

KG
11365
510

KG 11365.510

KG-11365.510



July 26. 1891.

B. + C. 1122.
15 31 10.1
32 10.2

B. 394.
15 31 0.0
32 0.0

15 52 6
2 12
16 0 12

10
16 0 22 Ap. time rel.

15 31 - ~~Sats. invisible.~~

Obs. J. J. I. Phot. R. Comp. with
atcl. III. W. obs. Powe rec.

15 35 - Sats invisible.

15 46 " "

15 54 " "

38.5

15 56 Sats mot. seen well enough to get setting. Clouds and daylight.

15 58 Put on no I eyepiece. Sats. two and three very faintly seen. sat I barely suspected at times. Clouds thicker.

16 2 It is now after theoretical time of obs. but no sats. visible.

16 03 Sats II. & III. faintly seen. but sat I. not seen.

July 27, 1891.

Circumpolar Variables

M. obs.

T. Ursae Maj.

12.	33	+60.4
17	13	
4	40	

u 30 *T*, *S* 1.5 *w* in large tel.
Too faint for finder
Est. 12.9

8 40

R. Camelop.

14	40	+84.1
17	18	
2	38	

n 1.0 *R*, *R* 3.0 *o* in large tel.
Too faint for finder
Est. 12.9

8 56

July 27, 1891.

S Cygni

20	8	+57.1
17	33	
2	35	
12	00	
9	25	

S Cygni certainly seen at intervals

$S = u$ in large tel.

Too faint for finder

Est. 15.1

9 13

S Cephei

21	37	+78.3
17	51	
3	46	
12	00	
8	14	

$S = 0$ in large tel.

Rather too faint for finder

Est. 12.5

9 26

4

July 27, 1891.

R Ursae Maj.

10	33	+69.3
<u>18</u>	<u>14</u>	
7	41	

10	33
<u>18</u>	<u>20</u>
7	47

R = φ in large tel
 R = φ in finder
 Est. 10.5

S Ursae Maj.

12	34	+61.7
<u>18</u>	<u>30</u>	
5	56	

S = ϵ in finder
 ϵ 2.9 S, S 4.0 φ in large telescope.
 Est. 8.1

July 27, 1891.

R Draconis

16	26	+67.4
18	46	
2	20	

15 ^{3.5}₄₀R, R 1.0 l in large telescope
 # R = l in finder
 Est. 9.8

10 20

R Ursae Min.

16	34	+72.8
18	59	
2	25	

d 3.0 R, R 1.0 e in finder
 d 3.0 R, R 1.0 e in large telescope
 Est. 9.5

10 28

S Persei

26	8	+57.2
19	7	
4	1	
12		
4	59	

d 1.0 S, S 2.0 e in finder
 d 1.5 S, S 2.0 e in large tel.
 Est. 9.0

10 40

July 27, 1891

J. Persei

$T = e$ in large tel.
 $T = e$ in finder
 Est. 9.1

10

41

R Aurigae

5	3
---	---

+53.0

19	20
----	----

17

29	3
----	---

19	20
----	----

9	43
---	----

12	00
----	----

2	17
---	----

10

51

R 2.0 R, R 1.0 L in large telescope
 R 2.0 R, R 1.0 L in finder
 Est. 10.5

R. Lynx

38

50

+55.1

19

30

11

20

12

00

40

July 27, 1891

R Lyncis

30	50	+55.1
19	33	
11	17	
12		
	43	

30	51	+54.3
19	38	
11	13	
12		
0	47	

g 2.5 R, R 2.5 h in large telescope
 g 2.0 R, R 2.0 h in finder
 Est. 9.8

11 11

July 31, 1891

Circumpolar Variables.

M. obs.

I Ursa Maj.

12

33

+60.4

17

00

4

27

Sky rather too bright.

8 22

Sky still too bright.

u ^{2.5} ~~2.5~~ I, I 2.5 m in large tel.
 Rather too faint for finder
 Est. 12.8

8 27

R Camelop.

14

40

+84.1

17

19

2

39

8 45

L ^{2.0} ~~2.0~~ R, R 1.5 m in large telescope
 L 2.0 R, R 1.5 m in finder
 Est. 12.5

July 31, 1891.

S Cygni

20 8

+57.1

17 37

2 31

12

9 29

Variable exceedingly difficult, adjacent
8.9 Mag. star put behind bar. Variable thought
to be glimpsed at intervals, it is certainly a
little fainter than star α which is about
at limit of visibility and is not steadily seen,
although it is certainly seen.

α 1.0 S, in large tel.

Too faint for finder
Est. 15.1

8 55

Alephei

21 37

+78.3

17 46

3 51

12

8 9

α 4.0 S, β 1.0 α in large telescope.

α 4.0 S, β 1.0 α in finder

Est. 12.2

9 09

July 31, 1891.

R Ursae Maj.

10	33	+69.3
18	1	
7	28	

9 22 ϕ 5.0 R, R 1.0 g in large tel.
 ~~ϕ 4.0 R, R = ϕ in finder.~~
 Est. 10.3

S Ursae Maj.

12	34	+61.8
18	15	
5	481	
12	00	
6	19	

9 35 e 3.0 S.S 4.0 f in finder
 e 3.0 S.S 4.0 f in large tel.
 Est. 8.2

R Draconis

16	16	+67.5
18	30	
2	48	

10 1 μ 1.0 R, R 2.5 σ in finder
~~in 2.0 R, R 1.0 σ in finder~~
 ~~μ 2.0 R, R 2.0 σ in large telescope~~
 Est. 10.8

July 31, 1891.

R Ursae Min.

16	33
18	53
2	20

+72.9

10 14

f 1.0 R, R 3.0 g in finder
 e 2.0 R, R 1.0 f in large telescope
 Est. 9.8

S Bootis

14	16
19	6
4	50

+54.6

10 28

f 10 S, S 4.0 g in large telescope
 e 5.0 S, S 1.0 f in finder
 Est. 9.7

P Cephei

21	5
19	21
1	44
12	
10	16

+68.0

10 38

c 5.0 P, P 3.0 d in finder
 c 5.0 P, P 3.0 d in large tel.
 Est. 6.5

July 31, 1891.

R Cassiop.

23 51

+49.7

19 30

4 21

12

7 39

R = p in large telescope

R = p in finder.

Est. 10.3

10 48

I Cassiop.

24 18.

+55.9

19 36

4 42

12 00

7 18

I = g in finder

of 30 I, I 2.0 g in large tel.

Est. 8.7

10 59

August 6, 1891.

Circumpolar Variables
R Lusa Maj.

Reed obs.

10	-	34	+69.18
17		48	
7		11	

Variable $R = g$ in large tel.
Variable $R = 3.0 R$ " " "

8 47

S. Regni

20	03	+57.42
18	4	
1	59	

12	
10	1

20	3
18	9
1	54

12	00
10	06

20	03
18	22
1	41

12	00
10	19

Invisible.

If u is close companion to l it is visible.

Aug. 6, 1891

S Cephei

21	36	+78.10
18	47 9	
2	47	
12	00	
9	13	
21	36	
19	00	
2	36	
12	00	
89	24	

10 25

n 4.0 γ in large tel.
 γ 2.0 " " "

R. Camelop.

14	25	+84.17
19	36	
5	11	
14	25	
19	43	
5	18	

10 40

R. l 3.0 γ in large tel.
 γ 2.0 m " " "

Aug. 6, 1891.

R Cassiop.

23 53

19 55

3 58

12 00

8 2

~~50~~ +50.50

Tuesday Aug. 11, 1891

Q 94
13 44^m 00
45^m 00

P. 4 b. 1182.
13 44^m 3 56.8
44 57.0

Lis. Jy. I Comp. Vol. ~~preceding~~
Phot. R. R. Obs. T. E. R. rec.

14	5 ^m	260	134.8
		41.5 ^m	170.3
		54.0	131.6
	6	8.5 ^m	158.3
		22.5 ^m	91.4
		45.0	195.3
	7	3.5 ^m	91.5 ^m
		16.5 ^m	195.4
		39.5 ^m	91.5 ^m
		52.5 ^m	199.2
	8	5.0	89.6
		15.0	201.9
		40.0	89.2
		52.0	197.6
	9	8.5 ^m	88.8
		21.5 ^m	202.6
		Clouds.	

Tuesday Aug. 11. 1891.

14 ^h	9	35.5	88.7
	10	00.0	206.4
		15.0	89.2
		25.0	200.4
	11	40.5 - 4.5	85.4
		20.5	199.0
		35.0	85.5
		Clouds continually passing.	
	12	2.5	194.1

14^h 15^h Jup. invisible
 14^h 18^h Sat. not ^{seen} Jup. & nearly clear.

Images elongated on ^{owing} account of
 to separation.

Reject.

994

14 28 00
 29 00
 30 00

94.6 1152

14 27 07.1
 28 57.0
 29 56.9

Wednesday Aug 13 1891

B. 94
8^h 9^m 00
10 00

B. L. 1182
8^h 50.8
9 51.0

9.0 sec.

Dis. Jap. I. Comp. with preceding. = III
Phot. R. & Abstr. Power recorder.

8^h ~~37~~
~~35~~
34.0 191.7 28.6 220.3 28.6
47.0 28.6 190.2 28.6 218.5 205.2
50.5 56.0 202.0 28.6 190.2 821.0
59.5 50.5 28.6 205.2
59.5 54.5

39
[38] 8
49.5 53.0 198.0 73.4 240.2 73.4
58.5 1.5 49.5 64.9 173.5 69.1 238.5 204.6
9.5 167.2 75.3 242.5 72.1 169.2 73.7 241.3 205.0
19.0 23.5 28.0 94.0 72.1 169.2 73.7 241.3 205.0
32.5 37.5 23.5 32.5 73.7 241.3 205.0
48.0 57.0 79.5 244.0 73.1 167.0 76.3 240.1 203.9
40
[39] +2 1.4 51.5 245.5 73.1 167.0 76.3 240.1 203.9
10.4 10.4 10.4

Wednesday Aug. 13, 1891

42	41.5	16.0	79.4	166.0
19.9	25.5	79.5	24.5	✓
28.9	33.5	19.9	73.4	166. ✓ 817.6
	45.0	28.9	76.4	239.8 204.4
	49.0			165.5
56.7	38.0	227.0	734	241.2
[42] 6.7	15.0	56.8	749	168.3 820.6
	22.5	5.8	74.1	243.2 205.1
	30.5			165.7
35.5	39.5	39.5	78.5	243.6
44.5	49.5	142.0	70.5	243.6
	58.0	38.5	745	170.5 820.6
	51.0	44.5		241.2 205.1
43	12.0	33.5		165.2
8.4	18.5	8.4	74.8	240.0
17.4	27.5	17.4	69.7	170.0 814.4
	37.5	36	72.2	239.7 203.7
	47.5	46		167.3
	53.5	56		241.6
	51.5	44		171.8
44	41.5	14		240.1
	25.8	24		173.2
	31.0	34		237.7
	32.5	40		173.2
	42.5	41		236.2
	49.0	51		173.8
	51.0	58		234.7
		45		175.6
		44		231.8

Wednesday Aug. 13, 1891

$\frac{1}{8}$ $\left[\frac{45}{1} \right]$

5.5	12	175.5
11.5	20	228.2
17.5	26	177.5
24.5	34	231.0
30.5	39	177.8
37.0	46	228.8
45.0	54	180.0
52.5	46 42	228.8
59.0	8	186.2
6.5	16	225.8
14.0	23	187.7
20.5	30	225.2
27.5	36	188.4
34.5	44	219.7
42.5	52	193.0
48.0	57	217.5

46.

Error of 1 minute = several. Later minutes
probably correct

$\frac{1}{9}$ $\frac{394}{2}$ 00
3 00
4 00

$\frac{1}{9}$ $\frac{1182}{1}$ 00.5
2 00.6
3 00.7

9.3 sec.

Monday, Aug. 17, 1891.

Bme 394

17 43.0 0.0

44 0.0

B+C 1182.

17 43 55.0

44 54.9

Tuesday Aug 18, 1891

Bund 394

15 30 ~~30.0~~
31 ~~30.0~~

B+C 1182

13 29 51.0
30 51.0

Diap. Jupiter I. Photometer R. Comparison Sat. precede
following of II. P. drum. Recorder.
Comp. with Sat. IV.

4 02 15.5

30.5

146.6 44.5 36.5
36.5 46

46 55.5

03 23.0

34.5

164.0 47.5 41.0
41.0 50
51 59.0

04 10.5

20.5

106.5 32.5 26.6
26.6 36
37 43.0

58.0

05 9.0 29.8
39

05 119.0 52.0
29.8

06 40 0.0

10.5

114.0 25.5

28.5 31.5 28.5
38 38

46.5

160.8

97.2 258.0

103.9 156.9

100.6 260.8 209.1

156.4

103.4 259.8

107.4 156.2

105.4 263.6 209.0

158.4

103.8 262.2

105.8 153.0

104.8 258.8 208.1

155.6

99.0 254.6

95.6 160.8

97.3 256.4 206.8

161.2

95.8 257.0

103.1 155.5

99.4 258.5

208.0

97.2 836.5 103.9
209.1 201.1 100.6

103.4 107.4
836.0 210.8
209.0 105.4

103.8 105.8
832.4 209.6
208.1 104.8

99.0 95.6
827.4 194.6
206.8 97.3

95.8 103.1
198.9 99.4
832.1 208.0

Aug 18, 1891

4 07 58.5
 21.0 36.5
 147.0 39.0 46
 36.8
 08 47 5.5
 19.5
 33.0
 153.5 45.5 38.4
 38.4 47
 48 53.5
 9 5.0
 14.5
 72.5 22.0 18.1
 18.1 27
 28 31.0
 39.0
 47.5
 212.0 58.0 53.0
 53.0 20
 10 3 7.5
 20.5
 33.0
 149.5 43.0 37.4
 37.4 46
 47 53.0
 11 3.5
 11.0
 19.0
 26.0
 33.0
 41.0
 49.0
 56.0

158.5
 96.8 255.3 827.7
 206.9 6
 97.5 158.2 96.8
 97.2 255.7 206.9 97.5
 194.3
 97.2
 163.6 841.1
 210.3
 94.8 258.4 94.8
 93.5 162.8 93.5
 148.3
 94.2 256.3 210.3 94.2
 157.2 825.6
 206.4
 97.2 254.4 97.2
 90.4 161.8 90.4
 187.6
 93.8 252.2 206.4 93.8
 163.0 827.8
 206.9 88.1 251.1 88.1
 87.5 163.1 87.5
 87.8 250.6 206.9 87.8
 161.8 826.4
 206.6 92.6 254.4 92.6
 86.6 161.8 86.6
 88.6 248.4 206.6 88.6
 163.3
 243.9
 169.8
 243.7
 171.7
 239.6
 172.2
 239.8

Aug 18, 1891

4	12	7.0	178.6
		14.0	235.5
		23.0	178.3
		30.5	232.8
		40.0	185.0
		49.0	239.3
		57.0	190.0
13		4.0	221.1
		39.0	196.9
		54.0	219.4
14		3.0	199.2
		14.5	222.1

Seeing fairly good

B394			B+C		
16	33	0.0	16	32	49.8
	34	0.0		33	50.0

Aug. 19. 1891.B394.

13 05 0.0

06 0.0

B+C 1182.

13 04 40.0

05 40.1

19.9 sec

Disap. Jupiter II Camp. with sat III (?) II sat. following -
 Phot. R. Pol. F. rec. Seeing good -
 Comp. with Sat. III.

1 37 14.5
 25.0
 118.5 35.0 29.6
 29.6
 50 44.0 50

38 17.5
 28.0
 134.0 37.5 33.0
 33.0
 53 49.0 53

39 9.0
 19.0
 110.0 36.0 27.5
 27.5
 49 46.0 48
 54.5

40 6.5
 43.5 16.5 10.9
 10.9
 32 26.0 32
 35.0
 46.0
 211.0 59.5 52.8
 52.8
 14

41 10.5 13.8
 20.5

161.6
 18.1 179.7 683.0
 170.8
 15.7 163.0
 16.9 178.7 170.8

135.3
 70.7 206.0 684.4
 171.1
 72.7 135.2
 71.7 207.9 171.1

133.6
 72.9 206.5 686.0
 171.5
 70.7 137.6
 71.8 208.3 171.5
 134.0

74.7
 71.6
 146.3
 73.2
 74.7
 71.6
 146.3
 73.2
 74.7
 71.6
 146.3
 73.2

137.2
 70.8 208.0 686.5
 171.6
 69.3 136.0
 70.0 205.3 171.6
 134.4

chelonor

car 202.

car 212.

Aug 19, 1891

41	30.5		70.8	205.3	646.0	70.9
167.5			67.1	139.6	171.8	67.1
41.9	53.5	41.8	690	206.7	171.5	138.0
3		2.9				69.0
42	3.0					
	14.0					
128.5	27.0		737	207.5	683.4	73.7
32.1			69.7	136.2	170.8	69.7
53	38.0	32.1	71.7	205.9	170.8	143.4
	49.5	53				71.7
43	0.5					
66.0	12.0		72.2	207.0	686.4	72.2
16.5			69.0	137.8	171.6	69.0
37	22.0	16.5	70.6	206.8	171.6	140.2
	31.5	38				70.6
	41.5					
215.0	49.0		67.6	206.0	692.7	67.6
53.8			74.9	136.7	173.2	74.9
15	58.0	53.7	71.2	211.6	173.2	142.5
	6.5	15				71.2
44	16.5					
120.5	25.0		67.6	206.4	688.2	67.6
30.1			69.8	136.6	172.0	69.8
51	34.0	30.1	68.7	206.4	172.0	137.4
	45.0	51				168.7
	54.0					
45	2.5		71.4	205.5	679.2	71.4
31.5			70.8	134.4	169.8	70.8
7.9	11.5	7.8	71.1	205.2	169.8	142.2
29	23.5	29				71.1
	32.0					
191.5	43.5		69.0	205.2	683.3	69.0
47.9			71.1	135.4	170.8	71.1
9	53.0	47.8				140.1
			70.0	206.5	170.8	70.0
46	3.0	9				

Aug 19, 1891

1	46	18.5-		141.2	
		28.0		65.0	206.2
		36.0	31.5	65.0	138.2
		43.5	52	65.0	203.2
		54.0			172.2
		4.0			139.3
1	47	13.5-			205.2
		28.5-			140.6
		36.0			200.8
		43.5-			142.4
		51.0			196.3
		58.0			146.1
	[48]	16.0			199.4
		15.0			142.0
		22.0			194.1
		30.0			149.2
		36.5-			194.2
		42.5-			153.8
		48.5-			190.2
		54.5-			154.5-
		1.0			187.6
	[49]	6.5-			158.2
		12.5-			187.4
		19.5-			158.6
		26.0			182.7
		32.0			160.8
		38.5-			180.0
					163.5

Aug 19, 1891

1 49.5 50.0

176.7

B394

15 45 0.0

46 0.0

B+C 1182

15 44 37.3

45 37.2

22.8 sec.

Circumpolar Var. Aug. 20, 1891.
 I Arctae Maj.

Reed obs.

12	31
18	00
5	29

+60.3

12	31
18	5
5	24

In focus
 Star = 52.5
 50.5

Out of focus
 Star = 83.5
 70.5

I. Pygmae

20	3
18	25
1	328

+59.42

12	
10	22

20	3
----	---

18	35
----	----

1	28
---	----

12	00
----	----

10	32
----	----

20	3
----	---

18	45
----	----

1	18
---	----

12	00
----	----

10	42
----	----

Aug 20, 1891.

B 394

10 20 00
10 21 00

B 10, 1182
10 19 20.2
10 19 20.2
10 20 20.1

39.90.

Direct Jupiter I Photo. R. Camp with Set focusing = III.
Jupiter. P. obs. 7 records.

(Clock error = 40.2.)
(After 11 45 26 = 41.4.)

10 31 31.5
42.0
189.0
47.2 53.0 47.2
27
32 21.5-32 27.2
11.5

121.0 24.0
30.2
10 37.0 30.2
48.5-33 10.2

33 1.5
57.5 9.0
14.4
54 18.0 14.4
29.0 54.4
39.0

270.0 48.5
52.5
32 57.0 52.5
34 51.5 32.5
15.0

113.5 23.0
28.4
8 32.0 28.4
43.5-35 8.4
56.0

237.3
80.2 317.5 1106.1 80.2
276.5 76.9
76.9 237.2 157.1
78.6 314.1 276.5 78.6

238.1
81.6 319.7 1107.7 81.6
276.9 73.3
73.3 238.3 154.9
77.4 311.6 276.9 77.4

242.3
69.3 311.6 1108.0 69.3
277.0 73.7
73.7 240.2 143.0
71.5 313.9 277.0 71.5

239.8
72.3 312.1 1103.9 72.3
276.0 72.0
72.0 240.0 144.3
72.2 312.0 276.0 72.2

240.3
73.7 314.0 1105.6 73.7
276.4 72.2
72.2 239.3 146.4
73.2 312.0 276.6 73.2

Aug 20, 1891

35	5.0	75.1	313.1	1106.8		75.1
43.0	15.0	74.7	240.5	276.7	6	74.7
50.8	10.8					149.8
51	27.0	74.9	315.2	276.7		74.9
	37.0		242.7			
	46.0	67.1	309.8	1110.6		67.1
201.0	55.0	70.5	243.8	277.6	7	70.5
50.2	50.4					137.6
30	36	68.8	314.3	277.6		68.8
	30.4		238.0			
	3.0	74.8	312.8	1104.4		74.8
	11.0	77.8	237.9	276.1	A	77.8
101.5	20.0	76.3	315.7	276.1		152.6
25.4	30.0		242.4			76.3
5	25.4					
	40.5	74.8	317.2	1115.1		74.8
	52.0	73.1	241.2	278.8	9	73.1
		74.0	314.3	278.8		147.9
37	11.5		242.0			74.0
29.0	13.0					
7.2	7.2					
47	22.5					
	47.2					
	31.0					
178.5	39.5	71.7	313.7	1109.5	10	71.7
44.6	50.0	70.2	241.8	277.4		70.2
25	44.6	71.0	312.0	277.4		141.9
	58.0		244.0			70.0
	38					
	24.6					
38	19.5	66.3	310.3	1101.2		66.3
101.5	19.5	70.3	238.3	275.3	11	70.3
25.4	30.5		308.6	275.3		136.6
5	20.4	68.3	243.3	275.3		68.3
	42.0					
	39.04					
	53.0					
39	0.5		309.6			
24.0	9.5		246.8			
5.2	119.0		308.2	277.0		

Aug 20, 1891

39	28.0	247.0
	36.5	303.2
	46.0	250.1
	59.5	299.0
40	11.0	254.1
	17.0	297.2
	23.5	254.3
	30.5	295.6
	37.5	258.6
	44.0	294.2
	49.5	257.3
	55.0	292.2
f1	1.0	262.7
	7.0	288.4
	15.0	29 268.3
	41.0	270.2
	50.5	283.4
42	0.0	270.4
	10.0	283.6

Seeing fairly good.

Aug 20, 1891

B 394

0	7	0.0
	8	0.0

B+C 1182

0	6	18.7
	7	18.5

41.5

Aug 21, 1891.

B 394

10 58 0.0

59 0.0

B+C 1187

10 56 57.5

57 57.6

Aug 22, 1891

Band 394

15	37	0.0
•	38	0.0

B+C 1182,

15	36	57.7
	36	57.7

Aug. 24, 1891B394

15	58	0.0
	59	0.0

B+C 1182

15	56	7.1
	57	7.1

Aug. 25, 1841B394

13 49.0

50.0

B+C 1182

13 46 52.1

47 52.0

Aug 26, 1891.B 394.

12 23 0.0

24 0.0

B+C 1182.

12 20 41.5

21 41.5

Aug. 27, 1891,B394,

13 40 0.0

41 0.0

B+C. 1182,

13 37 20.0

38 20.1

Aug. 28, 1891,B. 394

16	19	0.0
	20	0.0

B + C 1182

16	15	54.0
	16	54.0

Aug 29, 1891.339.4.

14 38 0.0

39 0.0

1010 1182.

14 34 36.9

38 37.0

Aug. 21, 1891.

B 324

17	41.	0.0
42		0.0

B+C 184.

17	37	4.0
	38	4.0

Sept. 2, 1891.

Circumpolar Variables. W. obs.

δ Cygni.

$$\begin{array}{r} 20 \quad \delta \quad +57.1 \\ 19 \quad 12 \\ \hline -56 \end{array}$$

δ 10 δ not seen. Str. than 12 ($3\frac{1}{2}$ not.)

δ Cephei.

$$\begin{array}{r} 21 \quad 37 \quad +72.3 \\ 19 \quad 30 \\ \hline -2 \quad 7 \end{array}$$

δ 32 0 2 δ , δ 1 δ in large tel.
Too ft. for finder.
Est. 12.2

δ Urs. Maj.

$$\begin{array}{r} 12 \quad 32 \quad +60.4 \\ 19 \quad 40 \\ \hline +17 \quad \delta \end{array}$$

δ 55 0 3 δ , δ 2 δ in large tel.
Rather too ft. for finder.
Est. 11.6

Sept. 2, 1891.

R Camelops.

$$\begin{array}{r}
 14 \quad 40 \quad + 24.1 \\
 20 \quad 2 \\
 \hline
 + 5 \quad 22
 \end{array}$$

9 17

f 2 R, R 3 g in large tel.
 f 1 R, R 3 g in finder.
 Est. 9.9

R Draconis.

$$\begin{array}{r}
 16 \quad 26 \quad + 67.4 \\
 20 \quad 26 \\
 \hline
 + 4 \quad 0
 \end{array}$$

9 40

p 3 R, R 1.5 g in large tel.
 Too fth. for finder.
 Est. 11.9

R Boötis.

$$\begin{array}{r}
 14 \quad 16 \quad + 54.6 \\
 20 \quad 55 \\
 \hline
 + 6 \quad 39
 \end{array}$$

10 10

R = h in large tel.
 R = h " finder.
 Est. 10.8

Sept. 2. 1891.

R Urs. Min.

$$\begin{array}{r} 16 \quad 34 \quad +72.9 \\ 21 \quad 16 \\ \hline +4 \quad 42 \end{array}$$

10 30

~~e 2 R. A 3 f~~
f 2 R. A 3 g in large tel.
f 2 R. A 2 g in finder.
Est. 9.7

N Persei.

$$\begin{array}{r} 2 \quad A \quad +59.2 \\ 21 \quad 40 \\ \hline -4 \quad 28 \end{array}$$

10 55

e 3 *N*, *N* 2 f in large tel.
N = f in finder.
Est. 9.2

Comp.

Star "d" is 1 to 2 mags. brighter than star "c" and 0.5 mags. brighter than star marked with a circle on lithographed chart. It would seem ~~not~~ to be very certainly a variable.

Light slightly foggy and hazy.

Sept 3, 1891

7 45 Examined γ Scorpii. Paul W.

19^h lat time BC. observed α D doublets

Circumpolar Variables, H. obs.

γ Cygni.

$$\begin{array}{r} 20 \quad 2 \quad +57.1 \\ 19 \quad 15 \\ \hline - \quad 53 \end{array}$$

δ 20 γ not seen. H. obs. γ (3^d notation.)

γ Cephei.

$$\begin{array}{r} 21 \quad 37 \quad +74.3 \\ 19 \quad 36 \\ \hline - \quad 2 \quad 1 \end{array}$$

δ 35 α 2, γ , δ 1.5 p in large tel.
Too ft. for finder.
Est. 12.9

Some cloud.

Sept. 3. 1891.

T Vis. mag.

$$\begin{array}{r}
 12 \quad 32 \quad +60.4 \\
 19 \quad 45 \\
 \hline
 +7 \quad 13
 \end{array}$$

A 45

0 2 T, T 2 p in large tel.
 Too ft. for finder.
 Est. 11.0

Cloudy..

Some clearer.

R Draconis.

$$\begin{array}{r}
 16 \quad 26 \quad +67.4 \\
 20 \quad 7 \\
 \hline
 +3 \quad 41
 \end{array}$$

9 10

p 2 R, R 1 q in large tel.
 Too ft. for finder.
 Est. 12.0

Somewhat cloudy at time of above
 est.

Sept. 3. 1891

R Urs. Min.

$$\begin{array}{r}
 16 \quad 34 \quad +72.9 \\
 20 \quad 18 \\
 \hline
 +3 \quad 4.4
 \end{array}$$

9 25

f 2 R, R 29 in large tel.
 Too ft. for finder.
 Est. 9.2

Cloudy.

A little clearer in north west.

J Boates.

$$\begin{array}{r}
 14 \quad 16 \quad +54.6 \\
 21 \quad 25 \\
 \hline
 +7 \quad 9
 \end{array}$$

10 24

R = h in large tel.
~~A~~ h 1 R, R 3 K in finder.
 Est. 11.0

Sept. 3. 1891.

I Persei.

$$\begin{array}{r} 2 \quad A \quad +57.2 \\ 21 \quad 35 \\ \hline -4 \quad 33 \end{array}$$

10 53

d 2.5 - I, I 1 e in large tel.
 d 3 I, I 1 e in finder.
 Est. 9.4

I Persei.

11 57

I = e in large tel.
 I = e in finder.
 Est. 9.5

The star assumed to be "d" last night was wrong star.
 The right star "d" comes between stars "c" and "e" in brightness as it should.

Night generally rather bad, ^{perhaps} ~~probably~~ affecting estimates a little.
 Light ~~was~~ and rather variable cloud.

Sept. 3, 1891.

B. + C. 11.42.

13	57	1.0
	54	1.1

Bal. 103.

14	1	0.0
	2	0.0

3^m 58.8

14 23 21

2 12

14 31 33

14 1 0

30 33

13 57 1

14 27 34

Ap. time ecl.

Disap. Sat. I. Phot. W. W. de. F recorder
Compare with Sat IV.

Corr 3^m 59^s

2 9 47 2

2 10 1.5

19 14 6

30.0 16.0 7.5

7.5

14 26 25.5

37.5

23 5.5

58.9

53.0

58.9

99.9

14 58

11

55

5.5

98.7

19.5

99.6

29.5

222.2

205.0

51.2

50

45.0

106.2

328.5

15 35

57.0

36.2

100.1

224.9

103.2

224.2

105.5

329.7

109.9

224.2

107.7

334.1

278.0

227.1

99.9

327.0

98.7

227.2

99.6

325.9

276.8

222.2

106.2

328.5

100.1

224.9

1112.2

278.01

105.5

109.9

215.4

107.7

1107.2

276.8

99.9

98.7

198.6

99.3

1100.6

276.2

106.3

100.1

206.4

103.2

Sept 3, 1891

19 16 42	12	13.5	325.0	225.2
		24.0	229.0	277.6
		170.0 35.5	97.5 326.5	1108.5
		42.5	95.4 228.8	277.1
		41 47.5-42.5	96.4 324.2	277.1
	13	3.0	229.0	
		18.0	98.0 327.0	1108.4
		139.0 27.0	94.0 229.2	277.1
		34.8 42.5 34.8	96.0 323.2	277.1
17 35		34 54.5	231.0	
	14	18.5	94.8 325.8	1114.3
		34.5	95.7 230.9	278.66
		180.0 46.0 44.6	95.2 320.2	rejeck-
		45.0	326.6	278.6
18 44	15	3.5-45.0	227.2	
		21.0	96.8 324.0	1101.3
		246.0 36.0	90.7 229.7	278.3
		1.5 50.0	98.8 320.4	275.3
			93.5 233.2	
20 1	16	13.5 31.5	88.0 321.2	1105.1
19 30		26.5	91.7 229.5	276.3
		40.0	89.8 321.2	276.3
		450.0 57.5	230.7	
		2.5	90.0 320.7	1103.3
21 1.5	17	11.5-2.5	86.3 232.8	275.8
		21.0	88.2 319.1	275.8
		42.0	229.5	
		244.0 55.5		
21 49	18 22 1	9.0 49.5		
		22.5		
		45.5		

50-

Sept 3, 1891

2

19 23 >

19 1.0 —
 31.5 16.0 — 7.9
 7.9 28.0

92.3 321.8 1102.4
 89.5 230.8 276.6
 90.9 320.3 10 92.3
 275.6 141.8
 141.8

317.5
 19.4 20.5

232.2 87.8
 320.0 88.9
 233.3 1107.7
 276.9

24 19

24 18
 20 6.0 19.5

88.4 11

21 42.0
 56.5

322.2 276.9
 234.0

22 16.5 22 22.3

84.2 318.2 1100.6
 84.4 232.0 276.2
 84.3 316.4 84.2
 275.1 141.8
 141.8

26 43

32.0 44.0

84.3 316.4 275.1

47.0

23 2.5

233.1

16.5

323.5 1108.1
 277.0

Sat I practically in contact with
 disc of Jupiter.

27 30

123.0 45.0 30.8
 30.8

90.4 233.5 1108.1
 84.5 318.0 277.0
 87.4

28 9

24 140 (140.0)

233.7

21

22.5

316.7

34

33.5

334.7

44

46.0

319.0

56

57.5

235.8

29 10

25 11.5

316.4

24

23.5

241.2

39

40.5

311.1

58

59.0

244.3

Sept 3, 1891,

19 30 17 2 26 18.5 307.0
 48 49.0 250.2
 31 1P 27 12.5 29571
 31 32.5 ~~Sat I entirely~~
~~disappeared behind disc of Jupiter.~~
 not seen -
 Sunk of mids -

31 22.0 264.7 1110.3
 36.5 190.0 240 290.7 277.6 26.0
 47.5 24.9 265.0 24.9
 57.0 47.5 25.4 289.9 50.9
 32 14.5 277.6 25.4

much troubled in all the above
 settings by very close proximity
 of Sat I to Jupiter. Sat I dis-
 appeared in contact with Jupiter
 disc so that it is a little un-
 certain whether Sat actually dis-
 appeared before going behind
 disc, or not.

Balloon 103

15 1 0.0
 2 0.0

BTC 1182

15 56 59.0
 57 59.0

4^m 1.0

Sept. 4. 1891.

N Cygni.

W. obs.

$$\begin{array}{r} 20 \quad A \quad +57.1 \\ 14 \quad 52 \\ \hline -1 \quad 16 \end{array}$$

7 KA

Not seen. Star is thought to be seen. *N* Prob. *flr.* than 15.1

N Cephei.

$$\begin{array}{r} 21 \quad 37 \quad +72.3 \\ 19 \quad 0 \\ \hline -2 \quad 37 \end{array}$$

2 A

0 2 *N*. *N* 1 *p* in large tel.
Too *flr.* for finder.
Est. 12.9

Sept. K. 1291.

T Mrs. May.

$$\begin{array}{r} 12 \quad 32 \quad + 60.4 \\ 19 \quad 20 \\ \hline + 6 \quad 42 \end{array}$$

A 31

0.2 T, T 2 ft in large tel.
Rather too faint for Finder.
Est. 11.2

T Mrs. May.

A 50

f 1.5 N, N 1 g in Finder.
f 2 N, N 1 g in large tel.
Est. 9.0

R Mrs. May.

$$\begin{array}{r} 10 \quad 32 \quad + 69.2 \\ 20 \quad 3 \\ \hline + 9 \quad 31 \end{array}$$

9 10

0.1 R. R 4 t in large tel.
Too ft. for Finder.
Est. 11.4

Sept. 4. 1291.

S Boötis.

$$\begin{array}{r}
 14 \quad 16 \quad + 54.6 \\
 20 \quad 25 \\
 \hline
 + 6 \quad 9
 \end{array}$$

9 29

$\underline{S} = L$ in larger tel.
 In pt. for finder.
 Est. 11.3

R Urs. min.

$$\begin{array}{r}
 16 \quad 34 \quad + 72.9 \\
 20 \quad 45 \\
 \hline
 + 4 \quad 11
 \end{array}$$

9 50

f 2 R. R 29 in larger tel.
 f 1. R. R 29 in finder.
 Est. 9.5

R Draconis.

$$\begin{array}{r}
 16 \quad 26 \quad + 67.4 \\
 21 \quad 5 \\
 \hline
 + 4 \quad 39
 \end{array}$$

Sept. 4. 1891.

10 3

p 3 R, R 1 g in large tel.
Lo ft. for finder.
Est. 12.0

Clouds and haze.

Somewhat clearer.

R Aurigae.

$$\begin{array}{r} 5 \quad 3 \quad + \quad 53.0 \\ 21 \quad 25 \\ \hline -7 \quad 34 \end{array}$$

10 35

g 2 R, R 3 h in large tel.
g 2 R, R 3 h in finder.
Est. 9.0

Sept. 4. 1891.

At Lyneis.

$$\begin{array}{r} 6 \quad 49 \quad +55.1 \\ 21 \quad 49 \\ \hline -9 \quad 01 \end{array}$$

10 45 Sky becoming too cloudy for farther estimates.

Sept 27, 1891

Ballon 103

16	4	0.0
	5	0.0

R+C 1182

15	59	30.3
16	0	30.3

Sept. 8. 1891.

Circumpolar Variables.

To obs.

✓ Cygni.

$$\begin{array}{r}
 20 \quad A \quad +57.1 \\
 19 \quad 0 \\
 \hline
 = 1 \quad A
 \end{array}$$

I not seen
 compared ~~to~~ ^u seen.

I probably fainter than 15.1

D Cephei

$$\begin{array}{r}
 21 \quad 37 \\
 19 \quad 10 \\
 \hline
 2 \quad 27 \\
 12 \quad 00 \\
 \hline
 9 \quad 33
 \end{array}$$

+78.3

~~to obs~~o 2.0 D, D 1.0 p in large tel.o 2.0 D, D 1.0 p in finder but faint

Est. 12.5

Sept. 8, 1891.

R Ursae Maj

10	32
19	25
8	53

+69.2

δ ~~A~~ 1.0 R, R 3.4⁵ t in large telescope
 $\delta = R$ in finder (very faint)
 Est 11.7

8 14

 δ Bootis

14	16
19	40
5	24

+54.6

δ 1.0 δ , δ 4.0 m in large tel.
 $\delta = \delta$ in finder
 Est. 10.9

8 26

R Ursae Min.

16	34
19	52
3	18

+72.9

δ 2.0 R, R 1.0 f in large tel.
 δ 2.0 R, R 1.0 f in finder
 Est. 9.5

8 38

Sept. 8, 1891.

R Draconis

16 26

+67.4

20 7

3 41

9 1.0 R, R 2.0 in large tel.

9 2.0 R, R 1.0 in finder (very faint)

Est. 12.3

(8 53)

J Ursae maj.

12 32

+60.4

20 22

7 50

J = \bar{n} in large tel.J = \bar{n} in finder

Est. 10.5

9 12

R Cassiop

23 57

+49.7

20 43

3 8

12 00

8 52

9 3.0 R, R 2.05 in large tel.

Too close for finder

Est. 10.8

9 27

Sept. 8, 1891.

J Cassiop.

$$\begin{array}{r} 24 \quad 19 \\ \hline 20 \quad 55 \\ 3 \quad 24 \end{array}$$

+55.9

$$\begin{array}{r} 12 \quad 00 \\ \hline 8 \quad 36 \end{array}$$

$\bar{J} = 9$ in large tel.
 $y \ 1.5 \bar{J}, \bar{J} \ 2.0 \text{ h in finder}$
 Est. 8.8

9 40

S Cassiop.

$$\begin{array}{r} 25 \quad 10 \\ \hline 21 \quad 8 \\ 4 \quad 2 \end{array}$$

+72.1

$$\begin{array}{r} 12 \quad 00 \\ \hline 7 \quad 58 \end{array}$$

$S = h$ in finder
 $S = h$ in large tel.
 Est. 9.1

10 0

S Persei

$$\begin{array}{r} 26 \quad 8 \\ \hline 21 \quad 29 \\ 4 \quad 39 \end{array}$$

+57.2

$$\begin{array}{r} 12 \quad 00 \\ \hline 7 \quad 21 \end{array}$$

e $2.0 \bar{S}, \bar{S} \ 2.0 \text{ f in finder}$
 d $2.0 \bar{S}, \bar{S} \ 2.0 \text{ e in large tel.}$
 Est. 8.8

10 18

Sept. 8, 1891.

I Persei

d 2.0 \bar{I} , \bar{I} 2.0 e in finder
d 2.0 \bar{I} , \bar{I} 2.0 e in large tel.

Est. 8.7

R Aurigae

29 3

+53.0

21 46

7 17

12 00

4 43

29 3

21 51

7 12

12 00

4 48

g 1.5 \bar{R} , \bar{R} 4.0 h in finder
g 2.0 \bar{R} , \bar{R} 3.0 h in large tel.

Est. 9.3

R Lynx

30 49

+53.0

22 4

8 45

12 00

3 15

Sept. 8, 1891.

$$\begin{array}{r}
 30 \quad 51 \\
 \hline
 22 \quad 12 \\
 8 \quad 39 \\
 \hline
 12 \quad 00 \\
 3 \quad 21
 \end{array}$$

+544

m 3 R, R 2 n in large tel.
 Rather too faint for finder
 Est. 11.1

10 53

R Camelop.

$$\begin{array}{r}
 14 \quad 40 \\
 \hline
 22 \quad 20 \\
 7 \quad 40
 \end{array}$$

+841

e 4.0 R, R 1.0 f in large tel.
 e 3.0 R, R 2.0 f in finder
 Est. 9.5

11 6

Sept. 9, 1891.

Circumpolar Variables

W. obs.

S Cygni

20	8
19	27
00	41
12	00
11	19

+57.1

S Cygni carefully looked for, ^{but} not seen, star
~~+~~ ^u thought to be seen. *S Est.* fainter than 15.1
 8 5 Moon approaching the quarter but low

S Cephei

21	37
19	40
1	57
12	00
10	3
21	37
19	45
1	52
12	00
10	8

+78.3

0 2.5 S, S 1.0 p in large tel.
 Too faint for finder
 Est. 12.5

Sept. 9, 1891.

~~R Draconis~~
R Ursae Maj.

10 32

+69.2

20 00

9 28

Δ 1 R, R 3_± in large tel

Rather too faint for finder

Est. 11.5

8 40

R Draconis

16 26

+67.4

20 10

3 44

R = 9 in large tel.

Too f. for finder.

Est. 12.3

8 50

R Cassiop.

23 51

+49.7

20 32

3 19

12

8 41

Sept. 9, 1891

Rel. estimates on comp. stars for circum-
polar Variables

R Cassiop.

a 5 b

t 3 c

c 3 d

~~d 5.5 e~~

d 5 e

e 5^b f

f 4.5 g

g 4.5 h

h 4 i

i 4⁵ j

l 5 m

m 5 n

n 4⁵ o

o 4.5 p

p 5.5 q

q 3 r

r 4.5 s

s 4 t

t 3⁵ u

u 4 v

w 4 x

x 3 y

y 2.5 z

z 3 t

t 3.5 β

(over)

Sept. 9, 1891.

$\bar{r} \ 2 \ R, R \ 2 \ 8$ in large tel.
 300 close and faint for finder
 Est. 10.5

10 m4

Comet Grolff. Gr. obs.

3 51 +22.6

Pos. Zero, 165.2

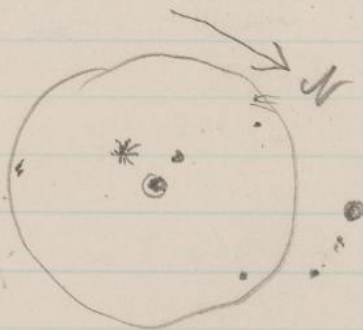
Setting $\frac{KV.0}{210.2}$

2 2	29 ^h	38 ^m .6	*
	29 ^m	51 ^s .1	*
	30 ^m	58.9	OE
	31 ^m	32.5	OE
	31 ^m	59.0	
	32 ^m	11.6	
	33 ^m	19.6	
	33 ^m	33.1	
	34 ^m	16.5	
	34 ^m	29.5	
	35 ^m	34.0	
	36 ^m	11.5	

Sept. 9, 1891.

22	36	35.3
	36	48.3
	34	56.2
	38	30.6
	38	54.6
	39	8.0
	40	15.5
	40	50.8

Order in preceding transits

* * \odot \odot Star in southern half outside
Comet in northern " inside

Comp. star = A, 4 mag.

A 9 mag fol comp. star 26.5, 2' north
at 6.5 " ~~from~~, 10 " 2 ~~from~~ reco, 12' south, \therefore Comp. Star = $\Delta m. + 22^{\circ} \frac{602}{702}$ (8.0 R)

Sept. 9. 1891-

Setting on 6.5 mag,
Dec. +21.7

Time 22h 00m
H. at Circ. reads 0^m 0^s
which means. -5h 0^m

Comet 10.5 mag.
Faint tail 1^h 2' long, extending
to preceding, a little south,

B. 236.			Ballou 103.		
22	59	34.5	11	29	0.0
23	0	34.5		30	0.0

i. B. 236 is 0^m 36.3^s slow.

Sept. 10, 1896
 Circumpolar Variables. It. obs.

$$\begin{array}{r}
 \text{S Cygni} \\
 20 \quad 2 \quad + 57.1 \\
 19 \quad 13 \\
 \hline
 - \quad 0 \quad 55
 \end{array}$$

Star ~~"4"~~^{"u"} thought to be seen.
 7 45 S Cygni not seen. Prob. p. 10. Chas
 15.0 Moon about at the quarter but
 low in southwest.

S Cephei.

$$\begin{array}{r}
 21 \quad 37 \quad + 74.3 \\
 19 \quad 33 \\
 \hline
 - \quad 2 \quad 4
 \end{array}$$

A A 0 2 S, S 1 p in large tel.
 Los ft. for finder.
 Est. 12.3

Sept. 10. 1891.

R Urs. maj.

$$\begin{array}{r}
 10 \quad 32 \quad +69.2 \\
 19 \quad 46 \\
 \hline
 +9 \quad 14
 \end{array}$$

A 2A

S 1 R, R 3.5 t in larger tel.
 Too f. for finder.
 Est. 11.7

A Boötis.

$$\begin{array}{r}
 14 \quad 16 \quad +54.6 \\
 20 \quad 13 \\
 \hline
 +5 \quad 57
 \end{array}$$

A 4A

L 2 S, S 3 m in larger tel.
 - Rather too f. for finder.
 Est. 11.1

R Draconis.

$$\begin{array}{r}
 16 \quad 26 \quad +67.4 \\
 20 \quad 30 \\
 \hline
 +4 \quad 4
 \end{array}$$

over.

Sept. 10, 1891.

9 6

9 1 R, R 2 n in larger tel.
 Too ft. for finder.
 Est. 12.1

T Urs. Maj:

$$\begin{array}{r}
 12 \quad 32 \quad + 60.4 \\
 20 \quad 47 \\
 \hline
 + 1 \quad 15
 \end{array}$$

9 22

m 4 J, J 2 m in large tel.
m 3 J, J 1 m in finder.
 Est. 10.3

Rel. Est. of Comp. Stars.
 for R Cassio.

$$\begin{array}{r}
 23 \quad 51 \quad + 49.7 \\
 21 \quad 2 \\
 \hline
 -2 \quad 49
 \end{array}$$

9 37

a 4.5 b
 f 4 g
 g 3.5 h
 x 2.5 y
 y 2.5 z
 z 3 t
 d 3 b

9 52.

Sept. 10. 1891.

9 56

n 3 R, R 1.5 n in larger lot.
- 200 ft. for binder.
Est. 10.8

Becoming cloudy.

R. Lynce's.

$$\begin{array}{r} 30 \\ 21 \\ \hline -9 \end{array} \quad \begin{array}{r} 49 \\ 40 \\ \hline 9 \end{array} \quad + \sqrt{55.0}$$

10 $2\sqrt{}$

in 3 R, R 1.5 m in large tub,
— Low ft. + low for fingers.
Est. 11.0

Count Grolff, Str. No.

R. aurigae
29 3 + 5.0

Sept. 10, 1891.

R. Aurigae.

$$\begin{array}{r}
 5 \quad 3 \quad + 53.0 \\
 22 \quad 2 \\
 \hline
 -7 \quad 1
 \end{array}$$

10 35

21 R, R 3.5 h in large tel.
 21 R, R 3 h in finder.
 Est. 9.2

Comet Taffel. Gr. 10.

$$\begin{array}{r}
 3 \quad 53 \quad + 22 \quad 20 \\
 22 \quad 5 \\
 \hline
 -5 \quad 48
 \end{array}$$

Hound.

Dec. Circle reads +22.0

J. T. = 22^h 11^m

Hour. C. = -5 43

R. A. = 3 54

Sept. 10, 1891.

Pos. Zero, 143.2

45.0

Setting: $\frac{45.0}{143.2}$

22	55	35.6	SE
	56	28.5	SE
	57	16.7	*
	57.5	51.5	*

	58	57.0
	59	46.3
23	0	32.0
	1	13.0

2	30.0
3	20.4
4	11.0
4	46.7

6	5.1
6	56.1
7	45.9
12	21.2

Sept. 10. 1891.

23	9	34.5
	10	30.5
	11	19.0
	11	55.5

Order in preceding transits

E E * *

Both in northern half.

Nucleus fairly well defined.

Fan shaped and faint tail ex-

tending to preceding some 2' off in its principal part - can be traced by indirect vision for 5' or 6' but

faint. nucleus about 10.0 magn.

Total light impression 9.7 magn.

Comp. star = δ m. + 22° 61' (A.A.R.)

B. 236.

23	27	31.0
	28	31.0

Ballou 103.

11	53	0.0
	54	0.0

Sept. 11. 1891.

B. + C. 1182
 11 47 8.0
 42 8.0

B. 394.
 11 52 0.0
 53 0.0

12 30 2A
 A 12

12 3A 40

11 52 0

46 40

11 47 2

12 33 4A.

Sp. time rel.

Sept 11, 1891.

Reef. Jupiter IV, Phot. H. Wok. Free. compared with Sat.
nearest 4 in the night, Probably Sat. I.

~~12~~ 22. 4 dimm; satellites faintly seen.

~~13~~ 26 Sat I almost invisible.

~~13~~ 38 Cloudy

~~13~~ 38 42.5

41 18.5

57.5

42 27.5

52.5

45 47.5

46 28.5

47 6.0

49 20.5

50 8.0

51 25.5

52 9.0

53 5.5

54 9.0

55 49.0

57 8.0

58 9.5

58 43.0

Sat I practically invisible

Sat I invisible.

Sat IV suspected

" seen.

clouds -

329.2 26.7 0.1

55.9

clouds - 27.9 0.1

328.0

58.5 - 90.5 0.0

326.7 91.2 -0.1

56.5 - 29.2 0.0

319.9 96.6 -0.3

Sat. invis

cloudy 27.6 0.1

47.5

335.9 71.6 0.7

clouds.

Consider cloudy

Sept 11, 1891.

12	59	48.5	46.5	70.6	
13	0	31.5	330.8	75.7	0.5
	1	23.0	54.9	24.1	0.2
	2	20.5	333.9	21.0	0.3
	3	3.5	52.4	72.5	0.4
		31.0	332.5	79.9	0.4
		56.5	48.5	76.0	0.5
	4	35.5	332.1	76.4	0.5
	5	9.0	53.0	40.9	0.3
		33.5	333.0	40.0	0.4
		59.5	46.2	73.2	0.6
	6	24.0	336.8	69.4	0.4
		47.0	47.0	70.2	0.4
	7	17.5	332.8		
		41.0	51.1		
	8	13.0	332.7		
	9	21.5	53.5		
		46.0	333.2		
	10	17.0	57.8		
		49.0	331.0		
	11	31.5	52.7		
	13	1.0	332.1		
		40.5	51.0		
	14	11.5	328.8		
		38.0	49.4		

Becoming more cloud -

2N. 13	18	0.0	356.5
		27.0	22.0
		35.5	358.5
13	19	9.0	23.6

Sept 11, 1891.

Observation thought of no particular value - Ser. prob. at ^{about} full brightness when first seen. Much cloud all the time during the observation. Growing a little clearer in the latter part of same. S.V. taken under extreme difficulty. Comp. satellite at the very last getting pretty close to disk of planet.

B 394
13 40 0.0
41 0.0

B+C 1182
13 35 $\frac{5}{7.7}$
36 5.6

Sept. 12, 1891.

Circumpolar Variables. W. O. O.

S Cygni.

$$\begin{array}{r} 20 \quad 2 \quad +57.1 \\ 19 \quad 28 \\ \hline -0 \quad 44 \end{array}$$

(14) (57) Region of *S Cygni* carefully examined
S not seen, star ~~"#"~~^{"u"} thought to be seen prob-
 ably fainter than 15.0. Moon a little past
 quarter.

S Cephei

$$\begin{array}{r} 21 \quad 37 \quad +78.3 \\ 19 \quad 37 \\ \hline \end{array}$$

2

12

10

21

37

19

41

1

56

12

10

4

0 2 *S*, *S* 1 *ip* in large tel.

0 1 *S*, *S* 2 *ip* in large tel.

Too fl for finder

Est 12.0

Sept. 12, 1891.

R Draconis

16

26

+67.4

1953

3

27

7 2 R, R 1 n in large tel.
 7 5 100 ft. for finder
 Est. 12.2

J Ursae Maj

12

32

+60.4

2020

7

48

m 3 J, J 1.5 n in large tel.
 m 3 J, J 1 n in finder
 Est. 10.2

R Ursae Maj

10

32

+69.2

2039

10

7

Δ 2 R, R 3 t in large tel
 100 ft. for finder
 Est. 11.7

Sept. 12, 1891.

R Cassiope

23 51

+49.7

20 51

3 00

12 00

9 00

$\approx 1 R, R 3 S$ in large tel.
 100 ft for finder
 Est. 10.9

S Bootis

14 16

+54.6

21 5

6 49

$\approx 1.5 S, S 3 m$ in large tel.
 100 ft. for finder
 Est 11.8

Mr. Reed absent, so that chart could not be obtained.

Comet Halff

3 57

H. obs.

+21.7

27 57

21 30

6 27

12

5 33

(over)

Sept. 12, 1891.

$$\begin{array}{r} 27 \\ 21 \\ \hline 6 \\ 12 \\ \hline 5 \end{array} \quad \begin{array}{r} 57 \\ 40 \\ \hline 17 \\ 00 \\ \hline 43 \end{array}$$

~~21.7~~

$$\begin{array}{r} 27 \\ 21 \\ \hline 6 \\ 12 \\ \hline 5 \end{array} \quad \begin{array}{r} 57 \\ 44 \\ \hline 13 \\ 00 \\ \hline 47 \end{array}$$

Comet too low and sky too bright to see comet at present. ~~Mr.~~

Mr. Rees has now returned.

Selection of Comp. stars for V. Cignani.

$$\begin{array}{r} \text{V Cignani} \\ 28 \\ 21 \\ \hline 6 \\ 12 \\ \hline 5 \end{array} \quad \begin{array}{r} 38 \\ 50 \\ \hline 48 \\ 12 \\ \hline 12 \end{array}$$

+49.8

Sky quite cloudy.

Sept. 12, 1891.

Position

Still too cloudy for relocation
of Comp. Stars for Var.

Corrected Traff.

Loc. etc.

Pos Zero. 350.2
45.0

305.2

22

38

27.5 \equiv

38

55.0 \equiv

39

46.3 *

40

23.0 *

40

58.4

41

25.5

42

16.7

42

53.8

43

29.3

43

55.5

44

46.6

45

24.0

Sept. 12, 1891

22	46	3.0
	46	28.9
	47	20.0
	47	57.4
	48	32.9
	48	58.2
	49	49.2
	50	26.8

Order in preceding transits comet, comet, star
star.

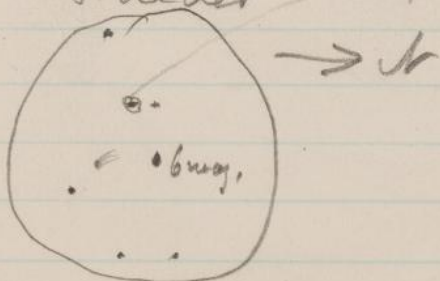
Comet in southern half
Star " northern "

Comp. star 8th mag.

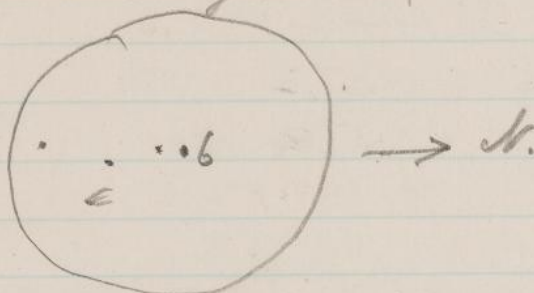
Comp star follows a 6 mag star 38 sec
4.5 minutes of arc south.

A ninth mag star follows comp star 1 sec,
and is 3 min north of it.

Finder comp. star.



Sept. 12, 1891.
Larger Tel.



Comp. Star = $2u. + 21^{\circ} 52'$ (6.5 K)

B. 236

0	59	33.0
1	0	33.2

Bond 394.
~~Bellou 103.~~

13	17	0.0
	12	0.0

Red. Jup. I.

B. & C. 1142

13	42	47.2
	43	47.1

Bond 394.

13	48	0.0
	49	0.0

No stars visible at time of eclipse or for a half to three quarters of an hour previous to same.

Sept. 14, 1891

B. + C. 11 + 2.
 7 6 5.2
 7 5.2

B. 394
 7 12 0.0
 13 0.0

Too cloudy for eclipse.

S Cygni

20 8 + 57.1

21 34

1 26

20 8

21 40

1 32

(9) 50/ S Cygni not seen, star "~~14.9~~"^u suspected, prob-
 ably fainter than 14.9

R Draconis

16 26

+ 67.4

21 48

5 22

S Cephei

21 37

+ 78.3

21 50

13

o 1 S, S 2.5 p in large tel.
 Too fl. for finder
 Est 12.1

Sept. 14, 1891

P. Draconis

$$\begin{array}{r}
 16 \quad 26 \\
 \hline
 22 \quad 1 \\
 5 \quad 35
 \end{array}$$

+67.4

2 ²/₅ R, R 1/2 in large tel.
 4 900 ft. for finder
 Est. 12.1

10 20

Comet Halley

Tr. obs.

$$\begin{array}{r}
 4 \quad 1 \quad +21.0 \\
 28 \quad 1 \\
 \hline
 22 \quad 14 \\
 5 \quad 47 \\
 \hline
 12 \quad 00 \\
 6 \quad 13
 \end{array}$$

$$+3 \quad 50 \quad -42'$$

$$\begin{array}{r}
 27 \quad 56 \quad +21.7 \\
 22 \quad 22 \quad 1 \\
 \hline
 5 \quad 34 \\
 6 \quad 26
 \end{array}$$

Sept. 14, 1891

Comet Wolff

Position zero 356.7
45.0

311.7 setting.

22

37	3.2	*
37	38.9	OE
37	51.2	*
38	21.5	E

38	56.7	*
39	33.4	OE
39	44.8	*
40	15.3	OE

41	5.2
42	20.2
42	57.3
43	8.9
43	39.0

44	15.2
44	52.9
45	4.2
45	33.7

over

Sept. 14, 1891.

22	46	19.9
	46	57.9
	47	8.9
	47	38.9

Order in preceding transits * ∞ * ∞
 Star in northern half inside
 Comet " southern " " "

Comp. Star = $2u. + 20^{\circ} 701 (2.9 \times)$ ✓

	B. 236.		B. 394.		
23	6	57.5	11	17	0.0
	7	57.7		18	0.0

Sept. 16. 1891.

Cloudy.

7 20

7 45

Still cloudy.

A 0

" "

8 27

Now Clearer

S Cygni

20	8
20	25
12	17
10	43

+57.1

8 43

S Cygni not seen probably fainter than

Arsae Maj

10	32
20	40
10	8

+69.2

S 2 R, R 3 t in large tel.
- 100 ft. for finder
Est. 11.8

8 57

Moon bright.

Sept. 16, 1891.

♂ Ursae Maj.

12	32
<u>20</u>	<u>55</u>
8	23

+60.4

 ~~$\bar{I} = m$ in large tel.~~ $\bar{I} = m$ in finder~~Est. k 5 \bar{I} , \bar{I} 2 m~~ in large tel.

Est 9.9

Star l is not used in this estimate because it is certainly fainter tonight than star m at least it seems so in the moonlight.

m 2 l

"m" seems a little brighter than "l" no matter what the position of the eyes is relative to the two stars

9 17

♂ Ursae Maj.

h 3 S, S 2.5 k in large tel

h 3 S, S 2 k in finder

Est. 9.5

9 27

♂ Boötis

14 16

21 25

7 9

+54.6

l 2.5 S, S 2.5 m in large tel.

Too ft. for finder

Est. 11.1

9 36

Sept. 16, 1891.

R Ursae Min.

16 34

+72.9

21 35

5 1

R = *r* in large tel.*R* = *r* in finder

Est. 9.6

9 45

R Draconis

16 46

+67.4

21 42

5 16

R = *r* in large tel.

100 ft. for finder

Est 12.1

9 51

S Cephei

21 37

+78.3

21 49

12

22 0

+ 23

0 1 *S*, *S* 2p in large tel.

100 ft. for finder

Est. 12.2

10 12

Sept. 16, 1891

R Lyncis

30 49

+55.0

22 10

8 39

12 00

3 21

m 3 R, R_{2n} in large tel.

Rather too faint for finder

Est. 11.2

Absolute estimate perhaps a little affected by
rather low altitude and moonlight. Sky also a
little foggy.

10 25

Comet Trafft.

4 9 +20.2

+ 3 40 - 43'

27 40

22 32

5 8

12 00

6 52

28 17

22 36

5 41

12 00

6 19

Sept. 16, 1891.

Comet Walff.

Position zero 311.0
45.0
 266.0

22

54

46.0

E

55

6.1

E

55

15.0 14.9

X

55

55.9

X

56

58.0

57

17.0

56

57

26.8

58

59

~~59.7~~ *Quoted 7.7*

59

26.0

59

45.0

59

54.2

23

0

35.4

1

36.5

1

54.4

2

4.1

2

44.5

4

14.8

4

31.9

4

42.5

5

22.7

Sept. 16, 1891

Order in preceding transits $\approx \approx \approx$
Both in southern half. Comet quite faint
in moonlight

Comp. Star = Sun. $+20^{\circ} 71.3$ (9.5)

B. 236.			B. 394.		
23	19	44.0	11	22	0.0
	210	44.0		23	0.0

$1^m 1.61$ slow.

The last tap in $2\frac{1}{2}$ set was ~~undoubtedly~~
undoubtedly 7.7 The chronometer face indi-
cated it and it was only guessed because the
observer happened to have 7.7 in mind. The running
of the transits also indicate 7.7

100

Sept. 17. 1891.

7 20

Clouds.

7 30

Cloudy.

A 0

Sky heavily clouded. Shower coming
up.

Sept. 18. 1891.

Cloudy first of evening.

A 30

Somewhat clearer.

A 55

Now considerably clearer.

S Cygni

20 8

+ 52.1

21 00

00 52

12 00

11 8

Star "r" seen, but star "s" not certainly seen. S Cygni not seen, probably fainter than 13.7. Full moon tonight, sky very bright. Some light cloud passing.

9 12

S Cephei

21 37

+ 78.3

21 21

16

12 00

11 44

0 1.5 S S 2 p in large tel.
Too ft. for finder.
Est 12.2

9 26

Est. made through light cloud

Sept. 18, 1891.

Q. Draconis

16 26

+ 67.4

21 32

5

6

Becoming thickly clouded at present time, variable not visible, no stars visible

10 4 Too cloudy for farther work.

Sept. 19. 1891.

Circumpolar Variables. H. obs.
 σ Cygni.

$$\begin{array}{r} 20 \text{ } \sigma \quad + 57.1 \\ 19 \text{ } \sqrt{5} \\ \hline - 23 \end{array}$$

7 45 Comp Star "H" seen. But s. t. is not
 seen. σ Cygni not seen. ~~Prof~~ Prob.
 flr. than 13.7

σ Cygni.

$$\begin{array}{r} 21 \quad 37 \quad + 74.3 \\ 19 \quad \sqrt{7} \\ \hline - 1 \quad 40 \end{array}$$

0 1.5 σ $\sigma^{2.5}$ in large tel.
 100 ft. for finding
 Est 11.9

8 1

Sept. 19, 1891

R Ursae Maj.

$$\begin{array}{r} 10 \quad 32 \\ 20 \quad 15 \\ \hline 9 \quad 43 \end{array}$$

+69.2

x 2 R, R 2 x in large tel.
Too ft. for finder
Est. 12.1

8 14 Sky bright. Moon one day past full

S Bootis

$$\begin{array}{r} 14 \quad 16 \\ 20 \quad 26 \\ \hline 6 \quad 10 \end{array}$$

+54.6

8 25 L 3 S, S 1.5m in large tel.
Too ft. for finder
Est. 11.8 2

R Draconis

$$\begin{array}{r} 16 \quad 26 \\ 20 \quad 35 \\ \hline 4 \quad 9 \end{array}$$

+67.4

8 35 7 3 R,
R = r in large tel.
Too faint for finder
Est. 12.1

Sept. 19, 1891.
R Cassiop.

23	51
20	48
<hr/>	
3	3
12	00
<hr/>	
8	54

+49.7

8 50

$\approx 2.5 R, R 2.5 S$ in large tel.
— Rather too close and ft. for finder
Est. 10.48

R Lyncis

30	49
21	00
<hr/>	
9	49
12	00
<hr/>	
2	11

+55.0

$m 3.5 R, R 2 m$ in large tel.
Too faint for finder
Est. 11.4

Region low and moon very bright, perhaps affecting absolute estimate to some extent.

Sept. 19, 1891

Sun. Lodge Zone. M. obs.

Pence's. A.O.

 $+19^{\circ}$

$$\begin{array}{r} 18 \\ 21 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ 30 \\ \hline 25 \end{array}$$

 $+19.9$

$$\begin{array}{r} 18 \\ 21 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 5 \\ 35 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 17 \\ 21 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 58 \\ 35 \\ \hline 37 \end{array}$$

9 35 ~ 3544

4.66

4.60

4.41

13.67

5.92 ^

3561

3.16

3.14

3.32

9.62

4.17 ^

Sept. 17, 1891.

3562	4.24 4.23 4.02	12.52 5.42 ^
3564	4.60 4.49 4.49	13.88 6.01 ^
493569	3.77 3.78 3.66	11.21 4.85 ^
3576	2.32 2.34 2.37	Following northern and slightly brighter of two.
	7.03 3.04 ^	
3579	3.95 3.79 3.81	11.55 5.00 ^
3582	3.10 3.09 3.21	9.40 4.07 ^
3586	4.39 4.69 4.69	13.77 5.96 ^

Sept. 19, 1891.

3590

2.89

2.89

2.99

7.77

3.36 ^

3596

3.30

3.40

Star faint. Est. 9.3

10.29

3.59

A faint star follows 2.5
sec. 2.5 min. of arc south,

3601

4.46 ^

3.69

3.91

3.92

11.52

4.99 ^

3604

3.60

3.76

3.90

11.26

4.88 ^

3605

4.91

4.74

4.73

14.41

6.24 ^

3611

3.89

4.16

4.02

12.01

5.20 ^

3614

3.08

3.23

3.43

9.74

4.22 ^

Sept. 19, 1891.

3617	4.40	
	4.30	
	4.20	13.00
		5.63 ^
3619	3.63	
	4.09	
	3.96	11.68
		5.06 ^
3624	3.42	
	3.30.	
	3.51	10.23
		4.42 ^
3631	3.56	
	3.80	
	3.73	11.09
		4.80 ^
3654	2.59	
	2.69	
	2.69	7.97
		3.45 ^
3659	3.68	
	3.92	
	3.91	11.51
	2.96	4.98 ^
3670	2.95	
	3.20	
	3.50	9.65
		4.18 ^

Sept. 19, 1891.

3679	2.91	
	2.90	
	3.09	8.90
		3.85 [^]
3695	3.50	
	3.82	
	3.80	11.12
		4.81 [^]
3704	2.60	
	2.88	
	2.76	8.24
		3.37 [^]
3705	3.12	
	3.19	
	3.33	9.64
		4.17 [^]
3706	2.38	
	2.49	
	2.71	7.58
		3.28 [^]
3708	3.00	
	3.19	
	3.13	9.32
		4.04 [^]
3716	5.30	
	5.30	
	5.31	15.91
		6.89 [^]

Sept. 19, 1891

3729	2.90	
	3.08	
	3.02	9.00
		3.90 ^
3736	5.01	
	5.00	
	4.97	14.98
		6.49 ^
3744	4.20	
	4.40	
	4.39	12.99
		5.62 ^
3747	2.70	
	2.62	
	2.91	8.23
		3.56 ^
3750	2.70	
	2.81	
	2.61	8.12
		3.52 ^
3751	2.52	
	2.69	
	2.60	7.81
		3.38 ^
3753	4.39	
	4.65	
	4.78	13.82
		5.98 ^

Sept. 19, 1891.

3758

3.13

3.39

3.30

9.82

4.25[^]

3764

3.40

3.33

3.39

10.12

7.12

4.38

3.08[^]

3767

3.00

3.00

3.00

9.00

~~3.79~~3.90[^]

3768

3.79

3.78

4.20

11.77

5.10[^]

3770

3.67

3.90

3.89

11.46

4.96[^]

3771

3.90

3.81

4.21

11.92

5.16[^]

10 50

moon too bright for comet.

Sept. 19, 1291.

Regr. of Jy. I. Phot. R. Comp. with
sta II W. obs. Powe. no.B^m 394
14 47 00
48 00B + C. 1152
14 39 28.5
40 28.6

14	56	54
	8	12
145	55	06
14	47	00
	18	6
14	39	29
14	57	35

14 55- Sky becoming very foggy
Jy. low and dim. Sat. I. very
dim at full brightness. Sat III
about invisible at full brightness.
Sat II + III about invisible at
full brightness, Jy. nearly invis-
ible to naked eye. Sat.

14 56

~~15 00~~Suspected.

14	59	12.5	
15	00	4.5	267.2
	2	00	355.0
		3x2.5	270.8
		54.5	3.9 (300.9) 3.59.8.9
3		32.5	255.7
		51.0	3.58.5

Sept. 19. 1891.

15	4	21.5	270.5
		45.0	340.2
	6	18.5	263.2
		56.5	1.0
	7	31.5	265.0
	8	41.5	81.2
		21.0	265.8
		48.5	57.2
	9	61.0	265.0
		30.5	57.7
		49.0	261.4
	10	7.5	3.5
		20.0	261.9
		34.5	0.8
	11	13.5	266.0
		35.5	0.0
		52.5	262.5
	12	12.0	0.7
		30.0	261.5
		42.5	0.0
		57.0	262.7
	13	9.0	8.7
		23.0	266.0
		40.0	6.0
		56.5	264.3
	14	8.5	7.5
		20.0	261.1
		31.5	4.5

Sept. 19, 1891.

15	14	45.5	261.1
		53.5	10.0
	15	8.5	260.0
		21.5	6.0
		38.5	260.2
		52.0	7.2
	16	7.0	260.0
		20.0	7.5
		33.5	262.0
		53.0	6.8
	18	35.0	260.0
		56.5	7.7
	19	13.5	262.9
		24.5	6.1
		40.0	262.1
		58.5	5.9
	20	10.5	260.7
		25.5	7.4
		39.5	264.6
		55.5	4.9
	21	9.5	261.9
		41.0	7.2
	22	30.0	279.0
	23	3.5	352.0
		38.5	283.2
	24	14.0	356.2

Sept. 19. 1891.
 Jup. low. Because thickly
 foggy just before theoretical
 time of reapar. so that sat.
 when first suspected was
 nearly 2.5 min. behind the-
 oretical time. Sats. II. & III.
 almost invisible except that
 at times during the lateness of
 the constant the fog was lifted
 a little, and sats. became a
 little brighter for moment.

B 394
 15 58 00
 59

B + C 1182.
 15 10 28.4
 11 28.3

Sept. 21, 1891,

Circumpolar Var.

Yr. obs.

$$20 \quad 0 = 7 \quad 35$$

S Cygni.

$$\begin{array}{r} 21 \quad 37 \quad + 72.3 \\ 20 \quad 2 \\ \hline - 1 \quad 35 \end{array}$$

Clouds

0 1 S. S 2 p in large tel.
Too ft. for finder
Est. 12.0

$$\cancel{20} \quad \cancel{20}$$

S Cygni

$$20 \quad 20$$

$$20 \quad 8$$

$$12$$

$$\hline 12$$

$$11$$

$$48$$

$$+ 59.1$$

8 - 12 Comparison star "r" seen. Nothing fainter seen with certainty. S Cygni not seen, probably fainter than 13.8 Est. Sky slightly hazy at time of Est.

Sept. 21, 1891

R Cassiop

20 30

+49.7

23 51

3 21

12

8 39

2 R, R 2 s in large tel.

Becoming too cloudy for finder

Est. 10.9

8 18 Sky becoming cloudy everywhere

9 8 Sky continues cloudy. no stars visible.
Too cloudy to prepare for eclipse
Closed dome

Sept. 23. 1891.

S Cygni
 20 8
 19 47
 ———
 21
 12
 ———
 11 39

+57.1

7 92 S Cygni carefully looked for; 9th mag. star
 put behind bar as usual. Star ~~"x"~~ ^{and quite certainly seen} ~~"u"~~
 suspected at times, but S not seen. Probably
 fainter than 14.9. Sky pretty clear at time of
 Est.

Became suddenly cloudy
 Sky now

Sky now a little clearer to the east

S Cephei
 21 37
 20 13
 1 24
 ———
 12
 10 36

+78.3

Cloudy again.

0.1 S, S 2.5 in large tel.
 200 ft. for finder
 Est 12.1

8 10

Sept. 23, 1891

Sky a little cloudy in this vicinity

Sky somewhat clearer.

δ Cephei

21 37

+78.3

20 45

52

12

11 8

21 37

20 51

46

12 00

11 14

Sky clearer. Reestimate of δ Cephei

0.15, S 2.6 in large tel.

Rather too ft. for finder

Est. 11.8

8 38

α Draconis

16 26

+67.4

24 00

54 34

2, R, R 2.5 in large tel.
Too ft. for finder
Est. 12.5

8 51

Sept. 23, 1891.

J Boötis

14	16
21	19
7	3

~~+54~~

+54.6

Cloudy in this region.

14	16
21	28
7	12

~~+3.5 S, S~~

m 2 S, S, n in large tel.
 100 ft. for finder
 11.5

Variable rather low.

J Hercules

H. obs,

Selection of faint compar. stars.

18	7
21	37
3	30
18	7
21	42
3	35
18	7
21	50
3	43

+31.4

Clouds.

Sept 23, 1891.

Sky all cloudy so of merid. will try E. of merid.

23	0	+8.6
22	5	
<hr/>		
	55	
12		
<hr/>		
11	5	
23	0	
22	15	
<hr/>		
	45	
12		
<hr/>		
11	15	

All cloudy in this region also.
Dec. index evidently wrong.

Time	22	20	+14.0
H. it.	- 0	40	
R. it.	23	0	
<hr/>			

Index 0.5 in error, circle reads too small,
~~too~~ index adjusted.

10 15 Sky still cloudy with no prospect of clearing.

Sept. 24, 1891.
 Circumpolar Variables

W. obs.

S Cygni

+57.1

20	8
19	57
<hr/>	
	11

12	
<hr/>	
11	49

A very faint star about in the direction of S Cygni from the adjacent 9th mag. star quite certainly seen at intervals, but it seems to be too far from 9th mag. star to be "S". If this is not "S," it is invisible tonight, and probably fainter than 15.0. Star "~~t~~" ^uthought quite certainly seen at intervals; the star mentioned above is about 7.48 equal to "t".

S Cephei

21	37
----	----

+78.3

20	17
----	----

1	20
---	----

12	
----	--

10	40
----	----

≈ 1.5 S, S 2 p in large tel.

Rather too faint for finder.
 Est. 11.9

Sept. 24, 1891.

R Draconis

16	26	+67.4
20	30	
4	4	

R = r in large tel.
 Too faint for finder
 Est 12.4

Δ Bootis

14	16	+54.6
20	44	
6	28	

m 2 5, 51 m in large tel.
 Too faint for finder
 Est. 12.3

abs. Est of last night, it would seem, must have been wrong, probably an undue allowance made for clouds.

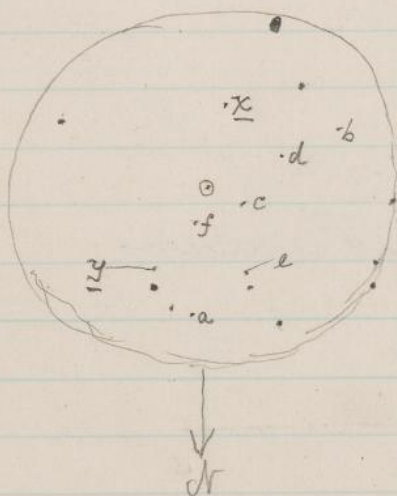
No clouds in sky tonight. Sky seems moderately clear but not as much so as sometimes.

Sept. 24, 1891.

Selection of faint comp. stars, R Pegasi.

$$\begin{array}{r}
 23 \ 00 \\
 \hline
 21 \ 00 \\
 2 \ 00 \\
 \hline
 12 \ 00 \\
 10 \ 0 \\
 23 \ 0 \\
 \hline
 21 \ 3 \\
 1 \ 57 \\
 \hline
 12 \\
 \hline
 10 \ 3
 \end{array}$$

+8.6



~~A careful re-exam. of faint comp. stars for R Pegasi, indicates that the selection is pretty good in general. The relation between stars "a" and "b" is a little in doubt, on account of the bad seeing. Star "a" seems brighter "b", but~~

Sept. 24, 1891.

The comp. stars selected on previous page are in my own provisional notation. Mr. Reed's ~~to~~ x is a little fainter than his y in large tel. My star a ~~then~~ is selected so as to be a little fainter than his x . My star z is the faintest which can be seen to night.

$T 5 R, R 2 u$ in large tel.
Rather too fl. for finder
Est. 10.8

Comp. stars used in above est. as Mr. Reed's.

\uparrow Hercules

18	2	
22	16	
4	14	
		+ 30.5

Region rather too low

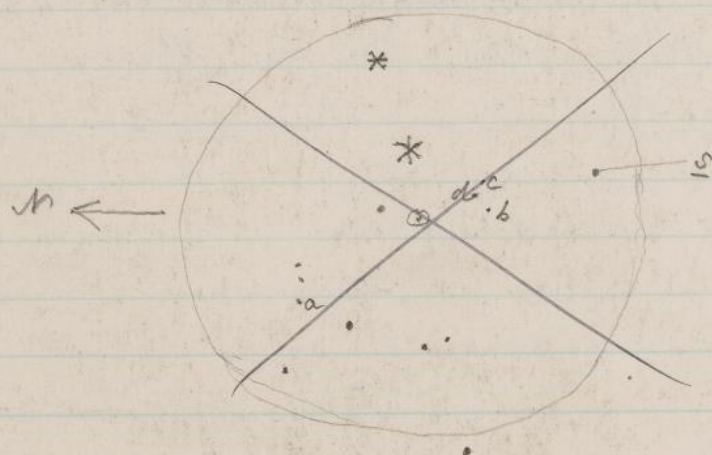
Sept. 24, 1891.

Selection of faint comp. stars for R Cygni

19	32
<u>22</u>	<u>22</u>
2	50

+49.9

19	32
<u>22</u>	<u>22</u>
32	54



Clouds came up which prevented finishing selection

Sept. 25, 1891.
Circumpolar Variables

W. obs.

S Cygni
20 8
19 57
11

+57.1

12
11 49

S Cygni not seen. Star ~~"#"~~^{"u"} thought to
be seen at intervals. S probably fainter
than 149; sky pretty clear, but very faint stars
not as easily seen as at some other times.

The faint star seen last night, not far from
the place of S Cygni, is thought not to be S.
It seems a little too far distant from 9th
mag. star to be S.

7 51

S Cephei

21 37
20 25
1 12
12 00
10 48

+78.3

0 18, S 2 p in large tel.
Rather too ft. for finder.
Est. +2.0 11.8

8 10

Sept, 25, 1891.

R Ursae Maj.

10 32

+69.2

20 45

10 13

10 32

20 50

10 18

S 3 R, R 1.5 \pm in large tel.
 100 ft. for finder
 Est. 11.9

8 23

Rel. est thought to be pretty good, but absolute est. somewhat uncertain, as region is rather low, and sky at this altitude is rather thick

S Boötis

14 16

+54.6

20 57

6 41

m 2.5 S, S 1 m in large tel.
 100 ft for finder
 Est. 12.3

8 32

Sept 25, 1891

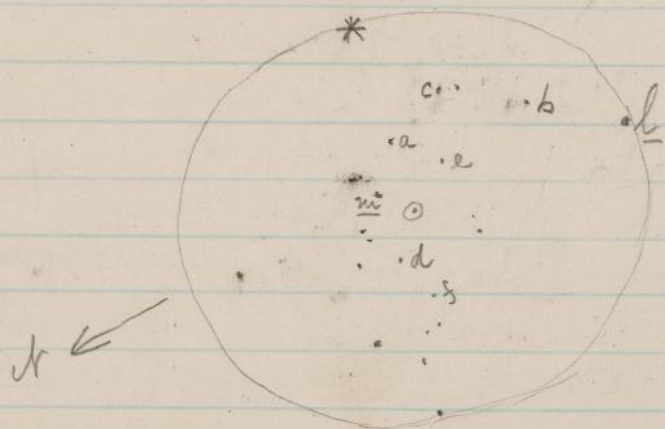
R Draconis.

16	26	+ 67.4
<u>21</u>	<u>5</u>	
4	39	

7 2.5 R, R 12 in target
 too faint for finder
 Est. 12.4

Selection of 5 faint comp. stars for
 Hercules

18	6	+ 31.4
<u>21</u>	<u>30</u>	
3	24	
18	6	
<u>21</u>	<u>35</u>	
3	29	



Sept, 25, 1891

Star "f" is the faintest star which can
be seen tonight, selection thought to be
good

Selection of faint comp. stars for
R Cygni

$$\begin{array}{r} 19 \quad 32 \\ 22 \quad 35 \\ \hline 3 \quad 3 \end{array}$$

+49.9



Comp. star "g" is about the faintest star
which can be seen tonight, sky pretty
clear in this region, star "g" is pretty
near the place of R, but is probably
not R as it precedes 9th mag stars a
little, whereas R follows slightly by chart.
R fainter than "g". R not seen, probably
fainter than 14.9

Sept. 25, 1891

There seems to be a star in the position indicated by "h", and at the limit of visibility, when bright star is put out of field. R Cygni thought at times to be seen.

$R = h$ in large tel.
Too faint for finder
Est. 15.1

11 2

Sept. 26. 1891.

Circumpolar Variables. No obs.

δ Pygni

+57.1

20 8

20 1

7

12

11 53

(7 39) δ Pygni not seen. Star "~~A~~"^u thought to be seen at intervals. S probably fainter than 15.0. Sky, a very little hazy.

δ Cephei

21 37

+78.3

20 16

1 21

12 00

10 39

0 2 δ , δ 1 p in large tel.
Too faint for finder
Est. 11.9

4 51

Sept. 26, 1891.

α Ursae Maj.

10 32 +69.2
20 30

$\times 9$ 58

$\times 2.5 \underline{R}$, $R 1.5 \underline{t}$ in large tel.
200 ft. for finder
Est. 12.2.

8 4 Sky somewhat hazy in this region, stars a little dim.

δ Bootis

14 16 +54.6
20 45
6 29

$m 2.5 \underline{S}$, $S 1.5 \underline{m}$ in large tel.
200 ft. for finder
Est 12.3

8 34

α Draconis

16 26 +67.4
21 00
4 34

$\frac{2.2 \underline{R}}{f}$, R
 $R = n$ in large tel.
200 ft. for finder
Est. 12.3

8 34

Sept. 26, 1891

Re-exam. of faint comp. stars for
I. Herculis.

18	6	+31.4
<u>21</u>	<u>20</u>	
3	14	

Sep. 130

Exam. of faint comp. stars selected last night, seems to indicate that the selection is good, although probably a still fainter comp. star can be selected when we have a clearer night.

d 4 I, I₃f in finder
d 4 I, I₃f in large tel.
Est. 7.8

9 20

Star e is not used as comp. star tonight because it is apparently not in Mr Reed's selection. And he is absent tonight.

comp. stars for. ~~Reed's annotation of faint~~
I Cygni

19	32	+49.9
<u>21</u>	<u>59</u>	
2	27	

A careful exam. of ft. comp. stars, ^{selected} for R Cygni last night (See p. 131) indicates that the selection is about as good as it can be made. Star "h" is practically on the limit of visibility tonight, and the altitude is pretty high. There is a possibility that a slightly fainter star might be added on a

Spt. 26. 1891.

very clear night, although it is not certain. ϵ Cygni suspected at times but not seen with \times absolute certainty

$h. 1 R$, in large tel.

Too faint for finder

Est. 15.0

9 45

Reexam for of ft. comp. stars for R Pegasi

23 00

+8.6

22 37

23

12

11 37

See p. 125] a careful reexam. of faint comp. stars for R Pegasi indicates that the selection is pretty good in general. The relation between stars "a" and "b" is a little in doubt, on account of the bad seeing. Star "a" seems brighter than "b" but between them.

possibly the interval is a little too small. But seeing is becoming so poor that this cannot be decided tonight

$T + R$, R 1.5 in in large tel.

$T + R$, R 1 in in finder

Est 10.9

10 30

Sky becoming cloudy

Sept. 26, 1891.

10 45 Sky still too cloudy for variables and comp. stars.

Comet Wolf

W. obs.

4	20
23	32
<hr/> 19	<hr/> 12

+16.0

Pos. zero 306.6
 45.0

 261.6 Setting.

23

48

~~40.0~~ 39.9 0 \equiv

49

17.5 0 \equiv

49

56.2 *

50

19.4 *

~~51~~~~31.0~~~~52~~~~9.0~~~~52~~~~47.2~~

53

10.4

~~54~~~~42.5~~~~55~~~~20.7~~~~55~~~~58.5~~

56

~~21.8~~

Sept. 26, 1891.

23

~~57~~~~3.0~~~~Clouds~~

0

2

0.6

2

41.1

3

17.2

3

41.0

5

11.0

5

52.1

6

28.2

6

57.7

7

55.0

8

36.0

9

11.5

9

35.4

10

16.3

10

58.2

11

33.0

11

57.0

Sept. 26, 1891.

Order in preceding transits $\in \in **$.

Both in northern half of square.

Comet has a faint tail, visible for some three minutes of arc in length. Tail extends to preceding. Nucleus fairly well defined, but not quite stellar. Coma 1 min. of arc in diameter.

Seven sets taken, reject 2nd and 3^d as it was quite cloudy when they were taken. Sky fairly clear during the other transits.

B. 236.

0	29	3A.2
	36	3A.3

B. 394

11	53	0.0
	54	0.0

1st 37.862

Sept 28 1891

B.L.C. 1182

5h 57 22

58 23

B 294

5 58 00

59 00

57.72.

Reap. Japs. IV. P. obs. Jr. rec.
Phot. R. Comp. with front cat. foll. Japs. (III)

11 45 45

53

46

14

23

31

38

44

50

47

59

47

8

16

22

30

40

46

48

58

48

7

18

25

36

4K + 47

55

45 A

16

25

33

40

46

52

46

1

10

18

24

32

42

48

47

0

9

20

27

38

new,

124.3

142.1

127.0

147.5

124.5

152.3

127.0

152.7

124.6

152.0

125.4

153.3

125.6

153.1

122.6

152.5

124.2

153.0

122.4

153.4

Sept. 24, 1891.

48	44	6	X7	X6	1222
	54			56	156.1
49	1		XA	3	122X
	11			13	15A.0
	24			26	11A.7
	33		158	35	40.2 15A.3
	41		40	X3	41.6 120.0
	52		49.38	5K	40.8 161.6
50	2		X9	X	177.0
	12			1K	44.3 161.3
	25		87	27	43.6 119.6
	40		22	X2	44.0 163.2
	49		50.20	51	11A.7
	57			59	44.6 163.3
51	7		50	262	42.4 117.6
	21		6	9	43.5 160.0
	36		51.4	23	120.0
	50			3A	41.0 161.0
52	58		51	224	43.4 119.7
	12		56	1K	42.2 162.1
	22			2X	110.6
	41		184	X3	54.3 16K.9
	52		46	50	50.6 113.0
53	1		52	3	52.4 163.6
	10			12	11A.7
	21		120	23	52.8 167.5
	34		30	36	58.8 111.4
	47			49	55.8 170.2

Sept. 24, 1891

6

53

0

112.5

$$\begin{array}{r} 56.5 \\ 55.1 \\ \hline 111.6 \\ 55.8 \end{array}$$

14

56.5

162.9

$$\begin{array}{r} 82 \\ 20 \end{array}$$

26

20

55.1

113.3

$$\begin{array}{r} 563.0 \\ 140.8 \end{array}$$

54 18

55.8

162.4

140.8

54

22

109.5

$$\begin{array}{r} 59.4 \\ 61.2 \\ \hline 120.6 \\ 60.3 \end{array}$$

$$\begin{array}{r} 172 \\ 43 \end{array}$$

34

59.4

162.9

49

$$\begin{array}{r} 43 \\ 55 \end{array}$$

61.2

111.4

$$\begin{array}{r} 562.4 \\ 140.6 \end{array}$$

55

3

60.3

172.6

140.6

40

110.1

56

61.1

171.2

$$\begin{array}{r} 61.1 \\ 56.0 \\ \hline 117.1 \\ 58.6 \end{array}$$

56

$$\begin{array}{r} 262 \\ 6 \end{array}$$

16

6

56.0

112.3

$$\begin{array}{r} 561.9 \\ 140.5 \end{array}$$

30

$$\begin{array}{r} 574 \end{array}$$

58.6

162.3

140.5

41

104.5

$$\begin{array}{r} 249 \\ 2 \end{array}$$

56

62.1

170.6

$$\begin{array}{r} 62.1 \\ 62.8 \\ \hline 124.9 \end{array}$$

57

10

2

58.0

63.5

107.3

62.8

$$\begin{array}{r} 557.4 \\ 139.3 \end{array}$$

22

170.2

139.2

34

109.3

$$\begin{array}{r} 222 \end{array}$$

44

65.7

175.0

$$\begin{array}{r} 65.7 \\ 62.6 \\ \hline 128.3 \end{array}$$

58

3

$$\begin{array}{r} 56 \\ 58 \end{array}$$

62.6

109.6

$$\begin{array}{r} 561.1 \\ 141.5 \end{array}$$

64.2

17

172.2

141.5

$$\begin{array}{r} 179 \\ 43 \end{array}$$

27

104.0

$$\begin{array}{r} 61.8 \\ 64.0 \\ \hline 125.8 \end{array}$$

34

$$\begin{array}{r} 45 \\ 59 \end{array}$$

61.8

169.2

51

64.0

107.2

$$\begin{array}{r} 556.2 \\ 139.0 \end{array}$$

62.9

59

3

62.8

171.2

139.0

10

162.7

$$\begin{array}{r} 121 \\ 33 \end{array}$$

20

$$\begin{array}{r} 32 \\ 30 \end{array}$$

65.1

167.2

$$\begin{array}{r} 65.1 \\ 57.0 \\ \hline 122.1 \\ 61.0 \end{array}$$

57.0

61.0

Sept. 24, 1891.

6	59	31	111.2	549.9	
	0	10	162.2	137.5	
7		12	102.1		
		31	172.2	64.1	
	139	39	106.2	62.0	
	35	5	162.2	126.1	
		33	107.6	63.0	
1		2	172.2	139.0	
	80	16	172.2	67.2	
	20	26	107.5	64.7	
		20	172.2	66.0	
		2	107.3	65.9	
		18	173.2	66.5	
	253	3	104.2	68.8	
2		3	173.0	67.6	
		3	107.7	63.7	
		58	171.2	66.8	
3	234	3	107.6	65.2	
	58	3	172.2	65.1	
		56	102.7	140.3	
		3	171.2	62.5	
	195	49	109.0	63.2	
	49	4	172.2	62.8	
		47	111.2	61.6	
4		6	172.2	66.7	
	130	26	102.6	64.1	
	32	32	175.3	567.9	
		5		142.0	
		30			

Sept. 24, 1891.

7	4	56	107.5	563.9	141.0	141.0	141.0
	5	4	176.7	69.2	62.5	68.0	68.0
		7.5	104.6	65.8	65.8	69.2	69.2
		19	171.1	141.0	141.0	141.0	141.0
		30	107.0	62.3	62.3	62.3	62.3
		19	169.3	66.0	66.0	66.0	66.0
		41	109.2	64.1	64.1	64.1	64.1
		49	175.2	140.7	140.7	140.7	140.7
		59					
6		110					
		20					
		14					
		7					
		12					

Limit of N.S.

6	34	131.0	14.6	14.6	14.6
	197	185.2	14.8	20.9	20.9
	49	129.5	20.9	35.7	35.7
	7	150.5	17.8	17.8	17.8
	47		556.7	139.2	139.2
	3				

IV Seeing good.
 Sat. appears a little preceding comp-
 arison sat. and so near that light
 of latter causes interference. Readers ob-
 servation a bit little difficult.
 Configuration does not agree with
 standard almanac.

Sept. 28, 1891

Preceding satellite precedes limb of Jupiter 1.2 secs of time.

Distance from preceding satellite to following limb of Jupiter 4.7 secs.

Distance from preceding sat. to first sat. following Jup. 7.7 secs.

Distance from ^{1st} sat. to 2nd sat. following Jup. 8.7 secs.

Distance from ^{2nd} sat. to 3rd sat. following Jup. 15.6 secs.

B. + C. 1122.

7	40	2.2
	41	2.2

B. 394.

7	41	0.0
	42	0.0

57.8

S Cephei

21 37

21

Too near the meridian.

R. Ursae Major

10 32

21 32

+69.3

11

S 2.5 R, R, L in large tel.

Too ft. for finder

Est 12.3

(over)

9 12

Sept. 28, 1891.

Abs. est. possibly slightly affected by
rather low alt. and haziness of sky.

S Boötis

14	16	+54.6
<u>21</u>	<u>55</u>	
7	39	

14	16
<u>22</u>	<u>1</u>
7	45

m 2.5 S, S 1.2 in large tel.
Too ft. for finder
East. 12.4

9 29

R Draconis

16	26	+67.4
<u>22</u>	<u>13</u>	
5	47	

9.2 R, R 1.2 in large tel.
Too faint for finder
East. 12.4

9 35

Sept. 28, 1891.

S Cygni

20 8

+57.1

22 20

2 12

9 45 S not seen. star ~~"t"~~^{"u"} quite certainly seen at intervals. S probably fainter than 15.0

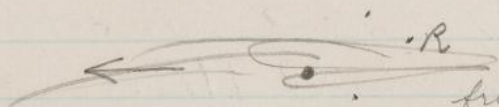
R Cygni

19 32

+49.9

22 30

2 58



Considerable difficulty experienced by rather abundant faint stars and ^{large} but a very thorough exam. of the region of R Cygni made.

R is not the star heretofore assumed as such, as is proved by a thorough exam. of the sky, having in regard also, to Schornfeld's note.

Diagram on p. 131 made right. R is faint.

g. R, R & h in large tel.
Too ft. for finder
Est. 14.4

10 50

Sept, 28, 1891

S Cephei

21	37
23	33
<hr/> 1	<hr/> 56

+78.3

0 v. S, S 1 ϕ in large tel.
 100 ft. for finder
 Est. 12.0

Re

B. & C. 11 & 2.

11	14	2.5
	15	2.5

57.5

B. 39

11	15	0.0
	16	0.0

Reap. sup. I, Phot. R. W. obs. Poor rec.
 Comp. with sat. III.

11 20 5.4

A 12

11 29 1.0

11 15 0

14 1.0

11 14 ~

11 22 12

Ap. time rel.

11

28

DD.

08

16

Seems

170.0

189.0

Sept. 28, 1891

[28]

26.0

167.3

36.0

196.0

45.0

164.5

54.0

203.0

29

06.0

160.8

14.0

201.5

22.0

157.8

29.0

210.2

36.5

152.0

44.0

207.0

52.0

150.6

30

01.0

211.3

9.0

145.5

18.0

210.7

30.0

146.9

39.0

214.7

47.0

147.8

55.0

210.5

31

63.0

144.2

14.0

218.5

23.0

144.1 719.4

34.0

72.9

217.5 179.6

43 38

68.2

145.8 191.2

51.0

70.6

213.3

32

1.0

144.8

12.0

72.9

217.9

24.0 18

72.7

143.1 190.2

35.0

72.3

215.8

33

09.0

141.0

Sep. 28, 1891.

11

33

19.0

219.3

29.0²⁵

78.64

140.7³

43

78.3

214.1^{178.8}

53

73.4

145.0

34

04

71.0

216.0⁴

17¹¹

72.6

143.9^{180.3}

29

71.8

216.5

44

142.0

55

75.0

217.0

35

06²

67.5

146.5^{179.5}

22

71.3

214.0

38

144.1

46

73.5

217.6⁶

55⁵²

68.9

144.9^{180.1}

36

09

71.2

213.8

17

143.5

27

71.4

214.9⁷

35³¹

71.2

144.9^{180.3}

45

71.3

217.1

~~54~~

37

06

141.0

15

73.3

214.3⁸

39

21^{38 19}

74.8

144.2^{179.6}

33

74.0

219.0

Limit of visibility.

42

25²

174.1

35⁵⁰

13.0

187.1^{180.4}

43

00

10.7

174.8

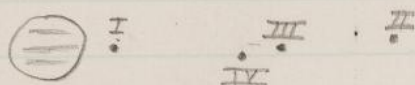
22

11.8

185.5

Sept. 24. 1891.

Seeing in general pretty good,
images of stars. however a little
blurred. Reading glass for circle
comes near the mouth of obs.
which caused a little trouble
by deposition of moisture upon
same.



$\begin{array}{r} \text{R} 394 \\ 12 \quad 1 \quad 00 \\ \quad 2 \quad 00 \end{array}$

$\begin{array}{r} \text{R} + \text{G} 1152 \\ 12 \quad 00 \quad 02 \\ \quad 1 \quad 02 \end{array}$

58

Sept. 30. 1891.

Comet disc. by Barnard
Sept. 28. Gr. obs.

20	56	-1.5
<u>20</u>	27	
	29	
<u>12</u>	00	
11	31	
20	56	
<u>20</u>	33	
	23	
<u>12</u>	00	
11	37	
20	56	
<u>21</u>	32	
	41	

Comet Sky early part of ev. somewhat hazy, Seeing bad. Images of stars blurry. Many bright stars in this region, sky somewhat improved a little later, comet finally found, Comet extremely faint.

Pos. Zero 90.5
45.0

Setting 135.5

Comp Star = $-1^{\circ}40'90''(9.57)$

Sept. 20, 1891.

2.3	2	41.8	E	+ .3
	3	20.1	E	
		58.5	*	+ .2
	4	17.5	*	
		54.4	8	
	5	32.7		- .2
	6	11.8		
		29.5		
		26.4		
	7	26.4		- .2
	8	3.8		+ .1
		42.0		
	9	00.0		
		1.8		
	10	13.1		
		52.4		+ .4
	11	31.8		
		49.2		
	12	53.4		+ .3
	13	33.3		
	14	11.5		
		29.6		
	15	34.9		
	16	12.3		- .2
		50.4		
	17	7.4		+ .3

Sept. 30, 1891.

Order in preceding transits:
 Comet ^{comet} again star star again.
 Comet in southern half of square
 star in northern half of square

Much difficulty experienced in finding comet.
 It is extremely faint and moves slowly. The nucleus cannot be over 13.5 magn. if it is that and the total light impression not over 13 to ~~13.5~~ 13.5 magn.
~~Comet~~ Comet perhaps 0.6 in diam.

Gradually during obs. it moved somewhat near to a star rendering obs. difficult.

D. Bootis

14	16
23	32
<hr/>	
9	16

+54.6

m 2.5 5, 5 in large tel.

Too fl. for finder

Est. 12.3

R. Draconis

16	26
23	39
<hr/>	
7	13

+67.4

2 R, R 1 in large tel.
 Too fl. for finder
 Est. 12.4

Sept. 30, 1891.

S Cygni

20	8	+57.1
----	---	-------

23	46
----	----

3	38
---	----

S not seen. Probably fainter than 15.0

S Cephei.

21	37
----	----

+78.3

23	51
----	----

2	14
---	----

S = 0

~~21 S, S 3.5 ft in large tel.~~
Too ft. for finder.
Est. 12.1

11 8

R Cygni

19	32
----	----

+49.9

23	59
----	----

4	27
---	----

g 2 R, R 3 h in large tel.
Too ft. for finder
Est. 14.1

11 12

Sept. 30, 1891.

R Ursae Maj.

10	32	+69.2
24	3	
13	31	

4 R, 2 it in largest tel.
Too ft for finder
Est 12.3

11 34

B. 236.

0	51	9.0
	52	9.0

B. 394.

11	59	0.0
12	0	0.0

∴ B. 236 is 1^m 54.2 slow. ✓

Oct. 1, 1891.

B & C, 11 & 2.
 7 49 4.5
 50 4.5

B, 39 X,
 7 50 0.0
 51 0.0

56.5

2 7 33
 7 50 0

 17 33
 7 49 4

 6 37 App. time ecl.

8 to Reap. Jup. II Photom. R, W. obs. Moore Rec.
 Compared with sat on left of planet =
 sat. I.

8 h	8 h	>	31.6	35	seen,
			43	45	42.0
			51	55	62.5
			57	1	36.1
	8		12	16	69.5
			17	21	54.0
			23	27	74.0
			31	35	39.0
			41	45	77.1
			49	53	54.0
	9	8	1	5	80.0
			4	8	22.2
			8	12	86.1

Oct. 1, 1891

8 h.

24
30
36
41
52
59

18.1
84.7
16.6
89.0
19.3
88.3

9

7
14

14.3
85.3

"

22
33
39
48

13.2
95.1
15.8

59

19.5
8.1

4/207.0
51.8

10

8
19 14
28
35

84.7
82.3
83.5

92.8
11.9
94.2 57.8
9.1

46 53
59

4/204.9
52.2

83.7
83.0
83.4

92.8
12.0 2

11

12
24
34
43 38
53

4/206.7
51.7

79.9
78.8
80.2

95.0 52.2
12.0
91.9
12.0 3
90.8 51.7

12

12
21
33 27.1

4/205.6
51.4

83.4
78.8
81.1

8.4
91.8 4
13.3

Oct. 1, 1891

13	43				92.1	514
	52				14.4	
	1	$\frac{4}{207.8}$			89.4	✓
	10	52.0	75.0		13.0	
	19		78.0		91.0	51.8
14	27		76.5		15.2	
	36	$\frac{4}{210.7}$	76.2		91.4	
	44	52.7	76.7		13.7	6
	53		76.4		90.4	52.7
	0				11.0	
15	8	$\frac{4}{203.8}$	78.3		90.3	7
	17	51.0	76.3		13.1	
	26		77.8		89.4	50.8
	35				10.8	
	42	$\frac{4}{202.1}$	78.4		89.2	2
16	56	50.5	80.1		11.0	
	3		79.2		91.1	50.5
	15				10.3	
	23	$\frac{4}{206.5}$	82.5		92.8	
	32	51.6	80.8		11.3	9
17	42		81.6		92.1	51.6
	50				12.2	
	57	$\frac{4}{210.6}$	80.9		93.1	10
	5	52.6	78.7		13.3	
	24		79.8		92.0	52.6

Oct. 1, 1891.

Limit of Vis.

8h

8h

20

22

42

28

41

21

✓ 4202.0
50.5

19.3

15.3

12.3

40.5

60.0

43.0

58.3 50.5

Seeing pretty good. Images of
satellites a little blurry but pretty
fairly defined.

B+C, 1122.

S

40

4.0

41

4.0

B. 394.

S

41

0.0

42

0.0

56

Oct. 1, 1891.

Comet Barnard, (Sept. 27) W. obs.

20	56	-1.5
21	46	
<hr/>		
	50	

Position Zero	85.3
	<hr/> 45.0
Setting	130.3

Order in preceding transits $\odot \odot * *$.
Both in northern half of square.

11 complete sets taken 5th set, considered not quite so good comet extremely faint 16 min of arc in diam., apparently a little condensation at centre, total light impression 13.5 mag. mag. of condensation at center 13.8

Transits taken by chronograph.
Comp. Star = Δ Cen. - $0^{\circ} 41' 36''$ (9.0 K)

#

Transits to join lettered comp. star of tonight to unlettered comp. star of last night.

Oct. 1, 1891.

Seven complete sets taken, last tap
in 5th set one sec. too early.

Transits by Chronograph 3^d tap in last
set ~~is~~ of a sec. too early.

Order in transits lettered star, lettered star,
unlettered star, unlettered star.

Both in northern half of square

Lettered comp. star = $-0^{\circ} 41' 36''$ (9.0 K)

Unlettered " " = $-1^{\circ} 40' 90''$ (9.5

δ Bootis

14 16

+54.6

23 21

9 5

m 2 δ , δ 1 ~~in~~ n in large tel.
Too far for finder
Est. 12.42

10 30

γ Draconis

16 26

+67.4

23 27

7 1

γ 1 γ , γ 2 γ in large tel.
Too far for finder
Est. 12.4

10 36

Oct. 1, 1891.

S Cygni

$$\begin{array}{r}
 20 \quad 8 \\
 23 \quad 33 \\
 \hline
 3 \quad 25
 \end{array}$$

+57.1

10 44 S Cygni not seen, star ~~"#"~~^{"u"} seen at intervals
 S Cygni probably fainter than 149

R Cygni

$$\begin{array}{r}
 19 \quad 32 \\
 23 \quad 41 \\
 \hline
 \end{array}$$

+49.9

10 27 9 2 R, R 3 h in large tel.
 Too faint for finder
 Est. 13.6

S Cephei

$$\begin{array}{r}
 21 \quad 37 \\
 23 \quad 50 \\
 \hline
 2 \quad 13 \\
 21 \quad 37 \\
 24 \quad 12 \\
 \hline
 2 \quad 35
 \end{array}$$

+78.3

11 17

S = 0 in large tel.
 Too ft for finder
 Est 12.1

Oct. 1, 1891

F Ursae Maj.

10	32	+69.2
<u>24</u>	<u>15</u>	
13	43	

~~N~~ 3 R, R 1 t in large tel.
 Tairix Jorfinder
 East 12.2

B. 236.

0	35	52.0
	36	52.2

B. 394.

11	40	0.0
	41	0.0

Oct. 2nd, 1891.

Partly cloudy.

Barnard's new comet. (Sept. 27) W. obs.

20	56	-1.5
20	38	
	18	
12	00	
11	42	

Position Zirc 109.4
 45.0
 Setting 154.4

Order in preceding transits ☉ ☉ * *

Comet in northern half

Star in southern half.

5 sets taken, & clouds prevented further observation, transits on chronograph with clock 1327. Same comp. star used as last night

Comet possibly a hair brighter than last night although still extremely faint.

Oct. $\frac{22}{11}$, 1891.

Sky became somewhat clearer again.
Three ~~more~~ sets taken. Conditions
just the same in the preceding sets.

Sky partly clear.

S Cygni.

20	8	
22	27	
2	19	+57.1

9 30 S not seen. Probably fainter than 15.0

S Bootis

14	16	
22	32	
8	16	+54.6

9 35 m 2.5 S, S 1 m in large tel.
Too ft. for finder
Est. 12.3

Oct. 2, 1891.

R Draconis

16	26	+67.4
<u>22</u>	<u>37</u>	
6	11	

R = 9 in large tel.
 Too ft. for finder
 Est 12.3

9 39

R Cygni

19	32	+49.9
<u>22</u>	<u>40</u>	
3	8	

R = 3.5 h in large tel.
 Too ft. for finder
 Est 13.7

9 43

S Cephei

21	37	+78.3
<u>22</u>	<u>44</u>	
1	7	

S = 0 in large tel.
 Too ft. for finder
 Est 12.2

9 45

Cloudy again

Oct. 2, 1891.

10 5 Still cloudy with no prospect of clearing.

Oct 3, 1891.

Barnard's new comet (Sept 27)

W. obs.
-1.5

20	56
21	8
<hr/>	
	12

Position Zero 158.2
 45.0
 Setting 203.2

Transits by chronograph and clock 1327.

Order in transits $\odot \equiv \odot \equiv **$.

Comet in northern half

Star in southern half

9 complete sets taken. 3rd tap in 8th set.
 a little doubtful. ^{subtract .3} add .3 of a second from
 last tap in last set.

Comp. Star = Δ U, $-0^{\circ} 41' 35''$ (9.2 K)

Circumpolar Variables.

W. obs.

14

S' Boötis

14 16

+54.6

22 45

8 29

m 3 S, S, n in large tel.
 Too faint for finder
 Est 12.3

9 50

Oct. 3, 1891.

 α Draconis

16	26	+67.4
22	58	
6	52	

g- 2 α , α 1 α in large tel.
Too faint for finder
Est 12.3

10 1

 α Cygni

19	32	+49.9
23	8	
34	36	

Review of comp. stars for α Cygni. Selection seems to be good. ~~At~~ A star at limit of visibility seems to be wanted, but seeing is not quite sharp enough to decide upon same tonight.

g 1 α , α 4 α in large tel.
Too faint for finder
Est 13.5

10 40

α seems to be slowly coming up in brightness

Oct. 3, 1891.

S Cygni

$$\begin{array}{r}
 20 \quad 8 \\
 23 \quad 48 \\
 \hline
 3 \quad 40
 \end{array}$$

+57.1

Star ~~A~~^u quite certainly seen. Not seen.
 Probably fainter than 15.0

X 10 44

S Cephei

$$\begin{array}{r}
 21 \quad 37 \\
 23 \quad 51 \\
 \hline
 2 \quad 14
 \end{array}$$

+78.3

10 50

$S = 0$ in large tel.
 Too faint for finder.
 Est. 12.3

P Ursae Maj

$$\begin{array}{r}
 10 \quad 32 \\
 23 \quad 57 \\
 \hline
 13 \quad 25
 \end{array}$$

+69.2

10 56

X 3.5 R, R, L in large tel.
 Too faint for finder.
 Est 12.6

Oct. 3, 1891.

Barnard's Last Comet.

H. B.

$$\begin{array}{r}
 7 \quad 32 \quad -27.9 \\
 \underline{-3 \quad 2} \\
 \quad 30
 \end{array}$$

$$\begin{array}{r}
 4 \quad 47 \\
 \underline{-2 \quad 45}
 \end{array}$$

$$\begin{array}{r}
 \sqrt{\quad} \quad 0 \\
 \underline{-2 \quad 32}
 \end{array}$$

$$\begin{array}{r}
 \sqrt{\quad} \quad 22 \\
 \underline{-2 \quad 10}
 \end{array}$$

A larger area of sky swept over
 but comet not found. Region low,
 some fog.
 Daylight coming.

Oct. 5, 1891.

S Cygni
 20 8
 20 49
 ———
 41

+57.1

20 8
 20 54
 ———
 46

S Cygni not seen, probably fainter than 14.9

Clouds.

B. + C. 1122.
 2 5 53.7
 6 ———
 7 53.7

^m 1 6.3

B. 394.
 2 7 0.0
 8 0.0
 9 0.0

Oct. 5. 1891.

Reap. Jup. III. Alt. P. Comp. Lat.
is Lat. pr. Jup. (I) P. obs. Tr. rec.

13	21	4	19	52.5	337.9
	16		20	10	65.3
	26			20	333.7
	44			34	60.3
27	9		Clouds, Lat. barely visible,		
	23	9	21	3	62.7
	36			17	331.0
	51			30	64.6
	23	9		45	326.5
	cor. 1 ^m 6		22	3	67.4
	cor. 1 ^m 7				

Lat. not visible.

~~Jup. barely vis.~~

25	12		24	5	Jup. barely vis. to naked eye,	323.9
26	5		25	15		69.4
			24		257.7	327.1
			35	31	258.0	71.6
			55		257.8	329.6
			26	7		67.7
			22		257.9	325.6
			30	24	251.4	73.6
			39		254.6	325.0
			50			73.3
			27	3	251.4	324.7
				9	258.6	
					255.0	

189.4

187.8

Oct. 5. 1891.

27	15		69.2	
	27		325.1	199.0
	35		71.3	
	42	56	252.8	325.1
28	5		258.4	64.6
	15		254.1	325.0
	29			66.0
	43		254.5	320.5
	54	48	255.1	71.1
29	5		254.8	326.2
	15			74.3
	25		253.3	327.6
	37	32	254.0	70.2
	42		253.6	325.2
30	5			74.2
	17		250.5	325.3
	22	22	258.8	71.9
	39		254.6	330.7
	49			73.6
31	1		259.3	322.9
	15		257.3	64.6
	25		258.8	325.6
32	5			71.2
	16		255.2	327.0
	27	22	251.7	73.1
	40		253.4	325.2

Oct. 5. 1891.

32	✓3		69.3	
33	✓		259.4 327.7	✓
	15	9	261.6 65.5	
	24		260.5 327.1	197.6
	32		261.2 66.0	
	✓5		259.1 327.2	✓
	✓6	49	260.0 64.3	
34	✓		327.5	197.2
	14		66.7	
	25		263.3 330.0	6
	35	20	258.5 71.5	
	✓6		259.8 328.0	199.0
	✓6		64.6	
35	2		262.8 331.0	
	19	18	260.2 66.6	7
	✓5		261.0 326.4	198.2
	✓9		66.0	
36	19		261.1 327.1	
	12	13	262.6 66.3	✓
	26		261.8 328.9	197.1

Limit of Vis.

36	✓6		1.6	
	✓6		29.2 30.2	
37	✓	60	25.9 2.4	
	14		27.5 22.3	15.8

Oct. 5, 1891.

Obs. interrupted during first portion of observations by clouds. Clear later. Seeing good.

B. + C. 1182.

A 43 $\sqrt{3.2}$
44 $\sqrt{3.2}$

- 1^m 6.8

B. 394.

A 45 0.0
46 0.0

Clouds.

20 56 - 1.5
22 16
1 20

Repr. of Jupa I. Phot. R. W. obs.
Powe. ~~re~~ comp. with first sat.
following = sat. III

B. 394

13 259 00
14 00 00
13 1 00

B. + C. 1182.

13 57 52.4
58 52.5
59 52.3

1 7.7

13

23

40

46

54

Seen.

170.2

194.5

Oct. 5, 1891.

h
13

24

4
14
2027
34
41
48
55

25

1
7
16
23
32
39
47
55

26

1
7
16
23
32
40
48

27

56
3 60
12
2334
43 38.2
53

63.4

60.8
62.1

59.9

62.0
66.0

165.4

200.1

160.7

242.7

159.8

203.0

157.0

205.5

95.5.4

207.5

157.3

209.2

154.0

208.9

152.9

211.9

152.9

212.6

149.6

213.0

148.0

215.4

149.6

213.0

150.0

210.8

150.1

210.0

138.1.0

213.0

Oct. 5, 1891.

13

28

5

153.2

36

57.8

211.0

48³⁸

62.0

149.1³

59.9

211.1^{181.1}

29

3

157.2

15

26

58.9

210.1⁴34²⁹

63.9

150.0

61.4

213.9^{181.3}

41

50

150.1

59

62.8

212.9

30

8⁵

60.1

151.6⁵

61.4

211.7^{181.6}

24

34

150.0

47

54.

62.1

212.1⁶

31

2

63.0

150.2⁶

62.86

213.2^{181.4}

12

22

149.2

35

38.

65.8

215.0⁷

65.9

147.1^{181.1}

44

51

65.8

213.0⁷

32

4

146.9

12

68.4

215.3

24¹⁸

66.0

146.7²

67.2

212.7^{180.4}

36

47

150.2

56

61.2

211.4

33

8³

65.4

148.0⁹

63.3

213.4^{180.8}

21

34

31

64.0

150.0

35

2⁸214.0¹⁰

Oct. 5, 1891

13	35	11	148.8
		28	210.5
			61.7
			62.8

Limit of invisibility

37	00		167.4
	13	22	26.7
	30		23.5
	47		25.1
			192.9
			180.8

Jup. rather low and seeing a part of the time extremely bad. Jup. bathing and at times nearly overlapping sats. observations however thought to be good, as images of sats. were similarly affected, and the discs of about equal size and similar in general appearance. seeing a part of the time quite good.

B394

14	2	0.0
14	3	0.0

B. & C. 1182

14	00	51.9
14	1	52.10

1 8.0

Oct. 8, 1891

Barnard's Comet (Sept. 27)

W. obs.
- 1.5

20	56
20	47
	9
12	00
11	51

Clouds.

20	56
21	25
	29

Still cloudy.

20	56
21	28
	32

Ros. garo	343.4
	45.0
Setting	298.4

Order in transits $\infty * \infty *$

Comet in southern half

Star in northern half

Seven sets taken. in fifth set use last of two close taps for fourth tap. In seventh set, second comet .5 of a second too early. Comet extremely faint .8 of a minute of arc in diameter. Slight central condensation, seems a little brighter than on Oct. 3.

Oct. 8, 1891.

S Boötis

14	16	
22	4	
<hr/>		
8	25	+54.6

9 31 $\underline{n} 3, S, S 10$ in large tel.
Too faint for finder
Est. 12.6

R Draconis

16	26	
22	59	
<hr/>		
6	33	+67.4

9 40 $g 1 R, R 2.5 r$ in large tel.
Too ft for finder.
Est. 12.3

R Cygni

19	32	
23	5	
<hr/>		
3	33	+49.9

10 00 $g 1 R, R 4 h$ in large tel.
Too ft. for finder
Est. 13.0

Si Agguai

$$\begin{array}{r} 23 \\ 3 \\ \hline 25 \\ 17 \end{array}$$

Dr E. phci

$$\begin{array}{r} 21 \quad \checkmark \quad 37 \\ 23 \quad 29 \\ \hline 1 \quad 52 \end{array}$$

10 13

Alusae Maj.

$$\begin{array}{r} 10 \\ 23 \\ \hline 13 \end{array} \quad \begin{array}{r} 32 \\ 37 \\ \hline \sqrt{} \end{array}$$

10 18

Oct. 8, 1891.

B. + C. 1142.

10	24	41.0
	25	41.0

B. 394

10	26	0.0
	27	0.0

 $-1^m 19^s$

Reap. of Jupiter II Photom. R. WOb, Moore Rec
comp. with sat. following = Sat. III

10	43	2.1
	26	0

	17	2.1
10	24	41

10	42	9.1
----	----	-----

9.1 app. time el.

com. + $1^m 20^s$

15 43 27 10

42

7

seen.

13

104.5

21

129.0

29

101.0

36

134.1

44

95.0

53

137.0

43

1

90.0

8

138.0

15

92.2

20

135.7

36

85.0

37

145.0

45

80.6

14.1

Oct. 8, 1891

10

43

53

146.2

44

1

79.2

8

146.2

16

78.0

23

152.2

31

74.1

38

152.0

45

74.9

52

153.7

58

77.0

45

5

156.0

13

70.3

21

158.3

28

74.5

36

82.0

156.5

44 40

85.6

730

53

83.5

158.0

46

6

115.5

70.3

17

84.7

155.0

26 21

82.9

72.1

35

83.8

155.0

45

113.1

72.3

52

83.5

155.8

47

0

56

82.2

74.1

9

82.8

156.3

114.6

Oct. 8, 1891.

10	47	17		71.1	
		28	84.0	155.1	4
		38 ³²	80.8	71.9	
		46	82.4	152.7	
		56	112.7	73.0	
	48	56	79.9	152.9	5
		19 ²⁹	82.2	71.9	
		39	83.6	159.1	
	49	23	114.2	71.0	
		35	82.3	153.3	
		48 ⁴²	84.0	73.8	6
	50	2	82.2	157.8	
		12	114.0	72.1	
		24	86.7	158.8	
		34 ²⁹	81.2	73.0	7
		46	84.0	154.2	114.5
	51	2		69.0	
		15	86.9	155.9	8
		26 ²⁰	82.4	72.9	
		36	84.6	155.3	113.2
		49		73.6	
	52	3	85.2	158.8	
	54	53 ³¹	85.2	72.8	9
	55	13	85.2	158.0	115.8
		22		71.0	
		33	43.850	156.0	10
		51	86.6	72.0	
	56	7	85.8	158.6	114.4

Oct. 8, 1891.

Limit of Vis.

10

57 ~~58~~
58

55

106.0

14

15.0

121.0

29 21

14.3

107.2

45

14.6

121.5

113.9

Seeing pretty good.

B. + C. 1142.

11 12 39.5

13 39.5

B. 394.

11 14 0.0

15 0.0

- 1^m 20.5^q.

Oct. 9, 1891.

$$\begin{array}{r} 20 \qquad \qquad \sqrt{6} \qquad \qquad -1.5 \\ 20 \qquad \qquad \sqrt{6} \\ \hline 0 \qquad \qquad 0 \end{array}$$

$$\begin{array}{r} \text{Position Zero} \quad 355.7 \\ \qquad \qquad \qquad 45.0 \\ \hline \text{Setting.} \quad 310.7 \end{array}$$

$$\begin{array}{r} 20 \qquad \qquad \sqrt{6} \\ 21 \qquad \qquad 25 \\ \hline 0 \qquad \qquad 29 \end{array}$$

In sixth set, first star .3 of a second late.
 Last star .5 of a second late.
 In last set. Last star $\frac{2}{3}$ of a ^{second} minute late.
 Eight complete sets taken.

Order in transits $\infty * \infty *$. Comet
 in northern half, star in southern half.
 Same comp. star used as last night

Some moon. Comet very faint. Gen'l
 appearance and brightness of the comet about
 the same as last night!

Oct. 9, 1891.

S Bootis

14	16
<u>22</u>	<u>3</u>
7	47

+54.6

8 18
n 25 S, S 10 in large tel.
 Too f. for finder
 Est. 12.6

R Draconis.

16	26
<u>22</u>	<u>19</u>
5	53

+67.4

9 1
p 2.5 R, R 1.5 g in large tel.
 Too f. for finder
 Est. 12.2

R Cygni

19	32
<u>22</u>	<u>27</u>
2	55

+49.9

R = g in large tel.
 Too faint for finder
 Est. 13.3

Night now pretty clear. Exam. of region of
 R Cygni for comp. star at limit of visibility
 (over)

Oct. 9, 1891.

R Cygni (con.)

(9) There seems to be an exceedingly ft.
 45 star, which is fainter than star h.
 Call this k. See diagram on p. 131

S Cygni
 20 8
 23 6
 2 58

+57.1

9 50

S 25, S 24 in large tel.
 Too faint for finder
 Est. 14.7

S Cephei

21 37
 23 16
 1 39

+78.3

9 57

m 4 S, S 1 n in large tel.
 Too faint for finder
 Est. 11.8

Oct. 9, 1891.

R Ursae Maj.

10	32
23	25
12	53

+69.2

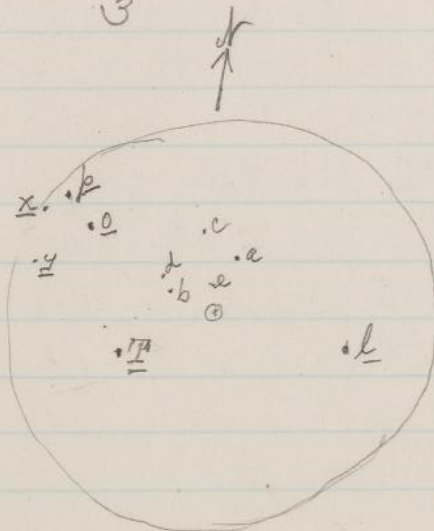
3.5 R, R 1.5 t in large telescope
Too faint for finder
Est. 12.5

10 5

Selection of ft. comp. stars for \$

Aquarii

20	40
23	45
3	5

- $\sqrt{.5}$ 

(over)

Oct. 9, 1891.

J Aquarii (cont)

0 3 $\frac{J}{2}$, $\frac{J}{2}$ 1 ft in finder
 0 2 $\frac{J}{2}$, $\frac{J}{2}$ 2 ft in large tel.
 Est. 10.0

10 51

Selection on previous page thought to be good. Star ϵ is the faintest star which can be seen tonight.

Oct. 14, 1891.

S Bootis

$$\begin{array}{r} 14 \quad 16 \\ 21 \quad 21 \\ \hline 7 \quad 5 \end{array}$$

+57.6

$$\begin{array}{r} 14 \quad 16 \\ 21 \quad 25 \\ \hline 7 \quad 9 \end{array}$$

n 3 S, S 10 in large tel.
Too ft. for finder
Est. 12.6

R Draconis

$$\begin{array}{r} 16 \quad 26 \\ 241 \quad 35 \\ \hline 5 \quad 9 \end{array}$$

+67.4

p 3 R, R 1.5 g in large tel.
Too ft. for finder
Est 11.7

Oct. 14, 1891.

R Cygni

19	32
21	47
<hr/>	
2	15

+49.9

 $R = 9$ in large tel.

Too faint for finder

Est. 13.3

8

13

S Cygni

20	8
22	0
<hr/>	
1	52

+57.1

S Cygni seen, as near as can be determined

~~S = 5~~ $S = 8$ in large tel.

Too faint for finder

Est. 14.4

(8

30)

Observation difficult on account of the bright moonlight.

S Cephei

21	37
22	15
<hr/>	
0	38
21	37
22	19
<hr/>	
0	42

+78.3

 m 3.5 S, S 1.2 in large tel

Rather too faint for finder

Est. 11.7

8

42

Oct. 14, 1891.

R Ursa Maj.

10	32
22	29

+69.2

¹¹
⁵⁷
 S 3 ¹¹R, ⁵⁷R, ⁵⁷X in large tel.
 * Foot for finder
 Est 12.4

8 56 Observation difficult, altitude rather low, and moon bright.

S Ursa Maj.

12	37
22	45
10	8

+61.53

Clouds.

Experiments to determine effect of right and left handedness in grade estimates.

Two stars 8.5 mag, star on right above called (a) star below called (b) in all cases. Distance 10'

b 4 a

Two stars of 10.5 mag. Distance 5'

b 5 a

Two stars of 11th mag. Distance 4'

b 2.5 a

Oct. 14, 1891.

Two stars of 9th mag. Dist. 4'
a, b

The above stars, ^{now} taken in reverse order

Two 9th mag. stars
b 1 a

Two stars of 11th mag.
b 2 a

Two stars of 10.5 mag.
b 4 a

Two stars of 8.5 mag.
b 3 a

Sky somewhat cloudy.

B. + C. 1122.

9	34	20.6
	35	20.5

B. 394.

9	36	0.0
	37	0.0

Reap. dup. I, Phot. R. P. obs. Tr. rec.
Comp. with Sat. IV.

197

Oct. 14, 1891.

Limit of Vis.

9 ~~70~~ 46 $\sqrt{40}$ $\frac{117.5}{56.7}$ 15.5 153.3 $\frac{322.1}{161.0}$
 47 $3\sqrt{46}$ 58.7 15.5 164.4 161.0

47 14.0 $\sqrt{15.6}$
 22.0 175.2
 24.0 184.5
 33.0 174.7
 40.0 181.4
 46.5 166.1
 57.0 135.6
 48 6.0 144.7
 17.0 129.3
 24.0 197.7
 35.0 126.6

clouds.

49 17.0 205.4
 30.0 124.0
 37.5 209.2
 46.5 112.0
 56.5 204.6
 50 8.0 113.4
 20.0 211.3
 31.5 113.1 $\frac{100.5}{103.7}$ 100.5
 41.5 $\frac{48.7}{195.0}$ 213.6 $\frac{204.2}{102.1}$ 204.2
 53.0 $\frac{48.8}{162.8}$ 110.5 162.8
 51 90 215.2

Oct. 14. 1891.

9	51	20.5	105.1	112.2	
		31.0	100.8	217.3	
		155.0	205.9	113.5	657.9
		38.8	103.0	215.6	164.5
		KKV	38.7	215.6	164.5
		59.0			164.5
	52	12.5	108.5	107.5	
		22.5	106.3	216.0	643.6
		108.5	214.8	106.9	160.9
		27.1	107.4	213.2	160.9
		31.0			
		KKV			
		52.5			
	53	5.0	106.0	111.2	
		17.0	104.2	217.2	
		27.0	210.2	111.6	655.8
		40.0	105.1	215.6	164.0
		216.0			163.9
		54.0			
		46.0	101.6	115.0	
		54.0	100.7	215.6	657.7
		54.0	202.3	113.7	164.4
		54.0	101.2	215.6	164.4
	54	9.5			
		21.0	111.2	107.4	
		34.0	107.0	215.6	651.6
		47.5	218.2	109.3	162.7
		46.7	109.1		
		clouds.			
	55	24.5	102.9	216.3	
		33.0	103.1	113.4	162.9
		42.0	206.0	212.4	425.1
		51.5	103.0	109.3	14

Stopped by clouds.

more or less passing, broken clouds during eclipse.

Oct. 1K. 1891.

B_u + C. 1122.

10	23	19.2
	24	19.3

B. 39K.

10	25	0.0
	26	0.0

Limit of visibility before eclipse was stopped by the sudden appearing of Jupiter I.

A second limit of visibility could not be taken at end of eclipse owing to clouds.

Oct. 15, 1891.
Circumpolar Variables

W. obs.

δ Bootis

14	16
21	30
<hr/>	
7	14

+54.6

μ 2.55, S 1.0 in large tel.
Too faint for finder
Est. 12.0

δ Draconis

16	26
21	49
<hr/>	
5	23

+67.4

μ 3 R, R 1.9 in large tel.
Too fl. for finder
Est. 11.8

δ Cygni

19	32
22	2
<hr/>	
2	30

+49.9

δ 18
R = 9 in large tel.
Too fl. for finder
Est. 13.3

Oct. 15, 1891.

σ Cygni
 20. 8
 22. 9

 2. 1

+57.1

8 23

$\underline{S} = t$ in large tel
 Too faint for finder
 Est. 14.5-

Clouds.
 Thickly cloudy with no prospect of clearing

Reap. Jup. II. W. obs. Powe rec.

B. + C. 1182.
 12 45 4.2
 46 4.1

B. 394.
 12 47 0.0
 42 0.0

12 53

Somewhat cloudy, Jup. invis-
 ible.

26 49
 22 43

 +4 6 -9.6

12 59

Setting on place of Jup. by H. A.
 and Sec. Clouds somewhat broken,
 but the heavy masses in this

Oct. 15, 1891,
region. Jup. invisible.

7^h 05^m Jup. seen for a moment, but now
invisible.

7^h 08^m Jup. seen for a moment, but im-
mediately disappeared in the clouds.

7^h 11^m Jup. invisible.

7^h 15^m Jup. still invisible.

7^h 18^m It is now time for rep. but
Jup. still invisible in large
telescope.

A little while before eclipse
sky looked as if rep. could
be taken, but heavy clouds
coming up prevented same, as
above.

Oct. 16, 1891

Circumpolar Variables

W. rfs.

S Bootis

14 16

21 38

7 22

+54.6

m 2 S, S 20 in large tel.
Too faint for finder
Est. 12.7

17 53

Moon very bright, about ^{at the} full.

R Draconis

16 26

21 50

5 24

+67.4

R 2.5 R, R 2.59 in large tel.
Too faint for finder
Est. 11.7

8 5

R Cygni

19 32

22 0

2 28

+49.9

e 4 R, R if in large tel.
Too faint for finder
Est. 12.9

4 22

Oct. 16, 1891.

S ~~Cephei~~ Cygni

20

8

+57.1

22 20

2 12

S 2 S, S 1t in large tel.

Too faint for finder

Est. 14.3

Observation exceedingly difficult on account
of bright moonlight and proximity of bright stars

S Cephei

21

37

+78.3

22 32

55

m 3.5 S, S 1n in large tel.

Too faint for finder

Est 11.5

R Ursae Maj

10

32

+69.2

22 40

12 8

S 3 R, R 1.5t in large tel.

Too faint for finder

Est. 12.5

Oct. 16, 1891.

W.M. Wedger Zone

W. obs

Series 21. +9°

$$\begin{array}{r} 20 \\ 23 \\ \hline 2 \end{array}$$

$$\begin{array}{r} 26 \\ 11 \\ \hline 45 \end{array}$$

+10.8

9 25 4546

$$\begin{array}{r} 4.60 \\ 4.79 \\ 4.80 \end{array} \begin{array}{r} 14.19 \\ 6.14 \end{array}$$

4548

3.22 Star slightly red.

3.62

3.92 10.56

4.57

4557

2.60

2.62

2.60 7.82

3.39

4562

2.95

2.90

2.93 8.78

3.80

4566

4.31

4.52

$$\begin{array}{r} 4.37 \\ 13.20 \\ 5.72 \end{array}$$

Oct. 16, 1891.

4569

2.87
 2.91
 2.82 8.60
 3.72

4573

2.09
 2.33
 2.39 6.81
 2.94

4585

2.99 Middle and brightest of group
 3.16
 3.28 9.43
 4.08

4586

3.11
 3.11 preceding, southern, and
 3.10 slightly brighter of pair,
 9.32
 4.04

4588

3.97
 4.30
 4.37
 12.64
 5.47

4591

4.70
 4.71
 4.78 14.19
 6.14

4593

3.70 seen to be wrong.
 3.63
 3.85
 3.88 11.36
 4.92

Oct. 16, 1891.

4603

3.60

3.69

3.95 11.24
4.86

4608

2.99 Middle and bright
3.10 est of three nearly
3.00 in line
9.09
3.94

4613

4.15

4.49

4.41 13.07
5.66

4616

4.40

4.69

4.71 13.80
5.98

4617

3.02

3.41

3.61 10.04
4.35

4622

3.45

3.71

3.77 10.93
4.73

4624

2.72

2.98

3.01 8.71
3.77

Oct. 16, 1891.

4630

4.41

4.85

4.75 14.01
6.05

4637

2.40

2.59

2.51 7.50
3.25

4640

5.30

5.38

5.31 15.99
6.92

4642

3.52 wrong.

3.91

4.20

4.27 12.38
5.36

4647

3.18

3.40

3.28 9.86
4.27

4648

3.49

3.61

3.69 10.79
4.67

4651

3.03

2.96

3.16 9.15
3.96

Oct. 16, 1891.

4656

2.77
 3.02
 3.00 8.79
 3.81

4659

3.21 Star rather bright
 3.50 Est. 9.3
 3.40 10.11
 4.38

4661

3.72
 3.60
 3.59 10.91
 4.72

4663

2.81
 3.21
 3.30 9.32
 4.04

4668

2.149 Preceding &
 2.39 southern of pair
 2.30 6.88
 2.98

4687

2.75
 2.99
 3.07 8.81
 3.81

Improved focus of eye-piece a little.

Oct. 16, 1891.

4688

4.00

3.89

3.80 11.69
5.06

4689

2.47

2.89

2.99 8.35
3.62

4692

2.49

2.79

2.87 8.15
3.53

4714

2.98

3.09

3.21 9.28
4.02

4715

2.58

2.69

2.90 8.17
3.54

4719

2.46

2.58

2.73 7.77
3.36

4727

4.30

4.20

4.03 12.53
5.43

Oct. 16, 1891.

4741

2.10 This star really fol-
 2.49 lows the D.M. 4742
 2.37 by about 3 sec.
 6.86
 3.01

4742

2.67
 2.80
 2.76 8.23
 3.56

4743

2.70 wrong
 3.32
 3.28
 3.21 9.81
 4.25

~~4744~~

~~2.00~~
~~2.03~~
~~2.00~~

4749

4.30
 4.27
 4.30 12.87
 5.57

11 0

The next to last star above has been crossed out as it was accidentally taken when it should not have been. It is not in the list of stars to be observed.

Oct. 17, 1891.
Circumpolar Variables

S Boötis

14

16

W. obs.

+54.6

R Draconis

16

26

+67.4

1991phae.ppsf..514d