

KG
11366
V.320

Dec. 3, 1886

Region of R Ceti (14) Lohm

6 30 z Not seen in wedge.

t	12.8	15.0	27.8 [^]	24 ^v
R	26.4	27.7	54.1 [^]	48 ^v
a	28.9	28.9	57.8 [^]	51 ^v
y	12.8	11.5	24.3 [^]	21 ^v
m	35.0	30.1	63.1 [^]	56 ^v
f	26.0	25.2	51.2 [^]	45 ^v
d	42.0	45.2	87.2 [^]	77 ^v
b	26.9	29.8	56.7 [^]	50 ^v
g	39.8	42.0	81.8 [^]	72 ^v
e	39.0	39.0	78.0 [^]	69 ^v

7 5 Star prec. a 7.5 16.3 17.4 33.7 30^v
 By estimate a 2 R
 R 15 star prec. a

Some clouds passing, perhaps
 affecting observations.

Dec. 3. 1946.

7 20 E. T. = 0 25 S. T.

Comp. Stars for Var.

W. obs.

53 R. Urb. Ineq:

10 33 +69.8

0 45

-9 48

d	102.0	103.0	205.0 ^{6.4}	
(g)	106.7	102.8	209.5 ^{53.6.4}	
c ₁	56.3	55.5	111.8 ^{3.5}	
c	93.7	92.3	186.0 ^{5.8}	
b	74.0	64.5	142.5 ^{4.5}	
l	84.1	94.9	179.0 ^{5.3}	
x	38.0	40.8	78.8 ^{2.4}	
R	28.1	25.2	53.3 ^{1.6}	
(e)	40.1	42.1	66.3 68.8	135.1 ^{4.3}
an	40.1	42.1	82.2 ^{2.5}	
(d)	66.3	70.0	71.0 141.0 ^{4.5}	
b ₂	65.1	70.0	135.1 ^{4.2}	
(f)	87.9	91.2	179.1 ^{5.6}	

Star in apt. same R.A. as R₁ and 3' south. Call this Z.

8 38

R 1.5 Z

10 10

Some light cloud in sky.
More cloudy than rather clear. Region of R Monocerotid(33) identified, but observations prevented by more clouds.

Dec. 7. 1886.

B. + C. 1122.

16 22 0.0
23 0.0

B. 394.

16 26 0.0
27 0.0

Dis. sup. I. Phot. H. P. obs.
Comp. with. 1st set. fol. = III.

16 42 47

43 11

20

27

3/2

47

55

44 4

12

22

33

43

51

45 1

14

25

35

46 33

111.3

200.0

111.4

203.0

112.4

202.2

109.2

192.6

102.6

196.4

111.0

195.2

110.6

200.3

112.2

200.3

109.9

197.0

110.2

Dec. 7. 1886.

16	46	43	197.6
Store reads in wrong quadrant,			
16	47	32	196.2
		46	293.3
		56	192.3
	42	5	295.7
		15	195.2
		23	293.2
	49	6	196.2
		14	225.4
		24	192.4
		31	229.4
		40	199.9
		47	225.3
		53	203.2
	50	0	224.0
		2	203.2
		17	225.4
		25	202.5
		33	222.0
		40	205.6
		51	221.2
	51	2	212.6
		9	221.4
		15	226.5
		24	275.3
		32	220.2

Dec. 7. 1886.

16	51	32	27	51
		45	22	14
		52	26	4.2

Limit of Vis.

52	25	22	4.7
	32	26	4.0
	40	22	6.9
	49	26	4.2

B. + C. 1182.

16	57	59.5
	5/2	59.5

B. 394.

17	2	0.0
	3	0.0

6

Dec. 8, 1886.

Region of γ Tauri (20)

S. obs.

6 20

x (of list)

32.8

a

9.7

(5)

16.4

Interrupted by clouds.

Comp. Stars for Var.

N. obs.

26 R Leporis

4 57 14.6

2

-2 57

Too low and also too much cloud
in air.20 γ Tauri

N. obs.

4 15 +19.3

2

0

+2 15

Cloudy.

Stopped finally by heavy
banks of clouds coming up
from north west.

Dec. 9. 1886.

26 E. S. = 1^h 0^m S. S.
Comp. Stars for Var.
35 R Lyncis.

W. obs.

(1) L

(2) p

3 f

4 f

5 f

6 a

7 R

8 g

9 b

10 d

11 e

12 w

13 w

14 d

Rather too f.

Abandoned.

53 R Urs. Maj. W. obs.

10 34 +69.8

1 30

- 9 4

over,

Dec. 9, 1886.
53 R Urs. Mag. Obs.

d	104.6	114.0	222.6 [^] 6.9 >
(g)	100.0	99.4	199.4 [^] 6.1 >
c ₂	52.7	51.0	104.7 [^] 3.3 >
c	96.3	101.2	197.5 [^] 6.2 >
b	64.0	67.0	135.0 [^] 4.2 >
b	93.0	96.9	189.9 [^] 5.7 >
x	34.0	35.2	69.2 [^] 2.1 >
R	just visible but too ft. for wedge.		
(c)	54.0	59.0	117.0 [^] 3.7 >
m	42.4	39.9	82.7 [^] 2.6 >
(d)	69.5	66.5	136.0 [^] 4.3 >
b ₂	62.1	56.9	119.0 [^] 3.7 >
(f)	89.4	90.0	179.4 [^] 5.6 >

Moon about at full. Sky very bright.

Measures not repeated in reverse order as usual, but two measures of each star made in immediate succession.

Dec. 9, 1886

Region of V geminum (38 b) Sols.

100	a	37.6	40.0	77.6 [^]	6.7 ^{>}
	b	34.1	34.2	68.3 [^]	5.9 ^{>}
	f	27.1	25.8	52.9 [^]	4.5 ^{>}
	m	9.9	10.1	20.0 [^]	1.7 ^{>}
	e	33.1	32.9	66.0 [^]	5.7 ^{>}
	m	12.1	14.0	26.1 [^]	2.2 ^{>}
	d	32.3	30.0	62.3 [^]	5.4 ^{>}
	z	not certainly seen			
	q	" " "			
	IV	33.0	33.7	66.7 [^]	5.7 ^{>}
	x (on chart; not on list)	11.7	11.5	23.2 [^]	2.0 ^{>}
	q	11.2	9.8	21.0 [^]	1.8 ^{>}
	g	27.0	30.8	57.8 [^]	5.0 ^{>}
	fk	21.0	21.5	42.5 [^]	3.7 ^{>}
	g	39.9	41.7	81.6 [^]	7.0 ^{>}
	h	22.0	24.1	46.1 [^]	4.0 ^{>}
	h	31.9	30.8	62.7 [^]	5.4 ^{>}
	b	44.9	44.8	89.7 [^]	7.7 ^{>}

x follows IV 1.1, 0.7 south.

q follows V 0.5, 2.7 south.

x follows e 39.2, 2.7 south.

100 418

By estimate
C 3 V
V 3 dStopwatch runs to 61.1 while BKB 1182 runs 60.0
Stopwatch at 60.9 when started.

Dec. 11 1886

Region of U ¹ Can. Min. (40 a) S. obs.					
g	56		31.0	28.0	59.0 [^] 51 ^{>}
(2K)	k ¹ (prec. e 6.8, 2.2 north)	16.3	18.3	34.6 [^]	30 ^{>}
(1A)	k ¹ (prec. e 13.6, 1.8 north)	12.2	15.7	27.9 [^]	25 ^{>}
e		28.0	28.8	56.8 [^]	50 ^{>}
l		15.9	17.0	32.0 [^]	29 ^{>}
d		28.4	32.1	60.5 [^]	53 ^{>}
m		15.2	16.0	31.2 [^]	27 ^{>}
t		11.8	11.6	23.4 [^]	20 ^{>}
z		9.1	7.9	17.0 [^]	15 ^{>}
x		11.2	11.4	22.6 [^]	20 ^{>}
u		31.2	32.9	64.1 [^]	56 ^{>}
q		36.1	36.8	72.9 [^]	63 ^{>}
py		9.2	9.2	18.4 [^]	16 ^{>}
ml		14.5	14.5	29.0 [^]	25 ^{>}
g		23.9	22.9	46.8 [^]	41 ^{>}
phy		23.1	25.1	48.2 [^]	42 ^{>}
f		25.1	25.3	50.4 [^]	44 ^{>}
tc		34.0	36.9	70.9 [^]	62 ^{>}

10 48

By estimate

d 3 u
u 3 f

Early evening rather cloudy; clouds thin and scattered. Afterwards very clear, at least in region observed. Observations of z a little doubtful, but other faint stars pretty well seen, although the full moon was near.

Dec. 14, 1886

Region of γ Piscium (5) S. obs.

5 53

e	20.2	20.0	40.2^	35^v
a ⁽¹⁾	24.1	21.2	45.3^	39^v
f ⁽¹⁾	22.7	23.6	46.3^	40^v
d ⁽¹⁾	27.1	27.2	54.3^	41^v
c ⁽¹⁾	20.3	17.5	37.8^	33^v
b ⁽¹⁾	23.8	24.6	48.4^	42^v
h	23.5	24.1	47.6^	41^v
n	24.0	25.9	49.9^	43^v
k	28.2	27.0	55.2^	47^v
i	21.9	22.0	43.9^	38^v
m	13.7	13.0	26.7^	23^v
c ⁽²⁾	26.8	26.4	53.2^	46^v
a ⁽²⁾	44.2	45.1	89.3^	77^v
f ⁽²⁾	17.0	14.9	31.9^	27^v
g	18.3	18.9	37.2^	32^v
x	15.8	15.3	31.1^	27^v
y	11.0	11.3	22.3^	19^v
(23) Star prec. γ 5.5 south,	16.1	17.0	33.1^	28^v
(24) Star prec. γ 6.5 south,	11.0	11.0	22.0^	19^v
(21) Star at $0^h 25^m 8^s$, $+13^\circ 3'$,	41.4	44.0	85.4^	73^v
(22) Star at $0^h 27^m 3^s$, $+12^\circ 35'$,	48.2	49.9	98.1^	84^v

6 53

By estimate

γ 2 γ ; γ 2 a
 x 5 Eadie's Star ; Eadie's star 1 y

For identifications, see book 42, pages
 117, 195.

Dec. 14, 1886.
Comp. Stars for Var. W. obs.
53 R Urs. Mag.
1 55 = 2 3

10 33
2 0
- 2 33

8	15	d	109.0	112.7	221.7 ^{6.9} >
		(g)	114.8	119.5	234.3 ^{7.2} >
		c ₂	63.8	77.7	141.5 ^{4.4} >
		c	114.9	119.8	234.7 ^{7.3} >
		b	122.5	82.1	104.6 ^{5.2} >
		h	113.9	118.4	232.3 ^{6.9} >
		x	40.0	50.1	90.1 ^{2.8} >
		R	26.0	28.9	54.9 ^{1.7} >
		(e)	73.7	76.6	150.3 ^{4.8} >
		m	52.1	52.3	104.4 ^{3.2} >
		(d)	86.8	79.9	166.7 ^{5.3} >
		b ₂	70.3	72.7	143.0 ^{4.4} >
8	48	(f)	106.2	104.0	210.2 ^{6.6} >

~~27~~

Z (see p. 2) 27.7 32.7 60.4^{1.9}

When R was taken last in ascending part of series Z was abt. 1 grade brighter than R. Too cloudy at close of series for ~~measured~~ estimation.

Last star or two probably affected by clouds.

Moon up but not particularly troublesome.

Dec. 14, 1886

18 45

Rather clear at 18h, Jupiter very bright. Cloudy since about 18h15m, Jupiter occasionally visible, but not distinctly. Observation of eclipse not practicable.

16
Dec. 1846.

Comp. Stars for Var. H. obs.

$$\begin{array}{r} 1 \quad \sqrt{\sqrt{}} = 7 \quad \sqrt{2} \\ 10 \quad 33 \quad +69.2 \\ 1 \quad \sqrt{\sqrt{}} \\ \hline 2 \quad 3 \quad 2 \end{array}$$

R Mrs. May, (53)

d	121.6	925.4	247.0 ¹ 71 >
(g)	120.1	131.2	251.3 ¹ 71 >
c _r	67.4	65.2 75.8	143.6 ¹ 45 >
c	124.0	120.2	244.6 ¹ 76 >
b	27.7	94.0	181.7 ¹ 57 >
h	118.2	116.2	234.4 ¹ 70 >
x	51.8	53.8	105.6 ¹ 33 >
R	31.2	32.4	63.6 ¹ 20 >
(c)	83.1	82.8	165.9 ¹ 53 >
u	60.2	54.0	117.2 ¹ 36 >
(d)	88.1	84.0	172.1 ¹ 54 >
b _r	44.1	72.0 81.1	159.1 ¹ 50 >
(f)	104.8	102.0	206.8 ¹ 65 >

$$L \quad 42.1 \quad 39.9 \quad 82.0^{\wedge} 25 >$$

g 25 By estimate $\approx 3R$

Dec. 16, 1886

Region of V Lumin. (386) S. obs.

9 53

a	40.8	45.4	86.2 [^]	74 >
p	35.8	37.3	73.1 [^]	63 >
t	27.0	29.3	56.3 [^]	48 >
n	16.7	16.8	33.5 [^]	29 >
e	37.1	33.6	70.7 [^]	61 >
m	19.6	20.0	39.6 [^]	34 >
d	38.9	39.0	77.9 [^]	67 >
z	11.0	12.3	23.3 [^]	20 >
y	11.7	10.8	22.5 [^]	19 >
x	16.1	14.2	30.3 [^]	26 >
v	31.8	32.1	63.9 [^]	55 >
q	13.2	14.8	28.0 [^]	24 >
g	30.9	29.8	60.7 [^]	52 >
k	24.1	27.8	51.9 [^]	45 >
g	39.3	38.6	77.9 [^]	67 >
l	23.5	23.3	46.8 [^]	40 >
h	32.8	31.9	64.7 [^]	56 >
b	45.0	45.7	90.7 [^]	78 >

10 45

By estimate

d 3 v

v = e

For identifications, see page 9

Moon rose during observations.

Dec. 17. 1886.

$1 \quad 20 = 7 \quad 12$
Comp. Stars for, Var. H. 6.

$$\begin{array}{r} 5 \quad 12 \quad + 34.3 \\ 1 \quad 30 \\ \hline - 3 \quad 44 \end{array}$$

$$\begin{array}{r} 35 \text{ R. Lynceis.} \\ 6 \quad 50 \quad + 55.0 \\ 1 \quad 50 \\ \hline - 5 \quad 0 \end{array}$$

* (1) L

(2) f	62.5	65.0	127.5	6.4
3 f	53.3	55.5	108.8	5.4
4 g	33.2	36.4	69.6	3.5
5 K	21.3	26.0	47.3	2.4
6 a	36.7	47.7	84.4	4.2
7 R	23.0	24.1	47.1	2.4
8 g	42.0	44.3	166.3 4.3	8.5
9 b	44.6	46.5	91.1	4.6
10 d	65.1	62.1	133.2	6.7
11 e	55.2	52.6	107.8	5.4
12 n	67.4	69.2	136.6 3.2	7.0
13 m	52.0	59.7	111.7	5.9
14 L	76.9	72.5	155.4	7.8

* h ¹	15.6	16.2	32.8	1.6
h ²	20.2	20.6	40.8	2.0
h ³	29.9	31.0	60.9	3.0

(1) L

Dec. 17. 1886.

Somewhat hazy increasing to cloudiness,
during observations. Upon going out upon
balcony at end of obs. found sky
becoming thickly covered with clouds.

Reject preceding series.

Dec. 21. 1886.

Comp. Stars for Var. Hobs.

$$1 \quad 35 = 7 \quad 19$$

35 R Lyncis.

$$6 \quad 50 \quad + 55.0$$

$$\begin{array}{r} 1 \quad 45 \\ \hline - 5 \quad 5 \end{array}$$

(1) L	400	350	750 ^	38 >
(2) f	65.8	67.5	133.3 ^	6.7 >
f	57.3	54.7	112.0 ^	5.6 >
g	39.8	39.9	79.7 ^	4.0 >
k	28.8	28.0	56.8 ^	2.8 >
a	43.0	42.8	85.8 ^	4.3 >
R	35.5	34.8	70.3 ^	3.5 >
g	89.4	84.9	174.3 ^	8.9 >
g	47.0	50.4	97.4 ^	4.9 >
d	59.9	63.5	123.4 ^	6.2 >
e	53.5	51.5	105.0 ^	5.2 >
n	68.8	68.1	136.9 ^	7.0 >
m	63.5	62.7	126.2 ^	6.3 >
h	78.9	73.4	152.3 ^	7.6 >

8 33

8 35

g 35 R

Now that the moon is absent, there is no doubt as to which "h" of the

Dec. 21. 1886.
 chart is, although slightly out of
 place on chart.
 It is the 4th. and 5th of the group of
 3 stars taken in a previous place.

B. & C. 1182.

15 48 14.2
 49 14.1

B. 394.

15 55 0.0
 56 0.0

16 18 39
 16 26 51

15 55 0

3 1 51

15 48 14

16 20 5

15 55 0

Dis of up. III. Phot. H. P. obs.
 Compared with Lat I.

15 55 7

17

29

38

49

59 0

16.4

117.5

15.7

120.0

15.2

115.7

Dec. 21. 1886.

15	vg	11	15.1
		21	121.3 -
		31	12.2 -
		42	119.2
		53	15.6
16	0	4	121.3
		17	16.5 -
		27	120.1
		32	17.7
		42	119.2 -
		59	15.3 -
	1	11	119.5
		23	16.4
		32	117.2 -
		44	12.4 -
		53	116.6
	2	9	12.6
		26	122.2 -
	3	22	15.4 -
		37	116.2
		47	12.1
		52	120.6 -
	4	11	15.6
		22	112.3
		35	12.3
		45	119.2 -
		57	12.4
	5	9	115.1

Dec. 21. 1886,

16	5	23	16.6	
		40	112.4	9

Quadrants ~~wrong~~, changed.

6	23	300.0	120.0	102.7
	39		197.3	
2	13	299.6	119.6	
	29		192.6	107.0

Quadrants wrong. - changed.

9	22	168.4	
	31	112.2	
	40	14.5	
	49	120.2	
	56	16.6	
10	5	121.3	
	14	17.3	

	23	
11	2	113.6
	27	20.7
	37	117.6
	42	21.2
	52	115.6

12	15	12.6
	25	116.5
	33	17.6
	41	112.6
	52	15.5
13	1	112.2

Dec. 21, 1886.

16	13	12	19.6
		21	112.6-
		30	19.2
		38	115.3
		46	23.6
		57	116.4-
14		12	19.6
		20	113.3
		24	22.3
		37	112.0-
		45	22.5
		53	115.6
15		3	19.7
		11	115.6-
		20	19.6
		24	112.2
		41	19.9
		51	110.6-0
16		2	24.3
		12	102.4
		21	24.6
		30	111.3-
		40	24.9
		49	112.2
17		1	24.7
		11	111.6-
		21	22.6
		31	102.4

Dec. 21. 1946

16	41	20.6
17	50	10.25
	52	24.9
18	11	109.6
	22	23.6
	33	106.7
	46	24.3
	54	116.6
19	3	26.6
	26	109.3
	36	24.0
20	0	106.4
	7	25.6
	21	101.2
	30	23.2
	41	104.2
	59	29.4
21	6	99.2
	16	31.4
	26	99.5
	43	31.6
	59	95.2
22	12	30.6
	15	96.7
	24	133.4
	33	92.4
	41	135.5
	47	92.6

Dec. 21, 1886,

16	22	55	34.7
	23	5	91.0
		16	44.5
		27	91.3
		34	39.6
		53	23.4
24		4	42.6
		11	23.7
		20	47.6
		29	23.2
		39	46.3
		50	22.1
25		2	42.5
		17	74.2
		30	50.7

Not seen later.
Limit of Vis.

26	13	51.4
	25	20.6
	40	47.2
	52	79.4
		392
		316
		708
		354

B. + C. 11 + 2,
~~16~~ 53 12.0
 54 12.1

B. 394.
 17 0 0.0
 1 0.0

Dec. 21. 1886.

Barnard's Comet. W. obs.

$$\begin{array}{r}
 12 \quad 36 \quad + 10.3 \\
 46 \quad 34 \\
 \hline
 12
 \end{array}$$

Comet does not rise until 17^h 45^m
E.T. - Growing cloudy.

Cloudy at time of second eclipse.
~~Closed down.~~
As it was quite certain to be cloudy
at time of second eclipse, closed
a little earlier.

Dec. 28, 1886

Region of T Arietis (15)		S. obs.	
ap	40.4 42.2	82.6 [^]	70 ^v
f ⁽¹⁾	35.1 30.3	65.4 [^]	56 ^v
b	40.0 39.0	79.0 [^]	67 ^v
d	36.3 33.9	70.2 [^]	60 ^v
e	36.6 35.3	71.9 [^]	61 ^v
T	40.3 37.1	77.4 [^]	66 ^v
x not seen in place			
Star fll. e 35 ^s , 3 ^s south,	17.0 17.2	34.2 [^]	29 ^v
Star fll (11) 9 ^s , 0.5 south,	30.3 29.2	59.5 [^]	51 ^v
Star free. the last 3 ^s , 2.5 south,	23.0 22.9	45.9 [^]	39 ^v
c	38.8 36.2	75.0 [^]	64 ^v
f ⁽²⁾	29.0 29.6	58.6 [^]	50 ^v
(10)	41.2 43.1	84.3 [^]	72 ^v
(11)	too bright for wedge		

By estimate

T 4 a

T 6 b

but by estimate in finder

a 1 T

T 2 b

T orange

See notes in book 42, p. 144

Dec. 28, 1886.
 Comp. Stars for Var. H. obs.
 $2^{\circ} = 7^{\circ} 19' E.T.$
 27a *St. Aurigae*
 $15 \quad 16 \quad +34.4$
 $2 \quad 15$
 $\hline -3 \quad 3$

a	45.3	40.8	86.1 [^]	64 ^{>}		
b	34.0	37.8	71.8 [^]	52 ^{>}		
g	22.5	23.3	45.8 [^]	33 ^{>}		
f	23.0	25.9	48.9 [^]	36 ^{>}		
e	22.2	30.8	59.0 [^]	43 ^{>}		
h	13.3	14.4	15.0	18.8	33.8 [^]	25 ^{>}
s	22.3	31.1	59.4 [^]	43 ^{>}		
k	13.3	14.4	27.7 [^]	20 ^{>}		
d	30.3	32.7	63.0 [^]	46 ^{>}		
c	29.3	29.3	58.6 [^]	43 ^{>}		
(11)	56.3	56.0	112.3 [^]	83 ^{>}		
(12)	51.0	52.2	103.2 [^]	76 ^{>}		
(13)	60.2	57.9	118.1 [^]	87 ^{>}		

8 1A
 $s \quad 2.5$
 $d \quad 2.5$

Dec. 28, 1886,
 Region of T Cam. Min (40) L. obs.

9 28

c

26.8

46

d

28.2

49

b

26.9

47

(has a faint comp. 6" sp)

14.4

25

9 53

Observations interrupted by
 irregular and variable haze,
 which still continues; more apparently
 coming from the southwest.

Jan. 2 11887

Region A R beti (14) Loh.

z visible but too faint for wedge.

6 15	t	13.9	15.2	29.1 [^]	26 ^v
	R	15.2	17.0	32.2 [^]	28 ^v
	a	26.5	27.9	54.4 [^]	48 ^v
	g	14.2	15.1	29.3 [^]	26 ^v
	m	28.8	29.3	58.1 [^]	51 ^v
	c	22.9	24.1	47.0 [^]	41 ^v
	d	42.8	44.9	87.7 [^]	77 ^v
	b	27.1	31.6	58.7 [^]	52 ^v
	g	37.0	39.5	76.5 [^]	67 ^v
	le	39.9	39.8	79.7 [^]	70 ^v
	my	37.8	36.1	73.9 [^]	65 ^v
	t	39.0	42.0	81.0 [^]	71 ^v

7 0

By estimate
c 10 R
R 1 t

Jan. 2, 1887.
 Region of U? Can. Main. (400) L. vhs.

g	37	b	35.2	37.0	72.2 [^]	63 >
		k	23.8	24.3	48.1 [^]	42 >
		k?	18.0	21.9	39.9 [^]	35 >
		y	29.0	35.1	64.1 [^]	56 >
		h	24.9	22.2	44.1 [^]	41 >
		d	30.7	34.0	64.7 [^]	56 >
		n	20.8	24.7	45.5 [^]	40 >
		t	20.2	20.8	41.0 [^]	36 >
		z	13.0	13.0	26.0 [^]	23 >
		x (has a fainter star sf)	17.4	20.9	38.3 [^]	33 >
		u	35.6	37.8	73.6 [^]	64 >
		q	39.0	40.0	79.0 [^]	69 >
		y	17.0	20.1	34.1 [^]	32 >
		m	21.4	24.7	46.1 [^]	40 >
		g	24.7	29.5	54.2 [^]	48 >
		h	30.0	30.8	60.8 [^]	54 >
		f	32.6	30.0	62.6 [^]	55 >
		c	35.8	37.2	73.0 [^]	64 >

40 30

By estimate
 g 2 u
 u 3 d

Jan. 3, 1887

620 Region of R Leporis (26) S. obs.

d	425	39.1	81.6 [^]	6.9 >
g	44.0	44.2	88.2 [^]	7.5 >
Ja	41.1	41.8	85.9 [^]	7.0 >
e	42.0	44.0	86.0 [^]	7.3 >
R	28.9	33.7	62.6 [^]	5.3 >
b	38.2	39.1	77.3 [^]	6.6 >
c	46.0	48.9	94.9 [^]	8.2 >
	44.0	44.1	88.1 [^]	7.6 >

658 By estimate in finder
d 1 R
R 1 a

Usual stopwatch at watchmaker's for repairs. Stopwatch used tonight borrowed from watchmaker. It runs well for a minute at a time with an ordinary watch. Turn knob to left to start, to right to stop; push in knob to set back.

Jan. 3. 1887.
Comet Friday.

W. obs.

0 4 12 +0 49

0 2 34 +0 32 (1255)
 2 44
 +2 40

43.8
 45.
 88.8

3 29 42.5 E
 36 27.0 E
 34 3.5 *
 34 35.4 *

~~35~~ ~~31.8~~
 36 59.1
 37 40.2
 41 17.0
 41 40.5

3 Jan. 3, 1887.

$\begin{array}{ll} 43 & 2.6 \\ 43 & 42.5 \\ 47 & 24.5 \\ 47 & 55.4 \\ 49 & 12.5 \\ 49 & 50.9 \\ \sqrt{13} & 27.2 \\ \sqrt{3} & 57.1 \end{array}$

$\begin{array}{ll} \sqrt{5} & 23.7 \\ \sqrt{6} & 0.1 \end{array}$

$\begin{array}{ll} \sqrt{9} & 35.2 \\ 0 & \sqrt{2} \end{array}$

Both in northern Lalf.
Comp. Star $+0^{\circ} 19' (6.4)$

$\begin{array}{ll} 236 & \\ 4 & 5 \quad 53.5 \\ & 6 \quad 53.5 \end{array}$

$\begin{array}{ll} 1327. & \\ 4 & 6 \quad 1.0 \\ & 7 \quad 1.0 \end{array}$

Order in all the sets the same.

B. 236 used in above transits.

Jan. 3, 1885⁷

Region of U[?] Puppis (43a) - S. A.
 (prec. 9 20^s, 5^s south) 19.0 17.9 36.9[^] 32 >
 (foll. 2 stars 3^s 8, 5^s 5) 24.5 29.1 53.6[^] 46 >
 2^h 1^m north

m	10.8	12.0	22.8 [^]	20 >
g	14.0	18.3	32.3 [^]	28 >
h	14.4	15.0	29.4 [^]	25 >
U not certainly seen	23.3	19.4	42.7 [^]	31 >
h	32.2	36.5	68.7 [^]	60 >
h	31.0	30.0	61.0 [^]	52 >
h	15.9	18.4	34.3 [^]	29 >
w	10.4	9.0	19.4 [^]	17 >
k	23.6	27.0	50.6 [^]	44 >
d	29.4	33.8	63.2 [^]	54 >
z	18.1	19.0	37.1 [^]	32 >
y	20.4	22.1	42.5 [^]	37 >
x	21.5	24.1	45.6 [^]	39 >
c	33.2	32.0	65.2 [^]	56 >

11 5

Ended; see remark on
stopwatch, page 31.

Jan. 10, 1887.

6 28 Region of γ Gemini. (42) S. obs.

	23.5	30.8	54.3 [^]	44 ^{>}
a	35.1	37.9	78.0 [^]	59 ^{>}
b	25.7	31.5	57.2 [^]	46 ^{>}
d	22.2	20.1	42.3 [^]	34 ^{>}
c	27.0	32.3	59.3 [^]	48 ^{>}
h	30.1	28.9	59.0 [^]	48 ^{>}
i	19.5	19.4	38.9 [^]	32 ^{>}
l	37.8	36.3	74.1 [^]	59 ^{>}

7 2 Other stars too faint for wedge
stopwatch as on Jan. 3.

Place of Sappho

Gr. 42^h

7	2	38.5	+ 8	56	30
	1	45		3.2	
1835	7	0 54	+ 8	59.7	

9 10	10.0	29.8 33.2	57.0
	14.2 4.2	35.2 5.4	61.2 4.2
	18.2 4.0	40.9 5.7	65.3 4.1
	21.8 3.6	46.2 5.3	69.5 4.2
	25.8 4.0	51.5 5.3	73.5 4.0
9 14	29.8 4.0	57.0 5.5 (9 22)	78.4 4.9 (9 26)
	41.0	5.4	4.3

Jan. 10, 1887

q 41

10.0

10.0 4.5

(q 49)

14.0

10.0

(q 57)

32.1

14.5

14.0 4.2

19.7

15.5

38.2 6.1

18.7

3.6

5.7

21.0

44.0 5.8

22.3

4.0

5.5

26.8

49.8 5.8

26.3

4.0

5.8

32.1

55.1 5.3

4.15.3

(q 59)

61.2 6.1

5.81.5 in 33^m

0.136

2.72 in 60^mMovement of Sappho for 1^h, 2.7 by ephem.

Circle 10 50

Watch uncorr. 10 25

9.0

174.6

45.

219.6

Sappho and J.M. + 90 1537 n of Planet

Both north half of square.

Planet Planet Star Star. J. obs.

Chronometer B. 236. Eye & ear.

6

8

16.2

42.40

52.4

9

8.6

7.9

17.0

44.5

24.9

20.95

32.75

38.55

Jan. 10, 1887

6	9	58.5		
	110	50.8	24.65	52.3
		59.6		8.1
			3.65	44.2
	11	7.7	<u>3.65</u>	
			39.00	

Times

6	8	42.40
	10	24.65
	12	54.35
	14	44.50
	16	42.05
	60	207.95
6	12	41.59

6	12	29.5		
	13	19.2	54.35	49.7
		30.9		5.1
		36.0	33.45	44.6 ✓
			39.10	22.3
				111
				334

$\Delta\alpha$

38.55
39.00
39.10
38.95
39.20
<u>44.80</u>
38.96

2 $\Delta\delta$

44.5
44.2
44.6
44.1
<u>44.2</u>
16
44.32

6	14	19.6		
	15	9.4	44.50	49.8
		20.6		5.7
		26.3	23.25	44.1 ✓
			38.95	22.05
				110.2
				320.1

16	17.1			
	17	7.0	42.05	49.9
		18.4		5.7
		24.1	21.25	44.2 ✓
			39.20	22.1
				110
				331
				331
				334
				332

Booth in south hall

Planet Planet Star Star. Lobs.

6	20	31.5		
		42.0	36.75	10.5
		48.5		54.9
			15.95	44.4
	21	43.4	39.20	

Jan. 10, 1887.

~~237~~

6 22 59.6
 23 10.0 4.70 4.80
 16.5
 24 11.5 44.00
 39.50
 39.20

10.4
 55.0
 44.6

Time 13.236
 6 20 36.75
 23 4.80
 25 10.30
 27 2.30
 95 54.15
 6 23 58.54

$\Delta \alpha$
 39.20
 39.20
 39.40
 39.55
 136
 39.34

2 $\Delta \delta$
 44.4
 44.6
 44.0
 44.3
 13
 44.32

6 25 59
 14.7 10.30
 23.3
 26 16.1 49.70
 39.40

8.8
 52.8
 44.0

General mean
 Time 13.236
 60 207.95
 95 54.15
 155 262.10
 6 17 42.46

6 26 57.8
 8.8 2.30
 27 15.2
 28 8.5 41.85
 39.55

9.0
 53.3
 44.3

$\Delta \alpha$
 44.80
 37.35
 82.15
 39.13
 2 $\Delta \delta$
 16
 13
 29
 44.32

Time by F. 1327

6 17 42.46
 6 18 44.5

B 236

6 38 0.0
 39 0.0

F. 1327

6 38 29.0
 39 29.0

Planet faint in moonlight.
 Place of L. 13857 (D.M. + 9° 15' 37") for 1800

At 6^h 15^m sid time
 Planet

Approx. place from ephemeris

1887 + 6 58 21.5 + 9 10 12
 4 45.3 - 7 20
 7 3 6.8 - 9 2 52
 39.1 - 8 5 32
 7 2 27.7 - 8 57 20
 7 2 28.5 8 56 45

629

K

a

b

d

c

g

g

g

g

g

o

e

l

t

t

m

i

m

h

Jan. 11, 1887.

Region of T. geminum (42) S. Ls.

30.2	39.2	69.4	56.2
38.1	44.8	82.9 [^]	67.2
28.0	38.1	66.1 [^]	54.2
19.8	31.0	50.8 [^]	41.2
37.2	38.0	75.2 [^]	61.2
23.8	22.0	45.8 [^]	37.2
16.0	11.4	27.4 [^]	22.2
11.0	9.6	20.6 [^]	17.2
9.5	9.0	18.5 [^]	15.2
23.1	25.0	48.1 [^]	39.2
9.8	10.0	19.8 [^]	16.2
18.2	20.1	38.3 [^]	21.2
44.2	44.7	88.9 [^]	71.2
29.1	30.0	59.1 [^]	48.2
21.3	21.0	42.3 [^]	34.2
11.3	9.9	21.2 [^]	17.2
33.7	32.4	66.1 [^]	54.2
13.0	13.1	26.1 [^]	21.2
37.8	39.4	77.2 [^]	63.2

Moonlight increasing; 2^d observations of o & x doubtful.
 Range suspected early in series; perhaps affected K, a, b, d.

7.40.

By estimate
 A 3 T
 T 3 e

Usual stopwatch employed this evening; run to 60^s while B, 236 runs 60.0.

Cloudy later.

Jan. 12, 1887
 Longitude of δ Gemini (41) Libos

$\begin{array}{r} 38.4 \\ 37.1 \\ 43.8 \\ 13.1 \\ 26.9 \end{array}$
 $\begin{array}{r} 6.2 > \\ 6.0 > \\ 7.1 > \\ 2.1 > \\ 4.4 > \end{array}$

Reject

6 53 Interrupted by clouds
 if not seen; it may perhaps be one
 of the stars following δ , above mentioned.

$\begin{array}{r} B\ 236 \\ 5\ 23\ 0.0 \\ 24\ 0.0 \end{array}$

$\begin{array}{r} 07\ 1327 \\ 5\ 23\ 45.9 \\ 24\ 45.9 \end{array}$

Zero 150.9
 $45.$

Setting 195.9

Bar micrometer

Libos.

(80) Sappho and δ M. + $8^{\circ} 1659$ of planet.
 Planet with half, star with half.
 Star, planet, planet, star.
 Star of planet

$\begin{array}{r} 5\ 39\ 42 \\ 7.1 \\ 25.6 \\ 50.4 \end{array}$

$\begin{array}{r} 27.30 \\ 16.35 \\ 10.95 \end{array}$

last reading doubtful;
 reject the last.

Jan. 12, 1887.

5	41	0.0		
		4.5	24.65	49.3
		20.9	12.70	16.4
		49.3	11.95	65.7

~~54.5~~

5	45	29.1		
		33.8	53.80	49.4
		49.9	41.85	16.1
	46	18.5	11.95	65.5

~~18.5~~
~~42.8~~
~~57.4~~
~~26.5~~
~~34.7~~

5	49	1.3		
		10.6	28.20	53.8
		21.8	16.20	11.2
		55.1	12.00	65.0

Jan. 12, 1887.

5	50	53.2	
5	51	0.9	28.8 19.40
		13.7	14.8 7.30
		45.6	12.10

Time 13236

52.4	5 29 46.35
12.8	5 41 12.70
	45 41.85
65.2	49 16.20
	51 7.30
	53 5.90
	239 83.95
	5 48 4.79

5	52	51.8	52.5
		59.4	18.05
		12.4	5.90
		44.3	12.15

$\Delta\alpha$

11.95
11.95
12.60
12.10
12.15
10.15
12.03

2(D-Ad)

65.7	19
65.5	
65.0	65.38
65.2	
65.5	

Planet, star, planet, star.
Planet north half, star south half.

6	2	0.4	28.30	29.9
			15.35	35.6
		10.5	12.95	65.5
		30.3		
		46.1		

6	3	24.8	53.85	32.4
		37.5	41.00	32.7
		57.2	12.85	65.1
	H	16.2		

6	4	56.1	24.55	31.4
	5	7.5	11.80	34.1
		27.5	12.75	65.5
		41.6		

Jan. 12, 1887.

6	6	39.5	35.60	27.0
		46.3	23.00	38.6
	7	6.5	12.60	65.6
			5.60	
		24.9	53.00	
			12.60	

6	8	0.1	26.60	27.3
		7.2	13.75	38.2
		27.4	12.85	65.5
		46.0		

Time 13.236

6	2	18.35
	3	41.00
	5	11.80
	6	53.00
	8	13.75
	24	134.90
	25	74.90
6	5	14.98

$\Delta\alpha$	$2(D-\Delta\alpha)$
12.95	65.5
12.85	65.1
12.75	65.5
12.60	65.6
12.85	65.5
40.0	22
12.80	65.44

6	17	36.1	62.75	26.5
		43.5	49.35	38.5
	18	2.6	13.40	65.0
		22.0		

6	19	58.5	44.10	22.05	20.0
		59.6	17.00	8.50	44.9
	20	18.5		13.55	64.9
		44.5			

6	21	42.9	70.75	28.2
		52.1	57.00	36.7
	22	19.1	13.75	64.9
		29.1		

Jan. 12, 1887

6	23	33.0	
		39.0	59.00
		57.9	45.45
		19.0	13.55
24			

6	25	29.8	62.00	37.3
		48.0	48.45	28.0
		7.1	13.55	65.3
26		16.0		

Zero verified 150.9

Some clouds during last part of observations.

B 236	F 1327
6 46 0.0	6 46 46.8
47 0.0	47 46.8

See p. 40. B.236 loses 0.9 in 83^m; 0.011 in 1^m; hence rate too small for correction to observations.

6	5	4.51
		46.36
Time by F. 1327	6	5 50.87

Time	B.236
6 17	49.35
20	8.50
21	57.00
23	45.45
25	48.45
6	208.75
6 21	53.75

$\Delta\alpha$	$2(D - \Delta\alpha)$
13.40	65.0
13.53	64.9
13.75	64.9
13.53	64.9
13.53	65.3
280	0
13.56	65.00

General mean	
Time	
5 48	47.9
6 45	46.8
6 21	53.75
14	73.52
15	13.52
6 5	4.51
$\Delta\alpha$	$2(D - \Delta\alpha)$
12.03	65.38
12.80	65.44
13.56	65.00
8.39	82
12.80	65.27

41	46.80
83) 36.9	44
332	46.36
372	
58	

Jan. 16, 1887

(41) S. dr.

Revised F. S. *Geminorum*

6 38	a	40.6	46.0	86.6 [^]	70 >
	n	30.2	37.7	67.9 [^]	55 >
	b	42.8	47.8	90.6 [^]	73 >
(20)	Star foll. b 52 ^s , same S,	17.0	20.9	37.9 [^]	31 >
(21)	Star foll. b 57 ^s , 3' north,	28.0	33.1	61.1 [^]	49 >
	m	17.5	22.1	39.6 [^]	32 >
	z	19.7	9.0	18.7 [^]	15 >
	l (probably S) ∴ prob. the var.	12.8	44.0	26.8 [^]	22 >
	S (not the var.)	12.8	16.0	28.8 [^]	23 >

Reject g, d, for
uncert. aucty.

x } synonyms for l & S }
y } S, probably

c	38.2	43.6	81.8 [^]	66 >
d	33.8	36.3	70.1 [^]	57 >
g	28.0	32.7	60.7 [^]	49 >
h (a fainter star 3' foll. a little south)	15.5	17.1	32.6 [^]	26 >
i	18.7	21.1	39.8 [^]	32 >
k	18.7	19.0	37.7 [^]	31 >
a	42.5	46.0	88.5 [^]	72 >

7 31

By estimates

g 10 S
S 2 l
l 3 z

In more customary nomenclature
g 10 x; x 2 S; S 3 z; this z
is probably the star so called in
R 34, 98.

uncertain which is S, and which l;
as used on this page, l precedes S.

For F, see remarks on page 40.

Cloudy later

When these observations were taken, the observer had forgotten
the nomenclature resulting from the observations of 1883.

6

1

Jan. 21, 1887.
 Region A *T. gentianum* (42) Lobs.

	35.7		5.7 >
a	41.9		6.8 >
b	38.12		6.2 >
d	29.0		4.7 >
c	35.8		5.8 >
g	23.2		3.8 >
g	19.2		3.1 >
h	10.0		1.6 >
h	7.1		1.2 >
o	16.2		2.6 >
e	9.7		1.6 >
e	19.7		3.2 >
l	45.2	43.5	88.7 ¹ 7.1 >
t	24.0	28.2	52.2 ¹ 4.2 >
n	15.0	13.0	28.0 ¹ 2.3 >
f	25.0	23.1	48.1 ¹ 2.9 >
i	29.1	28.8	57.9 ¹ 4.7 >
m	15.9	12.8	28.7 ¹ 2.3 >
n	39.8	35.3	75.1 ¹ 6.1 >

6

50

Interrupted by clouds. Large probably variable during the observations.

8

35

Much irregular haze. Photometric observations probably ineffectual.

Jan, 23, 1887.

2 20 A. T. = 5 55 E. T.

Search for Brooks New Comet. H. A. S.
12h + 71°

~~2~~ 2 30
+ 8 30

Continual cloudiness so that it is impossible to look up comet as yet. Warm dense clouds from the south coming in. Growing worse steadily.

12 + 71°
2
10

12 23
9 23
9 1

Tried again for comet but constantly interrupted by cloud.

Brooks New Court. W. 10.

(1855) 18 25 15' 73 56.9

x north half
= south half

John G. Wolbach Library, Harvard-Smithsonian Center for Astrophysics • Provided by the NASA Astrophysics Data System

274 1.6
54 48

49

280 39.47
97 - 85

$\delta - X$	δ	X
-1 24.40	97.0	102.2
20.75	97.2	108.7
19.20	96.0	112.4
17.40	96.8	116.2
16.10	96.8	118.6
-1 19.57	97.16	111.62

Jan. 24. 1867.

Barnard's New Comet. Gr. No.

1886. VIII.

$$\begin{array}{r} 19 \quad 10 \quad + 25.4 \\ 13 \quad 35 \\ \hline + 5 \quad 35 \end{array}$$

$$- 5 \quad 30 \quad + 26.0$$

$$\begin{array}{r} 13 \quad 39 \\ \hline 19 \quad 9 \quad + 26.0 \end{array}$$

$$- 5 \quad 26 \quad + 25.7$$

$$\begin{array}{r} 10 \quad 44 \\ \hline 19 \quad 10 \end{array}$$

$$256.5$$

$$\begin{array}{r} 45. \\ \hline 211.5 \end{array}$$

$$19 \quad 7 \quad 44 \quad + 25.56$$

Jan. 24. 1227,
 14 5 129

6 11.2

45.0

7 11.0

~~27~~ 45.6

12 44.0

9 17.7

9 ~~9~~ 44.2

10 24.1

11 22.5

56.5

12 23.4

12 56.4

13 54.4

14 24.9

14 56.1

15 53.2

16 51.5

17 25.7

17 53.6

Order * * * *
 Both in southern half.
 Comet 9.5 mag. 1' diameter - some
 central core.

Jan. 24. 1887.

A. 1327

14 34 1

39 1

B. 236.

14 34 14.0

39 14.0

Jan. 25, 1887.

4 45 = 2 10 C.T.
Brooks New Comet.

St. obs.

$$\begin{array}{r} 12 \quad 29 \\ 4 \quad 55 \\ \hline 13 \quad 34 \end{array}$$

$$75.6 \pm$$

$$1 \quad 22$$

$$74.5$$

$$12 \quad 30$$

$$+74.5$$

$$\begin{array}{r} 2 \quad 33 \\ 2 \quad 10 \\ \hline 4 \quad 23 \\ 4 \quad 25 \\ \hline 5 \quad 8 \\ 13 \quad 22 \\ \hline 14 \quad 30 \end{array}$$

Comet found - Becoming cloudy
at rough est. of comet's position 74.3
(comet not certainly visible through
clouds) made it precede +74.741
47 sec. and 2.5 north.

$$\begin{array}{r} 13 \quad 7 \\ 5 \quad 25 \\ \hline 14 \quad 32 \end{array}$$

Time about $9 \frac{1}{2}$ hours East. Time.

Jan. 26. 1886.

B.T.C. 1142.			B. 39K.		
13	52	37.4	13	59	0.0
	59	37.4	14	0	0.0

Reap. Jap. III. Phot. R. P. obs.
Comp. with Sat. I.

14	16	0.0	seen.
		20.0	112.9
		43.0	192.7
17		1.5	105.2
		12.0	126.2
		26.0	109.2
		40.0	129.4
		51.0	109.0
18		5.0	193.4
		19.0	100.5
		32.0	194.2
		45.0	106.2
		52.0	193.6
19		13.0	107.5
		31.0	202.0
		42.0	95.6
		53.0	192.0
20		6.0	22.2
		30.0	196.3
		43.0	93.3
		55.0	200.7

Jan. 26. 1944.		
14	19.0	93.4
	36.0	203.2
	42.0	95.6
22	4.0	204.5
	14.0	93.5
	31.0	200.4
	42.0	22.0
	55.0	206.6
23	9.0	92.2
	24.0	204.3
	37.0	101.6
	51.0	205.4
24	2.0	29.3
	32.0	207.1
	53.0	23.6
25	15.0	210.6
	31.0	92.6
	44.0	201.9
26	1.0	90.2
	14.0	206.4
	45.0	22.6 ref.
27	1.0	29.2
	13.0	201.2
	26.0	22.4
	42.0	206.5
	57.0	97.2
28	10.0	209.3

Jan. 26. 1885.			
14	at	24.0	29.0
		37.0	202.4 3
		50.0	27.6
29		3.0	211.4 -
		15.0	29.2
		26.0	211.7
		47.0	24.2 4
		54.0	201.3 -
30		14.0	25.2
		26.0	201.6
		44.0	24.2 5
		54.0	201.6 -
31		10.0	22.6
		27.0	206.4
		46.0	91.2 .6
		54.0	209.1 -
32		16.0	25.0
		35.0	204.3
		55.0	24.7 7
33		14.0	210.6 -
		36.0	25.1
		47.0	206.6
34		7.0	26.9 2
		24.0	
35		11.0	211.6 -
Lun Vis.			
14	35	34.0	92.6
		54.0	191.2
36		10.0	112.2
		22.0	200.4

Seeing very bad and irregular - sometimes

Jan. 26. 1948.
 rendering sat. almost invisible.
 Bad seeing probably occasioned
 partly by diff. of temperature inside
 and outside dome.

B. + C. 1122.
 14 44 36.7
 45 36.7

B. 394.
 14 45 0.0
 46 0.0

6 20

Region of *γ* Geminae (42) 1.0 hr.

k	38.3	42.5	80.8 [^]	65 >
d	44.0	46.8	90.8 [^]	44 >
b	42.2	40.0	82.2 [^]	64 >
d	34.5	36.0	70.5 [^]	57 >
c	40.0	41.1	81.1 [^]	66 >
g	25.0	25.9	50.9 [^]	41 >
g	17.5	17.2	34.7 [^]	28 >
p	14.3	15.0	29.3 [^]	24 >
z	10.0	10.5	20.5 [^]	17 >
y	16.1	20.1	36.2 [^]	29 >
o	40.0	9.5	19.5 [^]	16 >
e	21.7	23.1	44.8 [^]	36 >
h	46.7	47.0	93.7 [^]	75 >
t	31.2	29.2	60.4 [^]	49 >
m	15.2	14.9	30.1 [^]	24 >
f	22.1	24.6	46.7 [^]	38 >
i	35.0	30.9	65.9 [^]	53 >
n	17.2	20.1	37.3 [^]	30 >
h	43.0	44.0	87.0 [^]	70 >

7 5

By estimate
g 1 g
g 2 n

Jan. 27, 1887.

Brooks Comet. Gr. Abs.

14 33

74.2 (Ad. star)

$$\begin{array}{r}
 75 \\
 14.7 \\
 4.4 \\
 \hline
 1A.55
 \end{array}$$

75.4

$$\begin{array}{r}
 1A.2 \\
 25 \\
 \hline
 63.2
 \end{array}$$

5-k	1A	29.9	Bot. star	South half North "
		52.5	St. "	
	20	1.3	Bot. "	
	22	1.2	Bot. star	

23	52.7	Bot. star
24	50.2	St. "
25	54.3	Bot. "
27	25.1	St. "

28	24.3	Bot. "
29	12.0	St. "
30	21.0	Bot. "
31	57.0	St. "

Jan. 27. 1887.

✓	33	17.2	Bark. Star,
	34	43.5	Fit. "
	35	53.2	Bark. "
	36	48.9	Fit. "
	38	1.2	Bark. "
	39	19.1	Fit. "
	40	26.9	Bark. "
	41	34.2	Fit. "

Faint star and Comet.

9	2	5	44	40.0	Star, south half, outside
			45	26.7	"
			45	35.1	Comet, north half, inside
			47	8.6	"
		5	47	32.0	
			48	19.1	
			48	33.3	
			50	1.1	
		5	50	32.1	
			51	19.3	
			51	33.4	
			53	0.4	

Jan. 27, 1887.
 5-53 26.6
 54 13.6
 54 32.0
 55 53.5

5-56 25.3
 57 12.2
 57 37.0
 58 57.7

63.2 Region of U. Puppis (43a)		S. obs.	
of Dec. 9 20°, 4' south)		21.1	22.2
of follows 2 stars 3° and 6°, 2' 8" north)		28.0	30.9
m		18.2	17.9
		20.0	18.0
a		11.9	17.6
U not recognized; some very faint stars near the place.		21.5	24.3
h		32.9	36.9
		36.8	36.8
e		21.4	20.7
b		10.9	11.1
ny		28.9	29.0
k		33.8	35.0
d		18.5	20.0
z		18.8	22.0
y		23.7	25.6
x		33.8	32.9
c			

10 32 Ended first series

10 50 Ended second series

Jan. 27. 1867.

~~B. + C. 1142.~~

11	26	25.4
	27	

~~B. 394.~~

11	27	0.0
	28	0.0

~~B. 236.~~~~B. 394.~~

11	30	0.0
----	----	-----

B. 236

A	14	3.0
	15	3.0

Fr. 1327

S	14	1.0
	15	1.0

Jan. 28. 1867.

As the Brooks Comet was very high in Declination and so the motion slow. It was impossible to obtain a Comp. Star which would come inside the field with the Comet, without great loss of time, so the Comet was connected with a lettered star in about same R. A. but outside the field, by an intermediate star. #

This lettered star is called Brt. Star above.

" other " " " " " " " (H.)

Comp. star above (Brt. Star) is

Dist. + $75^{\circ} 624$, mag 9.2 (B.)

Dist. pos. = $12^h 52^m 28^s + 75^{\circ} 53.5$

Feb. 1. 1887
 The clock brought up new photograph
 in which Keweenaw lens is substituted for
 Altimeter lens. No slit.
 Successive settings of focus at 36, 37, 40.

6^m 45^m Plate exposed about 2^m. Clock
 could not be brought up to normal rate,
 and telescope drifted off star. See
 Draper Mem. Obs. book, Series C

Feb. 4. 1867.

Experiments with slitless spectrocope
on Equatorial. Photograph of α Urs.
Min. Exposure ^{made} at 7^h 45^m East. Lime.
Exposure ended at
Exposure about 11 minutes

α 56

Experiments on rate of clock.
Setting on α Urs. Min.

Exposure on α Urs. Min. at 9^h 0^m
Clock on.

Exposure ended at 9^h 29^m
Clock taken off at about 9^h 27^m
and telescope moved a little in order
to let star trail for a couple of minutes.

Feb. 9, 1887.

Region of γ Piscium S. obs.Eadie's suspected star (called v).
The star seems still fainter than previously.

G 42

 γ 1 v
 γ 2 ww being a star about 3' south of γ , between
 γ and the star 5.5 south of it observed on
page 11.

G 48

e 1 γ
 γ 4 xFor previous observations of Eadie's
star see book 42, pages 190, 195, 198, 200,
209, and book 43, page 11.

$$5^h 10^m 5^s \gamma = 7^h 33^m 6^s \gamma.$$

Comp. Stars for Var.

N. obs.

$$\begin{array}{r} A \quad 36 \\ \gamma \quad 20 \\ \hline - 3 \quad 16 \end{array} \quad + 12.7$$

47 γ Cancer.

See next page.

Feb. 9. 1887.

4 of δ Canori.

W. obs.

d	42.0	43.4	85.4 [^]	71 >
f	22.9	20.2	43.1 [^]	36 >
b	28.0	28.9	56.9 [^]	47 >
e	24.7	24.8	49.5 [^]	42 >
r	34.3	38.0	72.3 [^]	60 >
g	30.4	30.2	60.6 [^]	50 >
h	36.9	34.9	71.8 [^]	60 >
c	44.0	45.1	89.1 [^]	75 >
a	39.9	38.7	78.6 [^]	65 >
10(d)	30.2	32.9	63.1 [^]	53 >
11(g)	15.8	20.1	35.9 [^]	30 >

Star preceding b 23° , 2' south, called x

8 53 x 23.0 22.7 45.4[^] 38 >

(g) precedes b 25.5 , 2' north; this is the position of (g) in the list, but the star called x is somewhat brighter and may be the comparison star required.

~~The star~~

(g) has a star prec. 2° , 2' north

Another precedes this 3° , 2.5' north

Both of these are a little fainter than (g)

By estimate with finder

$\delta = a$

9 0

Feb. 9, 1887
Bar micrometer

149.6 Zero by γ Geminorum
45.

194.6 Setting

B. 236
7 34 57.7
36 27.6

F. 1327
7 34 30.0
36 0.0

Bar micrometer
D.M. +10° 1236 and Lappho
Both south half; star, star, planet, planet.

7 45 53.1
46 10.7 1.90
48 31.5 40.95 2^m 39.05
48 50.4
17.6
18.9
1.3

7 51 9.3
51 29.9 19.60
53 47.6 58.80 2^m 39.20
54 10.0
20.6
22.4
1.8

7 56 49.0
58 4.7 19.90
58 35.1 2^m 39.15
8 0 42.6 59.05
1 15.5

Eye piece accidentally touched and
possibly disturbed during third set.
Rajist.

Feb. 9, 1887

3	14.0					Time B, 236
3	33.0	23.50				7 48 40.95
						53 58.80
5	52.3					8 6 2.75
6	13.2	2.75	19.0			10 4.65
			20.9			14 21.45
			1.9			11 128.60
						8 2 37.72

8	7	16.0	25.55			$\Delta\alpha$
	7	35.1				8 159.05
	9	54.1				159.20
	10	15.2	4.65			159.25
				19.1		159.10
				21.1		158.90
				2.0		.50
						159.10

8	11	31.8	42.55			$2\Delta\delta$
	11	53.3				1.3
	14	9.7				1.8
	14	33.2	21.45			1.9
				21.5		2.0
				23.5		2.0
				2.0		9.0
						1.80

Both in north half; star, star, planet, planet.

8	16	13.0			
	16	56.5	34.75		
	18	53.0			
	19	34.3	13.65		
				43.5	
				41.3	
				2.2	

8	20	28.5			
	21	8.9	48.70		
	23	8.0			
	23	46.8	27.40		
				40.4	
				38.8	
				1.6	

8	24	33.9	53.85		
	25	13.8			
	27	13.6	32.60		
	27	51.6			
				39.9	
				38.0	
				1.9	

Feb. 9, 1887

8	28	55.1			Time B. 236
	29	35.4	45.25		8 19 13.65
	31	35.1		$2^m 38.75$	23 27.40
	32	12.9	24.00	$\frac{40.3}{37.8}$	27 32.60
			15.25	2.5	31 54.00
			54.00		35 54.80
					135 182.45
					8 27 36.49

8	32	58.0			$\Delta\alpha$
	33	34.6	16.30	$2^m 38.50$	158.90
	35	37.6		$\frac{36.6}{34.4}$	158.70
	36	12.0	54.80	2.2	158.75
					158.50
					360
					158.72
					$2\Delta\delta$
					2.2
					1.6
					2.5
					2.2
					10.4 2.08

Planet faint in moonlight; its motion in right ascension evident by a still fainter star just north of it.

194.6 Setting

11 17

239.6 Zero verified

Planet follows star, a little to the north of star.

B 236

F. 1327

9 8 37.10
9 27.10

9 8 10.0
9 0.0

See p. 67; B. 236 loses 0.65 in 84^m ; 0.0077 in 1^m ; 0.02 in 2.64 which is a correction to $\Delta\alpha$ unless F. 1327 has a sensible rate. $\Delta\delta$ will not require correction.

General mean.

54		Time	$\Delta\alpha$	$2\Delta\delta$
77		8 2 37.72	159.10	1.80
37.8		8 27 36.49	158.72	2.08
27.4		30 14.21	17.82	3.88
415.8		8 15 7.10	158.91	1.94
27.4		27.4	4.02	$\Delta\delta 0.97$
Time by F. 1327		8 14 39.7	158.93	

Feb. 11, 1887

B 236

7.1327

7	25	18.9
	26	18.9

7	25	0.0
	26	0.0

Bar micrometer S. obs.
Zero 239.6 γ Geminorum

Setting $\frac{4.5}{284.6}$

12.8

D.M. +10° 1243 and Sappho
Planet ~~star~~ south following star
Star north, planet south, half
star, star, planet, planet.

10 20

8

1

41.9

56.15

2

40.4

$$\begin{array}{r} m \quad s \\ + \quad 8.70 \quad 1^m \quad 8.50 \\ \hline \end{array}$$

2

45.0

4.65

$$\begin{array}{r} 28.5 \\ 39.3 \\ \hline 67.8 \end{array}$$

3

24.3

~~| | |
|---|------|
| 5 | 32.7 |
| | 12.6 |~~

8

8

0.0

23.05

8

46.1

$$\begin{array}{r} m \quad s \\ + \quad 6.95 \\ \hline \end{array}$$

9

20.5

30.00

$$\begin{array}{r} 46.1 \\ 19.0 \\ \hline 65.1 \end{array}$$

9

39.5

10

52.2

12.50

11

32.8

$$\begin{array}{r} m \quad s \\ + \quad 7.56 \\ \hline \end{array}$$

12

6.9

20.06

$$\begin{array}{r} 1 \quad 8.10 \\ 40.6 \\ 27.4 \\ \hline 68.0 \end{array}$$

12

34.3

20.60

Feb. 11, 1887

8	17	28.0	
	18	5.4	46.70
	18	38.8	
	19	9.9	54.35

Time B. 236

8	3	4.65
9		30.00
12		20.60
18		54.35
21		31.40
63		141.00
65		21.00
8	13	4.20

8	20	5.7	23.50
	20	47.3	
	21	15.0	31.40
	21	47.8	

$\Delta\alpha$

68.50
66.95
68.60
68.50
68.40
.35

2(D - $\Delta\delta$)

67.8
65.1
68.0
68.5
68.4
37.8
67.56

Zero verified 329.6

45	
141.6	

35.6	
32.8	12.3
34.2	
171	
513	6.2
886	
373	

Wind increasing during observations, and now blowing so hard that further transits would be nearly useless, owing to the shaking of the telescope.

Motion of planet verified by a star 12^s.8 preceding it at the beginning of the observations, 12^s.3 at the end. Each result from 3 transits with stopwatch, micrometer set at the zero.

B. 236

8	42	18.5
	43	18.5

F. 1327

8	42	0.0
	43	0.0

See p. 70; B. 236 has 0.4 in 77^m; 0.005 in 1^m; no correction required.

77).4 (0.005

8	13	4.20	time by B. 236
		18.7	
8	12	45.5	time by F. 1327

Feb. 12, 1887

Wedge photometer.

6 18

Region of T Cam Min (40).

c	20.3	24.1	44.4	29 >
d	22.3	26.1	48.4	42 >
	20.0	23.5	43.5	38 >

(13) Star foll. 6 5^s 1' south. 14.1 19.2 33.3 ^ 29 >
 Companion of T (Leubke, p. 214) 9.0 8.1 17.1 ^ 15 >

T thought to be visible 6" of the companion

x (follows companion) (5 5, 0.2 north) 9.9 10.0 19.9 ^ 17 >

y 14.1 13.0 24.1 ^ 21 >

z 13.1 16.0 29.8 ^ 25 >

a 25.9 26.0 51.9 ^ 45 >

e (nfr of two) 24.0 33.1 57.1 ^ 50 >

(10) 39.5 39.9 79.4 ^ 6.9 >

(11) 37.9 34.0 71.9 ^ 6.3 >

(12) 36.5 32.2 68.7 ^ 5.9 >

7 6

T if seen, about half a magnitude fainter than the companion.

Feb. 12. 1887.

Comp. Stars for Var. H. obs.

$$\begin{array}{r}
 \cancel{47} \text{ H. Cancri.} \\
 59 \text{ V. S.} = 720 \text{ S. S.} \\
 \cancel{45} \text{ V. Cancri.} \\
 \begin{array}{r}
 12 \\
 19 \\
 \hline
 31 \\
 -3
 \end{array}
 \end{array}$$

d	36.7	34.9	71.6 [^] 6.0 >
e	40.1	37.5	71.6 [^] 6.5 >
h	33.2	32.4	66.2 [^] 5.6 >
k	24.3	24.2	48.5 [^] 4.1 >
r	36.0	34.8	74.8 [^] 6.3 >
m	30.2	33.1	63.9 [^] 5.4 >
x	20.7	19.7	40.4 [^] 3.4 >
a	40.3	41.8	82.1 [^] 6.9 >
g	20.9	22.0	42.9 [^] 3.6 >
c	32.3	39.8	78.1 [^] 6.6 >
b	45.3	43.0	88.3 [^] 7.4 >
n	28.2	29.0	57.2 [^] 4.8 >
f	49.3	46.8	96.1 [^] 8.1 >
(14)a	42.5	43.0	85.5 [^] 7.2 >
(15)b	42.0	39.3	81.3 [^] 6.8 >

Star (14)a is assumed to be the following and betw. of two stars.

over

Feb. 12, 1887.

Con. from previous page.

44a fol. star immediately preceding
by 10 sec. and is 0.5 south.Pre. star is about 4.9 mag. but
fol. star considerably brighter.

8 40 a 3.5 V } in finder.
c 1 V }

V is somewhat red. Color 2.

Region of R Canis (44) S. obs.

9 12

p(1)	42.9	43.9	86.8 [^]	76 >
q(2)	43.7	44.0	87.7 [^]	76 >
c(3)	31.3	30.9	62.2 [^]	53 >
g(7)	34.9	34.0	68.9 [^]	6.3 >
b(9)	33.8	31.5	65.3 [^]	5.5 >
e(10)	40.2	42.0	82.2 [^]	72 >
f(6)	42.9	44.2	87.1 [^]	76 >
d(14)	40.4	43.5	83.6 [^]	73 >
n(13)	23.5	27.8	57.3 [^]	45 >
h(12)	22.6	24.2	46.8 [^]	41 >
o(11)	14.1	13.0	27.1 [^]	23 >
m(8)	27.2	23.2	50.4 [^]	44 >
a(4) (prec. m 1 ^s , 6' north)	19.2	21.9	41.1 [^]	36 >
R(5) (prec. m 6.5, 5' north)	29.8	28.2	58.0 [^]	50 >

k, l, h, i (15 to 19) omitted, as bright and superfluous.

Position of a(4) should probably be nR, not S of R as
given in chart and list. R is known by its red color.

10 20

By estimate in finder, 1 R

R 3 m

Feb. 12, 1887.

Eye-piece fell out of telescope, the altitude of the region being considerable, breaking the glass plate to which the wedge was cemented.

~~By~~ Eye-piece replaced.

40 30

By estimates in large telescope
to 1 R
R 5 m

Feb. 13, 1887

Bar micrometer, S. obs.

Zero 80.5 γ Geminorum.

80.6

Mean 80.55

45

Setting 125.55

Stopwatch

5.0

42.6

79.8

116.4

153.7

190.4

37.6

37.2

36.6

37.3

36.7

37.08

B 236

7 26 3.6

27 3.6

F. 1327

7 26 0.0

27 0.0

DM. +10° 1243 and Lappha (80)
 Star south preceding planet.
 Both north half
 Star, planet, star, planet

78 41 55.4 20.50

42 37.2 362.5

42 45.6 56.75

43 46.3

50.2

39.1

11.1

87 44 59.7 22.85 359.5
 45 41.0 38.80
 45 46.0
 46 46.8

46.3

36.0

10.3

Feb. 13, 1887

Both north half; order, star, star, planet, planet.

7~~8~~ 48 8.9 23.20 36.20
 48 37.5 28.6
 48 50.8 59.40 17.2
 49 8.0 11.4

Time B. 23 6
 7 42 56.75
 45 58.80
 48 59.40
 50 59.60
 52 58.10
 237 292.65
 240 112.65
 7 48 22.53

7~~8~~ 50 6.4 23.30 36.30
 50 40.2 33.8
 50 48.5 59.60 22.2
 51 10.7 11.6

$\Delta\alpha$
 36.25
 35.95
 36.20
 36.30
 36.30
 100
 36.20

7~~8~~ 52 7.5 21.80 36.30
 52 36.1 28.6
 52 49.3 58.10 17.6
 53 6.9 11.0

2 $\Delta\delta$
~~44.3~~
 11.1 +2
 10.3 -78
 11.4 +32
 11.6 +52
 11.0 -8
 11.08

Both south half; order, star, star, planet, planet.

7~~8~~ 55 1.6 9.10 36.35
 55 16.6 15.0
 55 32.2 26.5
 55 58.7 11.5

7~~8~~ 57 5.9 15.50 36.30
 57 20.1 19.2
 57 36.5 51.80 30.6
 58 7.1 11.4

Feb. 13, 1887

$$\begin{array}{r} 8 \quad 54 \quad 43.0 \\ \hline 7.9 \end{array}$$

$$\begin{array}{r} 9 \quad 0 \quad 49.4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \quad 2 \quad 26.5 \\ \hline 82.1 \end{array}$$

8	7	36.8	48.50	36.05
	8	0.2		
	8	7.2	24.35	$\frac{23.4}{34.7}$
	8	41.9		11.3

Both south half; order, star, planet, star, planet

8	11	50.6	9.40	35.85
	12	21.0	45.25	30.4
	12	28.2		$\frac{41.3}{10.9}$
	13	9.5		

Time B. 236
 $\begin{array}{r} 7 \quad 55 \quad 45.45 \\ 57 \quad 54.80 \\ 8 \quad 8 \quad 24.55 \\ 12 \quad 45.25 \\ 15 \quad 7.30 \\ 27 \quad 12.35 \\ 88 \quad 58.87 \end{array}$

8	14	10.7	31.25	36.05
	14	41.1	7.30	$\frac{41.1}{52.4}$
	14	54.8		11.3
	15	33.5		

$\Delta 2$
 $\begin{array}{r} 36.35 \\ 36.30 \\ 36.05 \\ 35.85 \\ 36.05 \\ 36.60 \\ 36.12 \\ 2 \Delta 0 \\ 11.5 \\ 11.4 \\ 11.3 \\ 10.9 \\ 11.3 \\ 14.8 \\ 11.28 \end{array}$

Setting 12555
 Zero redetermined

170.9
 171.0

DM + 15 1243

Feb. 13, 1887
Stopwatch

5.0	35.8
40.8	36.2
77.0	35.9
112.9	36.1
149.0	35.9
184.9	36.0

10 54

Object observed moves 1^s in 80^m , and appears to be the planet.

B 236	7.1327
9 3 2.2	9 3 0.0
4 2.2	4 0.0

See p. 76; B. 236 loses 1.4 in 97^m ; 0.014 in 1^m ; no correction.

97) 1.4 (0.014)
 $\frac{97}{388}$

General mean

~~30~~ $\frac{0.014}{0.412}$

Time B. 236	$\Delta \alpha$	$2 \Delta \delta$
7 48 22.53	36.20	11.08
8 45 58.87	36.12	11.28
15 53 81.20		
7 51 10.7	36.16	11.18
3.2		5.59 $\Delta \delta$
Time 7.1327	7 57 7.5	

Feb. 14, 1887
Stopwatch compared with F. 1327

Stopwatch runs 40.1^s in 40^s by clock

40.2	40
45.2	45
40.1	40
40.1	40

6 30

In all from 10^s to 216^s ; 206^s in 205^s by clock

~~206~~ 40.2 by stopwatch equivalent to 40.0 by clock.

α Tauri Bar micrometer

Zero 170.65
170.75
170.80
171.10
170.95
425

Setting

170.85

Setting 260.85

7 0

10.0 43.8

53.8 43.3

97.1 43.9

141.0 43.8

184.8 43.8

228.6 43.8

Mean 43.72

10.0 43.7

53.7 43.7

97.4 43.8

141.2 43.8

185.0 43.9

228.9 43.9

Mean 43.78

Mean of all 43.75

Feb. 14, 1887

Stopwatch	10.0	45.0 in	45 ^s by clock
	55.0		
	100.0	45.0	45 ^s
	145.2	45.2	45 ^s
	190.2	45.0	45 ^s
	235.3	45.1	45 ^s
Mean	225.3	45.06 in	45 ^s by clock

Bar Micrometer.

Setting 260.45

Transits by stop watch. W. obs.

53.5	43.6
97.2	43.7
140.3	rej. wrong place
185.0	
229.0	44.0
272.2	43.8
missed	43.78 mean of 4
10.0 to 53.2	

New start at same zero to make sets similar to those on previous page.

10.0	
53.5	43.5
97.4	43.9
141.1	43.7
184.8	43.7
228.6	43.8
	43.72

Feb. 14. 1887.

Setting at 170.25

100	
53.5	43.5
97.3	43.8
141.1	43.8
184.8	43.7
228.4	43.6
	<u>43.68</u>

Setting 80.25

100	
53.7	43.7
97.3	43.6
141.1	43.8
184.9	43.8
228.4	43.5
	<u>43.68</u>

Setting 350.25

~~53.6~~

100	
53.6	
97.5	
141	

missed - watch did not stop at proper time.

New start at 350.25

100	
53.4	43.4
97.3	43.9
141.1	43.8
184.8	43.7
228.4	43.6
	<u>43.68</u>

blended over

All above observations collected

43.72	} 50H	43.72 general mean
43.78		
43.78		
43.72		
43.68		
43.68		
43.68		

$9.98223 \log \cos \delta$
 $1.17609 \log 15$
 $0.15052 \log \sqrt{2}$
 $1.64068 \log 43.72$
 $2.94952 \log 890.27$

Feb. 14, 1887

Stopwatch 10.0

55.0 45.0 in 45^s by {7.1327} clock

100.1 45.1 45

145.2 45.1 45

190.3 45.1 45

235.3 45.0 45

Mean 225.3 45.06 in 45

Stopwatch wound up fully before observations this evening, but not wound up during them.

1.5

1.414

$$\begin{array}{r} 1.414 \\ 1.707 \\ \hline 2.121 \end{array}$$

$$\begin{array}{r} 890.27 \\ 2.12 \\ \hline 888.15 \end{array}$$

$$\begin{array}{r} 1.414 \\ .06 \\ \hline 1.474 \\ 4282 \\ \hline 1.2426 \\ 890.27 \\ \hline 888.81 \end{array}$$

43.66

1.27

.96 .0508

$$\begin{array}{r} 1.27 \\ \hline 1.22 \end{array}$$

$$\begin{array}{r} 1.30884 \\ 1.64008 \\ \hline 2.94892 \end{array}$$

889.04 diagonal after allowing .06 for gain of stopwatch.

More exact reduction as follows: $43.72 - .06 = 43.66$

Log 43.66	1.64008
Log 15	9.98223
Log 15	1.17609
Log 62.864	2.79840

Log sin 5' 14".32	7.1829462	7.1829462
Log cos 5' 14".32	9.9999995	0.1505150
	9.9999990	7.3334612

Log cos 10' 28".64

$$\begin{array}{r} 9.9999980 \\ 9.9999960 \end{array}$$

Log sin 10' 28".64

$$\begin{array}{r} 7.4829760 \\ 9.8494850 \\ \hline 7.3334610 \end{array}$$

$$\begin{array}{r} 7.1829462 \\ 0.1505150 \\ \hline 7.3334612 \end{array}$$

Log sin 7' 24".52

444.52

889.04 diagonal as before.

Log sin 7' 24".52 as before.

Feb. 16, 1887
Bar micrometer J. St.

Zero 25.85 x Jauri
25.95
25.80

260

B 236 Setting 25.87 (approx) Setting +15.87 (approx.)
6.8 6.6

50.1 43.3

50.1 43.5

8.8
52.4 43.6

3.5
47.3 43.8

7.6
51.4 43.8

3.7
47.6 43.9

8.2
52.0 43.8

9.2
52.9 43.7

7.9
51.5 43.6

4.5
47.9 43.4

43.66

7 5 Mean 43.62

B 236

5 10 51.0
11 51.0

F. 1327

5 11 0.0
12 0.0

See p. 91 for another comparison

In 2nd 45th B. 236 loses 1.3 assuming F. 1327 to have no rate. 79
165) 1.3 (0.0079 loss of B. 236 in 1st 83

Rate of B. 236 not appreciable during single transits. 237
In 1st 23rd B. 236 loses 0.01 which may be used as correction to Δ of Supper 632
and D.M. +10° 1253, p. 91. 91

Feb. 16. 1887.
B. 236.
Bar micrometer.

W. obs.

Setting 115.27

Setting 205.27

6.1 ref.
49.4 43.1 } not good.
92.5 } ref.
Same as above.

43.9 43.4
27.3

17.1
60.5 43.4

5.1 43.6
42.7

2.9
46.6 43.7

22.4
72.0 43.6

22.0
11.7 43.7

14.6
52.3 43.7

56.5
40.0 43.5

47.6
31.2. Fault forgotten.
Repeated.

33.9
77.5 - 43.6
43.54

22.5
72.0 43.5
43.60

Feb. 16. 1887.

Bar micrometer con. Yr. obs.
Setting 295.27 Setting. 25.8756.6
40.1 43.545.2
28.7 43.526.5
70.1 43.610.0
53.7 43.742.8
26.5 43.731.7
75.5 43.822.0
65.7 43.715.3
58.2 43.538.7
82.3 43.6
43.6 ~43.2
86.7 43.5
43.60

Feb. 16. 1887.
Bar micrometer con. W. do.

Setting 205.47

46.6 43.4
90.0

15.0
52.6 43.6

33.9
77.5 43.6

6.6
50.4 43.4

31.5
75.0 43.5
43.52

Results collected

43.62 S.
43.66 S.
43.60 W.
43.54 W.
43.62 W.
43.60 W.
43.58 W.
42.2
43.603

Long 43.603
Diagonal 887.89
1.639528
1.30884 (sup. 82)
2.94836

90 S. finds the stars run well on the bar

The observations by W. focus altered a little from that used by S.

Feb. 16. 1887.
 Search for Sappho. the following of which is
 Transits of two stars probably
 for Sappho. S. obs. W. rec.

14^h 53.2
 15 4.4 11.2

Same again:

15 17.7 11.3
 15 29.0

Same again:

15 41.9 11.3
 15 53.2

Same again:

16 5.0 11.0
 16 16.0

Same again:

rej. 16 ~~24.2~~ 10.1
 16 34.3

rej. 17 ~~24.3~~
 35.2

17 50.2
 16 1.7 11.5
 mean 11.26

Feb. 16. 1887.

Compar. of Sappho and D m.
+ 10° 12' 53".
Planet proceeds, north.

~~Setting~~ 205.9 = zero, as before

$$\text{Setting} = \frac{45.1}{250.9}$$

Both in north half.
Order Planet, Planet, Star, Star.
S. obs. Wrec.

7	21	52.4	Planet.	5.05	
	22	17.7		27.70	1 ^m 22.65
	23	7.7	Star, Comp. star.		25.3
	23	18.3			110.0
	23	29.7			14.7
	23	47.7	another star, = 10° 12' 51".		
			Comp. Star.		

7	24	31.7	Planet	38.70	
	24	45.7	"	61.50	1 ^m 22.80
	29	19.0	1249	14.0	
	29	46.7	1253	29.6	
	30	10.6	1249	15.6	
	30	16.3	1253		

Feb. 16. 1887.
Same again.

7 30 39.7 44.45 1^m 23.25
30 49.2 67.70
31 27.3 9.5
31 55.0 25.4
32 14.7 15.9
32 20.4

7 32 50.4 54.10 1^m 23.10
33 32 3.2 86.20
33 32.0 13.4
34 5.6 29.2
34 24.7 15.8
34 34.2
42.4

7 35 12.4 17.90 1^m 22.85
35 23.4 40.75
36 0.2 11.0
36 27.3 26.9
36 42.6 15.9
36 54.2
+

7 37 17.4 23.15 1^m 22.85
37 24.9 46.00
38 5.0 11.5
38 32.6 26.8
38 53.9 15.8
38 59.4

Feb. 16, 1927,

All in ~~north~~ ^{South} half.

7	40	56.7	Plan.	21.50	1 ^m 22.85
	41	46.3	"	44.35	
	42	21.4	1249		49.6
	42	26.7	1253		35.3
	42	34.6	1249		14.3
	43	2.0	1253		

Time B.236
 7 22 5.05
 28 38.70
 30 44.45
 32 57.10
 35 17.90
 37 23.15
 41 21.50
 43 48.40
 268 256.25
 272 16.25

Same again,

7	43	23.2	48.40	1 ^m 23.05
	44	13.3 + .3	11.45	
	44	42.7	50.4	7 34 2.03
	44	53.7	35.5	10.
	45	1.2	14.9	7 34 12.0
	45	29.2		by F. 1327

$\Delta \alpha$
 82.65
 82.80
 83.25
 83.10
 82.85
 82.85
 82.85
 83.05
 23.40
 82.92
 +.61

2 AD
 14.7
 15.6
 15.9
 15.8
 15.4
 15.8
 14.3
 14.9
 42.9
 15.36
 7.68 AD

7 46 20.6 ^{see p. 84} 82.93
 Planet very faint at times in previous sets.
 Stopped by clouds.
 The supposed asteroid was just south
 of two stars half a magnitude fainter.

See p. 84

9 54	B 236	79 34 316	7.1327
7	55 49.7	237 2686	7 56 0.0
	56 49.7	10.3 10 ⁵	7 57 0.0

The additional star, D.M. + 10° 1249 was observed
 for determination of diagonal of square but
 the clouds prevented the completion of the series,
 by observations of the two stars in opposite halves of the square.

Feb. 17, 1887

Bar micrometry. S. obs.
Hole in north bar, preceding end

6 30

Zero 228.50 2 Hauri
 228.90
 228.45
 185

228.62

Setting 228.6

B 236

41 47 12.5

4 48 12.7

B 394

6 42 0.0

B 43 0.0

Above clock comparison by W. S. rec.
 See foot of p. 98 for another comparison with B. 394

Comet Barnard.

S. obs.

A 4 E 1447 III.

4 52

-3 12

5 13

2 51

-27

-12.4

5 26

7 43

Pos. Zero 44.6

45.1

Set.

93.6

On 41 37 42.2 mean time

B 236 gains 42.2 m

B 394

Gain of sid. time in H of mean time

45.5

Homa in 277.75 sid. time

B 236 loses 3.3 (0.012)

$$\begin{array}{r} 2.7775 \\ 3.3 \\ \hline 2.7775 \\ 55550 \end{array}$$

B. 236 loses 0.012 in 1^m; in 1^m 49 it
 loses 0.02 which may be applied as
 a correction to Δ of Sappho &
 ΔM. + 170 1275

Feb. 17. 1887.
 Barnard's Star in H. obs.

✓	52	424	*	} Both North half.
	53	320	*	
✓	4	368	=	
✓	5	114	=	
				43.6
				<u>34.8</u>
				8.8

56	22.1	
✓	7	5.9
✓	2	9.7
52	32.5	
		43.8
		<u>28.8</u>
		5.0

6	0	11.1	49.9
	1	1.0	29.7
	1	✓ 7.5	
	2	27.4 - 2	

3	19.5	49.4
4	2.9	24.3
✓	✓ 3	
✓	29.6	

6	31.9	49.4
7	21.5	19.1
12	17.1	
8	36.2	

Comet exceedingly ^{very} faint, 1' diam.
 Equal to 10.5 mag star.

Feb. 17. 1867.

$$\begin{array}{r} 6 \quad 20 \\ -1 \quad 19 \\ \hline 7 \quad 39 \end{array}$$

-12.2

Comp Star.

8 35

Comparison star is S.D. -12° 21' 35" in preceding observations.

Second Series.

Comet and S.D. -12° 21' 30" W. Ab. S. rec.
Setting 93.6

Both north half

6	56	54.2	star
	57	9.9	star
	57	52.2	comet
	58	24.7	comet

6	58	49.9
	59	5.4
	59	47.3
7	0	16.0

7	0	38.7
	0	54.0
	1	35.6
	2	2.8

Feb. 17, 1887

7	2	20.8
	2	36.5

Comet too faint

7	3	43.7
	3	58.9
	4	40.3
	4	59.0

Comet too faint in haze in this last set; reject.

7	5	38.0
	5	53.3
	6	34.6
	6	53.8

7	7	16.2
	7	31.7

Comet too faint

7	8	45.2
	9	0.3
	9	41.5
	9	54.0

In this last series the first 3 sets are good but the others not so good and somewhat doubtful from clouds and haze.

Feb. 17. 1887.

~~B. 394.~~~~B. 236.~~

B. 236.

Mr. 1327

7 21 48.0

7 22 1.0

7 22 48.0

7 23 1.0

Zero verified 228.6

Setting 273.6

$\Delta\mu. +11^\circ$ 1275 and Sappho. S. obs.
 Both north half; planet & star; star, star, planet, planet

7	50	24.0	39.90	31.8
	50	55.8		48.3
				<hr/> 16.5
	52	4.9	29.05	149.5
	52	53.2		

7	56	28.5	36.20	15.4
	56	43.9		32.2
	58	9.15	25.40	149.20
	58	41.5		<hr/> 16.8

8	0	15.9	21.25	10.7
	0	26.6		27.4
	1	56.5	10.20	148.95
	2	23.9		<hr/> 16.7

8	3	19.0	27.40	16.8
	3	31.5.8		33.0
	4	59.7	16.20	148.80
	5	32.7		<hr/> 16.2

Feb. 17, 1887

8	6	38.6	53.30	29.4
	7	8.0		<u>45.5</u>
	8	19.6		16.1
	9	5.1	42.35	1 49.05

Both south half; star, star, planet, planet

8 12 3.6 } too far south
11.5

8	14	30.2	53.75	47.1
	15	17.3		<u>31.6</u>
	16	26.8		15.5
	16	58.4	42.60	1 48.85

8 18 8.3
 18 48.9
 5.1
 lost

8	21	12.5	32.95	40.9
	21	53.4		<u>25.2</u>
	23	9.1		15.7
	23	34.3	21.70	1 48.75

8	24	30.4	48.70	36.6
	25	7.0		<u>21.6</u>
	26	27.2		15.0
	26	48.8	38.00	1 49.30

Feb. 17, 1887

8	27	59.5	14.00	29.0
	28	28.5		13.7
	29	56.2	3.05	15.3
	30	9.9		

✓	30	56.6	48.65	24.1
	31	30.7	13.65	18.9
	32	53.1	2.55	15.2
	33	12.0		

7	52	29.05
8	58	25.40
8	2	10.20
8	5	16.20
8		42.35
5		123.20
8	1	24.64

8	16	42.60
	23	21.70
	26	38.00
	30	3.05
	33	2.55

128	187.90
-----	--------

8	25	57.58
---	----	-------

26	82.22
----	-------

8	13	41.11
---	----	-------

10	7	56.2 Eastern Time
----	---	-------------------

8	13	54.1 F. 1327
---	----	--------------

6	33	37
	1	49
6	35	26

1 49.15

1 49.20

1 48.95

1 48.80

1 49.05

15

1 49.03

16.5

16.8

16.7

16.2

16.1

23

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

16.46

Mean	109.00
Cor. for rate	.02
	109.02

Mean	16.06
Δ	8.02
	7.95

6 36 58

1 23

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

6 35 35

1 48.85

1 48.75

1 49.30

1 49.05

1 48.90

1 48.85

1 48.90

15.5

15.7

15.0

15.3

15.2

17

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

15.34

The object observed yesterday is not in its place at that time, and is accordingly the planet. The object observed tonight appears to be the planet by its motion. It was 2° or 3° of a star due north of D.M. + 40° 1241.

120"	49.6
59.5	53.6
	1.8
	55.4
	14.3
	7.2
	10.4

8	13	41.11
2	24	48
5	4	53.11
7	22	1
8	13	54.1

B 394

11	19	0.0
1	11	3.8
10	7	56.2

B 236

9	24	57.0
	11	15.49
		17.67
		3.82

Feb. 19, 1887

B 236

F. 1327

H 39 42.7
H0 42.7

H 40 0.0
H1 0.0

Barnard's Star Comet. W. obs.

4	4	- 16.2
7	43	- 12.3
<hr/>		
2	1	3.9
	42	7.4
7	43	12.3
<hr/>		
7	1	- 4.5
7	36	Ap. pl. e
<hr/>		
1	25	

0	46	
6	4	
<hr/>		
6	54	- 2.4

8 86

Zero 48.6

W. obs. L. acc.

Letting 3.6

Star, Star, comet, comet,
Star north, outside; comet south, inside.

7	15	34.6
		46.0
	96	3.9
		30.1

Feb. 19, 1887

7	16	48.3
		59.7
	17	15.3
		43.1

7	18	11.2
		22.9
		36.4
	19	7.0

7	19	22.0
		33.2
		45.4
	20	17.0

7	20	36.0
		47.7
		57.2
	21	34.0

7	21	45.2
		57.0
	22	4.2
		39.9

7	22	55.1
	23	6.1
		11.0
		49.2

Feb. 19, 1887

7 24 28
 14.1
 17.9
 57.8

Comparison star. $\delta\delta$. $-2^{\circ} 18' 66''$; magn 9.7
 $6^h 52^m 17.2$ $M. -2^{\circ} 21.9$

Setting 3.6

~~Pace~~ Wedge photometer, on new
 plate of glass and tinfoil lines by
 Clark. S. obs.

Zero 15.25 & Can. Min.

Intervals of declination bars

B 236, disappearances

5.8	6.9
25.8	26.9
45.7	46.9

Disappearances on first and last bars, reappearance middle

8.4	22.6
31.0	17.5
48.5	

Reappearances first and last bars, disappearance middle

5.5	18.0
23.5	22.0
45.5	

Feb. 19, 1887.

Setting 105.25

Star runs well on middle declination bar.

Transit to entrance into wedge 2.5 to 3.0

Transit to exit from wedge 47.5

Stop watch runs 60.1 while B. 236 runs 60.0

Region of T. Can. Min. (40) S. obs.

10 1 c 19.7 20.5 40.2 ^ 35 >

dy 21.6 20.2 41.8 ^ 36 >

dx 18.0 20.3 38.3 ^ 33 >

(13) Star foll. 5^s 1' south, 15.2 15.9 31.1 ^ 27 >

companion of T (see book 42, page 214) 5.8 6.0 11.8 ^ 10 >

T pretty certainly visible, 6" n of the companion; too faint for wedge.

x (full comp. of T. 4.1, 0.3 north) 6.2 7.7 12.9 ^ 12 >

y 11.5 13.2 24.7 ^ 21 >

z 11.9 15.4 27.3 ^ 24 >

a 21.0 22.1 43.1 ^ 37 >

(9.e) e (n of two) 23.9 23.6 47.5 ^ 41 >

(10) 30.9 32.3 63.2 ^ 55 >

(11) 30.9 33.8 64.7 ^ 56 >

(12) 28.4 30.0 58.4 ^ 50 >

10 41 T equal to a star foll. x 2^s 1' south. (15)

Feb. 19 1887

See remark foot of p. 45.

Region of *Geminorum* (41) L. obs.

10 53	c		33.6	36.3	69.9 [^]	5.1 ^{>}
	m		30.0	24.3	54.3 [^]	4.4 ^{>}
	b		38.2	35.0	73.2 [^]	5.9 ^{>}
(20)	Star foll. b	52 ^s same d,	15.0	13.9	28.9 [^]	2.3 ^{>}
(21)	Star foll. b	57 ^s 3' north	25.1	22.7	47.8 [^]	3.9 ^{>}
(4f)	Star foll. b	28 ^s 5, 2' 5 south,	6.0	7.1	13.1 [^]	1.1 ^{>}
5m	m		17.0	15.9	32.9 [^]	2.1 ^{>}
62	z	(foll. m g, 0.1 north)	16.0	5.9	11.9 [^]	1.0 ^{>}
7l	Star foll. m	19 ^s 0.2 south	5.2	6.8	12.0 [^]	1.0 ^{>}
(9s)	Star foll. m	20 ^s 1.0 south too faint for wedge				
10y	Star foll. m	23 ^s 1.8 south	10.8	11.8	22.6 [^]	1.8 ^{>}
	d		30.8	31.1	61.9 [^]	5.0 ^{>}
	g	(foll. m 37 ^s 3.3 south)	22.0	28.0 24.2	46.2 [^]	3.1 ^{>}
	h	(cap of two; see p. 45)	10.8	11.3	22.1 [^]	1.8 ^{>}
	i	(foll. g 24 ^s 1.5 north)	12.8	13.2	26.0 [^]	2.1 ^{>}
	k		14.5	14.1	28.6 [^]	2.3 ^{>}
	a		35.2	31.8	67.0 [^]	5.4 ^{>}
	c		27.1	29.1	56.2 [^]	4.6 ^{>}

13th observations of c made between the second observations of g and d.

~~Second c~~ In the rejected observation of g, the star was imperfectly identified.

The group of stars near S is here given by their places with respect to m, as the nomenclature of the chart and list is confused.

The three stars given after b are those which may be taken for f. The third is the star nearest the place of D.M. + 23° 17' 14", which is supposed to be f. It is one of several faint stars in that region.

12 6 The star foll. m 20^s is probably S.

Feb. 19. 1847.

B. + C. 1142.

B. 394.

13 45 21.3

13 50 0.0

46 21.3

51 0.0

Dis. Jup. II. Comp. with sat.
 preceding = Oct. I. P. obs.

1X 2

1.0

196.7

16.0

273.6

33.0

192.4

53.5

200.4

3

24.0

201.4

41.5

211.4

56.5

202.3

X

7.0

240.4

22.5

203.4

36.5

279.6

49.0

202.4

V

0.0

274.2

20.5

201.0

33.0

277.1

46.0

200.6

59.0

276.7

6

11.0

199.4

29.0

240.3

40.5

200.6

53.0

279.7

7

A.0

204.3

24.0

276.2

34.0

204.0

44.0

242.5

Feb. 19. 1887.

14 ~~sats~~
 14 & 50 sats invis on spec
 of clouds.

14	9	9.0	199.7	
		29.0	202.1	7
		47.5	190.3	
10		2.0	206.0	
		16.0	200.6	
12		41.0	203.4	2
		55.0	194.6	
13		14.0	204.1	-
		26.0	199.3	
		44.5	272.6	9
14		0.5	197.0	
		15.0	276.2	-
		49.0	192.2	
15		7.0	277.2	
		21.5	201.6	10
		34.0	203.4	
16		9.0	202.6	-
		19.0	279.6	
		29.5	2010.4	11
		41.0	274.7	-
		53.5	199.2	
17		4.5	274.4	
		17.0	1919.1	12
		27.0	277.2	0

Feb. 19. 1887.

13	14	17	37.0	20.3d
14			45.0	275.6
15			55.5	210.4
16	18		4.0	276.8
17			9.5	201.8

Clouds.

18	18	52.0	269.9
19	19	4.0	214.3
20		14.0	267.2
21		24.0	212.2
22		34.0	260.2
23		45.0	212.7
24		55.0	257.8
25	20	12.5	227.8 (2/5)

Not seen later.

17
324
51

Limit of Vis.
Clouds prevented determination
of limit of vis.

→ Doubtful if sat. was seen.

B. + C. 1182.

14	29	20.7
	30	20.6

B. 394

14	34	0.0
	35	0.0

Feb. 24, 1887

Wedge photometer obs.

Region of U Geminorum (43)

Identification very difficult of the
comparison stars. The region is certain.

9	47(i)i (taken to be a star foll. DM. +22° 1800 33°, 2' 5" south)	19	11.0	11.8	22.8
	25(i)i? (a brighter star foll. DM. +22° 1800 13°, 2' 5" south)	21	18.0	19.2	37.2
	(2v) S (foll. DM. +22° 1800 64°, 3' south)	26	22.8	21.1	42.9
	(3r) v (prec. q, 4°, 2' north)	36	19.9	24.1	44.0
	(Kq) q (a DM. star; DM. +22° 1806)	43	26.0	26.1	52.1
	(7x) x (of list, not Schmidt's x; foll. s 56°, 7' north)	3.2	20.2	19.3	39.5
	(34) Star foll. this x 8°, 0' 5" south	21	14.2	11.7	25.9
	(27) DM. +22° 1809, (perhaps Schmidt's d)	28	18.2	15.8	34.0
	(28) Star prec. DM. +22° 1809 3°	24	16.0	13.0	29.0
	(29) DM. +22° 1814, (perhaps Schmidt's β)	32	19.7	18.8	38.5
	(30) Star prec. DM. +22° 1809 21°, 9' south (perhaps Schmidt's ε)	2.5	15.2	15.0	30.2
	(31) Star prec. this ε 12°, 4' 5" south (perhaps Schmidt's δ)	24	15.6	13.9	29.5
	(10f) f (prec. this δ 26°, 4' south)	28	16.2	18.0	34.2
	(15e) e	27	17.6	15.3	32.9
	(23h) h (No. 23 of list) is probably same as e or f				
	(9a) a	0.9	6.1	5.1	11.2
	U (now bright)	36	19.2	25.2	44.4

Wymeski's star south of U thought to be visible

(14b) b	12	7.2	7.1	14.3
(13g) g	23	12.5	15.2	27.7
(16d) d	23	13.3	15.0	28.3
(5c) c (prec. f 45°, 3' south)	20	13.1	11.4	24.5
(32) Star prec. f 37°, 6' north (perhaps Schmidt's α)	22	12.2	14.9	27.1
(6t) t (prec. g 35°, 6' south)	31	18.4	20.0	38.4
(11z) z (not in place; prec. c 2°, 5' south)	20	13.3	11.6	24.9
(33) Star 7' south of t (probably Schmidt's α)	26	14.2	17.2	31.4
(12p) p (DM. +22° 1808)	52	30.0	33.3	63.3

Feb. 24, 1887.

(17 m)	m (D.M. +22° 1811)	32.1	26.9	59.0 [^]	4.8>
(18 o)	o (D.M. +22° 1813)	30.8	31.6	61.8 [^]	5.1>
(19 n)	n (D.M. +22° 1817)	27.5	25.0	52.5 [^]	4.3>
(20 k)	k (D.M. +22° 1824)	22.9	21.8	44.7 [^]	3.7>
(21 l)	l (D.M. +22° 1826)	22.2	21.2	43.4 [^]	3.6>
(22 h)	h (follows l 10 ^s , 1' north)	16.1	16.1	32.2 [^]	2.6>
(25)	D.M. +22° 1803	43.0	40.5	83.5 [^]	6.8>
(36)	D.M. +22° 1810	40.0	34.8	74.8 [^]	6.1>
				u	3.6>

12 0 First set of observations ended.

12 35 Second set of observations ended.

A third observation of U gives 22.0. It is not probable that U actually increased in brightness between the first and second observations. Seeing bad, and large differences frequent in the observations.

12 39

My estimate, m 3 U
u 3 t

Feb. 25, 1887.

$$6^h \quad 1^m \text{ S.T.} = 7^h 19^m \text{ E.T.}$$

Barnard's Star Const. Δ obs.

$$\begin{array}{r} 5 \quad 13 \\ 6 \quad 6 \\ \hline + 53 \end{array}$$

$$\begin{array}{r} 6 \quad 36 \\ 1 \quad 25 \\ \hline 5 \quad 11 \end{array}$$

$$1 \quad 25 \quad 17.9$$

$$\begin{array}{r} 1 \quad 21 \\ 6 \quad 40 \\ \hline 5 \quad 19 \end{array}$$

Pos. Zero. 316.3

$$\begin{array}{r} \text{Setting} \quad 25. \\ \hline 271.3 \end{array}$$

See next page for transits.

Feb. 25. 1st + 7

7	13	27.6
	14	4.0
	14	43.9
	15	13.4

	16	22.7
	16	58.1
	17	39.8
	17	10.4

Comet, comet, star, star, both in north half

7	20	11.0
	20	43.3
	21	28.5
	21	58.6

7	22	23.0
	22	53.2
	23	40.1
	24	11.0

7	24	29.1
	24	57.2
	25	46.5
	26	16.6

7	26	33.8
	27	0.2
	27	51.9
	28	22.2

Feb. 25, 1887.

~~7~~ ~~28~~ ~~48.0~~

7	29	31.0
	29	57.3
	30	49.3
	31	19.4

9 0 Comparison star D.M. +17° 899,
magn. 8.9; Lalande.

Wedge photometer; S. obs.

Region of U Geminorum (43)

9 38	(10)	(as on p. 107)	12.4	13.4	25.8^	21 >
25	11?	— " —	19.9	19.2	39.1^	32 >
(20)	d	— " —	21.1	20.0	41.1^	34 >
(31)	r	— " —	26.2	22.2	48.4^	39 >
(49)	q	— " —	25.3	23.9	49.2^	40 >
(72)	r	— " —	19.9	20.3	40.2^	33 >
(34)	Star foll.	— " —	13.0	13.2	26.2^	21 >
(27)	D.M. +22° 1809 (as on p. 107)	— " —	30.3	23.3	53.6^	44 >
(24)	Star prec. 3 ^s	— " —	15.8	16.5	32.3^	26 >
(29)	D.M. +22° 1814	— " —	25.6	25.1	50.7^	42 >
(30)	Star prec. D.M. +22° 1809	— " —	16.1	21.0	37.1^	30 >
(31)	Star prec.	— " —	16.1	16.2	32.3^	26 >
(10 ff)	f	— " —	21.3	19.2	40.5^	33 >
(152)	e	— " —	17.1	15.9	33.0^	27 >
(236)	h	— " —				
(92)	a	— " —	6.8	6.1	12.9^	11 >
	u	— " —	21.1	23.3	44.4^	36 >

Wimmer's star — " — certainly visible, but with difficulty

Feb. 25, 1887.

(14k)	b	8.0	8.1	16.1	1.3 >
(13g)	g	16.8	16.8	33.6	2.8 >
(16d)	d	15.8	15.2	31.0	2.5 >
(5c)	c (as on p. 107)	12.9	10.9	23.8	2.0 >
(32/)	Star prec. f (as on p. 107)	13.8	15.1	28.9	2.4 >
(6t)	t — " —	21.8	20.2	42.0	3.4 >
(11z)	z — " —	15.0	13.0	28.0	2.3 >
(33)	Star 7' south of t — " —	17.5	18.0	35.5	2.9 >
(12p)	p (D.M. + 22° 1808)	35.3	31.8	67.1	5.5 >
(17m)	m (D.M. + 22° 1811)	28.9	27.7	56.6	4.6 >
(14.0)	o (D.M. + 22° 1813)	32.0	30.8	62.8	5.1 >
(19n)	n (D.M. + 22° 1817)	30.8	29.1	59.9	4.9 >
(20k)	k (D.M. + 22° 1824)	23.7	24.2	47.9	3.9 >
(21l)	l (D.M. + 22° 1826)	23.8	22.7	46.5	3.8 >
(22h)	h (fol. l 10° 1' north)	17.3	18.0	35.3	2.9 >
(35)	D.M. + 22° 1803	42.8	42.1	84.9	7.0 >
(36)	D.M. + 22° 1810	40.0	38.8	78.8	6.4 >
10 30	End of first series of observations.				
11 9	End of second series of observations.				
	o has a small companion sp. 8"				
	A star just visible a little preceding g may be the true z.				
11 13	By estimate				
	m 3 u				
	u 3 t				
	as yesterday				

Feb. 25, 1887.

B. 236,

10	9	17.2
	110	17.2

~~B. 394,~~

Fr. 1327.

10	10	1.0
	11	1.0

Feb. 27, 1887
 Wedge photometry, S. obs.
 Region of U Geminorum (43)

9	7(1c) i	(as in p. 107)	10.9	18 >
	2r-2k? i?	"	21.0	34 >
	(2v) d	"	22.9	38 >
	(3k) w	"	26.8	43 > 22
	(9g) q	"	28.2	46 >
	(7x) x	"	16.5	27 >
	(3k) Star foll.	"	13.5	22 >
	(27) DM. + 22° 1809	"	20.0	33 >
	(24) Star prec. 3 ^s	"	15.0	25 >
	(29) DM. + 22° 1814	"	23.9	39 > 20
	(30) Star prec. DM. + 22° 1809	"	15.1	25 >
	(31) Star prec.	"	16.9	28 >
	(10f) f	"	18.1	30 >
	(15e) e	"	16.0	26 >
	(23h) h	"		
	(9a) a	"	6.8	11 >
	U	"	14.1	23 >
	Winnecke's star	"	certainty seen at times	
	(14b) b	"	8.5	14 >
	(13g) g	"	17.7	29 >
	(16d) d	"	14.2	23 >
	(5e) c	"	10.3	17 >
	(32) Star prec. f.	"	13.3	22 >
	(6t) t	"	17.7	29 >
	(11z) z	"	14.0	23 >
	(33) Star 7' south of b	"	17.8	29 > 28.6
	(12p) p	"	33.8	
	(17m) m	(as in p. 108)	25.2	22.7 47.9 ^{5.5} > 3.9 >
	(18o) o	"	25.0	23.3 48.3 ⁴⁰ >

Feb. 27, 1887

(19n) m	(as on p. 108)	27.9	24.2	52.1 ¹	4.3 ^{>}
(20K) K	"	23.2	19.7	42.9 ¹	3.5 ^{>}
(21L) L	"	23.9	21.9	45.8 ¹	3.8 ^{>}
(22h) h	"	18.1	15.0	33.1 ¹	2.7 ^{>}
(35) D.M. +22° 1803	"	41.3	42.2	83.5 ¹	6.8 ^{>}
(36) D.M. +22° 1810	"	38.8	36.3	75.1 ¹	6.1 ^{>}

9 55 End of first series of observations.

10 5 Observations interrupted by clouds; reject second observation of p.

The star mentioned on page 112 as perhaps the true α precedes g 7:50, 0.5 north. It is too faint for the wedge.

40 45 Foggy continues too thick for observation of faint stars.

Feb. 28, 1887

6 30

Magnitudes of H.P. 740, 802, Lobs.
 H.P. 740 6 H.P. 766
 H.P. 740 3 H.P. 796
 H.P. 796 2 H.P. 802
 Hence H.P. 740 0.5 magn. brighter than
 H.P. 802.

Another independent estimate
 by magnitudes on arbitrary scale.

H.P. 740	2.5	est. - H.P. - 8
H.P. 766	3.2	- .8
H.P. 796	3.0	- 1.1
H.P. 802	3.5	- .3

This makes H.P. 740 1 magn. brighter
 than H.P. 802.
 Above estimates mostly depend on the finder.
 H.P. 740 is barely extinguished by the
 wedge; about 3^s before reappearance.
 H.P. 802 is extinguished by the wedge
 about 10^s before reappearance.

H.P. magn. as follows:

740	3.3	740 7 766	est. 6	diff. -1
766	4.0	740 11 796	est. 3	-8
796	4.4	802 6 796	est - 2	-8
802	3.8			

Recent estimates by W. S. Franko of
 Leicester, England, make H.P. 802 half a
 magnitude brighter than H.P. 740.

Feb. 22, 1887.

6 10 $\text{S.V.} = 7$ 15 2, 5,

Barnard's Star \approx W. obs,

$$\begin{array}{r} 6 \quad 42 \quad +23.0 \\ 6 \quad 15. \\ \hline +1 \quad 33 \end{array}$$

$$6 \quad 30$$

$$\begin{array}{r} 2 \quad 4 \\ 6 \quad 42 \\ \hline 4 \quad 44 \end{array} \quad (+23^{\circ} 747)$$

$$\begin{array}{r} 225.7 \\ 45. \\ \hline 180.7 \end{array}$$

over for transits.

Feb. 28, 1887.

~~7 39 36~~

42	15.2	E	} North half.
42	55.0	E	
43	54.2	*	
44	12.1	*	

8 58 7 46 4.6 Same order

46	42.0
47	44.1
48	2.0

7	48	25.0
	49	2.0
	50	5.2
	50	23.2

7	50	52.7
	51	27.8
	52	33.0
	52	51.0

7	53	18.2
	53	52.4
	54	58.6
	55	16.3

7	55	42.0
	56	14.9
	57	22.6
	57	40.5

Feb. 28, 1887.
Comparison star.
DM. $+23^{\circ}$ 747 8.5 K

9 43 Stopwatch runs to 61.2 while B. 236 runs 60.0
" " " 61.3 " " " 60.9
If started from 5.0 it runs to 65.0 while
B. 236 runs 60.0

Wedge Photometer L. obs.
Region of U Geminorum (43)

(i)	(as on p. 107)	11.2	10.2	21.4 [^] 1.8 >
9 50 v	"	20.3	20.1	40.4 [^] 3.3 >
25 i (?) i?	"	21.2	22.9	44.1 [^] 3.6 >
(25) d	"	23.3	24.0	47.3 [^] 3.8 >
(22) n	"	24.8	27.1	51.9 [^] 4.3 >
(49) q	"	17.9	19.0	38.9 [^] 3.0 >
(7x) x	"	12.9	13.4	26.3 [^] 2.2 >
(34) Starfall.	"	19.0	20.7	39.7 [^] 3.3 >
(27) DM. $+22^{\circ}$ 1809	"	13.3	16.2	29.5 [^] 2.4 >
(20) Star free. 3 ⁰	"	22.1	24.0	46.1 [^] 3.8 >
(29) DM. $+22^{\circ}$ 1814	"	16.3	21.0	37.3 [^] 2.1 >
(30) Star free. DM. $+22^{\circ}$ 1809	"	16.8	17.6	34.4 [^] 2.8 >
(31) Star free.	"	17.1	18.8	35.9 [^] 2.9 >
(10f) f	"	18.6	17.2	35.8 [^] 2.9 >
(15e) e	"	5.4	5.3	10.4 [^] 0.9 >
(9a) a	"	7.1	7.9	15.0 [^] 1.2 >
U	"	thought to be visible		
Winnecke's star	"	8.1	7.0	15.1 [^] 1.2 >
(14b) b	"	16.1	18.0	34.1 [^] 2.8 >
(13g) g	"	13.9	18.6	32.5 [^] 2.7 >
(16d) d	"	11.0	11.6	22.6 [^] 1.9 >
(5c) c	"			

Feb. 28, 1887

(32/)	Star prec. f	as on p. 107	11.9	15.9	27.8 ^ 23 >
(6t/)	t	"	18.3	22.0	40.3 ^ 33 >
(11z/)	z	"	14.0	13.1	27.1 ^ 22 >
(33/)	Star 7' south of t	"	18.9	19.2	38.1 ^ 31 >
(12p/)	p	"	34.8	33.0	67.8 ^ 56 >
(17m/)	m	as on p. 108	26.0	29.0	55.0 ^ 45 >
(12.0/)	o	"	28.2	28.8	57.0 ^ 47 >
(19n/)	n	"	28.4	30.0	58.4 ^ 48 >
(20k/)	k	"	21.0	25.1	46.1 ^ 38 >
(21l/)	l	"	22.0	22.9	44.9 ^ 37 >
(22h/)	h	"	19.3	17.8	37.1 ^ 30 >
(35/)	Diff. + 22° 1803	"	43.0	37.2	80.2 ^ 66 >
(36/)	Diff. + 22° 1810	"	37.6	34.1	71.7 ^ 58 >

10 27 Ended first series of observations.
 10 58 Ended second series of observations.
 91 0 By estimate
 c 1 u
 u 3 b

B. 236 Fr. 1327
 10 15 58.5 10 17 1.0
 16 58.6 12 1.0

Mar. 1. 1887.

6 12 P.M. = 7h 13 E.S.

Barnard's star \in W. obs.

$$\begin{array}{r} 4 \quad 34 \quad + 24.4 \\ 6 \quad 22 \\ \hline + 1 \quad 42 \end{array}$$

6 32

It became cloudy suddenly.
As it seemed certain that cloudy-
ness would continue, closed dome.

Mar. 2. 1887.

B. + C. 1142.
 15 1 31.5
 2 31.5

B. 394.
 15 2 0.0
 9 0.0

15 27
 A

15 35

A

17

15 2

15 29

Ap. trans ecl.
 Disappearance of Jupiter I. Compared with Satellite
 III. Photometer R. J. obs. W. rec.

15 19 1A

115 105.0

55

159.1

20 27

102.0

53

160.2

21 25

99.7

40

171.2

22 2

105.0

35

161.0

56

110.2

23 12

167.2

32

102.0

42

167.5

24 4

100.2

Mar. 2. 1887.

15 24 22

54

167.0

105.3

~~25 11~~

same side. ref.

25 50

163.5

26 20

106.2

41

169.2

56

109.7

27 11

162.4

24

112.0

44

160.0

24 1

115.2

13

157.3

27

122.0

Not seen later.

Limit of Vis.

29 59

123.3

30 12

159.0

30

112.2

46

160.0

Haze thick; a little thinner at beginning of observations before which the two satellites could not be seen at the same time. They were afterwards seen at intervals through varying haze.

B. + C. 1182.

15 37 30.7

38 30.7

B. 394.

15 44 0.0

45 0.0

March 3, 1887

B 236

8 34 46.9

35 46.9

F 1327

8 36 10.0

37 0.0

Bar micrometer S. Br.

Zero

282.50

282.00

282.50

Mean 282.33

2 Can. Min.

9 7 7.0

13 3.0

2 Can. Min.

Star a 13 43.3

10' south of α Can. Min.

Star b follows a about 48° , $41.5'$ north.

Setting 327.33

Observations of a and b for diagonal of square.

Both north half; a, a, b, b.

9 23 29.1

24 21.5

24 36.2

24 53.0

55.30

44.60

49.30

52.4

16.8

35.6

9 25 42.1

26 30.2

26 49.3

27 17

6.15

55.50

49.35

48.1

12.4

35.7

March 3, 1887.

9	28	32.0	53.90	43.8
	29	15.8		47.8
	29	39.5	43.40	36.0
	29	47.3	49.50	
9	31	3.8	29.45	51.3
	31	55.1		15.9
	32	11.0		35.4
	32	26.9	18.95	
			49.50	

9	34	9.6	33.40	47.6	49.30	35.6
	34	57.2		12.0	49.35	35.4
	35	17.0		35.6	49.50	36.0
	35	29.0	23.00		49.50	35.4
			49.60		49.60	35.6
					22.5	33
					49.45	35.66

Star a south half, b north; a, a, b, b,

9	37	11.5	29.60	36.2
	37	47.7		46.6
	37	55.6	18.90	82.8
	38	42.2	49.30	

9	39	24.5	49.45	49.9
	40	14.4		33.6
	40	22.0	38.80	83.5
	40	55.6	49.35	

9	42	31.5	50.75	39.0
	43	10.5		43.8
	43	18.5	40.40	82.8
	44	2.3	49.65	

March 3, 1887

9	44	56.6	42.15	31.1
	45	27.7		52.0
	45	35.5		<u>83.1</u>
	46	27.5	31.50	
			<u>49.35</u>	

9	47	22.5	44.40	43.8	49.30	82.8
	48	6.3		39.6	49.35	83.5
	48	13.9		<u>83.4</u>	49.65	82.8
	48	53.5	33.70		49.35	83.1
			<u>49.30</u>		49.30	83.4
					195	26
					49.39	83.52

In above observations, hole of square at the south, following.

Setting 57.33; a south half, b north; a, a, b, b.

9	57	52.4	8.80	31.8
	58	24.2	8.30	51.2
	58	32.3		<u>83.0</u>
	59	23.5	57.90	
			<u>49.60</u>	

10	0	0.7	18.85	36.3
	0	37.0		47.2
	0	44.5	8.10	<u>83.5</u>
	1	31.7	49.25	

10	2	4.2	24.05	39.7
	2	43.9		43.9
	2	51.4	13.35	<u>83.6</u>
	3	35.3	49.30	

10	4	22.2	44.10	43.8
	5	6.0		39.6
	5	13.7		<u>83.4</u>
	5	53.3	33.50	
			<u>49.40</u>	

March 3, 1887.

10	7	46.0	12.25
	8	37.6	
	8	45.4	1.65
	9	17.9	<u>49.40</u>

50.7	49.60	83.0
<u>32.5</u>	49.25	83.5
83.2	49.30	83.6
	49.40	83.4
	<u>49.40</u>	83.2
	195	17
	49.39	83.34

Both south half; a, a, b, b.

~~10 13 15.8~~

10	13	58.2	7.30	18.2
	14	16.4		<u>53.7</u>
	14	30.0	56.85	35.5
	15	23.7	<u>49.55</u>	

10	16	28.3	34.55	12.5
	16	40.8		<u>47.9</u>
	16	59.8	23.75	35.4
	17	47.7	<u>49.20</u>	

10	18	29.5	33.90	8.8
	18	38.3		<u>44.2</u>
	19	1.3	23.40	35.4
	19	45.5	<u>49.50</u>	

10	20	32.5	35.70	6.4
	20	38.9		<u>42.0</u>
	21	4.6	25.00	35.6
	21	46.0	<u>49.30</u>	

March 3, 1887

10	22	43.6	49.80	12.4	49.55	35.5
	22	56.0		<u>47.9</u>	49.20	35.4
				35.5	49.50	35.4
	23	15.1			49.30	35.6
			39.05		<u>49.25</u>	35.5
	24	3.0	<u>49.25</u>		180	24
					49.36	35.48

Setting 57.33; star a in South half,
over prolongations of bars as well as the
square; the hole is in the preceding angle, to the south.

10	26	30.9	35.15
	26	39.4	
	27	30.1	34.30
	27	38.5	<u>59.15</u>

10	28	9.0	13.10
	28	17.2	
	29	8.5	12.55
	29	16.6	<u>59.45</u>

10	29	53.0	57.50
	30	2.0	
	30	52.1	56.55
	31	1.0	<u>59.05</u>

10	31	31.6	35.95
	31	40.3	
	32	30.7	35.00
	32	39.3	<u>59.05</u>

March 3, 1887

10	33	23.7		
		1.1	27.60	59.15
	33	31.5		59.45
				59.05
	34	22.7	26.85	59.05
	34	31.0	59.25	59.25
				95
				59.19

Setting 147.33; star a in north half, over prolongations of bars and across square.

10	40	19.0		
			15.25	
	40	19.5		
	41	10.5	14.85	
	41	19.2	59.60	

10	42	6.9		
			11.30	
	42	15.7		
	43	6.4	10.70	
	43	15.0	59.40	

10	43	50.1		
			52.80	
	43	55.5		
	44	49.4	52.20	
	44	55.0	59.40	

		28.6		
10	45	49.8		
			52.65	
	45	55.5		
	46	49.2	52.00	
	46	54.8	59.35	

March 3, 1887

10	47	48.3	53.15	59.60
	47	58.0		59.40
	48	47.7	52.60	59.40
	48	57.5	59.45	59.35
				59.45
				<u>220</u>
				59.44

Zero 102.5 & Can. Min.

102.5	δ Can. Min	+5° 30' 40"
102.5	δ star a	+5 21
	δ (mean of stars a & b)	+5 23

Star a foll. & Can. Min. 6" 37.3, 10' south.

External temperature 21.0

10236	F. 1327
11 9 45.7	11 11 0.0
110 45.7	12 0.0

Stars a and b.		Star a on prolongations of bars	
Both north	49.45 35.66	South	59.19
Both south	49.36 35.48	North	59.44
	49.40 35.57	Diagonal	59.325
North & South	49.39 83.52	Log 59.315	1.77316
"	49.39 83.34	Log 15	1.17609
	49.39 83.42	Log cos 5° 23'	9.99808
	118.99		1.17417
Diagonal	59.50	Diagonal	885.79 885.83
	59.495		
Log 59.495	1.77448		
	1.17417		
	<u>2.94865</u>		
Diagonal	888.48		

Values of diagonal: p. 83 889.04 transits by stopwatch.
 p. 87 887.89 " " " chronometer.
 p. 130 888.48 by $\Delta\delta$ of stars a & b
 p. 130 885.83 by direct transits

Allow half weight to result by stopwatch on account of uncertainty of rate.
 Mean 887.63, subject to possible small correction for rate of F. 1327 and for refraction.

2.04	53.44	7.62
13.78		
16.86		
11.66	7	

Mar. 4. 1887
 Visible early in the evening. Showed Mercury, Venus, Saturn, Moon.
 6 55 N. N. = 7 45 E. N.

Barnard's New Comet. Obs.

$$\begin{array}{r}
 14 \quad 16 \\
 7 \quad 2 \\
 \hline
 4 \quad 19 \quad 26 \\
 4 \quad 12 \quad 28 \\
 7 \quad 20 \\
 + 2 \quad 12 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 7 \quad 56 \\
 4 \quad 12 \\
 \hline
 3 \quad 44
 \end{array}$$

$$\begin{array}{r}
 24 \quad 23 \\
 26 \quad 21 \\
 \hline
 2 \quad 2 \\
 1 \quad 4 \\
 \hline
 26 \quad 21 \\
 + 27 \quad 35 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2 \quad 20 \\
 7 \quad 45 \\
 \hline
 3 \quad 5
 \end{array}$$

$$2 \quad 46$$

Search carefully for ~~it~~
 not found.

Comet was very faint ~~40~~ 27.4
 when last observed and the moon
 is so bright that it would probably
~~be~~ be impossible to see it.

$$\begin{array}{r}
 12 \\
 7 \quad 45 \\
 9 \quad 3 \\
 \hline
 1 \quad 14 \\
 6 \quad 55 \\
 \hline
 2 \quad 13 \\
 4 \quad 0 \\
 \hline
 27.4 \quad 4 \quad 13
 \end{array}$$

Mar. 4, 1887.

Looked at Saturn Tr. obs.
Seeing very fine.

The division in ring seen all
the way round ^{to shadow of ball on ring} - also the
shadow of ball on ring.

The crater near craters also
well seen. Belts well visible.
The view of Saturn by far the best
ever seen by Tr.

Wedge Photometer

Region of R Virginis (63) S. obs.

10 20

f	44.8	44.3	86.1 ¹	7.6 >
i	39.7	36.9	76.1 ^{6.1}	6.4 >
k	36.2	38.9	75.1 ¹	6.6 >
e	40.9	42.0	82.9 ¹	7.3 >
p	36.5	37.8	74.3 ¹	6.5 >
h	26.8	27.9	54.7 ¹	4.8 >
n	22.7	23.2	45.9 ¹	4.0 >
a(1)	12.6	14.2	26.8 ¹	2.4 >
R	30.0	30.2	60.2 ¹	5.3 >
b	13.9	16.6	30.5 ¹	2.7 >
g	27.9	26.8	54.7 ¹	4.8 >
m	22.0	21.6	43.6 ¹	3.8 >
a ⁽¹⁾ (13)	33.9	35.4	69.3 ¹	6.1 >
c ⁽¹⁾ (16)	33.4	34.2	67.6 ¹	5.9 >

Stars d(14), b(15), a(17), b(18) bright and
not required for wedge photometer.

11 2

My estimate
p 5 R
R 2 g

March 8, 1887.

6 45 Estimates with finder. Obs.
 Sky apparently clear and full
 aperture of finder available below the
 small spatters. Circumstances more
 favorable than on Feb. 28 (p. 116).

H.P. 740	est. magn. 2.8	H.P. mean 3.3
766	3.2	4.0
796	3.3	4.4
802	3.0	3.8

The scale of the estimates was arbitrary.
 The general relations of brightness among
 the four stars seen by the estimates to
 be like those given by the meridian photometer.

$$6^h 55^m N.P. = 7^h 25^m S.P.$$

Comp. Stars for Var. St. obs.

2	32	+20.0
7	7	
-1	25	

over.

Mar. A. 1447.
Comp. Stars for Var. M. obs.

46 U Cancri.

d	16.2 15.1	17.7	32.8 [^]	2.8 ^{>}	
b	16.2	21.2	a third observation taken 17.0 18.1 3.0 ^{>}		
e	9.9	follows another 8 ³ 0.5 north & is brighter	12.7	28.6	1.9 ^{>}
u	9.8	11.1	20.9 [^]	1.8 ^{>}	
u	11.2	Susp. at about limit of vis.			
m	11.2	13.7	24.9 [^]	2.1 ^{>}	
a	12.9	15.0	27.9 [^]	2.3 ^{>}	
g	23.0	21.0	22.1	[22.0] [66.1]	3.7 ^{>} 11.0
c	16.9	21.0 22.1	17.5	34.3 ^{>}	2.9 ^{>}
f	26.7	25.8	52.5 [^]	4.4 ^{>}	
L	23.9 ⁽²⁾	24.2	24.2	56.4	4.7 ^{>}
(12)	42.4	41.2	84.6 [^]	7.0 ^{>}	

9 5

ended.

Region A I Cancri (47) I. obs.

9 35

d ⁽¹⁾	31.4	32.5	63.9 [^]	5.3 ^{>}
f	12.2	15.2	27.4 [^]	2.3 ^{>}
h	21.9	23.1	45.0 [^]	3.7 ^{>}
l	17.8	19.2	37.0 [^]	3.1 ^{>}
s	31.1	33.9	65.0 [^]	5.4 ^{>}
g ⁽¹⁾	20.8	22.3	43.1 [^]	3.6 ^{>}
h	27.2	28.9	56.1 [^]	4.7 ^{>}
c	35.0	38.0	73.0 [^]	6.1 ^{>}
a	30.2	28.5	58.7 [^]	4.9 ^{>}
d ⁽²⁾	22.0	24.7	46.7 [^]	3.9 ^{>}
g ⁽²⁾	7.2	7.9	15.1 [^]	1.3 ^{>}

By estimate, a 18; 82h.

10 10

March 8, 1887
 Region of Tauri (49) Sols.

10 20

g	37.2	44.0	81.2 [^]	67 ^{>}
h	27.3	28.8	56.1 [^]	41 ^{>}
d	24.8	23.8	48.6 [^]	40 ^{>}
c	22.8	22.1	44.9 [^]	37 ^{>}
a	10.0	11.3	21.3 [^]	18 ^{>}
e	23.7	25.3	49.0 [^]	41 ^{>}
T	25.9	27.9	53.8 [^]	45 ^{>}
f	31.8	31.2	63.0 [^]	52 ^{>}
b	19.8	19.2	39.0 [^]	32 ^{>}

10 45

By estimate
 f 2 T
 19 4 c

March 13, 1887
 Wedge photometer L. S. Brown
 Region of R Cancri (44)

p (1)	41.0	36.2	77.2 ^ 6.7 >
q (2)	39.2	36.9	76.1 ^ 6.6 >
r (3)	21.1	18.8	29.9 ^ 3.4 >
a (7)	24.2	24.7	48.9 ^ 4.2 >
b (9)	25.2	22.1	47.3 ^ 4.1 >
e (10)	36.0	31.7	67.1 ^ 5.9 >
f (6)	38.0	33.0	71.0 ^ 6.2 >
d (14)	33.1	33.9	67.0 ^ 5.8 >
n (13)	17.4	16.5	33.9 ^ 2.9 >
h (12)	13.0	11.9	24.9 ^ 2.2 >
o (11)	14.1	14.9	29.0 ^ 2.5 >
m (8)	17.1	16.3	33.4 ^ 2.9 >
a (4) (prec. m 1 ⁵ , 6' north)	9.9	11.1	21.0 ^ 1.8 >
R (5) (prec. m 6 ⁵ , 5' north)	18.2	14.9	33.1 ^ 2.9 >

k, l, h, i, (15 to 19) omitted as bright and superfluous.
 Same star taken for R as on page 74, which
 see

10 0

By estimate
 c 3 R
 R 3 m

March 13, 1887
 Region of U Camm (46)

10	18	d	15.3	15.9	31.2 [^]	2.6 >
		b	16.2	20.0	36.2 [^]	3.0 >
		c (foll. of two)	11.0	8.5	19.5 [^]	1.6 >
		n	9.7	8.0	17.7 [^]	1.5 >
		u	not seen			
		m	9.8	10.0	19.8 [^]	1.7 >
		a	11.0	10.3	21.3 [^]	1.8 >
(14)		Star foll. in 6 ^s 4 months	too faint for wedge			
(13)		Star prec. n 25 ^s 3 ^s south	8.6	6.3	14.9 [^]	1.3 >
		g	23.8	23.0	46.8 [^]	3.9 >
		c	23.0	20.7	43.2 [^]	3.6 >
		f	28.8	28.9	57.7 [^]	4.8 >
		h	33.1	28.3	61.4 [^]	5.1 >
		(12)	42.7	42.1	84.8 [^]	7.0 >

11 7

Ended.

March 20, 1887
Wedge photometer. S. obs.

Region of δ Hydrae (48)

9	25(24)	f of chart ($8^h 46.4^m, +2^\circ 22'$) [23 of list]	39.7	35.9	$75.6^\circ 6.1 >$
	(12e)	e of chart ($8 46.3, +3^\circ 3'$) [12 of list]	33.8	31.4	$65.2^\circ 5.1 >$
	(16d)	d of chart ($8 47.7, +3^\circ 12'$) [16 of list]	34.7	34.5	$69.2^\circ 6.1 >$
	(t6)	b (1) follows	27.9	25.2	$53.1^\circ 4.1 >$
	(2t)	t (2) [follows b $32^\circ, 4' 5''$ south]	20.0	19.5	$29.5^\circ 3.5 >$
		h (21) probably identical with t			
		k (22) [follows t 10° , same δ]	15.9	17.9	$33.8^\circ 3.0 >$
		n (3) probably identical with k (22)			
		o (4) [has a fainter star $15''$ nf]	12.2	11.7	$22.9^\circ 2.1 >$
		a (5)	27.5	23.9	$51.4^\circ 4.5 >$
		l (6) not visible; perhaps identical with y as suggested by Chandler			
		m (7) [precedes y $6^\circ, 2' 5''$ north]	14.3	5.0	$9.3^\circ 0.8 >$
		y (8)	8.1	10.0	$18.1^\circ 1.6 >$
		z (9)	6.9	7.2	$14.1^\circ 1.2 >$
		s (10)	22.2	20.2	$42.4^\circ 3.1 >$
		x (11)	8.0	8.8	$16.8^\circ 1.5 >$
		w (13)	5.1	4.9	$10.0^\circ 0.9 >$
		c (14)	30.5	29.2	$59.4^\circ 5.3 >$
		q (15)	19.9	24.0	$43.9^\circ 3.9 >$
		b (20 of list; on chart $8^h 45.4^m, +3^\circ 55'$)	23.1	23.7	$46.8^\circ 4.1 >$
		a (18 of list; on chart $8 49.7, +3^\circ 5'$)	41.1	43.1	$84.2^\circ 7.4 >$
		e (17) [sp in a loose group of 4; precedes (12) $5^\circ 54', 2'$ south]	32.8	34.1	$66.9^\circ 5.9 >$
		f (19) [near same δ with e (17), about $45'$ north; has a pair sf and one star nf]	21.5	22.9	$44.4^\circ 3.9 >$

By estimate

a(5) 3 f
s 3 t

Var. 21.1447.

7 21 S.T. = 7 15 L.T.
Comp. Stars for Var. Jr. obs.
4.7 S. Dancere
+ 36 + 14.7
7 31.
- 1 5

d	33.8	33.0	66.8	55	>
f	19.1	18.0	37.1	31	>
b	20.9	22.0	42.9	36	>
e	19.9	20.1	40.0	34	>
s	19.2	18.3	37.5	31	>
g	21.2	21.5	42.7	35	>
h	23.4	25.1	48.5	40	>
c	36.4	35.8	72.2	6.1	>
a	27.0	25.8	52.8	44	>
to d					
" g	16.0	16.8	15.9	13.0	28.9 24 >

Series finished just before general cloudiness came on, although it has seemed hazy, and probably the whole series has been somewhat affected by light and somewhat varying cloud.

Mar. 23. 1887.

Comp. Stars for Var.
51 R Leonis Min.

W. ob.

$$\begin{array}{r} 9 \quad 34 \quad + 35.9 \\ 7 \quad 57 \\ \hline -1 \quad 37 \end{array}$$

e

d

b

c

h

a

g

b(?)

z

x

a

k

14 a~

15 a

16 e

Became too cloudy for work.
Clouds all over the sky and only
bright stars visible in finder.

~~B~~ Mar. 23, 1867.

B. + C. 1122.
 13 41 $\frac{6.7}{7.0}$
 42 6.7

B. 394.
 13 40 0.0
 41 0.0

Dis. Jup. II. Phot. H.
 Comp. with Sat. IV.

P. obs.

13 51 47.0
 59.0
 52 11.0
 27.0
 47.0
 53 2.0
 → 16.0
 33.0
 45.0
 54.0
 54 10.0
 23.5
 37.0
 51.5
 55 6.0
 19.5
 53.0
 56 4.0
 17.0
 25.0

275.3
 16.5
 221.0 1
 23.4
 279.3 -
 17.6 2
 223.4
 16.4 -
 272.3
 19.5 3
 222.1
 22.4 -
 222.4
 17.2 4
 279.2
 19.2 -
 221.6
 17.6 5
 274.2
 12.4 -

Mar. 23, 1947.

12	✓6	32.5	240.6
		45.0	17.6
	✓7	1.0	279.4
		13.5	23.1
		26.5	242.4
		40.0	19.3
		51.0	241.2
	✓2	7.0	14.4
		21.5	241.3
		34.5	14.4
		50.0	241.1
	✓9	2.5	20.4
		12.5	241.0
		36.0	14.6
		45.0	243.2
		54.0	14.2
14	0	15.0	242.3
		14.0	17.7
		26.0	247.0
		35.5	10.1
		42.0	249.4
		50.5	9.8
	1	6.5	296.2
		17.0	11.4
		25.0	290.0
		29.0	0.6
		34.5	299.2

Nov. 23, 1887.

14	1	43.5	359.4
		51.0	301.2
	2	1.0	357.0
		10.5	303.2
		20.5	352.1
		29.5	307.9
		46.0	345.2

Not seen later.

Limit of Vis.

3	46.0	309.6
	56.5	351.0
4	11.5	304.4
	26.5	350.0

B. + C. 1182.

14	10	6.2
	11	6.1

B. 394.

14	9	0.0
	10	0.0

Mar. 24. 1887.

Comp. Stars for Var. H. obs.

7 37.5.7 to 7 14-8.5.

50 J. Hydras

2 44 - 2.5

7 47

- 57

7 53

51

2 6

25 = 7

43

52

44

19

- 29

The two observations of each star taken in immediate succession. ^{W. obs.} for want of time. First observations of b & c rejected on account of clouds.

8 23

k 35.2 34.0 69.8^ 61 >

b 17.5 14.7 24.3 25.0 49.3^ 43 >

a 19.0 16.8 32.1 29.0 61.1^ 53 >

g 41.0 41.2 82.2^ 72 >

c 19.0 19.8 38.8^ 34 >

h 17.4 17.2 34.6^ 30 >

i 13.0 13.1 26.1^ 23 >

l 23.2 23.5 46.7^ 41 >

p 35.7 36.1 71.8^ 62 >

q 20.0 17.5 37.5^ 33 >

r 13.9 15.1 29.0^ 26 >

m 18.6 19.1 37.9^ 33 >

38 > 43.7^ e 22.5 21.25 full, another slightly brighter 22.5^ 2.5 north

41 > 53.0^ d 28.0 25.0 (and full, another fainter 18.5^ 12.5 south)

40 > 46.5^ f 23.8 22.7 } full, another equally bright 16.5^ 0.5 south

(and full, another slightly fainter 15^ 4 north)

By estimate J 31

Ended

9 6

March 24, 1887. S. S.
 Wedge photometer
 Region of δ Hydrae (48)

9	24	f of chart (as on p. 138)	43.9	39.0	82.9	73 >
		e — " — " —	32.2	33.0	65.2	54 >
		d — " — " —	38.8	35.0	73.8	65 >
		b (1) — " —	30.2	28.5	58.1	52 >
		t (2) — " —	23.6	23.7	47.3	42 >
		h (21) see p. 138	43.9			
		n (3) — " —				
		k (22) as on p. 138	19.1	17.8	36.9	32 >
		o (4) — " —	14.5	13.4	27.9	25 >
		a (5) — " —	27.0	28.9	55.9	49 >
		l (6) not visible — " —				
		m (7) — " —	5.8	6.0	11.8	10 >
		n (8) — " —	13.9	11.5	25.4	22 >
		z (9) — " —	9.2	9.0	18.2	16 >
		s (10) — " —	25.4	25.0	50.4	44 >
		x (11) — " —	11.5	13.0	24.5	22 >
		w (13) — " —	6.0	8.8	14.8	13 >
		c (14) — " —	33.9	32.1	66.0	58 >
		q (15) — " —	23.1	25.0	48.1	42 >
		g (20) — " —	25.1	27.5	52.6	46 >
		la (18) — " —	42.8	40.0	82.8	73 >
		e (17) — " —	30.9	33.5	64.4	54 >
		f (19) — " —	28.1	25.8	53.9	44 >

10 17

By estimate

a (5) 3 s
 s 4 t (2)

Sky rather hazy; haze perhaps a little thicker
 at end than at beginning of observations, ^{afterwards decidedly increasing.}

25.
Mar. 25, 1887.

Comp. Stars for Var. St. obs.
 50 J Hydrae.
 A 44 - A.V (7^{52.} 40 = 7^{E. 7.} 14)
 7 54
 - 50

K	38.0	38.7	76.7 [^] 6.7 >
b	24.0	26.3	50.3 [^] 44 >
a	28.2	30.1	58.3 [^] 5.1 >
g	38.4	39.0	77.4 [^] 6.8 >
c	19.2	21.7	40.9 [^] 3.6 >
h	12.1	17.1	35.8 [^] 3.1 >
i	11.6	11.3	22.9 [^] 2.0 >
l	25.1	30.2	55.3 [^] 4.9 >
p	37.2	35.7	72.9 [^] 6.3 >
q	21.9	22.9	44.8 [^] 3.9 >
z	14.4	13.2	27.6 [^] 2.4 >
m	17.1	18.2	35.3 [^] 3.1 >
e	24.3	24.5	48.8 [^] 4.2 >
d	24.8	26.1	50.9 [^] 4.5 >
f	21.8	24.3	46.1 [^] 4.0 >

Less
 There are some apparent discrepancies
 between the chart and the sky.

The first star on chart for K, follows
 13 sec. 1' north instead of south.

Mar. 25, 1847.

The second star follows K 24 sec,
in same dec.

A star fol. "L" 13 sec. abt. 2' north
instead of south. This being an error
similar to the previous one and there
being no star on chart in same position
as in sky, it is probable this is
"Y" and was so assumed last night
as well as to night.

There seems to be no doubt about
"f" but and its position seems to be
right but the star which it seems cer-
tain must be "e" is some considerably
out both as respects "d" and "f".

It is probable it is "e" however as
there is no other star to supply its place.
The assumed "e" precedes "f" 54 sec,
and is ~~2~~ ³ south.

9^h 7^m

7 2.5 i

March 25-1887
 Wedge photometer 1.50
 Region of δ Leonis (56)

9	35	m	16.3	15.0	31.3 [^] 28 >
		a	31.1	33.0	64.1 [^] 56 >
		k	12.3	12.5	24.8 [^] 22 >
		h	19.2	18.6	38.0 [^] 33 >
		b	23.9	21.7	45.6 [^] 40 >
		n	14.2	14.3	28.5 [^] 25 >
		f	suspected, foll. h 47 ^s , 0.5 south		
		h	17.9	14.9	32.8 [^] 29 >
		c	29.0	30.8	59.8 [^] 53 >
		d	30.1	26.8	56.9 [^] 50 >
		g	22.0	21.7	43.7 [^] 38 >
		f	19.5	18.1	37.6 [^] 33 >
		e	24.7	25.3	50.0 [^] 44 >
(14)		Star foll. h 48 ^s , 3' south,	6.6	6.9	12.9 [^] 1.1 >
(15)		Star foll. h 54 ^s , 5' south,	6.7	5.9	12.6 [^] 1.1 >
10	20	A star foll. h 39 ^{s(16)} , 3' north, about equal to object suspected to be f.			

March 25, 1887
Region of U Canion (45) Subs.

10 59	d	20.0	21.8	41.8 ¹ 35 >
	b	22.4	21.1	43.5 ¹ 36 >
	b (full. of two)	15.0	16.9	31.9 ¹ 26 >
	n	14.7	13.5	28.3 ² 24 >
	U not seen	15.0		
	m	15.0	17.8	32.8 ¹ 28 >
	a	18.1	18.0	36.1 ¹ 30 >
(14)	Star foll. m 6 ⁵⁵ , 4' north,	5.3	6.1	11.4 ¹ 10 >
(13)	Star prec. n 2 ⁵⁵ , 3' 5" south,	11.2	9.9	21.1 ¹ 18 >
	g	27.2	28.1	55.3 ¹ 46 >
	gc	23.5	25.9	49.4 ¹ 41 >
	f	33.2	33.7	66.9 ¹ 56 >
	h	33.3	30.3	63.6 ¹ 53 >
	(12)	46.2	47.0	93.2 ¹ 71 >

11 23

Ended.

Mar. 25. 1887.

B. + C. 1182.

15	22	49.7
	23	49.6

B. 394.

15	22	0.0
	23	0.0

Dis. Sup. I. Phot. H. S. obs.
 Comp. with Lat. II.

15	32	41.5
----	----	------

-	33	2.0
---	----	-----

	33	30.5
--	----	------

47.0

	34	11.5
--	----	------

39.0

	35	5.5
--	----	-----

21.0

34.5

45.5

57.0

	36	9.0
--	----	-----

22.0

35.0

45.5

56.0

	37	13.0
--	----	------

23.0

103.0

196.1

104.4

198.9

104.2

200.0

101.7

195.3

103.5

199.5

105.1

203.0

102.2

197.5

105.3

195.9

104.5

202.0

Mar. 25. 1887

15	37	36.5	106.1	
		46.0	201.3	
		54.5	103.4	
	38	100	200.9	
		22.0	105.0	6
		33.0	200.3	
		46.0	102.6	
		57.0	197.7	
	39	16.5	102.4	7
		27.0	201.0	
		40.5	105.7	
		52.0	196.9	
	40	17.0	102.2	8
		31.0	195.2	
		47.5	102.4	
		52.5	197.7	
	41	12.0	102.0	9
		25.5	201.1	
		35.5	103.6	
		45.5	196.2	10
		54.5	104.0	
	42	2.0	195.2	
		10.0	107.0	
		14.5	192.4	
		26.0	106.2	
		34.0	195.2	

Mar. 25, 1887.

15	42	42.0	110.7
		50.5	122.5
		54.5	112.5
	43	7.5	129.2
		16.0	111.0
		20.5	127.6
		22.5	124.3
		40.5	127.1
		45.0	121.6
		54.5	122.5
	44	4.0	120.2
		10.0	174.2
		17.0	124.7
		24.0	120.6
		31.0	127.7
		44.5	172.2
		57.0	126.6

Not seen later.

Limit of Vis.

45	24.5	133.2
	46.0	167.6
	52.0	129.9
46	9.0	167.4

B. & C. 1112.

15	51	49.1
	52	49.0

B. 394.

15	51	0.0
	52	0.0

Mar. 26. 1887.

Comp. Stars for Var.

W. obs.

7 40 V. S. = 7 10 E. S.

51 R Leonis Min.

9 34 + 35.7

~~2~~ 0.

-1 34

e 38.2 37.3 75.5[^] 54 >

d 44.6 45.9 90.5[^] 66 >

b 45.1 46.9 88.0[^] 63 >

c 34.3 38.2 72.5[^] 52 >

w 19.0 19.2 38.8[^] 28 >

a 19.2 19.1 38.3[^] 28 >

g 22.6 21.7 44.3[^] 32 >

R 22.1 23.5 invisible.

H² 19.2 18.0 22.1 23.5 45.6[^] 33 >

z 14.2 14.5 28.7[^] 21 >

x 19.2 18.0 37.2[^] 27 >

u 35.1 35.5 70.6[^] 51 >

k 23.4 26.2 49.6[^] 36 >

14a 50.2 50.5 100.7[^] 74 >

15a 45.9 46.3 92.2[^] 68 >

16e 38.0 40.1 78.1[^] 57 >

9 3 R is probably invisible as there is no star visible in the place of R, and the stars immediately adjacent seem to be in nearly the correct position.

March 26, 1887

Wedge Photometer

S. obs.

Region of γ Leonis

(57)

9	26	(7)	[at $11^h 28^m 8^s, +4^\circ 6'$]	42.1	41.0	82.1	7.3 >
		(8)	[at $11^h 30^m 2^s, +4^\circ 38'$]	31.2	28.0	59.2	52 >
		(9)	[at $11^h 30^m 7^s, +4^\circ 26'$]	40.0	34.7	44.7	6.6 >
		(10)	[at $11^h 33^m 0^s, +4^\circ 27'$]	37.0	37.0	44.0	65 >
		z		6.8	8.3	15.1	1.3 >
		x (a close pair, equal, sp. diff.)		5.8	5.7	11.5	10 >
		y		8.1	9.2	17.3	15 >
		a		10.0	16.0	26.0	2.3 >
		γ	not visible				
		b		17.9	16.2	34.1	30 >
(11)		Star prec. b 5 ^s , 9's south		18.0	18.8	36.8	32 >
10	4	Ended.					

Region of γ Virginis (60)

10	23	(10)	[at $12^h 6^m 8^s, -4^\circ 54'$]	40.9	42.6	83.5	7.3 >
		(11)	[at $12^h 8^m 9^s, -5^\circ 2'$]	37.5	38.3	75.8	6.1 >
		e		28.3	31.0	59.3	52 >
		a ⁽¹⁾ (prec. x 88 ^s , 5.5 north)		15.0	14.0	29.0	26 >
		x		12.3	10.4	22.7	2.0 >
		γ		14.2	14.3	28.5	2.5 >
		z		9.8	10.0	19.8	1.7 >
		b ₂		12.2	11.7	23.9	2.1 >
		b	not seen in place (possibly this b is the true one)				
(12)		Star foll. z 2 ^s , 8's south		8.0	8.9	16.9	1.5 >
(13)		Star foll. z 5 ^s , 10's south		12.6	8.9	21.5	1.9 >
		d ⁽²⁾		20.9	21.1	42.0	3.1 >
		d		36.0	36.5	72.5	6.4 >
10	58	My estimate x 3 γ ; γ 2 y (supposing that γ is given correctly on the chart).					

March 29, 1887

B 236

7 56 22.5
7 59 33.0

B 394

7 12 20.0 44 2.5
7 15 30.0 44 3.0

found four very minute uprise
of obs. R. m.

Approx. to 8 28.3

Set stop watch at 0^m 0.0

8 27 50.5 dis. instant ~~at end of~~
have observed time 8 27 50.5 Cont. 20 at 8 28 0.5
Stopped stop watch at 8^m 28^m 30^s, nearly 0^m 49.5
49.5 - 10.5 = 39.5 = interval or run of watch.

∴ time elapsed car 8 28 0.5 - 10.0 = 8 27 50.5
" elapsed 8 28 30.0 - 39.5 = 8 27 50.5

or two methods give exactly same result within $\frac{1}{2}$ sec

B 236

8 36 8.5
37 8.8

B 394

8 7 52 0.0 44 8.5
53 0.0 44 8.8

Error at 8 27 50.5 44^m 7.0 ∴

time of dis. by B 394 = 7^m 43^m 43.5 = time of dropping
of 2 lanes.

Mar. 29. 1847.

$$\begin{array}{r} 4A \quad 30 \quad = \quad 3 \quad 3 \quad - \quad 0 \\ \hline \sqrt{1} \quad 21 \quad \quad \quad \quad \quad \sqrt{1} \\ \hline 2 \quad \sqrt{1} \quad \quad \quad \quad \quad 3 \quad \sqrt{1} \quad \sqrt{1} \end{array}$$

9 37 32.0 Noted time
but L. Lauri at considerable
distance & out from limb of Moon.

Direction of limb of Moon 222.3
Zero of off pos. \rightarrow 233.4
 \rightarrow 323.4

∴ Pos. Aug 27.4 264.9

Wedge photometer obs.

beyond delay observations.

Region of R Craters (55)

10 10

f
g
b
R (not apparently double)
a
h
d
c

31.1	33.0	64.1° 54>
35.3	37.0	72.3° 61>
25.8	26.0	51.8° 44>
27.6	27.1	54.1° 46>
30.9	30.9	61.8° 52>
39.4	36.4	75.8° 64>
28.9	30.0	58.9° 50>
33.1	31.2	64.3° 55>
9.0	11.6	20.6° 17>
18.1	15.9	34.0° 29>

(9) Star 3' north of a
(10) Star foll. a 14', 3' north, 18.1 15.9

10 37 By estimate e 2 R
R 1 f

Mar. 30. 1887.

Alt 0° N.P. = 7h 13m 6s S.
Comp. Stars for Var. St. No.
63 A Virginis.
12 25 + B.C.

2 15
- 4 10

f	42.5	47.0	89.5 ^{7.9}	
i	32.2	39.9	42.1 ^{6.3}	
k	35.4	42.8	78.6 ^{6.9}	
e	41.2	40.7	81.9 ^{6.2}	
p	36.4	36.3	72.7 ^{6.4}	fol. and bot. of 3.
h	25.7	29.5	55.2 ^{4.9}	
n	21.7	21.0	42.7 ^{3.8}	pr. southern + bot. of 3.
a	13.0	12.2	25.8 ^{2.3}	
R	19.4	19.9	29.3 ^{3.5}	
b	+2.9	16.2	16.7 ^{32.9}	Ref. fifth.
g	24.1	27.5	51.6 ^{4.5}	
m	20.4	21.2	41.6 ^{3.1}	
13 a	32.6	34.3	66.9 ^{5.9}	
d	47.2	47.4	94.6 ^{8.3}	
b	37.4	33.9	71.3 ^{6.3}	
c	33.7	32.8	66.5 ^{5.7}	
17 a	bot. } obs. with M.P.			
18 b				

9 9 By estimate, ~~on~~ n 3 R
Thin clouds beginning to pass over
region observed.

March 30, 1887
Wedge photometer f. obs.
Region of R Crateris (55)

9 30

f
e
h
R
a
h
d
c

29.0	29.0	58.0 ^ 49 >
31.3	35.0	68.0 ^ 54 >
28.2	27.9	56.1 ^ 44 >
29.2	29.9	59.1 ^ 50 >
32.5	31.2	63.7 ^ 54 >
39.2	38.8	78.0 ^ 66 >
28.8	28.1	56.9 ^ 48 >
30.6	31.0	61.6 ^ 52 >
10.8	11.1	21.9 ^ 18 >
14.3	13.0	27.3 ^ 23 >

(9) Star 3' north of a
(10) Star foll. a 14¹⁵, 3' north.

9 53

By estimate
e 2 R

R 1 f

Region of X Virginis (58)

10 15

d
g
h
X
z
a
e
(8)

18.1	17.2	33.3 ^ 31 >
25.1 15.7	16.0	31.7 ^ 28 >
15.3	16.8	32.1 ^ 28 >
13.6	15.1	28.7 ^ 25 >
10.0	9.4	19.4 ^ 17 >
22.1 16.6	17.0	33.6 ^ 29 >
23.7	21.1	44.8 ^ 39 >
28.8	28.0	56.8 ^ 49 >
34.1	32.2	66.3 ^ 58 >

(11) Unsuitable for wedge, on account of (10).
(12) n/p of 2

25.2	27.8	53.0 ^ 46 >
33.3	34.2	67.5 ^ 59 >

10 48

By estimate, d 2 X ; X 2 c

(10) is too bright for wedge, and (11) too near (10).

March 30, 1887

B 86 1182	B 394
16 29 58.6	16 20 0.0
210 58.6	21 0.0

Dis. of up. II. Comp. with Lit. I.
Comp. with Phot. St. I. obs.

16	25	4.0	22.7	
	26	9.0	101.0	
		27.5	22.6	1
		43.0	103.2	
	27	4.0	22.9	
		20.0	99.2	
		36.5	21.4	2
		55.0	97.3	
	28	13.5	24.1	
		24.0	104.2	3
		37.5	20.9	
		47.5	99.4	
	29	3.0	21.4	
		16.0	100.4	
		32.0	21.7	4
		47.0	97.9	
	30	0.0	21.0	
		10.5	101.2	
		24.0	22.9	5
		45.0	99.0	

Mar. 30. 1887.

16	31	37.0	24.9	
		46.0	101.9	
		56.0	20.0	6
	32	57.5	99.0	
		16.0	21.4	
		26.5	101.6	
		49.5	21.1	7
		52.0	97.4	
	33	7.0	20.4	
		12.0	100.5	
		26.0	21.0	8
		34.0	95.2	0
		43.0	21.5	9
		56.5	99.3	10
	34	7.5	24.0	11
		16.0	99.1	12
		25.5	26.1	
		33.0	92.0	
		41.0	27.2	
		50.5	92.4	
		52.5	33.4	
	35	7.0	91.4	
		17.0	29.6	
		25.0	23.0	
		32.5	31.7	
		40.5	27.0	

Mar. 30, 1927.

16	35	49.0	38.0
		57.0	22.3
	36	6.5	36.2
		15.5	21.2
		23.0	45.3
		35.0	72.9

Not seen later.

Limit of Vis.

37	2.0	42.4
	20.5	20.1
	36.0	45.5
	50.5	72.0

B. + C. 1152.

16	42	57.5
	43	54.5

B. 394.

16	43	0.0
	44	0.0

Mar. 31. 1887.

Opened dome thinking that possibly a ~~see~~ short series could be taken before the clouds became troublesome. But they are pushing up so fast from the south and are already north of the zenith (with light clouds also all over the northern sky) that it is probably best not to proceed.

Clouds becoming thicker and covering the whole sky. H.

Apr. 4. 1887.

Comp. Stars for Var. *St. obs.*

δ 34 $\sqrt{1.7} = 7.23$ E. J.
45 $\sqrt{1}$ Cancri.

δ 12 +17.5 74.1
 δ 51
+33 90.
164.1

8 25	d	33.2	28.0	61.2 ¹ 5.1 >	74.1
	e	31.7	28.1	59.8 ¹ 5.0 >	36.0
	h	24.6	25.1	49.7 ¹ 4.2 >	43.4
	k	15.2	15.2	30.4 ¹ 2.6 >	90
	v	17.2	11.1	28.3 ¹ 2.4 >	34.1
	m	23.1	26.3	49.4 ¹ 4.1 >	
	x	13.2	12.2	25.4 ¹ 2.1 >	
	a	34.0	30.4	64.4 ¹ 5.4 >	
	g	15.8	10.6	26.4 ¹ 2.2 >	
	c	31.2	32.0	63.2 ¹ 5.3 >	
	b	33.9	32.3	66.2 ¹ 5.6 >	
	n	22.2	23.8	46.0 ¹ 2.9 >	
	f	42.6	39.1	81.7 ¹ 6.9 >	
14 a		34.5	33.2	67.7 ¹ 5.7 >	
15 b		38.0	34.8	72.8 ¹ 6.1 >	

Stopwatch out of order after second observation of 14 a. B 236 used later.

3.5 a

9 15 Ended. The estimate of V made at the time of the second observation of V with the wedge.

April 5, 1887
 Region of R Leonis (52) L. obs.
 B 236 used as time piece.

9 38

a (1)	44.5	48.5	93.0 [^] 80 >
b (4)	42.0	44.8	86.8 [^] 75 >
c (5)	33.5	38.1	71.6 [^] 62 >
d (9)	34.6	41.0	75.6 [^] 66 >
e (10)	38.7	43.5	82.2 [^] 71 >
f (8)	29.2	34.9	64.1 [^] 55 >
h (7)	26.7	32.1	58.8 [^] 51 >
e (15)	22.2	25.1	47.3 [^] 41 >
d (16)	19.5	24.7	44.2 [^] 38 >
c (17)	19.2	23.5	42.7 [^] 37 >
h (2)	24.0	24.2	48.2 [^] 42 >
g (3)	22.2	19.7	42.7 [^] 36 >
R (6)	19.1	20.3	39.4 [^] 34 >

A (11), ξ (12), ν (13), i (14), α (18), β (19), γ (20),
 omitted as bright and comparatively distant.

10 28

By estimate

h 3 R

R 4 g

Apr. 6. 1887.

Comp. Mass for Var. Tr. obs.

52 R. Louis.

$$\begin{array}{r} 9 \quad 39 \quad +12.5 \\ 2 \quad 45 \\ \hline -54 \end{array}$$

2-25
7-10

Stopwatch used as time piece; requires care in holding it to prevent error.

1 a	47.0	46.8	93.8 ^ 8.1 >
2 h	27.2	23.8	51.6 ^ 4.5 >
3 g	24.1	19.9	44.0 ^ 3.8 >
4 b	40.6	43.7	84.3 ^ 7.2 >
5 c	34.9	34.5	69.4 ^ 6.0 >
6 R	20.4	24.0	44.4 ^ 2.9 >
7 k	30.1	27.0	57.1 ^ 4.9 >
8 f	32.5	25.3	57.8 ^ 5.0 >
9 d	34.9	32.2	67.1 ^ 5.8 >
10 e	40.5	40.1	80.6 ^ 6.9 >
14 i	41.7	41.0	82.7 ^ 7.1 >
15 e	29.6	27.8	57.4 ^ 4.9 >
16 d	35.0 19.0	26.8	45.8 ^ 3.9 >
17 c	25.1	22.0	47.1 ^ 4.1 >

8 30

8 58

By estimate

R 29

h 30 R

April 6, 1887
 Region of T. Vir. Maj. (62) - S. obs.
 Timepiece watch I.R.A. 1678; record in ticks
 of this watch.

9 38

	Ticks.	Seconds	
w (1)	139, 123	55.6 49.2	104.8 [^] 46 >
t (2)	110, 104	44.0 41.6	85.6 [^] 3.8 >
x (3)	45, 45	18.0 18.0	36.0 [^] 1.6 >
y (4)	not seen		
d (5)	48, 69	19.2 27.6	46.8 [^] 2.1 >
e (6)	138, 141	55.2 56.4	111.6 [^] 49 >
g (7)	75, 72	30.0 28.8	58.8 [^] 2.6 >
f (8)	102, 89	40.8 35.6	76.4 [^] 3.4 >
or (9)	87, 86	34.8 34.4	69.2 [^] 3.0 >
m (10)	117, 115	46.8 46.0	92.8 [^] 4.0 >
b (11)	165, 162	66.4 64.8	131.2 [^] 5.7 >
c (12)	154, 137	61.6 54.8	116.4 [^] 5.1 >
a (13)	178, 181	71.2 72.4	142.6 [^] 6.3 >
s (16)	132, 127	52.8 50.8	103.6 [^] 4.3 4.4 >

(14), (17), (18) omitted as not required.
 Ended.

10 58

11 13

299 ticks of watch equal 120^s of T. 1327
 $\frac{.4}{11.96}$ Multiply record by 0.4 to reduce to seconds.

April 7, 1887

Region of T. Urs. Maj. (64) S. obs.
Timepiece watch JRA 1878 as yesterday;

9 10 300 ticks in 120^s by F 1327

		Ticks	Seconds		
9 25	n(1)	184, 204	73.6 81.6	185.2 ⁵	6.5 >
	g(2)	190, 208	76.0 83.2	159.2 ⁵	6.7 >
	d(3)	154, 165	61.6 66.0	127.6 ⁵	5.4 >
	c(5)	155, 169	62.0 67.6	129.6 ⁵	25 5.4 >
	t(8)	110, 125	44.0 50.0	94.0 ⁵	4.0 >
	g(9)	141, 152	56.4 60.8	117.2 ⁵	5.0 >
	h(15)	207, 205	82.8 82.0	164.8 ⁵	6.9 >
	m(12)	179, 192	71.6 76.8	148.4 ⁵	6.0 >
	b(4)	104, 108	41.6 43.2	84.8 ⁵	3.5 >
	l(6)	88, 92	35.2 36.8	72.0 ⁵	3.0 >
	s(7)	161, 156	64.4 62.4	126.8 ⁵	5.3 >
	a(14)	105, 112	42.0 44.8	86.8 ⁵	3.6 >
	k(10)	81, 91	32.4 36.4	68.8 ⁵	2.9 >
	x(11)	44, 47	17.6 18.8	36.4 ⁵	1.5 >
	y(13)	40, 40	16.0 16.0	32.0 ⁵	1.3 >

Nos. 16 to 21 inclusive omitted as bright and distant.

10 25 By estimate in finder
n 7
s 3 d

10 42 T. Urs. Maj. looked for, not seen; x visible,
as yesterday.

Apr. 8. 1887.

Comp. Stars for Var. St. obs.
 52 R Leonis 2 40
 9 39 +12.5 7 17
 9
 — 34

Usual stopwatch
 repaired and in use again.

1a	44.2	47.3	92.1 [^] 79 [^] >
2h	23.2	22.8	46.0 [^] 40 [^] >
3g	19.2	17.7	26.9 [^] 32 >
4k	40.5	39.9	80.4 [^] 69 >
5e	31.7	32.9	64.6 [^] 56 >
6R	19.2	18.8	38.0 [^] 33 >
7k	27.8	25.3	52.1 [^] 46 >
8f	30.8	29.9	62.7 [^] 52 >
9d	35.3	36.1	71.4 [^] 62 >
10e	41.0	39.2	80.2 [^] 69 >
14i	40.3	39.3	79.6 [^] 68 >
15e	28.2	23.8	52.0 [^] 45 >
16d	19.6	19.4	39.0 [^] 34 >
17c	15.1	17.9	33.0 [^] 29 >
20g	27.5	28.9	56.4 [^] 49 >

8 39

9 4

R 2.5 g
 h 3 R

Some light cloud and haze, but quite thin. Probably not enough to materially affect observations.

April 8, 1887

Region of S Mrs. May. (64) S. obs.

9 18

n(1)	79.9	75.2	153.1 [^] 6.5 >
g(2)	80.7	76.9	157.6 [^] 6.6 >
d(3)	67.8	60.6	128.4 [^] 5.4 >
c(5)	63.0	56.9	119.9 [^] 5.0 >
t(8)	41.0	41.9	82.9 [^] 3.5 >
g(9)	49.8	51.0	100.8 [^] 4.3 >
h(15)	75.5	78.5	154.0 [^] 6.5 >
m(12)	67.4	57.9	125.3 [^] 5.1 >
f(4)	36.9	38.9	75.8 [^] 3.1 >
l(6)	31.6	27.8	59.4 [^] 2.5 >
s(7)	61.2	56.2	117.4 [^] 4.9 >
a(14)	42.0	38.5	80.5 [^] 3.4 >
k(10)	36.2	30.1	66.3 [^] 2.8 >
x(11)	19.0	15.3	34.3 [^] 1.4 >
y(13)	12.4	14.5	26.9 [^] 1.1 >

Nos. 16 to 21 inclusive omitted; see p. 167
 Cloudiness perhaps increased a little during observations.

By estimate in finder

n 5 f
 s 4 d

40 17

Other parts of sky more cloudy.

April 10, 1887.

Eclipse of Jupiter II. - Dis.
Photometer H. Ph obs. S. Rec
Lat. Very near Jupiter

8 23 0.5- 208.6
19.5- 280.3
40.5- 217.2
53.5- 284.2

24 14.5- 222.3
29.5- 283.4
46.5- 210.1

25 3.5- 277.7
14.5- 202.7
32.5- 275.8
49.0 209.3

26 4.0 273.6
19.0 212.0
55.5- suspected

27 ~~Obs.~~ Obs.

Obs. diff. on account
of low altitude, proximi-
ty of Jupiter & haze.

Limit of view

28 41.5- 219.0
51.0 244.4
29 9.5- 224.4
20.5- 282.5

April 10, 1887

B + b. 1182

~~8 41 40.2~~
~~41 2 40.2~~

8 41 40.2

8 42 40.2

B + b. 1182

8 45 40.2

8 46 40.2

B. 394

8 42 00

~~43 00~~

8 42 00

8 43 00

B 394

8 47 00

8 48 00

Wedge photometer P. 158.

Region of X Virginis (58)

9 33 d

c

b

X

z

a

e

(8)

(9)

(12)

(13)

nr of two

15.8 17.8 38.6^29 >

14.8 15.0 29.8^26 >

13.0 12.6 25.6^22 >

13.9 14.7 28.6^25 >

6.8 6.9 13.7^12 >

14.0 12.8 26.8^23 >

18.0 21.3 39.3^34 >

27.6 29.8 57.4^50 >

34.0 31.8 65.8^57 >

24.2 27.0 51.2^45 >

32.6 31.8 64.4^56 >

(10) & (11) omitted; see remarks on p. 158.

By estimate

d 2 X

X 2 c

10 5

April 10, 1887,

Region of U Virginis (65)

L. obs.

40	18	s	29.0	26.5	55.5	49 >
		r	6.0	4.7	10.7	09 >
		m	23.8	21.9	45.7	40 >
		w	15.0	15.0	30.0	26 >
		u	7.2	7.8	15.0	13 >
		a	17.0	19.0	36.0	32 >
		pr	14.7	13.0	27.7	24 >
		b (has a fainter star north)	22.0	25.2	47.2	42 >
		q	8.0	7.0	15.0	13 >
		f	37.6	34.5	72.1	63 >
		c	26.5	28.8	55.3	49 >
		d	31.1	31.3	62.4	55 >
		e	32.4	33.2	65.6	58 >

t omitted, as bright and distant.

11 0

By estimate
q 2 u
u 2 r

April 10, 1887

Eclipse of Jupiter I - Dis. P. obs.
Photometer R. G. rec.{ compared with first satellite following Jupiter
? II } B + G. 1182 B 394

13	33	38.2	13	35	00
13	34	38.0	13	36	00

13	5-2	56.5	60.0	
13	5-3	8.5	147.2	27.2
		5-5-0	59.8	
		146.6	1.5	26.4
	5-4	13.5	59.5	
		27.0	142.6	23.3
	5-5	1.5	60.4	22.3
	5-5	12.5	142.7	
		21.5	57.7	79.1
		35.5	136.8	
		58.5	61.7	74.9
56		10.5	140.6	
		22.5	65.5	67.5
		30.5	102.8	
		38.0	62.3	70.5
		51.5	132.8	
		59.5	67.2	54.6
57		12.0	125.2	
		20.0	74.2	53.1
		27.0	127.3	
		36.5	78.6	37.4
		52.5	116.4	

5-8

April 10 1887,
 Gemini 1012.

5-8	36.0	84.3	
5-	115.5	58.5	30.9
5-9	13.5	88.3	30.1
	35.5	118.4	

Eyestop removed
 from eyepiece.

B. + L. 1182
~~14~~
~~15~~ 10 37.8
~~14~~
~~15~~ 11 37.5

B. 394
~~14~~
~~15~~ 12 00
~~14~~
~~15~~ 13 00

Apr. 12. 1887.
 47 S.T. = 77 E.T.

Comps. Stars for Var.

St. obs.

157 J. Leonis.
 11 27 +3.9
 4 57
 -2 30

Region found and partly identified
 but troubled by clouds, and finally
 abandoned as eclipse comes soon.

Dis. dup. I. Phot. H.
 Comps. with Sat. II.

St. obs.

B. + C. 1182.

8 6 19.2
 7 19.6

B. 394.

8 8 0.0
 9 0.0

8 13 7.0
 37.5
 14 1.5
 25.0
 53.5
 15 19.0
 39.5
 16 4.0

197.0 94.0
 291.0
 199.2 96.5
 296.3
 199.0 92.2
 297.2
 207.2 90.4
 292.0

Apr. 12. 1889.

2	16	27.5	199.2	
		40.5	296.3	96.5
	17	0.5	194.3	96.6
		12.5	290.9	
		24.0	194.0	106.1
		34.5	300.1	
		54.0	197.0	
	18	7.0	293.3	96.3
		22.5	202.0	
		42.0	292.1	90.1
	19	12.5	200.3	97.0
		33.0	297.3	
		56.0	202.0	90.0
	20	22.5	292.0	
		40.0	201.3	90.7
		53.5	292.0	

Thick haze.

Jupiter not visible to naked eye
at 24 40

Clouds continued at 26 0" so that
disappearance could not be obs.

Seeing bad throughout, - Sats. only
visible at intervals.

B. + C. 11 & 2.
2 52 19.0
53 —
54 19.0

B. 394
2 54 0.0
55 0.0
56 0.0

Apr. 13, 1887.
 $\text{at } 15^{\circ} 0' \text{ S.D.} = 7^{\text{h}} 47^{\text{m}} - \text{E.T.}$
 Comp. Stars for Var.
 44 R Cancri.
 8 4 +11.6
 9 0
 +56

Tr. obs.

1p	44.5	48.2	92.7	8.1 >
2g	42.3	44.0	86.3	75 >
3c	28.0	21.0	22.0	42.0 37 >
4a'	21.2	20.0	41.2	25.6 >
5R	18.0	16.9	34.9	30 >
6f	43.4	41.9	85.3	74 >
7a	32.0	29.0	61.0	52 >
8m	24.6	23.0	47.6	41 >
9b	29.0	27.1	56.1	48 >
10e	41.3	39.4	80.7	70 >
11.0	15.4	18.0	33.4	29 >
12p	17.0	17.2	34.2	30 >
13w	21.2	20.9	41.9	42.1 37 >
14d	32.2	37.5	76.3	66 >
17h	48.0	46.8	94.8	82 >

a' 3.5 R at alt. $\text{at } 15^{\circ} 0' \text{ S.D.}$
 (4a) and (5R) assumed to assumed
 as on page 136.

A fainter star precedes in 7.5 sec. 0.5 south
 at " " " " 7.2 " 2.0 "

April 14, 1887
 Wedge photometer S. Br.
 Region of γ Leonis (56)

8 59

m

a

K

h

b

n

I

p

c

d

g

f

e

20.0 18.5 $385^{\circ} 34 >$ 33.2 30.1 $63.3^{\circ} 56 >$ 14.1 15.3 $294^{\circ} 26 >$ 24.2 19.0 $432^{\circ} 38 >$ 23.4 23.0 $464^{\circ} 41 >$ 15.4 15.1 $305^{\circ} 24 >$

I not seen, unless identical with object foll. h 47° ; see p. 148,

15.1 15.2 $30.3^{\circ} 24 >$ 31.8 30.0 $618^{\circ} 54 >$ 28.6 31.0 $596^{\circ} 52 >$ 23.9 23.3 $442^{\circ} 42 >$ 20.2 19.0 $392^{\circ} 34 >$ 25.3 22.0 $448^{\circ} 42 >$

(1K) Star foll. h 48° , 3' south,

17.1 17.8 $349^{\circ} 31 >$

(15) Star foll. h 54° , 5' south,

10.0 9.2 $192^{\circ} 17 >$

The star foll. h 39° , 3' north seen as on p. 148. It is brighter than the object foll. h 47° and suspected to be S; difference 1, perhaps 2. But the star foll. h 48° , 3' south, has evidently grown brighter since March 25 (see p. 148) and may be presumed to be S. The estimates below refer to this star.

10 3

My estimate
 h 3 S

S 2 m

The index of the stopwatch is bent. This was noticed before beginning the observations. The watch has probably had a fall. It stands at about 1.5 when set.

April 14, 1887

Region of τ Leonis (57) S. obs.

10 18

(7) as on p. 154	41.1	42.8	83.9 ¹ 74 >
(8) — " —	29.0	30.1	59.1 ¹ 52 >
(9) — " —	36.0	35.0	71.0 ¹ 62 >
(10) — " —	34.0	34.2	68.2 ¹ 60 >
z	9.4	10.9	20.3 ¹ 18 >
x (a distance, s/b, equal)	8.0	9.2	17.2 ¹ 15 >
y	12.9	12.6	25.5 ¹ 22 >
a	15.5	17.1	32.6 ¹ 29 >

 τ not seen

b

18.0 16.9 34.9¹ 21 >Star prec. b 5, g' south. 18.2 18.4 36.6¹ 22 >

10 48

Ended.

Stopwatch runs from 1^h 5 to 61^h 7 while ordinary watch runs 60^s.

April 17, 1887.

Wedge photometer

Obs.

Region of R Comae (5-9)

9 0 Region identified. thin variable clouds
delay observations.

9	10	(7)	38.6	36.8	75.4 [^] 6.3 >
		(8)	32.0	29.9	61.9 [^] 5.2 >
		(d)	26.1	19.1 21.8	47.9 [^] 4.0 >
		(9) Star at 11 ^h 56.6, +19° 38'	40.1	38.9	79.0 [^] 6.6 >
		x	7.0	7.4	144 [^] 1.2 >
		b	19.6	18.1	37.7 [^] 2.1 >
		R	not seen		

c 20.7 22.5 432[^] 3.6 >

a (sp. of two) 11.0 11.0 22.0[^] 1.8 >

9 35 Ended. Clouds suspected during second
observation of d; observation rejected and
another made. Sky frequently inspected
during observations.

April 17 1887

Region of T. Virginis (60) S. Ms.

10 7	(10) as on p. 154	43.8	41.5	85.3 ¹	75.7
	(11) — " —	31.2	37.7	68.9 ¹	6.1 >
	e	28.9	30.6	59.5 ¹	52 >
	a ⁽¹⁾ as on p. 154	14.0	11.7	25.7 ¹	23 >
	x	9.8	9.0	18.8 ¹	17 >
	f	16.8	20.0	36.8 ¹	32 >
	y	9.0	9.9	18.9 ¹	17 >
	z	9.3	10.0	19.3 ¹	17 >
	b not seen in place	6.1			
(12)	Star foll. 2 2 ^s , 8' south	6.1	9.0	8.0	14.1 ¹ 12 >
(13)	Star foll. 2 5.5, 10' south	9.0	9.7	18.7 ¹	16 >
	a ⁽¹⁾	21.8	17.9	39.7 ¹	35 >
	d	34.0	30.0	64.0 ¹	56 >

10 45

By estimate

a⁽²⁾ 5 T

T 5 a⁽¹⁾

April 17, 1887

	B + C. 1182	B394
10	36 31.2	10 39 00
10	37 31.0	10 40 00

Disappearance of Jupiter II,
 compared with Satellite I. S Obs
 S. Rec
 Photometer H.

10	5-2	47.0	35.6	
	53	3.5	97.7	1
		28.5	37.2	
		5-2.5	95.5	
	5-4	6.5	40.0	
		20.5	97.7	
		34.5	41.0	2
	5-5	48.0	96.8	
		0.5	42.0	
		11.0	97.0	3
		29.0	37.7	
		44.5	97.8	
	5-6	17.5	38.0	
		31.0	96.1	4
		45.5	36.8	
	5-7	1.5	93.0	
		20.5	40.0	
		37.5	97.0	5
		51.5	38.8	
	5-8	0.2	96.0	

April 17, 1887

3-8 15.0 37.8
 26.5- 95.8
 38.5- 41.3 6
 46.5- 93.5-
 59.5- 37.5-

59 9.5- 96.8
 23.0 35.0 7
 32.0 93.1
 43.0 40.0
 54.0 96.2

00 2.5- 39.8
 11.5- 95.7
 21.5- 41.2
 33.0 93.9-
 42.0 39.9
 48.5- 92.7

01 2.5 40.8
 11.5- 91.5-
 21.5- 41.5-
 30.5- 91.8

40.0 43.8

50.0 86.7

02 1.5- 47.7
 12.5- 85.8
 23.0 48.1
 32.0 88.8

20 *unsubstantiated*

April 17, 1887:
 semit of vis.

11	0 3	37.5-	48.3
		5-5-0	84.5-
	0 4	15.5-	45-0
		35-5-	90.7

Satellite I not seen
 continuously during disappearance

First comparison copied into
 the book from a piece of paper

B + L. 1182			B. 394		
11	20	30.5-	11	23	00
11	21	30.5-	11	24	00

April 17, 1887

Disappearance of Jupiter I S. Obs.
comp. with Sat II Phot. H. S. Rec.

B & C. 1182

B 394

15 22 28.7

15 23 00

15 23 28.5

15 26 00

15 39 12.5 118.0 69.8
40.5 187.8

40 29.5 122.0 71.2

41 15.5 183.2 —

57.0 121.5 67.7

42 14.0 189.2

32.0 119.7 71.8

51.5 191.5 —

43 19.0 120.9 70.2

38.5 191.1

44 53.5 115.3

45 58.5 197.0 71.7

46 57.5 124.7

47 37.5 194.9 70.2

48 39.5 suspected

Seeing ~~gas~~ very bad, sat-
ellites generally invisible.

B & C. 1182

B 394

16 19 28.0

16 22 00

16 20 28.1

16 23 00

Apr. 19. 1887

9 1st S. T. = 7 10 E. T.
Comp. Stars for Var. H. obs.
39 N. Can. Min.
7 22 + 4.1
9 33
+ 2 11

1 f	35.0	38.0	73.0 [^]	64 [^]
2 e	34.0	39.0	73.0 [^]	64 [^]
3 g	41.5	38.2	80.3 [^]	70 [^]
4 d	29.5	27.9	57.4 [^]	51 [^]
5 h	27.5	24.3	51.8 [^]	46 [^]
6 x	10.2	13.0	23.2 [^]	20 [^]
7 k	22.1	24.7	46.8 [^]	41 [^]
8 y	16.8	19.0	37.8 [^]	31 [^]
9 r	12.8	15.0	27.8 [^]	24 [^]
10 w	29.9	34.0	62.9 [^]	56 [^]
11 n	27.2	31.9	59.1 [^]	52 [^]
12 g	36.0	36.1	72.1 [^]	63 [^]
13 b	27.5	26.0	53.5 [^]	47 [^]
14 d	33.0	32.0	65.0 [^]	57 [^]
15 z'	14.2	14.5	28.7 [^]	25 [^]
16 w	8.8	11.0	19.8 [^]	17 [^]
17 z''	19.9	24.2	44.1 [^]	39 [^]

Star foll. of 5^s (18) 2.5 south, 16.1 28[^]

e has a 4th star foll. 3 sec. 0.5 south - north

Star foll. of 5^s (18) 2 (this estimate made after 2nd observation of 3. this comp. star observed just before this estimate)

9 40

April 19, 1887
 Region of R Corni (61) S. obs.

g	32.9	32.8	65.7 ⁵³ >
je	25.7	25.0	50.4 ⁴³ >
d	18.7	19.7	38.4 ³² >
R	8.0	6.9	14.9 ¹³ >
dy	31.0	33.6	64.6 ⁵⁴ >
le	31.0	34.2	65.2 ⁵⁵ >
n	20.8	23.3	44.1 ³⁷ >
m	17.5	16.0	33.5 ²⁸ >
A	23.3	25.0	48.3 ⁴¹ >
G	41.1	41.7	82.8 ⁷⁰ >
R	41.0	41.0	82.0 ⁶⁹ >
(p)	12.7	9.1	21.8 ¹⁸ >
g	16.0	16.9	32.9 ²⁸ >
Star 2' north of n (14)	7.0	7.2	14.2 ¹² >

10 6

(p) 2 R
 R 2 Star 2' north of n (14)

Disappearance of Jupiter I.
 Photometric H. Pobj. S. rec.
 Compared with nearest satellite
 prec. = II. Comparison difficult on
 account of proximity of Jupiter

10	11	44	109.6
		59	204.3
12	114		115.6
	25		203.0
	36		113.6
	52		200.4

April 19, 1887		
10	13	2
		117.5
		12
		109.6
		22
		121.2
		32
		201.7
		43
		113.4
		53
		197.7
14		6
		115.4
		18
		201.3
		32
		111.6
		44
		200.8
		54
		115.3
15		7
		200.8
		28
		115.7
		40
		201.01
		54
		114.6
16		3
		202.7
		16
		115.6
		28
		197.3
		42
		198.6
		55
		198.5
17		7
		120.4
		19
		193.2
		29
		121.6
		42
		189.9
		57
		130.14
18		1/1
		181.2
		24
		138.4
		38
		172.4
		53
		suspected

April 19, 1887.
Limit of visibility

10	19	32	139.2
		46	179.4
		57	132.5
20		1/2	181.3

B 86 1182

10	30	15.8
	31	15.8

B 39.4

10	33	0.0
	34	0.0

Apr. 20, 1887

$$\begin{array}{r} 93.5 \\ 35.0 \\ \hline 58.5 \\ 35.0 \\ \hline 23.5 \end{array}$$

9 25 S. I. = 7
 Comp. Stars for Var.
 7 31 +9.2
 19 45

13 E. I. Gr. obs.

+ 2 1 4

40 a U(r) Cam. Min.

1 k	32.6	33.7	66.3^58 >
2 k	25.2	20.8	46.0^40 >
3 e	30.7	27.2	57.9^51 >
4 l	21.8	21.0	42.8^37 >
5 d	29.9	27.5	57.4^50 >
6 n	19.0	21.7	40.7^35 >
7 t	16.9	18.5	35.4^31 >
8 z	13.4	15.2	28.6^25 >
9 x	15.4	18.7	34.1^30 >
10 u	25.9	27.8	53.7^47 >
11 g	32.5	34.7	67.2^58 >
12 y	18.0	15.1	33.1^29 >
13 m	20.2	19.7	39.9^35 >
14 g	26.2	27.1	53.3^47 >
15 h	26.8	27.8	54.6^48 >
16 f	30.7	29.8	60.5^53 >
17 c	33.3	33.6	66.9^59 >

By estimate

at 2 = d

8 45

9 3

April 20, 1887
 Region of U Virginis (65) L. obs.

9 26

d	29.0	32.1	61.1 ⁵⁴ >
n	11.6	11.0	22.6 ²⁰ >
m	27.1 24.2	29.9	57.0 ⁵⁰ >
m	24.2	22.8	47.0 ⁴¹ >
U	17.9	19.0	26.9 ³² >
a	24.0	27.0	51.0 ⁴⁵ >
f	19.1	26.9	46.0 ⁴⁰ >
b (has another star 1 st sp, 1 st north)	27.1	26.0	53.1 ⁴⁷ >
q	16.0	14.3	20.3 ²⁷ >
U	38.9	42.0	80.9 ⁷¹ >
C	33.3	29.8	62.1 ⁵⁶ >
d	36.0	34.7	70.7 ⁶² >
e	34.8	37.1	71.9 ⁶³ >

t omitted, as bright and distant.

By estimate

for 2 U
 U 4 q

90 5-

April 20, 1887,

Region of W & V Virginis (66 & 67)

10 20

W	23.8	25.4	49.2 ¹	43 ^{>}
g (foll. star at $13^h 18.7^m, -2^{\circ} 54', 13', 5.5''$ north)	10.9	12.0	22.9 ¹	20 ^{>}
V (79 ^s foll. f, 6.5 north) two faint for wedge	13.8	12.0	25.8 ¹	23 ^{>}
x ⁽¹⁾	19.8	17.9	32.7 ¹	33 ^{>}
a ⁽¹⁾	21.5	23.6	45.1 ¹	40 ^{>}
(15a) star foll. a ⁽¹⁾ $17^s, 2' 15''$ south (on chart)	13.1	15.9	29.0 ¹	26 ^{>}
b ⁽¹⁾ (has a fainter star foll. 1 ^s 5 ^s)	21.8	26.1	47.9 ¹	42 ^{>}
k	29.0	27.1	56.1 ¹	49 ^{>}
d	22.2	23.3	45.5 ¹	40 ^{>}
n	31.8	29.9	61.7 ¹	54 ^{>}
h	31.4	31.0	62.4 ¹	55 ^{>}
m	30.2	32.5	62.7 ¹	55 ^{>}
p	32.7	32.2	64.9 ¹	57 ^{>}

e not found in place; no star near likely to be e
 a⁽²⁾ see star foll. a⁽¹⁾ above
 b⁽²⁾ probably same as b⁽¹⁾; there is a star foll. 35^s.
 (16c) C (star on chart at $13^h 23.0^m, -2^{\circ} 28'$) 19.8 24.0 43.8¹ 39[>]
 h⁽²⁾ probably same as h⁽¹⁾

By estimate

k 5 W

W 2 d

11 28

Star about equal to object called V above, preceding
 it 16^s, 3' south. ~~(14)~~ ~~(16)~~ (17)

Apr. 21. 1887.

Comp. Stars for Var. 401 a U (v) Can. min.

St. obs.

7 31 +9.2
10. 1
+2 30

173.2
120
353.2

1 b	30.7	35.1	65.8 [^]	57 >
2 k	23.0	25.2	48.2 [^]	42 >
3 e	28.7	26.1	54.8 [^]	48 >
4 l	18.7	19.0	37.1 [^]	33 >
5 d	26.9	28.9	55.8 [^]	49 >
6 u u	20.3	18.4	38.7 [^]	34 >
7 t	17.2	16.3	34.1 [^]	30 >
8 z	14.7	14.4	29.1 [^]	25 >
9 x	15.1	17.0	32.1 [^]	28 >
10 u	24.7	26.0	50.7 [^]	44 >
11 g	32.1	35.1	67.2 [^]	58 >
12 y	14.0	14.1	28.1 [^]	24 >
13 m	17.1	18.2	35.3 [^]	31 >
14 q	22.8	22.9	45.7 [^]	40 >
15 h	26.0	24.5	51.1 50.5 [^]	44 >
16 f	27.1	28.8	55.9 [^]	49 >
17 c	32.0	36.1	68.1 [^]	60 >

My estimate
U 2 d

Observations probably somewhat affected by light cloud and haze, especially during first half of series. - Sky gradually becoming clearer during last half.

April 21, 1887

Bayonet W & V Virgins (66867) S. obs.

9 10

g (as on p. 192)

12.8 11.8 24.6 22 >

W

25.9 23.9 49.8 44 >

V

13.8 14.9 28.7 25 >

as on p. 192; but the star about equal to it 3' south, precedes 22°, not 16°. there is a fainter star preceding V 10°, 3' south.

x

18.0 17.3 35.3 31 >

a⁽¹⁾

24.0 20.8 44.8 39 >

(15a) star foll. d' as on p. 192

15.8 14.1 29.9 26 >

(7b) b⁽¹⁾ as on p. 192

20.1 26.0 46.1 41 >

k

29.3 31.1 60.4 53 >

d

23.6 25.1 48.7 43 >

n

31.2 29.1 60.3 53 >

h⁽¹⁾

32.7 31.2 68.9 56 >

m

34.0 35.0 69.0 61 >

p

33.9 35.1 69.0 61 >

e

not found; see p. 192

d⁽⁴⁾b⁽¹⁾

see p. 192

C

as on p. 192

24.1 25.8 49.9 44 >

h⁽¹⁾

see p. 192

By estimate

k 4 W

W 4 d

For V, see above.

10. 7

April 21, 1887

Region of γ Librae (74a) S. obs.

10 27

c	12.8	15.5	28.3 ¹ 2.3 >
(s)	8.0	9.8	17.8 ¹ 1.5 >
T	15.0	15.3	30.3 ¹ 2.5 >
b	13.1	16.2	29.3 ¹ 2.4 >
a	11.8	16.0	27.8 ¹ 2.3 >
(p)	15.0	22.2	37.2 ¹ 3.1 >
(q)	14.4	19.0	33.4 ¹ 2.8 >
(m)	44.8	47.2	92.0 ¹ 7.1 >
(n)	30.2	33.1	63.3 ¹ 5.3 >
(o)	32.7	37.1	69.8 ¹ 5.9 >
(v)	6.0	5.8	11.8 ¹ 1.0 >
x	9.1	9.1	18.2 ¹ 1.5 >
(t)	7.2	6.7	13.9 ¹ 1.2 >

11 15

By estimate
(q) 2 7
1 b

For stars, see book 42, p. 29

Apr. 22. 1887.

46 U Canceri.

Tr. obs.

$$\begin{array}{r}
 A \quad 32 \quad + 20.0 \\
 10 \quad 0 \\
 \hline
 +1 \quad 2A
 \end{array}$$

1 d	26.5	26.2	53.3 [^]	45 >
2 b	25.1	23.4	48.5 [^]	40 >
3 l	15.1	15.6	30.7 [^]	25 >
4 n	14.0	13.7	27.7 [^]	23 >
5 u	invisible.			
6 m	17.9	17.0	34.9 [^]	29 >
7 a	18.3	19.0	37.3 [^]	31 >
8 g	30.7	30.9	61.6 [^]	51 >
9 c	26.0	25.7	51.7 [^]	43 >
10 f	34.7	34.2	68.9 [^]	57 >
11 h	34.0	34.0	68.0 [^]	56 >
12	46.3	44.9	91.2 [^]	76 >

A 30

April 22, 1887
 Region of S Virgins (69) S. obs.

9 20	w	34.2	35.8	70.0^62 >
	f	26.2	28.0	54.2^48 >
	e	29.3	34.2	63.5^56 >
	p	18.7	19.3	38.0^33 >
	h	24.1	26.6	50.7^45 >
	q	17.1	18.9	36.0^32 >
	s	27.0	31.5	58.5^51 >
	x	10.5	10.0	20.5^18 >
	t	15.8	15.2	31.0^27 >
	a	42.3	42.0	84.3^74 >
	h	26.5	30.1	56.6^50 >
	b	38.8	42.0	80.8^71 >
	d	33.9	35.3	69.2^61 >
	c	38.0	37.0	75.0^66 >

k and m omitted on account of brightness & distance,

By estimate
 d 2 f
 f 2 e

10 12

April 22, 1887.
Region of Z' Virginis (69a) S. obs

10	25	b	13.4	14.14	278 ¹ 24 ^{>}
		a	15.8	17.0	328 ¹ 28 ^{>}
		x	6.9	7.0	13.9 ¹ 12 ^{>}
		Z	9.4	9.0	184 ¹ 16 ^{>}
		d	14.8	17.6	324 ¹ 28 ^{>}
		(m)	31.5	33.8	65.3 ¹ 56 ^{>}
		(n)	35.6	38.9	745 ¹ 64 ^{>}
		(o)	31.9	32.6	645 ¹ 55 ^{>}
		(p)	25.1	28.3	534 ¹ 46 ^{>}
		(q)	21.0	24.1	45.1 ¹ 39 ^{>}
		(r)	15.4	20.0	354 ¹ 30 ^{>}
		(s)	8.2	7.2	15.1 ¹ 13 ^{>}
		(t)	9.0	10.2	19.2 ¹ 17 ^{>}

By estimate

11 2

~~Q~~ t 2 Z
Z 3 s

See book 42, p. 30, for stars above.

Apr. 22. 1887

B. + C. 11 + 2,
 13 9 44.7
 110 44.7

B. 394.
 13 13 0.0
 14 0.0

13 37
 13
 24
 13 10
 13 34

Limit of Vis.

13 29 22.0
 44.0
 30 1.5
 17.0

252.3
 220.4
 256.5
 221.4

Reps. Jup. III, Plot. H. Comp. with first obs.
 13 32 44. } Subject seen close
 to edge of disc.

33 13.5
 25.
 37.
 52.5

254.2
 223.2
 249.4
 279.3

34 5.0 } 12.0
 19.0 }
 35.0 }

249.2 } 245.1
 241.0 }

35 49.5
 3.5
 17.0
 35.0

229.2
 244.2
 244.6
 292.1

Apr. 22, 1947.

13	35	42.0	243.7
	36	9.5	299.3
		23.5	239.6
		40.0	300.1
		52.5	234.3
	37	6.5	300.4
		22.0	235.4
		45.5	301.3
	38	0.0 - 2'	233.3
		17.5	304.2
		33.5	236.4
		54.0	307.3
	39	6.5	235.2
		20.5	304.4
		35.5	235.7
		51.5	302.2
	40	12.5	233.4
		24.5	303.2
		47.5	235.4
	41	2.5	300.3
		47.1	229.6
		56.5	309.7
	42	12.0	231.7
		29.5	316.6
	42	53.5	227.6
	43	11.0	305.2
		24.5	226.0
		35.5	315.2

Apr. 22, 1887

13	KK	22.0	22V.K
		36.0	30A.6
		51.0	22KV ²
	KV	13.5	310.6
		31.0	227.3
		KV.0	312.2
		57.5	22V.0 ³
	K6	20.0	310.A
		32.5	22K.K
		KK.5	312.4
		57.0	224.6 ^K
	K7	13.5	31A.6
		31.0	222.7
		KV.5	315.1
	K8	A.0	223.9 ^V
		24.0	312.7
		3A.0	226.7
		55.5	317.2 ⁶
	K9	30.0	221.5
		K3.0	313.1
		5A.0	222.3
	50	21.0	311.A
		36.5	223.4 ⁷
		47.5	315.A
	51	1.5	216.9
		17.5	315.6 ²
		55.0	21A.K
	52	15.0	315.0

Apr. 22, 1887,

Sat. appeared very close
to Jupiter about 20 sec. before
first record.

B. + C. 1182.
14 2 43.5
3 43.5

B. 394.
14 6 0.0
7 0.0

April 24, 1887

Wedge photometer. Subs.
Region of δ Libiae (76).

10 12

	23.9	24.2	48.1 [^] 40 >
k	26.2	28.3	54.5 [^] 4.5 >
a	25.8	24.1	49.9 [^] 4.1 >
f	19.2	22.5	41.4 [^] 3.5 >
ix	8.2	8.1	16.3 [^] 1.4 >
s	10.1	10.0	20.1 [^] 1.7 >
y	10.1	10.4	20.5 [^] 1.4 >
yc	22.1	23.7	45.8 [^] 3.8 >
g	14.4	15.2	29.6 [^] 2.5 >
hg	16.9	15.5	32.4 [^] 2.1 >
b	32.9		
d	32.9	37.5	70.4 [^] 5.9 >
e	29.2	32.2	61.4 [^] 5.2 >
m	33.5	35.3	68.8 [^] 5.7 >
h	26.8	26.3	53.1 [^] 4.4 >

10 48

By estimate
y 1 s
s 2 x

April 24, 1887.

B 4 L 1182
 15 54 46.0
 15 55 46.5

B 394
 15 55 00
 15 56 00

Reap. Jup. II, comp. with Sat. I
 Phot. H. S. obs. G. Rec.

15 13 cloudy
 15 18 still cloudy,

Apr. 26. 1887.

B. & C. 1142,
13 55 23.5
56 23.6

B. 394.
13 56 0.0
57 0.0

Reap. dup. I. Phot. R. Stots, W. re.
Consp. with III.

$$\begin{array}{r} 14 \overline{) 22} \\ \underline{13} \\ 26 \\ \underline{18} \\ 14 \end{array}$$

Jupiter invisible in haze at
theoretical time of reaps.

14	23	32	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
14	23	32	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
14	23	32	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
14	23	32	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
14	23	32	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92								

Apr. 26, 1947.

14	26	17.0	26 54	51.0	→
		31.0		346.0	
		54.5		56.3	
27		20.5		355.5	
		16.5		49.7	-
28		6.0		351.2	
		31.0		50.0	
29		15.5		352.0	
		53.5		53.7	
30		11.5		353.0	-
		33.0		50.5	
		44.5		0.3	6
31		13.0		50.1	-
		31.0		354.2	
		52.0		54.0	
32		12.5		359.0	
		29.0		42.0	-
		47.0		357.1	
33		3.0		51.2	
		14.0		354.0	
		34.5		53.0	-
		54.0		353.1	
34		14.5		51.5	
		35.0		350.0	
		44.5		52.0	-
35		5.0		351.0	
		36.0		53.5	
		53.0		354.9	
36		9.5		52.0	-

Apr. 26, 1927.
Limit of Vis.

14	36	43	5.2
	37	1.5	41.0
		20.0	3.0
		34.5	46.0

Limit of Vis. could not be taken
before eclipse on account of haze.

B. & C. 1122.			B. 394		
14	44	22.7	14	45	0.0
	45	22.6		46	0.0

Apr. 27. 1887.

Comp. Stars for Var.

W. ch.

$$\begin{array}{r}
 65 \text{ U Virginis} \\
 \hline
 12 \quad 40 \quad + 6.8 \\
 10 \quad 0 \\
 \hline
 -2 \quad 40 \\
 10 \quad 15
 \end{array}$$

1s	29.7	31.0	60.7 [^]	53 >
2r	13.8	13.0	26.8 [^]	24 >
3w	27.0	25.1	52.1 [^]	46 >
4w	21.0	19.8	40.8 [^]	36 >
5u	21.2	22.3	43.5 [^]	38 >
6a	20.9	20.0	40.9 [^]	36 >
7p	17.6	17.8	35.4 [^]	31 >
8b	29.7	27.1	56.8 [^]	50 >
9q	16.1	16.2	32.3 [^]	28 >
10t	41.5	44.2	85.7 [^]	75 >
11e	39.0	41.4	80.4 [^]	71 >
12d	39.8	36.8	76.6 [^]	67 >
13c	31.2	32.2	63.4 [^]	56 >
14f	43.2	43.2	86.4 [^]	76 >

b is southern and brk of two.

U 2w and U 2a

Last half of return series troubled by clouds, but probably not very

Apr. 27. 1887.
 much affected by them as care
 was taken to wait on each star until
 they had gone by. Clouds broken
 and fragmentary - not in solid,
 but disjointed masses.

q. 58

b	28.9	30.1	59.0° 48'
a	33.2	32.2	65.4° 54'
b(?)	42.1	41.7	83.8° 69'
c	22.3	23.0	45.3° 39'
y	29.1	31.0	60.1° 49'
R	33.3	32.1	65.4° 54'
d	29.2	26.8	56.0° 46'
c	31.6	31.0	62.6° 51'
x	41.0	40.0	81.0° 66'

10 30
 By estimate
 x 1 R
 R 4 y
 R distinctly sed.

May 1, 1887.

Wedge Photometer
Region of R Hydrae (68)

8 53

b(2)	43.0	43.6	86.7 ¹	71 >
h	30.7	33.6	64.3 ¹	53 >
a	32.9	37.2	70.1 ¹	54 >
e	21.3	24.8	46.1 ¹	38 >
y	31.9	37.0	68.9 ¹	56 >
R	36.4	37.1	73.5 ¹	60 >
d	30.2	31.1	61.3 ¹	50 >
c	34.2	33.0	67.2 ¹	55 >
x	44.1	44.8	88.9 ¹	73 >

9 24

By estimate
R = x
R 7 y

Region of T Cancer (49)

9 55

g	45.5	48.3	93.8 ¹	78 >
h	36.0	36.6	72.6 ¹	60 >
d	30.5	34.0	64.5 ¹	54 >
c	32.9	30.3	63.2 ¹	52 >
a	20.2	23.7	47.9 ¹	36 >
e	32.2	34.0	66.2 ¹	55 >
T	34.0	34.1	68.1 ¹	54 >
f	40.9	42.8	83.7 ¹	69 >
h	31.2	30.6	61.8 ¹	51 >

10 23

By estimate
f 1 g
15 6 e

T distinctly red

May 5. 1887

B. 236,			B. 394		
13	40	24.7	10	31	0.0
	41	24.5		32	0.0

Reaps. Sup. I. St. Obs. St. rec.
Phot. H. Comp. with Sat. II.

#3

Clouds thick at time of reaps.
- sat. invisible.

Clouds still thick at some 3
min. after theoret. time of reaps.

13 59 ~ Sat. seen for an instant.

Not seen later.

59	2
46	25
1A	37
31	0
48	37

May 9, 1947

12 0 = 4 35

Comp. Stars for Var.

H. obs.

52 ~~6~~^e U Leonis.

10 14 +15.7

12 10
+1 56

9 28

(6)

32.5 35.0 67.5[^] 58 >

a

15.1 13.8 28.9[^] 25 >

c

too faint for wedge

U

not seen

x

12.7 12.7 25.4[^] 22 >

b

10.9 10.4 21.3[^] 18 >

(7)

30.9 31.1 62.0[^] 53 >

(8)

40.0 37.2 77.2[^] 66 >

9 47

ended

May 9. 1887.
Comp. Stars for Var.
51 Re Leo. Num.

S. obs.

10 0

e 42.2 43.9 86.1[^]62>

d 51.0 48.7 99.7[^]73>

b 43.4 44.1 87.5[^]63>

c 32.9 43.0 81.9[^]59>

h 12.5 12.0 36.5[^]26>

6 a 17.1 20.1 37.2[^]27>

g 24.0 23.2 47.8[^]34>

for 24.7 22.6 47.3[^]34>

h 22.9 22.9 45.8[^]33>

(10) ~~h~~ 10.5 11.0 21.5[^]15> "a" 28 sec. 1' north,

(17) 11.2 11.2 23.0[^]17> "a" 35 " 1' "

x 15.3 17.9 33.2[^]24>

12 a 35.5 35.2 70.7[^]51>

k 27.2 25.2 53.6[^]39>

14, 15, 16 bright, and not necessary.

10 56

K 3 R 1 L

May 10. 1887.

Comp. Stars for Var.

St. obs.

5 2 e U Leonis

10 14 + 15.7

11 15
+ 1 7

Troubled by clouds.

9	2	(6)	39.7	35.2	74.9 ⁶⁴ >
		a	16.1	17.0	33.1 ²⁸ >
		c	10.1	13.0	28.1 ²⁰ >
		c ruyft.; measure somewhat uncertain;			
		U not certainly seen			
		x	12.9	13.8	26.7 ²³ >
		b	11.5	11.2	22.7 ²⁰ >
		(7)	35.1	33.2	68.3 ⁵⁹ >
		(8)	40.9	41.7	82.6 ⁷¹ >
9	17	Ended			

May 10. 1887.

Comp. Stars for Var.

(V^{2/4})
526¹ Leonis

S. obs.

9 35

e	22.7	24.2	46.9 [^]	38.7 ^{4.7}
c	27.9	29.0	56.9 [^]	55
d	27.5	23.5	51.0 [^]	42.7
b	23.2	30.0	53.2 [^]	44.7
a	35.2	35.3	71.1 [^]	58.7
g	20.2	17.1	37.3 [^]	3.1.7
h	22.0	12.0	40.0 [^]	33.7
x	14.5	13.7	28.2 [^]	23.7
y	13.0	13.2	26.8 [^]	22.7
f	21.3	20.2	42.1 [^]	35.7
v	12.2	10.2	22.4 [^]	18.7
z	11.0	11.2	22.2 [^]	18.7

Call star above (additional to stars on chart) z. Then z fol. & 25 secs. 2.5 south.

10 10 y z v 1 f z

May 10. 1887.

Comp. Stars for Var.

Nobs.

51 R Leo. kin.

~~36.0~~~~+~~

10	20±	e	38.6	39.0	77.6 ^{5.5}
		d	44.8	47.9	92.7 ^{5.6}
		b	40.0	45.1	88.1 ^{6.1}
		c	40.2	41.0	81.2 ^{5.8}
		h	16.8	20.2	37.0 ^{2.7}
6	a		18.6	18.9	37.5 ^{2.7}
	g		23.0	22.3	45.3 ^{3.3}
	R		22.8	24.2	47.0 ^{3.4}
	l		23.0	20.0	43.0 ^{3.1}

17.4¹³ (10)20.6¹⁵ (17)

10.0 7.4

11.4 9.2

x 13.7 15.0 28.7^{2.1}12a 32.0 34.5 66.5^{4.8}K 23.2 22.9 46.1^{3.3}

} Same stars as on p. 213.
 } one of them probably L.

10 5A K1R 2L

3.

1886phae-proj.10023