.8 67.4
124.45 18.60 214.95 16.85
not quite close enough
Stars brought closer; perhaps a little too close
8 28 S obs. Φ Index pos ang 230° Seeing getting worse
Diag. 300° Diag 240°
16.6 34.7 101.4 48.0
51.3 149.4
198.3 35.0 284.0 44.2
233.3 328.2
499.5 69.7 863.0 92.2
124.87 17.42 215.75 23.05

Jan 19, 1878

γ Ceti P. obs. Two images of faint star made equal. Index 0

8 47	80.9	
	172.0	91.1
	261.5	
	348.6	87.1
	863.0	178.2
	215.75	44.55

Pos. circle turned 180°. fr. star Index V.

8 50	84.2	83.6
	167.8	
	263.4	86.6
	350.0	
	865.4	170.2
	216.35	42.55

Two images of bright star made equal.

8 53	83.6	86.2
	169.8	
	261.6	
	353.9	92.3
	868.9	178.5
	217.22	44.62

Pos. circle turned 180°. br. star Index 0

8 55	258.8	
	351.2	92.4
	76.8	
	175.6	98.8
	862.4	191.2
	215.60	47.80

Jan. 19, 1878

faint stars equal   φ index

S. obs.

8 59   80.1
    173.3   93.2
    261.5
    355.8   94.3
    870.7   187.5
    217.67   46.87

Images of bright star equal.

9 7   76.0
    172.9   96.9
    261.3
    347.5   86.2
    857.7   183.1
    214.42   45.77

9 9   79.9   88.2   ft. sts. v index
    168.1
    262.6
    348.6   86.0
    859.2   174.2
    214.80   43.55   br star.

9 14   81.5
    167.2   85.7
    262.2
    345.3   83.1
    856.2   168.8
    214.05   42.20

Jan. 19, 1878

ν Ceti P. obs.

9 18 28.0 Index V at 260°

43.6 15.6

208.5

223.2 14.7

503.3 30.3

125.82 7.57

Index Φ at 280°

9 23 118.1

133.9 15.8

298.9

313.6 14.7

864.5 30.5

216.12 7.62

π Andr. P. obs.

9 30 118.7 14.9

133.6

299.4 13.9

313.3

865.0 28.8

216.25 7.20 S. obs

9 33 117.7 16.2

133.9

298.8 15.8

314.6

865.0 32.0

216.25 8.00

Jan. 19, 1878

248 16.4
45.2

209.0 15.3
224.3

142
507.3 31.7
126.82 7.92

9 40 27.6 P. obs.
44.5 16.9

209.0 15.8
224.8

505.9 32.7
126.47 8.17

l Triang.
9 46 7.6 S. obs.
64.9 57.3

191.1 49.7
240.8

504.4 107.0
126.10 26.75

9 50 11.2 P. obs.
66.1 54.9

186.7 58.1
244.8

508.8 113.0
127.20 28.25 S. obs

980 56.3
154.3

281.4 51.3
332.7

866.4 107.6
216.60 26.90

Jan. 19, 1878

9 55 96.4 P. obs.
156.4 60.0

275.7
337.0 61.3
865.5 121.3
216.37 30.32

Jan 21st 1878. Thickness of 15" objective
measurement of drawing
Diam 103.0
Thickness at edge 13.2
13.5
" centre 18.3

307
309
3349 /138

380
33
114
114
1254 /103
12.1
103
224
206
180

380 : 103 = ~~x~~ : 33
Calcd. thickness of 15" lens

Assumed thickness 50 mm

103.0 : 5 = 38
190 /103
1.84
103
32
870
824
460
50

Jan. 22, 1878.

Photometer H.

α Cass. Stars in a line (not a parallelogram)

6 24 33.6 5.6 S. obs.
39.2
214.0 5.2
219.2
506.0 10.8
126.50 2.70

6 29 124.7 4.5 Probably getting a little cloudy. Bright image kept out of field in this set.
129.2
304.5 4.5
309.0
867.4 9.0
216.85 2.25 Clouded up.

Nearly clear again at 8, but clouded over immediately afterwards.

Jan. 23, 1878.

Opened dome, but found seeing very bad owing probably to the sudden fall of temperature during the day. Observations therefore not attempted.

Jan 14th 0 h. Diam holes in perforated cardboard g

C. S. Minton.

Right-hand edge			Left-hand edge of hole		
34.20	~~35.08~~		35.08		88
35.79	59	1	.65	2	86
39	60		.26	1	87
98	59	1	85	1	87
61	53	7	49		88
21	60		08	1	87
80	59	1	44.70	2	90
21	61	1	.30	1	89
98	57	3	86		88
63	65	5	52	1	89
20	57	3	07	1	87
84	64	4	73	1	89
41	57	3	31	2	90
03	62	2	91		88
62	59	1	48	2	86
16	54	6	05	1	89
79	63	3	66	1	87
45	66	6	33		88
03	58	2	91		88
64.63	60	49	65.51		88
				87.95	39

Above measures perpendicular to uncut edge

m Dx

30.43 / 19 = 1602
19
114
114
3

Mean diam holes 87.95 ± .85

" dist holes 160.2 ± 2.6

Jan. 24, 1878.
Measure per to edge

49.15	1.62	1	50.03	1.62		88
.77	59	2	65			88
36	63	2	24	.59		88
99	61		85	61	2	86
60	60	1	46	61	2	86
20	60	1	07	60	1	87
80	61		67	61	1	87
41	60	1	28	62	1	87
01	61		90	61	1	89
62	60	1	51	60	1	89
22	63	2	11	62	1	89
85	61		73	63		88
46	61		36	60	2	90
07	62	1	96	63	1	89
69	62	1	59	59	2	90
31	61		18	63	1	87
92	68	7	81	59	1	89
60	60	1	40	63	8	80
78.20			79.03			83
					4	

20 03
79.23 Repetition of last two 80.08 61 85
80 64
79.83 60 1 .69 2 86

22 31

30.68 | 19
19 161.46
116
114
28
19
90
78
120

161.5 ± 1.1
87.7 ± 1.2
87.3 ± 1.5

28 | 19
19
47

14

7

87.70
87.35

Jan. 24, 1878

Measure 80 = 13.62 par. edge
13.63
13.52 perp. edge
13.53

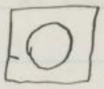
Results: ~~par. to edge~~ [illegible] edge

perp.			par.	
160.2 ± 2.5			161.4	1.1
88.0 ± .8			~~87.7~~	~~1.2~~
1.1			87.3	1.5
1.5				
5.9	1.5			

24 | 125.4
24
17
17/240
.7/70
1/14

perp.	perp.
~~114~~	62 115
171.6	172.9
94.3	93.5
169.0	1.702
~~[illegible]~~	1.704
~~169.1~~	

	perp.	par.	perp.	par.
C.S. div.	1.716	1.729	88.0	87.3
Scale	1.690	1.702		
"	1.691	1.704		



1716 | 88 | 8580
88
836 | 2200
.513 | 1716
4840

1729 | 873 | 8645
.505 | 8500

1 − π .2545²

ratio lines perp. 513 } .509
to intervals par. .505 }

1 − .1599 .20358

.7965

Jan 21st 1878. Opened Dome at 7.40
Photometer H.
α Piscium. P. obs.

6 12 89.9
158.7 68.8
273.5 65.3
338.8
860.9 134.1 Star faint and barely visible
215.22 33.52 owing to haze and clouds

6 15 93.3
160.0 66.7 S. obs. clouds.
275.2
341.6 66.4
870.1 133.1
217.52 33.27

6 18 359.2 P. obs.
69.4 70.2
179.6 69.0
248.6
856.8 139.2
214.20 34.80
4.6 S obs
71.2 66.6
186.4
245.2 58.8
507.4 125.4
126.85 31.35

Jan. 24, 1878

7 12 η Cass P obs

115.6
135.7 20.1
296.8
317.2 20.4
865.3 40.5
216.32 10.12

26.1
46.4 20.3
205.6
225.8 20.2
503.9 40.5
125.97 10.12

α Cassiopeae
sm. star blue cent. yellow!

124.2
129.6 5.4
304.6
309.3 4.7
867.7 10.1
216.92 2.52

33.4
39.2 5.8
214.8
219.9 5.1
507.3 10.9
126.82 2.72

Jan. 24, 1878

ι Ceti el cent.

14.4 41.0
55.4
193.6 42.6
236.2
499.6 83.6
124.90 20.90 interval imp. a little large

103.6 43.4
147.0
289.5 37.2
326.7
866.8 80.6
216.70 20.15

ι Cass. close companion S. obs. Small

8 21 108.4 images seen plainly at considerable intervals only.
148.9 40.5
281.7 47.4
329.1
868.1 87.9
217.02 21.97

8 28 11.7 44.2
55.9
195.0 39.5
234.5
497.1 83.7
124.27 20.92

Stars seemed very faint, & blurred for some time. Examined object-glass, but found nothing wrong. Afterwards returned to ι Cass. and found seeing better again.

Jan. 24 1878

ι Cass. distant companion.

8 55 113.0
139.8 26.8
295.0
318.4 23.4
866.2 50.2
216.55 12.55

9 0 20.5
47.4 26.9
203.6
229.9 26.3
501.4 53.2
125.35 13.30

Lantern fell; wick dropped out of reach.
Lighted another lantern.

η Cass. seeing much worse

9 18 25.5
47.9 22.4 left eye
205.2
226.0 20.8
504.6 43.2
126.15 10.80

9 22 115.0
134.6 19.6 left eye
296.8
317.9 21.1
864.3 40.7
216.07 10.17

Jan. 24, 1878

α Cass. bright image out of field

9 30 33.0
38.5 5.5
215.3
221.1 5.8
507.9 11.3
126.97 2.82

9 35 122.5 bright image out of field.
129.4 6.9
305.0 5.6
310.6
867.5 12.5
216.87 3.12

9 54 ψ Cass. Companion very faint; distance & angle however seem right. This first set is perplexing. No change made after it except with position circle and string for moving prism.
28.8
45.2 16.4
207.0 16.9
223.9
504.9 33.3
126.22 8.32

Moved circle but returned to first diagonal by mistake (on the other side).

10 0 32.8 9.3
42.1
210.8 9.5
220.3
506.0 18.8
126.50 4.70

10 5 121.7 11.0
132.7
301.7 10.8
311.5
867.6 20.8
5.20

Seeing mostly bad the whole evening, but at times tolerable.

1878 Jan. 25
Photometer H. 55 Pisc. P. obs.

5 52 113.8
139.5 25.7
292.6
318.4 25.8
864.3 51.5
216.07 12.87 S. obs.

5 54 114.0
139.0 25.0
293.1
318.7 25.6
864.8 50.6
216.20 12.65

5 57 22.6
49.0 26.4 P. obs.
201.6
230.8 29.2 br. Clou Much.
504.0 55.6
126.00 13.90

6 01 25.2
48.0 22.8
203.0
229.0 26.0
505.2 48.8
126.30 12.20

Jan. 25, 1878

6 11 φ Piscium S. obs.

29.3
40.8 11.5

209.3
222.6 1~~1~~.3 3

502.0 ~~22.8~~ 24 8
125.50 ~~5.70~~ 6.20

6 17 P. obs.

28.8
41.7 12.9

209.9
221.9 12.0
502.3 24.9
125.57 6.22

6 19 S. obs

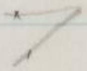
120.1
130.9 10.8

300.5
311.5 11.0
863.0 21.8
215.75 5.45

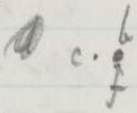
6 27

120.9
133.2 12.3

299.3
310.4 11.1
863.8 23.4
215.95 5.85

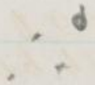


Jan. 25, 1878

γ Ceti Stars arranged thus ; 

b, bright image ; f, faint image ; c, companion of b.

6 41 10.8 S. obs.
49.6
60.4 Lost sight of f. v

6 50 v India Robs 

14.6
37.3
51.9

195.8
41.6
239.4

499.7 78.9
124.92 19.72

6 55 U obs. ~~just about~~

angles 300 & 315-320

21.7
30.8
52.5

200.0 focus poor

32.4
232.4
506.6 63.2
126.65 15.80

U obs India ~~Vattr~~ & to left →⇉

7 05 106.5 Bright & not at equal distances from the compared images. Position thus ..

115.7 39.2

257.3
36.6
323.9

863.4 75.8
215.85 ~~18.20~~
18.95

7.13 103.6 P obs
41.7
145.3

287.1
41.0
328.1

864.1 82.7
216.02 20.67

Jan. 25, 1878

V left & above. Square formed
8 obs

7.23 NW & SE Diag. – NE & SW Diag

18.5 35.6 110.7
54.1 rej. dome cuts off

7.26 NW & SE NE & SW

19.4 106.2
34.0 33.0
53.4 139.2
193.8 291.7 28.4
39.1 ~~28.3~~
232.9 320.1
857.2 61.34
499.5 73.1 Left. but objects fainter.
124.87 18.27 214.30 15.32
5

7 33 8 obs V left above N.E.
S.W.

25.0 111.5 ~~34.8~~ 35.8
27.0
52.0 147.3
201.5 289.5 33.0
29.3
230.8 322.5 eye tired
870.8
509.3 56.3 217.70 ~~67.8~~ 68.8
127.32 14.07 brighter ~~16.95~~ 17.20

V better
8 obs

7 48 31.1 ~~42.8~~
42.8 11.7
207.6
13.0
220.6
502.1 24.7
125.52 6.17

Jan. 25, 1878

ν Ceti P. obs.

8 2 118.0 16.8
134.8
296.8 16.0
312.8
862.4 32.8
215.60 8.20

Constant of photometer I by Mars through hole R3. Aperture 5 inches

8 34 2.19 P. obs.
2.14 2.168
2.15
2.31
2.05
84

Great trouble in keeping Mars behind hole clamped and held by tangent screw.

S obs. Telescope continually shifting in declination, although clamped.
221
239
265
296
9 26 2.39 2.520
260

Jan. 25. 1878

Continuation of observations on constant

9 27 1.63 P. obs. Image of hole perceptibly too faint

2.03 ~~2.336~~

2.27

2.39

1.88 After this measure, moved telescope & found setting too faint;

2.48

12.68

2.113

α γ Andr. Photometer H.

9 48 109.5 32.6 S. obs. Stars yellow (inclining to orange), and bluish white

142.1

290.8 28.3

319.1

861.6 60.9

215.37 15.22

9 51 112.3 27.1 P obs

139.4

291.5 29.7

321.2

864.4 56.8

216.10 14.20

9 55 22.0 29.0 S. obs.

51.0

197.8 32.0

229.8

500.6 61.0

125.15 15.25

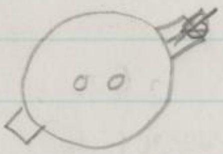
Jan. 25, 1878 & Jan 26

P. obs.

Small star blue
and not green.

9 57 22.5
49.4 26.9
199.3
231.4 32.1
5026 59.0
125.65 14.75

Jan 26th 1878. 5 15.
Zeiss of Phot. H



Images right = R
left = L

all readings by ∅ tubes

Position of point in field denoted by apparent angles and distances. radius of field = 1.

5 20	36.6	216.9
	36.7	217.0
	36.6	216.7
	36.5	216.8
	36.6	216.8
	36.60	42
		216.84

216.6 r c.
307.2 89.4 l 270° .6
36.6 r

1283
~~6867~~ 90.3 ~~49.~~7
~~17.1167~~ ~~44.~~92

Jan. 26, 1878

5 26

37.6 89.0 r 90° .6
126.6 l c
215.6 91.4 r 90 .6
307.0 l c

36.2 r 90° .8
34.6 r 270 .8
36.6 r c

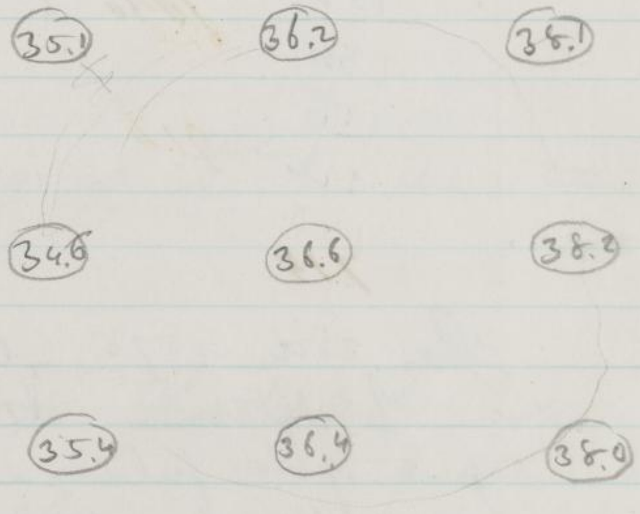
36.2 r 180 .8
36.4 r 0° .8

			l	
35.6	3.3	r cap with refl. image	124.3	3.9
38.9			128.2	
214.5	3.1		305.1	4.0
217.6			309.1	
506.6	6.4		866.7	7.9
126.65	1.60	reflected in [illegible]	216.67	1.97

35.4	3.6	124.4	3.9
39.0		128.3	
214.4	3.4	305.3	3.7
217.8		309.0	
506.6	7.0	867.0	7.6
126.65	1.75	216.75	1.90

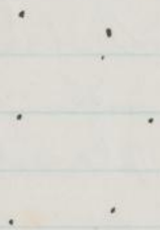
Jan. 26, 1878

38.1	135°	.8
35.1	225	.8
35.4	315	.8
38.0	45	.8



6.10 γ. Ceti

27.3
46.7 194
204.8
225.7 20.9
~~504.5~~ 403 10.07
126.12
113.1
135.8 22.7
299.2 249.2 .173
316.5
~~814.6~~ 400. 10.00
~~203.65~~
864.6
216.15



36.4 35.05 38.2
35.25 36.6

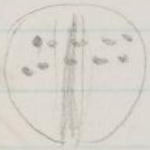
1.65 1.8
.56 1.15 1.8
1.4 1.8 .8
2.5 112 2.25
2.5 280
2.25
7.25
7.0
2.42 per 65"
1.0 per 25"

Objectglass dewed

7h 3m δ Andromedae Phot. Jan. 26, 1878
br cap
1.55 14.30
1.30
1.56
1.24
1.58
7.15

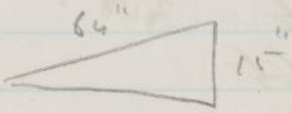
~~Jan.~~ 28th, 1878. 0 30.

To determine the size of Phot. H in diff parts of the field a piece of perforated cardboard was attached to W. of S. window of room over Library. This was viewed through Photometer H replacing the Rochon prism by a double image prism placed in front of the lens. One image of the card was thrown out of the field and on turning the Nicol a dark band passed through the field first from R to Le and then back Le to R.



The band is at RA to the 1st refract band of the prism and seems to move equally for diff. inclinations

15 to 64

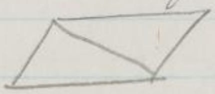


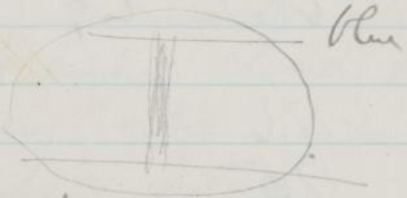
15 | 128
128 , 1172
220
128
920
896
240

6°44

13° = App. ang. of field

Jan. 26, 1878





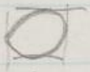
Hand mark came up at left of plate when plate is lettered

Friday Jan. 25th 1878. ~~Pro~~ Mr. A. R. wrote to Mr. V. Woods asking him to make another hole. Monday Jan. 28th the plate came which will be designated by T. It contains five holes of which No 2 only is good. Largest hole = 1
These are near edge
Next row. 6 half filled bad, 8 (good) 9 not good) 10 closed. 10 filled up.
12 fair 13 fair.
Two rows one of eight other of five

1 Largest
2 good
3
4
5
6 half filled
7 bad
8 good larger
9 not good. hole, i.e. one place
10 closed
11 closed
12 fair
13 fair

Jan 28 3 P.M.

1 Plate No 9



Notice sky illumination

17.6
17.5
17.3
17.2
17.1
17.2
17.3
17.3
17.2
17.1

17.28

No 8

26.7
26.8
26.6
26.7
26.8

26.72

Micr plate

1 Div = $\frac{1}{20}$ mm.

[illegible]
65.4
65.8
65.7
65.9
65.9
65.7
65.3
65.7
65.8
65.7

65.69

65.6
65.4
66.0
65.7
65.9
65.9
65.5
65.7
65.6
65.6

65.69

Jan 28th 1878. Opened Dome at 3 P.m.
Seeing unusually bad wind high closed at [illegible]
Rate of Clocks very little
3 m 18 s time of Venus crossing field
14 55
Telescope blow ½ diameter of Venus

Satellite of Venus
6.0 .88 ~~could see~~ distinct vis Venus in field
.73 just vis
.76 " "
79 distinct vis
100 could not be noticed

6.1 .78 star below Venus } V out of field
.84 seen faintly } Dome covers

.44 followed 6
.80 glimpsed
picked up at .31
109 star = compar. diff.
.79 distinctly seen
6.2 6 13
.62 Venus nearly below, + distinctly vis.
63 " seen " at a glance.
6 18 80 * seen at a glance
.75 V. in field.
6.3 100 only bright V in field
6 19 41 easily seen, V. covered

Jan 28 1878.

Si

6 23 V, corrected 0.44 distinctly vis
" " .42 limit vis.
6 25 " w pole .54 distinctly vis.
" .49 limit vis.
6 27
lat. not seen.

Photometer H
β Orionis comparison not seen,
Disk of chief star estimated 15" across.

7.22 23 Orionis. Seeing very bad.

45.4 U
185.4 38.1
223.5

8.8 36.6
463.1 74.7
115.77 18.67 S
4.3 39.4

43.7
185.4 37.9
223.3
456.7 77.3
114.17 19.32 P.

7 32 15 18 96.3 37.9
32 33 22 134.2
32 55 20 275.4 41.1
33 15 316.5
822.4 79.0
205.60 19.75

.. u Jan. 28, 1878.

7 35 94.3 44.9
139.2
276.4 39.4
315.8
8257 ~~827.7~~ 84.3
206.42 ~~206.92~~ 21.07
u

δ Orionis

7 41 102.5 26.4
128.7
283.3 24.3
307.6
822.3 50.7
205.57 12.67 u

7 45 14.8 23.0
37.8
195.2 20.6
215.8
463.6 43.6
115.90 10.90

Images not as near to each other as they should have been —

Possibly get in dark edge of field.

7 48 45 10 18.4 14.0 P
55 30 32.4
49 25 22 198.6 14.8
49 47 213.4
462.8 28.8
115.70 7.20
51 10 15 109.2 14.0
25 20 123.2
45 25 288.6 14.5
52 10 303.1
824.1 28.5
206.02 7.12

u As Jan. 28, 1878

7 54 288.8 14.4
303.2
107.5 15.7
123.2
822.7 30.1
205.67 7.52

7 57 ~~34.4~~ u
188.8 16.6
35.4
197.6 15.2
212.8
464.6 31.8
116.15 7.95

ι Orionis

8 9 109.0 13.6 6
122.6
10 25s 200 288.5 12.9
45 301.4
821.5 26.5
205.37 6.62

S

8 14 35 109.9 11.1 slipped out of focus after
15 0 pa. 121.0
17 rot 197.2 13.8 second reading. Place of star
17 50 211.0 then changed.
639.1 24.9
159.77 6.22

Jan. 28, 1878

ι Orionis continued. P. obs.

8 19 55 19 106.3 17.2
20 14 123.5
21 0 25 285.6 17.3
25 302.9
818.3 34.5
204.57 8.62 3 obs
~~23 30 107.2~~

24 55 18.1 13.8
15 31.9
30 198.2 14.9
50 213.1
461.3 28.7
115.32 7.17

δ² Orionis P. obs.

8 29 25 25 ~~50.3~~
50 18 52.9 52.6
30 8 19 179.4 50.0
37 23 229.4
31 0 0.3
462.0 102.6
115.50 25.65 S

8 37 45 35 49.1 49.9
8 38 20 30 178.5 50.1
50 30 228.6
20 359.2
815.4 100.0
203.85 25.00

Object glass partly covered by dome.

.8
22
20
10
30
22
15
20
25
20
19
25
25
18
19
23
331 16
213

Jan. 28, 1878

δ2 Orionis continued. P. obs.

8 37 85.8
141.7 Circle slips; begin again
Index slips

8 39 101.0
55.9
156.9
279.1 56.0
335.1
872.1 111.9
218.02 27.97

8 42 160.7
282.5
54.0
336.5
105.8
54.9
885.5 108.9
221.37 27.22

8 Monoc.

8 55 110.6
46.2
156.8
288.0
334.2 46.2
889.6 92.4
222.40 23.10

9 0 110.8 U. obs.
39.9
150.7
287.8
48.0
335.8
885.1 87.9
221.27 21.97

Jany. 28. 1878

9 4 20.9
61.8 40.9
202.0
244.0 42.0
528.7 82.9
132.17 20.72

9 8 22.8 U. obs.
64.9 42.1
199.0
240.7 41.7
527.4 83.8
131.85 20.95

H Monroe S

9 20 89.3 ⟨ * 310° disappears
174.6 85.3
263.1
360.5 97.4
887.5 182.7
221.87 45.67

9 30 89.4 U. obs.
174.4 85.0
270.6
357.2 86.6
891.6 171.6
222.90 42.90

9 34 90.1 ⟨ *130° disappears S Ob
171.2 81.1
267.1
356.9 89.8
885.3 170.9
221.32 42.72

Jan. 28 1878

11 Moncoc. continued

9 39 86.2 U. obs.
179.0 92.8
267.2
359.2 92.0
891.6 184.8
222.90 46.20

Jan 28 93 Am

Measures of holes No. 9 and No 8 with Lamps Ill.

No 9	No 8	Unit Plate 20 m	
178	26.73	65.8	65.9
177	75	65.9	65.8
180	74	65.9	65.7
178	77	65.8	66.1
177	74	65.8	66.2
176	74	66.0	65.9
177	76	65.9	65.9
175	73	65.9	65.8
178	73	65.9	65.9
177	75	66.0	66.2
17.73	26.744	65.890	65.940

17.63

					per hour
40	20.6		19 37.2	17.0	51.9
20	43.4	in	29 47.2	27.2 l	54.7
50	56.2				

Jan 28th 23h. 1878. Rate of Clock of Equatorial

Chron. Clock

20h	48m	55.80	1 20.8	2	57	20	8	24.2
	50	16.0	40.2		58	40	"	24.0
	50	56.2	40.2		59	20	.	23.8
	51	36.4		3	0	0	.	23.6
21	20	2.9	40.5	3	28	0	7	57.1
	"	43.4	40.4		2	40	"	56.6
	21	23.8			29	20	"	56.2
21	39	40.8	39.6		47	20		39.2
	40	20.4	40.2		48	0		39.6
	41	20.6			48	40		37.4

shortened pendulum

Equat. Clock Chron.

3	53	20	20	47	35.4	41.4	5	44.6
	54	0		48	16.8	40.6	"	43.2
	54	40		~~57~~	57 4		"	42.6
4	28	0	21	24	31.4	39.2	3	28.6
		40		25	10 6	41.2	"	29.4
	29	20		"	51.8		.	28.2
4	46	0		42	37.2	39.6	3	22.8
		40		43	16 8	40.5	"	23.2
	47	20		"	57.3		"	22.7

Jan. 29, 1878

Jan 29th 1878.

5 35 Dia field Transit of Venus

Venus across field

10.6	10.8
21.4	10.6
32.1	10.7
42.4	10.3
53.0	10.6
	10.60

at end of 3 min about .1 motion about .2 parts
dia Venus Ven = .4 field = .08 field
24 min t = approx time transit

Photometer H.
ω Fornacis P. obs.

5 55	71.1	26.7
	97.8	
	249.6	29.3
	275.9	
	697.4	56.0
	174.35	14.00
		5 obs
5 57	69.6	29.0
	98.6	
	249.8	29.0
	278.8	
	696.8	58.0
	174.20	14.50

Jan. 29, 1878

5 59 9.8 P. obs.
1.58.0 30.7
189.8 31.8
339.1
696.7 62.5
6 03 174.17 15.62
S obs

337.3 33.5
10.8
158.2 32.1
190.3
696.6 65.6
174.15 16.40

Photometer I.
ι Ceti P. obs. Seeing good.

6 21 3.68 3.472 3.472
3.44
3.24
3.15
385
.236

6 26 S obs.
5.45 Reflected image lost; brought back; 2y, same star?
6 39 4.12 4.996
4.67
5.03
6.13 After this reading looked again and it seemed well enough; but afterwards the whole field about the reflected image as well as that image, looked brighter.
5.03
24.98

Jan. 29, 1878

ι Ceti continued. U. obs. Thought reflected image faint, searched for another, and found a brighter one. Adjusted focus.

6 55 3.75 4.20
3.83
3.84
4.42
4.26
20.10

Same S obs

7 5 5.34 With * left in field by S. ; or rather found there after observations of S.

2.64 Noted * entirely disappear. Found another *; brighter; probably the star

3.13 2908 observed by P. and U. through the prism and small telescope.

3.11
3.23
2.43 μ Cygni examined but not attempted
14.54

Y Pegasi P obs

	Bright Comp		Faint Comp	
7 35	1.83	1.930	1.25	1.292
	1.78		1.22	
	2.28		1.30	
	1.88		1.38	
	1.88		1.31	
	9.65		.146	

Bright U obs. Jan. 29, 1878

7 50 1.33 $\overset{1}{2}.418$
1.46
1.65
1.20
1.45
.209

7 54 faint
0.99 0.942
0.90
0.76
1.03
1.03
4.71

δ Ceti. P. obs. Companion very faint.
8 6 1.32 1.274 Seeing leaves little to be desired.
1.47
1.22 near limit of measurability
1.21
1.15
.137

8 44 1.42 1.370 U. obs.
1.68
1.10
1.38
1.27
185

Jan. 29, 1878

Photometer H. on comet-seeker, with achromatic prism in front of object-glass, ~~Constant~~ (by ~~[illegible]~~)

2 Pegasi
S. obs.

9 0 38.8
150.0
73.5
223.5
338.2 60.6
750.5 & U Looked for Neptune's Sat. not seen
187.62 134.1
33.52

(This search for Neptune's satellite was with the equatorial, as may be supposed, and not with the comet seeker)

γ Cass.
U. obs.

9 22 338.8
48.8 70.0
222.7
339.3
41.6 62.3
168.2
210.6 42.4
345.2
159.3 63.4

Omit 345.2 in taking zero

Sum 1529.3
714.65
357.32
Zero 178.66

~~1874.75~~
~~236.84~~
2381
29.76

40.2
156.6

P obs

Index moves

Photometer G.

δ Andr. & faint companion (seen very well).

9 21 2.18 2.02 P. obs. A third companion seen at nearly the same position angle and 6 times the distance.
2.50 2.02
2.04
2.10
2.19
10.1

Bright companion.

9 26 3.38 3.134
3.20
3.00
2.91
3.18
15.67

Bright δ obs

2.26 2.090
2.06
2.42
2.01 < * moved
[1.50] not right * α Andrm.
1.70
10.45

9 50 2.28 Br. cap. U obs

Jan 30 1878

Pole. No. 9	Pole No. 8	Unit Plate $\frac{1}{20}$ mm	
17.2	26.8	~~65.9~~ 6.0	6.1
17.1	26.7	~~66.3~~ 6.4	6.3
16.7	26.7	~~66.2~~ 6.2	6.0
17.0	26.7	~~66.3~~ 6.4	6.4
17.0	26.8	~~66.1~~ 6.3	6.3
17.0	26.8	~~66.2~~ 6.2	6.1
17.2	26.7	~~66.3~~ 6.3	6.1
17.2	26.9	~~66.2~~ 6.1	6.0
17.2	26.7	~~66.2~~ 6.2	6.3
17.2	26.7	~~66.2~~ 6.0	6.4
~~17~~8	75	21	20
17.08	26.75	66.21	66.20

Jan 30, 1878

Photometers H & I repaired & improved.
Screw A removed from photometer I.

5 55 Photometer H. ω Fornacis
117.5 P. obs.
149.6 32.1
295.5
357
330.9
893.5 67.5
223.37 16.87

5 58 27.8 32.4 S. obs
60.2
207.8 30.7
238.5
534.3 63.1
133.57 15.77

Looked for 12 Eridani. Not seen, or not seen double.

Photometer I
ε Cygni & faint companion n. p.
6 26 1.54 P. obs. Still fainter companion
1.33 suspected, with pos. angle
1.61 60° less ~~greater~~ than this
1.65 and distance 2½ times
1.61 as great.
274
1.548

Jan. 30 1878

ε Cygni & extremely faint companion

6 29 0.91 P. obs.

1.37

1.29

1.20 (thought good)

1.31

[illegible]

1.216 Looks a whole magnitude fainter than other comp.

First companion S obs new focus for reflected image. Lost reflected image and found one which may ~~not~~ be that used by P. but seemed to be the only good one near the end of the telescope.

6.53 1.79

1.83

1.87

1.76

1.99

9.24

1.848 Second companion not seen.

7 5 2.22 U. obs. too faint to continue

μ Cygni & γ Pegasi examined - too hazy.

δ Androm.

faint comp. Not seen distinctly by P or U.

ν [illegible] Phot H Not seen

Jan. 30, 1878

Effect of change of plane on readings
α Cassiopeiæ Phot H
Images parallel to diurnal motion
~~Image at bottom of field~~

7. 42 135.6 Img bottom of field −4.8
130.8 top of field
311.6 bottom + 3.1
314.7 top

7 53 ψ Cassiop
127.0 13.6 P Rb
140.6
306.0 15.4
321.6
895.0 29.0
223.75 7.25
8 0 128.2 u Obs.
9.3 very faint being hazy
137.5
308.8 9.5
318.3
892.8 18.8
223.20 4.70
8 5 39.3 9.0
48.3
218.4
9.2
227.6
533.6 18.2
133.40 4.55

Same P Obs Jan. 30, 1878 . 1

8 8	35.2	
	48.0	12.8
	214.4	
	232.2	17.8
	529.8	30.6
	132.45	7.65
8 10	Same	S obs
	32.4	18.0
	50.4	
	214.8	18.2
	233.0	
	530.6	36.2
	132.65	9.05
8 15	138.2	
	126.2	12.0
	305.0	13.7
	318.7	
	888.1	25.7
	222.02	6.42

ι Cass. P obs. Distant companion

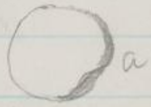
8 29	123.8	22.0
	145.8	
	302.2	
	325.2	23.0
	897.0	45.0
	224.25	11.25

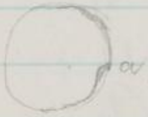
Cloud at 8.30 a account of haze

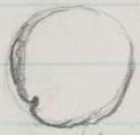
Measures of holes Jan 31 1878

Unit-plate = $\frac{1}{20}$ mm = 20 lines = 1 mm

No 9	No 8	1st 10l	2nd 10l
16.7	26.5	65.6	65.9
16.8	26.7	66.1	5.7
16.9	26.6	66.0	5.5
16.9	26.8	66.0	6.3
16.7	26.7	65.8	5.8
17.0	26.6	65.8	5.9
16.7	26.7	66.0	5.8
16.9	26.8	65.8	5.6
17.1	26.8	65.9	5.6
16.9	27.0	65.8	5.8
16.86	26.72	65.88	65.79

The "horn" on No 9 appears to have changed its appearance somewhat. Its first appearance was something like this  a

It now appears thus  a, having a sharper horn at a.

No. 8 has a film thus . This film seems to me ~~to~~ to be more marked than at first

W.A.R.

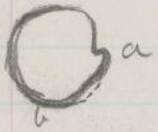
6

1878, Feb. 1

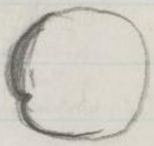
Measures of holes No. 8 + 9 Th = 72°.0

No. 9	No. 8		
17.0	26.6	66.2	65.9
16.7	26.7	66.0	5.8
16.8	26.5	65.9	6.0
17.0	27.0	65.8	6.0
16.9	27.0	65.9	5.9
17.2	26.9	65.9	6.0
17.0	26.8	65.7	5.7
17.1	26.9	65.8	5.8
16.8	26.7	65.9	6.1
17.2	26.8	65.9	6.0
[illegible]	~~26.8~~	90	92
~~1707~~ 1697	679	65.90	65.92
~~17.07~~ 16.97	26.79		

No 9



No 8



Change in No 9
Line ab falls more within the dotted curve
Than on Jan 30

1878 Feb. 2

Photometer H.

θ Eridani P. obs. Images strongly colored.

6 39 17.3 60.1 28.1 - 3.3

17.4 32.0 + .6

190.8 34.6 + 3.2

256.3 65.5 30.9 - .5

541.8 126.6 76

135.45 31.40 1.90

18.9 S obs.

Called off to assist overturned sleigh

8 26 ι Orionis 1 — 2 S obs.

108.4

160.0 51.6

286.1

340.0 53.9

894.5 105.5

26.37

8 33 223.62 1 — 3

107.8

159.7 51.9

284.7

337.2 52.5

889.4 104.4

222.35 26.10

1 — 4

115.7 30.6

149.3

295.7 34.8

330.5 65.4

894.2 16.35 223.55

Zw

Feb 2, 1878

8 40 2 – 3

89.5 2 dis. or 290° 88.0

177.5

166.9 (2y 266.9) 92.2

359.1

793.0 180.2

198.25 45.05

8 45 2 – 4

Dome moves very hard on account of storm.

99.4 68.8

168.2

278.3 69.9

348.2

894.1 138.7

223.52 34.67

3 – 4

8 52 104.6

163.0 58.4

286.0

340.5 5~~3~~4.5

894.1 11~~1~~2.9

223.52 ~~27.97~~ 28.22

Feb. 2, 1878

8 3^{m} Zero Phot I P.

99.9 99.84

0.1 +.16

99.7

99.7

99.8

8^{2} $\frac{499.2}{99.84}$

5^{m} 99.6

00.0

0,3

Feb. 2/1878

δ' Orionis P. obs. Photometer H.

		1 — 2		
9	0	110.6	50.6	
		161.2		
		290.4	47.0	
		337.4		
		899.6	97.6	
		224.90	24.40	
		1 — 3		
9	3	107.9	48.8	
		156.7		
		290.4	48.3	
		338.7		
		893.9	97.1	
		223.4~~7~~2	24.27	
		1 — 4		
9	5	117.9	30.7	
		148.6		
		298.4	31.9	
		330.3		
		895.2	62.6	
		223.80	15.65	
		2 — 3		
9	7	355.6	92°.0	3 disappears (pos. angle 120° from 2)
		87.6		
		179.3	91.3	
		270.6		
		893.1	183.3	
		223.27	45.82	

5 Feb. 2, 1878

2 — 4

9 10 103.9 61.8
165.7
280.2 66.7
346.9
896.7 128.5
224.17 32.12

3 — 4

9 14 103.4 60.1
163.5
280.4 60.9
341.3
888.6 121.0
222.15 30.25

σ Orionis P. obs. It has 3 companions

	Pos. angles.	Distances
a	50°	30"
b	70°	11"
c	237°	11"

c is the companion given in the catalogue.

σ Orionis & c

9 32 127.7 10.0
137.7
310.6 8.8
319.4
895.4 18.8
223.85 4.70

Feb. 2, 1878

σ Orionis & c   Other diagonal

9 35   38.8   11.8
50.6
219.9   9.1
229.0
538.3   20.9
134.57   5.22

σ Orionis & b

9 37   119.1   29.2
148.3
299.7   28.4
328.4
895.2   57.6
223.80   14.40

9 39   31.1   Other diagonal
57.5   26.4
208.8   28.4
237.2
534.6   54.8
133.65   13.70

σ Orionis & a

9 41   29.2   28.1
57.3
207.9   29.9
237.8
532.2   58.0
133.05   14.50

Feb. 2, 1878

σ Orionis & a. Other diagonal

9 43 116.6
31.1
147.7
294.8
34.3
329.1
888.2 65.4
222.05 16.35

9 44 σ Orionis & a Sch.
117.9
31.8
149.7
294.0
33.0
327.0
888.6 64.8
9 46 222.15 16.20
σ Orionis & a Sch
27.9
29.2
57.1
208.9
27.1
236.0
529.9 56.3
132.47 14.07
9 50 c not seen
being under

Feb. 2, 1878

9 58. σ Orionis d b.

27.3 29.9
57.2
209.3 29.6
238.9
532.7 59.5
133.17 14.87

10.01 other diag. b.

116.1 33.0
149.1
299.2 29.2
328.4
892.8 62.2
223.40 15.55

10.03 C ~~attempted~~

128.8 8.8
137.6
309.4 10.2
319.6
895.4 19.0
223.85 4.75

10.7 39.3 8.8 ~~8.4~~ very bad in both pos.
48.1
220.2 8.6
228.8
536.4 17.4
134.10 4.35

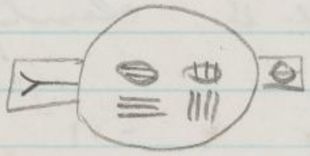
Feb 3d 1877 23.40 Accuracy of setting 2 threads at R.A. One thread attached to Meridian band & other to Phot. B. Lamplight reflected from mirror.

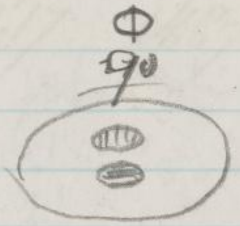
49.2	50	−.8	−1.1
48.4	45	+3.4	+3.1
41.2		−1.2	−1.5
34.7	35	−.3	−.6
32.6	30	+2.6	+2.3
27.4		+2.4	+2.1
17.5	20	−2.5	−2.8
11.0		−4.0	−4.3
5.2		+.2	−.1
3.2		+3.2	+2.9
		+1.14 −.88	20.8

Mean dev. = ± 2.08 div. = 30"

(app) The progressive change is apparently due to the motion of the Sun. Regarding it as uniform and five div. each time gives second column. 3d col = 1st 2d setting = 3d −.3. Hence mean deviation equals only about half a minute. There is a great deal of stray light in the field and image is very bad

Feb 3d. M.W.S., 1878 Dome opened at 6 P.M.





Snow and ice interfered with moving dome and had to be removed before observations.

Photometer H.

	θ Eridani	P. obs.		
6 40	20.2		30.4	+.8
	139.4	600	30.4	+.8
	199.4		29.6	−.4
	220.2	600	296	−.4
				.4
	679.2	120.0		
	169.80	30.00		
6 43	24.1	S. obs.	333	+8
	138.6	63.8	32.2	−3
	202.4		31.6	−9
	318.0	66.1	32.8	+3
	683.1	129.9		23
	170.77	32.47		.57

Feb. 3, 1878

θ Eridani P. obs. Other diagonal

6	46	43.0	68.8	35.6	+2.0
		111.8	~~72.8~~	332	- .4
		227.1	65.5	31.5	-2.1
		292.6		34.0	+ .4
		674.5	134.3		49
		168.62	33.57		1.22

S obs

6	48	485	62.1	32.2	+ 2.6
		1106		29.9	+ 3
		233.7	56.4	29.0	- 6
		290.1		27.2	- 24
		682.9	118.5		59
		170.72	29.62		1.67

6 52 f Eridani P. obs. * at 200 [illegible]

24.1	
129.2	81.2
210.4	
309.4	74.7
673.1	155.9
168.27	38.97

6 54 S obs

22.6	
135.0	69.9
204.9	
312.0	70.6
674.5	140.5
168.62	35.12

Feb. 3, 1878

f Eridani P. obs. Other diagonal.

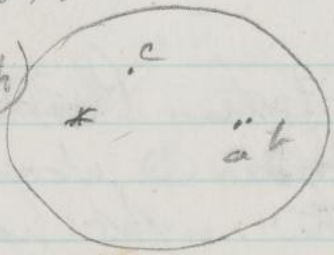
6 56 41.2
117.4 76.2
218.2 79.3 ~~78.7~~
297.5
674.3 155.6
168.57 38.87
7.0 Sdo.
44.9 67.6
112.5
222.9 74.0 74.0
296.9
677.2 141.6
169.30 35.40

7 42 39 Eridani.

69.5 17.1
86.6
252.6 17.6
270.2
678.9 34.7
169.72 8.67
7 340.1 21.3
361.4
158.0 21.8
179.8
679.3 43.1
169.82 10.77

Feb. 3, 1878

40 o² Eridani & c (see sketch)



8 02 Rdgs Abst I

3.23 2.658
1.84
2.44
2.76
2.98
13.29

40 Eridani & b (see sketch)

8 6 5.19 4.130
3.82
4.31
3.45
3.84
20.66

*b a 110 ab 135° a–b 6" Sdgs.

8 12 Sdgs c

3.32 2.552
2.06
2.41
2.55
2.42
12.76

b

8 20

3.95 18.92
3.71 3.784
3.67
3.90
6 3.69

Feb. 3, 1878

γ Ceti Photometer H: P. obs.
Index Q above. At the first reading
the right hand upper star is bright.

8 35 5.1 149.3
62.6 ~~144.4~~
~~149.5~~ 245.3
326.2

Began again.

8 39 8.8 59.4 34.4
146.3 46.3 93.8
192.6 240.1 36.4
328.2 40.6 276.5
675.9 86.9 669.8 : 70.8
168.97 21.72 167.45 17.70

Index V above
Bright star below at first reading
NE & S.W diagonal
3.6 58.2 37.5
150.3 36.7 95.7
187.0 239.4 38.6
325.4 278.0
666.3 38.2 74.9 671.3 76.1
166.57 18.72 167.82 19.02

images in second column more distinct than those in first

8 44 S. obs. V above
NE & SW. diag.

669.6
167.40

269.8
275.0
544.8
272.40
242.7
29.7

3.8 59.7 35.1 35.1
151.8 28.0 94.8
179.8 242.7 ~~242.7~~ 272.40 27.1 ~~26.9~~ 29.7 32.3
328.2 35.6 269.8 64.8
663.6 63.6 16.40
165.90 15.90

29.7 = difference obtained by subtracting 242.7 from mean of 269.8 and 275.0

Feb. 3, 1878

On looking again I find lowest reading of last set. too small, setting again gives 275.0 Φ above

	NW & SE			
8 59	3.6		61.2	31.3
	151.8	34.1	92.5	
	185.9	33.6	236.7	41.2
	330.0		277.9	
	671.3	67.7	668.3	72.5
	167.82	16.92	167.07	18.12

Photometer J

α Tauri & companion P.obs.

9 18 0.59
0.65
0.68
0.65
0.70
.327
0.654

Limit of visibility of reflected image of α Tauri.

0.47
0.47
0.49
0.47
0.45
.35
0.470

Feb. 3, 1878

Regulus & Titania P. obs.

9 45 0.58 235
0.47 0.470
0.45
0.46
0.39

235
0.470

Uranus & Titania

9 49 3.07
3.37
2.37
3.07
3.27

15 15
3.030

Regulus & Oberon

9 55 0.65
0.51
0.55
0.52
0.54

277
0.554

Counterpoise thought perhaps to cut off view through prism; took another setting with the prism differently placed, but obtained 0.52

Uranus & Oberon

9 58 342
3.37 232
3.70 3.464
3.32
3.51

Pos. angles from Uranus
Titania 350°
Oberon 180°

Feb. 6th, 1878. Opened Dome at 3.15

Inserted cylindrical lens and to change [illegible] into a luminous line and compare with ~~[illegible]~~ Airy.

Photometer H.

θ Eridani P. obs.

5 50	18.4			
	139.4	54.9	27.4	-2.1
	194.3		27.5	-2.0
	315.2	63.2	31.6	+2.1
	667.3	118.1	31.6	+2.1
	166.82	29.52		83
				2.07
5 53	23.0	S. obs.	34.0	-4
	135.1	68.8	33.9	-5
	203.9		34.9	+5
	314.2	68.8	34.8	+4
	676.2	137.6		18
	169.05	34.40 P		.45
5 57	41.8	65.2	33.2	+1.4
	107.0	~~76~~	32.0	+ .2
	224.6	62.0	30.4	-1.4
	286.6		31.6	- .2
	660.0	127.2		32
	165.00	31.80 S		.80
5 59	48.4	59.0	30.3	+1.3
	107.8		28.7	- .3
	231.4	56.9	27.7	-1.3
	288.3		29.2	+ .2
	676.3	115.9		31
	169.07	28.97		.77

Feb. 4, 1878

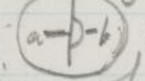
Photometer H

f Eridani P. obs.

6	8	28.1		Star at 20° (the brightest) disappears after second ~~first~~ reading.
		130.7	76.0	
		206.7		
		312.2	75.9	
		677.7	151.9	
		169.42	37.97	
			S. obs.	Star at 20 dis.
6	9	27.8		Sat at 200° dis.
		130.8	74.5	
		205.3		
		308.0	79.8	
		671.9	154.3	
		167.97	38.57	
			P. obs.	
6	15	40.8	69.5	
		110.6		
		223.0	69.2	
		292.2		
		666.6	139.0	
		166.65	34.75	
6	16	42.2	70.0	S obs.
		112.2		
		220.6		
		296.5	75.9	
		671.5	145.9	
		167.87	36.47	

Feb 4 1878

Photometer I with cylindrical lens. Saturn. Very difficult to compare ring with artif. line since prism is so short. Ansa believed to be too faint, since it disappears close to Saturn while ring remains visible

6 37 S. Prism turned so that the line of light extended from the edge of the prism to about the middle of the prism only: Saturn about $\frac{2}{3}$ covered by the prism; thus  a is the visible end of the line of light; b is the ansa of the ring.

5.71
5.96
5.76
5.80
6.09 29.32
5.864

6.52 5.69 U. obs.
5.28
5.49 Planet almost wholly concealed
5.61 Prism same as in preceding obs.
5.25 27.32
5.464

μ Cygni P. Obs

7.18 3.03 Object faint & low
3.51
3.70
3.30
3.21 16.75
3.350

Feb. 4, 1878

7.21 μ Cygni Cl obs

3.56
3.80
3.29
3.42
[2.03] rej. shutter cuts off.

$\frac{14.07}{3.518}$

3.5~~25~~18

7 47 θ Ceti P obs.

1.16
1.04
1.20
1.08
1.18

1.132

7 52 · U obs.

1.25
1.15
1.23
1.23
1.14

1.200

Searched for Neptune's satellite. U. thought he saw at intervals something at a pos. angle of about ~~150~~ 135° from Neptune, but not well enough to measure it. P. and S. saw nothing certainly. P. thought he saw something at about 90° but too far off, δ Androm. Feb. 4, 1878

8 42 2.36 P obs

2.45

2.40

2.45

2.61

2.454

S obs

8 47 2.16

2.23

2.11

2.07

1.93

10.50

2.100

8 54 2.39 U. obs.

2.59 Companion thought to be reddish.

2.44

2.22

2.28

2.384 Reddish color not confirmed by S or P.

Uranus Sat.

Oberon

9 12 ~~Titania~~ & Regulus P obs

~~0.58~~

0.56

0.55

0.49

0.62

0.48 0.538

9 15 ~~Titania~~ Oberon & Uranus Polo Feb. 4, 1878

3.94
3.07 *
2.90
3.29
3.43
3.326

3326

9 30 ~~Oberon~~ Oberon Regulus

0.47
.40
.43
.45
.42
47

.434

9 39 Oberon Uranus Ang 170°

2.33
2.63
2.19
2.38
2.34
147

2374

* 10° less angle dist 3 times as great

Feb. 4, 1878

9 56 Oberon & Regulus 5 obs

0.46

.44 .442

.45

.47

.39

24

10 10 2.22

2.42 6)2.68 Oberon & Uranus

.447 ~~2.406~~

2.31 2.447

2.60

2.48

12.03

2.65

6)14.68

2.447

Angle 160-170°

2.65

2.68

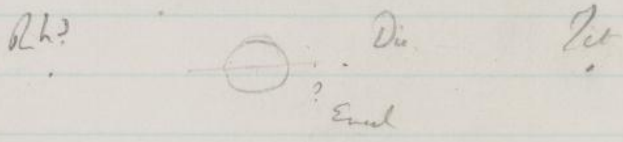
Closed at 10 20

Feb 5th 1878 Opened Dome at 3 Ph

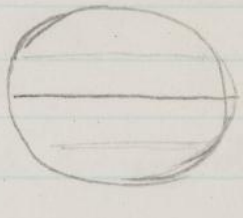
θ Eridani P dis

555 17.0 31.3
79.1 62.1 308
198.2 30.1
259.1 60.9 30.8
30.75
553.4 123.0
138.35 30.75
106.8 62.8 1.3 +.8
169.6 1.5 +1.0
288.4 59.2 9.7 −.8
347.6 9.5 1.0
3.6
.90
912.4 122.0
228.10 30.50

Saturn. Ring seen clearly; one satellite (Enceladus?) near following ansa; another (Dione or Rhea) just beyond.



Faint dusky band on northern half still fainter band on southern.



S. sees ring on both sides of planet; also the two belts. Thinks the small satellite may be a part of the ring itself.

ι Ceti P obs Feb. 5, 1878

6 43 2,14
2,16
2.29
2.32
2.52

2,286

S obs

6.50 3.41
2.91
2,65
2,34
3,02

2,866

7 0 3,48 U obs
3,16
3,43
2,15
2,58

2.960

7 17 θ Ceti P obs
1.37
1.19 1,346
1.48
1.48
1.21

173
1.346

Feb 5, 1878

o Ceti.

U obs

7 24 1.45
1.63
1.40
1.48
1.54

1.500

γ Pegasi P ob

Fainter Comp (b)

7 33 1.38
1.58
1.38
1.51
1.39

1.448

Brighter Comp (a)

2.18 2.022
2.00
2.13
1.76
2.04

11

Feb. 5, 1878

7 38 U fol. cusp. (b)

0.80

0.72 .834

0.84

0.92

0.89

417

U obs. br. cusp (a)

7 45 1.43 1.240

1.22

1.14

1.38

1.03

120

7 53	Phot H	U obs	v Ceti
	40.5	13.8	
	54.3		
	223.4	10.8	
	234.2		
	552.4	24.6	
	138.10	6.15	
7 56	132.3	12.2	
	144.5		
	310.5		
	323.5	13.0	
	910.8	25.2	
	227.70	6.30	

Feb. 5, 1878

809 Looked at Neptune satellite not seen by P.

194° 38' Reading of Circle
11 30

No Satellite seen by W. S had a suspicion of one in the right place but could not make sure of it

Two small stars in a line from Neptune and to the north of it visible in smallest finder.

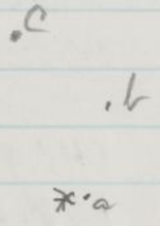
Sirius & star south of it (pos. angle 159°) }
Photometer } P. obs.

8 53 0.54 }
0.50 } reject; read wrong, perhaps
0.54 }

0.54 0.540 C
0.52
0.51
0.62
0.51
20

Feb. 5, 1878

Sirius & star south following (pos. angle 115°)



8 57 0.33 P. obs.
0.24
0.28 .288 b
0.32
0.27
44

9 00 Star at 115° S. obs.
.25
.28 .260 b
.26
.25
.26
30

Star c
9 09 .46 0.450
.39
.43
.45
.52
225

Photometer H Feb. 5, 1878

Sirius & companion north following

9 25 ~~140.0 reject~~

141.9 } 1.5 P. obs. { Index φ to the left
140.4 }
14.099 Reduced image above companion.
141.6 } 1.3
140.3 }
141.6 } 1.3 Bright image out of field
140.3 }
141.7
141.7) -1.5
140.2) -1.5
140.2
7.1
99 0.71

9 210 228.3 } 0.4 Index V to the left..
227.9 } Reduced image below companion.
456.2
228.10

Other diagonal.

Bright image out of field.

Reduced image does not wholly disappear, and perhaps never becomes as faint as the companion. This set therefore given up.

Feb. 6, 1878

6 0 P. looked at α Can. Maj. & at β Orionis with Photometer J. Companion of Sirius suspected. Reflected image of Sirius bright enough for use as a star of comparison, but that of Rigel too faint!

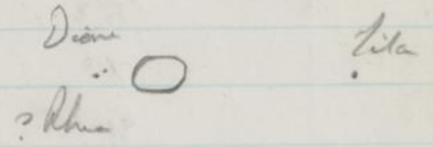
Photometer J

	β Orion.	P. obs.	Mitchell Comp.
6 22	0.62	.630	
	0.78		
	0.55		
	0.64		
	0.56		
	3.15		

6 27 0.45 / .39 } 0.42

Cloudy. limit of visib of artif star 1.09

6 40 Viewed Saturn very low near cloud being near



Rhea not seen although seen through two preceding satellites looked like it at first.

Feb. 6, 1878

[7 0±] γ Cassiop. 5 obs

0.85 P 10°
0.65 D 3′
0.87
0.67
0.78
0.764

Diam. of field found by transit of this star
$\frac{1}{2}$ field = 41^s
∴ as $\delta = 58^0$ $\frac{1}{2}D = 20^s$
$D = 40^s = 10'$

0.81 P 355
0.65 D 4′
0.83
0.81
0.70
0.760

1.13 P 340
0.90 D 40″
0.99 .982
0.88
1.07
491

Last comp. only 4 obs

7 m 0.94
.88
.76
.92
.86
0.872

Feb. 6, 1878

0.88 Pols
0.86
0.92
0.88
0.95
0.898

γ Cephei Pols
Comp a P 90° D 4'
b P 180 D 1'.5 faint
c P 270 D 4'
d P 275 D 4'.5
e P 290 D 3 3/4' as d and e
b (Also 5 more at about same distance)

2.41
1.92 1.712
1,537 1.58
1.36 reject light cut-off from
1.29 prism by [illegible] counterpoise
215 356

any 90° 180° 1' only.
U obs.
1.48 1.600
1.47
1.86
1.51
1.68
300

Feb. 6, 1878

Looked at α Cass. [illegible] too bright to measure

Phot H

η Cass.

129.2
149.1 19.9
309.1
328.3 19.2
916.7 39.1
228.92 9.77

br star blue
ft " yellow

comp. dusky clear ~~white~~ bluish

U obs

8.02 133.0
143.5 10.5
310.4
323.3 12.9
910.2 23.4
8.07 227.55 5.85
β

39.6
61.1 21.5
219.8
239.6 19.8
560.1 41.3
140.02 10.32

8.14 41.8
59.3 17.5 U obs,
220.5
236.3 15.8
557.9 33.3
139.47 8.32

S obs Feb. 6, 1878

8 18 40.3
59.9 19.6 Comp. slightly orange
218.1 Star pale yellow
239.5 21.4
557.8 41.0
139.45 10.25
126.5
148.9 22.4
307.8
332.0 24.2
915.2 46.6
228.80 11.65

8 30 α Cassiop
133.0
139.3 6.3
315.4
321.2 5.8
908.9 12.1
227.21 3.02

8 37 44.0
48.8 4.8
225.8
231.0 5.2
549.6 10.0
137.40 2.50

8 43 44.5 U. obs.
50.0 5.5
224.0
229.8 5.8
548.3 11.3
137.07 2.82

Feb. 6, 1878

α Cassiop. continued. U. obs.

8 47 135.3
140.5 5.2
313.0
318.4 5.4
9072 10.6
226.80 2.65

A.G.C. called and tested [illegible] striae in glass.

Looked at Neptune and saw satellite with higher power (achromatic). Seen with difficulty if at all with low power.

Looked at α Tauri. Comp. seen by A. S.

Prism fell and broke

6

1878, Feb. 6, Morning

Measures of holes No 8 & No. 9

No. 9	No. 8	Mir. Plate	
17.2	26.7	66.0	66.1
17.7	26.8	66.1	6.0
17.3	26.8	65.9	5.9
17.3	27.0	66.0	6.3
17.6	26.9	65.9	6.1
17.2	27.0	66.0	6.1
17.2	26.8	65.8	6.2
17.6	26.8	66.0	6.0
17.2	27.0	65.9	6.0
17.0	27.0	65.9	6.3
33	688	595	10
17.33	26.88	65.95	66.10

The notch or horn on No 9 has certainly become more marked than at first — N.A.K.

Feb. 7th 1878. Dome opened at 4.30

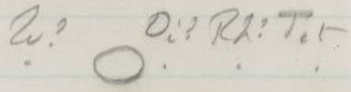
Cond. of Satel I by sky. ap 5"

544 1.74
1.96
1.96
1.87
1.87
1.880

1.99
1.81
1.89
1.99
1.91
547 1.918

Replaced broken slide by a smaller R.A. slide and arranged higher power eyepiece to find Satel I.

6 03 Looked at Venus and Saturn
Neither P. nor S. saw anything of the ring.



Looked at μ Cygni. Companion not seen well enough to measure.

Feb. 7, 1878

ν Ceti Photometer J

6 34 2.39 P. obs.
2.18 2.300
2.10
2.51
2.32
150
2.300

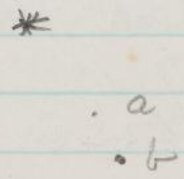
6 36
1.92 S. obs.
1.84
1.78
1.67
1.85
406
1.812

6 47 2.16 U. obs.
1.93
2.17
1.84
2.13
2.046

6 55 Looked at Saturn. S. saw less detail than before. Nothing seen of ring by either S. or U. Satellites noticed by U. as in sketch on last page.
Looked at μ Cygni — too low.

Feb. 7, 1878

b η Cephei P obs



7 17 2.01
2.29
2.46
1.82
1.80
2.076

7 20 a Pobs
1.08
1.77 Too bright on second look
1.13
1.18
1.13
1.258

7 26 a U obs
0.98
1.14
1.09
1.12
1.10
1.086

U estimates
a Dist 70"
b " 110"
Pos. Ang 30°
Another companion about 3'.5 nearly in same line and of equal brightness with b

7 33 2.38 b
2.34
2.21
2.00
2.51
2.296

Feb. 7, 1878

γ Cephei P obs

7 46 1.48 Comp. b v. p. 145

1.53

1.44

1.60

1.55

1.520

7 48 1.45 W ob.

1.63

1.55

1.59

1.71

1.586

γ Cassiopeiae

Comp. about 340 40" P

8 05 [1.92] rej. too bright.

---

8 12 1.55 S obs

1.22

1.32

1.38

1.25

~~1.572~~

4

1.3~~2~~4

8 23 1.34 W. obs.

1.23 1.238

1.31

1.23

1.08

Feb. 7, 1878

γ Cass. continued. P. obs.

8 27 1.36
1.40
1.25
1.30
1.37
168
1.336

Afterwards worked at Neptune. Satellite not seen by P. or S.

α Tauri & distant companion

8 53 1.15 P. obs.
1.11
0.97
1.03
1.04
1.060

1.28 S Ob
1.12 1.150
1.17
1.09
1.09

bright clamp 45° - 50°

9 02 u Ds.
1.08
1.13
1.10
1.16
1.02
.49
1.098

Faint companion not seen by either observer.

Regulus & Titania

9 36 0.56 P. obs.

0.59

0.60

0.68

0.75

318

0.636

Uranus & Titania

9 39 3.58

4.27 3.800

3.70

3.30

4.15

400

3.800

9 43 2.95 U obs.

3.54 3.304

3.91

2.98

3.14

152

3.304

U do. Titania Regulus

9 51 .52

.56 .516

.50

.50

.50

.516

Feb. 7, 1878

Titania & Regulus S obs

9 56 [0.43] rej. focus poor

10 0 0.47

,54

,53

,55

,58

,534

10 5 Titania & Uranus

3,32 3,002

3,01

2,79

2,62

3,27

501

10 46 Eva (164) ad. β Aurigae U obs Phot I.

.67

.46

.42

.44

53

504

0.61 P obs

59

,61

,60

,67

.61~~8~~6

11 9 U obs Feb. 7 1878 & Feb. 11

.63
.56
.61
[.75] artif looks too bright reject
.64
.55
299
0,5998

0.80 bright but obs do not reject.
.61
.58 .640
.65
.56
320

1878 Feb. 11

Photometer H Seeing fair at instants; stars often much blurred.

32 Eridani

6 11 20.7 53.6 P. obs.
74.3
200.1 52.8
252.9
548.0 106.4
137.00 26.60
6 12 20.9 48.8 S. obs.
69.7
199.2 55.7
254.9
544.7 104.5
136.17 26.12

Feb. 11, 1878

32 Eridani Other diagonal ρ

6 17 110.8 P. obs.
55.1
165.9
290.3 52.3
342.6

909.6 107.4
227.40 26.85 S

6 19 109.8
55.2
165.0
290.9
55.1
346.0

911.7 110.3
227.92
~~226.42~~ 27.57
~~39 Eridani~~

Σ 655 Leporis

6 30 128.6 P. obs.
14.6
143.2
309.4
13.4
322.8
904.0 28.0
226.00 7.00

6 35 130.0 S obs
12.8
142.8
309.9 14.2
324.1
906.8 27.0
226.70 6.75

6 38 393 ρ obs
52.7 13.4
~~39.3~~
219.3
14.8
234.1
545.4 28.2
136.35 7.05

Sobs Feb. 11, 1878

6 42 40.0
13.8
53.8

220.2 13.3
233.5

547.5 27.1
136.87 6.77

6 50 40.5 U. obs.
11.8
52.3

221.3 11.9
233.2

547.3 23.7
136.82 5.92

6 54 130.1
13.5
143.6

308.5
1~~4~~3.5
322.0

904.2 27.0
6.75
226.05 40 Eridani

It is doubtful if star ob-served is really 39 Erid, as on moving ~~the telescope~~ 2 3/4° North, Rigel was in the field of ~~the~~ small finder.

7 13 39.8 R Obs
9.9
49.7

Fainter companion not seen

220.6 9.5
230.1

540.2 19.4
135.05 4.85 U obs

7 16 39.3
9.5
48.8

220.5
8.9
229.4

538.0 18.4
134.50 4.60

P. Obs Feb. 11, 1878

7 19 130.2
140.3 10.1
309.5 8.0
317.5
897.5 18.1
224.~~87~~37 4.52 U. obs.
7 22 129.8 10.7 images looks brighter
140.5 than on last set by U
308.5 11.0
319.5
898.3 21.7
224.57 5.42
7 35 655 before P obs.
39.4 11.3
50.7 11.8
219.8
231.6
541.5 23.1
135.37 5.77
7 38 219.0 U obs
229.8 10.2
40.4
51.4 11.0
541.2 21.2
135.30 5.30
7 43 129.8 U obs
142.6 12.8
308.4
321.6 13.2
902.4 26.0
225.60 6.50

P Ob Feb. 11, 1878

7 47 129.7
142.2 12.5

309.1 12.9
322.0

903.0 25.4
225.75 6.35

7 55 ~~43.0~~ B Orionis U Ob

~~42.8~~

223.3
229.8 6.5

42.4 7.1
49.5

545.0 13.6
136.25 3.40 U Ob

8 02 313.3
320.4 7.1

132.3 7.32
139.5

905.~~4~~5 14.~~4~~3 P Ob
226.3~~5~~7 3.~~60~~57

8 7 131.3
139.3 8.0

312.5
320.6 8.1

903.7 16.1
225.92 4.02 Ob.

42.4
49.6 7.2

222.5
231.4 8.9

545.9 16.1

136.47 4.02

Looked for 39 Eridani to verify former observation, but not finding it readily, postponed the verification ρ Orionis 8 obs Feb. 11, 1878

8 35 35.9
 18.1
 54.0

 217.8
 19.0
 236.8
 544.5 37.1
 136.12 9.27 S obs.
 128.0
 18.0
 146.0
 308.1
 16.9
 325.0
 907.1 34.9
 226.77 8.72

8 41 126.4
 17.5 U. obs.
 143.9
 306.8
 18.5
 325.3
 902.4 36.0
 225.60 9.00

8 46 (36.0) reject; focus altered U obs by pushing in circle.
 35.5
 19.3
 54.8
 217.3
 17.4
 234.7
 542.3 36.7
 135.57 9.17

23 Orionis images c̄ line

8 56 20.8
 48.3 U. obs.
 69.1
 200.6
 47.8
 248.4
 538.9 96.1
 134.72 24.02

Feb. 11, 1878

8	59	106.5	U obs.	Seeing very bad
		160.9	54.4	
		289.1	49.3	
		338.4		
		894.9	103.7	
		223.72	25.92	
			S. obs.	Images in rhombus
9	04	112.4	43.2	
		155.6		
		293.3	42.7	
		336.0		
		897.3	85.9	
		224.32	21.47	S obs.
9	07	203.8	41.4	
		245.2		
		27.0	36.8	
		63.8		
		539.8	78.2	
		134.95	19.55	
		δ Orionis	P obs.	
9	10	38.9	12.5	
		51.4		
		217.1	14.4	
		231.5		
		538.9	26.9	
		134.72	6.72	

Feb. 11, 1878

		S.obs		
9	13	38.8	6	
		216.4	1~~5~~4.6	
		231.0		
		53.1	14.3	
		539.3	28.9	
		134.82	7.22	
9	17	127.4	P.obs.	
		141.2	13.8	
		307.9		
		321.6	13.7	
		898.1	27.5	
		224.52	6.87	S.obs
9	20	126.9	14.5	
		141.4		
		308.8	13.2	
		322.0		
		899.1	27.7	
		224.77	6.92	
		θ² Orionis		
9	24	106.9	56.5	P.obs.
		163.4		
		288.3	55.6	
		343.9		
		902.5	112.1	
		225.62	28.02	S.obs.
9	27	107.2	52.5	
		159.7		
		269.4	51.6	
		341.0	104.1	
		897.3		
		224.32	26.02	

Feb. 11, 1878

9 29 17.6 P. obs.
71.4 53.8
198.6
253.7 54.9
541.5 108.7
135.37 27.17 S obs.
9 32 20.7 49.6
70.3
197.4
249.9 52.5
538.3 102.1
134.57 25.52
v Orionis
9 35 99.4 P. obs.
168.6 69.2
281.4 66.2
347.6
897.0 135.4
224.25 33.85 S Ob
9 38 100.3 64.5
164.8
283.3 59.2
342.5
890.9 123.7
222.72 30.92
9 40 10.7 P Ob
74.8 64.1
192.0 63.7
255.7
533.2 127.8
133.30 31.95

S obs Feb. 11, 1878

9 43 13.9
75.4 61.5
189.3
255.0 65.7

533.6 127.2
133.40 31.80

9 46 8.6 U. obs.
76.8 68.2
192.8
255.4 62.6

533.6 130.8
133.40 32.70
345.0 U. obs.
99.6
164.8 62.2
278.6
66.4
885.0 128.6
221.25 32.15

Measures of holes 8 and 9 Feb. 13 1878

No. 8	No. 9		
26.8	17.5	65.4	6.1
7.2	17.7	6.1	6.0
6.9	17.6	6.0	5.7
6.7	18.0	6.2	6.1
6.9	17.5	6.0	6.0
6.7	17.6	6.0	6.0
6.8	17.7	6.0	6.1
6.9	17.8	6.1	6.0
6.8	17.8	6.0	6.0
6.7	17.9	6.0	6.1
6.84	17.710	65.9~~6~~8	66.0~~2~~2

26.840

The rift of a
appears for the first time

The plate may have ~~the~~ been put in since the focal opposite to the former position

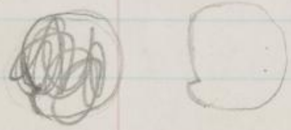
Exposed plate to high temperature for 1 hr by placing it on the stone.

Measures following on next page.

Measures of holes 8 + 9   1878, Feb. 13

8

27.0	17.3
27.2	17.4
27.0	17.6
27.0	17.7
27.2	17.4
27.0	17.8
27.1	17.5
27.0	17.5
26.8	17.3
27.0	17.4
3	49
27.030	17.490



No change in appearance

Right less elongated.

Feb. 13, 187~~7~~8

Mr. R. J. Paine visited Observatory. Showed him Saturn. Planet visible at times about $6^h\frac{3}{4}$ among clouds. Ring not visible at 9 o'clock. Afterwards cloudy! Cleared off later. Seeing pretty good.

9 30 ρ Orionis S obs

39.8
18.2
58.0

222.0
18.3
240.3
560.1 36.5
140.02 9.12

132.2 S. obs.
18.5
150.7
308.9
329.6 20.7
921.4 39.2
39.35
~~2[illegible]~~ 9.80

9 36 130.0 U. obs.
149.2 19.2
308.2
20.8
329.0
916.4 40.0
229.10 10.00

9 41 39.5 U. obs.
21.0
60.5

218.7
20.5
239.2
557.9 41.5
139.47 10.37

λ Orionis Feb. 13, 1878

9 51 72.8 S obs Seeing poor.
209.0
250.8 41.8 Images could not be brought close enough
26.1 46.7
558.7 88.5
139.67 22.12
9 55 117.8 S. obs.
158.9 41.1
301.1
338.6 37.5
916.4 78.6
229.10 19.65 U obs
10 1 131.4 Altered position of eye-piece & circle
179.2 47.8
312.5
356.3 43.8
979.4 91.6
244.85 22.90
10 3 43.7 U. obs.
84.8 41.1
222.0
271.4 49.4
621.9 90.5
155.47 22.62

Feb. 14th. 1878. Opened Dome at 5.00 P.m.

5 52 ρ Orionis R obs Not sure this is the right star
Verified & found right.

55.4
73.0 17.6
234.7
252.0 17.3
615.1 34.9
153.77 8.72 S. obs.
5 57 54.9
74.2 19.3
236.0
252.4 16.4
617.5 35.7
154.37 8.92
6 2 145.3 P. obs.
163.8 18.5
323.4
344.6 21.2
977.1 39.7
244.27 9.92
6 4 145.0 S obs
163.0 18.0
326.8
345.8 19.0
980.6 37.0
245.15 9.25

Feb. 14 1878

~~23 [illegible]~~ ~~[illegible]~~ 23 Orionis

6 15 132.0 P. obs.
173.8 41.8
310.3
353.4 45.1
971.5 86.9
242.87 21.72

6 16 132.1 S. obs.
174.5 42.4
314.3
352.5 38.2
973.4 80.6
243.35 20.15

6 21 43.6 P. obs.
78.4 34.8
223.0 40.2
263.2
608.2 75.0
152.05 18.75

6 22 39.1 S obs
80.4 41.3
223.1 42.9
266.0
608.6 84.2
152.15 21.05

~~Feb 14 1878~~

θ orionis #9 Obs P

6 30 33.9 a to b
86.5 52.6
213.1
267.3 54.2
600.8 106.8
150.20 26.70
32.8 a to c
84.7 51.9
216.3
267.3 51.0
601.1 102.9
150.27 25.72
6 34 44.8 a to d
78.3 33.5
223.3
258.2 34.9
604.6 68.4
151.15 17.10
12.6 b to c
104.3 < c disappears
91.7
199.7
284.2 84.5
600.8 176.2.8
150.20 44.05
6 38 b to d
29.9
92.7 62.8
208.8
274.2 65.4
605.6 128.2
151.40 32.05

θ Orionis Feb. 14, 1878

6 40 27.8 61.4 c t d
89.2
209.6 61.5
271.1
597.7 122.9
149.42 30.72

6 45 35.2 a t b 8 obs.
55.8
91.0
216.0
51.3
267.3
609.5 107.1
152.37 26.77

6 48 120.5 60.9 a t c
181.4
305.1
53.2
358.3
965.3 114.1
241.32 28.52

6 51 134.5 a t d
34.3
168.8
317.0 34.0
351.0
971.3 68.3
242.82 17.07

6 55 36 8.3 b t a c disappears -
112.8
77.2
190.0 c disappears
291.8
76.5
602.9 153.7
150.72 38.42

b Ad Feb. 14, 1878

7 00 117.4
69.5
1869
298.0
66.4
364.4
966.7 135.9
241.67 33.97

7 03 1.4 c Ad
122.9
59.0
181.9
304.0
57.4
610.2 116.4
80 152.55 29.10

U ob

7 09 a. b
125.0 Observation abandoned
Seeing very poor

β Orionis
7 18 148.3 8 obs.
6.0
154.3
327.1 5.6
332.7
962.4 11.6
240.60 2.90 U obs.
7 21 148.6
6.0
154.6
327.6
6.2
333.8
964.6 12.2
241.15 3.05

Feb. 14, 1878

7 23 U obs

57.8 5.8
63.6
239.1 6.4
245.5
606.0 12.2
151.50 3.05 P Obs

7 28 58.9
64.7 5.8
238.4
243.8 5.4
605.8 11.2
151.45 2.80

7 35 27.8 a to b U obs δ Orionis
90.8 63.0
210.3
272.2 61.9
601.1 124.9
150.27 31.22

2.4 a to c U. obs.
122.8
177.7 54.9
306.5 55.9
609.4 110.8
152.35 27.70

40.5 a to d U. obs.
79.2 38.7
222.5
261.4 38.9
603.6 77.6
150.90 19.40

b Ac Feb 14, 1878

12.8 c disap U. obs.

104.5 Seeing very poor

193.2 88.7

291.5

602.0 81.3 170.0

150.50 42.50

6.8 b A d U. obs.

118.2 Seeing worse

185.4 67.2

299.7

6~~8~~10.1 67.1 134.3

~~150.02~~ 152.52 33.57

8.00 37.7 c A a U. obs.

98.8 [illegible] 67.1 98.8

207.8

279.2 71.4

617.5 138.5

154.37 34.62

κ Leporis examined. Seeing too poor to measure it.

8 30 θ² Orionis

123.7 U. obs. Seeing still worse than before.

178.5 54.8

306.2

358.0 51.8

966.4 106.6

241.60 26.65

Feb. 14, 1878

δ² Orionis other diagonal

8 35 33.8 U. obs.
85.8 52.0

215.4
268.2 52.8

603.2 104.8
150.80 26.20

σ Orionis & a

8 44 39.6 U. obs.
77.2 37.6
219.1
255.8 36.7

591.7 74.3
147.92 18.57

8 48 130.6 U. obs.
167.3 36.7

310.0
344.8 34.8

952.7 71.5
238.17 17.87

σ Orionis & b

8 52 135.5 U. obs.
165.5 30.0
318.2
344.5 26.3

963.7 56.3
240.92 14.07

Feb. 14, 1878

σ Orionis & b. Other diagonal

8 54 47.0 28.5 U. obs.
75.5

228.2 26.4
254.6

605.3 54.9
151.32 13.72

σ Orionis & c U. obs.

8 59 145.4 8.2
153.6

327.3 8.1
335.4

961.7 16.3
240.42 4.07

9 2 57.0 12.5 U. obs.
69.5

236.5 11.6
248.1

611.1 24.1
152.77 6.02

σ Orionis & c S. obs.

9 10 56.5 8.7
65.2

237.7 8.5
246.2

605.6 17.2
151.40 4.30

Feb. 14, 1878

σ Orionis & c Other diagonal

9 16 145.8 S. obs. Stars seem more
156.7 10.9 symmetrically placed
326.9 than in last set.
338.1 11.2
967.5 22.1
241.87 5.52

σ Orionis & b

9 23 45.2 S. obs.
33.2
78.4
224.8
32.0
256.8
605.2 65.2
151.30 16.30

S. obs.
137.8
27.7
165.5
316.1
29.8
345.9
965.3 57.~~1~~5
241.32 ~~14.42~~ 14.37

σ Orionis & a

9 28 131.6 S. obs.
35.8
167.4
315.1
30.1
345.2
959.3 65.9
239.82 16.47

9 32 41.4 S. obs.
35.4
76.8
222.8
32.1
254.9
595.9 67.5
148.97 16.87

240.6 54 Leonis Feb. 14, 1878

10 0 83.5 42.9 S obs

223.6

42.8

266.4

614.1 ~~594.1~~ 85.7

153.52 ~~148.52~~ 21.42

10 3 134.0 S. obs.

40.8

174.8

310.0

356.0 46.0

974.8 86.8

243.70 21.70

10 8 131.5 U. obs.

~~10~~ 175.2 43.7

310.5

354.5 44.0

971.7 87.7

242.92 21.92

10 12 (43.0) reject (focus altered) U. obs.

42.8

86.2 43.4

221.4 51.1

272.5 ~~49.1~~

622.9 94.5

155.72 23.62

Feb 15th, 1878. Dome opend at 5.45

612 δ Orionis 1st P. obs.

4.7
126.7
178.6 51.9
307.3
57.4
617.3 109.3
6 15 154.32 27.32 1.5 P
356.1
128.5
176.8 48.3
307.2
48.9
968.6 97.2
6 18 242.15 24.30 1.4 P
135.3
164.3 33.0
317.5
348.5 31.0
969.6 64.0
242.40 16.00 2.3 P
6 20 13.2 3 dis.
111.2
196.6 85.4
286.6
86.6
607.6 172.0
151.90 43.00

Feb. 15, 1878

6.24 2 – 4 β
8.3
116.9 66.3
183.2
299.9 68.4
608.3 134.7
152.07 33.67
6.28 1.5 β Images faint
~~[illegible]~~
123.6 57.9
181.5
56.2
305.3
611.9 114.1
6.33 152.97 28.52

Hazy but seeing good rather too light for above object

λ Orionis β
6.40 42.6
84.3 41.6
219.8
263.9 44.1
610.5 85.7
6.43 152.62 21.42 β
312.2
357.6 45.4
130.0
177.1 47.1
976.9 92.5
244.22 23.12

Feb. 15, 1878

6 53 λ Orionis U obs.

127.0
178.5 51.5
309.4
50.6
360.0
974.9 102.1
243.72 25.52

35.6 U obs.
55.1
90.7
219.1
50.9
270.0
615.4 106.0
153.85 26.50

δ Orionis U. obs.

7 23 54.6 Barely seen
68.9 14.3
234.4
249.5 15.1
607.4 29.4
151.85 7.35

143.5 U. obs. Comp. appears brighter
160.6 17.1
322.7 19.6
342.3
969.1 36.7
242.27 9.17

ζ Orionis U. obs.

7 40 45.9 44.6

prism not bring stars any better

90.5
226.0 42.6
268.6
631.0 87.2
157.75 21.80

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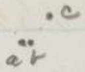
136.8 U. obs.
37.5
174.3
314.8
43.7
358.5
984.4 81.2
246.10 29.30

8 5 α Geminorum
6.4 U. obs.
118.5
67.5
186.0
300.5
65.9
611.4 133.4
152.85 33.35
29.7 U. obs.
65.0
94.7
215.3
62.1
277.4
617.1 127.1
154.27 31.77

ζ Cancri a+b & c



8 35 9.8 U. obs.
125.0
67.3
192.3
304.5
65.3
631.6 132.6
157.90 33.15
8 39 31.6 U. obs.
69.4
101.0
213.8
64.5
278.3
624.7 133.9
156.17 33.47

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Circle reading 345° 7' = 18° 2'
10h 21m 6h 26m = 8h 5m
Must be of [illegible]

8 44 31.0 8 obs
99.5 68.5
217.3
284.6 67.3
632.4 135.8
158.10 33.95

8 48 3.9
124.7
186.0 61.3
298.1 65.8
612.7 127.1
153.17 31.77

7.5 P obs
120.1
186.1 66.0
303.3 64.2
617.0 130.2
154.25 32.55

8 55 31.0
98.2 67.2
207.8
278.7 70.9
615.7 138.1
153.92 34.52

Prism not come close enough to measure a with b. ~~but~~ No reading taken

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ζ Orionis

9 21 41.8 4~~8~~7.3 P. obs.
89.1
223.3 41.6
264.9
619.1 88.9
154.77 22.22
9 26 47.4 38.1 S. obs.
85.5
229.4 36.1
265.5
627.8 74.2
156.95 18.55
9 30 130.6 47.6 P. obs.
178.2
311.4 43.4
354.8
975.0 91.0
243.75 22.75
9 35 131.9 45.8 S. obs
177.7
315.4 44.6
360.0
985.0 90.4
246.25 22.60

ι Orionis

9 45 151.8 P. obs
167.5 15.7
331.8
345.8 14.0
996.9 29.7
249.22 7.42

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U obs.

151.5 14.3
165.8
331.2 15.2
346.4
994.9 29.5
248.72 7.37 U obs
9 47 76.5 15.3
61.2
243.9 12.1
256.0
637.6 27.4
159.40 6.85 P obs
62.4
9 55 75.9 13.5
242.8 14.0
256.8
637.9 27.5
159.47 6.87

σ Orionis & b P. obs. { c not visible through haze.
10 0 50.0 30.4
80.4
230.5
260.0 29.5
620.9 59.9
155.22 14.97
10 5 141.6 P. obs.
171.6 30.0
320.3
352.1 31.8
985.6 61.8 15.45 246.40

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σ Orionis & a

10 7 138.4 P. obs.

34.2

172.6

320.7

27.2

347.9

979.6

~~97[illegible].6~~ 61.4

.90

~~244.65~~ 15.35

10 11 48.3 P. obs.

31.9

80.2

229.2

33.2

262.4

620.1 65.1

155.02 16.27