KG
11366
v.359

June 16, 1899. (Friday.)

Phot. T. χ Cygni W. 6ti.

19 45 · +32.6

8.00 Cloudy. 14 26

8.30 Cloudy. 5 19 Ledgered.

6 41

9.00 Clouds thick. Comp star = DM +32° 3589 (8.0)

Stars invisible

~~Left~~ & Above

I

332.8 ⟨var. dis. 329.3 var dis.

~~9 8 30~~ ~~349.2~~ ~~9 26.3~~ 352.0 22.7

9 26.3 ~~154.6~~ 149.3 25.4 − 3.36

~~170.8~~ 174.7 48.1

−3.38

329.0

353.0 24.0

151.5 23.3 − 3.40

174.8 47.3

~~Right~~ & Below.

238.0

264.8 26.8 − 3.27

60.8 23.3

84.1 50.1

− 3.26

240.3

32.7 265.0 24.7 · 3.24

59.0 58.8 26.1

9 29.5 84.9 50.8 Mean = − 3.32

5 1.0

14 28.5 M. M. Time

June 16, 1899.

Same again.

II

	~~Right~~ Below			
	237.0			
9 35.3	264.7	27.7		
	61.1	23.3	- 3.23	
Clouds thick.	84.4	51.0		
Stars gone.				- 3.22
	239.6			
Clouds.	264.0	24.4	- 3.22	
	59.0	26.8		
	85.8	51.2		
	Above			
	329.4			
	351.6	22.2		
	151.0	23.5	- 3.47	
	174.5	45.7		
				- 3.39
	329.0			
48.2	353.6	24.6		
Cloudy	150.3	24.5	- 3.31	
Stars gone.	174.8	49.1		

8 3.5
9 41.8
5 1.0
14 40.8 G. m. Time.

Mean = - 3.30

June 16, 1899.

Same again.

III

Above

9 58.1 328.0

Clouds 353.3 25.3×

Starsgone 149.6 25.2× −3.25×

174.8 50.5×

−3.34

329.0

352.1 23.1×

151.0 23.3× −3.44×

174.3 46.4×

Below

238.6

265.2 26.6×

59.7 23.7× −3.26

83.4 50.3×

−3.25

239.8

10 05.0 263.9 24.1×

123.1 58.5 26.6× −3.24

10 1.6× 85.1 50.7×

5 −1.0

15 0.6+ Hr.-m. Time.

Mean = −3.30×

June 16, 1899.

Phot. T. Iapetus: W. Obs.

17	7	-21.6
16	7	
1	80	
11	00	

Iapetus ~~fol~~ precedes Saturn 65 secs. and is 3'.5 N. of it.

Left & Above Same comp ✱ used as on the last night.

146.2 ∠ comp ✱ dis. Ledgered

10 24.4 179.6 33.4⁺
327.8 26.4⁺ + 2.87⁺
354.2 59.8⁺

+2.78⁺

146.0
178.7 32.7⁺
325.2 31.6⁺ + 2.70⁺
356.8 64.3⁺

Right & Below

56.5
89.6 33.1⁺
235.6 30.4⁺ + 2.73⁺
266.0 63.5⁺

+ 2.79⁺

57.5
10 30.0 87.3 29.8⁺
15 26.2 G/2 h.T. 235.0 30.2⁺ + 2.86⁺
265.2 60.0⁺

Mean = + 2.78

June 16, 1899

(Iapetus.) Same again

Right & Below

~~57.~~56.5
10 32.0 89.0 32.5×
236.3 28.7× +2.80×
265.0 61.5×

+2.76×

56.8
89.0 32.2×
233.6 31.6× +2.72×
265.2 63.8×

Left & Above

324.0
357.0 33.0×
145.6 33.4× +2.63
179.0 66.4×

+2.68×

~~347~~ 145.0
~~35.4~~ 356.0 179.8 34.8×
39.3 28.9× +2.73
326.6 63.7×
15 34.6 Gr. M.T. 355.5

Mean = −2.72×

In order to take Iapetus it was necessary to put Saturn at extreme edge of field & a little outside so that Iap. which was near Saturn was considerably out of centre of field.

June 16, 1899.

Titan

Above Ledgered.

299.0 < comp. ✻ dia.

10 42.2 21.2 82.2^x

126.0 68.6^x $+0.56^x$

194.6 150.8^x

$+0.55^x$

306.0

14.8 68.8^x

120.0 83.0^x $+0.54^x$

203.0 151.8^x

Below.

210.0

295.0 85.0^x

36.5 68.5^x $+0.51^x$

105.3 153.5

$+0.43^x$

214.6

10 47.0 288.1 73.5^x

26.5 88.0^x $+0.35^x$

10 44.6 114.5 161.5^x

5 1.0

15 43.6 G.M.T.

mean $= +0.49^x$

June 16, 1899

Titan again.

Below

208.6

10 48.3 295.6 87.0×

35.0 71.2× +0.42×

~~106~~ 158.2×

106.2

+0.45×

216.2

285.6 69.4×

28.4 85.4× +0.48×

113.8 154.8×

Above

117.7

203.0 85.3×

306.5 69.3× +0.49×

15.8 154.6×

+0.52×

125.7

10 54.0 199.0 73.3× +0.54×

302.0 78.7×

102.3× 20.7 152.0×

10 51.2

5 -1.0

15 50.2× Gr. M. T.

Mean = +0.48×

June 16, 1899

W Virginis.

Phot. 7. 13 16 −4.2
16 54 W. Obs.
3 38

Right & Below
~~60.~~ 59.5 < comp. + dis.
11 258 83.3
239.8
265.3

58.6
84.8
239.2
265.0
Left & Above
329.1
353.2
140.1
174.7

11 35. Too cloudy to continue.

18 39 { H.A. Reads + $4^h 12^m$
Decl. " ~~−3.7~~ $-3^\circ.1$
Sid. Time $18^h 34^m$

June 16 &99

Arnold & Kent.		Bond 394	
11 46	57.5	1146	00
11 47	57.5	1147	00

June 17. 1899. Saturday

Mme Ceraski's Algol Variable

20 8 +46.3 20 8 +46.3
13 48 13.45
6 20 6 23
5 40 5 37

Phot P.
W. obs.

Left & Above

Ledgered

322.0 < comp star, dis.

I

8 33 40 1.3
Clouds 143.6 39.3+
38.4+
182.0 77.7+ +2.26+

322.5 +2.26+
44 50 359.5 ! 36.6+
140.5 41.3+ +2.26+
181.8 77.9+

4823.5728+
4819.0377+✓
+4.5351+

Right & Below
232.1
49 15 270.6 38.0+
52.3 39.9+ +2.24+
92.2 78.4+

+2.24+

232.6
51 25 270.3 37.7+ +2.23+
179 10 51.8 41.0+
8 44 48 92.8 78.7+
13 44 48+ Gr. M. Time.

Mean +2.25+

June 17. 1899.

Observations in prec. group very difficult.

II

Right & Below

231.1
8 54 25 272.3 41.2 +
52.5 38.6 + +2.20 ×
91.1 79.8 +

+2.18 ×

230.8
8 06 05 271.3 40.5 - + +2.16 ×
50.6 40.6 +
91.2 81.1 +

Left & above

143.2
8 58 00 158.0 39.8 +
322.8 39.6 + +2.21 ×
1.8 79.4 +

+2.22 ×

142.0 ~~144~~.0
9 00 10 182.2 40.2 +
228 40 + 322.4 39.0 + +2.22 +
13 57 10 h.m.s. 1.4 79.2 +
4823.5813 ×
4819.0377
+4.5436

Mean = +2.20 ×

June 17, 1899.

III

Left & above

140.~~4~~

9 04 45 182.3 41.9x

323.0 39.0x +2.17x

2.0 80.9x

+2.21x

143.0

9 06 20 182.4 39.4x

Clouds 322.3 38.7x +2.25x

1.0 78.1x

Right & Below

51.6

08 40 89.3 37.7x

234 0 37.0x +2.36x

271.0 74.7x

+2.32x

52.2

10 30 90.9 38.7x

30 15 233.0 38.5x +2.28x

14 7 34x 271.5 77.2x

9.1.h

4823.5886x

4819.0377

4.5509x

Mean = +2.26x

June 17, 1899.

IV

Right & Below.

Clouds → 52.0
9 15 10 91.6 39.6ˣ +2.27ˣ
233.2 37.8ˣ
271.0 77.4ˣ

+2.26ˣ

51.4
17 55 91.5 40.1ˣ +2.26⁺
233.5 37.8ˣ
271.3 77.9ˣ

Clouds. Left & above
322.8
20 50 2.4 39.6ˣ +2.29ˣ
143.6 37.2ˣ
180.2 76.8ˣ

+2.26ˣ

322.2
22 30 1.86 39.4ˣ +2.24ˣ
76 25ˣ 143.0 39.1ˣ
14 19 06 obs. int. 182.1 78.5ˣ

~~Clouds thicker~~ Clouds thicker Mean = +2.26ˣ

4823.5966 ˣClouds thick; stars gone;
4819.0377
4.5589ˣ

June 17 1899

V

~~G~~ Left & Below

324.1
9 30 55 1.2 37.1×
144.0 36.0× +2.41×
180.0 73.1×

+2.825×

Clouds. 324.3
37 10 1.0 36.7×
143.8 38.1× +2.35×
Clouds. 181.9 74.8×

Right & Above

Cloudsthicken 233.2
Starsgone 271.8 38.6×
9 42 20 52.5 38.3× +2.29×
Starsgone 90.8 76.9×

+2.26×

Cloudsthick. 232.6
9 50 55 271.5 38.9×
161 20 52.1 40.0× +2.23×
14 40 20 $\frac{9}{2h}$ 92.61 78.9×
4823.6113 ×h.t.
4823.6106
+0.0007

mean +2.32×

June 17, 1899.

VI

Reject Below

237.9

9 58 30 271.8 39.9*

clouds. → 52.7 32.6* +2.24*

Clouds thick. → 91.3 72.5*

Stars gone. →

232.8 Clouds thick all stars gone.

10 05 40 271 8 39.0

Clouds 5

thicker.

Stars gone 9

14 58 30 at M.T. ~~Reject Above settings~~

4823.6240*

4823.6106 Now start on next page.

+0.0134*

June 17. 1899.

~~VII~~

VI

Right & Below
45.1

10 25 00 92.5 44.4 ×
clouds thick. → ~~23~~. 40.0 × ~~+2.05~~ ×
11 02 30 233.0 55.4 × +2.07
273.0
00

935 Clouds thick all stars gone.

---

57 30
15 43 45 ×
45 23.6555 ×
45 23.6106 ~~Reject above readings.~~
+ 0.0449

New start on next page.

June 17, 1899.

Right & Elbow

Clouds thick 11 14.00 230.1
11 21 00 273.1
11 23 30 47.5
12 17 40 104.5
126 70
11 31 32
16 31 32 Gr. M. Time.

43.0 ×
57.0 ×
100.6 ×

+1.66 ×

11 45 Sky thickly covered with clouds, no stars visible to naked eye.

~~104.6~~

12 ~~20~~ 220.0
~~19 00 274.5~~
~~40.4~~

~~64.5~~

42 23.6556
42 23.6106
+0.0750

Now start on next page.

June 17, 1899

VI

Right & Below

220.0

12 19 00. 284.5 64.5
40.4 61.6 +1.06
107.0 126.1

+1.07

Cloudier. 221.0

22 40 281.0 60.0 +1.05

7 41 40 38.0 65.1

12 20 50 103.1 125.1

17 20 50 Gr. M. Time. Above 8 settings on this new group taken Left & Above.) continuously through gaps in clouds

Clouds thick. Cloudy Again.

4523.7228
4523.6106
+0.1122

Arnold & Dent.
14 26 0.5
14 27 0.2

Bond 3 97.
14 26 00
14 27 00

June 17, 1899.

Settings made this evening mostly through
clouds, or breaks in clouds. In first group,
star also faint in twilight and moonlight.
Star not at all visible after settings
on previous page. Sky became heavily
and continuously cloudy and remained
14 35 so throughout night, with no break.

June. 19. 1899. (Monday)

I Librae

Cap. 6 inch Phot T. W. obs

14 56 -2.0
13 42

1 14
10 46

7 51. Clouds
7 56 Clouds; Stars gone.

8 15 Abandoned; too cloudy in this region; also too late for phase wanted.

W. Virginis

13 16 -4.0
14 21 Phot. T. (W. obs)

1 05

13 16 -4.0
15 52

2 36

Clouds.

9 45 Clouds

See following page for meas. of W. Virginis

June 19. 1899.

W. Virginia.

I

9 48 Cloudsthick.

10 10 Abandoned on account of clouds.

χ Cygni.

19 45 +32.5
16 18 Phot. T. W Obs.
3 27
8 33 Ledgered.

Above
328.0 < var. dis.

I

10 24.2 352.3 24.3×
149.8 23.5×
173.3 47.8× −3.37×
329.3
355.0 25.7× −3.28×
149.7 25.9×
175.6 51.6× −3.20×
Below
239.4
267.7 28.3×
52.3 26.0×
54.3 54.3× −3.09×
239.5 −3.12×
~~−3.22~~
10 29.8
10 27.0 263.6 24.1×
5 −.22 52.8 26.2×
15 26.5 G. 55.0 50.3× −3.26×

mean = −3.23×

June 19, 1899.

II

Below

239.0

10 32.1 267.0 28.0×

59.4 26.9×

86.3 54.9× −3.07×

239.5 −3.12×

264.6 25.1×

59.2 27.1×

86.3 52.2× −3.17×

Above

150.

149.5

176.0 26.5×

329.0 26.3×

355.3 52.8× −3.15

149.5

10 37.3 175.3 25.8× −3.20×

10 34.7 329.6 25.0×

5 −.2 354.6 50.8× −3.24

15 34.5± Gr. M. Time.

Mean = −3.16×

June 19. 1899.

Above III.

150.0
10 39.2 174.4 24.4 ×
328.7 25.6 ×
354.3 50.0 × − 3.27 ×

149.7 −3.26 ×
175.2 25.5 ×
329.3 25.2 ×
354.5 50.7 × − 3.24 ×

Below.

58.8
85.6 26.8 ×
239.7 24.9 × − 3.20 ×
264.6 51.7 ×

− 3.20 ×

59.5
10 44.6 85.7 25.2 ×
83.8 238.8 26.2 × − 3.21 ×
× 9
15 41.7 265.0 51.4 ×
m.t.

Mean = − 3.23 ×

June 19 1899

Iapetus

17 13 -21.5
17 00
0 13

Above Phot. I. (W. 6h)

148.2 <comp + dis
11 13.8 178.2 30.0 × Ledgered.
330.0 25.0 ×
358.0 55.0 × + 3.06 ×

149.5 +3.12
176.2 26.7 ×
328.0 25.3 ×
358.3 52.0 × + 3.12

Below.
57.2
88.2 31.0 ×
235.9 31.1 × + 2.78 ×
266.0 62.1 ×

+ 2.77 ×
59.0
11 22.2 88.6 29.6 ×
16 17.8 233.0 33.1 ×
266.1 62.7 × + 2.76 ×

Mean = + 2.94 ×

June 19. 1899.

Same Again.

	Below			
	57.0			
11 26.4	89.0	32.0 ×		
	235.1	30.2 +		
	265.3	62.2 +	+2.78 ×	
	57.5			+2.76 +
	88.6	31.1 ×		
	233.6	32.2 ×		
	265.8	63.3 +	+2.74	
	Above			
	326.8			
	352.6	25.8 ×		
	149.0	27.5 ×		
	176.5	53.3 ×	+3.13 +	
	328.2			+3.08
11 37.0	355.5	27.3 ×		
	149.0	28.0 +		
16 31.5	177.0	55.3 +	+3.04 +	

Mean = +2.92 ×

June 19. 1899

Titan.

Above

Ledgered.

301.7 ∠ comp * dis.

11 39.6 22.8 80.3×

126.2 73.3×

199.5 153.6× + 0.50×

307.5 + 0.54×

18.8 71.3×

124.0 78.4×

202.4 149.7× + 0.58×

Below

207.7

293.8 86.1×

37.8 71.4×

109.2 157.5× + 0.43×

215.6 + 0.44×

11 45.0 289.0 73.4×

11 84.6 30.8 82.9×

16 ~~4~~2.1 Gr.M.T. 113.7 156.3× + 0.45×

mean = + 0.49×

June 19, 1899.

Same again:

Below.
209.0
11 46.6 293.2 84.2 ×
33.3 75.0 ×
108.3 159.2 × +0.40 ×

215.7 +0.42 ×
289.0 73.3 ×
31.3 83.9 ×
115.2 157.2 × +0.43 ×
Above
122.6
205.5 82.9 ×
306.3 69.8 ×
168 152.7 × +0.52 ×

125.0 +0.50
11 52 5 201.8 76.8 ×
11 99.1 302.9 78.6 × +0.47
16 49.8 G.M.T. 201.5 155.4 × mean = +0.46 ×

Same comp. star used as on previous night. (6-16)

June 19. 1899

Meas of Iapetus extremely difficult; Saturn rather low; sky somewhat murky moon also near full; it was impossible to equalize Iapetus with comp star except by putting Saturn outside edge of field so that Iapetus and comp star were near edge of field. Iapetus ~~was north~~ was about at conjunction on N. side of planet, which makes it only 2 or 3' of arc from Saturn so, it was close to edge of field.

Because of above reason meas of Iapetus are liable to be not quite as good as usual.

Arnold & Dent			Bond 394		
12	14	08.7	12	14	00
12	15	08.5	12	15	00

June 21, 1899. Wednesday.

Phot. F. W. Wts.

W. Virginis

13 16 -4.0 13 16 -3.0
~~14~~ 16 ~~00~~ 14 16

1 00 1 00

Left & Above Ledgered.

149.0 <comp. + dis.
8 21.8 175.1 26.1*
328.6 25.9* /
354.5 52.0* +3.12*

148.8 +3.12*
174.6 25.8*
326.6 29.4*
356.0 55.2* +3.05*

Right & Below.
56.0
85.5 29.5*
238.0 27.5*
265.5 57.0* +2.98*

57.9 +3.00*
28.4 85.1 27.2*
28 25.2 237.0 28.8*
13 24.9* 4r.N.x 265.8 56.0* +3.02*
48 27.5529
48 15.3077*
+ 12.2512

Mean = +3.06*

June 21, 1899.

Right & Below   II.

56.2 < comp & dis.

8 30.6   86.8   29.6*

238.9   26.3*

265.2   56.9*   +2.98*

57.7   +2.94*

86.5   28.8*

236.5   30.3*

266.8   59.1*   +2.89*

Left & Above

328.9

354.8   25.9*

149.4   25.9*

175.3   51.8*   +3.19*

328.2   +3.27*

358   351.2   23.0*

8 34.7   149.8   25.2*

5 .3   175.0   48.2*   +3.35*

13 34.4* Gr. M. Time

48 27.5656*

48 15.3077

12.2579*

Mean = +3.10*

June 21, 1899.

Left & Above III

	329.5		
8 41.5	354.6	25.1″	
	148.5	27.3″	
	175.8	52.4″	+3.17″
	328.8		+3.16″
	356.0	27.2″	
	150.0	25.6″	
	175.6	52.8″	+3.15″

Right & Below.

	237.9		
	266.5	28.6″	
	57.3	29.0″	
	86.3	57.6″	+2.95″
			+2.95″
	239.3		
49.9	266.0	26.7″	
8 45.7″	55.3	31.0″	+2.95″
5 -.3	86.3	57.7″	

13 45.4″ Gr. M. Time.

4827.5732″
4815.3077

12.2655″

Mean = +3.06″

June 21, 1899.

Right & Below IV

237.5
8 52.1 266.3 28.8+
57.8 28.0+
85.8 56.8+ +2.98+

237.4 +2.94+
265.5 28.1+
56.0 30.7+
86.7 58.8+ +2.91+

Left & Above
149.4
175.3 25.9+
328.0 27.9+ +3.11+
355.9. 53.8+

+3.08+

148.1
59.7 176.2 28.1+
8 55.9+ 328.2 27.2+ +3.04+
5 .3 355.4 55.3+
13 55.6+ Gr. M. Time.
48 27.5803+
48 15.3077
12.2726+

Mean = +3.01+

June 21, 1899.

Left & Above V

149.2

9 02.2 176.2 27.0*

328.0 27.0*

355.0 54.0* + 3.10*

148.8 + 3.12*

175.5 26.7*

328.5 26.5*

355.0 53.2* + 3.13*

Right & Below.

57.2

86.2 29.0*

237.8 28.6* + 2.95*

266.4 57.6*

57.0 + 2.96*

14.1 86.0 29.0*

16.3 238.2 28.5*

9 8.2* 266.7 57.5* + 2.96*

5 .3

Mean = + 3.04*

14 7.9* Gr.M.T. Hour Circle Reads 2h 11m

4827.5888* Decl. Circle " − 3°.1

4810.3077 Sidereal Time = 15h 31m

122811*

June 21, 1899

Arnold & Dent.			Bond 394		
9	25	16	9	25	00
9	29	16	9	29	00

Reap. of (Jup.) I. Phot R. W. Obs.
Campbell Recorder

Compared with more remote of Two Sat. on preceding side = Sat. IV.

Chron. Corr. = −16 secs. throughout

9 43 48	9	44	04		seen	
57			13	38.6	112.9	+2.3
44 07			23	44.5	151.5	+1.9
16			32	48.5	107.0	+1.7
28			44	53.5	155.5	+1.5
36			52	63.3	102.0	+1.1
43			59	72.9	165.3	+0.7
57		45	13	77.6	92.4	+0.5
45 03			19	82.2	170.0	+0.3
10			26	84.7	87.8	+0.2
16			32	86.7	172.5	+0.1
23			39	88.2	85.8	+0.1
29			45	90.2	174.0	0.0
37			53	93.2	83.8	−0.1
43			59	97.9	177.0	−0.3

June 21, 1899.

9 45 53	9 46	09	100.9	79.1	-0.4	
59		15	100.2	120.0	-0.4	
46 06		22	103.5	79.2	-0.5	
15		31	106.7	123.3	-0.6	
25		41	105.8	76.6	-0.6	
34		50	107.2	122.4	-0.7	
44	47	00	110.7	75.2	-0.8	
52		08		125.9		
47 36		17		71.2		
-16		31	116.0	127.2		1
47 20		41	110.2	73.2		
		55	113.1	124.0	-0.9	
48 18	42	05		75.2		
-16		13	106.8	122.0		
48 02		~~22~~	111.8	74.2		2
		32	109.3	126.0	-0.7	
48 54		41		75.7		
-16		49	108.0	123.7		
48 38		59	111.5	73.5		3
	49	09	109.8	125.0	-0.8	
49 28		16		75.0		
-16		25	109.0	124.0		
49 12		33	111.1	73.0		4
		39	110.0	124.1	-0.8	
		45		74.5		
		57		125.1		

June 21, 1899.

			110.6	
9 49 58	9 50 02	109.0	74.2	5
−16	14	109.8	153.2	−0.8
~~9 49 42~~	20		75.5	
50 34	27	108.0	153.5	6
−16	39	109.6	73.9	
50 18	45	109.3	153.5	−0.7
	54		74.6	
51 05	51 02	109.4	154.0	7
−16	09	110.0	74.9	
50 49	15	109.7	154.9	−0.8
	52 23		72.0	
52 46	37	113.2	155.2	8
−16	53	114.8	71.1	
52 30	53 11	114.0	155.9	−0.9

Limit of Visibility

	39		111.5	
54 00	52	35.4	146.9	
−16	9 54 08	31.2	113.5	
53 44	20	33.3	145.0	(+2.6)

Seeing in general pretty good:

Arnold & Dent.	Bond 394
9 55 16	9 55 00
9 59 16	9 59 00

June 21, 1899.

Phot-7- ~~Iapetus~~. Titan W. 660.

17 7 -21.0

Same comp-star 16 23

used as last time. 0 44

11 16 Ledgered.

Left & Above

129.4 < comp star dis

10 18.8 199.1 69.7*

306.6 69.8*

16.4 139.5* +0.78*

127.5 +0.76*

198.1 70.6*

306.6 71.7*

12.3 142.3* +0.73*

Right & Below

28.7

111.1 82.4*

212.7 77.1*

289.8 159.5* +0.39*

33.0 +0.40

26.0 110.6 77.6*

44.8 210.5 81.5*

15 22.1 G.M.T. 292.0 159.1* +0.40*

4827.640

Mean = +0.58*

June 21 1899.

Same Again.

Right & Below

29.3
10 27.7 112.8 83.5
213.8 76.8
290.6 160.3 + 0.38

31.0 + 0.32
113.4 82.4
210.1 83.3
293.4 165.7 + 0.27

Left & Above.

299.1
21.5 82.4
124.6 73.7 + 0.46
~~20~~ 198.3 156.1

+ 0.54
304.7
10 37.0 16.8 72.1
64.7 123.9 75.3
15 32.1 G.M.T. 199.2 147.4 + 0.63 Mean = + 0.43

4827.647 Moon very bright and rather near Saturn; Iapetus too faint to measure on account of moon-light.

June 21, 1899.

R. S. Sagittarii.

Phot. VI

18 9 +34.2

17 2 (W. Obs.)

1 7

10 53

Left & Above

Ledgered.

27.8 < var. dis.

11 03.05 60.7 32.9x

209.0 31.4x

240.4 64.3x −2.70x

29.6 −2.70x

04 45 60.4 30.8x

207.8 33.8x

241.6 64.6x −2.69x

Right & Below.

298.4

07 25 331.0 32.6x

117.8 33.2x

151.0 65.8x −2.65x

297.7 −2.60x

09 30 331.7 34.0x

24 45 117.0 35.1x

11 06 11x 152.1 69.1x −2.54x

5 −16

16 5 55x Gr. M. Time.

4827.6707x

4827.4092xv Epoch 4202

+0.2615

Mean = −2.65x

June 21, 1899

Right & Below　　　　　　II

297.0
11 11 10　332.3　　35.3
118.2　　33.6
151.8　　68.9　− 2.54

297.4　　　　　　− 2.53
12 40　331.3　　33.9
116.2　　35.6
151.8　　69.5　− 2.52

Left & Above

208.0
15 30　240.4　　32.4
28.7　　31.8
60.5　　64.2　− 2.71

208.5　　　　　　− 2.69
17 10.　240.2　　31.7
16 30　27.5　　33.6
11 14 08　61.1　　65.3　− 2.67
5 −16
16 13 52 Gr. M. Time.

4827.67633
4827.40922
0.26711

Mean = − 2.61

June 21, 1899.

Left & above

III.

209.0
11 21 55 242.3 33.3*
29.9 31.3*
61.2 64.6* - 2.69*

-2.72*

209.3
11 23 45 240.0 30.7*
28.6 32.3*
60.9 63.0* - 2.75*

Right

117.2
11 26 40 152.5 35.3*
297.6 34.2*
331.8 69.5* - 2.52*

-2.50*

117.2
11 27 50 152.5 35.3*
20 10 296.8 35.5*
11 25 02* 332.3 70.8* - 2.48*
5 -16

16 24 48*

Mean = -2.61*

4827.6839*
4827.4092
0.2747*

June 21, 1899.

~~Left~~ Right & Below IV

118.0
11 31 00 152.3 34.3 ×
298.3 33.2 ×
331.5 67.5 × − 2.59 ×

−2.59 ×

118.0
32 20 151.2 33.2 ×
297.0 34.3 ×
331.3 67.5 × − 2.59 ×

Left & Above.

28.3
34 15 60.8 32.5 ×
208.5 30.7 ×
239.2 63.2 × − 2.74 ×

28.8 −2.72
35 40 60.1 31.3 ×
13 15 208.2 33.1 ×
11 33 19 × 241.3 64.4 × − 2.70 ×
5 −16
16 33 03 × Gr. M. Time
4827.6896 ×
4827.4092
+0.2804 ×

Mean = −2.66 ×

June 21, 1899

Left & Above

V

28.0
11 37 10 61.1 33.1*
209.1 31.2*
240.3 64.3* − 2.70*

−2.71*

29.2
11 38 40 60.3 31.1*
208.5 32.7*
241.2 63.8* − 2.72*

Right & Below
298.5
11 40 35 331.8 33.3*
119.0 33.0*
152.0 66.3* − 2.63*

−2.60*

298.0
11 42 05 332.0 34.0*
158 30 118.0 34.0*
11 39 38 152.0 68.0* − 2.57*
5 −16
16 39 22* Gr. M. Time.
4827.6941*
4827.4092
0.2849*

mean = −2.66*

June 22, 1899 (Thursday)

α Coronae.

15 2 +32.0
14 2
1 0
11 0

7 50 Too cloudy in this region

δ Librae
14 56 -8.0

8 30 Cloudy

9 00 Cloudy

9. 10 Sky thickly cloudy; no chance for any work.

June 23, 1899. (Friday.)

W Virginis

Phot. T.			W Obs.
13 16	13	16	−4.2
14 32	14	16	
1 16	1	00	

Too Cloudy; impossible to get it after throughly trying;

X Cygni.

19 45 +32.6	19	45	+32.6
14 57	14	50	
4 48	4	55	
7 12	7	05	

See next page for measurements of X Cygni.

June 23, 1899.

χ Cygni.

~~Left~~ & Above & Right — Ledgered. I.

325.5 < wardis

5 42.5 — 354.8 — 25.6*

145.5 — 27.1* — −3.15*

175.6 — 52.7*

Clouds

325.5 — −3.15*

stars gone

~~5 45~~. — 354.1 — 25.3*

149.5 — 26.1* — −3.21*

stars gone. — 51.4*

175.9

Left & Below

237.1

266.5 — 29.7*

557 — 27.5* — −2.97*

56.2 — 57.2*

−2.96*

235.1

50.2 — 266.0 — 27.9*

2 93.0 — 57.1 — 30.1* — −2.94*

5 46.5 — 57.2 — 58.0*

5 −.3

1.3 46.2* Gr M. Time

4529.574*

Mean −3.07*

June 23, 1899.

Left O & Below

II

236.2

Clouds rather thick

8 52 2 266.0 29.8*

58.3 27.8* -2.98*

Stars faint 57.6*

Stars faint

86.1

-2.98*

237.8

265.2 27.4*

57.2 29.0* -3.00*

86.2 56.4*

Right & Above

148.9

175.3 26.4*

327.8 27.7*

355.5 54.1* -3.10*

148.2 -3.08*

9 01.6 176.6 28.4*

11 3 8 328.8 26.2*

8 56.9 355.0 54.6* -3.07*

5 .3 * Stars very faint

13 56.6 Gr. M. Time.

+8 29.581*

Mean -3.06*

June 23, 1899.

III.

14~~8~~.5

9 26.8 Stars gone

1~~76~~.0

~~3~~ Stars very faint ~~30.1~~

32~~8~~.2

~~355~~.3

Stars gone.

27.5
27.1
54.6

-3.97
-2.95

Reject above readings.

9 40 Clouds thick everywhere; no stars visible; no chance for anything farther.

3
35

Arnold & Dent
9 48 18

Bond 394
9 28 00

June 26 1899. Monday

Arnold & Dent. Bond 394

7 29 28.2 7 29 00
7 30 28.5 7 30 00

Phot. T. Mme Ceraski's Var. W. Obs.

20 8 +46.3
14 8
6 0

8 04 Clouds
8 10 Clouds.
8 12 Clouds

20 8 +46.3
14 54
5 14
7 46

See next pages for measurements of Mme Ceraski's Variable.

8 30 Clouds

20 8 +46.3
15 5
5 3
6 57
20 8 +46.3

June 26 1899.

Mme Ceraski's Var.

Left & Above

I.

300.4 < comp star dis. Ledgered, Blotted.

8 55 37 244.6 54.2

123.0 50.0

203.0 164.2 + 0.30+

Clouds.

301.0 +0.30+

9 02 39 Clouds thick.

2~~7~~4.2 Stars gone 53.2

122.1 50.3

202.4 163.5 +0.31+

Right & Below.

209.6

14 03 297.5 54.9 ~~5x.9~~

32.5 79.5

112.0 164.4 + 0.30+ ~~+ 0.3~~

Clouds thick; stars gone.

211.0 +0.30

17 15 291.4 Clouds thick 50.~~5~~4

272 37 29.3 54.4

9 5 09+ 113.7 164.~~8~~7 +0.29+

5 −29

14 7 40+ G. M. Time.

4532.5557+ 4.4046

4525.1539+ 4.5729

+4.4046+ −0.1653+

Mean = +0.30

June 26, 1899.

Right & Below — II

	209.4		
9 23 25	293.0	83.6 ✓	
	32.8	76.7 ✓	
	109.5	160.3 ✓	+ 0.35 ×
	212.5		+0.39 ×
25 05	259.8	77.3 ✓	
	32.0	81.8	
	113.8	159.1 ✓	+ 0.40 +

Left & Above

	123 3		
25 40	201.0	77.7 ✓	
	305.0	75.4 ✓	
	20.4	153.1 ✓	+0.51 ×
	12 7.0		+58 ×
31 10	200.3	73.3 ✓	
108 20	305.8	72.6 ✓	
9 27 05 ×	18.4	145.9 ✓	+0.66 ×
5 -29			

14 26 36 × Gr. M. Time.

4832.60158 ^ — 4.5729

4828.15839 × — 4.4179

+4.4179 × — -0.1550 ×

Mean = +0.48 +

June 26, 1899

III

Left & Above

126.6
9 36 10 199.1 72.5
302.6 77.3
19.9 149.8 +0.58

126.4 +0.59
38 25 200.8 74.4
305.7 74.1
19.8 148.5 +0.60

Right & Below.

33.3
43 40 110.2 76.9
214.0 73.6
287.6 150.5 +0.57

34.3 +0.57
46 10 109.2 $7\overset{4}{\cancel{5}}.9$
164 25 215.3 74.4
9 41 06+ 289.7 ~~150.3~~ +0.59
5 -29 149.3
14 40 37 Gr. M. Time.

4832.6115+ 4.5729
4828.1839+ 4.4276
+4.4276+ -0.1453

mean = 0.58

June 26, 1899.

IV.

Right & Below

34.0
9 51 15 108.9 74.9
216.8 72.3
289.1 147.2 + 0.63

~~+0.70~~
+0.68

35.6
53 55 107.9 72.3
217.6 70.6
288.2 142.9 +0.72

Left & Above.

129.2
57 45 197.6 68.4
305.2 66.6
~~15.1~~ 135.0 + ~~0.92~~ 0.88
14.8

+0.92

10
10 91 05 129.8
194.4 64.6
224 00 308.5 66.3
9 56 00 14.8 130.9 +0.96
5 -29
14 55 31 Gr. M. Time

Mean = +0.80

4832.6218 4.5729
4828.1839 4.4379
+ 4.4379 -0.1350

June 26, 1899

Left & Above

V

130.4
10 08 35 195.0
308.0 64.6
12.4 64.4
129.0 + 1.00

130.0
10 35 194.5 64.5 +0.98
309.6 66.2
15.8 130.7 +0.96

Right & Below
39.0
1.4 00 105.6 66.6
219.6 64.7
284.3 131.3 +0.95

39.8 +0.96
17 40 104.0 64.2
50 50 219.7 65.6
10 12 48 285.3 129.8 +0.98
5 -29
15 12 19 Gr. M. Time.

Mean = +0.97

4832.6335
4825.1839
+ 4.4496
4.5729
-0.1233

June 26, 1899.

Right & Below VI

38.8
10 23 10 104.1 65.3 ✓
220.5 62.4 ✓
282.9 127.7 ✓ +1.03 x

40.0 +1.08 x
25 00 104.8 64.8 ✓
226.0 58.2 ✓
Clouds 123.0 ✓ +1.13 x
284.2

Left & Above.
310.0
27 00 12.4 62.4 ✓
132.4 61.4 ✓
193.8 123.8 ✓ +1.11 x

311.3 +1.16 x
28 50 10.2 58.9 ✓
24 00 132.3 60.3 ✓
10 26 00 x 192.6 119.2 ✓ +1.21 x
5 -29
15 25 31 x Gr M. Time

Mean. +1.12 x

4832.6428 x
4828.1839
+ 4.4589 +
4.5729
-0.1140

June 26, 1899.

VII

Left & above

313.1
10 33 55 5.9 55.~~7~~8 ✓
134.4 56.6 ✓
191.0 112.~~5~~4 ✓ + 1.36+

312.6
37 00 7.6 58.0 ✓ + 1.36+
134.0 55.0 ✓
192.0 113.0 ✓ + 1.35+

Right & Below.
222.5 Clouds
39 25 250.3 57.5 ✓
41.5 60.2 ✓
102.0 117.7 ✓ + 1.24+

223.6 + 1.25+
40 00 250.3 56.7 ✓
150 20 43.0 58.0 ✓
10 37 35+ 101.0 114.7 ✓ + 1.31+
5 29+
15 37 06+ G.M.T. + 1.32+

4832.6505+ 4.5729
4525.1539 4.4669
4.4669+ -0.1060+

June 26, 1899

Right & Below VIII.

222.7
10 43 45 280.3 57.6 ✓
43.1 57.8 ✓
100.9 115.4 ✓ + 1.29 ×

224.3 +1.33 ×
45 35 280.0 55.7 ✓
45.0 56.5 ✓
101.5 112.2 ✓ + 1.37 +

Left & Above
134.3
49 15 189.1 54.8 ✓
314.9 52.8 ✓
7.7 107.6 ✓ + 1.47 ×

137.4 +1.52 ×
52 40 189.0 51.6 ✓
191 15 315.7 52.5 ✓ +
10 47 49 × 8.2 104.1 ✓ + 1.56 +
5 29
15 47 20 × Gr. M. Time

Mean = +1.42 +

4832.6578 ×
4828.1839
+4.4739 ×
4.5729
−0.0990 ×

June 26, 1899.

Left & Above IX:

137.6
10 55 55 157.5 49.9
317.5 45.3
5.5 95.2 +1.70

137.6
11 01 05 156.0 45.4 +1.70
316.2 50.2
6.4 95.6 +1.69

Right & Below.
45.1
04 35 95.0 52.9
226.6 49.0
275.6 101.9 +1.61

46.1 +1.64
06 50 96.4 50.3
251 25 227.5 45.5
11 02 51 276.3 99.1 +1.65
5 −29
16 02 22 Gr. M. Time.
4532.6654 +1.67:
4525.2539
+4.4545
4.5729
−0.0554

June 26, 1896.

X

Right & Below

47.1
" 21 50 94.3 47.2 ✓
229.1 44.9 ✓
274.0 92.1 ✓ +1.86 ×

49.1 +1.85 ×
24 35 96.8 47.7 ✓
228.9 45.0 ✓
273.9 92.7 ✓ +1.84 ×

Left & Above

322.1
28 05 0.7 38.6 ✓
144.7 37.5 ✓
182.2 76.1 ✓ +2.31 ×

321.8 +2.30 ×
30 35 0.4 38.6 ✓
10 5 05 143.3 38.2 ✓
11 26 16 181.5 76.8 ✓ +2.29 ×
5 29
16 25 47 Sd. M. Time.

Mean = +2.08 ×

4832.6846 ×
4828.1839
+4.5007
4.5729
−0.0722

June 26, 1899.

XL

Left & above

322.3
11 36 35 1.4 39.1 ✓
144.2 37.1 ✓
151.3 76.2 ✓ +2.31

322.3 +2.34
39 00 359.0 36.7 ✓
144.0 37.2 ✓
151.2 73.9 ✓ +2.35

Right & Below

232.0
42 10 272.2 40.2 ✓
51.4 41.3 ✓
92.7 81.5 ✓ +2.15

232.2 +2.16
45 10 272.4 40.2 ✓
162 55 51.5 40.4 ✓
11 40 44 92.2 80.6 ✓ +2.15
5 29
16 40 15 Gr. M. Time. Mean = +2.25

45 32.6946 +
45 25.~~4~~539
+ 4.5107
4.5729
[illegible]

June 26, 1899.

XIII

Right & Below

231.2

α 48 10 273.2 42.0 ✓

51.2 40.8 ✓

92.0 82.8 ✓ + 2.11 ×

232.5 2' 13 ×

52 00 272.6 40.1 ✓

52.2 40.0 ✓

92.2 80.1 ✓ + 2.19 ×

δ

5 143.0

52 10 180.4 37.4 ✓

322.6 37.6 ✓

0.2 75.0 ✓ + 2.35 ×

146.0 +2.45 ×

12 00 5 20 179.8 33.8 ✓

212 40 323.7 35.0 ✓ +2.55 ×

11 53 10 358.7 68.8 ✓

5 -29

16 52 41 Gr. M. Time

Mean = + 2.30

48 32.7034 4.5729

48 28.1839 4.5795

+4.5195 × -0.0534 ×

June 26, 1899

XIII

Left & Above

142.8
12 08 20 180.7 37.9 ✓
324.2 35.1 ✓
359.3 73.0 ✓ + 2.41

+2.45

145.8
11 15 180.3 34.5 ✓
323.2 36.1 ✓
359.3 70.6 ✓ + 2.49

Right & Below

~~93.2~~
16 50 232.3 40.4 ✓
272.7 39.6 ✓
51.6 80.0 ✓ + 2.19
91.2

+2.21

232.2
19 20 271.0 38.8 ✓
55 45 51.9 40.0 ✓
12 13 56 91.9 78.8 ✓ + 2.23
5 29
17 13 27 [illegible] M.T.

Mean = +2.33

4832.7178
4828.1839
+4.5339

4.5729
4.5339
−0.0390

June 26, '899

Right & Below ~~Left & P~~ XIIII

229.6
12 31 55 271.5 36.9 ✓
51.3 41.6 ✓
92.9 75.5 ✓ +2.24 ×

233.0 +2.24 ×
34 45 271.4 35.4 ✓
53.4 40.4 ✓
93.5 75.5 ✓ +2.23 ×

Left & Above
144.2
37 55 151.2 37.0 ✓
323.7 36.3 ✓
30.0 73.3 ✓ ~~+ 2.49~~
+ 2.40 ×

145.6 + 2.42 ×
40 50 151.5 35.9 ✓
14 24 05 323.5 36.4 ✓
12 36 01 × 0.2 72.3 ✓ + 2.43 ×
5 −29
17 35 32 × G. m. T.
G. m.
4532.7330 × 4.57729
4525.1539 4.5491
+ 4.5491 × − 0.0238 ×

mean = + 2.33 ×

~~Fnoon~~
June 26 1899

Left & Above — XV

143.2
13 25 56 151.1 — 37.9
323.0 — 34.2
357.2 — 72.1 + 2.44

+ 2.35

144.2
30 48 151.6 — 37.4
59 30 322.0 — 35.3
13 29 45+ ~~35~~0.~~7~~3 — 75.7 + 2.37
5 -29
12 29 16+ Gr. M. Time.
45 32.7703+ Right & Below
45 32.7565
+0.0135+ Instrument against pier, so that group could not be completed.

Reversed telescope. Some delay experienced in finding and adjusting images, owing to extreme altitude as ~~H. was~~ both H. and telescope were now against pier on east side, and observing in zenith. New group was therefore started.

June 26, 1899

~~XVI~~

XV

Right & Below

140.6
13 44 35 181.2 40.6
322.2 40.8
3.0 81.4 + 2.15

2.2[illegible]

143.1
46 30 180.0 36.9
323.7 36.3 + 2.20
360.0 73.2

Left & Above.
50.4
48 55 90.4 40.0
232.1 38.9
271.0 78.9 + 2.23

+2.22

52.6
50 30 92.6 40.0
190 30 ~~232.9~~ 232.4 39.4
13 47 32 71.8 79.4 + 2.21
5 29

mean = +2.25

18 47 9 Gr. M. Time
4832.7827
4832.7568

June 26, 1899.

Left ⊙ Above

~~XVII~~

50.6

13 54 60 92.3 41.7^{x}

XVI

232.0 40.0^{x}

272.0 81.7^{x} + $2,14^{x}$

52.1

$+2.19^{x}$

57 40 90.5 38.4^{x}

232.6 40.1^{x}

272.7 78.5^{x} + 2.24^{x}

Right ⊙ Below

323.2

14 04 35 0.3 37.1^{x}

143.4 39.6^{x}

183.0 76.7^{x} + 2.29^{x}

322.8

$+2.22^{x}$

06 35 2.1 39.3^{x}

242 50 139.7 42.5^{x} + 2.14^{x}

$14\ 00\ 42^{x}$ 182.2 81.8^{x}

5 -29

19 00 13 Gr. M. Time

$+$

$+F32.7918^{x}$

$+F32.7568$

$+0.0350^{x}$

Mean = $+2.20^{x}$

June 26, 1899

Right & Below

~~XXIX~~

XVIII

325.7
14 11 20. 359.3 33.6×
142.9 39.3×
152.2 72.9× + 241×

+ 227×

321.6
13 16 3.2 41.6×
142.1 40.5×
152.6 52.1× + 2.13×

Left & Above
232.3
16 20 272.3 40.0×
51.6 42.5×
94.1 52.5× + 2.12×

+ 2.11×

229.5
20 00 272.5 43.0×
60 50 52.0 40.3×
14 15 12 + 92.3 53.3× + 2.10×
5 29
19 14 43± Gr. M. Time

mean = +2.19×

4532.5019×
4532.7565
+0.0451×

June 26. 1899

Left & Above   XVIII

232.2
14 26 15 271.3   39.1×
51.3   40.4×
91.7   79.5× + 2.21×

+2.18×

231.1   40.6×
29 10 271.7   40.6×
51.6   81.2× + 2.16×
92.2

Right & Below
33 05 143.1
152.8   39.7×
321.6   39.8×
1.4   79.5× +2.21×

142.3   +2.17×
35 40 154.8   42.1×
124 10 321.0   40.0×   +2.13×
14 31 02× 1.0   82.1×
5 -29
19 30 33× Gr. M. Time.   means +2.18×
4832.8129×
4832.7568
+0.0561×

June 26, 1899.

Right & Below

XIX

139.3

14 38 40 182.6 43.3+

322.1 39.8+

1.9 83.1+ +2.10+

141.2 2.14+

40 20 183.2 42.0+

322.6 38.7+

1.3 80.7+ + 2.14+

Left & Above

50.6

42 56 92.8 42.2+

229.9 44.0+

273.9 86.2+ + 2.02+

51.1

45 56 94.6 43.5+ + 2.00+

230.1 43.7+

167 40 273.8 87.2+ + 1.99+

14 41 55+

5 29

19 41 26+ Gr. M. Time

4832.8203 +

4832.7568

+0.0635+

mean = +2.06+

June 26 1899

Left & above

XX

50.1
14 48 20 94.0 43.9
230.3 44.3
274.6 88.2 + 1.96

49.6 + 1.94
50 50 95.3 45.7
230.1 44.2
274.3 89.9 + 1.92

Right & Below

318.9
52 55 4.9 43.0
140.4 42.2
182.6 85.2 + 2.05

319.9 + 2.05
54 40 3.3 43.4
206 45 141.7 41.7 + 2.05
14 51 41 183.4 85.1
5 -29
19 51 12 Gr. M. Time

Mean + 2.00

4832.8272
4832.7568
+0.0704

*

June 26, 1899

Right & Below

XXI

389.0
14 58 30 3.8 44.8
137.5 47.5
185.0 92.3 + 1.48

~~32~~ 319.7 (+1.46)
6.2 46.5
15 00 00 138.0 46.2
184.2 92.7 + 1.44

Left & Above
228.6
15 01 50 274.8 46.2
45.1 50.4
95.5 96.6 +1.74

03 30 225.5 (+1.72)
243 50 276.3 50.8
15 00 .58 48.8 47.5
5 -29 96.3 98.3 + +1.70
20 00 29 Gr M Time mean +1.78

48 32 8336 In this group obs. very difficult taken in strong
48 32.7568 twilight
+0.0768

See note next page.

June 26, 1899.

Observations throughout night somewhat difficult on account of faintness of var. star inasmuch as it was passing through minimum. Moon also up & nearly full, making stars rather faint the larger part of the time.

Arnold & Hart.			Bond 394.		
15	17	28.5	15	17	00
15	18	29.0	15	18	00

June 27, 1899 (Tuesday)

Phot. W. β Lyrae W. 6b.
Telescope diaphramed down to 9.5 inches.

18 45 +33.2
14 25
4 20
7 40

Ledgered

I

Left & above.
285.8 < var dis.
8 01 50 306.0 20.2+
105.2 21.0+
126.2 41.2+ − 3.70+

284.7 −3.71+
04 45 305.4 20.7+
105.3 20.1+
125.4 40.8+ − 3.72+

Right & Below.
195.6
07 45 215.8 20.2+
15.4 20.6+
36.0 40.8+ − 3.72+

194.9 −3.74
10 45 215.0 20.1+
25 05 15.6 20.2+
8 06 16+ 35.8 40.3+ − 375+
5 −30 4833.546+
13 05 46+ Gr. M. Time. 4821.360+
12.186+

Mean = −3.72+

June 27, 1899

Right & Below. IV

195.7
8 13 30 215.4 19.7
15.3 20.3+
35.6 40.0+ − 3.77+

−3.76+

195.1
15 50 215.9 20.7+
15.8 19.8+
35.6 40.5+ −3.74+

Left & above.
105.6
19 50 125.4 19.8+
285.0 21.2+
306.2 41.0+ −3.71+

−3.72+

104.9
23 20 125.6 20.7+
72 30 285.4 20.1+
8 18 08+ 305.5 40.8+ − 3.72+
5 −30
13 17 38+ Gr. M. Time.
4833.534+
4821.360
12.194+

mean = −3.74

June 27. 1899.

III.

Left & Above

105.8
8 27 50 125.4 19.6
284.5 21.0
305.5 40.6 − 3.74

−3.74

105.0
31 45 126.0 21.0
285.7 19.5
305.2 40.5 − 3.74

Right & Below.

15.8
35 40 35.3 19.5
195.4 20.5
215.9 40.0 − 3.77

−3.75

1~~3~~4.9
39 10 35.9 21.0
134 25 195.4 19.7
8 33 36 215.1 40.7 − 3.73
5 30

13 33 06 Gr. M. Time.
4833.565
4821.360
+12.205

mean = −3.74

June 27, 1899.

Phot. T. W Virginis W. Obs.

13 16 -3.4
15 23
2 07

13 16 -3.4
15 36
2 20

9 00 Clouds sky thickly cloudy

R. S. Sagattarius.

18 9 -34.2
16 9
3 0
9 0

W Virginis

13 16 -4.2
16 23
3 07

See next page for meas. of W Virginis

June 27, 1899.

Phot 7. W. Virginis W. obs.

Ledgered & Plotted.
I

Left & Above

143.8 < comp star dis

9 52.5 181.0 37.2+
325.1 32.9+
358.0 70.1+ + 2.50+

144.8 +2.48+
179.8 35.0+
322.7 36.4+
359.1 71.4+ + 2.46+

Right & Below

52.8
93.0 40.2+
233.0 38.0+
271.0 78.2+ + 2.25

53.8 + 2.26+
10 00.0 90.5 36.7+
11 2.5 232.6 40.4+
9 56.2 273.0 77.1+ + 2.28+
5 -.5

14 55.7 Gr. M. Time.
4833.6220+
4832.5788+
1.0432+

Mean = +2.37+

June 27, 1899

~~III~~
II

Right & Below
Clouds.

53.0
10 03.0 90.2 Clouds 37.2*
234.6 Stars gone. 36.4'
271.6 73.6' + 2.39*

54.0 +2.38*
90.0 36.0*
233.5 38.6'
272.4 74.6' + 2.36*

Left & Above
321.5
1.1 39.3*
144.7 35.9*
180.6 75.2* + 2.34*

323.5 +2.40*
15.0 359.4 35.6*
10 10.5 144.1 35.7*
15 10.0 Gr. M.T. 179.8 71.3* + 2.46*
4533.6319*
4532.5788
+1.0531*

Mean = +2.39*

June 27, 1899

Left & Above

	323.1		
10 19.5	0.2	37.1	
	144.6	34.8	
	179.4	71.9	+ 2.44

	323.9		+2.44
	359.5	35.9	
	144.2	36.6	
	180.6	72.5	+ 2.43

Right & Below

	232.9		
	272.0	39.1	
	54.2	37.2	
	91.4	76.3	+ 2.31

	23~~4~~7.7		+2.36
25.7	271.2	36.5	
45.2	53.6	36.5	
	90.1	73.0	+ 2.41

15 22.1 G.M.T.
4533.6404
4532.5755
+1.0616

Mean = +2.40

June 27, 1899

Right & Below IV

232.5

10 29.2 271.8 39.3 +

54.0 38.0 +

92.0 77.3 + + 2.28 +

234.1 +2.34 +

270.8 36.7 +

53.1 37.0 +

90.1 73.7 + +2.39 +

Left & Above

143.6

180.1 36.5 +

324.8 34.7 +

359.5 71.2 ++ +2.47 +

145.1 +2.46

36.0 180.4 35.3 +

65.2 324.1 36.1 +

15 32.1 M. M.T. 0.2 71.4 + + 2.46 +

4833.64733 +

4832.5788

+1.0685 +

Mean = +2.40 +

June 27, 1899

V

Left & Above

144.2
15 42.0 179.0 34.8 +
324.6 36.2 +
0.5 71.0 + +2.47 +

+2.45 +

144.1
150.8 35.9 +
323.6 36.5 +
0.7 72.4 + +2.43 +

Right & Below

53.3
90.5 37.5 +
233.5 36.4 + +2.32 +
270.2 73.9 +

+2.40 +

53.0
46.5 90.3 37.3 +
2.5 233.5 35.6 + +2.41 +
15 43.79 gr ml 269.4 72.9 +

4233.6554 +
4232.5788
+1.0766 +

Mean = +2.42 +

June 27, 1899

Saturn.

17 7 -21.0
17 27
0 20

Phot. 4. Iapetus W. obs.

Left & Above

45.2 < comp star dis Ledgered.

11 11.5 98.2 53.0x

225.3 54.5x

279.8 107.5x +1.48x

+1.46x

45.7

98.8 53.1x

226.2 55.4x

281.6 108.5x +1.45x

Right & Below

316.5

6.0 49.5x

138.0 48.0x

186.0 97.5x +1.72x

319.0 +1.74x

11 16.3 6.0 47.0x

7.8 136.5 48.5x

16 13.7 7.3x 185.0 95.5x +1.77x

4833.676x

Mean = +1.60x

June 27, 1899.

Right & Below. Same Again.

	317.0			
11 17.8	7.0	50.0×		
	137.0	49.1×		
	186.1	99.1×	+1.68×	
	315.5			+1.681×
	5.8	50.3×		
	136.1	48.9×		
	185.0	99.2×	+1.681×	

Left above

	225.0			
	281.0	56.0×		
	45.1	53.7×		
	98.8	109.7×	+1.42×	
	225.6			+1.43×
11 25.0	282.2	56.6×		
42.8	45.6	52.4×		
16 20.9 g.m.t.	98.0	109.0×	+1.44×	

H 833.681×

Mean = +1.56×

Comp. star for Japetus + Titan to night is B D − 21° 4864 (9.3)

June 27 1899

Left & above. Titan.

135.1 Ledgered.

11 27.0 188.6 < Titan dia. 53.5*

318.0 49.5*

7.5 103.0* - 1.52

136.1 -1.50

187.1 51.0*

311.2 58.8*

10.0 109.8* - 1.42

Right & Below.

~~42.0~~ 225.3

~~103.8~~ 277.8 52.5*

41.2 62.6*

103.8 115.1* - 1.30

220.0

33.8 283.0 63.0

60.8

Mean = - 1.40

16 29.9 G.M.T. Phot. got off track preventing completion of

4833.657 group.

June 27 1899.

~~Same Ag~~ain.

. Arnold & Dent	Bond 394.
11 . 48 30.2	11 48 00
11 . 49 30.5	11 49 00

June 29. 1899 (Thursday)

Phot. W. β Lyrae W. Obs.

18 45 138.2
14 32
4 13
7 47 Plotted Ledgered.

Right & Below Full aperature used by accident.

294.6 < var. dis.

8 07.5 321.0 26.4
116.8 21.4
138.2 47.8 − 3.37

296.3 −3.40
8 318.0 21.7
114.6 25.1
139.7 46.8 − 3.42

Left & above

204.2
230.9 26.7
26.0 22.1
48.1 48.8 − 3.33

206.0 −3.33
8 16.5 228.5 22.5
24.0 24.2 26.1
8 12.0 503 48.6 − 333
5 − .6
13 11.4 Gr. M. Time.
48 35.549
48 34.276
+1.273

Mean = − 3.36

June 29. 1899.

Left & above

II

203.6

8 19.8 231.4 27.8

25.0 23.8

48.8 51.6 — 3.20

— 3.21

205.1

229.3 24.2

23.4 27.1

50.5 51.3 — 3.22

Right & Below.

116.1

140.2 24.1

296.0 22.4

318.4 46.5 — 3.43

— 3.38

115.8

8 30.5 139.0 23.2

50.3 294.7 25.2

8 25.2 319.9 48.4 — 3.34

5 .6

13 24.6 Gr. M. Time

18 35.559

18 34.276

+1.283

Mean = — 3.30

June 29, 1899.

Right & Below III

115.4
δ 32.7 140.0 24.6*
294.4 24.8*
319.2 49.4* - 3.30*

115.4 -3.28*
139.8 24.4*
294.4 25.7*
320.1 50.1* - 3.27*

Left & Above
23.3
50.3 27.0*
205.3 23.5*
228.8 50.5* - 3.25*

24.6 -3.30*
8 44.5 ~~40.1~~ 49.9 25.3*
205.6 22.8*
77.2
δ 38.6* 228.4 48.1* - 3.36*
5 - .6
13 38.0*
48 35.568*
48 34.276
+1.292

mean = -3.29*

Seeing a little poor at first: but better latter.

June 29. 1899.

Phot. T. W Virginis W. Obs.

13 16 −4.2

15 43

2 27

Left & Above

Ledgered, Plotted.

144.6 comp. dis.

9 10.6 178.8 34.2+

325.0 35.0+

360.0 69.2+ + 2.53

145.4 + 2.53x

179.8 34.4+

323.3 34.9+

358.2 69.3+ + 2.53

Right & Below

52.0

90.0 38.0+

235.2 33.6+

268.8 71.6+ + 2.45*

54.9 + 2.519x

9 17.0 88.8 33.4+

27.6 234.8 36.0+

9 13.8x 270.8 69.4 + 2.53

5 6

14 13.2x Gr. M. Time

4835.5925x

4832.5788x

3.0137x

mean + 2.51x

June 29, 1899

Right & Below

II

233.5

9 25.0 270.6 37.1^{x}

54.3 34.2^{x}

88.5 71.3^{x} + 24.6^{x}

234.9 + 24.6^{x}

269.4 34.5^{x}

58.0 37.3^{x}

90.3 71.8^{x} + 24.5^{x}

Left & Above.

144.8

180.8 36.0^{x}

324.5 33.6^{x}

358.1 69.6^{x} + 25.2^{x}

145.5 + 25.3^{x}

9 31.6 179.3 33.8^{x}

5.6.6 323.8 35.3^{x}

9 28.3^{x} 359.1 69.1^{x} + 25.4^{x}

5 6^{x}

14 27.7 Gr.M.Time.

48 35.6026^{x}

48 32.5788

+ 3.0238

Mean = − 25.0^{x}

June 29, 1899

III

~~Left & Above~~

145.6
9 33.6 179.2 33.6^{r}
325.4 32.6^{r}
358.0 66.2^{r} $+2.64^{r}$

145.3 $+2.58^{r}$
179.0 33.7^{r}
323.7 35.9^{r}
359.6 69.6^{r} $+2.52^{r}$

Right & Below
53.0
90.3 37.3^{r}
236.0 33.8^{r}
269.8 71.1^{r} $+2.47^{r}$

55.0 $+2.48^{r}$
9 38.8 89.2 34.2^{r}
12.4 234.4 35.9^{r}
9 36.2 270.3 70.1^{r} $+2.50^{r}$
5 -6

14 35.6 Gr. m. time -
+8 35.6080^{r}
+8 32.5788^{r}
+3.0292^{r}

Mean = +2.53^{r}

June 29, 1899

IV

Right & Below

54.0

9 45 8 90.7 36.7*

235.4 34.1*

269.5 70.8 −2.48*

55.3 −2.49*

88.8 33.5*

233.8 36.8*

270.6 70.3* −2.50*

Left & above

323.1

358.5 35.4*

145.8 33.5*

179.3 68.9* −2.54*

325.7 −2.56

9 51.2 358.4 32.7*

97.0 145.0 35.4*

9 48.5 × 180.4 68.1 −2.57

5 6

2.52*

Mean = ~~2.52~~

14 47.9 Gr. M. Time.

48 35.6166

48 32.5788

+ 3.0378

June 29, 1899

X

Left & above

324.6
9 53.0 359.0 34.4
146.6 32.9
179.5 67.3 - 2.60

- 2.58

325.5
358.4 32.9
144.7 35.1
179.8 68.0 - 2.57

Right & Below

234.0
270.0 36.0
58.2 34.6
88.8 70.6 - 2.49

- 2.48

234.3
10 0.4 269.2 34.9
113.4 53.5 36.3
89.8 71.2 - 2.47

9 56.7
- 6
~~9~~ 56.1 Loc. M. Time

Mean - 2.53

α 35.6.223
α 32.5788
+ 3.0435

June 29. 1899.

Phot. T. Iapetus. W Obs.
17 10 -21.0
16 53
Left & above. 0 17

Same comp star used as $\overset{43}{\text{on}}$ ~~the~~ last night,
227.8 comp star. Ledgered

10 23.6 276.0 48.2*
47.0 47.6*
94.6 95.8* +1.76*

229.0 +1.78*
276.0 47.0*
47.0 47.9*
94.9 94.9* +1.79*

Right & Below
139.7
155.6 45.9*
316.5 49.1*
365.6 95.0* +1.78*

137.8 +1.76*
10 31.0 158.8 48.0*
54.0 318.4 48.6*
10 27.0* 367.0 96.6* + 1.74*
5 .6
15 26.4* Gr. m. Time
4835 .643*

Mean = +1.77*

June 29. 1899

Same again.

Right & Below

137.5

10 33.2 184.5 47.0 x

318.3 46.5 x

364.8 93.5 x + 1~~8~~2 x

137.7 +1.77 x

186.1 48.4 x

318.2 49.0 x

367.2 97.4 x + 1.72 x

Left & Above.

46.6

97.1 50.5 x

227.3 48.4 x

275.7 98.9 x + 1.68 x

48.0 +1.70 x

10 39.0 96.4 48.4 x

12.2 227.5 49.5 x

10 36.1 277.0 97.9 x + 1.71 x

5 6 x

15 35.5 Gr m. Time

48 35.650

Mean = + 1.74 x

June 29, 1899.

Left & above Titan.

315.1 < Titandis. **Ledgered.**

10 42.0 368.1 53.0 ×

135.4 56.7 ×

192.6 109.7 × −1.42 ×

312.3 −1.36 ×

370.8 58.5 ×

135.0 56.6 ×

191.6 115.1 × 1.30 ×

Right & Below

224.1

279.7 55.6 ×

45.3 55.5 ×

100.8 111.1 × −1.39 ×

223.2 −1.39

10 45.2 ~~279~~.278.8 55.6 ×

10 45.1 44.0 55.5 ×

5 −6 +99.5 111.1 × −1.39 ×

15 44.5 Gr. M. Time.

48 35. ~~698~~ ×
656 ×

mean = −1.38 ×

June 29, 1899.

	Right & Below	Same again.	
	224.6		
10 50.0	279.4	54.8^{+}	
	41.6	55.9^{+}	
	97.5	110.7^{+}	$-1.40^{\times}$
	223.7		$-1.39^{\times}$
	~~279~~ 3	55.6^{+}	
	42.6	56.2^{+}	
	98.8	111.8^{+}	$-1.38^{\times}$
	Left & Above		
	129.2		
	194.4	65.2^{+}	
	312.9	54.4^{+}	
	367.3	119.6^{+}	$-1.20^{\times}$
	132.4		$-1.19^{\times}$
10 56.4	191.7	59.3^{+}	
10 53.2	312.1	61.2^{+}	
5 -6	373.3	120.5^{+}	$-1.18^{\times}$

15 52.6 Gr. m. time

4835.662^{d}

mean = $-1.29^{\times}$

June 29. 1899

Arnold & Dent			Bond 394		
11	41	36.5	11	41	00
11	42	36.5	11	42	00

June 30 1899 (Friday)

Arnold & Dent   Bond 394
7 34 38.5   7. 34 00
7 35 38.5   7 35 00

Phot. W.   β Lyrae.   W. Obs.
18 45   +33.2
14 42 (9.5 in cap used.)
4 03

Left & Above. 7 57   I.
27.2 Evardis   Ledgered, Plotted
8 07.5   47.8   ~~19.9~~   20.6
207.1   20.3
227.4   40.9 − 3.72

27.5   −3.73
47.8   20.3
207.6   20.3
227.9   40.6 − 3.74

Right & Below
Clouds.
297.0
317.1   20.1
118.2   18.8
137.0   38.9 − 3.83

297.8   −3.82
13.8   316.8   19.0
21.3   117.6   4836.549   20.2
8 10.6   4834.276
5 .6   137.8   +2.273   39.2 − 3.81
13 10.0
4836.549   mean = −3.78

June 30, 1899

II

Right & Below

297.1

8 16.8 317.6 20.5$^+$

118.1 18.7$^+$

136.8 39.2$^+$ — 3.84$^+$

-3.80$^+$

297.3

316.5 19.2$^+$

118.1 20.3$^+$

138.4 39.5$^+$ — 3.79$^+$

Left ~~&~~ Above

27.1

47.2 20.1$^+$

206.6 20.7$^+$

227.3 40.8$^+$ — 3.72$^+$

26.8 -3.72$^+$

25.0 47.2 20.4$^+$

41.8 206.8 20.5$^+$

8 20.9$^+$ 227.3 40.9$^+$ — 3.72$^+$

5 .6

13 20.3$^+$ Gr. M. Time.

4836.556$^+$

4534.276

+2.280

Mean = -3.76$^+$

June 30/1899.

Left Above

III

5 30.5 ~~26.5~~ 206.5

~~27.1~~ ~~47.5~~ 227.2 20.5+

~~20.5~~ 27.3 19.7

47.1 40.2 − 3.76+

3.75+

207.5

227.5 19.7+

27.0 20.8+

47.5 40.5 − 3.74+

Right Below.

116.5

137.5 21.0+

297.8 19.5+

317.3 40.5+ − 3.74+

117.7 − 3.77+

41.4 137.1 19.4+

72.2 297.3 20.0+

5 36.1+ 317.3 39.4+ − 3.80+

5 −.6

13 35.5 Gr. M. Time.

45 36.566+

45 34.276

+2.290

Mean = −3.76+

June 30, 1899.

Phot. 7. χ Cygni W. Cts.

19 45 +32.6

9.5 cap accidently 15 42

on during the follow- 4 03

ing observations.

Above & Right 7 57

147.2 Lvar. dis. Ledgered

857.7 176.5 29.3*

327.6 28.4*

356.0 57.7* − 2.95*

147.8 −2.95

176.9 29.1*

327.3 28.5*

353.8 57.6* − 2.95*

~~Left~~ & Below

56.0

88.2 32.2*

236.2* 30.8*

267.0 63.0* − 2.75

56.6 −2.76

9 03.1 88.0 31.4*

120.8 236.9 31.0*

9 00.4* 267.9 62.4 − −2.77

5 −.6

13 59.8* Gr. M. Time. Mean 2.86*

4836.583*

June 30, 1899.

Same again

Left & Below

~~56.4~~

90H.2 88.3 31.9'

236.4 30.1×

266.5 62.0× − 2.79×

57.5 − 2.80×

87.3 29.8×

236.6 31.7×

267.7 61.5× − 2.80

Right & Above

326.7

355.9 29.2×

146.7 30.3×

177.0 59.5× − 2.88×

326.4 − 2.90×

08.6 356.0 29.6×

148.0 28.7×

12.8 176.7 58.3× − 2.93×

9 6.4

~~8~~ −.6

14 5.8× G.M.time. Mean = −2.95

4836.587×

June 30, 1899

A ♃ Hent	Bond 392
9 12 38.5	9 12 00
9 13 38.5	9 13 00

Reap. Jup. (II). Phot. R. W. Observer
Comp. with nearest of Campbell Recorder.
three satellites (before Eclipse) on following
side = Sat. I.
Chronometer Correction = − 38 secs throughtout.

9 37 22	9 32 ~~37~~ 00		seen	
28	06	24.1	93.9	+3.4
38	16	25.3	118.0	+3.2
42	20	27.2	92.7	+3.1
48	26	30.1	119.9	+2.9
53	31	40.1	89.8	+2.2
38 01	39	43.3	129.9	+2.0
06	44	38.4	86.8	+2.3
12	50	39.5	125.0	+2.2
20	2 58	38.5	85.6	+2.3
26	39 04	44.0	128.0	+2.0
37	15	50.1	80.0	+1.7
48	26	52.0	130.1	+1.6
53	31	54.9	78.1	+1.4
57	35	57.5	133.0	+1.3
39 03	41	60.6	75.5	+1.2
10	48	63.0	136.1	+1.1
15	53	62.7	73.1	+1.1

June 30, 1899.

9	39	21		59	63.8^x	135.2	+1.0^x
		30	40	02	68.3^x	72.0	+0.8
		35		13	70.2^x	140.3	+0.8
		43		21	72.2^x	70.1	+0.7
		49		27	77.9^x	142.3	+0.5
		57		35	80.2^x	64.4	+0.4^x
	40	08		46	80.6^x	144.6	+0.4^x
		18		56	82.8	64.0	+0.3
		28	41	06		146.2 →	
	41	30^x		13		64.2	
		−38		23	81.3	145.5	
	40	52^x		37	84.8^x	63.0	
				46	83.0	147.2	+0.3^x
				55		52.5	
	42	08^x	42	03	87.5^x	146.0	2
		−38		13	89.7	58.9	
	41	30^x		19	88.6^x	145.6	+0.1
				34		52.5	
	43	00^x		51	91.4^x	149.9	
		−38	43	13	85.3	60.9	3
	42	22		22	88.4	146.2	+0.1

Moved image of Comp. Sat. slightly in field.

				36		60.6	
				44		146.0	

June 30 1899.

85.4
9 43 48 9 43 53 83.9 62.1
-38 44 01 84.6 146.0 4 +0.2
9 43 10 ~~09~~ 09 62.2
~~44~~ 35 33 86.7 145.9
-38 44 89.8 62.2
43 57 53 88.2 152.0 5 +0.1
45 03 59.6
45 14 10 90.2 149.5
-38 15 89.9 60.1 0.0
44 36 27 90.0 150.0 6
36 60.0
45 53 45 91.0 151.0
-38 55 93.5 55.0 7 -0.1
45 15 46 10 92.2 151.5 7
24 55.4
46 40 34 93.4 157.5 5
-38 46 92.0 59.5
46 02 57 92.7 151.5 -0.1
~~50~~

Limit of Visibility

5 1 46 ~~50~~ 51 10 96.9
-38 41 16.6 113.5
51 08 55 16.3 97.5 +4.2
52 17 16.4 113.5

June 30, 1899.

Arnold & Dent			Bond 394
9	57	35.3	9 57 00
9	58	32.5	9 58 00.

Iapetus.

Phot. T. 17 10 -21.0 W. Obs.
17 36
0 26

Same comp. star used as on previous night!

Left & Above 1.

225.8 (comp star dis. Ledgered.

11 05.0 275.1 46.5+
48.3 46.7+
95.0 93.2+ + 1.83+

225.7 + 1.86+
274.8 46.1+
49.4 44.6+
94.0 90.7+ + 1.90+

Right & Below
~~9~~
140.0 45.0+
185.0 45.1+
318.6 90.1+ + 1.91+
3.9
11 01.3 140.0 44.6 + 1.92.
16.3 184.6 44.3
11 8.2 319.4 88.9++ 1.94 + 1.89+
5 -.6 3.7
16 7.6 U. M. Time 16 36 1.79

June 30, 1899

Same again

Right & Below

137.8
11 15.0 185.5 47.7
319.1 45.6
4.7 93.3 +1.83

138.0 +1.79
187.4 49.4
318.1 46.9
5.0 96.3 +1.75

Left & Above
48.9
95.0 46.1
231.0 42.6
273.6 88.7 +1.95

49.5 +1.97
11 19.6 93.3 43.8
34.6 230.2 43.4 +1.99
11 5 17.3 273.6 87.2
-.6
16 16.7 Gr. M. Time. mean = +1.88
4836.678

June 30th 97

Titan.

Left above

Ledgered

	136.5 < Titania.			
a 21.4	155.9	49.4 +		
	311.6	62.1 +		
	13.7	111.5 +	-1.38 +	
	+			
	130.5			-1.32 +
	191.6	61.1 +		
	314.2	51.1 +		
	5.9	112.2 +	-1.37 +	

Right Below

	49.0			
	95.1	46.1 +		
	221.7	56.2 +		
	272.5	102.9 +	-1.59 +	
	39.3			-1.54 +
a 27.0	96.6	57.3 +		
2.4	226.6	49.7 +		
11 24.2 +	276.3	107.0 +	-1.49 +	
5 -6				

16 23.6 + Gr. M. Time.

4 2 36.62 3 +

Mean = -1.46 +

June 30, 1899,

Right & Below Same Again.

47.6 < Titan dia.

97.0 49.4+

11. 28.5 223.8 55.4+

279.2 104.8 - 1.54+

39.3 -1.42+

98.6 59.3+

227.4 50.2+

277.6 109.5+ - 1.43

Left & Above.

305.8

10.9 62.1+

137.6 51.4+

159.0 113.5+ - 1.34

315.2 -1.32+

11 34.5 7.8 52.6+

63.0 131.3 63.1+

11 31.5 194.4 115.7+ - 1.29

5 -6

16 30.9 Gr. M. Time.

4 58 36.88+

Mean = -1.40+

July 1. 1899. Saturday.

Plot X. Prime Ceraski's Var. W. 6h.

20 8 +46 3

14 40

5 28

Left & Above 6 32 Ledgered

~~76.6~~ < comp star dis.

Clouds. Stars gone. I

Some clearer again

~~294.7~~ Cloud.

~~8 51.40~~ ~~27.9~~

114.2 < comp dis.

53 00 211.7 97.5x

293.0 97.7x

30.7 195.2x −0.29x

164.8x

11.5.4

55 30 2~~09~~19.0 94.6+ −0.26x

293.3 98.1+

31.4 192.7+

167.3+ − 0.24+

Right & Below

20.6

58 20 127.9 101.3+

204.5 101.8+

300.3 203.1+

23.6 156.9x −0.44x

59 50 127.9 ~~98.3~~ 98.3x −0.40x

26 40 206 ~~99.1~~ 100.0x

8 56 40x 301.0 198.3x

5 −36 4837.5807x 161.7x −0.35

1356 04x 4837.3299x

0.2508

mean = −0.33x

~~June~~ July 1, 1899

Right & Below.

22.4

9 01 58 1230 100.6

207.5 98.2

301.7 198.8

161.2 -0.36

II

20.0

121.4 101.4 -0.35

04 45 202.6 96.7

299.3 198.1

167.9 -0.34

Left & Above

114.3

07 20 213.4 99.1

293.5 94.6

288.1 193.7

166.3 - 0.26

113.3

09 25 208.4 105.1 -0.38

23 20 289.3 100.7

9 5 50 300.0 205.8

5 · -36 154.2 - 0.49

14 5 14 Gr. M. Time.

4837.5869

4837.3299

+0.2570

Mean = -0.36

July 1, 1899.

Left & Above

III

114.7

9 11 50 210.0 95.3^{x}

293.4 96.6^{x}

30.0 191.9^{x}

168.1^{x} -0.22^{x}

360.0^{x}

112.3

14 20 210.6 98.3^{x} -0.34^{x}

293.0 106.2^{x}

clouds. stars gone. 204.5^{+}

155.5 -0.47^{x}

39.2

Right & Below.

27.0

27 30 122.2 99.2^{x}

203.3 97.4^{x}

300.7 196.6^{x}

163.4 -0.32^{x}

23.7

30 20 120.4 96.7^{x} -0.34^{x}

34 00 201.7 102.3^{x}

9 21 00 304.0 199.0^{x}

161.0^{x} -0.36^{x}

5 -36

14 20 24 Gr. M. Time Mean = -0.34^{x}

4537.5975^{+}

4537.3299

+0.2676^{+}

July 1, 1899

Right & Below IV

19.7

9 32 15 123.0 103.3+

203.8 98.6+

302.4 201.9+ −0.42+

158.1

22.8 clouds

34 00 120.6 98.8+ −0.40+

44 30 200.1 ← Clouds thick. stars gone.

39 15 301.8 101.7+

Left & Above. 200.5+

159.5 −0.39+

291.4

49 45 31.1 99.7+

113.0 97.4+

210.4 197.1+

162.9 −0.32+

293.0

51 50 301 Clouds: stars gone. −0.29+

173.05 114.6 97.1+

96.6+

9 43 16+ 211.2 193.7+ −0.26+

5 36 162.3+

Continually troubled by clouds especially

14 42.36+ in the last group.

4837.6128+ mean = −0.34+

4837.3299

+0.2829+

July 1, 1899.

Phot. T. Titan ~~Iapetus~~. W. obs.

17 10 −21.0

16 55

0 15

Left 11 45

10 18 Too much cloud at present to measure Titan

Same comp. star as on previous night.

10 23 47 318.1 < Titan comm

6.2 48.1+ Ledgered.

138.0 49.2+

~~18~~6. 97.3+ −1.72+

187.2

−1.58+

314.7

8.9 54.2+

137.0 54.5+

191.5 108.7+ − 1.45+

Right & ~~Below.~~

223.0

279.7 56.7+

39.0 65.0+

104.0 121.7+ − 1.16+

220.3 −1.23

10 32.0 281.6 61.3+

55.7 45.7 53.7+

10 27.8 ~~10~~ 99.2 115.0+ − 1.30+

5 .6

15 27.2 Gr. M. Time.

4837.644+

Mean = −1.40+

July 1, 1899

Same again.

Right

225.0

10 34.5 278.6 53.6

42.5 57.8

100.3 111.4 − 1.39

221.7 − 1.34

280.~~5~~ Clouds. 58.8

43.6 56.5

100.1 115.3 − 1.30

~~R~~ Left

136.7

190.7 54.0

~~312~~ 55.4

313.4 109.4 − 1.43

~~8.2~~ 8.8

134.6 − 1.41

47.5 191.3 56.7

313.6 54.7

82.0 8.3

10 41.0 111.4 − 1.39 mean = −1.380

5 .6 Impossible to measure Iapetus; Titan ~~10~~ 0 in first group, difficult on account of cloud & haze.

15 40.44

4837.653

July 1, 1899.

Phot. W. R. S. Sagittarii W. Obs.

Left & Above 15 9 -34.2

125.8 towards 17 30

11 06 35 219.0 0 19 Power 135 I used

7.2 11 41 Ledgered.

36.2 34.2× Plotted.

29.0×

125.9 63.2× — 2.74×

05 35 216.1

5.0 30.2× -2.72×

39.0 34.0×

64.2× — 2.76×

Right & Below

95.0

11 00 125.2 33.2×

275.6 30.8×

306.4 64.0× — 2.71×

95.4 -2.66×

13 20 129.4 34.0×

39 30 275.4 32.6×

11 09 52 +305.0 66.6× — 2.62

5 36

16 09 16 Gr. M. Time. Mean = -2.69×

4537.6721

4537.0721 √×

+0.6000×

July 4, 1899

~~For~~ Same again.

Right o Below

II

95.8

11 18 35 128.5 32.7x

276.1 32.1x

308.2 64.8+ -2.68x

95.2 -2.68

17 40 127.4 32.2x

275.0 33.1x

308.1 65.3+ -2.67

Left o Above

5.1

19 45 37.5 32.4x

185.4 31.9x

217.3 64.3+ -2.70

5.5 -2.70

21 20 37.5 32.0x

74 20 185.8 32.4x

11 18 35x 218.2 64.4+ -2.70

5 36

16 17 29+ -2.69+

48 37.6792+

48 37.0721

0.6071+

July 1, 1899.

Left & Above — III

6.0
11 23 05 38.2 — 32.2x
185.4 — 31.3x
216.7 — 63.5x — -2.73x

6.2 — -2.74x
27 00 37.2 — 31.0x
185.5 — 32.3x — -2.74
217.8 — 63.3x

Right & Below
275.0
31 10 307.5 — 32.5x
95.8 — 32.8x
127.6 — 63.3x — -2.74

275.3 — -2.72
~~33 15~~ 307.8 — 31.9x
11 36 30 95.2 — 32.4x
11 29 08x 127.6 — 64.3 — -2.70
5 36 — -2.73x
16 28 32x Arnold & Hunt — Bond 384
4837.6864x 11 43 36.0 — 11 43 00
4837.0721x ~~H~~ — H
0.6143x

July 3, 1899. (Monday)

Phot. W. B Lyrae N. Obs.

15 45 +33.2

9.5 in cap. used. 14 55

3 50

Left & Above 8 10

245.1 <var. dis. Ledgered, Plotted.

F 11.7 265.5 20.4

64.2 20.8

85.0 41.2 − 3.70

244.8 −3.75

264.8 20.0

65.2 19.4

84.6 39.4 − 3.80

Right & Below.

155.2

174.3 19.1

335.2 19.1

354.3 38.2 − 3.87

154.8 −3.83

F 19.5 175.0 20.2

11.2 335.5 19.3

F 15.6 354.8 39.5 − 379

5 .7

13 14.9 Gr. M. time. mean = −3.79

4839.552

4834.276

+5.276

July 3, 1899.

II

Right & Below

	155.4		
8 22.0	175.1	19.7	
	3~~3~~4.9	20.3	
	355.2	40.0 —	3.77
			-3.80
	155.3		
	174.9	19.6	
	335.0	19.3	
	354.3	38.9 —	3.83

Left & above

	65.3		
	85.1	19.8	
	244.6	20.3	
	264.9	40.1 —	3.76
			-3.76
	65.1		
8 29.2	85.2	20.1	
11.2	245.3	19.8	
8 25.6	26~~5~~.1	39.9 —	3.77

5 -.7

13~~24~~9.

48 39.559

~~45~~ 34.276

+5.283

Mean = -3.78

July 3, 1899.

III

Left & Above

65.1

8 31.4 85.5 20.4

244.5 20.0

265.5 41.4 — 3.69

64.8 -3.70

85.2 20.4

244.8 20.5

265.3 40.9 — 3.72

Right & Below

335.5

354.8 19.3

155.3 20.0

175.3 39.3 — 3.81

334.9

8 39.4 355.2 20.3 -3.80

10.8 155.7 19.1

8 35.4 174.8 39.4 — 3.80

5 .7

13 34.7 Gr. M. Time.

4 8 39.566

4 8 34.276

+ 5.290

Mean = 3.75

July 3, 1899.

Phot. T. W Virginis Mr. Obs.

13 16 -4.2

15 53

Left above 2 37

181.6 Comp. star dis Plotted, Ledgered.

I

9 11.5 173.7 22.1″

329.6 22.6″

352.2 44.7+″ +3.52″

151.3 +3.53″

174.2 22.9″

330.4 21.4″

351.8 44.3″ + 3.54″

Right & Below.

59.2

84.1 24.9″

239.3 24.9″

264.2 49.8+ +3.28″

59.2 +3.28

15.5 84.1 24.9″

10.0 239.1 24.9″

9 15.0 264.0 49.8″ + 3.28″

5 .7

14 14.3 G. M. Time.

Mean = +3.40″

4h39.5933

4h32.5788

7.0145

July 3, 1899

Right & Below. II

59.5
9 20.5 53.3 23.5
240.1 23.9
264.0 47.4 + 3.39

59.5 + 3.36
54.3 24.5
240.2 23.5
264.0 45.6 + 3.33

Left & above
329.4
352.5 23.4
151.2 21.9
173.2 45.3 + 3.49

330.0 + 3.47
9 29.5 353.1 23.1
151.3 23.0
10.6 174.3 46.1 + 3.45
~~9~~ 25.3
5 -.7
14 24.6 Gr. m. Time.
Mean = + 3.42

4539.6604
4532.5722
7.0216

July 3, 1899

III

Left & Above

329.8
9 32.5 353.2 23.4
150.5 23.3
173.8 46.7 +3.42

329.9 +3.42
353.3 23.4
150.6 23.2
173.8 46.6 +3.43

Right & Below

240.0
263.3 23.3
59.1 24.6 +3.37
83.7 47.9

240.4 +3.38
9 40.8 264.0 23.6
7.6 60.0 23.8
83.8 47.4 +3.39

9 36.8
5 -.7

14 36.1 Gr. M. Time Mean = +3.40

4539.6054
4532.5758
7.0296

July 3, 1899.

Right & Below IV

240.2

9 44.2 263.5 23.3

59.6 23.5

83.1 46.8 +3.42

240.2 +3.40

264.2 24.0

60.0 23.6

83.6 47.6 +3.38

Left & Above

150.5

173.5 23.0

329.7 24.0 +3.41

353.7 47.0

150.1 +3.40

9 50.8 173.7 23.6

95.0 329.3 24.0

9 47.5 353.3 47.6 +3.38

5 -7

14 46.8 Gr. M. Time. Mean = +3.40

48 39.6159

48 32.5788

+7.0371

July 3, 1899.

V.

Left O above

	150.3			
9 55.5	173.9	23.6		
	330.0	23.4		
	353.4	47.0	+ 3.41"	
				+ 3.40"
	150.4			
	173.8	23.4		
	330.0	23.7	+ 3.40"	
	353.7	47.1		

Right O below

	60.0			
	84.0	24.0		
	240.2	23.9	+ 3.37"	
	264.1	47.9		
	59.3			+ 3.38"
10 02.5	83.5	24.2		
11 58.0	240.1	23.5		
	263.6	47.7	+ 3.39"	

9 59.0
5 -7

14 58.3 Gr. M. Time

45 39.6 235*
45 32.5755

7.0450

mean = + 3.39"

July 3, 1899.

~~Titan.~~
Iapetus

Phot. T. 17 8 0 - 21.0 W Obs.
17 16
0 6

Iapetus follows Saturn 34.5 secs. and is
1.4 S of it. Comp. Star = same as last Time.
Left & above

230.7 comp. + dis. Ledgered.

10 42.2 272.8 41.8

50.9 43.7

94.6 58.5 +2.04

233.6 +2.04
~~272.0~~ 38.4
51.4 43.9
95.3 82.3 +2.04

Right & Below.

139.9

153.2 43.3

319.9 42.7

2.6 86.0 +2.00

140.6 +2.02

10 52.4 150.8 40.2

94.6 319.0 44.7

10 47.3 8.7 84.9 +2.05

5 -.7

15 46.6 Gr. M. Time Mean = +2.03

4 F 39.6 5

July 3, 1899.

Same again.

Right & Below

140.0
0 55.7 183.7 43.7×
320.3 42.9+
~~27~~ 86.6 - +2.01×
31.2

149.0 +2.01×
183.8 43.8×
319.5 42.6×
2.1 86.4× +2.01×

Left & Above.

50.2
97.8 43.6×
230.2 41.5×
271.7 85.1× +2.05×

51.1 +2.08×
11 06 00 92.5 41.4×
121.7 230.2 41.5×
11 00.8× 271.7 82.9× +2.11×
5 -.7

16 00.1× Gr. M. Time
4839.667×

mean = +2.04

July 3, 1899.

Left & Below Titan.

F9 < Titandis.

131.2 Ledgered

11 14.2 191.3 60.1"

317.7 49.6"

7.3 109.7" −1.42"

137.3 −1.44"

187.7 50.4"

313.7 57.2"

10.9 107.6" −1.47"

Right & Above.

41.1

103.3 62.2"

223.2 56.2"

280.0 119.0" −1.21"

43.2 −1.26"

11 19.5 96.9 53.7"

14.0 220.0 60.0"

11 17.0 280.0 F 114.5" −1.31"

5 −7

16 16.3 Gr. m. Time. Mean = −1.35"

H 5 39.67 "

July 3, 1899.

Same Again.

Right & Above

41.0

Cl 21.4 103.0 62.0

223.9 53.3

277.2 115.3 -1.30

42.0 -1.27

101.6 58.6

221.3 59.2

280.5 117.8 -1.24

Left & Below

314.8

9.4 55.1

135.6 46.1

181.7 101.2 -1.63

315.6 -1.57

Cl 27.4 17.6 52.0

" 24.4 135.2 54.2

5 -7 189.4 106.2 -1.51

mean = -1.42

16 23.7 h.m.t. Observations of Iapetus difficult on account

45 39.6 = 3 of faintness of Sat. & Haze.

Arnold & Kent Bond 39

" 42 40 " 42 00

" 43 40 " 43 00

July 5, 1899. (Wednesday)

Phot. W. *B Lyrae W. Obs.

9.5 inch cap used.

18 45	18 45	+3 32
15 03	14 53	
3 42	3 52	
8 48	8 08	

Right & Below, Ledgered ~~Plotted~~ T.

8 02.0 176.5 ∠ var dis.

200.0 23.5 x

356.4 23.6 x

20.0 47.1 x − 3.40 x

176.4 −3.42 x

200.3 23.9 x

357.3 22.5 x

19.2 46.4 x − 3.44 x

Left & Above

86.7

109.8 23.1 x

267.3 22.7 x

290.0 45.8 x − 3.47 x

86.3 −3.44

8 09.5 110.1 23.8 x

8 11.5 266.6 23.2 x

8 5.8 + 289.8 47.0 x − 3.41 x

5 −.2

13 5.9 Go. Ko. Time 4841.545 + 4834.276 mean = −3.43

July 5, 1899.

Left & above II

56.5

5 1285 109.3 22.5

266.4 23.6

290.0 46.1 - 3.45

55.9

110.0

~~109.5~~ 24.1

266.4 22.9

289.3 47.0 - 3.41

- 3.43

Right & Below

356.4

19.0 22.6

176.1 24.2

200.3 46.8 - 3.42

356.1 - 3.42

215 20.2 24.1

343 177.4 22.6

5 172 200.0 46.7 - 3.42

5 5

13 16.4 Geo. M. Price

4541.553

4534.276

+7.277

mean = 3.43

July 5, 1899.

III.

Right & Below

356.5

8 32.6 20.8 23.7

175.5 24.6

200.7 48.3 - 3.35

355.6 - 3.37

20.4 24.8

177.0 22.6

199.6 47.4 - 3.39

Left & Above

266.7

290.0 23.4

86.0 24.8

110.8 48.2 - 3.30

265.5 - 3.34

39.6 290.5 25.0

12.2 86.3 23.5

8 36.1 109.8 48.5 - 3.34

5 .8

18 35.3 Gr. m. Time.

~~48 41~~.566

48 34.276

+7.290 Images a little blurry on account of this and rather high altitude observations a little difficult.

Mean = 3.36

July 5, 1899.

Phot. Y. W Virginis W. Obs.

13 16 -4.2
15 56
2 40

Left & Above

332.2 < comp. star dis. Ledgered Plotted.

9 14.6 352.0 19.8

152.4 19.45

171.9 39.3 + 3.51

332.0 + 3.51

351.9 19.9

152.0 19.4

171.4 39.3 + 3.51

Right & Below

242.0

262.8 Clouds! Clouds! 20.3

62.2 Clouds. 20.0

82.2 40.3 + 3.75

242.3 + 3.76

9 38.8 262.0 19.7

53.4 61.8 20.3

9 26.7 81.8 40.0 + 3.77

5 -1.8

14 25.9 Har. M. Time Mean = + 3.72

4841.6013

4832.5788

9.0225

July 5, 1899.

Right & Below. II

242.0

9 41.7 262.2 20.2*

61.9 20.0*

81.9 40.2* + 3.76*

242.1 +3.76*

262.1 20.0*

61.8 20.1*

81.9 40.1* + 3.76*

Left & Above

152.2

9 52.1 172.0 19.8*

~~9~~3.8 332.2 19.4*

9 46.9 351.6 39.2* + 3.81*

5 .8 clouds: clouds thick.

14 46.1 [illegible] 15.

~~48~~41.6154* 17.

48 32.5788*

+9.0366*

33 ..

35

mean = +3,78*.

Stopped by clouds.

11 20 Sky thickly cloudy: no chance for anything further:

Arnold & Dent			Bond 394,		
11	29	47.5	11	29	00
11	30	47.6	11	30	00

July ~~5~~ 6, 1899. Thursday.

~~III~~

7.30 Cloudy
8.00 Cloudy

8.30 Cloudy

8.50 Still cloudy; raining at intervals; no chance for any work.

July 7 1899. (Friday)

Phot. W.   B Lyrae   W O K
9.5 in Cat used.   12 45   + 33.2
15 00
3 45

7 52 Clouds.   2 15

12 45
− 15 45
3 00
9 00

8 30 Cloudy
9 00 Cloudy
9 30 Cloudy

Too Cloudy to do anything with B Lyrae

Arnold & Kent			Bond 394.		
9	50	27	9	51	00
9	51	27	9	52	00

Obs. Jup II   Phot R   W O K
Comp with   Campbell Rec

Jup. Visible for a few minutes a little while before time when satellite should have been observed for Disappearance But at time of eclipse & a while before Jup - entirely invisible.

July 7, 1899.

About three min. after theor. time of disa. Jup. and Sat. seen for a moment. At that time Sat II had disappeared. Immediately after clouds again thick + Jup. gone.

10 15 Cloudy no chance for anything further.

July 10, 1899 (Monday)

Mme Ceraski's Variable.

Phot. T. 20 8 +46.3 W. Ufs.

15 15
4 50
7 10

Left & Above

Ledgered. Plotted.

317.8 < comp Stars dis.

8 22 00 4.7 46.9+

140.0 46.8+ +1.82+

186.8 93.7+

+1.81

317.5

25 00 5.1 47.6+

138.7 46.8+ +1.80+

185.5 94.4+

Right & Below.

224.0

28 10 278.4 54.4+

44.9 53.1+ +1.48+

98.0 107.5+

+1.48+

225.4

31 50 277.8 52.~~4~~+

107 00 44.3 55.3+

8 26 45+ 99.6 107.7+ +1.47+

5 +49+

48 46.5608+

48 46.4762

13 27 34+ Gr. M. Time. +0.0846+ Mean +1.64+

July 10, 1899.

Right & Below. II

223.3
8 37 00 250.8 57.5+
44.0 55.8+
99.8 113.3+ +1.34+

224.8 +1.36+
40 10 279.5 54.7+
43.3 56.7+
100.0 111.4+ +1.39+

Left & Above.
136.2
42 40 190.1 53.9+
314.8 53.6+
8.4 107.5+ +1.48+

135.2 +1.46+
45 00 190.0 54.8+
164 50 315.0 54.1+
8 41 12+ 9.1 108.9+ +1.44+
5 +49+
13 42 01+ Gr. M. Time.
4846.5708
4846.4762
+0.0946+

Mean = +1.41+

July 10 & 99.

III

Left & Above

135.6

8 47 35 191.1 55.5^{+}

314.4 54.6^{+}

9.0 110.1^{+} +1.42^{+}

+1.36^{+}

135.3

49 40 190.3 57.0^{+}

313.0 57.6^{+}

10.6 114.6^{+} +1.31^{+}

Right & Below

41.5

53 10 102.3 60.8^{+}

223.3 58.7^{+}

282.0 119.5^{+} +1.20^{+}

+1.13^{+}

40.2

55 45 103.5 63.3^{+}

206 10 220.0 63.0^{+}

8 51 38^{+} 283.0 126.3^{+} +1.06^{+}

5 +49^{+}

13 51 27^{+} Gr. M. Time. Mean = +1.24^{+}

HF46.5774

HF46.4762

+0.1012^{+}

July 10, 1899.

IV

Right & Below

39.3
8 59 45 103.4 64.1+
221.3 63.7+
254.0 127.8+ +1.03+

40.5 +1.02+
9 02 25 105.0 64.5+
220.4 64.3+
254.7 128.8+ +1.00+

Left & Above

310.0
07 50 13.2 63.2+
129.9 64.9+
194.8 128.1+ +1.02+

310.0 +1.03+
09 55 13.2 63.9+
2 59 55 130.6 63.9+
9 4 44 194.5 127.1+ +1.04+
5 +49

14 5 33 Gr. M. Time. Mean = +1.02+
48 46.5872+
48 46.4762
+.1110+

July 10, 1899

V

Left & above

309.0
9 15. 10 15.0 66.0+
128.8 65.4+
194.2 131.4+ + 0.95+

+0.94+

308.8
17 35 15.7 66.9+
130.1 65.7+
195.8 132.6+ + 0.92+

Right & Below

218.0
20 50 286.2 68.2+
36.0 69.8+
105.8 138.0+ + 0.81+

+0.76+

216.3
23 00 287.0 70.7
76 35 35.5 71.8
9 16 39+ 107.3 142.5 + 0.72+
5 +49+
14 17 28+ Gr. M. Time.

mean = +0.85+

48 46.5954+
48 46.4762
+0.1192

July 10, 1899.

Right & Below VI

217.0

9 27 50 287.7 70.7+

35.8 72.2-

108.0 142.9+ +0.72+

+0.72+

216.5

30 05 288.1 71.6

35.5 71.8-

1073 143.4- +0.71

Left & above,

127.0

33 25 198.0 71.0-

3044 73.1-

17.5 144.1- +0.69-

+0.71

125.5

35 45 197.3 71.8-

127 05 307.2 70.6-

9 31 46- 17.8 142.4+ +0.73+

5 +49-

14 32 35 Gr.M. Time. mean = +0.72+

45 ~~4~~6.6060+

45 46.4762

+0.1298

July 10, 1899

VII

Left & Above

125.0
9 46 05 199.2 74.2
304.1 75.5
19.6 149.7 +0.58^{+}

124.7 +0.59^{+}
45 10 199.7 75.0
304.9 73.6
18.5 148.6 +0.60^{+}

Right & Below

31.1
52 20 112.0 80.9
213.0 78.3
291.3 159.2 +0.40

32.0 +0.38^{+}
54 40 111.8 79.8
200 15 210.5 81.5^{+}
9 50 04 292.0 161.3^{+} +0.36
5 +49
14 50 53 Gr. M. Time.

mean = +0.48^{+}

48 46.6186^{+}
48 46.4762
+0.1424^{+}

July 10, 1899

Right & Below VIII

31.8
9 58 25 113.7 81.9
210.8 80.5
291.3 162.4 + 0.33

+0.37

32.8
10 00 10 112.0 79.2
212.5 79.5
292.0 158.7 + 0.41

Left & Above

302.5
02 55 18.0 75.5
123.0 80.0
203.0 155.5 + 0.47

~~+ 0.46~~

301.2
04 55 19.9 78.7
246 25 123.7 77.8
10 01 36 201.5 156.5 + 0.40
5 + 49
15 02 25 Gr. M. Time

mean = + 0.42

4846.6267
4846.4762
+ 0.1505

July 10, 1899.

IX

Left & Above

302.0
10 16 30 22.3 80.3+
122.0 80.5+
202.5 160.8+ + 0.37+

300.0 +0.33+
18 50 22.5 82.5+
120.8 82.1+
202.9 164.6+ + 0.29+

Right & Below

212.0
23 00 296.0 84.0+
28.2 85.4+
113.6 169.4+ + 0.20+

210.2 +0.20+
25 00 294.1 83.9+
28.6 85.6+
8 3 20 114.2 169.5+ + 0.20+

10 20 50+
5 +49+
15 21 39+ Gr. M. Time.

4846.6400+
4846.4762
+ 0.1638+

Mean = +0.26+

July 10, 1899.

X

Right & Below

210.2
08 30 55 294.4 84.2
27.5 89.3
116.8 173.8 + 0.12

+ 0.08

207.4
34 15 296.7 89.3
26.2 88.7
114.9 178.0 + 0.04

Left & above

119.2
39 30 203.5 84.3
298.2 86.6
24.8 170.9 + 0.17

+ 0.14

118.4
43 05 206.7 88.3
147 45 298.3 85.9
10 36 56 26.2 174.2 + 0.11
5 +49
15 37 45 Gr. M. Time.

mean = + 0.11

4.846,6513
4846.4762
+ 0.1751

July 10, 1899.

Left ☉ Above

XI

	117.6		
10 54 05	205.4	87.8+	
	295.7	90.8+	
	26.5	178.6+	+ 0.03+
	117.4		
55 55	205.9	88.5-+	+ 0.04+
	296.9	89.0+	
	25.9	177.5+	+ 0.05-+

Right ☉ Below

	26.2		
11 00 35	117.3	91.1+	
	207.4	89.7+	
	297.1	180.8+	- 0.02+
		179.2+	
	26.8		- 0.04+
02 45	117.8	91.0+	
	206.2	91.8+	
	298.0	182.8-	- 0.05-+
		177.2+	

2	33	10
10	58	18+
+5		+49+
15	59	07 Gr. M. Time.

48 46.6661+
48 46.4762
+0.1899

Mean = 0.00

July 10, 1899.

I aperture

Phot. T. 17 15 +21.0 H. Obs.

18 45

1 30

Right & above

57.6 < comp & dis. Comp. Star = -21° 4554 (A.G.)

11 53.5 84.8 27.2

238.3 26.1 Ledgered

264.4 53.3 + 3.13

57.2 + 3.12

84.7 27.5

239.4 26.6

266.0 54.1 + 3.10

Left & Below

330.0

359.4 29.4

149.4 25.4

174.8 54.8 + 3.07

334.5 + 3.37

12 00.5 352.4 17.9

151.2 24.0

11 4.0

11 57.0 175.2 41.9 + 3.67

5 4.8

16 57.8 Gr. M. Time

4846.707

Mean = 3.24

July 10. 1899

Same Again

Left & Below

330.1
12 03.2 352.2 22.1+
149.8
174.3 25.0+
47.1+ + 3.40+

331.0 23.0+ + 3.36+
354.0
149.2 25.6+
174.8 48.6+ + 3.33+

Right & Above

238.7
264.0 25.3+
58.2 26.0+
84.2 51.3+ + 3.22+

238.0 + 3.18+
12 10.6 264.6 26.6+
1 3.8 57.8 26.7+
12 6.9+ 84.5 53.3+ + 3.13+
5 ~~7.8~~
17 7.7^{8} Gr. M. Time.
.714+

mean = +3.27+

July 10, 1899.

Titan.

Ledgered.

Right

120.6 < Titania.

$2^{15}.0$ 201.2 — 80.6

303.9 — 78.4

22.3 — 159.0 — −0.40

−0.32

120.0

204.3 — 84.3

295.7 — 83.7

19.4 — 168.0 — −0.23

Left

31.3

110.0 — 78.7

211.7 — 82.0

293.7 — 160.7 — −0.37

−0.36

31.8

264

112.7 — 80.9

364 212.8 — 80.7

12 18.2 293.5 — 161.6 — −0.35

8 +.8

17 19.0 Gr. M. Time.

4846.722

Mean = −0.34

July 10, 1899

Same Again

Left.

31.4

12 22 8   111.3   78.9+

212.3   81.1+

293.4   160.0+   - 0.38+

32.0

112.8   80.8+   -0.33+

211.0   82.3+

293.3   163.1+   - 0.32+

Right.

300.8

22.0   81.2+

120.1   82.8+

202.9   164.0+   - 0.30+

300.2   -0.30+

12 29.2   23.0   82.8+

12 0   120.5   81.7+

12 26.0+   202.2   164.5+   - 0.30+

5   +.8   r.   mean = -0.32

17 26.8+   fr. Mr. Arnold & Short   Bond 394

.727+   12 46 11.3   12 47 00

12 47 11.5   12 45 00

July 11, 1899. (Tuesday

Phot. W. β Lyrae. W. Uk.

18 45 +33.2

9.5 inch cap used. 15 15

3 30

Left & Above 8 30

I.

Plotted. Ledgered

272.7 ∠ var dis.

7 52.8 295.9 26.5+

91.7 27.9+

119.6 54.4+ −3.02+

271.7 28.2+ −3.06+

299.9 27.5+

92.0 55.7+ −3.03+

119.5

Right & Below

182.8

26.3+

209.1

1.9 27.7+ −3.10+

29.6 54.0+

182.0 27.5+ −3.10+

8 06.0 209.5

121.2 3.1 26.2+

8 0.6 29.3 53.7+ −3.11+

5 4.8

mean −3.08+

13 1.48 Gr. M. Time.

4847.542+

4847.192

1.850

July 11, 1899.

II

Right & Below

158.0

8 08.8 208.9 25.9+

2.4 26.9+

29.3 52.8+ — −3.15+

158.4 −3.14+

209.7 27.3+

3.2 26.0+

29.2 53.3+ — −3.13+

Left & Above

93.0

120.1 27.1+

271.6 28.4+

300.0 55.5+ — −3.04+

92.0 −3.04+

8 16.2 120.3 28.3+

8 25.0 272.6 27.4+

8 12.5 300.0 55.7+ — −3.03+

5 4.8

13 13.3+ Gr. M. Time. Mean −3.09+

48 47.551+

48 47.192

+0.359+

July 11, 1899.

III

Left O Above

929
8 19.2 120.0 27.1
271.4 28.9
300.3 56.0 — −3.02

91.8 −3.02
120.3 28.5
272.5 27.5
300.0 56.0 — −3.02

Right O Below.

3.2
29.4 25.9
182.0 28.2
210.2 54.1 — −3.10

1.9 −3.08
8 27.6 30.2 28.3
46.8 182.7 26.4
8 23.4 209.3 54.7 — −3.07
5 +8 mean −3.05
m.t.
13 24.2 hr Altitude very high, Obs. difficult.
4847.558
4847.192
+0.366

July 11, 1899.

Phot. T. W Virginis W. Obs.

13 16 -4.2
16 16
3 00

3.2

~~8 7~~
~~Sidereal~~: ~~16 25~~
S. T. 16 25
H a 3 7 Dec. -3°.2

Left & Above

Ledgered. Plotted.

323.0 < comp. star dis.

8 59.8 358.9 35.9
143.7 38.7
182.4 74.6 +2.36

322.4 +2.33
2.0 39.6
144.1 36.9
181.0 76.5 +2.30

Right & Below

233.3
270.4 37.1
52.1 39.9
92.0 77.0 +2.28

Phase = +15.0071

1322 +2.26
906.0 272.0 39.8
125.8 52.7 14 3.7 Gr. M. T. 38.7
9 2.9 91.4 4847.5859 78.5 +2.24
+1.8 4832.5788 +2.30

July 11, 1899

Right & Below II.

232.4

9 08.8 272.2 39.8^{+}

50.3 41.1^{+}

91.4 80.9^{+} $+2.17^{+}$

231.2 $+2.19^{+}$

271.8 40.6^{+}

52.6 38.8^{+}

91.4 79.4^{+} $+2.21^{+}$

Left & Above

143.8

180.8 37.0^{+}

322.8 39.2^{+}

2,0 76.2^{+} $+2.31^{+}$

142.9 +2.31

148 152.4 39.5^{+}

23.6 323.7 36.8^{+}

9 11.8^{+} 360.5 76.3^{+} $+2.31^{+}$

5 4.8

14 12.6^{+} Gr. m. Time Mean = $+2.25^{+}$

4847.5921^{+}

4832.5788^{+}

$+15.0133^{+}$

July 11, 1899.

Left & Above

III

143.8

9 18.7 181.5 37.7^{+}

323.0 38.0^{+}

361.0 75.7^{+} $+2.32^{+}$

141.9 $+2.30^{+}$

181.6 39.7^{+}

323.2 37.0^{+}

360.2 76.7^{+} $+2.29^{+}$

Right + Below

52.8

92.2 40.4^{+}

232.3 38.9^{+}

271.2 79.3^{+} $+2.22^{+}$

51.4 $+2.21$

23.7 91.8 40.4^{+}

42.4 232.3 39.5^{+}

9 21.2^{+} 271.8 79.9^{+} $+2.20^{+}$

5 8

14 22.0^{+} Gr. M. T.

Mean = $+2.26^{+}$

48 47.5986^{+}

48 32.5788

$+15.0198^{+}$

July 11, 1899.

Right & Below IV.

51.7

9 26.6 92.0 40.3

232.0 40.2

272.2 80.5 +2.18

51.8 +2.18

92.4 40.6

232.2 39.5

271.7 80.1 +2.19

Left & Above

322.7

362.2 39.5

143.1 38.5

181.6 78.0 +2.25

323.0 +2.28

9 34.6 361.3 38.3

61.2 143.0 38.0

9 30.6 181.0 76.3 +2.31

5 .8

14 31.4 Gr. M. Time. Mean = +2.23

4847.6052

4832.5788

+15.0264

July 11, 1899.

V.

Left o Above

322.4
9 37.4 361.2 38.8
143.1 37.8
180.9 76.6 +2.30

322.6 +2.30
361.2 38.6
143.0 37.8
180.8 76.4 +2.30

Right o Below.

232.5
272.3 39.8
51.5 40.0
91.5 79.8 +2.20

232.8 +2.20
9 43.8 272.2 39.4
51.2 40.0
81.2
9 40.6 91.2 79.4 +2.21
.8 Sprocket ~~whell~~, wheel reads mean = +2.25
14 41.4 Gr. M. Time 6 or +18.
4847.6121
4832.5788
15.0333

July 11, 1899.

Phot T. — Iapetus. — W. Ok.

17 10 . -21.0
17 35
0 25

Iapetus follows Saturn 34 secs. and is 2'.7 S of it.
Titan follows Saturn 12.5 secs. and is 0'.2 south of it.

Right & Above — Ledgered

238.0 < comp. + dis.
10 38.2 265.4 — 27.3
56.8 — 29.2
86.0 — 56.5 + 3.00

+ 3.03

238.1
264.5 — 26.4
57.1 — 28.6
85.7 — 55.0 + 3.06

Left & Below.
149.4
175.1 — 25.7
328.2 — 27.5
355.7 — 53.2 + 3.13

148.8 — + 3.15
10 50.4 176.0 — 27.2
88.6 329.5 — 25.0
10 44.3 354.~~8~~5 — 52.2 + 3.17
5 + 8
15° 43.1' 9r. - M. Time. — Mean = + 3.09
4 84 7 1.5

July 11, 1899.

Same again

Left & Below

149.2
10 53.8 176.6 — 27.4+
329.2 — 24.9+
357.1 — 52.3+ + 3.17+

149.8 — +3.22+
174.7 — 24.9+
329.0 — 24.8+
353.8 — 49.7+ + 3.28+

Right & above

56.2
87.0 — 30.8+
235.9 — 30.1+
266.0 — 60.9+ + 2.83+

56.3 — +2.84+
11 04.0 86.2 — 29.9+
117.8 235.8 — 30.8+
10 58.9 266.6 — 60.7+ + 2.84+
5 8
15 59.7+ Gr. M. Time — Mean = +3.03+
4847.667+

July 11, 1899.

Titan.

Right & Above

~~22.0~~ { Titan dis ~~comp + dis~~.

Ledgered.

1~~2~~9.8

cc cc.4 202.5 82.9+

303.4 78.3+

~~22~~.21.7 161.2+ - 0.36+

123.3 - 0.38+

201.4 78.1+

300.0 80.7+

20.7 158.8+ - 0.40+

Left & Below.

30.5

114.3 73.8+

214.9 76.2+

291.1 150.0+ - 0.58+

30.6 - 0.45+

20.0 111.57 81.1+

211.6 82.0+

31.4 293.6 163.1+ - 0.32+

11 15.7+

5 .8

16 16.5+ Gr. M. Time.

48 47.678+

Mean = - 0.42+

July 11, 1899.

Same again.

~~Right~~
Left & Below
29.9
11 22.1   114.0   84.1+
211.5   80.5+
292.0   164.6+   −0.29+

33.4   −0.31+
112.8   79.4+
210.6   83.1+
293.7   162.5+   −0.33

Right & Above.
300.8
23.0   82.2+
122.1   79.3+
201.4   161.5+   −0.35+

29.8   303.8   −0.39+
11 ~~30.8~~   ~~20.0~~ 19.8   76.0+
51.9   120.8   81.7+
11 20.0+   202.5   157.7+   −0.43+
5 +.8   mean = −0.35+
16 26.8 Dr. McIntire Arnold & Hunt   Bond 397
48 47.685+   11 40 15   11 41 00

July 12, 1899. (Wednesday)

Arnolds Hev			Bond 394		
7	27	17	7	28	00
7	28	17	7	29	00
7	29	17.2	7	30	00

δ Librae

14 56 -8.0
15 26
0 30

7 50 Too Cloudy

14 56 -8.0
15 40
0 44

All cloudy. no chance for any work:
8 30 Thunder shower coming up. accompanied by much lightning.

July 13, 1899. (Thursday)

Phot. T. W Virginis W. Obs.

13 16 −4.2

15 21

2 05

Left & Above

I

~~Plotted.~~

Ledgered

322.8 < comp star dis.

8 264 359.5 36.7+

145.5 34.4

179.7 71.1 + 2.47

+2.46

323.8

359.3 35.5

144.2 36.0+

180.2 71.5 + 2.46

Right & Below

234.2

269.3 35.1

52.8 37.3

90.1 72.4 + 2.43

+2.41

233.2

8 32.8 270.0 36.8+

59.2 53.4 36.7+

8 29.6 90.1 73.5+ + 2.39

5 +6

3 30.2 G. M. T.

Mean = + 2.44

4849.5626+

48 82.5758

16.9838+

July 13, 1899.

Right & Below. II

233.8

8 35.7 270.2 36.4^{+}

53.0 38.6^{+}

91.6 75.0^{+} $+2.35^{+}$

233.3 $+2.35^{+}$

271.3 38.0^{+}

53.4 36.8^{+}

90.2 74.8^{+} $+2.35^{+}$

Left & Above

142.9

180.1 37.2^{+}

323.3 Clouds 35.8^{+}

359.1 73.0^{+} $+2.41^{+}$

144.3 $+2.42^{+}$

8 43.3 180.3 36.0^{+}

79.0 323.4 36.8^{+}

8 39.5^{+} 360.2 72.8^{+} $+2.42^{+}$

5 $+.6^{+}$

13 40.1^{+} Gr. M. Time

4849.5695^{+} Mean = +2.38

4832.0788

$+16.9907^{+}$

July 13, 1899.

III.

Left & Above.

144.1

8 48.0 180.3 Clouds. 36.2

323.7 35.9

359.6 72.1 +2.44

143.9 +2.43

180.0 Clouds. 36.1

323.3 36.5

359.8 72.6 +2.42

Right & Below.

53.3

90.0 36.7

233.8 36.4

270.2 73.1 +2.41

53.3 +2.41

8 57.4 90.1 36.8

108.4 233.8 36.2

8 52.7 270.0 73.0 +2.41

5 .6

.3 53.3 8h mean Time. mean = +2.42

4849.5787

48~~49~~32.5788

+16.9999

July 13, 1899

Right & Below

IV

	53.4		
9 0.2	90.2	36.8$^+$	
	233.5	36.5$^+$	
	270.0	73.3$^+$	+ 2.40$^+$
	53.3		+ 2.40$^+$
	90.1	36.8$^+$	
	233.2	36.8$^+$	
	270.0	73.6$^+$	+ 2.39$^+$

Left & Above

	323.5		
	360.2	36.7$^+$	
	143.9	36.6$^+$	
	179.9	73.3$^+$	+ 2.40$^+$
	323.7		+ 2.40$^-$
9 12.6	360.2	36.5$^+$	
	143.5	36.5$^+$	
12.8	180.2	73.0	+ 2.41$^-$

9 6.4$^+$
5 + .6
14 7.0$^+$ Gr. M. Time

Mean = + 2.40.

4849.5882$^+$
4832.5788
+17.0094$^-$

July 13, 1899

Right & Below — V.

323.3
9 14.6 — 359.9 — 36.6+
143.5 — 36.5+
180.0 — 73.1+ — + 2.41+

323.5 — +2.41+
360.2 — 36.7+
143.6 — 36.4+
180.0 — 73.1+ — +2.41+

Right & Below,
233.0
270.4 — 37.4+
53.0 — 38.0+
91.0 — 75.4+ — +2.39+

+2.39

~~9 0~~ — 233.1
9 21.6 — 270.3 — 37.2+
36.2 — 53.2 — 37.0+ — + 2.37+
9 13.1 — 90.2 — 74.2+ mean + 2.38
5 +6

Troubled somewhat by thin clouds.

14 13.7 Sr. M. time. Sprocket wheel reads -6 or +18.

4849.5929+
4832.5788
+17.0141+

July 13, 1899.

Phot. T. Nova Sagittarii. W. Ob.

18 51 -13.0

17 08

1 43

Ledgered.

Left & above. 10 17

320.2 < comp star dis.

9 47.7 2.2 42.0+

142.2 42.2+

182.4 84.2+ +2.07+

321.0 +2.06+

3.0 42.3+

140.2 42.4+

182.6 84.7+ +2.06+

Right & Below.

229.2

276.8 47.6+

48.8 45.6+

94.4 93.2+ +1.53+

228.8 +1.82+

9 56.1 275.0 46.2+

103.8 48.3 47.7+

9 51.9 96.0 93.9+ 1.81+

5 +6

14 52.5 Gr. M. Time.

4849.620+

Mean = +1.94+

July 13, 1899.

Same Again.

Right O Below

228.0
9 59.1 276.0 48.0+
48.7 46.3+ +1.80+
95.0 ~~94.3~~ 94.3+ ~~+1.91~~

228.5 ~~+1.82~~
275.2 46.7+ +1.76+
48.0 50.2+
98.2 96.9+ +1.73+

Left O Above.
140.2
183.0 42.8+
322.6 40.4+
363.0 83.2+ +2.10+

141.4 +2.12+
10 05.3 182.2 40.8+
124.4 321.4 40.9+
362.3 81.7+ +2.14+

10 2.2+
5 +.6

~~mean~~ = + ~~2.00~~ ~~1.98~~
mean = +1.94+

15 2.8+ 9s m.r. Spectrum principally monochromatic
~~184~~9.627+ Faint continuous spectrum also through centre.

July 13, 1899.

Phot. T. Iapetus. W. Obs.

17 10 − 21.0
18 10
1 00

Iapetus follows Saturn 31.5 secs
and is 2!8 south of it.

Left Ledgered.

150.0
26.2+
10 53.0 176.2 Same comp. star as on previous night.
328.7 $\frac{25.9^{+}}{52.1^{+}}$ +3.18+
354.6

+3.20+

150.2 25.9+
176.1
327.6 $\frac{25.4^{+}}{51.3^{+}}$ +3.22+
353.0

Right.

57.2 29.5+
86.7
236.0 $\frac{29.1^{+}}{58.6^{+}}$ +2.91+
265.1

+2.88+

56.4 30.4+
11 03.0 ~~89~~.86.8
116.0 236.6 $\frac{29.7^{+}}{60.1^{+}}$ +2.86+
10 58.0 266.3
5 +.6
15 58.6+ Gr. M. Time.

4849.666+ Mean +3.04+

July 13, 1899.

Same. Again

Right.

56.4

11 05.2 56.3

235.8

265.6

35.8

56.7

236.7

266.0

Left.

Reject the above readings.

11 1

July 13, 1899.

Titan

Left & Above — Same comp star as on prev night

30.5 < Titan dis. — Ledgered.

11 15.8 — 113.4 — 82.9

214.6 — 74.0

255.6 — 156.9 — 0.44

—0.38

30.2

110.1 — 79.9

210.0 — 82.5

292.5 — 162.4 — 0.33

Right & Below.

304.0

218 Clouds. — 77.8

124.1 — 72.9

197.0 — 150.7 — 0.56

306.5 — 0.55

11 25.0 — 16.0 — 69.5

.40.8 — 122.4 — 82.4

11 20.4 — 204.8 — 151.9 — 0.54

5 +.6

16 21.0 Gr. mean Time. — Mean = —0.46

4849.681

July 13, 1899.

Right & Below — Same Again.

294.8

11 27.6 22.6 87.8+

126.2 71.8+

198.0 159.6+ − 0.39+

− 0.51+

307.8

16.5 67.7+

121.8 79.7+

201.5 147.4+ − 0.63+

Left & Above.

207.5

292.8 85.3+

36.2 70.9+

107.1 156.2+ − 0.45+

− 0.34+

212.3

11 32.0 291.0 78.7+

59.0 26.1 89.6+

11 29.5 115.7 168.3+ − 0.22+

5 +6

16 30.1+ Gr. Mean Time.

48 49.687+

Mean = − 0.42+

July 13, 1899.

Iapetus again (Sky slightly clearer

Left

149.9
11 37.4 176.0 26.1+
329.3 24.9+ / 51.0+ +3.23+
354.2

+3.22+

150.0 24.2+
174.2 27.5+ / 51.7+ +3.20+
328.5
356.0

Right

59.4 57.8
86.5 29.5+
~~80.1~~ 237.8 27.7+ / 57.2+ +2.97+
265.5

+2.90+

56.2 30.2+
11 47.8 86.4 30.2+ / 60.4+ +2.84+
236.~~8~~2
85.2 266.4 mean +3.06+
11 426
5 +.6
16 43.2 h.m.t.
4849.697+

Ledgered.

Sky became slightly cleared.
Observations difficult on Titan & Iapetus
Sky hazy; especially in second ob. on Titan.
Arnold & Hunt Bond 394

12 00 22 12 ~~10~~ 01 .00

July 14, 1899. (Friday)

8 00 Clouds.
Phot. T. χ Cygni. Wr Obs.

19 45 + 32, 6
15 55
3 50
8 10

8 30 Clouds. Ledgered.
35 Clouds

Above
323.3 <vardis.
8 36.6 359.3 36.0+
143.6 37.2+
180.8 73.2+ −2.40+
323.7
359.0 35.3+ −2.44
144.8 35.7+
180.5 71.0+ −2.47+

Below.
232.2
27.8.3 41.1+
53.6 37.4+
91.0 78.5+ −2.24+

8 41.0
77.6 233.0
8 38.8 272.8 39.8+ −2.24+
5 +.6 54.0 38.7+ −2.24+
13 39.4+ 9h M.T. 92.7 Clouds 78.5+
48 50.569+

Clouds rather thick.

Mean = −2.34

July 14, 1899.

Same again

Below
~~231.4~~ Stars gone.

231.4
9 20.0 271.0 39.6⁺
52.0 39.5⁺
91.5 79.1⁺ -2.22⁺

231.5 -2.16
274.2 42.7⁺
52.1 40.1⁺
92.2 82.8⁺ -2.11⁺

Above
141.8 Clouds.
150.4 38.6⁺
322.6 37.2⁺
359.8 75.8⁺ -2.32⁺

142.8 -2.30⁺
9 34.8 181.6 38.8⁺
54.8 321.8 37.9⁺
9 27.4 359.7 76.7⁺ -2.29⁺
5 .6
14 28.0⁺ Gr. Mean Time. Mean = -2.23⁺
4850.603⁵

July 14, 1899

Arnold of Kent. Bond 394.

9 41 26.2 9 42 00
9 42 26.5 9 43 10

Chronometer Corr = + 34 secs.

Reap. (Jup.) ~~6~~ I. phot. R. Ap-Ob.

Comp with sat on ~~follow~~ preceeding side = Sat. IV Campbell recorder

9 56 34	~~10~~ 9 56 00		seen	
36	02	62.4	150.5	+1.5
44	10	66.2	203.2	+0.9
54	20	69.5	187.0	+0.8
57 03	29	72.6	206.5	+0.7
10	36	79.7	183.9	+0.4
16	42	81.4	213.6	+0.3
23	49	82.8	182.2	+0.3
29	55	94.9	215.0	-0.2
36	57 02	97.9	120.1	-0.3
42	05	95.2	215.0	-0.2
52	15	101.4	122.5	-0.4
58	24	103.2	224.2	-0.5
58 14	40	104.0	121.0	-0.5
21	47	106.1	223.0	-0.6
28	54	109.0	115.9	-0.7
41	58 07	107.1	227.9	-0.7
47	13	105.2	120.5	-0.6

July 14, 1899.

9 58 05	~~10~~ 9	58	20	105.2	226.0	-0.6
59 01			27	105.4	120.5	-0.6
10			36	108.0	226.2	-0.7
20			46	107.8	118.2	-0.7
30			56		226.0	
59 19		59	03		118.9	
34			15	109.2	225.1	
59 53			25	110.3	115.5	/
			33	109.8	225.5	-0.8
			43		116.0	
10 00 00	10		57	1132	229.2	}
34	~~11~~	00	07	1147	114.0	
10 00 34			15	1140	228.7	-0.9
00 06			31		116.5	
+34			41	1108	227.6	-0.8 3
01 20			50	1134	116.5	
		01	00	111.2	230.2	
01 30			10		116.0	
+34			26	1140	230.0	-0.9
02 04			35	1127	117.5	4
			47	113.4	230.5	
			56		116.5	
		02	05		229.2	

July 14, 1899.

				116.4		
10 02 18	10	02	23	114.9	115.5	
+34			44	115.6	230.4 -1.0	
10 02 52		04	02		116.2	
			~~49~~		~~232.7~~	
04 42			40	111.8	228.0	6
34			55	114.9	117.0	
05 16		05	09	113.4	231.9 -0.9	
05 42			15		118.8	
34			33	111.2	230.0	
06 16			53	113.0	116.0	7
		06	06	112.1	229.0 -0.9	
06 44			20		117.8	
34			32	111.4	229.2	8
07 18			46	111.9	118.1	
		07	19	111.6	230.0 -0.8	

Limit of Visibility

	~~05~~	~~31~~		
	09	42		148.2
10 10 13	10	07	50.8	199.0
+34		21	49.9	148.2 (+1.6)
10 10 47		42	50.4	198.1

Seeing a little blurry.

July 14, 1899.

Arnold & Hunt Bond 39x
10 14 26.2 10 15 00
10 15 26.2 10 16 00
Iapetus follows Saturn 30 secs. & 2'.9 South of it.
Plot. 7. Iapetus Mr. Obs.
Left & above Same comp. star as on last time.

150.0 Plotted
10 36.6 174.2 24.2 Ledgered
329.1 26.1
355.2 50.3 +3.26

149.1 +3.22+
175.2 26.1+
329.0 25.9
354.9 52.0 +3.18

Right & Below.
57.5
85.4 27.9
237.3 28.4+
265.7 56.3+ +3.00

56.8 +2.98+
10 46.4 86.3 29.5+
83.0 237.4 28.1
10 41.5+ 265.5 57.6+ +2.95
5 .6
15 42.1+ Gr. Mean. Time. Mean = 3.10+
4850.654+

July 14, 1899.

Same Again

Right & Below

57.6
10 49.8 86.3 29.7+
237.0 28.7+
265.7 58.4+ + 2.92+

56.6
~~57.~~ +2.94+
85.3 28.7+
237.0 28.5+
265.5 57.2+ + 2.97+

Left & Above

327.6
355.4 27.8+
147.2 29.3+
176.5 57.1+ + 2.97+

327.4 + 3.00+
11 02.0 355.1 27.7+
11 1.8 148.2 28.3+
10 55.9× 176.5 56.0+ + 3.02+
5 +.6
15 56.5× Gr. Mean Time.
4850.664+

Mean = +2.97+

July 14, 1899.

Titan

Left above — Plotted

Ledgered.

35.5 ∠ Titan dist.

11 10.6 — 112.2 — 76.7+

206.4 — 86.9+

293.3 — 163.6+ — −0.31+

29.2 — −0.32+

115.0 — 85.8+

213.1 — 76.9+

290.0 — 162.7+ — −0.33+

Right & Below

Clouds.

301.2

~~17.~~

16.5 — 75.3+

117.0 — 88.2+

205.2 — 163.5+ — −0.31+

301.1 — −0.38+

11 22.0 — 20.8 — 79.7+

32.6 — 122.8 — 77.4+

11 16.3+ — 200.2 — 157.1+ — −0.44+

5 4.6

16 16.9 Gr. Mean Time

4850.678

Mean = −0.35+

July 14. 1899.

Same Again.

Right.
~~Left~~ & Below

305.2
1125.0 17.8 72.6+
118.8 82.5+
201.3 155.1+ − 0.48+

302.2 −0.50+
21.0 78.8+
124.6 74.6+
199.7 153.4+ − 0.51+

Left & Above.

213.1
291.2 78.1+
31.2 84.4+
115.6 162.5+ − 0.33

208.1 − 0.32
11 29.0 29.2.4 84.3+
140 31.1 80.1+
11 27.0+ 111.2 164.4+ − 0.30
5 +6 mean = −0.44+
16 27.6+ Hu.M.T. Titan
4850.686+

Much troubled by clouds in settings

July 15, 1899. (Saturday)

Bond 394
7 18 00
7 19 00

Arnold & Hunt
7 17 28.5
7 18 28.2

Phot. T. W Virginis W. Obs.

13 16 - 42

Left & Above 15 43 Plotted.

2 27 Ledgered.

I

1439
8 15.8 180.6 36.7+
324.2 34.1+
358.3 70.8+ +2.48

1441 +2.48
179.1 35.0+
323.8 36.2
360.0 71.2+ +2.47

Right & Below
52.9
90.6 37.7+
234.5 36.1+
270.6 73.8+ +2.38

53.3 +2.38
822.4 90.5 37.2+
38.2 233.6 36.4
8 19.1+
5 +.5 270.0 73.6 +2.39

13 19.6 Gr. M. Time. 4851.5553

4851.5553 4849.8499 +2.43

[illegible]

July 15, 1899.

II

Right & Below.

51.0

δ 24.0 90.2 39.2+

233.8 36.7+

270.5 75.9+ + 2.32+

53.2 +2.35*

90.3 37.1+

23~~4~~.3 36.8+

271.1 Clouds. 73.9+ + 2.38+

Left & Above.

325.4

358.7 33.3-

144.6 34.4+

179.0 67.7+ + 2.59+

324.2 +2.54*

δ 34.0 359.2 35.0+

13 29.5 h.m.t. 144.5 35.3+

179.8 70.3+ + 2.50+

4851.5622+

4849.5499+

+1.7123

Mean = +2.44*

July 15, 1899.

Left & Above   III

324.2
8 35.8   359.6   35.4'
143.9   35.9'
179.8 Clouds.   71.3' + 2.46'

+2.44'

325.9 Clouds thick.   ~~143.2~~ 144.1
360.0   179.4   35.3'
144. Clouds.   323.2   37.0'
177.   360.2   72.3' + 2.43'

Right & Below.
54.2 Clouds.
90.1   35.9'
234.0   36.4'
270.4   72.3' + 2.43'

+2.42'

54.1
9 01.6   90.5   36.4'
97.4   234.3   36.5'
8 45.7   270.~~4~~ 8   72.9' + 2.41'
5 +.5

13 49.2 Gr. M. Time.   Mean = +2.43'
4851.5752' Clouds.
4849.8499
+1.7259

July 15 1899
~~[illegible]~~

Right & Below

IV

53.5
9 26.3 — 91.1 — 37.6
233.5 — 36.7
270.2 — 74.3 + 2.37

52.3 — +2.35
90.6 — 38.3
233.5 — 37.1
270.6 — 75.4 +.233

Left & Above

323.3
360.2 — 36.9
143.3 — 37.5
180.8 — 74.4 + 2.36

323.1 — +2.38
9 32.4 — 359.6 — 36.5
58.7 — 143.7 — 36.7
9 29.4 — 180.4 — 73.2 + 2.40
5 +.5

14 29.9 Gr. M. Time. — Mean = + 2.36
HF51.6041
HF49.8499
+1.7542

Observations on last two groups taken through some clouds.

Sprocket wheel reads -62+18

July 15, 1899.

χ Cygni.

19 45 +32.6

17 35

2 10

9 50

I

Clouds thick

Above the Right

Ledgered.

142.6

9 56.0 151.2 38.6

323.3 36.9

360.2 75.5 = 2.33

144.2 -2.32

152.5 38.3

321.3 37.7

359.0 76.0 = 2.32

Below & Left

50.0

92.0 42.0

233.8 38.2

272.0 80.2 = 2.19

52.6 -2.17

10 01.8 92.6 40.0

11.7.8 231.3 41.6

9 58.9 272.9 81.6 = 2.15

5 .5

14 59.4 Gr. M. Time. Mean = -2.24

H 58 [illegible]

July 15 1899

Left & Below — Same again

522
10 03.8 — 92.6 — 40.4
232.6 — 37.8
270.4 — 78.2 — 2.25

524 — -2.22
92.6 — 40.2
231.8 — 39.9
271.7 — 80.1 — 2.19

Right & Above
323.5
359.8 — 36.3
143.2 — 38.2
181.4 — 74.5 — 2.36

323.3 — -2.37
10 10.4 — 361.0 — 37.7
144.1 — 36.1
14.2
10 7.1 — 180.2 — 73.8 = 2.38
5 .5
Mean = -2.24
15 7.6 h 4m M.T. Troubled a little by clouds in first group.
4851.631

July 15, 1899.

Phot T. Iapetus W. 6k.

17 20 -21.0
10 05
0 45 Same comp star as
11 15 last time

Iapetus follow Saturn 28 secs & 29 South of it
Left & above
Ledgered.
Plotted.

325.0
10 34.8 355.3 27.3
151.6 24.2
175.2 51.5 +3.21

326.2 +3.10
355.6 28.8
145.9 27.8
177.7 56.6 +2.99

Right & Below
236.3
267.3 31.0
57.7 26.8
84.5 57.8 +2.94

236.9 +2.90
266.6 29.7
10 45.5 57.5 30.2
80.3 87.7 59.9 +2.86

10 40.2
5 +5
15 40.7

H8 51.653

Mean = +3.00

July 15, 1899

Same Again.

Right & Below

237.5

10 48.2 265.7 28.2

57.8 27.2

85.0 55.4 + 3.04

238.6 + 3.03

265.9 27.3

57.3 28.6

85.9 55.9 + 3.02

Left & Above.

145.8

177.7 31.9

326.2 29.9

356.1 61.8 + 2.79

145.8

10 57 0 177.2 31.4 + 2.73

105.2 324.2 33.8

10 52.6 358.0 65.2 + 2.67

5 +.5

15 53.1 Grn. Time.

4851662

mean = + 2.88

July 15, 1899.

Titan.

Left Above.

32.0 {Titan dis. Ledgend

11 034 107.9 75.9 Plotted

213.4 76.2

289.6 152.1 - 0.53

31.6 - 0.49

109.5 77.9

211.6 78.4

290.0 156.3 - 0.45

Right & Below.

301.5

23.0 81.5

124.0 74.2

197.2 155.7 - 0.46

300.5 - 0.38

11 12.2 21.8 81.3

15.6 119.0 83.2

11 07.8 202.2 164.5 - 0.29

5 4.5

16 8.3 Gr. M. Time.

4851.672

Mean - 0.44

July 15, 1899

Right & Below — Same Again

300.7

11 14.8 23.6 82.9

123.6 73.4

197.0 156.3 - 0.45

303.0 - 0.42

16.0 73.0

~~116~~ 85.9

119.1 158.9 - 0.40

205.0

Left & Above.

31.7

114.3 80.6

208.0 83.6

291.6 164.2 - 0.30

31.5 - 0.33

11 25.0 110.7 79.2

39.8 213.5 81.7

11 19.9 295.2 160.9 - 0.36 mean - 0.38

5 .5

16 20.4 Gr. M. T. Measurements rather difficult especially on Titan, Haze increasing during nr. 12 Titan

4551.681 Latter very faint in sec of group. Iapetus faint but sky clearer at times of same.

July 17, 1899. Monday

Phot. T. χ Cygni. Vr. Obs.

19 45 +32 6
16 00

~~Angl~~ 3 45
~~Left~~ Above 8 15 I
Clouds.

145.0 < var-dis. Ledgered.
8 16.2 150.0 350+
324.0 350+
359.0 700+ − 2.51+

144.6 − 2.48+
17~~8~~.7 34.1+
323.0 37.3+
360.3 71.4+ − 2.46+
Below.
51.4
9~~4~~3.4 42.0+
23~~3~~.8 37.0+
2~~7~~0.8 79.0+ − 2.22+

55.6 − 2.25+
8. 21.0 90.4 36.8+
37.2 231.6 40.5+
8 18.6 272.1 77.3+ − 2.28+
5 + 4
13 19.0+ Gr Mean Time Mean = − 2.36+
4853.555

July 17. 1899.

Below Same Again.

51.7

8 22.4 92.7 41.0+

232.0 38.9+

270.9 79.9+ − 2.20+

51.7 −2.19+

90.5 38.5+

238.5 41.8+

273.3 80.6+ − 2.18+

Above.

324.1

358.5 34.4+

143.5 36.7+

180.2 71.1+ − 2.47+

323.3 −2.42+

8 27.2 359.3 36.0+

96 142.0 38.5+

8 24.8 Star gone 74.5+ − 2.36+

5 +4 180.5

13 25.2+ Gr. mean Time. Mean = −2.30+

4853.559+

Clouds thick

July 17. 1899.

M. P. 441.

Phot. ~~E~~ R. 27 33 W. Wk.

17 05 +62.3

10 26

1 32

Cloudy; no stars visible in finder.

9. 40 All cloudy no chance for anything further,

Arnold & Dent.			Bond 394		
9	45	320	9	46	00
9	46	320	9	47	00

July 18, 1899. Tuesday

Comp. of Chronometers.

Arnold & Dent			Bond 394		
7	26	34.0	7	27	00
7	27	34.0		28	00

Phot. R. M.P. HHI. M. Obs.

28 33 +6 23

15 55

8 38

3 22

27 33

15 55

11 38

0 22

See next page for meas. of M.P. HHL

July 18, 1899.

M. P. 441.

Plotted.
Ledgered. I

~~Reg~~ Above

230.3 < var dis.

8 15.6	271.4	51.1ˣ	
	49.0	51.2ˣ	
	100.2	102.3ˣ	−1.60ˣ
	230.0		−1.52ˣ
	282.0	52.0ˣ	
	48.8	52.0ˣ	
	100.8	104.0ˣ	−1.56⁺

Below.

	139.0		
	190.9	51.9ˣ	
	320.0	51.0ˣ	
	371.0	102.9⁺	−1.59ˣ
	138.0		−1.51ˣ
8 21.4	192.4	54.4ˣ	
36.4 +	318.0	55.2	
8 18.2	373.2	109.6	−1.43ˣ
5 +.4			

13 18.6⁺ Gr. M. Time.

4854.

Mean = −1.54ˣ

July 18, 1899.

	Below	Same Again.		
	137.0			
8 23.3	192.0	55.0 +		
	317.7	54.3+		
	372.0	109.3+	-143+	
				-142+
	137.9			
	193.0	55.1+		
	317.7	54.6+		
	372.3	109.7+	-142+	
	Above.			
	229.8			
	282.0	52.2+		
	~~472~~	54.5+		
	46.8	106.7+	-149+	
	101.3			
	229.7			-1.50+
8 30.0	281.1	51.4		
53.3+	47.7	55.0		
8 26.6	102.7	106.4	-150+	
5 +.4+				
13 27.0+	Gr. M. Time			Mean = -1.46+
.560				

July 18, 1899.

Phot. T.   Iapetus   M. Obs.

17 6   - 21.0
16 40
0 26

~~Iap. follows~~ Sat. 1 34 s ~~Saturn 21.5 and is about 3.0 South of it~~

Iapetus fol. Saturn 21.5 s and is about 3' South of it.

Left & Above   Same comp stars as last time.

8 ~~9~~ 59.5 → 356.8

326.6 < Comp Star dis.   Ledgered. Plotted.

356.8   30.2
145.2   31.8
177.0   62.0   + 2.79+

326.7   + 2.82+
357.1   30.4+
147.4   29.8+
176.2   60.2+   + 2.80+

Right & Below,

237.8
266.2   ~~8.4~~
55.9   28.4+
86.7   30.8+
59.2+   + 2.59+

236.1   + 2.88
9 11.3   266.6   30.0+
130.8+   57.0   29.4+
9 5.4   86.4   59.4+   + 2.88+

14 5.8 G. M. Time. 48 ~~45~~ 54. 587+   Mean = + 2.85+

July 18, 1899

Same Again.

Right & Below

236.4
9 16.0 266.7 30.3$^+$
56.8 29.6$^+$
86.4 59.9$^+$ + 286$^+$

236.4 +2.85$^-$
266.6 30.2$^+$
56.4 30.5^{-+}
86.9 60.7$^+$ + 2.84$^+$

Left Above.
147.2
176.6 29.4$^+$
326.1 30.5$^-$
356.6 59.9$^+$ + 2.86$^+$

146.8 + 2.86$^+$
9 32.4 176.6 29.5$^+$
48.4$^+$ 326.7 29.9$^+$
9 24.2$^+$ ~~357~~. 59.7$^+$ + 2.87$^-$
5 .4 356.6
14 24.6$^+$
4854.601$^+$

Mean = + 2.86$^+$

July 18, 1899.

Titan

	Left & Above		Ledgered, Plotted
	31.2		
9 42.0	115.6	< Titanalis.	84.4
	212.5		77.5
	290.0		161.9 − 0.34
	33.3		−0.32
	110.9		77.6
	209.8		86.8
	296.6		164.4 − 0.20
	Right & Below		
	298.3		
	22.0		83.7
	122.1		77.9
	200.0		161.6 − 0.35
	302.9		−0.36
9 50.3	19.5		76.6
92.3	119.2		84.2
9 46.2	203.4		160.8 − 0.37
5 4			
14 46.6 Gr. M. Time			Mean = −0.34
4854.616			

July 18, 1899 –

Same again.

Right & Below

299.1
9 52.6 22.0 82.9+
122.4 77.4+
199.8 160.3+ −0.38+

~~301.3~~ 299.9 −0.40+
~~19.7~~ 21.9 82.0+
123.5 76.7+
290.2 158.7+ −0.41+

Left & Above.
212.6
258.6 77.0+
32.6 79.3+
111.9 156.3+ −0.45+

~~211.0~~ 32.8 −0.40+
10 4.7 ~~291.7~~ 112.7 79.9+
~~10 03.6~~
117.3 210.3 81.9+
9 58.6+ 292.2 161.8+ −0.35+
5 +4
14 59.0+ G.M. Time.
4854.624+

Mean = −0.40+

July 18, 1899.

Phot. ~~M.~~ W. R S Sagittarii. W. 6h.

18 9 - 34.2
19 15
1 06

W. went over to West Dome to revise comp. stars for R.T. Cygni with Mr. Reed.

Right & Below R. S. Sagittarii Cont. I

Ledgered
Plotted

18
11 23 15 → 331.6 < var dis.
3.5 31.9
152.1 31.9
184.0 63.8 - 2.72

333.0 -2.74
19 20 3.9 30.9
152.3 31.5
183.8 62.4 - 2.77

Left & above
242.6
20 50 273.5 30.9
62.8 30.8
93.6 61.7 - 2.80

242.0 - 2.77
22 00 273.7 Epoch .4213 31.7
80 25 62.3 4854.6810 ✓ 31.5
11 20 06 93.8 4853.9823 63.2 - 2.74
5 +26 +0.6987
16 20 32 G. M. T. mean = -2.76

July 18, 1899

Tame again.

Left above
241.7
11 23 05 273.5 31.8
62.5 31.0
93.5 62.8 -2.76

243.0 -2.76
24 25 273.6 30.6
62.0 32.0
94.0 62.6 -2.76
Right & Below
152.9
27 00 183.5 30.6
332.0 32.6
4.6 63.2 -2.74

152.1 -2.74
28 05 183.8 31.7
22 35 333.1 31.2
11 25 39 4.3 62.9 -2.75
5 +26
16 26 05 Gr. M. Time. mean = -2.75
4854.6848
4853.9823
+0.7025

July 18, 1899

	Right & Below,	Same again.		
	152.3			
11 29 30	184.0	31.7		
	332.1	31.6		
	3.7	63.3	-2.74	
	152.1			-2.76
30 55	183.2	31.1		
	332.0	31.4		
	3.4	62.5	-2.77	
	Left & Above			
	62.5			
32 20	92.6	30.1		
	241.2	32.8		
	274.0	62.9	-2.75	
	62.0			-2.74
33 45	93.5	31.5		
126 30	242.1	31.7		
11 31 38	273.8	63.2	-2.74	
5 26				
16 32 04	Gr. M. Time.		Mean = -2.75	

4854.6890

4853.9823

+0.7067

July 19. 1899. (Wednesday)

Madame Ceraski's Var.

Phot. T. 20 A +46.3

15 55 W. Obs.

4 13

7 47

20 5 ~~46~~ .3 I

8 07.0 Clouds 16 20

3 48

8 1 2

8 20 Clouds Ledgered

Left & Above Plotted.

321.0 ← comp star dis.

8 23 40 2.3 41.3+

143.2 35.8+

179.0 77.1+ +2.28

Clouds.

323.5 +2.26

27 55 2.5 39.0+

143.5 39.3+

182.8 78.3+ +2.25

Right & Below Clouds.

229.2

13 3² 14+

4855.5640 ✓

4851.0495

+4.5145+

4.5729

0.0584+

35 00 273.2 44.0+

50.3 43.0+

93.3

Clouds stars gone. 87.3+ +1.99

40 05 229.8 41.3+ +2.02

126 40 271.1 43.8+

8 31 40 ~~50.1~~ 49.8 85.1+ +2.05*

34 93.7 Mean = +2.14

July 19. 1899.

	Right & Below			
	230.2			
8 .45 40	272.8	42.6+		II
	459.6	43.8+		
	93.4	86.4+	+2.01+	
				+2.04+
	229.6			
45 20	272.4	42.8+		
	Clouds.	41.8+		
	50.6	84.6+	+2.06+	
	92.4			
	Left & above			
~~8~~	144.7			
51 55	150.9	36.2+		
	Clouds.	37.7+		
	321.6	73.9+	+2.38+	
	359.3			
				+2.36+
	143.2			
56 25	151.0	37.8+		
202 20	323.6	37.2+		
8 50 35	Clouds; stars gone.	75.0+	+2.35+	
34	360.8			
13 51 09+	Clouds; stars gone		+2.20+	

4855.5772+
4851.0495
+4.5277+
4.5729
−0.0452

July 19.1899:

Ref to Above.

III

~~1430~~ 322.4

9 05 30 ~~1804~~ 362.2 39.8+

144.0 37.4+

181.4 77.2+ +2.28+

322.3

08 45 360.8 35.5+ +2.228+

Clouds. 38.8+

142.4 77.3+ +2.28+

Stars gone.

158.2

Ref to Below

230.4

17 00 273.0 42.6+

49.9 43.3+

93.2 85.9+ +2.03+

231.0

20 20 272.3 41.3+ +2.06+

51 35 58.2 47.7+

9 12 54 92.9 84.0+ +2.08+

5 34

14 13 28 Gr M. Time.

4855.5928+
4851.0495
+4.5433+
4.5729
-0.0296+

mean = +2.17+

July 19, 1899.

Right & Below. IV

230.4

9 24 50 273.2 42.8

51.0 41.2

92.2 84.0 +2.08

Clouds.

+2.11

232.0

25 15 272.3 40.3

50.3 41.5

91.8 81.8 +2.14

Left & Above

143.3

33 20 181.9 38.6

321.6 39.2

360.8 77.8 +2.26

143.0

+2.28

35 40 181.4 38.4

12 20 05 322.4 38.0

9 25 31 360.4 76.4 +2.30

5 +34

14 26 05

4855.6015

4807.0495

+4.5520

4.5729

-0.0209

Mean = +2.20

July 19, 1899.

V

Left & Above

143.1
9 42.00 181.0 37.9+
323.1 37.8+
360.9 75.7+ +2.32+

143.5 +2.33+
44 20 181.6 38.1+
323.4 37.1+
360.5 75.2+ +2.34+

Right & Below.

51.6
47 00 90.5 38.9+
232.1 40.1+
272.2 79.0+ +2.22+

50.6 +2.18+
49 05 92.4 41.8+
22 25 232.0 39.8+
9 45 36 271.8 81.6+ +2.15+
5 +34 clouds
14 46 12+ Gr M. Time.

Mean = +2.26+

4855.6154+
4851.0495
+4.5659+
4.5729
−0.0070

July 19. 1899.

Right & Below — VI.

51.1
9 52 40 90.6 — 39.5+
232.3 — 40.3+
272.6 — 79.8+ — + 2.20

49.4 — + 2.12
54 10 92.5 — 43.1+
230.7 — 41.9+
272.6 — 85.0+ — + 2.05+

Left & Above.
320.6
56 20 360.0 — 39.4+
143.0 — 38.8+
151.8 — 75.2+ — + 2.25

322.5 — 2.30
59 10 360.6 — 37.8+
22 20 143.6 — 37.3+
9 55 35 Clouds — 75.1+ — + 2.34
5 +34 ~~151.~~

14 56 09 150.9
h.m.x.
HF55.6223
HF51.0495

+4.5728
4.5729
-1.9[illegible]

Mean = +2.21

July 19, 1899.

VII

	Left & Above	
	~~3225~~	Clouds.
1~~0 05 25~~	~~3600.7~~	143.0
10 25 30	~~Clouds.~~	152.4
34 53		323.7
35 10		1.0
35 50		143.5
44 30		151.0

Right & Below.

July 19, 1899

VII

Left & Above

	142.5		
Cl 19 35	180.5	38.0	
	323.0	39.4	
	362.4	77.4	+ 2.27
	143.2		+ 2.30
24 00	180.6	37.4	
	322.6	38.4	
	361.0	75.8	+ 2.32

Right & Below.

	51.0		
29 25	95.9	44.9	
	229.2	43.7	
	272.9	88.6	+ 1.95
	51.0		+ 1.96
33 05	93.6	42.6	
10.6 05	228.4	45.2	
11 26 31	273.6	87.8	+ 1.97
5 +34			
16 27 05 Gr M. Time			Mean = + 2.13

4855.6855

4855.6224

+0.0631

July 19. 1899

Right & Below VIII

48.2
11 3 80 97.3 49.1
228.1 47.3
275.4 96.4 + +1.75
Clouds.
43 30 49.1 +1.71
~~49 0~~ 97.4 48.3
81 30 225.5 51.3
11 40 40 276.8 99.6 +1.67
5 +34
16 41 19 Gr. M. Time.

48 55.6953 Left & Above Mean = +1.71
48 55.6224 Clouds
+0.0729

Stopped by clouds; clouds now becoming very thick

Much troubled throughout evening by clouds, observations taken throughout evening through more or less cloud. Clouds sometimes thinner, with ~~fairly~~ somewhat clear spaces and then thicker again. Star down at ~~[illegible]~~ minimum & faint moon bright also.

July 19. 1899

Arnold & Dent		Bond 394
12 01	26.2	12 02 00
12 02	26.5	12 03 00

July 20, 1899 (Thursday)

Comp of Chronometers

Arnold & Dent			Bond 398		
7	27	26.5	7	28	0.0
7	28	26.2	7	29	0.0
		.19			#42.9