

KG
11366
v. 314

Nov 3. 1882
Sunt for planet H₂
telescope 2^h 50^m W. +15^h 45 +20^h

Rise at 22.10

Stopped by clouds at 22^h 20^m

Nov. 4, 1882.

S. obs.

κ Delta U.A. 20 33 + 9.6

G. C. 4598 20 37 14 + 12° 0

70

(1875.0) 20 38.5 + 12.1

21 + 12.5

Double star 21 44
370°, 5", 10, 10. $\frac{1}{20} \quad \frac{9}{35} + 12.7$

Feb.

21	58	
1	20	+ 12,4
<hr/>	<hr/>	
20	36	

Mar. 4, 1882
 Examination of ϵ Lyrae & companion with
 30" inch of Bellows examined at Clark's on Oct. 30th

d. & easily seen with 15"
 when ϵ & δ are out of field
 ϵ (fainter) also noticed.

α Lyrae also examined and Winnecke's
 companion probably seen — P. obs.

Sweep for Planetary Neb. P. obs.

Telescope J^m east —12.5 to —17.5

Began at 22^h 35^m

	37.3	up			
H.P. 4031 22 ^h 43 ^m -14.2	37.7	3 ^d mag	13.8	+5.5	-4
	38.4	up			
	39.0	up			
	39.7	up			
	40.8	up			
	42.1	up			
45.3 -16.5	42.7	3 ^d mag.	16.2	+5.6	-2.3

Nov 4, 1882.

22 ^h		43.8 ^m	up	
		45.2	up	
		46.4	up	
		47.7	up	
		49.0	up	
		49.4	7 th mag.	17.1 ^{22^h 58^m} bands surp 17.5
		50.9	up	
		52.0	up	
		53.2	up	
		54.7	up	
		55.7	up	
		56.9	up	
		58.4	up	
	23	0.7	up	
		2.1	up	
9.6 11.7	9.8 9.8	3.5	up	
		4.2	4 th mag.	9.2 ^{+5.3} ⁻⁵ +7.4 -6
		5.0	up	
		6.3	up	
		7.6	up	
		9.7	up	
		10.9	up	
		11.0	5 th mag	at 15.8 ^{+5.3} ⁻¹
		12.3	up	
		13.4	up	
16.4	15.7	14.6	up	
		15.6	up	
		15.7	Sweep ended.	

Nov, 4, 1882.

Revis of Vol VI

S. obs.

7.5 }	7.8	24
0.5 }	2.6	1.2
✓	0.2	2.2
7.5	7.8	12
7.5	2.6 }	22
3.0	2 }	5.0
3.0	6 0 ^h 4 ^m	50
3.0 }	0.3	a 0 ^h 11.3 ^m
7.5 }	2.3	5.1 dbl.
9.8	3	0.5
9.8	2.3	5.1
8.0	7.5	7.5
6.5	7.5	5
8.0 }	7.5	4.9
6.5 }	0.2	7.5 }
5.8 }	2 }	4.9 }
0.5 }	7.5 }	7.5
5.8 }	5.3	7.5
5 }	5.3	10.0
2.5 }	5.0	3.3
1.0 }	5.0	0.6
10	1.5	3.0
2.5	8.0	6
5.2	15	100
2.5	8	2.4
5.2	5.0	8.3
0.1	8.0	2.4
2.5	5.0	8.3
1	2.4	7.4

Nov. 4, 1882

74	24	55	73
7.0	95	9.0	9.8
1.8	2.0	9.0	4.7
9.0	20	9.5	47
18	20	95	98
9.0	58	7.0	5.6
40 ^u	58	10.0	6.0
90	0.2	10.2	56 }
90	2	100	60 }
73 dbl.	5.1	50 ^u	5.5
73	0.5	2.5	55
1.5	50	7.4	3.5
15	5	25	35
2.6	8.5	74	6.5
2.0	7.2	4.8	8.7
26	85	8.1	5.1
20	72	48	4.1
7.4	2.5	3.2	52
2.6	25	4.8	26
2.3	9.0	90 }	4.0
74	90	30 }	51 }
23	2 0 ^h 23.4	35	70 }
26	9.5	-0.2	40
7.7	7.5 second tap	-2.0	4.2
8.0	0.8	4.9	4.0
77	95 }	6.0	4.2
80	75 }	2.6	9.9
6 0 ^h 19.5	8	26 }	42
2.4	9.5	50 }	9.9
9.5	95	6.0	4.0
2.0	55	7.3	4.0 }

Nov. 4, 1882.

1.5 }	75	10.0	10.1
40	1.0	7.2	101
40	60	1.0	5.1
15	7.3	100	4.8
b 0 ^h 35.0	10	6.0	51 }
50	60	3	48 }
20	54	70 }	5.5
50	45	60 }	55
20	54	0.0	0.1
7.0	25	0	1
70	47	4.9	7.0
0.6 dbl.	9.9	7.5	70
6	22	49	a 0 ^h 30.4
b 0 ^h 36.9	22	8.5	4.8
10.0	99	75	48
10.0	24	80	1.8 sec. tap
9.9	70	2.5	8.0 dbl
100	70	25	18
100	24	2.8	4.0
99	b 0 ^h 43.1	9.5	80
a 0 ^h 38.3	7.8	28	40
4.8	7.3	95	0.1
5.0	0.4	9.7	10.0
50	78	9.9	1
10.0	4	97	7.5
48	72	99	100
2.5	a 0 ^h 44.5	7.0	8.0
100	9.0	50 }	75
25	23	7.4 }	80
7.5	23 }	70	2.0
60	90 }	50 }	5.0

Nov. 4, 1882.

20	25	25	3.0
4.7	7.0	10.0	0.2
6.2	5.5	100	3.0 }
50	8.0	7.3	2 }
47 }	1.8	73	0.3
62 }	50 }	9.8	4.0
2.2	90 }	4.0	5
2.0	70	98 }	4.0
2.2	20	40 }	9.5 sec tip
2.0	4.0	5.0	1.5
6 0 ^h 55 ^m 6	4.0	50	9.0
10.1	7.0	10.0	1.5
10.1	7.0	7.4	0.2
0.5	7.5	100	6.0
5	7.5	7.4	2
1.0	6.0	0.7	6.0
8.5	7.8	7	10.3 outside prism
10	6.0	0.8	4.8 #
0.2	7.8	5.3	10.4 outside
8.5	1.9	8	4.8
2	1.9	5.3	10.4 outside
a 0 ^h 58 ^m 8	5.0	5.2	10.0
8.3	5.0	8.3	10.0
8.3	6 1 ^h 4.0	5.2	7.5
2.2	7.6	0.2	4.7
4.0	7.0	8.3	3.8
2.2	7.6	2.4	7.0
4.0	7.0	2	5.0 }
5.0	2.5 }	2.4	3.0 }
2.5	9.9 } only two stars seen	8.0	10.2
50	9.9 } should of been there	8.0	3.0

Nov 4, 1882.

102	80 }
30	70 }
32	10.1
32	100
27	6.0
10.2	5.5
30	60
102	55
33	a 1 ^h 28 ^m 34
35	10.2
33	102
45	68
38	0.0
8.0	0.2
48	9.0
59	2 }
10.0	90 }
50	24
80	20 }
100	50 }
0.2	24
7.4	b 1 ^h 30 ^m 4
2	
74	
7.8	
78	
b 1 ^h 26 ^m 3	
7.2	
8.6	
7.0	
7.2	

Nov. 5. 1882.

Scout for ϕ neb. taken ϕ E. $-12^{\circ} 55' 47''$
 began at $1^h 40^m$; RA = $2^h 40^m$ L
 began at C 39^m
 ended at $2^h 20^m$ mostly found.

Nov. 7, 1882.

B 86. 1182

11 7 21.8


18 21.8

B 394

11 8 0

9 0

Star seen at about 11 5

Set Star 

Cloud at 12 0 on south of star.

Nov 8, 1882.

Start observations - 17.55 - 12.5

5th W.

Begin at 0^h 45^m

1 07	13.3	...	3d hyp.
1 10	14.8	...	6 3 rd hyp.
1 19	16.0	...	6 3 rd hyp.

Ended at 1^h 26^m

∴ RA 0^h 40^m to 1^h 26^m - 12.50 - 17.5

Scanned at RA 1^h 05^m Dec - 14.8 days
inspected not in with certainly Robs

B+C 1182

11 27 18.2

28 18.2

B 394

11 28 44.5⁺ 00

29 00

+26.3

12^h 00 53 86.0 Reject

12 00 39 211.0 Reject
261.3

Nov. 8, 1882.

Dis appearance of Jupiter I
Compared with IIIP. obs., S. read
the circle, Cu. rec.

12 ^h 2 ^m 19	198.8
35	283.0
48	192.0
58	284.8
3 53	192.2
4 4	284.0
22	187.9
33	283.8
45	193.2
54	280.4
✓ 2	192.9
13	286.0
22	186.0
32	276.7
43	193.8
53	280.0
58 7	195.8
22	280.0
31	190.0
42	281.1
51	196.9
59	273.0
9 9	193.0
17	283.0
<u>27</u>	193.8
40	282.8

Nov. 8, 1882

12 ^h	44 ⁹	50	194.0
	<u>44</u>	<u>57</u>	<u>280.8</u>
10		8	190.3
		15	285.0
		23	188.4
		33	<u>277.0</u>
		40	197.1
		49	273.6
		57	200.3
11		6	277.3
		12	198.9
		18	270.0
		23	200.3
		29	277.1
		34	198.0
		38	272.1
		44	197.0
		50	272.8
		56	200.7
12		2	270.0
		6	212.0
		13	271.2
		19	200.2
		28	267.0
		34	208.2
		38	265.9
		44	212.2
		49	264.3
		54	210.8

Nov. 8, 1882.

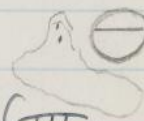
12 ^h	13	0	259.0
		4	210.0
		10	256.0
		16	220.0

Limit of Vis.

13	56	215.3
14	6	255.5
	12	215.9
	23	257.2

On account of Water between lenses
a blur of light was caused which seriously
interfered with the observations

Phot. R. Conson. with lat. foll. fig. (III)



B+C	1182
12 ^h	22 ^m 18.0
	23 18.0

B	394
12 ^h	23 ^m 44.5
	00
	24 00
	+26.5

Nov 9, 1882

Temp for heat sub. in Bellows.

6 10 - 30

Again 7 0 - 10 Also experiments
with Spectroscopy.

Nov 12, 1882.

Obs of Jup I (dis.) prevented by clouds

~~Obs. of dis. Jupiter I prevented by clouds.~~

Nov 15, 1882

~~10^h~~ Revision of Vol. VI J. obs.

Began with Star at $21^h 28.2 + 0^\circ 0' 37''$

Began at $21^h 26^m 10^s$

0.2	70	7.5
2.0	75	7.5
4.3	5.2	9.5
2	7.6	7.3
20	5.2	7.3
4.0	7.6	8.0
5.0	1.6	8.0
2.5	a $22^h 30^m$	9.3
7.3	4.8	9.3
6.1	4.8	4.8
9.2	7.0	4.8
1.2	6.2	7.3
70	70	9.5
60	62	7.3
90	8.5	a $22^h 39^s$
10	8.5	
4.3	2.3	This zone rejected
7.0	2.3	
4.3	b $22^h 34^m$	

Nov 15, 1882.

See preceding page - obs commenced
on page 19 by mistake

21 28

21 50

21 28

23 47

~~See preceding page~~

Second trial of Stars following
21^h 28^m 10^s - Vol. VI -
Began 0^h 17^m 10^s

0.2	2	2.5	a 0 ^h 21.7
2.2	2	2.0	7.5
4.6	4.6	2.5	7.0
2	2	4.0	7.5
0.2	2	4.0	7.0
2.2	4.6	6.8	1 0 ^h 23.3
4.6		6.8	8.0
2		7.6	8.0
5.0		7.6	2.3
2.5		7.3	9.5
5.0		7.3	2.3
2.5		5.5	9.5
7.3		7.8	10.0
5.8		5.5	1.00
8.0		7.0	7.4
2.0		1.8	7.4
6.0		1.8	7.8
7.3		5.0	7.8
8.0		5.0	10.2

Nov 15, 1882

9.7	9.5	30	0.0
9.7	2.1	3.0	0.1
5.0	9.5	100	0
5.0	2.1	3.5	2.0
9.9	0.3	30	60 }
7.3	3	4.5	3 }
9.9	6.0	3.5	20
7.3	7.0	8.0	6.8
5.0	60	5.0	5.3
5.0	70	3.5	4.5
6 h 30.3	10.2	50	60
0.5	4.5	80	6.8
5	4.5	0.5	7.5
5.2	4.7	7.0	4.8
5.2	10.1	5	5.2
5.1	4.7	70	7.5
8.0	10.1	7.6	60
0.3	9.9	76	7.0
2.6	9.9	7.0	70
50 }	7.5	8.5	
80 }	4.5	6.5	
3	3.2	70	
20	80	8.5	
7.8	50 }	6.5	
7.8	30 }	10.0	
3.0	10.0	100	
0.2	2.6	5.2	
30 }	100	5.2	
2 }	2.6	10.0	
0.4	3.0	100	
4	10.0	6.5	

Pen on Chronograph
gave out soon
after beginning of
observations.
Reject.

Nov. 15, 1882.

B. & C.	1182	B	394	44.5
1 ^h	18 ^m	57.6	13	20
	19	57.6	21	00
				+46.9

Disappearance Jupiter I
 Compared with Satellite II
 Phot. R - S. obs. Cur. rec.

1 ^h	55	2	164.0
		20	266.0
		42	173.2
56	11	259.3	—
	26	176.7	same
	48	263.2	
57	2	172.1	
	18	263.0	—
	44	168.0	
58	1	271.0	
	23	171.0	
	36	265.6	—
	48	169.8	
	59	267.5	
59	26	167.4	
	36	257.0	—
	50	175.0	
2	0	7	262.8
		18	172.8

Nov. 15, 1882.

2	0	23	253.7	—
		37	170.3	
		47	263.0	
		55	172.0	
	1	3	264.5	—
		17	169.0	
		25	260.3	
		34	171.7	
		42	268.0	—
		52	169.5	← clock stopped
	2	22	260.5	
		36	173.8	
		44	260.0	—
		54	177.0	
	3	1	268.0	
		8	166.0	
		20	267.0	—
		36	176.0	
		45	272.0	
		54	170.5	
	4	1	262.0	—
		9	174.8	
		21	270.5	
		28	167.8	
		41	261.7	
		49	174.2	
		56	260.0	
	5	4	179.5	
		11	257.2	

Nov. 15, 1882.

2 ^h	✓	16	179.5
		24	260.0
		31	179.5
		38	246.7
		47	181.5
6		55	241.0
		1	188.7
		9	239.5
		16	183.1
		22	239.5
7		31	189.8
		39	236.0
		46	194.2
		54	230.3
		1	201.5
		8	seen
		16	suspected

Limit of Visibility.

2 ^h	7	45	197.3
		2	221.5
		11	200.8
		24	224.0

B+C 1182

2	17	57.4
	18	57.4

B. 394

14	19	00
	20	00
+47.1		

Nov. 16, 1882.

Revision of Vol VT. S. ob.
 Began with Star at $21^h 28^m 10.5^s + 0^\circ 0' 37.0''$
 Began at $22^h 1^m 10^s$

-0.3	5	70
1.5	4.0	-0.1
35}	40	0.0
-3}	a $22^h 7^m 0^s$	4.9
15	6.7	0
35	5.8	-1
4.3	6.7	4.9
2.0	5.8	4.8
4.3	1.8	7.8
6.5	8.3	0.0
5.5	8.3	2.4
7.7	1.8	4.8
1.5	9.0	8.0
5.5	9.0	7.3
7.6	6.0	0
6.5	6.0	7.3}
1.5	10.0	20}
10.2	8.2	7.5
6.8	10.0	7.5
10.2	8.2	2.5
6.8	4.5	-0.3
5.0	4.5	-3
0.5	8.8	2.5
5.0	7.0	b $22^h 20.6^m$
	8.8	8.3

Nov. 16, 1882.

1.8	2.5	b 22 ^h 31.6
18	97	9.5
13	24	5.4
5.5	2.6	9.5
6.0	3.0	-0.2
5.5	2.5	2.0
6.0	7.5	5.2
0.5	2.6	-2
5	4.0	2.0
9.7	3.0	3.0
9.7	8.5	3.0
3.9	4.0	a 22 ^h 20.3
9.8	7.0	
9.8	80.7	
3.9	7.5	
9.8	7.4	
9.8	7.0	
8.2	-a 22 ^h 29 ^m	
8.2	7.4	
7.0	6.0	
4.0	7.5	
4.0	5.5	
7.0	7.0	
9.6	8.0	
2.5	9.0	
9.6	6.5	
2.5	5.0	
2.4	9.0	
9.7	5.0	

Time for two stars
at ~~21~~ 21^h 49^m

$$\delta = \begin{matrix} 10' 12'' \\ 10' 8'' \end{matrix}$$

$$t = 22^h 43.0$$

$$L_1 = +1.3$$

$$AA = 54^m +$$

Nov 16, 1882.

8 30 Star at $21^h 45^m 32^s.2 + 3' 5''$ follows
 star at $21^h 45^m 33^s.0 + 1' 19'' - 0' 41''$
 Incorrect; see p. 35.

$$t = 0^h 11^m 35^s \\ 42.5$$

$$t = 0 \quad 12 \quad 5 \\ 13 \\ 28.5$$

Star at $21^h 44^m 55^s.3 + 7' 57''$ not seen. Clouds near.

Clouds came on, preventing renewal of transit observations

Nov. 18, 1882.

Revision of Vol VT - S. obs.

Began with star at $21^h 49^m 44^s + 10' 12''$

Began at $22^h 10^m 44^s$

9.6	3.9	4.5
9.6	26	0.8
96	39	5.5
96	75	5.5
7.8	5.8	7.0
7.8	5.8	4.5
6.3	7.0	4.0
3.0	7.0	7.0
6.3	5.5	5.5
3.0	5.5	5.6
8.5	8.5	5.6
2.2	8.5	6 $22^h 25.9$
8.5	4.6	4.3
22.5	4.6	4.3
2.3	a $22^h 19.3$	7.5 $\frac{1}{2}$ pl
9.0	8.8	3.0
2.3	8.8	7.5
2.4	5.0	3.0
9.0	-0.4	-0.2
2.5	0.3	4.8
2.4	-4.7	5.4
2.8	5.0	-2
2.5	3	4.8
7.4	5.5	5.4

Nov. 18, 1882.

2.3	10.0	82	7.0
0.9	6.2	50	-0.1
9	100	6.0	-1
23	62	2.4	70
star at 22 ^h 12 ^m 28.2 ^s Reim	3.0	60	9.9
1.7	30	24	99
7.0	9.6	8.3	8.0
9.5	7.3	83	80
70	96	50	9.0
7.8	73	1 22 ^h 52.7	7.4
15	5.8	50	90
7.8	4.8	7.5	8.0
0.0	48	58	74
9.5	58	58	7.5
4.9	4.3	75	80
0.7	10.0	9.0	8.8 abl
2.6	43	90	4.7
7.5	100	3.8	75
7	0.2	38	88
50	10.1	5.1	48
26	2	51	6.3
75	101	4.7	63
7.5	1.7	7.8	3.3
7.5	4.0	47	6.8
7.8	40	78	33
7.8	17	4.5	68
8.7	7 faint star seen rec. star at 22 ^h 24 ^m 20.2 ^s	4.5	7.5
8.7	8.3	2.3	7.5
a 22 ^h 42.3	5.0	23	0.0

Nov. 18, 1882.

0	2
0.0	72
0	-0.4
2.0 dbl pxf	9.8
10.2 l. edge of wedge	98
0.8	6.7
8.0	67
8	9.8
80	33
0.5	98
6.0	33
6.1	80
5 }	80
61 }	5.1
60	51
5.8	4.3
58	0.8
10.0	8.2
100	43
3.2	82
32	8
3.0	10.3 } too low
30	10.3 } for dia.
2.2	6.0 dbl
22	60
Star at 22 ^h 50 ^m 1.1 not seen	α 23 ^h 21.5 ^m
5.2	Ended with
52	last star of 22 ^h
0.3	$\delta = 1.3$
7.2	

Nov. 18, 1882

10 ^m 435	d = 4.5
11 12	d = 5.5
12 36	2.5
13 7	9.9

Continuation of Re-Vision Vol VI - 806
 Commencing with star at 20^h 45^m 52^s + 4' 33"
 Began at ~~1^h 23^m 52^s~~ 1^h 29^m 52^s

4.5	9.7	9	7.5
4.5 Prob. too late	10.0	5.3	3.0
5.1	9.0	5.3	7.9
5.1	9.7	7.7	9.3
2.5	10.0	7.7	7.9
2.8	9.0	1.0	9.3
2.5	10.0	1.0	7.6
2.8	10.0	0.7	7.6
9.9	9.6	7	0.2
6.0 (2 nd tap)	9.6	0.6	5.1
2.5	6 1 ^h 38.9	6	2
6.0	1.0	7.2	5.1
9.0	1.0	7.2	0.7
2.5	4.8	1.3	7
2.5	10.0	7.8	3.0
2.8	10.0	1.3	4.9
2.5	5.1	7.8	4.0
2.8	5.0	9.9	3.0
9 1 ^h 34.7	5.1	3.0	4.9
4.9	5.0	9.9	4.0
4.9	0.9	7.5	6.2

Nov 18, 1882.

5.0	75	0.4	3.0
62	12	4.7	5.8
50	6.0	4.7	3.0
7.9	60	4	5.8
5.9	5.2	7.2	7.2
59	5.2	0.4	7.2
76	9.2	7.2	5.7
6 1 ^h 52.1	92	4	5.7
-0.1	-0.5	6.8	5.0
-1	-5	6.8	9.0
6.0	9.5	2.8	5.0
0.5	9.5	2.8	7.0
60	0.3	10.3	9.0
5	1.2	10.3	7.0
9.9	3	5.8	1.8
7.0	12	5.8	2.6
99	9.4	8.0 ^{if two breaks} take first	2.6
70	9.4	5.0	1.8
4.5	-2.3	5.0	4.0
4.5	6.5	0.2	6.5
7.3	2.3	8.0	6.5
2.5	6.5	2.5	4.0
7.3	0.0	8.5	1.1
2.5	0	8.0	1.1
10.0	4.8	5.0	0.9
100	4.8	8.5	9
0.8	8.1	7.7	10.3
8	8.1	3.2	10.3
7.5	9.3	7.7	2.0
1.2	9.3	3.2	6.2

Nov. 18, 1882.

20 }	10.0
62 }	100
6.0	55
60	-0.6
7.6	83
49	80
76	-5
49	-0.3
4.0	8.0
40	80
8.0	-3
9.3 }	5.0
80 }	50
93	0.1
7.4	7.3
2.5	1
25	2.5
7.0 }	73
74 }	7.2
70	77
0.6	3
4.3	72
6	76
3.8	$a_{2^h} 45.2$
4.3	ended with last star in 0h
38	
2.2	
22	
5.5	
55	

Nov 19, 1882

S. Dr. Ex. rec.

Identification of region of supposed
discrepancy mentioned top of page 27.

Catalogue 2

Catalogue 5

49.0		0.5
54.0	50	2.8
46.5	52.5	5.3
28.0	36.5	2.6

21	43	58.2	0' 35"
	44	3.7	2 36
		55.3	7 57
	45	32.2	3 5

7.7		2.6
33.6	25.9	1.5
[53.0]	[19.4]	0.5
7.5	14.5	6.0

21	45	32.2	3 5
	46	58.4	1 54
	47	22.3	0 27
		32.2	5 52

error in record
see below

42.4		1.5
16.0	33.6	6.0
26.0	10.0	6.8 (not in catalogue)

21	46	58.4	1 54
	47	32.2	5 52

44 ^m	52.0	2.6
46	18.5	1.5
	26.5	
	52.3	6.0
	33.8	

21	45	32.2	3 5
	46	58.4	1 54
	47	32.2	5 52

54.5		1.5
19.0	24.5	0.5
28.5	9.5	6.0

21	46	58.4	1 54
	47	22.3	0 27
		32.2	5 52

Nov. 19, 1882.

Region certainly identified by above transits! The star lat-
 $21^{\circ} 45' 32.2''$ $+3' 5''$

has the companion which it should have by the catalogue, following it a fraction of a second, declination about 0.

The supposed identification on p. 27 is incorrect.

B+C 1182			B. 394		
12	25	43.2	12	27	00
	26	43.2		28	00
	27	43.2		29	00
			+61.3		

Dis. Jupiter II -
 Compared with Satell. fol. Jupiter = I. P. obs. - Spread
 circle - Cu. rec -
 Phot. R.

1	3	8	248.6
	3	53	330.8
	4	5	252.3
		16	335.0
		27	249.4
		41	332.8
		59	247.8
	5	15	333.2
		31	250.1

Nov 19, 1882

5	45	332.9
	56	245.4
6	7	332.3 —
	24	251.1
	38	332.2
	59	250.0
7	7	331.3 —
	19	250.0
	26	335.0
10	26	254.5
	34	331.5 —
	40	247.5
	46	335.2
11	3	249.5
	9	331.3 —
	15	247.2
	26	329.0
	33	249.5
	59	332.9 —
	45	249.5
	50	334.4
	56	251.0
12	2	330.0 —
	7	254.1
	13	328.4
	18	251.1
	23	329.4
	30	254.0
	35	326.1

Nov. 19, 1882

	40	259.7
	46	325.8
	53	257.9
	58	323.0
13	4	260.5
	9	325.0
	15	263.2
	20	322.9
	24	263.9
	30	318.3
	35	264.9
	41	316.2
	46	266.0
	51	314.3
	57	269.5
14	2	313.8
	7	269.7
	12	308.8
	17	276.0
	24	306.2
	29	276.2
	34	311.1
	39	276.1
	44	304.5
	45	279.1
	55	303.9

AF

Nov. 19, 1882

Limit of Visibility

1	15	36	279.2
		41	305.9
		48	277.5
		56	307.6

	B+C 1182		B 394	
1 ^h	22	43.0	13 ^h	24 44.5
				00
	23	43.0	1	25 00
				+61.5

Nov. 20, 1882

Phot. H. Clock not running.
 π Arietis (Double star) Est. Pos. Aug. 120.

9 12

20 Σ 311.
 35.0 33.0[^] S. obs.
 179.0 38.2[^]
 217.2 $\overline{71.2^{\wedge}}$ 25[^] 4.5[^]

9 21

92.3 33.1[^] S. obs.
 125.4
 274.3 30.0[^]
 304.3 $\overline{63.1^{\wedge}}$ 27[^] 4.7[^]

9 28

92.7 29.2[^] S. obs.
 121.9
 270.9 32.4[^]
 303.3 $\overline{61.6^{\wedge}}$ 28[^] 4.2[^]

9 35

0.0 34.1[^]
 34.1
 181.0 34.5[^]
 215.5 $\overline{68.6^{\wedge}}$ 26[^] 4.6[^]

Double star at 2453[^] 58[^] + 10° 16' - R. book 33 -
 Σ 338.

~~10 53~~

10 55

~~56.4 Reject~~
~~242.9~~ S. obs.
 153.4 < m. stars dis.
 242.9 89.5[^]
 334.0 85.4[^] 2.1[^] ✓
 59.4 $\overline{174.9^{\wedge}}$

Nov. 20, 1882

10 59

64.9 \angle m. star dia.
 150.7 $\overline{85.8}^{\wedge}$ S. obs.
 237.9 $\overline{93.1}^{\wedge}$
 331.0 $\overline{178.9}^{\wedge}$ ~~20~~ 2.0 ✓

11 3

60.3 \angle m. star dia.
 151.1 $\overline{90.8}^{\wedge}$ S. obs.
 243.0 $\overline{89.8}^{\wedge}$
 332.8 $\overline{180.6}^{\wedge}$ ~~20~~ 2.0 ✓

11 7

152.6 \angle m. star dia.
 241.4 $\overline{88.8}^{\wedge}$ S. obs.
 336.0 $\overline{81.0}^{\wedge}$
 57.0 $\overline{169.8}^{\wedge}$ ~~20~~ 2.2 ✓

Stars nearly equal, southern slightly
 fainter - S. obs.

Nov. 22, 1882.

B + C 1182
 6 30 32.6
 31 32.6

B 394
 6 32 44.5
 00
 33 00
 +71.9

Re-ap. Jupiter III, Compared with IV
 Phot. R. Subs. Pread circle. Cu. rec.

~~6 30~~
 6 Re-appearance not seen —
 Jupiter low. Seeing bad.

B + C 1182
 3 24 31.6
 25 31.6
 26 31.6

B 394
 15 26 44.5
 00
 27 00
 28 00
 +72.9

Dis. Jup. I. Compared with IV.
 Phot. R. Subs. Cu. rec.

3 49 43
 50 1
 25
 46
 51 6
 23

173.5
 297.0
 173.0
 299.7 —
 176.0
 297.3

Nov. 22, 1882

3	51	52	177.0
	52	10	298.7 —
		28	177.9
		52	298.9
	53	11	176.8
		28	297.0 —
		43	172.2
		54	300.0
	54	8	175.5
		28	302.0 —
		42	175.0
		54	303.4
	55	5	176.8
		19	303.0 —
		30	175.2
		44	300.8
	56	0	171.5
		12	303.5 —
	57	12	179.5
		22	298.8
	28	33	180.5
		43	299.0 —
		54	175.0
	58	3	304.0
		12	173.3
		22	299.2 —
		36	177.0
		47	299.0
		58	181.7

Nov 22 1882

3	59	5	294.7
		18	180.0
		27	291.2
		37	188.0
		48	291.0
4	0	58	188.0
		7	286.0
		18	201.3
		33	272.5
		42	212.2
		56	rusp.

Limit of Visibility -

1	22	215.0
	38	271.0
	52	214.0
2	6	264.0

B+C 1182

4	9	31.3
	10	31.3

B 394^{44.5}

16	11	00
	12	00
		+43.2

Nov. 24, 1882.

 π Arietis Σ 311.

9 05
 54.5
 89.4 34.9[^] S. obs.
 239.8 30.6[^]
 270.4 65.5[^] 27 47

9 07
 141.9
 179.5 37.6[^] S. obs.
 327.2 35.8[^]
 363.0 73.4[^] 24 K.K[✓]

9 22
 59.0
 91.0 32.0[^] S. obs.
 238.7 32.4[^]
 271.1 64.4[^] 27 K.7[✓]

9 27
 148.7 29.6[^]
 178.3 S. obs.
 324.2 39.5[^]
 363.7 69.1[^] 25 K.5[✓]

Clouds - images unsteady.

November 24, 1882.

Double star at $2^h 53^m 58^s + 10^\circ 16' 8.2''$ (Book 33 - p 196)

9 40 26.7 87.6[^] $\Sigma 338.$
 114.3 S. obs.
 207.6 89.4[^]
 297.0 177.0[^] $\text{at } 2.1 \checkmark$

9 43 118.7 90.3[^] S. obs.
 209.0
 300.9 80.6[^]
 21.5 170.9[^] $\text{at } 2.2 \checkmark$

Interrupted by clouds -

Nov 24, 1882.

B+C 1182

9	46	27.3
	47	27.3

B. 394

9	48	00
	49	00

Dis. Jup. I - Compared with II

Phot. R.

R

~~Sols. Curves~~
Sols. Curves.

10	8	33	219.2
	10	32	320.8
	11	34	221.3
		51	317.5
	12	16	209.0
		42	312.1
		59	223.8
	13	14	316.3
		30	213.1
		55	315.8

⁷⁵ Began new series.
 Photometer R. Jupiter I compared with II.
 P. obs. S. read circle C. rec

10	14	55	222.7
	15	5	317.5
		17	217.4
		28	320.0
		41	209.9
		48	319.1

Nov 24, 1882

10	15	58	214.5
	16	8	319.5
	18	51	217.8
	19	2	318.0
		19	217.0
		29	315.0
		35	222.9
		43	316.2
		55	215.4
	20	2	318.0
		10	213.6
		19	317.5
		32	215.8
		41	320.1
	21	15	215.7
		24	318.5
		32	217.1
		41	318.4
		59	212.0
	22	12	319.0
		21	214.9
		32	318.1
		41	219.2
		50	322.5
	26	4	217.2
		12	317.5
		20	215.0
		26	318.9
		31	218.5

Clouds

Nov. 24, 1882.

10	26	36	317.0
		44	222.0
		48	310.0
		55	219.0
27 28		16	303.0

← clouds

B4C 1182

10	37	27.0
	38	27.0

B 394

10	39	00
	40	00

Right the above owing to clouds.

Nov. 25, 1882.

Double Star at $4^h 5^m 41^s - 7^\circ 13'$ / Book 33 p. 196 -

$\Sigma 514$. P. IV, 15

$t = 0$ 55.38 - 7.4

$$\begin{array}{r} 3 \quad 10 \quad 00 \\ \hline 4 \quad 6 \quad 8 \end{array}$$

8 45 42.8 64.2¹
 107.0 S. obs.
 224.9 (55.6¹)
 280.5 119.8¹ ~~12~~ 3.2[✓]

8 53 130.3 62.7¹
 193.0 S. obs.
 319.0 47.5¹
 366.8 110.5¹ ~~11~~ 3.4[✓]

8 59 132.7 51.2¹
 183.9 S. obs.
 313.0 58.8¹
 371.8 110.0¹ ~~11~~ 3.4[✓]

9 ✓ 49.9 49.1¹
 99.0 S. obs.
 218.8 65.0¹ 33 Companion faint, measured
 286.8 117.1¹ ~~13~~ with difficulty. S. obs.

Nov 25, 1882

Estimated diff. of Mag = 2 - S. obs.

9 15

226.6

~~81.2~~ rej

281.1

316.8

9.6

54.5^{.1} P. obs.
$$\begin{array}{r} 52.8^{\cdot 1} \\ 107.3^{\cdot 1} + 5 \quad 3\checkmark \end{array}$$

9 18

~~49.2~~ rej
~~104.6~~ rej

132.1

192.7

132.4

191.6

60.6^{.1}

P. obs.

$$\begin{array}{r} 59.2^{\cdot 1} \\ 119.8^{\cdot 1} + 12 \quad 3.2\checkmark \end{array}$$

U Tauri

Northern star .1 ltr than southern S. obs.

" " .1 ftr " " P. obs.

Northern bluish Southern reddish P. obs.

" bluer than the southern S. obs.

Nov 27, 1882

10	34	44	45	58	3	14
	54	16	24	25	10	
40	7	25				
28	19	59				

Re-Vision of Vol. VT - S. obs
 Began with $22^h 53^m 55.2 + 9' 40''$
 Began at ~~23^h 26^m 35^s~~ $23^h 26^m 35^s$

23^h 25^m 9^s	5.7	dbl	5.8
9.5	10.0	2d	7.7
2.6	100	1st	5.0
9.5	52	}	5.8
2.6	a	$23^h 32^m 7$	50.7
2.0	4.8	}	77
7.6	4.0	}	a $23^h 36.7$
2.0	4.0		9.8
7.6	4.8		1.8
4.8	9.0		9.8
4.8	9.6		2.8
a $23^h 29.1$	8.0		7.7
3.3	0.0		2.0
0.0	90	}	1.0
7.6	96	}	2.8
3.3	80		7.7
7.6	0		10
0	9.8		b $23^h 38.3$
10.0	b $23^h 35.3$		4.8
10.0	9.8		4.8

Nov. 27, 1882.

4.3	80	4.0	42
43	0.0	0.3	1
aa 23 ^h 39 ^m	5.8	4.0	7.4
3.5	0	3	0.8
3.5	1-23 ^h 45 ^m	0.7	-0.2
7.7	5.8	5.1	8
9.9	4.6	7	74
8.5	4.6	9.1	-2
77	bb 23 ^h 46.8	5.1	aa 23 ^h 58.5
98	7.6	9.1	4.0
5.8	2.4	3.9	4.0
90	7.6	6.2	2.7
5.8	2.4	6.2	2.7
2.5	-0.1	3.9	-0.5
7.5	8.2	a 23 ^h 54.4	-5
7.4	2.3	9.5	5.0
2.5	-1	4.3	5.0
7.5	2.0	9.5	9.9
7.4	3.5	0.2	9.9
1-23 ^h 43.3	8.0	4.3	0.0
5.1	9.7	2	0
5.1	3.5	1.1	9.7
8.3	9.7	1.0	9.7
8.3	a 23 ^h 49.7	1.1	4.8
a 23 ^h 44.5	5.0	1.0	a 0 ^h 5.3
8.3	4.9	-0.5	2.3
2.0	5.0	1-23 ^h 56.7	4.8
6.8	4.9	-5	2.2
8.3	1.7	4.2 2d tap	1-0 ^h 4.7
2.0	1.7	0.1	5.2

Nov. 27, 1882.

3.0	78	9.6
30	10.1	9.8
52	101	9.3
22	6 0 ^h 14.7 ^m	96
22	18	98
23	18	93
23	23	99
10.0	50	99
28	23	94
28	50	94
24	25	18
9.0	6.6	18
24	25	47
90	66	47
a 0 ^h 9.8 ^m	aa 0 ^h 17.3 ^m	10.0
10.2	7.0	100
102	70	5.0
43	43	5.0
10.0	43	50
100 }	50	50
43 }	50	66 0 ^h 28.9 ^m
69	24	
69	24	
3.0	98	
9.5	27	
9.5	27	
30	98	
7.3	28	
7.8	28	
7.3	a 0 ^h 23.3 ^m	

Ended with star at
23^h 55^m 8.9^s + 5' 30" —

Dec. 2, 1882.

Observations with Photometer constructed
to observe Transit of Venus.

~~Sky outside limb with center.~~

Sky near northern limb compared with center
of sun.

3^h 10^m

119.0

P. obs.

156.2 37.2

3^h 10^m

299.2

331.6

32.4

69.6

2.5

Northern limb compared with center.

96.6

P. obs.

171.2 74.4

3 12

251.2

352.4 71.2

145.6

0.7

Points near center.

359.1

P. obs.

90.6

91.5

3 16

182.2

267.6

15.4

176.9

0.1

Dec. 2, 1882.

Southern limb compared with centre, P. obs.

$$\begin{array}{r}
 10.6 \\
 81.4 \quad 70.8 \\
 189.8 \\
 259.2 \quad \underline{69.4} \\
 \quad \quad 140.2
 \end{array}
 \quad 0.8$$

Sky near southern limb compared with centre, P. obs.

$$\begin{array}{r}
 27.8 \\
 66.2 \quad 38.4 \\
 199.6 \\
 245.6 \quad \underline{46.0} \\
 \quad \quad 44.4
 \end{array}
 \quad 2.1$$

Sky near southern limb compared with centre, W. obs.

3 26

$$\begin{array}{r}
 60.2 \\
 39.2 \\
 212.0 \\
 238.6 \\
 \quad \quad \underline{26.6} \\
 \quad \quad 57.8
 \end{array}
 \quad 3.0$$

S limb with centre

3 31

$$\begin{array}{r}
 8.1 \\
 85.7 \\
 188.9 \\
 263.3 \\
 \quad \quad \underline{77.6} \\
 \quad \quad 74.4 \\
 \quad \quad \underline{152.0}
 \end{array}
 \quad 0.5$$

W obs

Centre with centre,

W obs

3 32

$$\begin{array}{r}
 359.7 \\
 92.2 \\
 181.1 \\
 271.1 \\
 \quad \quad \underline{92.5} \\
 \quad \quad 90.0 \\
 \quad \quad \underline{182.5}
 \end{array}
 \quad 0.0$$

Dec 2, 1882
 R limb with center. Wobs.

~~3~~ 3

102.2

173.2

71.0

3 36

279.9

70.1

350.0

141.9

0.8

Sky and ~~center~~ edge of sun.
 Photo. W. obs.

3 38

309.1

11.8

320.9

127.3

142.9

15.6

27.4

u.6

Dec. 3, 1882.

1386.1182 17 53 50.5 54 50.5	13,394 17 54 0.0 55 0.0 <div style="text-align: right;">-6.0</div>
------------------------------------	-----------------------------------------------------------------------------

Dis. Jupiter II. Photometer R.
 Compared with Jupiter III. Pobs. & rec.
 Seeing very bad. Clock not working.

18	14	55			82.7
	15	10			165.0
		56			81.8
16	11				168.3
		26			85.7
		38			162.4
		52			78.6
17	8				165.6
		29			81.2
		43			158.8
18	7				78.4
	23				157.6
	42				85.8
	58				161.4
19	12				82.9
	32				161.8
20	10				87.6
	23				158.8
	39				82.3
21	11				165.5

Dec. 3, 1882.

18	21	17	83.1	
		3/6	160.9	
		51	80.2	
22		7	155.6	—
		2/4	83.4	
		39	161.6	
		5/8	86.7	
23		10	160.3	—
		23	84.3	
		37	160.7	
		50	89.2	
24		1	154.6	—
		11	87.6	
		22	150.3	
		33	89.8	
		44	152.4	++++
		56	91.6	
25		8	150.7	
		18	95.7	
		27	148.6	+++++
		4/3	94.8	
		52	147.9	
26		1	102.8	
		10	145.4	
		17	102.7	
		26	139.4	
		37	104.8	
		48	134.4	

not seen later

Dec. 3, 1882
 Limit of visibility.

18	27	35	102.9
		45	136.8
28	6		106.8
	19		140.4

B B C. 1182

18	33	50.0
	34	50.0

B 394

18	34	44.5
		0.0
	35	0.0
		-5.5

Dec. 6. 1882

Transit of Venus. Cloud

B.C.			B 394.		
8	48	36	8	49	00
8	49	50 35.7	8	50	00
	50	35.6	8	51	00

Sun barely visible at 9⁰⁰ not sufficiently
to let go.

Pos. 0 = 127

Set at 93

a	9 ^h	17	54.1
-a		18	5.6
			21.4 Thick clouds
a			28.2
a			37.8
a			52.4
b			55.7
a		19	0.0
a			29.6
b			44.2
b			49.0
		20	22.0

at b² dist between curts = $1\frac{1}{2}$ (than between 1st)
that between parallel lines ($\frac{1}{125}$ in)

Dec 6, 1882.

Venus first seen at 19 44.2 edge
 blurry. Difficult to decide whether indentations were
 real or not. Signal at 18 55.7 suspicion not
 confirmed.

 $t = 9 \quad 25 \quad 42.2$
 $2 \quad 25 \quad 30^{\circ}$
 $t = 9 \quad 26 \quad 11.8$
 $2 \quad 26 \quad 00$

tip by W. not recorded est. at 9 38 by hi
 as half way from. 19 49 & 20 22
 Center by P at 105 from. 20 220

9 ^h	39	9.8	a
		11.2	a
		20.4	a
		30.1	a
		36.8	a
		51.3	b
		59.9	b
	40	7.2	c

9 39 51.3 assumed as second contact. P. 105

10 - 6 1882

J. R. E.

W. H. P.

2nd Contact — Original.

E.

19^m 40.6^s Part.

P.

19^m 5^s 40.7^s

19

Last "Not yet"

perhaps 10^s before 19^m 40.6^sCall it contact = 2^h 40^m 1^s

Dec. 23/82 The correction from 6^s to 1^s was not ^{all} a correction for the instant. I would call contact, but ~~also~~ an increased allowance for the lost time between observation and looking at chronometer. The estimate 2 40 1^s was made at Prof. P's request before reducing it or knowing any other person's result.

Dec 23/82. The inference for Mr. P. is based upon fact that we both agreed that his word "Part" came one (second) after my word "Part". J. R. E.

Dec. 6, 1882

J. R. E. with "Alexis Caswell" 4 in. telescope.

"Past" (intimate contact) at $19^h 40^m 06^s$ by 3451
 Not recorded by assistant, but by observer going to
 chronometer and estimating backward.

Last "Not yet" perhaps 10^s before this.

Estimate uncertainty 5^s in time of contact.

Assumed $2^h 40^m 1^s$

I called "past" at $19^h 40^m 9^s$

Probable Error perhaps $\pm 3^s$

Do not know time of last "not yet"

Same Recorder as J. R. E. W. H. Pickney.

O. C. Wendell obs. with large finder
 on large telescope. First contact ob-
 tained and given to Mr. Cutler who
 failed to ~~record~~ ^{hear the tip} it. but the tip was
 given about midway of tips of Prof. P.
 designated on previous page. Said
 tip was after the limb was certainly notched.
 Contact was thought to be seen some 6 to
 8 sec preceding tip.

Removed covering partly from object glass
 between two contacts. This proved too
 bright for eye and focus could as seen
 was not as much covered with clouds

Original - 3rd contact.

J. R. E. 345^h

Actual record.

2nd internal contact.

Interpretation.

Modulation

06 Venus

50 near

3^m

Venus near limb

15 m

3^m 15^s not yet.

30 m

30 " "

40 m.

40 past but barely and perhaps?

55 p.p.

55 surely past.

10 ^{4^m} escape sep.

4^m 10 escape well separated.

ball 2nd internal contact - 8^h 3^m 40^s

No black spot seen.

Probably near faint image.

4th contact.

22^m

20^s m

50 m

23 10 m

20 m

30 m

40 ?

47 p.

24

This perhaps the last contact.

Dec. 6, 1882.

63

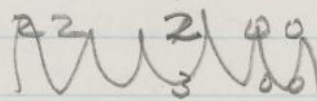
as in first contact. and sharp definition could not be obtained for second contact in season. H. obs.

B4C 1182



10	3	35.4
	4	35.4
	5	35.4

B. 394



22	4	00
	5	00
	6	00

Contacts observed by P. with E. Equatorial spectrum reduced to 14.48 cm. by diaphrag No 8. Same 206 No 2. Titan. Light reduced by glass wedge of green glass. Clouds reduced reduced light of sun to very near that of sky. At first contact edge distorted by large mass which rendered it difficult to be certain that indentation caused by Venus was not due to atmospheric causes. Suspected at 18 55.7. This indentation was soon seen to be atmospheric. Venus seen at 19 44.2 and captured 5 sec. later. The mutual distance creeps then equalled 1.5 mutual distance views and involves a correction of seconds.

2 Contact. This one well seen. Observed time 9 39 51.3. A previous tip was probably given by not being by recorder. This well recorded

Dec. 6, 1882.

about five seconds. but it is doubtful if calt
had the latter place. Seeing good.

Comp. ^{with} Venus

10^h 366
369
37.2
37.7

35.6

v6.2

213.8

237.8

P. obs

~~31.0~~

Edge of Sun

38.0

211.2

38.3

244.0

Comp with Venus

11 39

28.9 Repeat

11 39

23.0

41.7

213.9

223.0

W. obs.

Dec. 6, 1882

65

Observation by Mr. Rogers on plate
the E. Eg. fr. diameters. See Fundamental Standards
p 90 for explanation of plate

16 ⁿ 38 30	30	45	30	45	tr	45	30	45	30
	p	p	f	f		p	p	f	f
40 0	30	45	30	45	rr	45	30	45	30
	p	p	f	f	rr	p	p	f	f
41 15	30	45	30	45	rr' rr'	45	30	45	30
	<u>p</u>	<u>p</u>	<u>f</u>	<u>f</u>		<u>p</u>	<u>p</u>	<u>f</u>	<u>f</u>
41 50	x	x	x	x	xx xx	x	x	x	x
42 30	x	x	x	x	xx xx	x	x	x	x
43 10	x	x	x	x	xx xx	x	x	x	x
43 45	x	x	x	x	xx xx	x	x	x	x
44 40	x	x	x	x	xx xx	x	x	x	x
45 25	x	x	x	x	xx xx	x	x	x	x
46 15	x	x	x	x	xx xx	x	x	x	x
47 0	x	x	x	x	xx xx	x	x	x	x
47 45	x	x	x	x	xx xx	x	x	x	x
48 30	x	x	x	x	xx xx	x	x	x	x

new setting for zero position
failure

17 745	x	x	x	x	xx xx	x	x	x	x
8 8	x	x	x	x	xx xx	x	x	x	x
9 30	x	x	x	x	xx xx	x	x	x	x
9 8	x	x	x	x	xx xx	x	x	x	x
9 40	x	x	x	x	xx xx	x	x	x	x
10 30	x	x	x	x	xx xx	x	x	x	x
11 15	x	x	x	x	xx xx	x	x	x	x
11 55	x	x	x	x	xx xx	x	x	x	x
12 30	x	x	x	x	xx xx	x	x	x	x
13 15	x	x	x	x	xx xx	x	x	x	x

Seeing very unstable

66

Dec 6, 1882

a

6

		30	45	30	45	rr'	rr'	45	30	45	30
		p	b	f	f			p	b	f	f
14 ^m	0 ^s	x	x	x	x	xx	xx	x	x	x	x
14	30	x	x	x	x	xx	xx	x	x	x	x

New Series

a'

b'

		30	45	30	45	rr'	rr'	45	30	45	30
		p	p	f	f			p	p	f	f
17 ^m	21.0	x	x	x	failure						
17 ^m	21 ^m 20 ^s	x	x	failure							
24	20	x	x	x	x	xx	xx	x	x	x	x
25	5	x	x	x	x	xx	xx	x	x	x	x
25	45	x	x	x	x	xx	xx	x	x	x	x
26	30	x	x	x	x	xx	xx	x	x	x	x
27	15	x	x	x	x	xx	xx	x	x	x	x
27	50	x	x	x	x	xx	xx	x	x	x	x
28	30	x	x	x	x	xx	xx	x	x	x	x
29	15	x	x	x	x	xx	xx	x	x	x	x

Seeing very unsteady

30	00	x	x	x	x	xx	xx	x	x	x	x
30	45	x	x	x	x	xx	xx	x	x	x	x

New a Series

b'

41	00	x	x	x	x	xx	xx	x	x	x	x
42	45	x	x	x	x	xx	xx	x	x	x	x

~~43 25~~

Seeing horrible

43	25	x	x	x	x	xx	xx	x	x	x	x
----	----	---	---	---	---	----	----	---	---	---	---

false stroke near close of last obs

44	20	x	x	x	x	xx	xx	x	x	x	x
	45	x	x	x	x	xx	xx	x	x	x	x
45	25	x	x	x	x	xx	xx	x	x	x	x
46	10	x	x	x	x	xx	xx	x	x	x	x
	55	x	x	x	x	xx	xx	x	x	Reject	

Dec. 6, 1882 -

67

		30 p	45 p	30 f	45 f	rr'	rr'	45 p	30 p	45 f	30 f
47	35	x	x	x	x	xx	xx	x	x	x	x
48	20	x	x	x	x	xx	xx	x	x	x	x
49	00	x	x	x	x	xx	xx	x	x	x	x

Image of Venus building

Venus compared with Centre of Sun -

1^h 5^m 50^s +9

261.0

12.0

W. obs -

273.0

176.9

19.5

31.5 = 15.8

96.4

2.7

4.3

1 6.0

4.30

17.20

8.280

.019

Sky compared with Centre of Sun -

1 7 20
1.7.5

67.9

30.4

98.3

246.2

35.0

65.4 = 32.7

281.2

7.0

2.7

W. obs -

2.66

Same again (Sky to 1

65.2

36.8

102.0

244.9

36.1

72.9 = 36.4

281.0

0.7

2.4

W. obs -

1 9 10

1 9.3

2.54

1.016

8.984

1 7.6

.096

2.41

Dec. 6, 1882.

1^h 11^m 50^s

Changed position circle by 180° W. obs -

Venus compared with Centre of ~~Sky~~ Sun

1 16 0

16.2

344.2

1.0

16.8

W. obs -

← Interrupted by clouds -

17 30

169.0 ← Wrong reject

18 20

163.9

11.2

$$\begin{array}{r} 16.5 \\ 34.7 \\ 17.3 \end{array}$$

$$\begin{array}{r} 4.55 \\ 18.20 \\ 8.180 \\ .015 \end{array}$$

175.1

$$\begin{array}{r} 28.0 \\ 3.0 \end{array} = 14.0$$

4.6

Sky compared with Centre of Sun -

19

5

$$\begin{array}{r} 19.4 \\ 36.7 \\ 18.4 \end{array}$$

173.3

18.7

W. obs -

192.0

$$\begin{array}{r} 2.94 \\ 1.176 \\ 8.824 \\ .067 \end{array}$$

333.0

39.2

12.2

$$\begin{array}{r} 57.9 \\ 7.3 \end{array} = 29.0$$

2.9

Reversed pos. circle again by 180°

Venus compared with Centre of Sun

1 24 0

24.2

76.2

17.0

W. obs -

93.2

$$\begin{array}{r} 4.05 \\ 1.620 \\ 8.380 \\ .024 \end{array}$$

254.2

18.3

272.5

$$\begin{array}{r} 35.3 \\ 2.5 \end{array} = 17.6$$

4.1 4.0

Sky compared with centre of Sun -

246.2

30.9

W. obs -

277.1

$$\begin{array}{r} 25.5 \\ 49.7 \\ 24.8 \end{array}$$

$$\begin{array}{r} 2.79 \\ 1.116 \\ 8.884 \\ .077 \end{array}$$

65.9

30.9

96.8

$$\begin{array}{r} 61.8 \\ 4.1 \end{array} = 30.9$$

2.8

Dec. 6, 1882.

Reversed pos. ~~S~~ Circle Again by 180°

Venus compared with centre of Sun -

$$\begin{array}{r} 1^h 28^m 30^s \\ 28.6 \end{array}$$

$$\begin{array}{r} 4.46 \\ 1.784 \\ 8.216 \\ .016 \end{array}$$

163.9

180.1

346.9

0.0

16.3

W. obs.

$$\begin{array}{r} 13.1 \\ 29.3 = 14.6 \\ 2.9 \quad 4.5 \end{array}$$

Sky compared with Centre of Sun -

30 10

30.3

58.9

29.4

$$\begin{array}{r} 2.210 \\ 0.960 \\ 9.040 \\ .110 \end{array}$$

155.8

187.8

331.8

13.2

32.0

W. obs.

$$\begin{array}{r} 41.4 \\ 73.4 = 36.7 \\ 0.6 \quad 2.4 \end{array}$$

~~2 230~~ Examined spectrum of Venus with heliograph and heliostat. No peculiarities seen

2 230 Attached Helge Spectrometer to large telescope and made a careful examination of spectrum of Venus, no peculiarities seen. Obs. Compared by H.H.P.

Dec. 6, 1882

~~Group of light with Venus~~

Comparison of Venus with centre of Sun

Venus compared with centre of Sun -

2 46 0

~~670~~

P. Obs.

Venus much darker than sky near it.

2^h

47.6

47.8

$$\begin{array}{r} 5.58 \\ 2.232 \\ 7.768 \\ .006 \end{array}$$

67.2

73.6

6.4

243.6

11.1

254.7

$$\frac{17.5}{4.4} = 8.8$$

8.8

5.6

P. Obs.

Sky compared with centre of Sun -

48.6

$$\begin{array}{r} 18.8 \\ 96.6 \\ 48.3 \end{array}$$

238.6

261.2

22.6

P. Obs.

$$\begin{array}{r} 3.32 \\ 1.328 \\ 8.672 \\ .047 \end{array}$$

55.4

264

81.8

$$\frac{49.0}{4.4} = 24.5$$

3.3

No sensible irregularity in haziness.
 Venus distinctly darker than sky

Venus compared with centre of Sun

51.2

51.4

$$\begin{array}{r} 4.44 \\ 1.776 \\ 8.224 \\ .017 \end{array}$$

63.8

77.1

13.3

240.6

16.2

256.8

$$\frac{29.5}{2.9} = 14.8$$

4.4

P. Obs.

Dec. 6, 1882.

Sky compared with Centre of Sun

2 51.5
51.7
103.1
51.6

4.29
2.74
1.096
8.904
.080

235.4
264.2 288 P. obs.
52.3 34.3
86.6 63.1 = 31.6
++ 2.7

Venus compared with Centre of Sun -

52.9
53.1

4.37
1.748
8.252
.018

61.4
77.3 15.9 P. obs.
242.6 14.6
257.2 30.5 = 15.2
2.8 4.4

Sky compared with Centre of Sun

55.6
55.8
108.9
54.4

3.06
1.224
8.776
.060

236.7
264.4 27.7 P. obs.
57.6 27.2
84.8 54.9 = 27.4
++ 3.15

0.4 W
3.8 C
8.2 W 2
21.4 d

3^h 2^m 4.2 a
15.6 a
19.2 W.1
25.8 a
33.2 W.1
40.5 W.1
43.2 a
50.3 W.1
52.0 W.1
56.2 a

Crusts = twice
interval between
time
a cont. not come

Dec 6, 1882.

2 56.2 should be w₁ contact suspended.
 3 08 3 38 denser contact.
 21.4 denser internal between cypes

equals time interval between wires. I obs
~~Evidently this cannot follow c = 3 3.8. It is rather shorter~~
~~than h = 2 56.2 contact is 11.1 and c = 3 7.3~~

3th 0.4 was w₂ (first one)

W. obs. { W₁ = contact not come. but filament was ^{rowing}.
 First w₂ at 3rd 0.4 was contact not
 quite come. - ^{very faint} a line of light still visible
 w₂ at 3rd 3rd 2.2 was contact.

34 19

Waze growing thicker

3^h 22 25.2 a
 29.4 a
 " W1
 34.2 a
 39.2 a
 " W1
 44.5
 " W1
 51.2 a
 56.7 b
 23 0.2 W2
 3.4 b
 5.2 W2
 10.0 c

Dec. 6, 1882

73

3 23 16.2 W₂

19.4 (d True contact)

this record was 19.4 c
changed by mistake

W₁ for

C is probably true contact. Obs.
= 3^h 23^m 10.0

W. obs. { W₁ = Contact approaching
The first W₂ signifies contact pretty close.
" second W₂ " close to contact.
~~last~~ True contact preceded last
W₂ by 2 secs.

4 inch Comet Seeker, Chronometer 3451.
2d Internal

3 16 not yet

3 33 contact ✓

Venus went out of field.

4 22 passed.

2d External

23 0 not yet

~~23 50~~ m

Venus went out of field

23 50 not yet

24 0 disappeared, ✓

W. H. Pickering.

Dec. 6. 1882,

B. L. C. 1182,

3	38	
3	39	34.2
	40	34.1

B. 394,

3	39	0.0
3	40	0.0
	41	0.0

Prod. 3451.

g^L	42	25.7	prob. wrong	3
	43		missed	
	44		bad (hurried)	
right	45	26.3		
	46	26.4		
	47	26.6		

Bond 394,

42	0.0
43	0.0
44	0.0
45	0.0
46	0.0
47	0.0

∴ 3451 was 1^m 37.6 slow. ✓

Results of observations of contacts with large
finder on large Equatorial - 4 inches aperture.
9^h 20^m 17.6 C. M. S. = Time of first contact.
Second contact not obtained as silver film on
object glass had been partly removed by wiping.
to ~~polished~~ the cloudy state of the sky.
This seemed to produce an indistinctness
and glare, aggravated also by the fact that
the sky had become clearer ^{at time of second contact}, so that contact
had could not be observed.

3^h 3^m 18.6 = Time of third contact. C. M. S.

3 23 24.6 = " " fourth " C. M. S.

Dec. 6, 1882. Original record of
observations by A. Searles on 14/75-78. 75

2

Internal contact at egress.

Dec. 6, 1882.

A ~~59~~ 20 6 14.3 S. obs. R. rec. Ea. moves mirror.

B — 23.4 36.7

C = First appearance of darkness between planet and limb.

B = geometrical contact

C = "Internal contact certainly parted; cusps separated."

[Note made at 5^h mean time: At signal "C" the cusps were separated, not by any "black drop" but by the circular outline of the planet itself.]

1 Dec. 6 1882 Comparisons of time pieces.
(Dec. 5 astronomical for first comparison)

F. 1327 13.236

13 44 0 13.47 39

13 45 0 13.48 39

F. 1327 13.236

19 17-20 19.20 59.5

19 18-0 19.21 39.5

B 394 13.236

2 20 0.0 19.22 51.0

2 21 0.0 19.23 51.2

3 Dec. 6, 1882. External contact at equs. Light shade glass.

20 16 15

Venus visible with light shade glass

beyond such

S. obs. Rec.
Ca. more near

20 24 10, 10 on Sturges chle

but very faint

20 25-56, 20 on Sturges
20 26 28, 11 down full.

Notch not afterwards seen.

4. Dec. 6, 1882. Comparison of time pieces.

7.1327

13.236

20 28 0 20 31 39.3
20 29 0 20 32 39.0

13 39 4 13 20 6
30 32.0 20 33 36.0

3 33 0.0 20 36 3.0
36 10.0 39 13.5

The first comparison in this last set of three was rejected at the time for uncertainty.

Note made Dec. 11, 1882. The present recollection of the observer is that there can be no doubt that the disk of Venus was much darker than the sky immediately surrounding the sun. Thus, with the two shade glasses employed, the tints would be approximately as in the diagrams below.



Venus black in each case.

5 Dec. 6, 1882, S. Os.

General remarks: S. Os.

Aperture $5\frac{3}{16}$ inches.Approximate focal length
6 ft. $18\frac{3}{4}$ inches, (or $74\frac{3}{4}$ in)

Telescope mounted horizontally
3 ft. from the ground
looking approximately north
towards a plane glass
reflector, not silvered,
formerly used in solar
photography, $7\frac{1}{2}$ by 6 inches,
mounted in a frame having
an approximate altitude and
azimuth motion, and placed
upon the ~~east~~ stone block at
the east side of the steps at
the south entrance of the Observatory.

6

Dec. 6, 1882, S. Os.

General remarks
continued.

The eyepiece employed
was No. 5 of the solar
micrometer eyepieces
of the East Equatorial,
with a power for that
instrument of 688 and a
field of 3'. The focal
length of the East Equatorial
is 268.7 inches. Hence the
actual power employed was about 230.
 $268.7 : 688 = 90.8 : 232$ field of 3'.

5504	
6192	232
624704	
5374	
8730	
8661	
669	

Note Dec. 10, 1882. Direct
measurement of diameter of
beam emergent from eyepiece
makes it 0.025 inches. Taking
aperture above, $5\frac{3}{16}$ inches (all of
which is visible on removing
eyepiece), the magnifying
power is $\frac{5188}{8730} = 208$. The
comparison of 25 focal lengths
would be preferable if it did not
involve some doubtful assumptions.
The adaptation in which it was found.
The power may be stated as 210 or 220.

7 Dec. 6, 1862. S. obs.

General remarks continued.

The person being available to set the mirror in position for observations of ingress, none were made. The assistant expected thought it too cloudy for observation and did not arrive.

At express Prof. W. A. Rogers took the time from the chronometer, and Mr. C. C. Eaton managed the mirror. The signal "A" was given at the appearance of a distinct darkness between the limbs of the planet and sun.

This darkness was not quite as great as that of the planet itself, but did not afterwards disappear, and nine seconds later (signal "B") there was apparent geometrical contact, but the limb was agitated. At signal "C" contact was certainly lost. The shade glass used was a dark red one, and there was no glare about the sun's limb.

8 Dec. 6, 1882. S. obs.

General remarks continued. After internal contact, thin clouds began to obscure the sun, and a lighter (blue) shade glass was substituted for the red one. The whole disk of the planet was then indistinctly seen, but the part ~~between the sun~~ outside of the sun's limb seemed smaller (to belong to a smaller circle than that inside. The increasing cloudiness soon put an end to this appearance, and prevented any accurate observation of the last contact.

Additional remarks written Dec. 7, 1882, by A. Searle.

During the transit, the disk of the planet was uniformly dark, except that at times it seemed to be crossed by faint streaks of light, very likely due to slight defects in the shade glass or other parts of the optical apparatus employed.

At internal contact at egress, the agitation of the limb was too great to allow geometrical contact to be very accurately defined, although the seeing was tolerable, and not to be called decidedly bad. The time given as ^{that of} geometrical contact might be otherwise defined as that when the sun's limb was first touched by a spot as black as the general surface of the planet's disk. Previously, as stated in yesterday's memorandum on the opposite page, the darkness between the limbs of the sun and planet was not quite as great as that of the planet's disk; but it had been steadily increasing, without any ~~note~~ observed interruption by threads of light. (See p. 43 of the Washington "Instructions for Observing the Transit of Venus"). I think it probable that the "appearance of congealing" there mentioned at the phenomenon to be taken for contact answers to the attainment of full darkness above described; and this, as already stated, could not be distinguished from geometrical contact, although, with a steadier limb of the sun, it might perhaps have been distinguished. Thirteen seconds later, at signal "C", it was evident that the limb of the planet had begun to cover part of the sun's limb. See record above.

Dec. 6, 1882.

12	16	11.5	123.2
		24.5	220.3
		36.5	125.5
		51.0	216.5
17		7.0	117.9
		22.0	216.2
		37.0	120.3
18		47.5	214.8
		0.5	117.7
		17.5	210.0
		29.5	115.0
		42.5	219.7
19		57.0	114.5
		13.5	213.3
		29.0	123.7
		45.5	214.8
		57.5	119.3
20		8.5	213.0
		19.0	126.1
		38.0	213.8
		45.0	122.0
		57.0	213.0
21		7.0	122.0
		17.5	214.4

Dec. 6, 1882.	(1)
B. & C. 1152.	Bond 394
12 5 32.4	44.5
6 32.5	0.0
	7 0.0
	+12.1
	+12.0

Eclipse, of Sat. III.
 Compared with Sat. III. Obs.
 Phot. R. W. W.

12	3	46.9	
12	23	41.1	
12	27	30.0	approx. time eclipse.
12	12	14.5	113.4
		35.0	217.2
		55.0	121.0
13		11.5	215.3
		30.5	115.5
		46.0	216.9
14		1.0	114.0
		20.5	212.3
		35.5	117.0
15		4.5	212.4
		36.0	117.1
		55.5	223.6

Dec. 6, 1882.

(4)

12	26	22.0	202.0
		32.5	140.8
		42.0	194.8
		53.0	137.8
	27	6.5	196.2
		16.5	144.8
		24.0	191.9
		39.0	144.9
		49.5	193.3
	28	4.5	147.0
		14.5	186.8
		30.5	144.2
		40.0	147.0
		51.0	151.3
	29	2.0	146.2
		11.5	152.2
		20.0	144.0
		24.5	156.0
		34.5	179.2
		51.0	157.0
	30	1.5	179.7
		12.0	Seem.
		16.5	Suspected

12	21	29.5	125.0
		41.5	215.3
	22	52.5	121.9
		5.5	219.8
		21.5	122.2
		33.5	211.7
		51.0	117.9
	23	6.0	211.3
		14.5	125.5
		32.5	211.0
		55.5	124.1
	24	4.0	199.3
		19.5	124.3
		31.0	210.3
		41.5	132.4
	25	52.5	212.1
		3.0	131.5
		12.5	204.3
		24.0	135.4
		40.0	206.4
		51.0	140.7
	26	1.0	198.9
		12.0	137.2

Dec. 6, 1882.

Limit of Vis.

12	30	55.0	157.1
	31	7.5	175.3
		19.5	155.2
		34.0	173.0

Clock not running; Jupiter
high. Observations difficult.

B. + C. 1182.

Bond 394.

12	37	32.2	12	38	44.5
	38	32.0		39	0.0
					0.0
					+12.3
					+12.2

The above observations of the disappearance of Jupiter III were recorded at the time on slips of paper, as the book was not found, and pasted into it Dec. 7.

Dec 7, 1882

B+C 1182

7	24	29.1
	25	28.8
	26	28.8

B	394	44.5
7	25	00
	26	00
	27	00

+15.4
+15.7

Dis. of Jupiter II P. obs. Cu. rec.
Compared with prec. satellite - IV.
Phot. R

7	33	58	87.3
	34	11	190.2
		29	91.6
		39	199.1
		48	85.3
	35	10	194.7
		25	87.6
		39	192.4
		53	89.3
	36	7	192.6
		19	88.4
		32	188.2
		46	88.4
	37	0	197.3
		41	92.4
		55	191.2

Dec 7. 1882

Limit of Visibility

7	38	11	108.3
		23	170.3
		31	114.3
		40	165.2

7	38	52	92.2
	39	2	192.0
		13	94.2
		25	192.3
		35	92.4
		45	193.3
		57	90.4
	40	11	187.6
		22	40 37.6 94.2
		32	47.6 187.4
		39	54.6 91.3
		47	41 2.6 195.2
	41	12	90.3
		16	190.2

Images bad. Satel. lost
in blur around Jup.

	33	91.4
	44	183.4
	53	98.8
42	2	174.8
	9	101.2
	16	179.7
	22	100.6

Dec 7, 1882 -

7	42	29	181.4
		36	97.2
		43	177.3
		52.	102.3
	43	3	180.0
		19	blur
	43	46	end

B4C 1182.

7	53	28.4
	54	28.5
	55	28.5

B 394.

7	53	44.5 ✓
	54	00
	55	44.5
	56	00

+16.1

+16.0

Dec. 7. 21. ^h

Additional statement with reference to my observations on Transit of Venus.

The instrument used was the large finder on large equatorial (4 inches aperture)

To partially reduce the light the object glass had been silvered by the Clarks and the first contact was taken in this way with a shade glass added. As it seemed possible that it might be more cloudy at time of second contact, the silver film was partially removed.

The sky clearing somewhat, however, the second contact could not be taken.

Before third contact the silver film was

entirely removed and the object glass carefully smoked by the method of Mr. Clacey. The third and fourth contacts were taken in this way with the addition of a shade glass.

First contact was quite well seen but there is a little uncertainty in the time due to the fact that the assistant did not note the "tip". I myself estimated it as midway between Prof. Pickering's last two times while Prof. Pickering estimated it as six seconds later.

The mean of these two estimates has accordingly been taken and is $9^h 20^m 16^s$ C.M.T.

The third contact occurred at $3^h 3^m 18^s$.

An observation 14 secs. earlier showed that contact had not taken place although the line of light between Venus and Sun's limb was very narrow.

Fourth contact was taken at $3^h 23^m 24^s$.

An observation 8 secs. previous showed that contact, although close at ~~last~~ hand, had not yet come.

Both third and fourth contacts were well seen and carefully noted.

O. C. Wendell.

Dec. 8, 1882

$$\begin{array}{r}
 22 \ 37 \\
 21 \ 49 \\
 \hline
 48
 \end{array}$$

Re-vision of Vol. VI

S. obs -

Began at $23^h 44^m 27.3$ Began with star at $21^h 49^m 27.3$

3.0	25}	7.5	3.5
9.8	96}	5.7	5.1
9.8	2.5	7.5	7.0 }
30	2.6	8.2	5.1 }
98	24	4.9	4.8 }
98	7.5 }	8.2	30 }
8.3	25 }	4.9	7.0
83	3.0	6 $23^h 53^m 4$	5.0
7.0	2.6	9.2	6.0 dbl
3.2	9.0	9.2	6.0
70 }	2.6	5.1	a oh 5.9
32 }	7.5	-0.5	4.8
9.5	6.0 }	1.3	4.8
2.4	9.0 }	-5	7.8 trpl
9.5	7.3	5.1	3.0
24	6.0	1.3	7.8 }
2.5	a $23^h 51^m$	a $23^h 55.5^m$	30 }
9.6	7.3	5.5	6 oh 5.7
2.4	5.7	4.8	

Dec 8, 1882.

3.0	30	$a\ 0^h\ 21^m.4$	30
0.0	75	22	53
3.0	75	4.0	7.5
5.0	75	22	75
5.8	$b\ 0^h\ 13^m.5$	40	53
0	9.0	4.0	4.7
5.0	9.0	4.2	7.9
5.8	10.2	9.2	45
2.3	6.0	42	45
1.8	10.2	5.0	79
7.5	6.0	9.2	24
1.8	3.4	6.2	45
2.3	10.0	5.0	24
7.5	7.0	2.7	7.0
1.9	3.4	6.0	0.0
7.3	10.0	9.0	70
10.0	7.0	3.0	0
8.0	5.8	5.0	$aa\ 0^h\ 31^m.7$
7.3	4.9	9.0	10.0
2.0	5.8	4.5	8.0
0.2	4.8	5.0	100
10.0	4.9	4.5	9.3
8.0	10.3	7.6	7.7
2	4.8	6.0	8.2
5.0	10.3	6.0	93
0.5	1.0	7.6	7.5
3.0	0.5	9.0	75
7.5	10.4 edge of prism	9.0	80
5.0	10	$b\ 0^h\ 27^m.4$	9.0 dbl
5	5	3.3	4.8

Dec. 8, 1882.

75

63

82

b₀h 42.6^m

48

6.8

Ended with

3.7

Star at

7.3

22^h45^m39.4^s +6'39"

68

Last star on p. 142

37

of mss.

73

b₀h 36.4^m

7.4

74

0.0

0

0.2

2.3 dbl p+f.

2 ~~ptt~~

23

7.0

7.0

0.8

8.0

8

80

a₀h 41.7

0.5

6.0

6.3

5

60

Dec. 8, 1882.

R Cygni

25	10
19	32
5	38

49
*

0 v

x m

d
.

v = 3 brighten chan m
2 per the d.

Center v and m by Phot H. Engstrom lens
P. obs.

8 18

305.2 78.6 v. disp.
23.8

120.7 81.5
202.2

Engstrom measured P.

8 20

32.4 84.8
117.2
215.8
296.4 80.6

Var L. or eye nearly parallel

Dec. 8, 1882

Search for Planet near $+67^{\circ} 4' + 55^{\circ}$

Obs. 4 20 West

Range at 1 50

P. obs.

Sweep ended at $2^h 32^m$

Nothing found -

Limits $21^h 30^m$ to $2^h 10^m$ $+47^{\circ} 4' + 55^{\circ}$

R. Andromedae.

W. obs.

4.5 Fringe at $0^h 9.5^m$ $+37.9$
 $\begin{array}{r} 2 \quad 42 \\ + 2 \quad 32 \\ \hline \end{array}$

2 52 46
 53 18
 28

10 43
 11 13
 30

59 580

t 1 37 t = $4^m 30$
 2 17
 1 Series 20
 23

5^m 40^s

Transits of Stars near R. Androm

3^h 12 30.3 Decl 2
 37.3 5.5
 40.8 1
 46.2 $\frac{1}{4}$
 50.4 3
 54.2 7
 59.8 8.5
 13 5.0 7.5
 6.8 5

Dec. 8, 1882.

13	22.8	7	
	23.0	10	Var
	25.0	9	
	36.8	$5\frac{1}{4}$	
	52.2	1	
	56.2	35	
	58	10	
14	11.0	2.5	
	15.8	7	
	16.8	$8\frac{3}{4}$	

2^d Series

16	31.5	10.5	
	35.0	5	
	49.6	4.5	
	57.2		
17	4.2	8	
	7.2	0	
	7.3	1 $\frac{1}{2}$	
	9.2	5	
	22.2	8	
	26.0	9	
	30.0	$5\frac{1}{2}$	
	35.3	7	
	36.5	0	Var
	43.2	5	
	46	6	
	48.5	$6\frac{1}{2}$	

Two or three misses

20

4

Dec 8, 1882

222 >

Second zone again

19	122	10.5
	16.5	5
	30.0	5
	31.0	5
	45.5	8
	48.2	1 $\frac{1}{4}$
	48.5	1
	49	1 $\frac{1}{2}$
20	50.5	8
	72	9
	9 $\frac{1}{2}$	11.2
	17.0	7 $\frac{1}{2}$
	18.0	0 Var
	20.2	5
	24	6
	28.5	7
	34	8
	35	8
	43.0	4 $\frac{1}{2}$
	46.0	1 $\frac{1}{2}$
21	52	6
	57.0	10
	81.0	4 $\frac{1}{2}$
	9.0	9

Dec 8, 1882

1st Series repeated

	time	Secs
3	23	24.2
		2
		3.1.0
		5.5
		34.2
		1
		40.3
		0.5
		44.5
		3
		45.1
		5
		47.0
		2
		54.0
		8.5
		59.5
		8
24		0.0
		5
		18.2
		7.5
		17.0
		Var
		19.2
		9
		30.3
		5
		46.4
		0.5
		50.2
		3
25		6
		9.5
		6.4
		Missed
		10.2

Last part of Series 1 after Var
~~Began again with~~

26	33.2	= Var
	37.2	6.5
	39.0	6
	47.2	5

Dec. 8, 1882.

	Time	Sec.
26	51.2	3
27	25	$\frac{1}{2}$
	6	$3\frac{1}{2}$
	8	9.5
	11	5
	23.2	2
	27.5	7
	28	9
	32	1
	34	$\frac{1}{2}$
	43	$4\frac{1}{2}$
	48	$1\frac{1}{2}$
	50	$6\frac{1}{2}$
	52	$5\frac{1}{2}$

R. Cygni observed in early part of evening by P. and Spectrum seemed to be banded.

R. Andromedae finely banded spectrum. W. obs -

Confirmed by P.

R. compared with star 12' north
1st spec.

R. 2nd spec. P

R. 7th spec. W

1894 Feb. 9. The comparison star is probably B.D. +37° 54.

Dec. 8. 1882.

Dec 1182

B 394

14 5 22.5
6 22.5

14 6 44.5
7 0
+22.0

14 9 9
511
10 15
50
11 17
414
12 8
34
13 15
39
14 0
19
45
15 5
27
47
16 240
340
17 4.5
25.0
35.0

352.2
101.0
356.2
103.8
354.0
98.2
349.6
107.9
349.0
101.0
349.0
174.7
285.3
184.3
286.7
181.6
282.0
182.2
278.0
182.0
275.6

112.0
116.3
~~63.7~~ 228.3
array quadrant

Dec. 8. 1882.

14	17	46.0	194.0
		55.5	264.3
	15	5.0	194.5
		14.5	208.0
18		55.5	205.6
19		17.5	253.0
		44.5	209.0
20		5.5	202.0

} Limit of
Visibility.

Dis. Lat. I. Comparison with Set. IV.
Phot. R. P. obs. Rec. after $14^h 16^m 0^s$.

B. & C. 1182.		
14	25	21.9
	26	22.0

Bond 394		
14	26	0.0
	27	0.0

+22.6
+22.5

Dec. 12, 1882.

22^h 45

Revision of Vol VI -

S. obs -

Began with star at 22^h 40^m 23.2
 " at 23^h 32^m 23.2

6.5	-0.3	5	7.5
6.5	5.2	9.2	4.5
a 23 ^h 33.2	5.3	9.2	4.5
-1.0	-3	0.6	3.0
-1.0 }	5.2	4.9	-0.5
-1.0 }	5.3	6	7.6
0.5	5.0	-0.4 }	3.0
0.5	0.5	4.9 }	7.6
-1.0	5.0 }	6.0	-5
9.6	5 }	-4	9.8
5 }	a 23 ^h 39.2	6.0	9.8
5 }	9.0	8.3	1.0
9.6	2.5	5.3	9.8 fol. }
b 23 ^h 35.2	9.0	8.3	1.0 }
0.3	2.5	5.3	9.8 prec.
-0.2	2.4	8.5	a 23 ^h 51.7
7.0	2.4	2.5	3.3 }
3	0.5	8.5	4.5 }
-2	5.0	2.5	3.3
7.0	5.0	7.5 ^{Not in the cat.}	8.0 }

Dec. 12, 1882.

45}	2.8	52	1
9.0	10.1	46	0.4
7.6	28	46	4.9
80}	7.5	7.6	4
90}	10.1	2.2	9.0
76	2.5	76	4.9
9.5	9.8	22	3.5
95	9.0	8.0	5.8
5.3	28	9.0	9.0
7.6	7.5	80	58
4.7	5.3	90	35
53	9.8	5.5	9.1
48}	90	-0.5	3.9
76}	53	8.0	6.0 ^m 14.4 ^m
6 23 ^m 55.9	2.5	50	90
9.3	7.2	3.0	0.1
1.0	7.1	-5	7.8
93	2.5	80	40}
2.5	7.2	9.0	0.5
7.8	7.1	2.5	70
0.8	6.0 ^m 2.5	90	1.1
5.8	7.8	4.9	0.3
10	7.8	4.8	5.3
25	1.5	4.9	3.5
70	6.7	4.8	-1.0
8	1.5	0.8	3.5
4.2	-0.1	8	-10
42	5.2	3.3	3.5
3.8	6.5	0.1	7.0
38	-1	33	0.4
2 23 ^m 59.0			

Dec 12, 1882.

0.3	30	70	2.6
-0.4	50	82	26
4	a o ⁿ 25.0	9.9	bb o ⁿ 41.2
70	1.8	99	
3	18	aa o ⁿ 33.7	Ended with
-4	2.0	0.8	star at
a o ⁿ 18.3	20	7.7	23 ^h 48 ^m 17.0
3.7	9.8 too bright	8	
9.9	2.6	77	
37	26	2.2	
99	2.4	22	
2.5	8.8	2.5	
-1.0	24	6.3	
2.5	88	2.5	
4.8	b o ⁿ 29.0	63	
-10	10.1	6.5	
48	101	65	
9.7	4.0	a o ⁿ 37.6	
-0.27	9.8	3.8	
97	a o ⁿ 30.1	4.9	
9.3	40	38	
-2	98	2.3	
4.7 dbl	6.0	49	
93	3.0	2.3	
1.2	60	9.3	
47	8.5	5.8	
12	85	2.7	
bb o ⁿ 23.3	30	60	
5.0	7.0	907	
3.0	8.2	307	

Dec 12 1882.

Sunt for planet sat.

Whitney 4 30 W.

Limits 20 50 -

Began at 1^h 201^h 32

44

Ended at 2 05

h 5^h 3^m

B. 236 2 5

 α 21 2450
47° - 55°

47.6 Lib = Cheloides

69.8 mid - 11/3

Limits 20 50 L- 21 35

Nebula very near this star

D.M. + 47° 3289

Star from nebula, μ 60° S about 30' 12α 4^s3^s2^s2^s2^s2^sExamined spectrum of α and β of star north of it.
latter star very blue. α Ete

163.4

Pos 0 = 163.3

90

73.3

Dec. 12, 1882.

Stars fol 2 Ceti

P. rls.

2 ⁿ 52 ^m	16.3	5.0	2 Ceti
	45.4	4.0	
	49.2	1.5	
	59.2	1.2	
53	33.2	1.5	
	8.2	4.0	
	15.0	3.5	
	26.5	4.0	
	30.0	3.3	
	38.5	4.8	
	48.2	7.6	
	52.5	9.0	
54	1.0	3.1	
	6.2	7.5	
	20.0	7.7	
	30.0	7.7	
	35.5	7.2	
55	1.0	7.8	
	7.5	7.2	
	20.4	1.5	dbl
	23.5	7.2	
	34.0	1.5	
	40.0	1.8	
	44.5	6.3	
	53.5	3.8	
	55.0	1.8	

Dec 12, 1882

2	56	9.0	72
		17.2	7.1
		25.0	38
		30.4	28
		35.5	0.8
		42.2	28
	57	2.0	0.8
		6.8	7.6
		19.0	9.5
		22.0	4.8
		33.3	9.5
		36.0	4.8

~~48~~
Same as above

2	59	47.2	5.0	S. obs
3	0	17.2	4.1	& bet
		36.3	40	
		57.0	0.5	
	1	2.4	3.0	
		7.0	30	
		10.2	5	
		32.4	3.0	
		40.4	30	
2	55	5.0	4.9	
		17.4	4.9	
		36.3	0.3	
		46.2	3	
		51.2	1.8	
		54.2	2.0	

Dec 12, 1882

3	3	10.4	20
		15.0	15.5
		20.2	3.5
		30.5	25
		57.2	35
4		1.5	2.5
		6.8	0.8
		14.0	25
		36.6	8
		40.0	0.2
		51.8	4.8
		53.0	0
5		0.0	2
		8.5	4.8

3	7	9.8	5.0	2 Cent
	8	40.6	7.8	
		45.2	9.0	
		54.2	9.0	
	9	3.8	7.8	
		12.0	9.3	
		20.6	9.3	
		28.5	7.4	
		53.7	7.7	
	10	1.5	7.4	
		16.3	7.7	
		36.3	7.3	

Dec. 12, 1882.

3	11	4.7	73
		10.0	7.5
		20.0	8.3
		25.5	7.5
		29.0	8.3
		58.5	7.5
	12	12.4	9.9
		14.0	7.5
		17.0	9.9
		27.5	9.9 fol
		29.0	9.9 prec

Looked for S Arietis

stop watch

19^s prec. component of double^{3/4}

$t_{\text{by } \beta_{394}} = 3^h 36^m$
 14.8^s Transit between components
 33.6 of double = 18.8^s

$t_{\text{by } \beta_{394}} =$

3	40	50.0
	41	33.8
	42	17.2
		33.6
		50.0
	43	6.8

Dec. 12, 1882

Comparison star precedes preceding component of double by
 $16^s.6$ and is $4'.7$
 north. W. obs -

Comp. star 0.7 Var.

W. obs -

1892 Dec. 24. The double star may be some star following the variable and not given in the chart or list. If the variable star is here correctly identified, the comparison star may be "a", which follows $5^s.4$ north.

Too faint to Satisfactorily observe

Comp. star 0.2 Var.

P. obs -
R. obs -

Variable 0.3 fainter than Comp. star.

S. obs -

Transits of stars in connection with β Carinae.

		dec
58	45.2	3
	48.0	4
	57.2	6
59	4.0	7
	7.0	12
	20.2	7
	40.0	5
	44.4	$\frac{3}{4}$
	49.0	9} dbl
	50.0	

Repeat above.

Dec 12, 1882. 107

New start W. obs.
Hirst + Series

-45.8	-6.5	4	0	+4.2	3
-41.0	-9.5			59.0	0
-35.8	-1.0		1	4.2	8.5
-25.2	-2.5			14.8	7
-11.6	-6.5			28.4	3
0.0	0.0			40.0	9.5 var.
+10.0	-9.0 (or -4.5)			50.0	1.5
+15.2	-8.8 (or -2.5)			55.2	7
+19.1	-0.5			59.1	9 } abt
+20.0		2		0.0	
+20.5	+1.0			0.5	10.5
+30.2	-4.5			10.2	5
+57.3	-8.5			37.3	1

Hirst Series repeated

-44.8	-6.5	4	3	29.2	3
-25.6	-2.5			48.4	7
-23.2	+1.0			50.8	10.5
-3.8	+2.5		4	10.2	12.5 var.
0.0	0.0			24.0	5
+10.0	-4.5			29.2	7
+15.2	-2.5			33.0	8.5 } abt
+19.0	-1.0			33.8	8.5 }
+19.8				34.0	10.5
+20.0	+1.0			43.8	5
+29.8	-4.5			43.8	5
+57.4	-8.5		45	11.4	1

Dec 12, 1882

Second Series, dist.

$-28.1 + 0.7$	4^h	12	45.0	3.2
$-20.9 + 0.5$			52.2	3
$-18.5 - 1.5$			54.6	1
0.0 0.0 $\delta?$		13	13.1	2.5
+21.9			35.0	
+22.9			36.0	
+29.1 + 0.5			42.2	3
+34.1 + 1.5			47.2	4
				3
				8
+58.1 + 6.5		14	11.2	9

$-26.6 + 0.7$			again	
$-21.1 + 0.5$		14	44.2	3.2
$-19.8 - 1.5$			49.7	3
$-0.0 0.0 \delta?$			51.0	1
		15	10.8	2.5
+22.4			33.2	} dble
+23.2			34.0	
+23.7 - 1.0			34.5	1.5
+35.4 + 1.5			46.2	4
+37.2 + 7.0			46.0	9.5
+41.7 + 1.3			52.5	3.8
+57.7 + 6.5		16	8.5	9
			46.4	6

SEARCHING REPORT

Heading (Check one box only)

- ☐ Identification guaranteed
☐ Identification **not** guaranteed
☐ Conflict
☐ No conflict

Other headings searched and Comments:

Edition Report

Latest Widener edition

Year

Call number

☐ Only edition

☐ No edition

☐ Earlier

☐ Later

☐ 5 or more

editions in Widener

☐ Earlier

☐ Later

editions in K

Author number (unless shown above)

Be
trial.
The
can the
some of
looked

From p. 1
2 obs. -45
1 -48
1 -35
2 -25
1 -23
1 -11
1 -3
0
2 +10
2 +15
2 { +19
+19
2 +20
2 +30
2 +57

for another
satisfactory
possibly comes
be over -
W.

7
5
5
0
5
5
0
3
5

Dec. 12, 1882

Same again

Becoming too hazy ~~to~~ for another trial.

The preceding trials are satisfactory, save that haziness ~~possibly~~ possibly causes some of the faintest stars to be ~~over~~ over-looked.

From p. 107

2 ds. -45.3 -6.5

1 -41.0 -9.5

1 -35.8 -1.0

2 -25.4 -2.5

1 -23.2 +1.0

1 -11.6 -6.5

1 -3.8 +2.5

0.0 0.0

2 +10.0 -4.5

2 +15.2 -2.5

 $2 \left\{ \begin{array}{l} +19.0 \\ +19.9 \end{array} \right\} -0.8$

2 +20.2 +1.0

2 +30.0 -4.5

2 +57.4 -8.5

From p. 108

2 ds. -27.4 +0.7

2 -21.0 +0.5

2 -19.2 -1.5

0.0 0.0

2 +22.2

2 +23.0

1 +23.7 -1.0

1 +29.1 +0.5

2 +34.8 +1.5

1 +37.2 +7.0

1 +41.7 +1.3

2 +57.9 +6.5

Dec. 14, 1882. The memoranda below
have been received from Messrs. Allan Clark & Sons,
with regard to the transit of Venus, Dec. 6, 1882.

Contacts

2	9 ^h	40 ^m	-	03 ^s
3	3	02 [*]		30
4	3	23		54 ¹ / ₂

Allan Clark
Boston time

Should be 3'

Transit of Venus Dec 6th 1882

3d Contact 3^h 3' - 13"

4th " " 3-23-34

Boston time

Chas. Lundin

Dec 14, 1882

23 46
23 11
35

Revision of Vol VI S. obs
Series VIII.

Began with star at $23^h 44^m 21^s + 7'18''$
Began at $23^h 31^m 21^s$

7.3	a $23^h 36^m$	50	1.0	0.5
73	9.6	55	10	5.2
4.3	9.9	50	7.4	5
43	9.3	1.2	74	52
5.1	9.6	9.7	2.0	0.8
2.7	9.9	6.0	8.0	8
51	9.3	12}	20	3.2
27	10.1	97}	10.0	5.0
10.0	10.1	60	80	4.0
6.8	9.6	7.7	3.2	30}
3.4	9.6	6 $23^h 43^m$	100	50}
100}	2.0	1.5}	32	40
68}	4.8	77}	8.0	a $23^h 23^m$
34}	2.0	7.8	9.5	6.2
2.5	7.0	15	80	5.5
3.0	4.8	78	95	6.2}
2.5	7.0	1.2	7.7	5.5}
30	5.5	12	77	8.2

Dec 14, 1882

6.8	a 0 ^h 2.0 ^m	aa 0 ^h 11.9 ^m	9.6
82}	7.6	4.8	10
68}	2.0	4.8	90
4.8	7.6	8.0	60
0.0	2.0	8.0	96
4.8	6.8	9.0	7.8
0	6.8	9.0	4.2
6.0	5.6	0.7	7.8
1.0	5.6	4.7	4.2
6.0	9.3	7	a 0 ^h 24.9 ^m
10	-0.5 dbl	4.7	4.0
10.0	9.3	7.3	6.5 dbl
7.4	-5	0.6	4.0
10.0	9.7	7.3	7.2
4.8	0.8	6.8	6.5
7.4	9.7	20 ⁽¹²⁾	7.2
5.5	2.2	6.9	6.0
5.5	8	7.3	6.0
4.8	2.2	3.3	5.1
7.5	b 0 ^h 8.7 ^m	7.3	7.0
2.5	9.2	10.3	5.1
7.5	9.2	3.3	7.0
2.5	9.5	10.3	2.2
b 0 ^h 0.7 ^m	2.3	6.2	2.8
10.2}	9.5	b 0 ^h 20.9 ^m	2.8
5.8}	6.9	8.2	2.2
5.8	2.4	8.2	b 0 ^h 29.5 ^m
1.0 }	0.2	5.8	4.3
10.2}	6.9	1.0	7.2
10	2	9.0	7.2

Dec 14, 1882

43	96	7.5
1.7	0	2.8
17	1 ^h 0 ^m 49.8	2.5
1.0	74	7.5
10	3.0	7.4
10.5	30	30
10.5	7.0	74
2.2	74	Ended with
7.0	70	star at
22	0.9	0 ^h 59 ^m 30.0 + 7' 28"
6.8	41	Last star in 0 ^h
70	30	
6.8	9	
8.2	41	
6.0	23	
5.0	40	
60	23	
82	59	
50	59	
a 0 ^h 37.8	10.0	
5.1	100	
7.6	6.0	
4.5	8.5	
51	60	
76	85	
45	-0.3	
8.0	8.3	
9.6	83	
0.0	-3	
80	0.2	

Dec. 14, 1882.
Cloudy during evening.

B. + C. 1182.

Bond 394.

9 37 55.7
38 55.7

9 39 0.0
40 0.0

Dis. Jupiter II. Phot. R. S. obs.

9 56 28
23 41
10 20 9
-1

10 19 approx. time eclipse.

10 7 42 29.0
8 13 114.5
27.5 19.7
11 20 105.5

Jupiter distinct to naked eye but very
dim in photometer. Satellites barely
seen at all.

Dec 15, 1882 -

23 51

23 26
25

Series IX
Re-Vision of Vol VI.

S. ob.

Began with star at $23^h 51^m 11.1$ $+9^{\circ} 44'$

Began at $23^h 47^m 11.1$

9.5	0.8	93	5.8
9.8	5.3	27	5.0
8.7	8	7.7	5.5 }
9.5	5.3	77	5.0 }
9.8	7.6	a $23^h 58.1^m$	7.8
8.7	7.6	7.5	5.7
a $23^h 48.4^m$	0.7	7.5	5.7
9.8	7	-0.1	7.8
9.8	0.4	5.0	-0.4
9.2	4	-1	-4
9.2	0.4	5.0	5.8
1.7	4	0.3	0.6
4.5	b $23^h 54.6^m$	3	5.8
1.7	6.9	3.0	6
10.2	6.9	##	a $0^h 5.7^m$
4.5	1.8	4.8	9.6
5.0	7.8	3.8	6.7
10.2	1.8	3.0 }	9.6
4.9	9.3 }	4.8 }	4.7
5.0	7.8 }	3.8	4.5
4.9	2.7	b $0^h 1.4^m$	6.7

Dec 15, 1882.

Series X.

Re-vision of Vol VT Continued.

S. obs.

Began with star at $0^h 30^m 23.5^s + 7'19''$
 Began at $2^h 36^m 23.5^s$

7.0	7.6	6.7	37	50
0.8	3.3	6.7	7.7	80
70	76	30	9.2	-5
6.57	33	0.9	77	-0.4
8 }	3.2 <small>only one star seen</small>	9	92	-4
65	5.7	0.7	7.3	5.0
a $2^h 37.9^m$	32	7	6.9	0.0
68	6.5 }	a $2^h 51.1^m$	73	7.2
2.6	5.7 }	10.2	6.9	50
68	6.5	10.2	0.6	0
10.2	a $2^h 45.9^m$	1.8	3.4	2.4
26	5.7	6.0	3.2 }	7.0 }
6.0	5.7	1.8 }	6 }	7.5
10.2	5.0	6.0 }	3.4	2.4
60	8.0	5.8	3.2	7.0
b $2^h 39.9^m$	6.6	5.8	1.5	7.5
8.1	5.0	7.6	b $3^h 1.4^m$	aa $3^h 6.5^m$
81	8.0	5.2	15	at $0^h 5.5^m$
5.0	6.6	4.9	5.3	for two taps
8.0	1.0	5.2	5.3	take second
9.0	2.4	7.8	10.0	2.5
80	2.4	4.8	5.0	8.0
50	1.0	b $2^h 56.8^m$	-0.5	2.6
90	3.0	3.7	8.0	2.5

Dec 15, 1882.

26	53	0.2	1.0
80	27	42	5.3
2.2	3.0	2	102
22	2.7	7.0	10
-0.9	27	10.0	7.3
-0.2	5.5	707	53
-9	55	100}	60
0.7	8.7	2.6	1.8
-2	9.4	2.6	18
7	7.8	3.0	5.6
3.4	4.9	5.0	56
34	80	30	4.5
-0.4	4.9	9.0	3.0
0.0	7.8	4.5	4.0
-4	4.9	(4.5)?	30
0	1.0	50	45
66 3 ^h 13.0 ^m	8.5 neb	90	40
5.5	0.0	45	aa 3 ^h 37.4 ^m
5.5	10	5.1	-0.5
5.1	0	0.0	-5
51	a 3 ^h 24.2 ^m	a 3 ^h 31.5 ^m	9.3
5.0	5.4	51	93
50	54	0	5.1
2.8	2.3	9.9	51
28	2.3	10.0	0.3
5.2	0.5	99	3
52	5	100	7.8
88	63	b 3 ^h 33.1	1.8
88	63	-0.6	4.0
5.3	b 3 ^h 27.2 ^m	10.2	78
2.7	4.2	-6	18

Dec 15, 1882—

63^h 40^m 3

7.0

8.5

40

70}

85}

6.2

9.3

62

93

9.8

6.0

98

60

-0.6

-6

5.1

4.9

51

49

66 3^h 45^m 6

Ended with

Star at 1^h 38^m 47^s 8

+ 5' 48"

About 0^h 55^m in this series there are two signals the last only of which is to be taken for a transit and disappearance combined.

Dec 15, 1882.

S Arietis

$$\begin{array}{r} 157 \\ 4 \overline{68} \\ 2 \ 11 \end{array}$$

$$\begin{array}{r} 4 \ 15 \\ 1 \ 56 \\ + 2 \ 17 \end{array}$$

As the sheets for identification
 Could not be found and there was
 some doubt as to the region con-
 cluded to leave it till another night
 Could not be at all sure ~~W. obs~~
 that it was the same region
 as that of previous night. W. obs -

Dec 15 1882

B.C.C.

15 44 49.4
45 49.4

B 394.

15 46 44.5
47 0.0
+ 55.1

Dec. Jupiter I. Cas. Alt. R.

Sat. compared with second and following sat. Sat. almost touching Jupiter.

Compared with Sat. II.

16	3	32.5	172.2
		47.0	267.2
	4	0.5	175.2
		15.0	263.5
		34.0	169.2
		46.0	266.2
		59.5	170.5
	5	9.0	262.9
		27.5	174.6
		39.5	266.4
	6	2.5	174.3
		15.0	261.4
		36.0	171.2
		53.5	258.2
	7	23.0	179.8
		41.5	263.7
		55.5	173.1
	8	14.5	256.2

Dec. 15, 1882,

16	A	37.0	182.2
		44.5	263.3
9		5.5	179.6
		25.0	259.4

Jupiter I apparently in contact with
Jupiter itself. Relative positions
Jupiter II brought near Jupiter.

16	10	24.0	172.6
		36.0	259.3
		47.5	180.2
		56.5	257.2
11		8.5	186.6
		15.5	251.3
		25.5	185.7
		37.0	241.2

Not seen subsequently.

Limit of Visibility.

16	13	0.0	189.8
		21	241.7
		35	187.4
		46	244.2

B. + C. 1182.

16	18	49.0
	19	49.2

Bond. 394.

16	20	44.5
		0.0
	21	0.0
		+ 55.5
		+ 55.3

Dec. 16, 1882,

Experiments relative to the determination of focal lengths of large finders on large telescope: W. obs.

$$3^h \quad 1^m \quad + \quad 0^{\circ} \quad 32' = 2^m. + 0^{\circ} 58' (7.2)$$

7 26

3 28 185.1

181.2

41.1

55.6

Transits over square

3 ^h	36	59.2	first star on first bar
	37	16.2	second " " " "
	38	6.3	third " " " "
	40	4.8	fourth " " " "
		12.5	first " " second "
		28.8	second " " " "
	4	52.2	fifth " " first bar
	41	20.2	third " " second bar
	43	17.1	fourth " " " "
	44	5.6	fifth " " " "

Same series repeated.

47	40.2	first star on first bar
	56.3	second " " " "
48	46.2	third " " " "
50	50.1	first " " second bar
51	8.2	second " " " "

Dec. 16, 1882

blondy

declin. of first star 5'

declin. of second star 8.5

declin. of third star 4.5

declin. of fourth star 3' 40"

declin. of fifth star 1.2

fifth star is D.M. +0° 581 (7.2)

thick clouds covering whole sky. Too cloudy
to continue.

Dec. 18, 1882

S Ceti

$$\begin{array}{r} 0 \quad 17 \\ 1 \quad 17 \\ \hline 1 \end{array}$$

-10.1

Transit t = 1^h 22^m 41.^s 7 42.6
 UG 27 Ceti 23 24.3

$$\begin{array}{r} 0 \quad 17 \quad 32 \\ \hline 42.6 \end{array}$$

0 17 7 4.6

0 18 14.6

S Ceti 1855	0	16	41	-10	7.9
Dec 20 th			61	+	6.7
S Ceti 1895	0	17	42	-10	1.2
UG 27 Ceti	0	18	32	-10	15.8
		9	10		14.6

t 1^h 30^m 31.^s 7 Dec 2
 31 12.8
 a { (31) 36.2 11
 32 18.3
 33 52.8
 34 7.8

Dec. 18/ 1882.

Transits of stars in Vicinity of
S Ceti. P. obs

t =	1 ^h	40 ^m	47.8	dec	
		41	1.1	- 6	11 mag
			34.2	3 = b	12 "
			44.2	1	10 "
			50.2	7.3	
				6.3 = a	

Last star, with dec. 9 = S Ceti -

S Ceti .2 fainter than a }
 S " .3 brighter " b }

{ a 2 S
 { S 3 b

t =	1 ^h	45 ^m	15.2	Decl	Mag
			18.0 - red star	14.5	7
				12.0	9
		46	27.5	16.0	10
			31.8 = S	9.0	
			34.2	19	12
			44.8	19	12
			53.2	19	10
		47	5.2	17	4.3
			8.5	19	12

Red star probably banded but
 moonlight strong. P. obs

Dec 18, 1882.

o Ceti -

0.2 b

a.3 o

0.2 c

2 ^h	1 ^m	17.2 = c	7	} over wire a -
		17.7 = a	9	
	1	59.1 = c	59.1	} over wire b -
		59.6 = a	59.6	

3 ^m	49.0 = o	6	} Wire a
	56.8 = b	6.5	
4	30.6 = o		} Wire b
	38.7 = b		

Spectrum of o Ceti = type III - P. obs
 Color very red -

Sp. Orconis W. obs.
 $\sqrt{22} - 4.8$
 $\sqrt{50}$
 $\sqrt{32}$
 $\sqrt{22} \sqrt{1} - 4 47.7$

Dec 18, 1882.
S. Orionis.

$$9 \text{ P. 1.0} = 7.16$$

$$2.9 \text{ } \sqrt{6}$$

$$1 \text{ } \sqrt{6} = 2 \text{ } 26$$

$$\sqrt{22} \text{ } 21$$

$$(1575) \text{ M. } \sqrt{24} \text{ } 54$$

$$1655 \text{ (M. } \sqrt{24} \text{ } 0$$

$$\text{S. Orionis } \sqrt{21} \text{ } 51$$

$$- 2 \text{ } 9$$

$$\text{P. 6 } \sqrt{23} \text{ } 10$$

$$\text{L. F } \sqrt{24} \text{ } 54$$

$$- 1 \text{ } 34$$

$$3.2 \text{ } 7,$$

$$1 \text{ } 63 = 2' \text{ } 43''$$

$$- 4 \text{ } \sqrt{6} \text{ } 53$$

$$- 4 \text{ } \sqrt{K} \text{ } 10$$

$$- 4 \text{ } \sqrt{K} \text{ } 1 \text{ } \sqrt{}$$

$$- 4 \text{ } \sqrt{K} \text{ } K2$$

$$+ 6 \text{ } 33$$

$$- 3 \text{ } 33$$

$$- 4 \text{ } 54$$

$$- 1 \text{ } 21$$

$$2.9 \text{ } 91$$

$$\frac{2.9}{3.2} = 0.906$$

$$3.46$$

$$12.2.25 = 1 \text{ } 44$$

$$1555 \text{ (J. mag.) } \sqrt{21} \text{ } 43$$

$$\text{S. Orionis } \sqrt{21} \text{ } 51$$

$$+ 5$$

$$- 3 \text{ } 26$$

$$- 4 \text{ } 49$$

$$- 1 \text{ } 23$$

$$1555 \text{ (J. F.) } \sqrt{22} \text{ } 1$$

$$- \sqrt{K} \text{ } 34$$

$$1555 \text{ (F.) } \sqrt{22} \text{ } 4$$

$$- \sqrt{K} \text{ } \sqrt{K}$$

Dec. 18. 1882.

Transits preceding and following β . Orionis. N. obs.

t =			decl
3	45	58.2	2
	46	6.0	8
		10.6	6.5
		10.8	4
		31.3	8
		32.3 (Var ^y)	8 10
		33.3	+08.7
		36.5	2
		37.4	6.5
		45.8	✓
		47.0	
		✓7	
47		1.0	+1/2
		✓	
		14	
		15	

Reject

	Transits.	Decl.
3	52	53.2
	53	1.2
	✓	6.5
	6	4.5
	26	8
	27	10 Var.
	28	8.5
	31.2	6.5
	40.2	2
	43.5	7.5
	52.8	✓

Dec 18, 1882

~~2.8~~
~~5.1~~
~~15.1~~
~~17.8~~

53

~~55.8~~

1.5

~~58.9~~

5.3

Cont. from prev. page

53

55.6

1.5

~~54~~~~58.9~~

5.3

54

58.6

1.6

~~17.2~~

10.6

3

Same again.

~~New set~~

Seed.

4

4

49.0

2

56.8

8

✓

1.2

6

2.0

4.5

22.0

8

20.0

Var.

10

25.0

8.3

27.0

6

36.5

2

38.0

7

49.0

5

51.7

1½

54.8

5.3

6

4.4

17

6.5

3

~~16.5~~
~~17.2~~

Dec 18, 1882
Another series.

4^h 9 4.5 Dec 3

6.8 7

11.0 2

11.4 7.2

17.0 1.8

25.7 7.4

28.2 1.5

38.2 0.8

39.2 Var Dec 0.

40.4 6.5

43.7 2.5

44.9 5

49.8 7.8

5.8 6

8.7 2.8

17.0 8.2

1.2

4.5

6.0

17.5

27.4

38.4

1.2

4.8

6.0

8.2

16.2

29.1

38.2

4

21

25.0

27.0

30.5

31.0

36.8

46.5

48.5

58.2

58.9

0.1

3.7

5.1

7.7

16.1

28.1

37.1

Sta

10

10

Same again

Stop watch intervals

1.2

4.5

6.2

8.8

17.2

29.2

38.2

22

Dec. 0 Var a

6.5 b

2.5

5.1

7.8

6

2.8

8.2

Dec 18 1882.

a. 1 *th*

W. obs.

a 2 *b*c 5 *a*

Note Jan. 21, 1893. In these comparisons, the variable star ^{S Orionis} appears to be called a (see p. 131) b (p. 131) is probably a star folb. S Orionis 5^s, 2's north, apparently identical with z on Chandler's chart; c (p. 129) is probably a star prec. S Orionis 1^s, 2's south, apparently identical with x on Chandler's chart; d (perhaps the star called b on p. 129) seems to follow S Orionis 16^s, 2's south, and may be one of two faint stars without letters having approximately that position on Chandler's chart.

Dec. 19, 1882,

B.8 C. 1182.

6 56 24.5
6 57 24.5

B.394.

6 58 44.5
6 59 0
+ 60.0

Reap. of Lat. I. Phot. ^R II. Sat.
compared with Lat. II. N. obs.

~~#~~
6 57 52
23 41
7 21 33
1 36
7 20

approx. time eclipse.

Limit of Vis.

7 15 21
52.5
16 17.5 2.5
39

105.2
137.2 32.0
108.0 31.5
139.5 63.5
489.9 31.8
122.5

7 20 17.0
22.0
39.0
53.0
24 6.0
20.0

Suspected
Clear,
91.2
141.7
96.7
166.1

Dec. 19. 1942.

7	21	34.0		84.0	
		48.0		167.8	
		59.5		93.1	
	22	10.0		160.4	
		19.5		81.2	
		30.5		172.2	
		41.5		75.3	
		52.5		171.0	
	23	5.0		69.0	
		15.5		174.9	
		28.5		71.0	
		41.0		176.3	
		53.5		72.3	
	24	7.0		176.5	
		45.5		78.5	
	25	0.5	8.0	176.0	97.5
		15.5		71.0	103.8
		30.5		174.6	201.3
	26	7.5		70.0	100.6
		24.5		174.0	104.0
		40.0	31	71.4	103.1
		51.0		174.5	207.1
	27	2.5		74.7	103.6
		14.5		173.2	
		40.5	28	70.5	99.1
		52.5		169.5	99.0
	28	10.0		71.7	98.0
		24.5		172.5	101.1
		39.0	31	71.3	102.9
		51.5		174.2	204.0
					102.0

Dec. 19, 1882,

7	29	3.0		70.2	
		15.0		173.6	102.8
		29.0		70.6	$\frac{104.6}{207.4}$
		46.0		175.2	103.7
30		7.5		67.5	
		23.0	34	172.9	$\frac{105.4}{103.1}$
		44.5		69.1	$\frac{208.5}{104.2}$ 6
31		3.0		172.2	
		20.5		73.7	
		44.0	52	69.1	$\frac{95.4}{111.0}$
32		2.0		68.0	$\frac{206.4}{103.2}$ 7
		20.0		179.0	
		43.0		66.4	
33		5.5		172.3	$\frac{105.9}{102.7}$
		30.5		71.6	$\frac{208.6}{104.3}$ 8
		44.5		174.3	
34		8.5		68.2	
		24.0		177.1	$\frac{108.3}{107.4}$
		41.0	32	66.9	$\frac{215.7}{107.8}$ 9
		59.0		174.3	
35		15.5		66.8	
		32.0		175.0	$\frac{108.2}{107.0}$
		46.5		67.9	$\frac{215.2}{107.6}$ 10
36		5.0		174.9	

B. + C. 1182.

41	24.2
42	24.2

Bond	394.	44.5
43	0.0	
44	0.0	

+80.3

Dec. 19. 1882.

Wob-

Var = 16^h 32.5^m + 72.0°
 2 15 R hrs. min.
 + 9 47.5

$t = 2^h$	23	$\sqrt{6.8}$
	24	1.3
		31.0

28	46.3
29	25.2
30	37.7

First Series: Dec

2	38	24.2	6.5
		51.3	9.8
39		31.2	9.2 var
		40.7	7
40		2.2	6
		29.0	6.2
41		8.7	3
42		4.7	4.8

Dec 19, 1882.

Same again

42	54.4	6	
43	18.0	5.8	
	21.8	9.8	
44	1.7	9.3	Var = a
	22.7	5.3	= b
	22.7	5.7	= c
	59.8	3	
45	38.6	4.8	
46	34.3		

Second Series

48	34.2	9.5
50	13.8	1
	21.7	1.8
	52.8	2.5 0.2 Var
	50.2	0.2 2.5 Var
51	56.0	7
53	26.2	8.8

a 2 b
a 1 c

W. obs.

Dec 19, 1882

Some Var as on prec. page 60

54.3

17.2

40.6

194

5.7

25.1

57.5

16 34

3 11

37

27

16

10

71

34

37

26 60
52.8
17.6

72

248

190

25.1
16.3
8.8

69.0

51.2

Transits

P. obs -

Declinations from

~~20~~
20

35.4

30.5

37.2

53.0

22

20.2

~~a 3 b~~

32.2

Decl

4.0 10 mag

Var 5.0 = 2

1.7 30.5 12 mag 12 mag

1.4

10 mag

8.5

10 mag

7.5

12 mag

a 3 v

v 1 b

c 2 v

Star a fol. 9.3 (Dm. 735) 24.8 and is 16" south

Dec 19, 1882.

$\begin{array}{r} 3 \ 3 \ 3 \\ \hline 4 \ 3 \ 2 \end{array}$
 Var. in Puppis -
 -12.6

$t = 3^h$	38^m	s	Decl	mag
		29.0	5.0	12
	39	2.0	3	12
		7.5	4	12
		11.0	9	Var 10
		32.2	5	11
		45.0	9	14

Another zone

40	26.0	12	11
	37.5	11	11
41	51.2	19	11
	0.6	13	10 = a h
	16.3	12	8 = a
	25.7	12	10 = b-k
	35.9	12	9 = c-d
	42.2	16	10
	45.0	17	

$\begin{array}{l} \checkmark \ 3 \ a \\ \checkmark \ 2 \ B \\ C \ 4 \ \checkmark \\ C \ 3 \ \checkmark \end{array}$

P. obs.

Dec. 25, 1882

B 86.1182	B. 394
4 16 50	4 19 0 ^{44.5}
17 50	20 0
	+114.5

Photometer R
 Jupiter II, reappearance
 Compared with IV
 A. S. Okunov
 S.C.C. m.

4 54 1	seen
16.5	337.0
58	82.0
55 25	338.1
48.	78.5
56 9.	339.5
38	82.0
57	338.7
57 26	79.0

Satellite evidently stationary, and
 computed, time of reappearance $4^h 52^m$
 or by chronometer $4^h 50^m$. Seeing very bad,
 and clouds at time of reappearance.

Dec. 26, 1882

B. 386. 1182
 8 52 43.5
 53 43.5

B. 394 44.5
 8 55 0
 8 56 0

Reappearance Jupiter I; invisible
 in clouds. Jupiter visible about $8\frac{1}{2}$
 mean time but only at instants after 9^h.

Dec. 25. 1882.

Gould's Comet (Cruls) M. obs.

7	25
11	17
<hr/>	
+3	52

-29° 55'

11	33
7	25
<hr/>	
+4	8

" 7-

Find that comet has already set.

B. + C. 1182.

17	23	31.6
	24	31.7

Bond 394.

17	26	0.0
	27	0.0

Reap. of Jupiter II. Phot. H. P. obs.

17	46	15
	23	41
<hr/>		
18	9	56
	2	28

18 7 28 approx. time eclipse.

Dec. 24, 1942,

Limit of Vis.

Comp and with nearest sat on same side.

18	4	5	29.0
		30	112.1
		50	32.6
		32	109.7

Seeing very bad.

18	10	36.5	Suspected.
	11	14.5	Seen.

Seeing still worse. Satellite again invisible.

Satellite barely visible with ring micrometer eyepiece No. 1. at 12^h 15^m

Dec 29, 1882-

2 50

Revision of Vol. VI. S. obs
 Began at 1^h
 " with star at 0^h

H.A. 1^h 22^m
 t = 2^h 21.5

Dec = 1.4

S. Geminorum.

56.2
 06.1
 ———
 3.9

45.8

50.1 8.1

53.4 5.3

12.7
 26.2
 ———
 13.5

Dec 29 1882

S. Geminorum Wob.

4	58	41 4.1	10
		42 4.2	2
	45	7.2	9
		9.1	9.8
		17.2	7.8
		19.0	10 1.9
		28.0	6.8
		33.5	7.2
		38.0	
		—	

		7.0
		5.8
59	2.0	8.8
	15.0	4
	8.0	3.8

5	0	13.0	1.9	} var.
		32.0	0.	

	45.0	1	} var.
	46.2	0	

Dec. 29, 1882

{ In the final nomenclature,
this is probably m
Probably z

5	3	36.0	10
		39.0	9
		41.0	9.8
		48.3	6
		54.0	6
41		4.2	7
			var.
		17.0	
		17.2	
		32.5	8.7
		53.8	9.1

Dec. 29, 1882

5	55.5	10
	58.3	9
6	1.8	9.8
	8.0	6
	14.3	6
	29.0 var	5.8 var,
	38.0	5
	38.2	5
	53.0	8.8
7	0.3	9.0
	14.9	7.5

In all the preceding sets, the star marked var is the preceding of two, the following of which is supposed to be the real variable.

Note March 7, 1893. The preceding star is really the variable; the foll. star is Chandler's x.

Interval between these

38.5
42.2 var 0.7 months of the other

In what follows the star marked var is supposed to be the real variable.

In fact, it is Chandler's x; see note above.

Dec. 29, 1882.

5	11	35.0	0.1
		36.8	0.9
		38.0	0.16 +
		41.5	2

5	12	8.8	0.6X
		49.0	1.5
		11.2	0 X

5	12	38.0	0 X
		58.0	4
	13	10.0	1
		13.0	0
		16.8	10 var
		22.0	35
		30.0	3.5
		36.2	1.2
		53.3	4
		58.8	1

Dec. 29 1882

5	14	47.3	8.8
		54.7	5.1
		55.3	8
	15	6.8	5.8
			10 var.
			8.5
			8.7
			6

5	16	59.2	8.8
	17	6.8	5.0
		7.3	7.5
		18.7	6
	18	16.6	10 var
		3.0	8.7
			7.8
		12.0	6

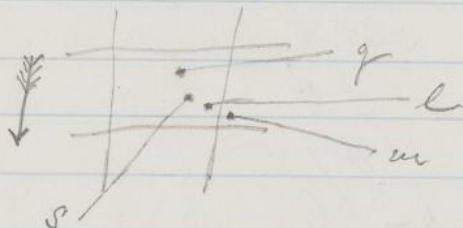
5	19	28.3	8.8
		35.2	5.0
		35.9	7.5
			6
			x } see next page
	20	14.0	10 var
		21.0	8.6 8.6
		27.0	8.7
		29.5	8.3
		38.5	6
		50.4	9.8
	21	3.8	7.5

— ft. pr. at 6.8
see next page

Dec 29, 1882.

5 2^h 58.0 ~~9.8~~ 6.8
 22 3.8 9.8 see last page

22 41.5 7.5 see last page
 52.8 16



g s s
 s 2 grades below than l. } Tr. obs.
 s 5 " " " m. }
 { 2 s. see below
 { x 2 s' (in Chandler's nomenclature)

Rejct; see below. - - - - s 7 m } s. obs.
 { s 3 l: see below - - - - l 3 s }
 { s 3 x (in Chandler's nomenclature)

Note, March 16, 1883. In the diagram above, the star called *m* is not that so called by Oudemans, but one subsequently called *y* by Chandler. The star *l* of the diagram is really the variable star *l* Geminorum, and the star *s* of the diagram is one subsequently called *x* by Mr. Chandler. It is supposed to be identical with the *l* of Oudemans, which should precede the variable star *4^s*, while this follows by that amount. The Δx by the transits pp. 147, 148, 149, is $3^s.7$ $3^s.8$, $4^s.2$; mean $3^s.9$.

Dec. 29, 1882.

Comet Cruls (Gould) W. obs.

$$\begin{array}{r}
 7 \quad 18 \quad 36 \\
 6 \quad 25 \\
 \hline
 -53
 \end{array}$$

30

-48

Comparison Star β Lyrae (-15° to 31/ No. 6765
Mag. 8.9

$$\begin{array}{r}
 \text{Pos. Zero} \quad 275.7 \\
 45. \\
 \hline
 320.7
 \end{array}$$

~~Order~~ Star Comet Star Comet
Order Star, Southern Nucleus, Northern
Nucleus, Star, Northern Nucleus, Southern
Nucleus.

Northern Nucleus slightly follows the
other and is brighter.

Repeat last set.

Star in southern half and comet in
northern half of square.

Comet follows comparison star 12.5 sec and
is 9.5 north.

Dec 31, 1882.

16	36	18	16	39	44.5
	37	18		40	0
					+146.5

Reap. of Jupiter I. Phot. R. P. obs.
Sat. compared with Jupiter ~~II~~ II.

16	42	30.0	Secur.
		38.0	35.5
		50.0	129.0
	43	1.0	38.3
		10.0	131.8
		20.0	33.0
		29.0	133.2
		42.5	38.4
		53.0	130.5
	44	2.0	34.4
		11.5	137.5
		36.0	33.2

Clouds.

		57.5	136.2
	45	9.0	37.2
		26.0	129.4
		53.0	31.0
	46	8.5	130.6

Clouds.

47	57.0	22.5 Sat.
----	------	-----------

barely visible - reject.

All measures among variable clouds.

Dec. 31. 1882.

5 L 5 m Thick clouds.

17

9.2

18.1

10

18.2

17

12

13

44.5

0.0

0.0

+146.4

+146.3

154

Jan. 1, 1883

6 45

c Orionis S. Sh.
 Stars unequal; p 3 f
 Photometer R (too distant for H).

67 10

~~add~~
~~wing~~
~~211.2~~
~~230.8~~
~~332.0~~

156.2
 225.9
 332.0
 58.8

69.7[^]

$\frac{+6.4^{\wedge}}{156.5^{\wedge}} \rightarrow 0.4^{\wedge} 2.4^{\vee}$

67.3
 1410.0
 232.8
 323.1

72.7[^]

$\frac{90.3^{\wedge}}{163.0^{\wedge}} \rightarrow 0.3^{\wedge} 2.3^{\vee}$

66.2
 139.8
 226.5
 329.4

73.6[^]

$\frac{102.9^{\wedge}}{176.5^{\wedge}} \rightarrow 0.4^{\wedge} 2.1^{\vee}$

7 13

337.0
 59.0
 143.0
 224.9

+ 2.0[^]

$\frac{+1.9^{\wedge}}{163.9^{\wedge}} \rightarrow 0.0^{\wedge} 2.3^{\vee}$

Jan. 1, 1843.
B. + C. 11 + 2.

7 16 15.1
17 15.1

Bond 394
44.5
7 19 0.0
20 0.0
+149.4

Reap. of Jupiter II. Compared with
III. Phot. R. S. obs.

7 4 5
2.8 41

7 27 46
-2 45

7 25 approx. time eclipse.

7 23 36
46.5
56.5
24 12.5
21.5
35

155.1 } Ref.
205.5
174.0
204.0
167.3
205.3

7 25 37.5
45.0
50.5
52.0
26 11.5
18.0
25.0
33.5

Suspected.
Seen.
170.0
206.2
172.6
211.0
165.5
209.7

of am. 1. 1883.

7	26	42.0	166.1
		49.5	215.7
		52.0	158.2
27		5.5	219.5
		13.0	162.8
		22.0	222.7
		33.0	151.2
		42.5	215.7
		53.0	152.9
28		2.5	219.1
		10.5	157.0
		19.5	237.2
		34.5	146.3
		46.0	221.3
		57.0	154.8
29		5.5	219.0
Images slightly moved.			
29		41.5	147.4
		55.0	228.0
30		5.0	153.0
		15.5	214.7
		26.0	157.5
		36.5	216.0
		48.0	155.2
31		0.0	214.5
		40.0	130
32		27.5	145.0
		45.5	232.0

Ref.

Jan. 1. 1883,			
7	33	4.0	154.0
		20.0	211.5
		34.5	147.1
		52.0	217.3
	34	32.0	143.5
		45.0	230.0
	35	13.0	151.2
		33.5	230.6
		50.0	147.0
	36	6.5	231.4
		27.5	142.0
		43.0	230.0
	37	1.0	151.0
		17.5	230.1
		35.0	150.3
	38	1.5	229.3
		17.5	144.3
		31.5	224.5
		44.0	156.2
		55.5	224.1
	39	14.0	153.2
		26.0	232.2
		39.0	153.5
		50.5	231.3
	40	6.0	152.0
		30.0	226.4
		49.5	145.0
	41	3.0	234.0
		23.5	157.3
		38.5	223.5

Jan. 1, 1883.
 Much diffused light between
 images of Jupiter.

B. + C. 1182.	Bond 394	44.5
7 45 15.0	7 48	0.0
46 15.1	49	0.0
		+149.5
		+149.4

Came up cloudy - Closed dome.

~~0~~

Jan. 2, 1883

0 55
1 38

43

Series XI.

Re-vision of Vol. VII.

Began with star at 0^h 55^m 18.5
" at 1^h 58^m 18.5

8.06

Telescope not clamped —
the clamp having been removed,

6.0	9.3	a 2 ^h 11.2	0.4	0.2
60	32	54	4	3.8
10.5	93	54	6.0	5.5
10.5	b 2 ^h 58	3.7	6.0	2.5
-0.3	-0.4	37	2.6	3.8
-3	0.2	b 2 ^h 14.5	2.6	9.3
0.0	-4	3.3	1.0	5.2
0	1.0	33	10	55
5.5	2	3.6	7.3	58
0.1	10	36	73	57
5.5	4.1	6.5	a 2 ^h 24.0	0.5
7.6	41	6.5	4.5	57
1	0.0	9.6	0.6	5
2.8	0.5	10.2	4.5	10.3
7.6	0	5.5	6	10.3
7.5	5	5.5	7.5	5.6
2.8	6.3	10.2	7.5	10.3 p
7.5	6.3	9.6	3.3	10.3 f
a 2 ^h 3.2	5.8	9.6	33	56
3.2	58	10.2	b 2 ^h 26.3	a 2 ^h 30.7

9x6th int
102th dis. of
these stars
stars not obs.

Jan 2, 1883 -

-0.2	78	Re-Vision contin	
-2	95	Began with star ^{wed}	
7.1	7.2	1 ^h 33 ^m 09.8 + 5' 2"	
7.8	72	Began at 5 ^h 18 ^m 39.8	
71	10.3	5.2	18}
78	103	8.0	78}
2.4	6.6 2 ^h 40.2	52	2.6
24	-0.5 edge of prism	80	26
6.8	5.6	7.8	2.8
68	5.1	78	28
4.8	56	10.5	6 5 ^h 29.3
4.0	51	10.5	10.5
4.7}	Ended with star at	a 5 ^h 21.6	10.5
4.8}		0.0	10.5 prec
40	1 ^h 38 ^m 47.8	-0.2	10.5 fol
47	+ 5' 48"	0 prec	0.6
9.9		0 fol	6
99		6.0	62
5.8	a 2 ^h 42.5	5.7	62
58		60	3.0
1.2		57	8.0
12		0.0	4.9
9.0		10.0	30
2.0		4.0	80
4.3		0	49
90		100	-0.1
20		40	-1
7.8		7.8	a 5 ^h 34.9
9.5		1.8 2 ^d of two	7.3
4.3			

Jan 2, 1883

7.6	4.3
0.3	43
9.8	3.2
	0.5
5.5	32
	5
50.12	10.2
	102

38

v-2

80

9.5

9.5

bb 5^h 45.^m6

5.5

-0.4

50

-4

0.6

27

6

27

-0.1

-1

0.5

5

aa 5^h 39.^m9

5.2

5.4

5.2

5.1

5.4

5.1

Ended with star at 1^h 59^m 40.^s0 + 10'38"

also equals last star in 1^h

This last zone lost.

Pen carriage broke -

Jan 2, 1883

B4C 1182
 10 54 10.2
 55 10.2

B394
 10 57 44.5
 58 00
 00
 +154.3

Re-appearance of Jup. I
 compared with Jup III
 Phot. R
 Reappearance unexpected, as error of chronometer had been neglected.

11" 9 0 5.0ls. a.w.c. rec
 seen; pretty bright

	5	78.0
	20	128.2
	29	65.4
	36	126.0
	45	60.6
	53	132.2
10	5	52.0
	13	130.2
	23	56.5
	31	130.0
	39	50.2
	47	136.2
	54	57.3
11	2	130.7
	12	44.8
	21	142.3
	33	54.2
	45	137.0

Jan 2, 1883 -

11	11	56	53.0	
	12	6	130.0	1
	13	50	51.2	
	14	7	134.2	
		17	53.2	
		26	134.8	
		34	47.5	
		44	132.8	
		54	45.0	2
	15	3	132.3	
		28	47.7	
		36	129.0	3
		46	44.8	
		58	131.2	
	16	8	40.1	
		24	131.4	4
		39	41.0	
		50	133.3	
	17	6	41.2	
		48	140.0	
	18	9	45.3	5
		26	135.1	
		41	40.8	
		52	130.1	6
	19	5	46.8	
		15	134.1	
		37	47.9	
		46	125.3	7
		59	49.2	
	20	14	131.2	

Jan. 2, 1883.

11	20	25	47.8	
		34	130.2	8
		46	44.8	
		56	127.0	
21		9	46.0	
		20	129.1	9
		29	40.2	
		44	128.2	
		54	39.1	
22		5	120.8	10
		20	40.8	
		32	118.3	

Limit of Visibility

23	33	65.3
	56	101.0
24	15	66.1
	34	103.3

Diffused light in field often troublesome.

11	36	10.0	11	39	00
	37	10.0		40	00
					+ 154.5

Jan. 3 1883

134
112
— 22

Series XII.

Re-vision of Vol. VI. S. ob.

Began with star at $1^h 33^m 39.8 + 5' 2''$

1. at $1^h 25^m 39.8$

no clamp.

5.5	0.0	103	20	0.2
8.3	10.3	1.8	76	30
10.2	4.5	18	9.5	2
55	0	64	100	1.2
102	103	64	10.0	12
83	10.5	4.0	95	5.6
7.9	8.0 (2d of two)	8.5	100	6.2
7.9	45	5.0	$21^h 43.2^m$	55
10.6	24	40	6.0	5.3
106	105	85	0.0	62
$21^h 29.0^m$	80	50	60	53
0.4	24	$61^h 30.5^m$	0	$61^h 49.9^m$
0.0 (2d of two) close together)	33	0.0 (3d of 3 Sign) naked	10.2	4.6 (2d of 2.5 Sign)
4	33	0	0.8	46
0	35	7.5	3.0	4.3
7.0	35	3.8	50	1.0
6.0	$21^h 36.2^m$	7.6	102	43
70	10.6	10.1	50	10
60	10.3	38	8	10.3
$61^h 31.5^m$	106	75	0.0	103

Jan 3, 1883

Star at 2 ^h 2 ^m 29 ^s + 6' 13" sec.	-0.38	39	18
50	-3	7.0	6 2 ^h 20 ^m 3
10.2	8.2	0.0	7.3
9.6	8.2	4.3	2.5
10.2	2.8	7.0	2.5
9.6	1.6	0	7.3
3.0	2.8	1.0	2.5
3.0	1.6	4.3	9.9
3.4	2.0	7.5	2.5
3.4	2.0	6.0	6.7
7.3	1.0	3.0	9.9
10.1	6.9	1.0	6.7
7.3	9.5	1.0	3.3
10.1	1.0	7.5	10.0
6.9	5.0	6.0	3.3
1.07	9.5	10.2	10.0
6.9	5.0	3.0	9.7
22 2 ^h 2.7	6.9	3.3	-0.8 outside of prism
10	2 ^h 11.3	10.0	9.7
2.6	4.0	3.3	4.8
2.6	7.8	10.0	5.8
7.4	9.0	0.5	5.8 no rattle
6.8	10.3	5	6.0
7.4	4.0	0.0 vft.	3.5
8.3	0.8	0	6.0
6.8	7.8	0.0	3.5
10.2	9.0	7.5	7.4
8.3	10.3	1.8	7.5
10.2	8	0	6 2 ^h 25.6
6 2 ^h 7.0	3.9	7.5	ended with star at 2 ^h 32 ^m 56 ^s + 7' 40"

Jan 3, 1883 —
Series XIII.

Re-vision Continued

Began with Star at $2^h 25^m 33.2^s$
" at $4^h 43^m 33.2^s$

1.7	10.5	4.9}	60	5.8
17	10.0	10}	10.3	32
0.4 uft.	-0.1	49	103	6.2}
4	10.0	0.8	6.2	5.8}
0.6	-1	7.6	6.2	6.2
8.0	$4^h 49.6^m$	8	6.8	3.2
2.3	5.2	5.8}	2.7	0.7
6	6.5	7.6}	6.8	3.2
80	6.5	$4^h 57.4^m$	27	7
23	5.2	5.8	0.2	9.9
$a 4^h 46.2^m$	6.5	6.0	2.3	0.0
0.5	4.9	7.8	2	9.9
7.0	4.9}	60	23	0
3.5	6.5}	7.8	$6^h 5^m 5.6^m$	$6^h 5^m 12.8^m$
8	7.8	7.5	6.3	8.2
3.3	7.8	7.5	6.3	7.6}
70	$a 4^h 52.7^m$	$a 5^h 00^m$	4.3	8.2}
3.5	6.9	-0.4 (first of two edges)	4.3	7.6
10.2	6.9	5.3 (edge of prism)	5.4	3.5
3.3	4.6	5.3	5.4	6.8}
10.2	3.2	5.2	-0.6	3.5}
7.5	4.6	-0.4	9.7	6.8
7.5	3.2	4.9	3.8}	9.9
4.0	2.4	5.2	9.7}	9.9
10.5	2.4	4.9	3.8	3.5
40	1.0	6.0	3.2	4.0

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Jan. 3, 1883

35 }	60
40 }	49
24	90 }
23	a 5 ^h 22 ^m
24	48
0.5	48
23	0.6
5	6
a 5 ^h 17 ^m	0.5
5.6	5
0.7	9.7
7.0	5.07
5.6	2.5 }
7	9.7
7.0	0.0
0.8	5.0
8	2.5
3.7	4.0
2.4	0
3.7	b 5 ^h 24.7
2.4	4.0
7.0	
4.5 }	ended with star
7.0 }	at 3 ^h 6 ^m 14.1 + 4' 22"
6.0	
4.5	
4.8	
4.9	
9.0	
4.8	

Jan 4, 1883

13 4C 1182
5 23 1.8
24 1.8

$$\begin{array}{r}
 13394 \\
 5 \quad 26 \quad 00 \\
 \quad 27 \quad 00 \\
 \quad \quad + 162.7
 \end{array}$$

Re-appearance of Jupiter I
Compared with Jupiter II
Phot. R

5 lbs. A.W.C. rec.

Limit of Visibility

✓	35	49	141.2
	36	6	205.0
		21	143.3
		37	199.0

		Suspected seen
5	37	
	38	
	41	
	52	155.6
38	4	203.2
	12	143.2
	21	214.3
	29	134.1
	45	217.3
	55	138.0
39	6	217.1
	16	135.4
	25	201.8
	37	128.0
	51	218.8

Jan 4, 1883

✓	40	7	132.0	
		28	215.8	
		49	128.5	
	41	0	223.4	<
		12	129.3	
		27	220.8	1.
		43	129.5	
		56	230.5	
	42	16	130.6	
		31	226.8	2
		45	127.8	
	43	3	230.1	-
		25	127.2	
		44	221.2	3
	44	1	131.6	
		22	221.0	-
		52	127.8	
	45	11	224.2	4
		25	129.7	
		39	218.4	-
	46	4	124.0	
		19	227.0	5
		34	129.8	
	47	16	209.9	-
		37	126.8	
	48	56	229.9	6
		19	121.1	
		41	230.9	-
	49	6	130.7	

Jan 4, 1883

5	49	22	232.5	
		53	137.0	7
	50	20	230.0	
		34	136.5	
		54	232.3	8
	51	10	130.3	
		26	235.2	
		{42	135.5	} reject Some confusion in recording here; hence reject these two
		{54		
	53	37	134.0	
		55	235.2	9
	54	14	133.0	
		35	236.3	
		51	130.0	
	55	8	235.0	10
		27	141.0	
		47	230.7	

Some thin clouds visible previous to eclipse, not very visible after eclipse, but probably sufficient to affect some readings.

B+C 1182			B 394		
6	5	1.6	6	8	0
	6	1.5		9	0
	7	1.5		10	0
					+162.9
					+163.0

Jan 4, 1883 -

6	36	29
	23	41
7	00	10 App. time of Eclipse
	2	58.5

6 57 11.5 Time by B.C. 1182
 Reappearance of Jupiter III
 Compared with Jupiter I
 Photometer N. P. obs. L. rec.
 Limit of visibility.

6	54	23	141.3
		48	181.2
	55	9	143.3
		33	184.8

6	56	24	seen
		33	148.6
		46	182.8
		54	139.2
57	17	} 57 ^m av	136.6
	28		187.6
	42		137.7
	52		188.8
58	3		136.6
	15		193.8
	26		136.2
	41		195.9
	53		134.4

Jan. 4, 1883

6	59	4	194.6
		15	131.3
		27	199.2
		41/2	130.6
		57	199.1
7	0	11/4	129.2
		28	200.4
		38	127.3
		52	204.1
	1	4	123.3
		20	207.2
		34	123.8
		47	204.5
	2	11	121.6
		20	208.2
		40	122.2
		58	206.8
	3	14	120.3
		34	208.0
		52	120.8
	4	8	207.6
		31	121.1
		46	206.5
	5	1	120.7
		17	207.5
		40	119.2
		52	210.2

Jan. 4, 1883

7	6	6	119.6	
		49	210.4	
		35	117.0	
		52	211.3	
7	9		118.1	— 2
	21		210.2	
	33		120.9	
	44		208.4	— 3
	58		116.3	
8	14		211.7	
	29		118.6	
	42		210.6	— 4
9	2		120.2	
	18		210.7	
	36		117.2	
	52		210.4	— 5
10	7		118.3	
	19		213.2	
	32		118.8	
	45		211.6	— 6
11	0		117.8	
	12		213.5	
	28		116.6	
	41		210.4	— 7
	53		117.9	
12	7		209.0	
	21		114.7	
	33		212.6	

Jan. 4, 1883,

B 86.1182

7	17	1
	18	1

B 394 44.5

7	20	0
	21	0

+163.5

2	24
4	0
<hr/>	
1	36

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Jan. 7, 1883,

S. Geminorum S. Str.

9 10

 \downarrow

xg

xS

xl

xm

g 8 S

S 6 l

l 4 m

} See p. 150. The record should
be x6 S; S 4 y (to conform
to Chandler's nomenclature, book 34, p. 163).

Identified T Geminorum.

Haze coming on prevented transits
or measurements.

9 45

T about 11.5 magn.

Comp. star E

"

12

"

"

d

"

9 magn. by D.M. (D.M. +24° 17' 71")

Jan 10, 1883
 Exam Jupiter IV with III.
 B.C.

9	35 15	177.9
	36 28	
	37 15	180.0
	49 25	239.5

Examined Jupiter carefully with Phot R.
 also with ring mic. No 1. Satellite IV
 should be in conjunction with shadow at about 10^h 40^m
 at 9 45 at nearly usual brightness. Fog on
 thin clouds makes it almost invisible in
 Phot R. also needs to be obtained with great difficulty.

Jan. 11, 1883.

High. Jupiter I. Ph. R.

P. obs.

B. + C. 1182.

Bond 394.

7	18	20.3
	19	20.3

7	22	0.0
	23	0.0

7	11	40
	20	41

7	35	22
---	----	----

7	23	0
---	----	---

	12	22
--	----	----

7	19	20
---	----	----

7	32	
---	----	--

Low Clouds of continually varying thickness render it impossible to obtain limit of visibility.

7	32	14	of up. clear but sat. not seen,
	33	16.5	through clouds, compar. sat,
			nearly invisible.

Rejected, on account of clouds.

Jan. 11. 1883.

Reap. of up. III. Phot. H. Compared with
sat. I.

B. & C. 11 + 2.

Bond 394

10	41	19.1
	42	19.2

10	45	0.0
	46	0.0
	+3	25.4

11	2
10	46
	16

10	42
----	----

10 58 approx. time eclipse.

Limit of Vis.

10 55 5.5

30

46.5

56 5.0

56 35.0

46.5

57 5.0

7.0

23.0

33.5

47.5

58 0.5

11.0

23.5

33.0

233.0

273.5

229.0

276.9

Suspected,

"

seen,

230.3

273.0

227.5

277.5

221.2

275.0

220.0

281.0

Jan. 11, 1883.

10	58	45.5	218.0
		55.5	284.5
	59	6.5	216.7
		19.0	287.0
		29.0	211.8
		42.0	289.3
11	0	0.5	211.0
		10.0	286.0
		23.0	204.6
		35.5	289.7
		47.5	210.0
	1	0.5	292.5
		15.0	204.0
		33.5	293.8
		50.5	207.9
	2	6.0	300.8
		22.0	203.0
		35.5	292.9
		50.0	201.5
	3	3.5	295.1
		19.5	202.1
		38.0	291.8
	4	17.5	194.2
	5	9.0	294.8
		25.5	200.3
		43.5	296.8
		56.5	

Reject

Jan. 11. 1883.

11	6	13.5	195.2	
		28.0	300.0	
		44.0	192.5	2
	7	3.0	299.1	-
		19.5	199.4	
		33.0	299.7	
		51.0	192.4	3
	8	5.5	298.6	-
		56.0	195.2	
	9	10.5	301.1	
		25.0	196.2	4
		39.5	302.7	-
		56.0	193.0	
	10	10.5	302.6	
		29.0	196.1	
		51.0	302.2	5
	11	10.5	195.2	
		32.5	303.0	
		49.5	194.6	6
	12	10.0	302.7	-
		27.5	193.1	
		45.0	301.2	
	13	3.5	194.6	7
		34.5	301.3	-
		54.5	194.0	
	14	10.5	298.9	
		32.0	197.0	8
		44.5	303.0	-

Jan. 11. 1883.

11	15	54.5	195.0	
	16	23.0	301.4	
		42.0	200.2	9
	17	2.0	301.0	
		32.5	194.0	
		44.0	302.1	
	18	9.0	194.1	10
		29.0	302.2	

B. + C. 1182.

11	24	18.7	
	25	missed.	
	26	18.7	

Bond 394

11	28	44.5	0.0
	29	0.0	
	30	0.0	
		x3	25.8

Jan. 12, 1883
S. Geminorum

S. obs.

6 40 \downarrow $\begin{matrix} \times g \\ \times S \\ \times l \\ \times m \end{matrix}$ $\begin{matrix} g 16 l \\ g 16 m \end{matrix}$ $\begin{matrix} g 8 l \\ g 8 l (or m) \end{matrix}$
In Chandler's nomenclature $g 16 S$; $S = g$

T. Geminorum *S. obs.*

Comparison star e (from chart) $f 8^s s 6'$
 Another star has called a $g p 43^s s 9'$

7 20 \downarrow $\begin{matrix} ex \\ ax \end{matrix}$ $\begin{matrix} \times J \\ \times J \end{matrix}$ $\begin{matrix} T 4 e \\ O. a 3 J \end{matrix}$
est. magn. 11.5

8 55

S. Geminorum *W. obs.*
 $\begin{matrix} g 7 l \\ g 7 m \end{matrix}$ $\begin{matrix} g 9 l \\ g 9 m \end{matrix}$

9 10

T. Geminorum *W. obs.*
 $a 6 T$
 $T 4 e$

of arr. 12. 1683.
Stars about $\sqrt{}$ semimajor. Deco.
Signes.

$\sqrt{2}$	$\sqrt{5.7}$	3.0	4.5
	$\sqrt{1.7}$		2.5
$\sqrt{3}$	1.2	2.5	0.5
	11.1	9.9	0.5
	25.2	14.1	3
	25.0	2.8	3 + $\sqrt{}$ = $\sqrt{}$
	36.2	1.2	0.5 & 1.5
	40.3	7.1	0
	56.7	13.4	

Same again.

$\sqrt{-\sqrt{-}}$	20.6	2.2	4.5
	20.4		2.5
	26.2	2.8	0.5
	36.3	10.1	0.5
	41.1	12.5	4.5 + $\sqrt{}$
	52.6	3.8	3
$\sqrt{6}$	1.3	1.7	3 + $\sqrt{}$ = $\sqrt{}$
	7.9	6.6	0.5 + 1.5
	21.2	13.3	0

Same again.

$\sqrt{9}$	24.2	3.1	4.5
	27.2		2.5
	29.1	2.5	0.5
	39.2	9.4	0.5
	52.9	13.7	4.5 + $\sqrt{}$
	57.0	4.1	3
	57.0	11.0	3 + $\sqrt{}$ = $\sqrt{}$
	11.7	6.7	0.5 + 1.5
	24.9	13.2	0

Jan. 12, 1883.

	Quies.		Reps.
v-h	7	57.0	v.v
		3.2	8.v
		5.0	9
		6.2	9
		9.7	2
		13.4	10
			7 = v
			2 v = v
			2

v	12	14.1	1.v	v.v
		22.6	9.1	8.0
		31.7	6.9	2.0
		32.6	9.2	7
		42.4	36.2	v = v
13	25.2			2

Same again.

14	2.4	2.0	v.v	a
	10.6	9.2	2.0	b
	20.2	6.2	2.0	c
	27.0	10.1	7	d
	37.1	36.5	v = v	
15	13.6		2	e

First three again.

16	46.6	46.6	v.v
	55.3	55.3	2.0
	4.0	4.0	2.0

Jan. 12. 1883.
Interpolation of stars among those
taken on previous page.

~~27~~

~~29.9~~

~~Dec.~~

~~21~~ June,

Dec.

✓ 21 32.0
34.4

9.0
8.0 = 6

Same again,

22 24
5.7

9.0
8.0 = 6

✓ 24 27.0

8.0 = 6

~~29.9~~
29.0
34.4

8.8
9.0

Same again,

✓ 25 0.2
2.0
8.0

8.0 = 6
1.4
9.0

✓ 27 9.5 7.5
17.0 1.9
15.7

8.0 = 6
9.0
8.0 = 6

Jan. 12, 1883.
 $\sqrt{28} \quad 26.0$
 27.2
 33.0

$8.0 = c$
 $10.$
 $7 = d$

Same again.
 $\sqrt{28} \quad \sqrt{6}, x$
 $\sqrt{7}, x$
 $29 \quad \sqrt{3}, x$

$8.0 = c$
 $10.$
 $7 = d$

~~6.0~~
~~6.0~~
~~6.5~~
~~6.6~~
~~6.3 + 0 = \sqrt{}~~
~~5.8~~

$\sqrt{45}$	11.2	17.0	1.2
	28.2	4.2	4.0
	32.4	11.1	3.8
	43.5	10.9	3.7
	54.4	8.3	4.1 + 10 = \sqrt{}
	2.7	5.7	4.7
	2.4	6.6	2.8
	15.0	6.0	3.0 + 5.0
	21.0	3.8	0.2
	24.8	4.0	4.8
	28.8		1.0

Jan. 12, 1883,
Same again,

✓	47	24.6		1.2
		40.6	16.0	4.0
		45.2	4.6	3.4
		56.1	10.9	3.7
48	7.0	10.9	4.1 + 10 = J	
	15.7	5.7	4.7	
	21.3	5.6	2.4	
	27.4	6.5	3.0 + 5.0	
	34.8	7.0	0.2	
	37.5	2.7	4.4	
	40.7	3.2	1.0	

Same again.

✓	✓ 8	50.2		1.2	a
	✓ 1	6.6	16.4	4.0	b
		11.0	4.4	3.4	c
		22.1	11.1	3.7	d
		30.4	11.3	4.1 + 10 = J	
		41.2	7.8	4.7	e
		47.0	5.4	2.8	f
		53.4	6.4	3.0 + 5.0	
		0.9	6.9	0.2	
		2.6	3.3	4.4	
		7.6	4.0	1.0	

Jan. 12, 1883.
Interpolative.

✓	✓✓	27.0	2.0
		29.0	3.2 = c
		31.6	3.6 + k.2

✓	✓✓	3.0	4.5	5.1	5.2
		4.5	4.7 = e		

36.0	22.9	7.3
✓9.2		9.0
7.1	7.9	6.2
11.6	4.5	0 = ✓
19.0	7.4	6.0
46.0	27.3	2.3
51.0	4.7	2.0

Same again.

1	24.4	23.0	7.3	a
	51.4	8.2	9.0	b
	59.6	4.4	6.2	c
2	4.0		0 = ✓	
	11.1	7.1	6.0	d
	34.7	27.6	2.7	e
	43.2	4.5	2.0	f

Jan. 12, 1883.
Interpolation.

r	0, K	9.3	double star
	3, 1	8.0	
	5, 2	7.3	as

6	5, 5	9.4	
	16, 0	8.7	Σ
	20, 0	8.0	f

Comet at 11^h mean time S. obs.



Slight transverse
rings of light as
in sketch on sf side
A small star in

the elongated nucleus, on the preceding
side. At 6^h 38^m by B. 236, the star
in axis of nucleus, two thirds of the distance
from its sp to its inf end.

Jan. 12. 1883.

Cruls Comet,

W. obs.

Pos. Zero. 298.8
 45.
 343.8

There are 3 nuclei in the comet. —
 the n.f. of all is the faintest, and rather
 close to middle nucleus, which is the
 brightest.

The faintest was not taken in transit,
 but the other two, of these latter the
 order was in transit.

S. P. Nucleus, N. F. Nucleus, N. F. Nucleus
 S. P. Nucleus, 1st star, 2^d star, 1st star
 2^d star.

The 1st star is Oc. A. 5718-9-20 (Mag. 8.8) ^{8.8}
 " 2^d " " " 5728-9 (" 8.9+9)

Comet in northern and stars in southern
 half of square.

The brightest nucleus is quite stellar.

192

Jan. 14, 1883

B 236

L

 α

3 53

3 43

7 36

S Gemin.

 $\delta + 23^{\circ}0$

8 25

g 16 m

g 17 l

g 8 s

m 1 Bl

S. obs.

See p. 183.

In Chandler's nomenclature g 17 s; y 1 s

g estimated 11.3 magn. S estimated 12.1 magn.

S Geminorum

8 45

a 3 T

T 4 e

S. obs.

See p. 183

a estimated 11.5 magn.

T " 11.8 "

B 236

4 27

h

3 15

 α

7 42

 $\delta + 23^{\circ}5$

7 44

4 35

3 9

4 37

2 59

7 36

S. obs.

U Geminorum.

B 236

5 2

2 45

 α

7 47

 $\delta + 21^{\circ}8$

Jan. 12, 1883
U. Geminorum identified.
 There are two faint stars near the
 comparison star d on the chart. One
 precedes d 2^s , 3^s ; the other f d 1^s , 1.5^s .
 Call the first of these g ; then $U = g$.
 Magn. of U est. 14.5; near limit of
 visibility.

$$\begin{array}{r} 6 \quad 57 \\ 5 \quad 23 \\ \hline 1 \quad 34 \end{array} \quad 22.3$$

$$\begin{array}{r} 5 \quad 24 \\ 1 \quad 34 \\ \hline 6 \quad 58 \end{array} \quad 22.3$$

D.M. $+22^\circ$ 1566

D.M. $+22^\circ$ 1567 f 29^s ΔP about $\frac{1}{2}$ as in D.M.

Stopwatch runs correctly
 for a minute with B 236.

By stopwatch interval 29.0
 28.0

Mean 29.0

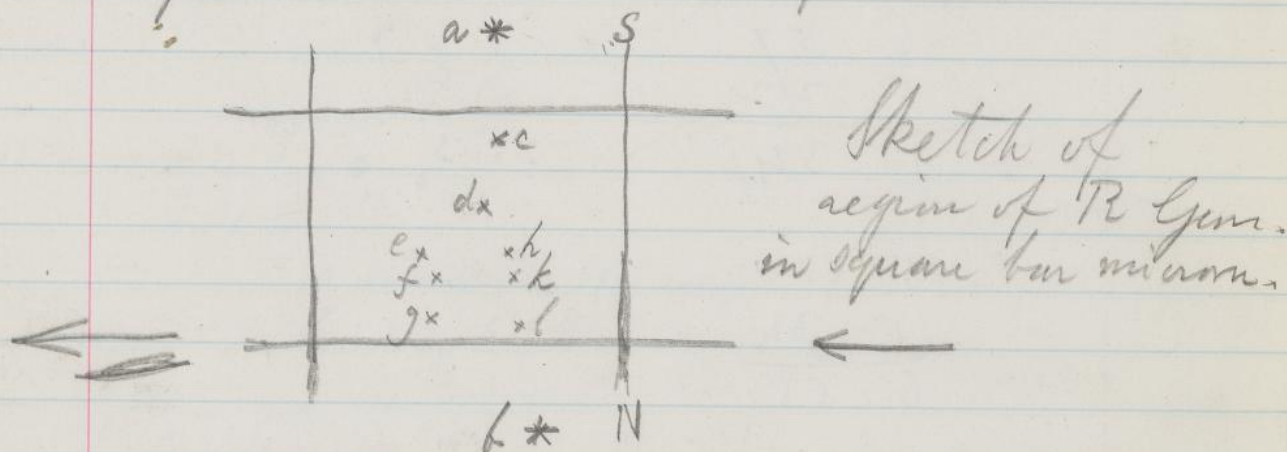
D.M. $+22^\circ$ 1569 f 1567 30^s
 60 Mean 30.0

Hence 1569 f 1566
 $1576 f$ 1569 61^s by stopwatch, 10^s (as in D.M.)
 1567 seems out of place.

Jan. 14, 1883.

D.M. +23° 1604 f D.M. +22° 1576 4^s 5^s,
17' n.D.M. +23° 1605 f D.M. +23° 1604 5^s 10' n.D.M. +22° 1581 f D.M. +23° 1604 24^s 2' s.

D.M. +23° 1604 seems also out of place.

D.M. +23° 1601 p 1604 16^s 8' n.R Geminorum should f D.M.
+22° 1576 4^s 11' n. There are two
faint stars near this place.

a = D.M. +22° 1576

b = D.M. +23° 1604

h or k should be R Gem.

10 50

The two are equal to each other, near
magn. 14, fainter than any of the other
stars near.

(R Geminorum = k. See R105, p. 148).

Neither D.M. +22° 1567 nor D.M. +23° 1604 is marked
with a letter referring to a more accurate catalogue.
The D.M. places are perhaps accidentally in error; if
not, the stars must have large proper motions.

January 15, 1883

Series XIV.

Revision of Vol VII. S. obs.
 Began with star at $1^h 35^m 24.5^s$
 " at $2^h 39^m 24.5^s$ Clamp in use.

10.2	10.1	90	9.9
102	101	9.5	W. $3^h 5.6^m$
a $2^h 42.5^m$	98	83	
-0.5	98	95	} Ended with star at $1^h 59^m 48.0^s$ + $10' 38''$ = last star in 1^h $\frac{1}{2}$
-5	b $2^h 51.1^m$	b $2^h 56.5^m$	
5.8	0.6	-0.9 Edge of prism	
5.2	6	9.5	
58	57	03	
52	57	95	
9.9	2.6	24	Decl. of Circle
3.0	77	3	= +1.4
99	4.5	24	
10.3	26	-0.7 Edge of prism	
30	77	0.4	
8.3	45	4	
7.4	a $2^h 53.6^m$	a $3^h 0.1^m$	
83	-0.8 Edge of prism	4.7	
102	6.8	5.3	
74	2.6	47	
2.6	7.3	4.8	
26	9.0	53	
2.5	26	48	
10.3	68	3.6	
2.5	73	36	
103	8.3	9.9	

196

Jan. 15. 1853.
Variable found by Prof. R.

$$\begin{array}{r} 16 \quad 32 \\ \sqrt{\quad} \quad 47 \\ \hline +16 \quad 45 \end{array}$$

$$\begin{array}{r} 16 \quad 32 \quad 0 \\ \quad \quad 22 \\ \hline 16 \quad 31 \quad 38 \\ \quad \quad 32 \quad 22 \end{array}$$

$$\begin{array}{r} +72^\circ \quad 36' \\ \quad \quad -3.6 \\ \hline +72 \quad 39.6 \end{array}$$

DM. +72° 735 16 33 47 72° 40.5
var μ 85° 6's R. Mrs. Min.

5 22 29 star a
24 14 DM. +72° 735
a μ DM. +72° 735 1^m 45^s
9 30 17^s f a and 6's of DM. +72° 73.5
is a very faint star. W. obs.

B 236 f
5 29 8 23 4
31 23 7.5 (1.5 sec. early)
30 23 52 7.5
53 30 1.5 a
14
31 7 10
46.5 - 39.5 7.5
32 5 30.1 43.9 0.7
37 6.6 56
44 7 8
6 22

Jan. 15 1883

B 236

J

5	36	42.0		4	
	37	5.4	23.4	7.5	
	37	58.8	51.4	7.5	
	38	26.8	30.0	1.5	<u>a</u>
		40.2	13.4	10	
			40.1		
	39	20.3		7.5	
	40	21.0	43.7	0.7	
		12.3	8.3	6	
			5.1	5	
		17.4	22.8	8	
		40.2			

5	43	16.7	8.7
		45.3	7.4

5	5	47	0.9	0	<u>b</u>
		7.0		6	<u>a</u>

5	47	54.6		8.6	2 ^s early
	48	26.0	31.4	7.5	
	49	26.0	60.0	2.5	
		48.0	22.0	2.3	
		52.3	4.3	5.5	<u>h</u>
			8.1		
	50	0.4		6.5	
		31.0	30.6	7.5	
		31.5	0.5	5.5	
			31.1	2	
	51	2.6		2.3	
		30.4	27.8		

Jan. 15, 1883.

B. 236			δ
5	52	7.9	8.6
		28.8	
		36.8	7.5
53	36.5	59.7	2.5
		22.8	2.3
		4.7	
54	4.0	6.5	5.5
		31.0	6.5
		0.7	7.5
		42.2	5
55	14.2	32.0	2
		26.6	
		40.8	2.4

0.8	7.7
20.0	192"
16 32 0.	72 36
16 32 20	72 39.2
16 33 47	72 45.5
1 27	6.3
	var. 1880
	var. 1855
	DM. + 72° 735

⊙ a p DM. + 72° 735 1^m 45^s
 Faint star f a 17
 Faint star p DM. + 72° 735 1 28

10 15 Faint star (supposed to be the var)
 visible only at intervals, about 0.7
 magn. fainter than a. W. obs.
 Region low; moon half full.

Jan. 15. 1883.
Comet Cruls (Gould) W. obs.

$$\begin{array}{r} 6 \quad 34 \\ 6 \quad 52 \\ \hline + 18 \end{array} \quad -26.2$$

$$\begin{array}{r} 6 \quad 42 \\ 7 \quad 17 \\ \hline 6 \quad 35 \end{array}$$

Comp. star a Mag. 7.6
b fol a 15 sec. + is 10' north Mag. 7.8
c " a 25.5 + is 6' south " c Mag. 8
d " a 27.5 + is 4' " " d " F. 2
e pr. a 4 same dec. Mag. 9.5
f fol. a 25 0.7 north Mag. 9.8

Pos. Zero 233.3

$$\begin{array}{r} 40- \\ \hline 274.3 \end{array}$$

Comp. star is Oc. A. $(-15^{\circ} 5' - 31^{\circ})$ 5445 (Mag. 8.9)
Order $\times \times \in \in$

Star in southern and \in in northern
half of aquar.

The brightest ^(only) of the nuclei spoken of the
last night, taken in transit ^{to right} ~~to right~~ is the
nucleus called u.f. on said ^{preceding} night. (Jan. 12.)

The u.f. of all these nuclei ~~was~~ was not
taken on Jan. 12.

Jan. 15. 1883.

B. & C. 1182.

12 18 59.1
19 59.3

Bond 394.

12 23 44.5
24 0.0
+3 45.4

Reap. Jup. II. Phot. H. P. obs.
Compared with Sat. I.

12 15 2
22 41
12 3 8 44
24
14 44
12 19 59
12 3 4 4 3

Limit of Visibility.

12 31 34 54.2
23 5
32 13 59.6
34 23.0

Set at 55.0

12 35 31.0
35.5
40.0 49.8
44.0 90.0
59.5 44.6
36 10.5 95.6

Jan. 15. 1883.

12	36	20.5	45.0	
		29.0	100.6	
		34.5	34.6	
		59.0	102.2	
37		11.5	37.4	
		14.5	107.2	
		26.0	33.0	
		35.0	107.2	
		46.0	24.6	
		57.0	112.2	
38		8.5	31.6	
		19.5	109.0	
		29.5	31.4	
		42.0	102.4	
		54.5	30.2	4
39		7.5	112.3	
		20.0	26.2	1
		30.5	109.3	
40		2.5	25.4	-
		15.5	111.6	
		24.5	24.4	2
		35.5	112.4	-
		51.5	26.3	
41		4.0	110.3	3
		35.0	25.2	
		47.0	109.6	-

Jan. 15, 1883.

12	42	0.0	27.4	
		15.0	106.3	4
		30.0	25.7	
		45.0	112.3	
		57.0	27.6	
43	19.5		106.0	
	53.5		31.2	
44	9.0		105.6	✓
	31.5		29.3	
	44.0		110.7	
	51.0		27.0	6
45	0.0		110.2	
	10.0		24.4	
	19.0		109.9	
	25.0		32.2	7
	33.5		110.0	
	43.0		30.4	
	52.0		111.2	
	59.0		31.2	A
46	7.5		111.0	

B. & C. 1182.

12	52	59.1
	53	59.1

Bond 394.

12	57	0.0	44.5
	58	0.0	
	+3	44.4	5

January 16, 1883 -

Re-vision of Vol VII S. O. L. -
 Begon with star at $1^h 56^m 14^s.3$
 " at $2^h 38^m 14^s.3$ Clamp in use.

46	2.7	a $2^h 57^m 9^s$
5.3	2.7	7.5
46	10.3	7.5
47	10.0	2.4
53	10.0	2.4
47	6.6	0.6
a $2^h 40^m 9^s$	10.3	6
33	6.6	1.0
33	9.2	1.0
9.7	9.2	0.3
9.7	5.8	5.7
4.0	5.8	8.2
40	0.2	3
5.1	2	8.2
51	2.0	5.7
9.4	2.0	$6^h 3^m 2.2$
7.8	6.9	ended with
10.4	5.6	star at
9.4	6.9	$2^h 18^m 12^s.3$
7.8	5.6	$+9^m 40^s$
10.4	7.8	
$6^h 2^m 48.2$	9.4	
2.0	7.8	
2.0	9.4	

Jan. 16, 1883

Var. in Puffin identified
65^s f another.

		avg.	Dec.		
25	10.5	10	9	8	2
	24.5	11	8	2	8
	37.5	10 , 10	6	Var.	
26	3.0	10	9		4
	21.5	9	9		5

v 2 + v 2 y 5 1 v P. obs.

2 3 v v 4 β S. obs.

v 2 α y 2 v 5 3 v W. obs.

~~5 36 40 6~~
~~15 15~~
~~16~~

5 36 53 6 W. obs.
37 3 2
4.5 9
10 6
11 5.5
22

Started again

Jan 16, 1883.

5-39	18	ded
	19.5	6
	29	0
	30	2
	36	9
	38	6
	42	5.5
	50	3
	55	1
	55	3
	56	5
40	1	var
	2	0.7
	6	1
	11	2.5
	15	3
	20	6.5
	21	2
	24	7.5
	26	5
	33	9
	37	10
	43	3

Same again

41	33	6
	34	0
	43	2
	45	9

Jan 16, 1883

41	49	6
42	50	5.5
	7	4
	8	1
	9	✓
	15	Var
	15.5	.8
	22	1
	30	3
	35	6
	35.5	5
	40	5
	45.5	7.5
	49	9
	52	10

Series 2

✓	49	20	9
		24.2	3
		37.0	4
		42.4	7
		49.7	3
		53	✓
		5.5	6
50		2.4	Var
		8	5.5
		14	9
		18	6

$$\left[\begin{array}{l} 27.3 \\ \end{array} \right\} \begin{array}{l} 4 \\ 3.5 \end{array} \right\} = a$$

Jan 16, 1883

32 50	32	32
37	37	4
54	38	9
		1.5
		4

5	50	42	4	} = a
			3.5	
		47	3.5	
		5-0.8	4	
		52	9	
		5-3	.5	
	54	0.9	4	

Same again

54	54	56.5	9
54	56	36.2	9
		41.5	3
		54.0	4
		59.2	7
57		6.0	3
		9.6	5
		15.0	6
		20	.5
		25	5
		31	9
		35.5	6
		44.5	a

Jan 16, 1883 -

5	57	50	3.5
		54	4
		55	9
		56	0.5
	58	3.2	4

Reap. of up. I. Phot. R. Comp. with
Set. II.

B. + C. 1182,

Bond 394,

14 44 52.3

14 ~~42~~ ~~49~~ 44.5
0.0

45 52.3

50 0.0

Corr. + 3 52.2

14 38 9

23 41

15 1 50

50 0

14 11 50

45 52

14 57 42

Limit of Vis.

~~14 54 48~~

14 55 17

36

53

56 10

182.2

220.7

185.3

217.2

Jan. 16, 1883, not confirmed.		
.14	v-7	35
		54.0
		52.0
	58	11.5
		23.5
		35.5
		47.0
		52.5
	59	12.5
		23.5
		35.0
		46.0
		52.0
15	0	11.5
		24.0
		37.5
		51.0
	1	7.0
		25.5
		43.5
	2	1.5
		30.0 ±
		55.0
	3	13.5
		29.5
		48.0
Suspected, but seen.		
		123.6
		231.5
		163.7
		243.5
		163.5
		248.2
		163.2
		240.7
		160.3
		243.7
		153.2
		244.0
		153.5
		242.6
		157.5
		250.1
		156.2
		246.5
		154.9
		246.2
		155.2
		244.0
		156.2
		239.5

Jan. 16, 1883.

15	4	13.0	155.3	
		31.0	247.5	
		50.0	152.6	3
	5	12.5	245.3	
		33.5	155.2	
		59.5	241.3	
	6	19.0	153.5	4
		39.0	243.6	
	7	0.5	151.0	
		19.5	239.7	
		36.5	154.9	5
		59.5	245.1	
	8	20.5	153.2	
		40.0	244.1	6
		56.5	151.1	
	9	11.0	247.0	
		33.5	152.2	
		51.0	243.2	
	10	22.5	157.1	7
		39.5	244.7	
		54.0	151.5	
	11	15.0	245.9	
		31.5	154.5	8
		47.0	241.1	
	12	2.0	154.1	
		16.5	249.0	
		32.0	153.2	9
		49.5	244.9	

Jan. 16. 1883.
 15 13 9.0 162.1
 33.0 244.0
 44.5 155.2 10
 14 7.0 246.0

Transits between wings of Sat. 3.

28 23.5
 30.0

Same again.
 40.5

46.5

Transits of both limbs of Jupiter.

10.0
 12.0 11.5

16.5
 19.5 18.0

Same again.

39.0
 42.0 40.5

45.0
 44.5 46.8

B. + C. 1142,

15 36 51.6
 37 51.6

Bond 394

15 41 44.5
 0.0
 42 0.0
 +3 52.9

Jan 18, 1883

This comparison wrong
 { B + 6 1182 13 394 }
 { 8h gm 43.6 8h gm 050 }
 { 9 43.6 9 00 }
 See comparisons ~~at~~ on p 214
 This comparison 5m out

c Orionis
 Phot R.

S. obs -

Prec. star 0.4 Mag. brighter

8 v6
 337.4 < prec. die.
 73.0
 162.8 95.6¹
 230.9 $\frac{68.1^{1.1}}{163.7^{1.1}}$ 2.3¹

9 1
 247.3 < Prec. die.
 334.2 86.9¹
 81.9 74.9¹
 156.8 $\frac{74.9^{1.1}}{161.8^{1.1}}$ 2.3¹

9 4
 240.1 < p.d. 90.8¹
 330.9 80.1¹
 77.7 170.9^{1.1} 2.2¹ ✓
 157.8

January 18, 1883.

9 7

170.9	c.p.d.
235.3	644.0
347.2	75.8
63.0	<u>140.2</u>
	108.2
	2.4

9 15 Following star somewhat reddish
Spectrum is relatively redder than
that of preceding star but not
otherwise peculiar

Re-appearance of Jupiter I
Compared with Satel IV
Phot. H. S. obs. Cu. rec.

9	26	23.8	228.7	limit of Vis.
		44.0	Reem	278.5
		46.0		278.2
	27	1.0		218.8
		11.2		283.2
		23.6		212.2
		35.2		296.1
		47.0		204.7
	28	0.5		295.0
		10.0		201.1
		21.8		301.8

January 18, 1883.

28	34.0	191.5	
	47.2	304.0	
	59.8	193.8	
29	11.3	305.3	mm
	24.0	190.5	
	35.2	305.4	
	49.2	187.4	
30	6.0	307.0	L
	29.2	190.4	
	42.6	310.0	
	59.8	191.2	
31.	13.7	305.0	
32	18.8	187.2	
	45.5	312.3	,
33	2.0	186.4	
	19.0	309.7	
	32.2	190.1	
	43.2	310.7	2
	53.0	191.5	
34	9.0	305.8	
	23.8	192.8	
	38.0	311.3	3
	51.2	193.1	
35	3.0	305.7	
	15.0	186.7	
	28.2	308.9	4
	40.0	190.9	
	56.2	310.2	
36	10.3	188.4	
	22.8	310.3	

Jan. 18. 1883.

36	33.2	187.2	✓
	43.5	309.2	
	54.0	188.0	—
37	4.2	309.1	6
	14.5	188.1	
	25.3	308.1	—
	37.2	187.5	
	48.5	309.8	7
	57.5	192.4	the
38	9.3	312.0	—
	53.0	188.6	
39	3.5	312.4	8
	16.0	183.7	
	35.7	308.2	—
	51.2	185.5	
40	1.7	313.3	9
	11.0	183.9	
	26.1	312.8	
	38.0	185.0	
	47.7	310.8	10
	57.7	188.0	
41	7.2	314.8	

Summit of Visibility

41	28.0	213.2
	41.1	274.8
	53.0	210.3
42	3.3	273.7

1882 John. 1882. 1882.