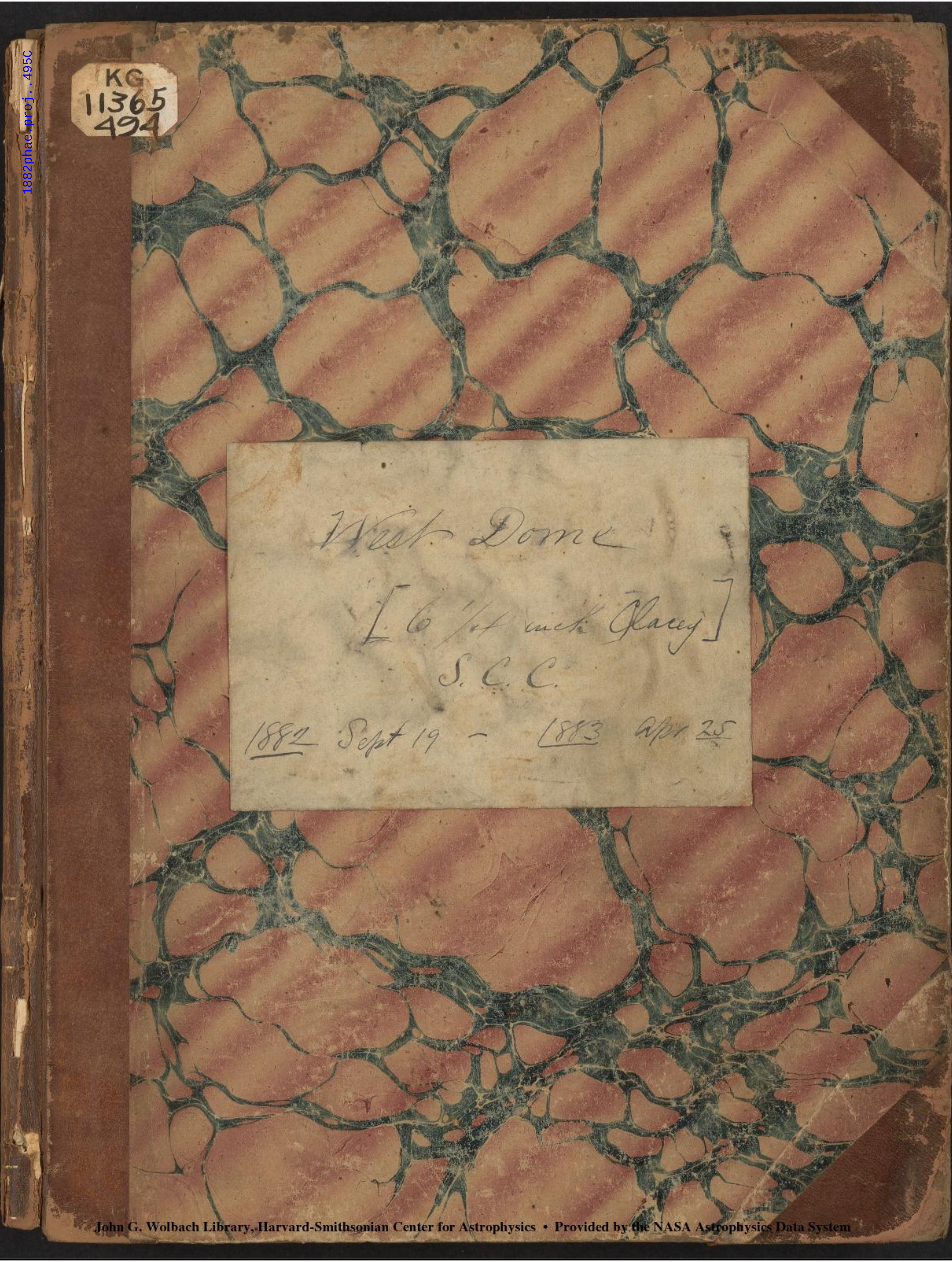
KG
11365
494



West Dome

[6 1/4 inch Clacey]

S. C. C.

1882 Sept 19 – 1883 Apr 25

KG 11365,494

KG 11365.494

HARVARD
UNIVERSITY
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1882pnae.proj..495C

Sept. 19 1882

	η Aquilae	8 20	12.1 7.4	4	31.9	59	56
	3127	8 20	17.6 12.9	4	58.6	60	24
	3087	8 20	20.9 16.2	5	9.3	59	33
	3033	20	23.1 18.4	5	26.4	58	47
7m 3′ m.p.	2952	20	26.1 21.4	5	48.6	58	25 ±
	2852a	20	33.1 28.4	6	38.7	58	51
	2815	20	36.9 32.25	6	48.0	59	28
	2744	20	40.3 35.65	7	19.2	59	30
α = 257° δ = 28° 20′		20	43.2 38.6	7	34.2	60	15½
(2579 or thereabouts 5 mag)	2695	20	53.2 48.6	8	19.1	58	28 ±

Watch 6s fast

Sept 19, 1882

	Watch			H a		Dec	
Jupiter	17	19	24	3	20	1	38 0

Obsr with ring micrometer on
~~17 27 8~~ 5 6 1/4 inch to get approx. radius

~~R~~ h on 5
2
17 29 11.5

30 2.
12.

B. & C. 1182

17 32 38.8
46.9
33 37.9
47.0

B. & C. 1182

17 35 14.0
23.2 object
36 10.1
23.0

Sept 19/82

17	37	26.0	reject — Set nearer centre before this set
		34.0	
	38	25.9	
		34.2	
		~~3.7~~	
		~~16~~	
17	39	47.0	reject
		55.1	
	40	45.7	:
		54.7	
	~~43~~	~~47.0~~	reject prev sets I changed focus
		~~55.4~~	
17	45	13.9	}
		23.2	
	46	13.8	
		23.4	
17	47	2.1	}
		11.9	
	48	2.5	
		12.0	

Sept 19/82

17	49	42.2
		53.0
	50	42.9
		52.4
17	52	51.5
		51.0
	53	51.7
	53	59.8
17	53	56.0
	54	55.3
	54	55.8
	55	5.6
17	56	4.0
		13.6
	57	3.9
		13.3
17	57	58.8
	58	0.3
		50.3
	59	0.1
	~~59~~	~~48.0~~
		~~49.7~~
~~18~~	~~0~~	

Sept 14/82

18	2	45.2
		55.0
	3	45.1
		54.8
18	4	41.1
		50.8
	5	41.2
		51.1
18	6	*31.1
		40.8
	7	31.3
		41.0

I now put ring microm on finder & took the following observations on Jupiter to get radii.

18	19	31	not
	20	9.2	quite
	23	15	through
	23	53.3	Centre
18	~~25~~	~~42.6~~	
	~~26~~	~~20.0~~	

		Watch Time			1+a			
			~~28~~	~~38~~		s m		
Jupiter		18	31~		0	4 31.9	37	38
	☄	18	59. ±		23	45.7	62	0
		19	8.0 ±		0	1.3	"	"
			12 ~		0	3.3	61	56
low pow		19	36	12	0	24.3	"	"
power 100	☄	19	38	36	0	26.3	61	55
	☄		40	10		28.3	61	54
	☄		41	42		29.8	61	56
	⊙		43	39	23	56.3	60	39
	⊙		45	25		58.2	60	42
	⊙		47	57	0	0.9	60	40
			5					
	☄		51	10	0	39.4	61	57
	☄		53	13	0	41.3	61	58
	☄		54	43	0	42.9	61	57

W.V.B records & also reads circles,

⊙	20	9	30	0	22.2	60	30
⊙	7	11	47	0	24.5	60	30
⊙		13	10	0	26.0	60	32

☄	20	27	30	1	16.2	61	53
☄		30	4	1	18.8	61	52
☄							
⊙		31	10	0	43.9	60	27
⊙		32	25	0	45.2	60	30

Watch fast of C M T. 4 sec.

☄	21	44	30	2	33.3	61	41
☄	21	52	5	2	46 2	61	42
☄	21	59	20	2	48.4	61	39
⊙	22	1	20	2	14 2	60	16
⊙	22	2	20	2	15.1	60	14
☄	23	11		4	0.4	61	18
⊙	23	11.48		3	24.7	60	1

36.4 – 1 17

S Sept. ~~27~~ 30, 1882

Cruls Comet

Watch 1m 24s slow

		T	HA	D
	☄	16 59.3	23 6.2	68 38
6th mag	X	17 1.3	23 24.4	68 39½
	☄	17 3.2	23 10.3	68 35
	X	17 5.3	23 28.2	68 38

Comet is 2′ n. following 15 or 20? several minutes

~~Hence~~ From above readings

Sept 30d ~~16~~h 59m.9 C.M.T. ☄ − X = $\Delta\alpha$ +16m 0s $\Delta\delta$ +2′.~~0~~ 15″

Compⁿ Star W, 415 (1882.0) 10 ~~26~~ 25 ~~19.62~~ 4.5 −7 ~~9~~ 1 ~~32.0~~ 56

Redⁿ to app Pl 2.5 − 12.

~~10 26 22~~ ~~−7 9 44~~

10 25 6.5 −7 2 8

10 ~~26~~ 25 ~~22~~ 6.5 −7 ~~9~~ 2 ~~44~~ 8

Comets Place

~~C~~ Sept 30d 17h 0m.0 C.M.T. app α 10h 41m 6.5s app δ −~~7~~ ~~7.5~~ −6° 59′ 53

The right ascension being correct within ± 4s

∴ declination ∴ uncertain by several

minutes on acc of change & unknown azimuth

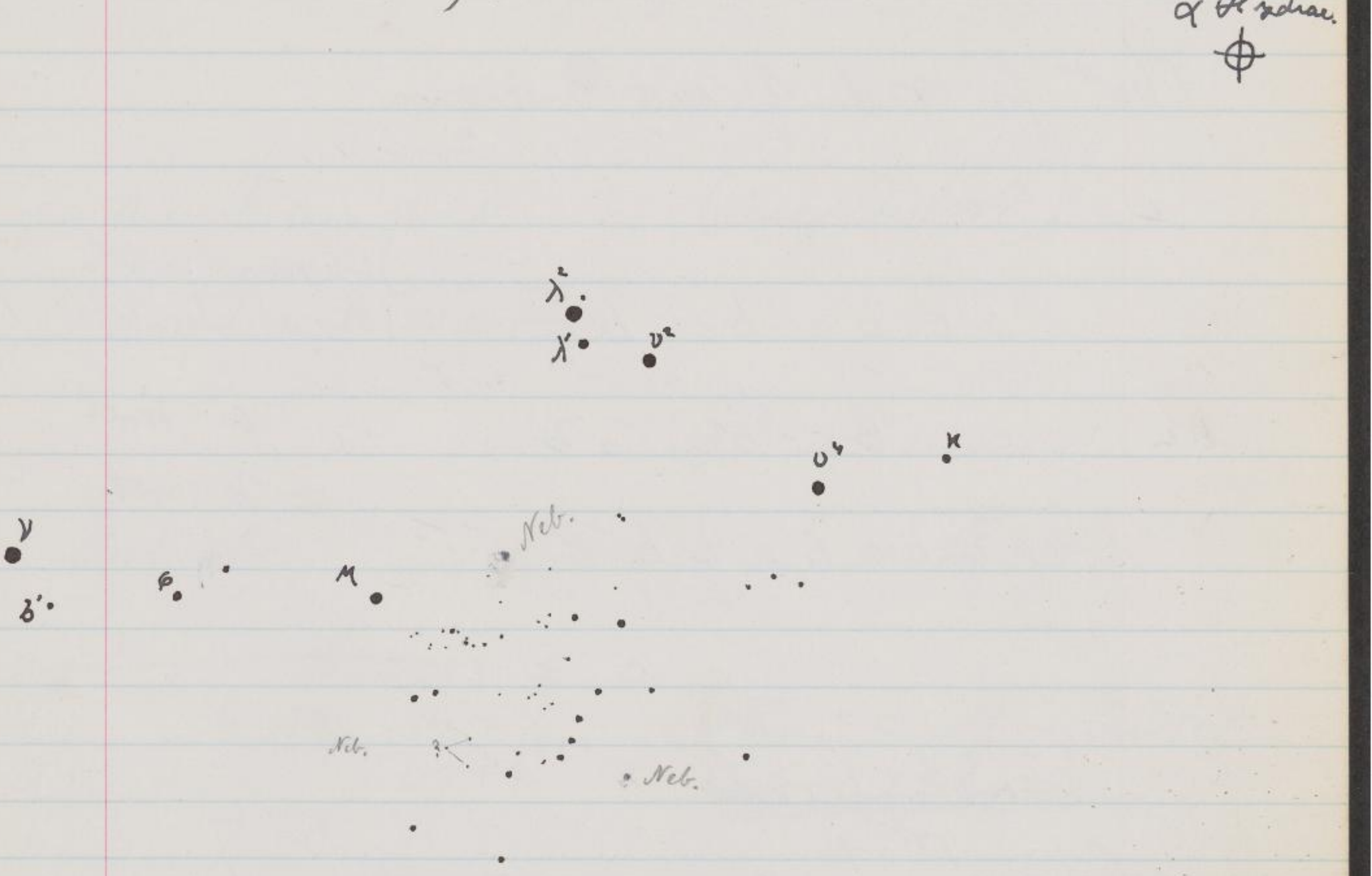
1882phael.proj...495C

Oct. 1.

		T		H.a		δ	
☄	17	0	25	23	12.8	69	8
X		3	35	23	43.3	69	8
Star b		5	49.8	23	21.1	69	8
☄		6	42.3	23	18.6	69	7
X		8	54.3	23	48.3	69	7
☄		12	00.±	23	24.0	69	8

x is prob.

Oct 14, 1882.



Lambda Hydra is charted * ~~on~~ Berlin chart in AR = 10h 1m, δ = -11°.4.
The nebula is south west of the pair ✦ ✦ charted in AR = 10h 1m, δ = -7°.4.
It is north-northwest of λ Hydra. See "Stunde IX".

Oct 19. 1882

Obsn for rad. of ring microm

a a b a b a b b

a a b a b (a) b b

a a b a b a b b b

{Chronograph
{record doubtful

a south
b north

Comet Cruls

4th tap of 1st + compn star 5 43 4
part. delayed by cloud

1st × is S of centre

~~Star~~ Comet also in southern half of ring and about 3' south of star. Another star follows comet about 1 min. and 15' north. A faint star prec. comp. star about half a minute and 5' north.

Chronograph F 1327

[illegible]

Oct 19. 1882.

a a b a - a - b (inner b's lost)

a a b a b a b b

Comets ☄ P$_c$ obs

~~a1~~	~~6~~	~~58~~	~~55.0~~	Σ Δ
a_1	6	59	34.7	82.2
a_2			47.5	
b_1	7	0	16.7	
a_3			17.2	
a_4			30.0	
b_2			31.0	
b_3			52.2	
b_4		1	7.0	

Stars S of Centre

~~☄ N "~~ "

objects were evidently all north not south

☄ 1	7	5	46.7	
2		5	58.2	
3		6	44.0	
4		6	56.0	:: Clouds

☄ is S of Centre

Oct 19, 1882

C1	7	10	24.7
C2			34.7
b1		11	5.2
C3			17.4
C4			28.0
b4			36.4

both stars N of Centre

b2 } could not
b3 } ~~[illegible]~~ be taken

☄ 1	7	16	27.4
2			40.3
3		17	19.7
4			30.0

☄ N of Centre

Point of ☄ obsd in middle of ~~[illegible]~~ length of nucleus

* * *

C1	7	19	1.0
2			12.4
3			47.5
4			59.5

b grazes northern edge of ring but does not disappear

all the objects north of centre

☄ 1	7	25	3.0
2			15.4
3			49.0
4		26	2.2

30.5

Oct 19, 1882

C_1	7	30	59.3
C_2		31	11.2
C_3			46.7
C_4		"	58.5
☄ 1		37	0.2
☄ 2			———
☄ 3			———
☄ 4		38	1.0

C north of Centre

Star b ½′ m. north of ring

☄ very faint

☄ north of Centre

a a b a b a b b

a_4 1^{sec} late

incomplete set

7 59 a a b a b . incomplete

8 01 a a b a b a b b
(1s late) 0.4 s late

8 02 a a b . incomplete
(0.35 late)

8 .

Oct 19. 1882.

Transits b and c
Abandoned as not needed.

	B 236			ƒ 1327	
8	9	25.4	8	8	1.0
	10	25.3		9	1.0
	11	25.4		10	1.0

Second left off at 24.4

Oct. 24, 1882.

S. looked for "cometary masses" from $15^h\ 30^m$ to 17^h; nothing seen. G.C. 2008 at first barely visible after identification of region; towards end of observations bright enough to have been noticed in sweeping, but not conspicuous. Moonlight and many thin clouds.

November 1, 1882

Obs to determine radii of ring micro zone of stars beginning with γ Lyrae

γ Lyrae	4 N	20	30	
	6 S			
	5 S		37	
	3 N		39	
	2 N		41	
	4 S		43	3 & 4 greater from Clo'ds
	4 S		59	

Obsn interrupted by clouds

Reduction of observations on opposite page

1327 slow $2^m\ 13.2^s$

γ Lyrae	20 30	28.0	30 40.7	31	21.3	31	33.8	a
	34	57.7	35 14.1	35	41.1	35	57.2	×
	37	5.9	37 18.1	38	1.9	38	14.5	×
	38	38.1	38 50.6	39	34.3	39	46.6	×
	40	59.2	41 10.2	42	0.2	42	11.7	b
	43	4.3	43 15.8	44	5.1	44	16.7	c
	59	0.3	59 13.3	59	55.9	60	8.2	d

Of the above stars those marked (×) are not given (accurately) in the Star Catalogues. The places, of a from 539 Star places, and of b c d from Leyden Obs. Annals IV, are as follows ~~for 1882.0~~

	h	m	s	°	′	″	Ann′l Prec.			α		δ	
a (1882.0)	18	54	31.77	+32	31	42.5		18	54	31.77	+32	31	42.5
2.562 b (1875.0)	19	4	50.04	32	29	27.5	2.256 5.61	19	5	5.83	32	30	6.8
c (1875.0)		6	55.06	32	24	23.9	2.258 5.77		7	10.87	32	25	4.3
d (1875.0)		22	48.41	32	23	9.8	2.277 +7.09		23	4.35	32	23	59.5

1882.0 (above α, δ)

To get T (Hour angle of Centre of Ring $T = \frac{t_1+t_2}{2} + \Delta t - \alpha$

Outer Ring $\frac{t_1+t_2}{2}$			Inner Ring $\frac{t_1+t_2}{2}$			T outer & inner		
20	31	0.90	20	31	1.00	1	38	42.38
	~~35~~	~~27.45~~			~~27.60~~			
	41	35.45		41	35.20		38	42.70
	43	40.50		43	40.45		38	42.80
	59	34.25		59	34.60		38	43.28 !!
						T 1	38	42.72

log r_0 = 2.6946 log r_0 = 2.5611

Assume $r_0 = 495''$. $r_0 = 364$

$D_0 = 32°\ 28'\ 14'$

δ = 32 28.2

log 15 cos δ · 1.1023

δ − D_0	log(δ − D_0)	log$\left(\frac{\delta-D_0}{r_0}\right)$	log$\left(\frac{\delta-D_0}{r_0}\right)$	outer sin γ	outer tan γ	inner sin γ	inner tan γ
+208″.5	2.3192	9.6246	9.7581	9.9596	0.3330	9.9136	0.1555
+112.8	2.0522	9.2578	9.4911	9.9928	0.7349	9.9781	0.4869
−189.7	n 2.2781	n 9.5835	n 9.7170.	9.9655	n 0.3821	9.9312	n 0.2141
−254.5	n 2.4057	n 9.7111	n 9.8446	9.9333	n 0.2221	9.8542	n 0.0096
		outer Ring	inner				

cos γ_0

Nov ~~7~~ 8, 1882

Comet Gould S C C obs

Compᵉ star folls. ✶ 3½ s 1½ or 2' N

1st set ~~in~~ ☄ ~~#~~ South × South

h m
~~17 54~~ 2d " ☄ north × north

17 54 3d " " "

18 1 4th " "

Missed inner ring on 3d & 4th sets

Last min. on chron 9h 21 ✶1327
= 18h 8m 47s of my watch
watch slow of C.M.T. 26
18 9 13 " C.M.T.

Comparison Star Oe 10163
(1850) 9h 44m 8s −22° 19'.0

1st set ~~too weight~~ not good for decl. – Star too near centre

Comet taps on chronograph were for duration of transit of nucleus which was 50" or 60" long. – ~~the~~ twilight was strong & nucleus faint, ~~it &~~ difficult. I found a tendency to ~~f~~ prolong tap unduly. – ~~mean of~~ middle of tap to be taken for time of observation

cos δ = 22 29   9.96567
15/2   0.87506
0.84073

assume r = 490 ... 2.69020
" r = 360 ... 2.55630

No. 8. Redn of obsns page 21

~~Outer~~ ~~☄ (s)~~ ~~* (n)~~ ~~Inner~~ 2d Set

	1. outer ☄ (s)	* (s)	~~Inner~~ ☄ (s)	* (s)	Outer ☄ (n)	* (n)	Inner ☄ n	* n
t_1	8 50 57.0	8 54 23.9	8 51 [15.0]	8 54 33.8	8 59 33.5	9 3 18.1	8 59 47.2	9 3 37.1
t_2	51 52.2	55 32.2	51 31.5	55 22.3	9 0 44.1	4 7.1	9 0 32.2	48.7
mean	8 51 24.60	8 54 58.05	8 51 23.25	8 54 58.05	9 0 8.80	9 3 42.60	9 0 9.70	9 3 42.90
Diff.			1st lap too long reject		70.6	49.0	45.0	11.6
log					1.8488	1.6902	1.6532	1.0645
log 15/2 cos δ τ					2.6895	2.5309	2.4939	1.9052
sin γ = μ/r					9.9993	9.8407	9.9376	9.3489
cos γ					8.7561	9.8580	9.6987	9.9889
d = r cos γ					1.4463 +0 28.0	2.5482 +5 53.3 51	2.2550 +2 59.8 44	2.5452 +5 50.9 44
d′ − d					− 5 25.3		− 2 51.1	
α′ − α	−3 33.45		~~−3 34.80~~		−3 33.80		−3 33.20	

α′ − α   −3 33.50

δ′ − δ   −3 22.

Oe 10163

1850   9 44 8.35   2.77
−22 19 3.3   −16.67

(1866) { 9_{146} $44_{13.2}$ 52.67 -
−22 23 31.0
n 9.61490
n 9.74508
1.30222
n 9.91969
n 0.66220
30722   4.594 ~~1.22691~~
3063 1.22691

Δα   2.766
Δδ   − 16.669

+1 28.51
−8 53.41

(1882.0) { 9 45 36.86
−22 27 56.71

	Δα	Δδ	
Fr. 1327			
9 0 9.5	−3 33.50	−3′ 22″	3 4
9 5 29.5	−3 32.95	−3 33.0	4 14
9 12 6.7	−3 34.02	−3 58.8	3 29
9 5 55.2	−3ᵐ 33.49ˢ	−3′ 38.0″	3′ 35

Err 1327 +2 15.0
9 8 10.2
15 11 3.6
17 57 6.6
2 56.5
17 54 10.1
C. M. T.

* (1882.0)   9 45 36.86   −22 27 56.71
☄ − *   −3 33.49   −3 38.0
☄ (1882.0) [uncorrd for refraction which is insensible]   9 42 3.37   −22 31 34.71

3d Set ~~4th Set~~

Outer α n	Outer x n	Inner α n	Inner x n
9 4 55.3	9 8 44.1	9 5 8.4	—
6 2.7	9 20.5	5 51.0	—
9 5 29.00	9 9 2.30	9 5 29.70	—
67.4	26.4	42.6	
1.8287	1.4216	1.6294	
2.6694	2.2623	2.4701	
9.9792	9.5721	9.9138	
9.4801	9.9674.	9.7578	
2.1703	2.6576	2.3441	
+ 2 28.0 1 57	+ 7 34.5 26	+ 3 26.1 3 12	
− 5	6.5		

− 3 33.30

$-3^m\,32^s.95$

$-4'\,37''.5$

~~54~~

4th Set

Outer α n	Outer x n	Inner α n	Inner x n
9 11 32.2	9 15 18.2	9 11 44.0	—
12 41.4	16 3.3	12 29.3	—
9 12 6.80	9 15 40.75	9 12 6.65	—
69.2	45.1	45.3	
1.8401	1.6542	1.6561	
2.6808	2.4949	2.4968	
9.9906	9.8047	9.9405	
9.3139	9.8866	9.6898	
2.0041	2.5768	2.2461	
+1 41.0	+ 6 17.4 9	+ 2 56.2 41	
− 4	36.4		

− 3 33.95

− 3 34.02
28

− 3 58.8

7′
0
7′

Nov 9, 1882

SCC obs

Obsn of zone for radii of ring. micrometer

1st beginning with γ Lyrae
min on Chron 22 55

γ Lyrae	23		3½ S	
	23	10	½ S	last tap 1 sec late
		13	1 N	
		19	2 S	
		20	½ N	
		23	5 N	
		2{ 25~~¼~~	½ N	single taps }
		25½	4 S	double taps }

6th tap & 7 tap came together ~~as a~~ as a triple tap nearly; the 1st two were for the second of these stars exit over inner ring and the third was for the exit over outer ring of the 1st star but this last tap was 1 second late

subsequent reduction gives approx:
α(1855) δ 1855
19h 20m 5s +32° 28′

23 33 4½ S foll by four short rattles; was a small nebulous object observed for identification.

Nov 9, 1882

	23	36	¾ N	
		38	2 S	
		43½	2 S	
		45	1 N	
		45½	5 S	double taps
		49	3½ N	
		51	3½ N	
6 mag.		53	1 N	take 2d tap on t_2
		56	5½ N	
7 m		57	3 N	double taps
		59	3 ± N	
	0	1	1 N	
	0	3½	6 S	take 2d tap on t_4
		6	±½ N	
		7½	7 S	double taps; missed inner ring
		10	centre	
		11	5½ S	double taps
		14	7 S	missed inner ring
		16	5½ N	
		~~2~~	~~(3½ N)~~	
		21½	½ N	
		22	4 S	double taps
		24	5 S	
		26	3 N	t_2 ½ sec late

Last minute on chron 0 30m

f226 +7.00)

Chronograph Reading of observations on pp. 24 & 25

					Outer E+Δt	Inner	Mean t
	23 5 39.6	5 49.2	6 39.2	6 49.2	23 6 14.40	14.20	23 6 14.30
	10 55.1	11 4.9	12 0.8	12 10.2 ~~11.2~~	11 32.65	32.85	11 32.75
	12 22.1	12 32.7	13 25.7	13 37.1	12 59.60	59.20	12 59.40
	17 59.2	18 10.1	19 2.0	19 13.0	18 36.10	36.10	18 36.10
	19 19.1	19 29.7	20 24.4	20 35.1	19 57.10	57.05	19 57.08
	22 48.5	23 4.2	23 32.9	23 48.3	23 18.40	18.55	23 18.48
	25 38.4	25 49.1	26 44.4	26 54.2 ~~55.3~~	26 16.30	16.75	26 16.52
	26 4.2	26 18.1	26 54.1	27 7.7	26 35.95	36.10	26 36.02
(neb.)	[32 14.7	32 30.4	33 3.9	33 19.3]			
	36 11.6	36 22.0	37 15.9	37 26.5	36 49.05	48.95	36 49.00
	37 56.8	38 7.4	39 0.1	39 10.9	38 33.85	33.75	38 33.80
	42 50.5	43 1.2	43 54.8	44 5.6	43 28.05	28.00	43 28.02
	45 19.4	45 30.4	46 25.0	46 35.5	45 57.45	57.70	45 57.58
	45 45.6	46 1.1	46 29.6	46 44.9	46 15.25	15.35	46 15.30
	49 27.3	49 39.6	50 25.3	50 37.5	50 2.40	2.45	50 2.42
	51 0.5	51 12.3	51 58.4	52 9.9	51 35.20	35.35	51 35.28
	53 9.9	53 20.4	54 13.7	54 24.2	53 47.05	47.05	53 47.05
	56 16.0	56 32.8	56 56.3	57 13.7	56 44.85	44.55	56 44.70
	57 10.0	57 20.7	58 10.1	58 21.3	57 45.65	45.40	57 45.52
	58 42.8	58 56.4	59 33.4	59 46.7	23 59 14.75	14.90	23 59 14.82
	0 1 11.0	1 22.0	2 13.7	2 24.7	0 1 47.85	47.85	0 1 47.85
	3 27.9	3 51.5	3 58.7	4 20.3	3 54.10	55.10	3 54.60
	6 7.1	6 17.1	7 13.2	7 23.7	6 45.40	45.15	6 45.28
	6 53.0	7 —	—	7 38.9	7 15.95	—	7 15.95
	9 48.8	9 59.3	10 54.5	11 4.3	10 26.55	26.90	10 26.72
	11 7.1	11 22.5	11 50.3	12 6.2	11 36.65	36.40	11 36.52
	14 8.1	—	—	14 46.9	14 27.50	—	14 27.50
	15 54.7	16 11.1	16 36.1	16 53.0	16 23.85	23.60	16 23.72
	18 36.3	18 53.5	19 16.4	19 33.6	19 4.95	4.95	19 4.95
	20 25.6	20 36.5	21 29.7	21 40.9	21 3.25	3.10	21 3.18
	21 26.4	21 38.7	22 21.3	22 33.6	22 0.00	0.00	22 0.00
	24 46.7	25 ~~4.7~~ 4.2	25 25.4	25 43.9	25 15.30	14.80	25 15.05

Authority	~~Comp~~ Star 1882.0 α & Redn to app Place in red	δ	App. Place of Star α	δ	(t+Δt)−α	
53ga Star	18 54 31.77 +1.61	32 31 42.5 +25.1	18 54 33.38	32 32 7.6	4 11 40.92	−55
Leydon zones 85987	19 1 16.39 1.66	32 36 6.1 25.5	19 1 18.05	36 31.6	41.35	−12
BBVI	19 8 13.92 1.70	32 35 23.2 25.8	8 15.62	35 49.0	41.46	−.01
BBVI	19 14 52.87 1.75	32 30 3.6 26.3	14 54.62	30 29.9	41.40	−.07
BBVI	19 38 19.09 1.93	32 37 38.0 28.5	38 21.02	38 6.5	41.40	−07
W B 1327	19 42 3.27 1.98	32 35 59.6 29.0	42 5.25	36 28.6	41.80	+33
Safford	19 46 1.88 1.99	32 37 0.2 29.1	46 3.87	37 29.3	41.65	+18
W.B 1606	19 50 4.10 2.06	32 36 31.0 29.7	50 6.16	37 0.7	41.69	+22
BBVI	19 55 1.65 2.10	32 34 25.3 30.2	55 3.75	34 55.5	41.53	+06
BBVI	19 59 52.90 2.15	32 29 19.5 30.6	59 55.05	29 50.1	41.47	0

Assume D = 32° 35′ 10″

Mean 14 11 41.47

Saturday Nov 18, 1882

Obs on Pleiades for ring microm.

g 5½ N } order g b g b g b g b
b 5½ S
η 6 S } Same taps except ~~that~~
24 6 N } 24 ~~third~~ 3d & 4th taps
should be a second earlier

h 3½ S

Second Set

g 5½ N } order g b g b g b g b
b 5½ S
10

one or two taps for settle first before
next star ~~η~~ 24 & η

24 - } order 24 η 24 η η 24 η 24
η } one of best taps on η or 24
was bad
also 2d tap of η

h } order h h 33 33 h h 33 33
33

Nov 18

3d Set

g — g single taps

ζ — ζ double taps

$8^h\ 21^m\ 5$ — ζ_2 & b_3 ½ sec. early

24 — 24 single taps

η — ~~reject~~ η double taps

~~[illegible]~~ order 24η η24 24η ?

4th Set

$8^h\ 21^m\ 13$

g — single

ζ — double

5th set

8 17 incomplete set

8 19 6th Set 24 — single taps

η — double taps

8 21 7th set 24 — order η 24 η 24 long taps for ~~24~~

η — ~~24η~~ increasing, – η 24 η

Apr 18

0 25 incomplete set

0 29 24 order 24 η 24 η 24 η 24 η
η for last tap take mean of both for η & 24.

0 32 24
η } reject set

0 34 g
b } order g b g b g b g b

0 36 g
b } order g b b g g b g b

0 39 g
b } order g b g b g b g b

0 41 g
b } order g b (b) g g b g b
(doubtful tap taken 2^{d}

Nov 15

0 45 9 2 } s2 s2 2s s2

0 47 s 2 } s2 2s s2 s2

Nov 19/82

Great Comet

1st set order ☄, 1st ×, 2d ×, 3d ×
8 10 } sid t. short rattles between 1'× & 2'×
8 15 } 3d ×, double taps
☄ north, all stars south

2d set order ☄ star star (another star)
(8 23 ☄) ☄ south 1 × north 2 × north
(short rattle precedes 1st ×.
2 × has long taps for (t_2 t_3)
~~☄~~ This short rattle made when 1 × of 1st set was just grazing south edge of outer ring.

3d set
(8 34 ☄) order ☄ star ○
~~☄~~ ☄ south × North

~~8~~
(8 39 ☄) 4th set same end of t_4 on ☄ 1/2 sec late

Chron stopped

Nov 19/82

(8 51 ⊄) 5th set
⊄ south   X north

t_4 on X ½ sec early

(8 57 ⊄) 6th set
⊄ south   X north

t_4 on ⊄ ½ sec. too long (end shld be ½ sooner)

(9 4 ⊄) 7th set
⊄ south   X north.

on t_2 on X $0.^s4$ too early
t_4 " " 0.2 " "

(9 10½ ⊄) 8th set
⊄ south   X north

---

9 19   9th set (Same Compn X as in 1st set)
⊄ & X North
t_4 on ⊄ shld be $0.^s7$ longer

Error ring on ⊄ missed

Nov 19, 1882

(9 24 ☄) 10th Set ☄ n × : n

{ Shimmering on comet
{ a long tube ; poor

☄ × t_3 $0^s.3$ too early

Redn of previous obsns

1st Set

	☄ (n)	× (s)	× (s)	× (s)
	8 9 27.5	8 12 3.1	8 15 5.1	8 15 18.8
	40.5	13.4	15.0	
	10 20.3	13 3.4	16 4.1	16 18.0
	33.7	13.6	13.9	27.4
	8 10 0.50	8 12 38.37	8 15 39.52	8 15 53.10
t-t	66.2	70.5	68.8	68.6
	39.8	50.0	49.1	—
Cos δ (26° 0′)	59.51	63.37	61.85	61.65
Cos δ = 0.899 99537	35.77	44.95	44.14	—
	+3′ 3″	−1 23	−2 12	−2 17
	+3 50	−1 47	−2 3	
adopt	+3 35	−1 42	−2 5	−2 17
☄ − × (Δα)		−2 37.87	−5 39.02	−5 52.60
δ ☄ − δ × (Δδ)		+5′ 17″	+5′ 40″	+5′ 52″

8 10 0.5
+2 18.
8 12 18.5
15 54 25.8
16 17 52.7
2 40.1
16 15 12.6
Comm. Nov 5.

Nov 14

	5th Set		6th Set		7th Set		8th Set	
	☄ (s)	× (n)	☄ (s)	× (n)	☄ (s)	× (n)	☄ (s)	× (n)
	8 50 14	53 46.1	8 57 18.5	9 1 1.3	9 4 22.5	8 9.7	9 10 58.8	14 44.1
	17.7	58.0	33.0	13.3	38.4	22.6	11 14.5	56.1
	43.7	54 35.2	58.7	51.9	5 5.9	56.5	38.9	15 32.7
	51 1.0	47.5	58 16.5	2 4.1	22.7	9 9.2	55.7	44.8
	8 50 30.95	54 16.70	8 57 46.67	1 32.65	9 4 52.38	8 39.51	9 11 26.98	15 14.42
t-t	59.6	61.4	58.0	62.8	60.2	59.5	56.9	60.7
	26.0	37.2	25.7	38.6	27.5	33.9.	24.4	36.6
δ(25 53) .900 9.9541	53.61	55.23	52.18	56.51	54.16	53.52	51.19	54.61
	23.40	33.47	23.12	34.73	24.74	30.54	21.95	32.93
	−4 25	+4 7	−4 42	+3 51	−4 20	+4 28	−4 51	+4 15
	−5 5	+4 8	−5 6	+3 59	−5 0	+4 30	−5 12	+4 13
adopt	−4 52	+4 8	−4 58	+3 56	−4 47	+4 29	−5 5	+4 14
~~α′−α~~ Δα	−3 45.75		−3 45.98		−3 47.13		−3 47.44	
☄−× Δδ	−9′ 0″		−8′ 54″		−9′ 16″		−9′ 19″	

1327 Ford

	☄ − × Δα	Δδ
8 50 31	−3 45.75	−9′ 0″
57 47	45.98	−8 54″
9 4 52	47.13	−9 16″
11 27	47.44	−9 19″
t m s		
9 1 9.2	−3 46.58	−9′ 7″.2

+2 18

9 3 27.2

15 54 25.8

17 9 1.4

−2 48.6

17 6 13

Com M. T.

Nov 19 Comp^n Stars

Nov 21.0

[illegible]
Readings for Instr. Corrns.

		Watch C. Sid. times in red m s	H A h m	d	O's Place
⊙	Circ Foll	~~0~~ 3 45	4 24.0	80 41	
ⓔ	Circ Prec.	0 7 40 16 8 43	(W) 16 28.2 E 4 30.0	40 56	15 48 28
	Circ Foll	0 12 24 16 13 27	(W) 4 32.7 E 16 34.2	80 28	15 48 28
	Circ Prec	0 15 4 16 16 7	(W) 16 35.7 (E) 4 37.3	40 59	15 48 28
	Circ Foll.	0 18 19 16 19 22	(W) 4 38.4 (E) 16 40.1	80 28	

	Watch	~~Bond~~ 394
~~Watch~~	0 27 5½	0 26 0
		−1 55
CmT	0 25 44½ ~~CmT~~ ~~Watch~~	0 25 44.5

Watch fast −1m 21s

O's app Place
α = 15h 48m 28s
δ = −20° 1.6′

	Watch	Fr 1327
Watch	0 29 15	16 28 0.
	corrn	+2 18
C. Sid T.	16 30 18	16 30 18

~~Watch fast~~ Diff. Sid. T. − Watch 16 1 3

Pole of instr. is high 15′

Collimation Corrn c = −0.4m (add to H.A. circl Prec.)

Index Corrn Δd = ~~*42′~~ −60 0′ = −60° 42′ (Circ. Prec.)
= −59 18 (Circ. Foll)

" " Δ(H.A.) = −8.8m (add to H.A.)

Nov 23. 1882

Telescope dismounted: hole cut in base plate to permit azimuth adjustment: instrument adjusted approximately in azimuth ~~by~~ and elevation by moving horizontal Pole to 1 degree = (0.20 inches) to the east. and elevating 15′ = .06 inches

Watch error = 0 Sid-Time
Watch

⊙ Foll	16 47.8	W 4 56.0 E 16 56.0	21 44.0
Pre	16 50.2	W 16 58.6 E 4 59.2	19 39

Ad (corr) Circ Pre = − 66′.0

⊙'s α = 15h 56m 7s,
δ = − 20° 26′

Pole low 10′ — took out one strip lead

⊙ Circ Pre	17 4.6	(W) 17 12.8 (E) 5 13.4	19 17
" Foll	17 7.1	(W) 5 15.0 (E) 17 15.7	21 28

Hence Pole is now 2½ high
Ad = (corr) ~~Circ~~ − 65½

⊙	Foll	17	18.0	(W) 5 (E) 17	25.7 26.4	21	28
	Prec	17	20.2	(W) 17 5	28.2 29.2	19	15

Coll + from 3 settings mean $c = +\,0^{s}.10$

~~Ad~~ adjusted Coll. by inserting brass strip under ~~eye e~~ strap toward ~~eye~~ object end of Tel.

⊖	Prec.	17	39.3	(W) 15 E	47.4 48.4	19	12-
	Foll	17	42.1	(W) 5 E 5	49.6 50.3	21	27

coll now gives $+\,0^{s}.37$

Removed brass strip

⊗	Prec	17	59.5	18 18	7.4 8.2	19	10
	Foll	18	1.7	6	9.4 10.1	21	19

Changed adjustment coll again

⊙	Foll	18	8.5	6 6	16.2 17.1	21	17
	–P	18	10.6	6 6	18.6 19.4.5	19	7

Nov 23

Watch 40^s slow of sid. t.

⊙ ~~11 48.4~~ 50 ~~6 51.8~~ ~~52.0~~

⊙ Foll 18 50.5 6 53.9 54.1 20 10

Prec 18 52.8 18 56.3 56.9 20 8

⊙ α = 15 57 30
δ = 20 27

Dismounted telescope & replaced ~~Adjust~~

~~⊙ Foll 19 45.9 15 48.5 3 49.1~~

⊙ Prec 19 51.7 3 54.6 54.9 −20 3

Foll 19 53.6 15 56.1 56.4 −20 1

⊙ α 15 57.5
δ −20 28
+2
−20 26

p −20 3
f −20 1
Δd = +1

c = +0.20

ΔH = +0.5

Nov 23

Watch-corr 0^s for sid. t.

~~32 Urs. maj. Foll $21^h\,20^m.0$ (m)6 $13^m.4$ 65 28~~
~~Δd − 1~~
~~d 65 27~~
~~δ = 65 41~~
~~δ-d + 14~~

~~i Cephei Foll 21 27.5 6 19.8 65 25~~
~~− 1~~
~~d 65 24~~
~~δ 65 35½~~
~~δ-d = + 11½~~

δ Persei 21ʰ 41ᵐ.1 5 53.2 d 47 7
3 34.6 Foll
+47 24.5
δ = 47 24.5
δ-d = + 17.5

adjusted azimuth
δ Persei Foll 22 2.8 5 29.4 d 47 46
δ 47 24.5
− 21.5

τ Herculis 22 8.8 5 51.2 d 46 58
5 53
+46 36.0
δ 46 36
22

Nov 23

π Aquarii (P) 22 21.0 +0 0.8 +0 44
α = 22 19 19
δ = +0 47.2
F 24.3 +0 39 +0 44

c = ~~+~~ −0.10

α α = 22 19.3
0 1.7

ι Aurigae 22 34.0 5 43.8 d 32 40
α = 4 49 25
δ = +32 58.7
δ 32 58.6
δ′−d = +18.6

adjusted azi

ν Aurigae 22 41.3
d 32 54
δ 32 58.6
+4.6

adjusted

ι Aurigae (E)
d 32 55
δ 32 58.6
+4.6

η Herculis (W)
α = 16 38 52
δ = +39 9.1
D = 39 12.0
δ = 39 10.0
η = δ′ − δ = +2

~~adjusted again~~

Capella (E)
α = 5 8 5
δ = +45 52.5
D = 45 52½
δ = 45 53½
η = δ − D = −1′

Nov 23

ι Pisci 23 23.3 11 47.1 4 56

ε Pisc (P) 23 33.3 23 57.8 | 23 35.5 | d 4 56

(F) 36.0 11 59.9 | 23 36.1 | d 4 56 D+4 56

23 +0.6
−0.3

α = 23 33 57
δ = +4 59.7
Δd = 0.0
c = −0.30
AH = −2.1

23 34.65
AZ +.3
23 34.95
−1.15
H 23 36.10
α 23 34.0
ΔH = +2.1

~~23~~ 57.2
−0 1.15

Δd = 0′

δ+5 0

δ = 5° 0′ ξ = −0 4′

~~Elevation of~~
Pole of inst 4′
~~above~~ below
true pole

adjusted by brass strips under north end

ω Piscium F. 23 48.5 −0 6.7 | 23 55.2 | +6 15½ D=6 15.3

23 53 P 23 51.7 −0 3.2 | 23 55.0 | +6 15

α = 23 53 20
δ = +6 13.1

23 −0.2
c = −0.1 D +6 15.3

δ +6 14.1

Watch 0.3m slow of Sid. t.

adjusted - Hour Circle vernier
ΔH (west vernier) = 0 H.a.

δ − d D−δ = +0.′9 = ξ

d

α Cygni (P) 0 35.4 3 58.7 d 44 56

α = 20 37 26
δ = +44 52.1

δ 44 52.7

$\alpha = T + AT - H - \Delta H - c \sec\delta + \xi \sin\tau \tan\delta - \eta \cos\tau \tan\delta - r$

$\delta = d + \Delta d - \xi \cos\tau - \eta \sin\tau - r$

$\xi \cos\tau + \eta \sin\tau = D - (\delta + r) = +3.3$

$\xi \cos\tau = +0.5$

$\eta \sin\tau = +2.8$

$\eta = +3\frac{1}{2}$

Hence Δd = 0
(West ~~[illegible]~~) ΔH = 0m
c = − 0.2 ±
(above pole) ξ = +1′ ±
(West of Pole) η = +3′ ±

in which condition the instrument was left after final adjustments.

Friday Nov 24, 1882

T H d

β Ceti (P) 0 32.2 23 54 8 | 0 37.4 | −18 38

α = 0 37 44 (F) 0 35.6 23 58.0 | 0 37.6 | −18 37½

δ −18 37.7

0 33.9 +0.2 0 34.1 23 56.4 0 37.7 0 37.7 ΔH = 0.0

23 56.4

2)−0.2 c = −0.10

2)+0.5 Δd +0.2

D = 18 37.7
δ = 18 36.0
ξ = +1.7

β Lyræ (P) 0 42.6 5 57.2 33 24

α = 18 45 45
δ = +33 14.0

D = 33 24
δ = 33 16.0
η = +8.0

50 Drac (P) 0 48.2 5 58.9 75 25

α = 18 50 4
δ = +75 18.0

D = 75 25
75 19
η + 6

ε Pisc (P) 0 52.8 23 56.1 | 0 56.7 | 7 17

α = 0 56 54
δ = +7 15.7

F 0 57.9 12 0.9 | 0 57.0 | 7 16

0 55.4 +1 23 55.6 58.5 0 57.1 56.9 ΔH +0.2

23 58.5

2)−0.3 c = −0.15

2)−1 Δd = −0.5

D+7 16.5
δ+7 16.4
ξ = +0.1

δ Gemin (F) 1 9.0 17 56.2 22 9½

~~1 4.7~~ ~~6 6.7~~

α 7ʰ 13ᵐ 9ˢ
δ 22 11.7

D = 22 9
δ = 22 13.7
η = +4.7

Frod 1327 1 17 0
Corr +2 18
1 19 18
Melot 1 19 11
7ˢ

Melot slow

From the above obsns we get the follg inst corrns.

	Δd	AH	c	ξ	η
	+0.2	0.0	−0.10	1.7	+8
	−0.5	+0.2	−0.15	+0.1	+6
					+4.7
mean	−0.1	+0.1	−0.12	+0.9	+6.2
				Instl Pole high	Instl Pole West

~~Mon~~ Aug 2~~6~~.9 1882

Carpenters at work on pier, wedging and bracing, to stop ~~lat.~~ E & W vibrations. — with little success —

afterwards took foll. ~~Dat~~ readings on ☉

~~Pos~~

		Watch				
☉	(F.)	0 7.9	+12 19.9	23 48.0	21°.6′	D − 21 5½
	(P)	10.4	0 22.7	20 47.7	21 5°	
		0 9.1	0 21.3	2)−0.3 −0.15	2)+1 +0.5	δ = −21 12

~~Nth~~ ξ = +6½

~~Watch~~

13 27

16 38 0 Watch 0 13 41

+ 2 14

16 40, ~~20~~

0 13.41

~~16~~

16 26.6~~39~~

0 9.1

16 35.7

0 21.3

16 14.4

16 14.0

ΔH = +0.4

~~Ad~~

Ad	AH	c	ξ
+0.5	+0.4	−0.15	+6½

Nov 27

Removed brass strips under north end to adjust for elevation pole

α Aquarii (P)

D − 0 46
δ 0 52
+ 6

Took out lead put in brass

α Aquar (P)

D − 0 54½
δ − 0 52
ξ − 2½

θ Aquarii (P / F)

~~D~~ −8 21
~~F~~ ~~0~~ 23.2

D = 8 22
δ = 8 21
ξ = −1

adjusted

π Aq (F / P)

+0 47½
+0 46½

+0 47.0
δ 0 48.2
−1.2

β Herculis on 6 hour circle

P

D +21 45
δ 21 45

α Tauri (F)

D +16 25.1
δ +16 18
− 7 +6

Nov 27

ε Aurig (F.

$\Delta\lambda$ 33 9
−9
ρ 33 8
δ 32 58
$-\eta$ +10

adjusted azimuth
ε Aurig (F)

D 33 0½
−0½
R 33 0
32 58
$\eta =$ −2

d Monoc P (6h W)

33 51
+0½
D 33 51½
δ 33 44½
$\eta =$ +7

κ Ophi (P) 6h W

D +9 43
$\delta =$ 9 34+2½±
$\eta =$ +6½

α Aurigae (F) 6 (E)

D = 45 51
δ 45 53
$\eta =$ +2

adjusted azi
α Auriga (F.) 6 E

45 54½
Δd −½
45 53½
$\delta =$ 45 50
$\eta =$ 0

Apr 27

L Herculis (P) 6^h (W)

+14 37½

D 14 37½

δ 14 32+3

η = + 2½

Caleans g
Electra b 5 sets g b g b g b g b

1st set g 4 [illegible] take 2/3 for 1 to 2

all before 1^h 40^m

Fuzzuti & Coelano
Celam g = (a) south
Tmg S, e = (b) north 3 sets a a b a b a b b

Ended 1^h 51^m ±

Nov 27

η Aurig 24 } 2 sets 24 η 24 η η 24 η 24

η Aurig 24 } 1 set η 24 η 24 24 η 24 η

Ended $1^h 59^m$

All previous obsns taken with marks on micro tube and adapter together

I then took foll observations with mark on micro tube turned 90° toward left hand

Tay & Celaeno

Celaen a
Taygeta b } 3 sets a a b a b a b b

Ended $2^h 13^m$

Celaeno g
Electra b } 3 sets g b g b g b g b

last set b_2 ½ sec late

ended $2^h 20$

just after this, knocked eye end of tel; examined and found focus disturbed: adjusted and continued obsn

Nov 27, 1882

Anon 24
η

(3 sets) 1st set 24 η 24 η 24 η η 24
2d 24 η 24 η η 24 η 24
3d 24 η 24 η η 24 η 24

Bessel's Places of these stars (Engelmann II, 304)

	α R 1840	Prec.	Sec. var.	μ	Decl. 1840	Prec.	Sec. Var.	μ'
Celaeno 16 g	53° 49 33.64	53.190″	+0.273″	+0.050	+23 46 49.58	11.838	−0.423	−0.078″
Electra 17 b	53 50 47.59	53.132	0.271	.028	23 36 16.24	11.832	423	0.062″
Taygeta 19 e	53 55 26.47	53.259	274	+.015	23 57 34.12	11.810	424	−0.058
η Tauri	54 29 46.72	53.191	.268	+.021	23 36 16.91	11.648	427	−0.068
Anon 24	54 29 42.52	53.253	270	—	47 16.49	11.648	427	—

	Prec	δ 1882.0	Cos δ
Celaeno 16 g	+8 13.67	23 55 3.25	996101
Electra 17 b	8 13.43	23 44 29.67	9.96160
Taygeta 19 e	8 12.50	24 5 46.62	9.96040
η	8 5.65	23 44 22.56	996160
Anon 24	8 5.65	23 55 22.14	9.96099

	δ − δ
Cel − Electra	633.58″
Taygeta − Cel	643.37
24 − η	659.58

Dec 2. 95

		Watch	HA		Dd
☉	P	23 35 18 16 20 26	23 45 14	$23\ 50^m\ \cancel{4}^s$	22 0.
	I	23 39 0 16 27 8	48 33	50 27	22 1.
		16 22 17 23 46 53 16 35 24	23 46 53.	2) −23 −12	2) +1′ +0′.5
		α 16 35 20 5 ΔH +4			
	P	41 6 16 26 24	51 7	50 9	22 0.
	F.	43 28 28 36	53 4	50 24	22 0.5
		16 27 30 23 52 5 16 35 25 16 35 20 +5	52 5.	2) −15 −8	2) +0.5 +0′.25

22 0.5

22 0.3

D 22 0.4
δ 21 59.6
ξ = +0′.8

Watch 1827

23 47 11 16 30 0

Cor + 2 19

True sid. t. 16 32 19
Watch 23 47 11
16 45 8

☉ α = 16 35 20
" δ = −22° 1′.6
r = +2.0
δ+r = 21 59.6

Δd	ΔH	c	ξ
+0′.5	$+4^s$	-12^s	+0′.9
+0.3	$+5^s$	-8^s	+0′.7

Dec 3 1882

Watch

η Pisc (σ) 1 18 27 11 53 4 | 1 25 23 | 14 44.5 | 14 44.5

P 21 41 56 42 | 1 24 59 | 14 45.0

1 20 4 11 54 53 −24 −12

+12 16

1 20

11 54 50

1 25 23

1 25 15

+8

δ + r = 14 45.5 −0.6

Gemin.

α ~~[illegible]~~ 1 27 2 5 59 9 32 8½

δ+r 32 ~~8~~ 8.0 0.0

Watch 1327

1 35 7 1 33 0

1 35 19 +2 19

1 35 19

Watch Corr +12

Ad ΔH c ξ η

0.0 +8s −12s −0.6 0.

Dec 5, 1882

Compn of
Hatton & Harris 535 with Fr 1327

1327	H&H 535	Corrn H&H ~~Diff~~
22 39 0	10 39 11	−11^s
1327	H&H	
1 54 0	1 54 6	− 6
B 394	Patek Phill	
9 0 0	9 0 13	−13

Dec 5.9 1882

Fr 1327	HXH 535	
13 6 0	13 5 30½	−30½

B 394	Patk Phill	
20 9 0	20 9 11½	−11½

After notch had been certainly seen it became apparent that ~~the~~ what was seen at 9 20 22 & 9 20 41 was the same phenomenon; this is the more certain because the notch ~~almost~~ did not occur exactly at the place where I expected and was looking for it.

W. V. B rec.
Dec. ~~5~~ 6, 1882 A. M. S. C. C. Jr Obs

9h 12m Edge sun indistinctly visible

9 14 More indistinct –

14 45 better –

15 20 limb scarcely visible
15 30 disappead –
15 50 sun invis. "vis" = visible
16 35 reappearing –
45 disappeared
17 37 limb dimly vis.

19 43 " reappearing –

20 22 notch: uncertain –
41 still; "
21 10 certain –
14 an ~~eight~~ ~~5th~~ on – {1/7 of whole diameter; this record would not be changed at time of obs.;
22 1 limb disappearing
10 " invis.
18 " reappearing –
31 " invis.
42 1/4 on. –
23 0 limb invis –
33 " scarce vis
38 better –
24 47 invis.
26 39 reappearing –

Internal contact. ingress.

9 35 8 limb scarce. vis.

37 39 Ven. atmos. lines suspect.
38 26 Atmosphere clearer.
Atmos. line can't be seen
48 Certain. not seen
58 Still Hazy -
39 29 ☉ reap. ing -
48 Not yet.
57½ " "

40 4 " "
13 " "
16 nearly -
23 not yet.
30.0 yes.
34 uncert.
39.0 past.
47.0 - Edge disapp'g from clouds
41 5 A little uncertain.

Limb alternately appearing + disappearing. Never distinct. Obs. made with difficulty

41 47.½ Cert. on ☉ 1/10 diam. of Venus
42 10 ☉ disap.

Nothing certainly seen of any phenom- like a ligament. At 40 30.0 when

"yes" was said, edge of ☉ seemed
for 1rst time distinctly & persis~~tle~~ly continuous. A few seconds
later this seemed to be less
certain. —
After ~~At~~ the word "past" no break in ☉
limb could even be suspected

B 394	Potts Phillips	Corr
22 53 0	22 53 11.2	−11.2

Dec 6-1

B 394	Potts Phillips	
2 48 0	2 48 9.5	−9.5

Dec 6 1882

Venus Internal Contact Egress SCC.
Positive eye-piece used in observing diameter Obsn
For ingress observations used negative eye-piece
whose power was about 200.

M.S.T.
S.C.C's watch

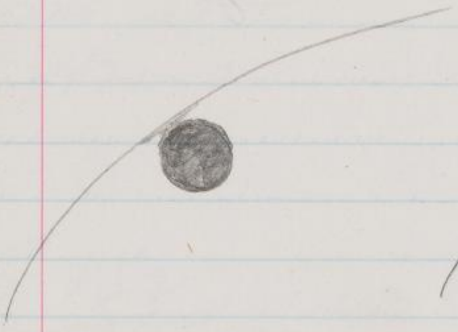
$3^h\ 2^m\ 30^s$ Edge of ⊙ well def. Atmos. toler. steady.
2 55 Tendency to dark shade between ♀ & ⊙
3 15 Ligament dis. Reappears,
20 Not yet
30 Yes (P.S.) Watch time within 1^s either way
37 Uncert.
46 Lig still ther
52 Certain past
61 Past beyond doubt

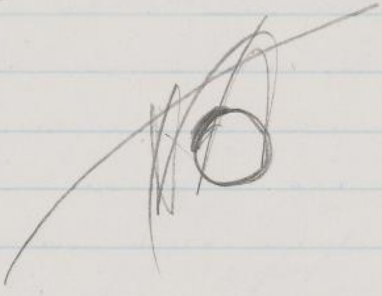
With reference to this, the phenomenon was so distinctly past that event must have been several seconds earlier.

During this Obsn - image tolerably good - altho' somewhat obscured by clouds

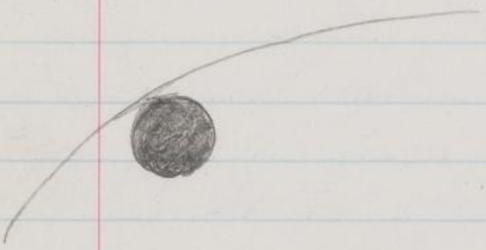
Internal Contact Egress

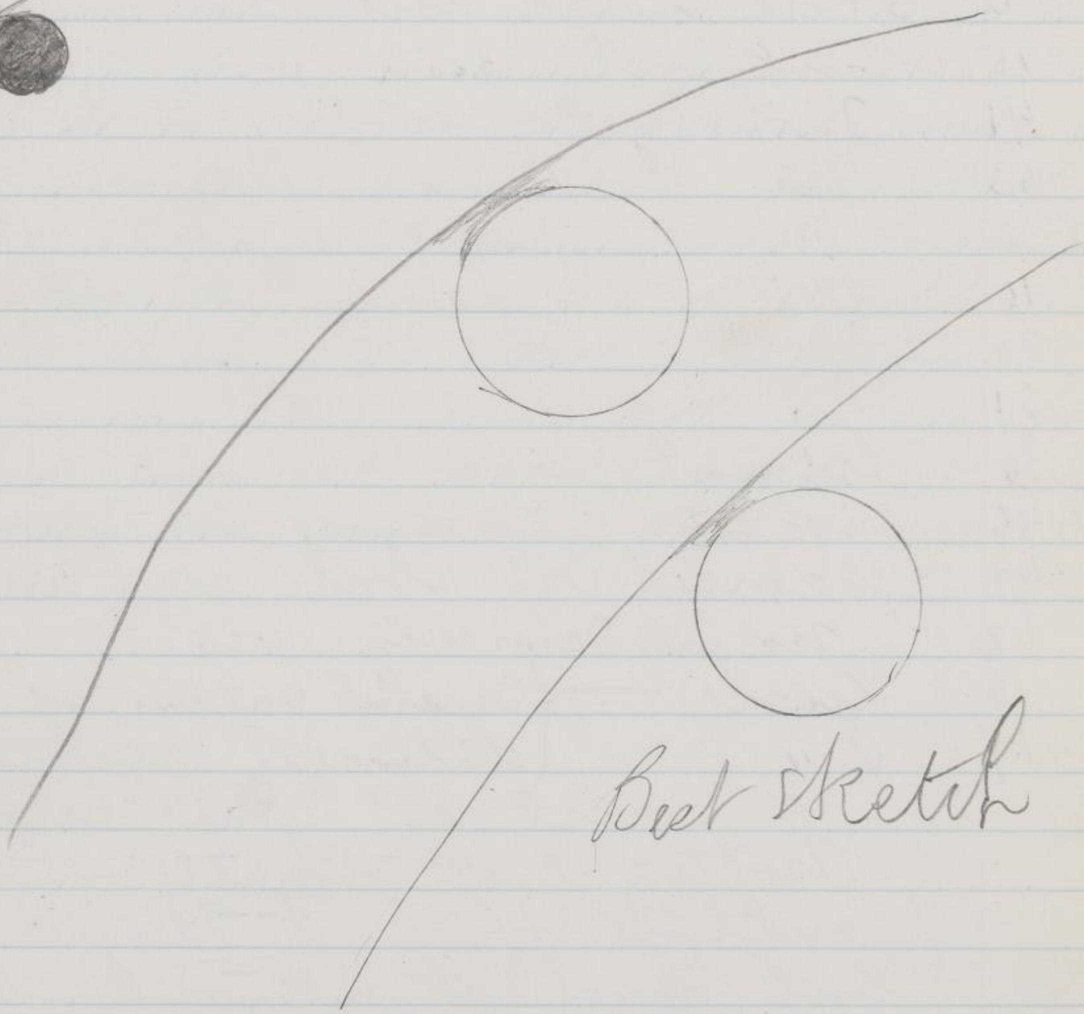
SCC





Enlarged sketch





Best sketch

External contact, egress -

3^h 17
18 15
20
25
30
35
21 8 ⊙ Edge almost invis but at ~~while~~ intervals
when vis. distinc. notched by
about ¼th of V. diam.
22 0 Still notch. but less markedly so
15 Limb not easily vis.
41 Not yet
53 No
23 2 "
10 "
20 "
31 "
36 Almost gone
46 Not gone
49 scarce vis but certainly
62 Not gone; Scarcely vis.
10 Gone — { General outline of ⊙ had been
19 " { distinctly restored.
At 2nd "gone" certainly.
Nothing but slightly undulating
outline of ⊙ Image faint
but good at intervals -

Venus not visible outside
Sun's limb

Dec 6

Bond 394	Patek Phillipe	
3 42 0	42 8.8	−8.8

Fr 1327	H.&H. 535	
20 40 0.	20 40 49	−49

Note; during progress of transit, and when definition was best say about 1:30 P.M.; Venus appeared surrounded by a ~~thin~~ very narrow line of light brighter than ☉'s disc, indistinct in outline. This was not especially looked for, but was noticed while ~~observing the~~ measuring the diameters

S.C.C

	Patek Phillipe Watch Time			~~394 Watch~~ 394 Watch	Corr.-Boston	Reduction to G. M. T. assuming 394 to be correct Boston Time
Exterioral Contact; Ingress				s	s	
"Notch; uncertain"	9	20	22	−11.3	−15.5	−26.8
"notch; still uncertain"		20	41	11.3	"	"
"Notch; certain "		21	10	11.3	"	"
Interioral Contact; Ingress						
"Nearly"	9	40	16	−11.3	"	"
"Not yet"		40	23	−11.3	"	"
"Yes (certain)"		40	30	−11.3	"	"
"Uncertain		40	34	−11.3	"	"
"Past		40	39	−11.3	"	"
Internal Contact; Egress						
"Tendency to dark shade or ligament	3	3	15	−9.2	"	−24.7
"Not yet "		3	20	"	"	"
"Yes "		3	30	"	"	"
"Uncertain "		3	37	"	"	"
"Ligament		3	46	"	"	"
" Certainly past several seconds "		3	52	"	"	"
External Contarch; Egress						
" almost gone "	3	23	36	"	"	"
"Not gone	3	23	46	"	"	"
"Scarcely but certainly visible"		23	49	"	"	"
"Not gone; scarcely visible"		24	2	"	"	"
"Gone certainly;		24	10	"	"	"

Assuming B. 394 to be correct Boston Time Cambridge Mean Time is	Provisional Adopted Cambridge Mean Time
9 19 55.2	h m s
20 14.2	9 19 55
20 44.5	4 44 31
	2 4 26
9 39 49.2	h m s
39 56.2	9 40 3
40 3.2	4 44 31
40 7.2	2 24 34
40 12.2	
3 2 50.3	h m s
2 55.3	3 3 5
3 5.3	4 44 31
3 12.3	7 47 36
3 21.3	
3 27.3	
3 23 11.3	
23 21.3	
23 24.3	h m s
23 37.3	3 23 45
23 45.3	4 44 31
	8 8 16

Notes explanatory of the Contact Observations.

External Contact: Ingress.

Observation made with negative eye piece power 180±. No lines were ~~inserted~~ used, but the eye was fixed at a point as near as could be judged from 3° to 5° to the right of the upper point of sun's disc (as seen in telescope). The notch (recorded time 9 20 22) was suddenly noticed at a point farther to the left nearer the vertex. The ~~subsequent~~ obsvn at 9 20 41 and subsequently confirmed this as the true time and place of contact.

Internal Contact: Ingress

The observation record and the note thereto appended, are sufficiently explicit without further note. The recorded watch time at $9^h 40^m 30^s$, is to be taken in the observer's opinion as the geometrical contact time.

Int—

Internal Contact: Egress

The shade between ☉ and Venus, first seen at $3^h 2^m 58^s$ watch time, was very much fainter than body of ~~Venus~~, and altho' it increased in depth, did not seem to confuse the determination of ~~instant of~~ time of geometrical contact noted at $3^h 3^m 30^s$ Watch Time, which observer thinks should be taken as this phase. This phase could not be considered to be earlier, but might possibly be estimated to have occurred ~~but~~ later 10 sec.

External Contact:

Time very certainly observed:- at 3 24 2 notch was still certainly visible at 3 24 10 it was certainly gone.

~~The times was~~

Dec 14

Venus

Smith

17^h 12 20 30 40 45 v v 45 40 30 20

Cond good

circuit

Wednesday Dec 20, 1882

Venus over inclined line plate

Venus South
~~1st limb~~

18 3 20 30 40 45 v v 45 40 30 20
n. foll. limb of Venus foll s. foll limb

Five sets -

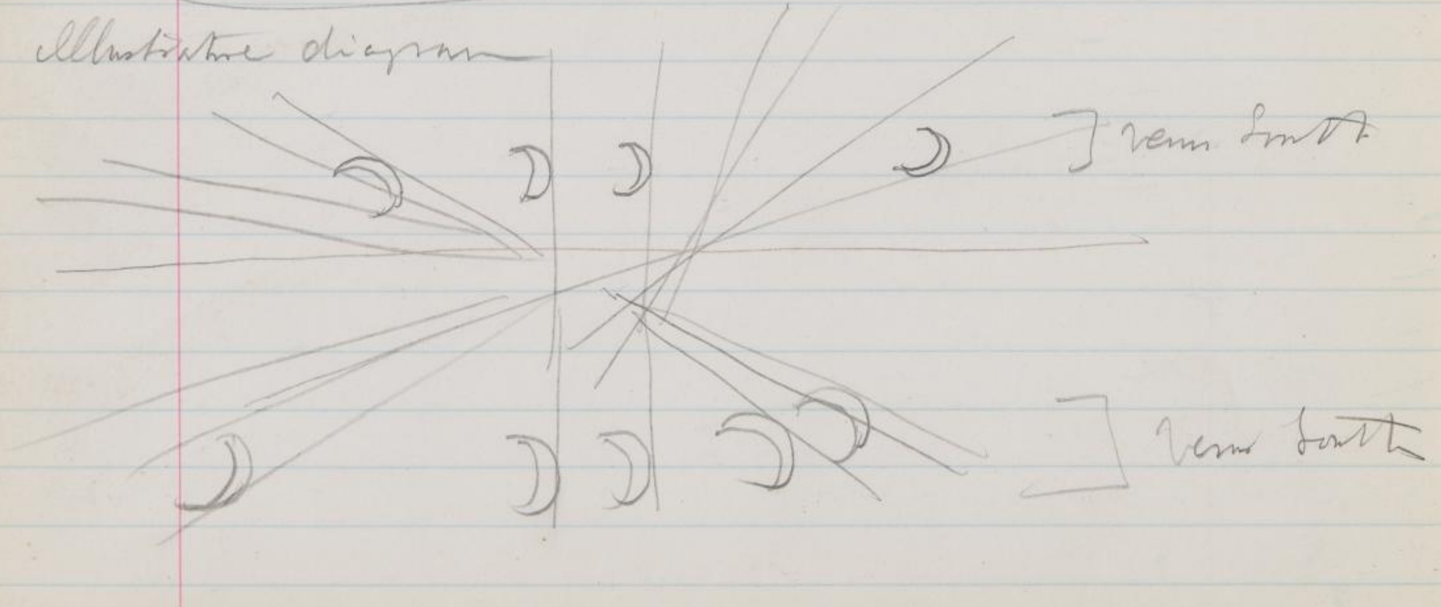
18h 12 (last set)

Venus North

18 14 } same lines; five sets
20 30 40 45 v v 45 40 30 20
18 21 } s. foll limb foll limb n. foll limb

Seeing very poor; ~~Venus~~

Illustrative diagram



Dec 20 1882

Obs^d also α Lyrae for zero of position

8 36 ± 1^st set reject

~~L. L.~~ Star North

8 38 } 10 20 30 40 45 v v 45 40 30 20 10
40 } two sets

Star South

8 42 } 20 30 40 45 v v 45 40 30 20
45 }

two sets. —

~~tast t~~ two taps on last thread of last set.
take second —

Dec 23 1882

Obsns with almacantar for time

1st mir. on chron $5^h\ 54^m$

χ Urs Maj	(E)	$7^h\ 0^m$	middle lathy
ν " "	(E)	7 9	all
η Tauri	W	7 14	middle poor
β Persei	W	7 21	all
δ Tauri	W	7 27	middle
δ Leo	E	7 42	all
	new chron. sheet		
α Persei -	W	7 57	middle
θ Leonis	E	8 1	all
ε Persei	W	8 8	3.45 of A & middle

illumination failed

last mir or chron $8^h\ 10^m$

Dec 24, 1882

almacantar Obs

1st star on chron 5^{h} 57^{m}

Adjusted instrument in ξ

~~η Tauri~~ η Tauri E 0 6 all (ch)

δ Cygni W 0 12 all (lost on chron)

Set of obs. for time follows

η Pegasi W 2 29 ~~last~~ last 3 obs bad; reject

η Gemini E 2 38 C, B A illum. poor

β Peg W 2 43 all illum very poor

chronograph having run down I think only part of 1st star was recorded others lost

Started chronograph

ε Gemini E 2 58 all

γ Pegasi W 3 7 reject 1st three & last three obs

o Androm W 3 20

Dec 24, 1882

	α Gemini	E	3	28	
	ζ "	(E)	3	33	
	δ "	(E)	3	44	rattled by mistake between 2 & 3 tallies
	α Androm	(W)	3	50	
	ι "	(W)	3	58	
5.	χ Gem	(E)	4	9	Ze C & B_{21} Tel illumination failed
	κ Urs Maj	(E)	4	18	C_{21} B A
	δ And	(W)	4	26	
	π Androm	(W)	4	32	A_5 B & C

Dec 25, 1882

Almucantar

ξ ~~Serpen~~ Cygni	(W)	1	0	lost A, 23	poor obs
τ Tauri	(E)	1	4		
ν Cygni	(W)	1	14		
ξ Pegasi	(W)	1	16	2B	poor obs.
β Aurigae	(E)	1	20	C 3 2 1, B A 5 3 (reject C 2)	
16 Peg	(W)	1	26	~~(B)~~	
ψ Aurigae	(E)	1	34	C 3 2 1 B A ~~A 3 B C~~	
θ Aurigae	(E)	1	40		
74 Cygni	(W)	1	51		
α Pegasi	(W)	1	59		
ξ Tauri	(E)	2	5		
~~χ~~ λ Pegasi(?)	(W)	2	12		
~~η Pegasi (?)~~	~~(W)~~	~~2~~	~~22~~		

Dec 25, 1882

π 2 Cygni	(W)	2 22		all on one side of field
η Pegasi (?)	(W)	2 29		poor; instrument oscillating over middle totally
η Gemini	(E)	2.38	C, B A	
μ "	(E)	2 46	C	

Dec 26, 1882

Took out eyepiece & lines, and arranged a new eyepiece, of about double magnifying power.
Very likely the altitude adjustment was disturbed in the operation.

Dec 28.

Almucantar day

Adjusted high eye piece for focus;
& horizontality approximately.

π2 Cygni (W) 2 22 ~~B~~ A5 – B C1,2,3 B5 2 taps take second)

η Pegasi (W) 2 29 A3 – B5

η Gemini (E) 2 35 ~~XX~~ ; lost C1

β Peg (W) 2 43 A3 – C3

ε Gemini (E) 2 58 ~~(B three thr)~~ ~~inst. oscillating~~

Care was taken tonight to take transits near vertical thread, as I am not ~~sh~~ sure of adjustment for horizontality.

γ Pegasi (W) 3 7

ο Androm (W) 3 20 A3(?) – C3 (B, lost)

α Gemini (E) 3 28 C3 – A3

ζ " (E) 3 33 good obs

δ " (E) 3 44 good obs

Dec 28

α Andr W 3. 50 good obs

ι Andr (W) 3 58 good obs

χ Gemin (E) 4 9 good obs

ι Urs Maj (E) 4 12 A_4 · B C_5

long rattle

To test horizontality obsd

κ Urs Maj. (E) 4 18

C over extreme left of field +
B " centre
A " extreme right " "

Dec 29, 1882

Almacantar adjusted in altitude

ι Gemi (E) 3 31   C, – A, poor obs

δ " (E) 3 44.   good "

α Andr (W) 3 50

ι " (W) 3 58

χ Gemi (E) 4 9

ζ Androm (W) 4 14.

κ Urs Maj (E) 4 18

δ Androm (W) 4 26

Obsd foll. star to get error of horizontality of thds

π Andr (W) + 4 32

A extreme left of field
B middle
C extreme right

lost A,
centre slightly oscillating over A

Dec 29.

37. R Geminorum
✓ not vis in Clacey 6¼
or only as 12 mag.
moonlight

~~Sus~~ Sus. var. +23°.1599 = S. var 167
✓
nothing vis. in 6¼ inch
or only a suspicion of a 12 mag.
moonlight.

Approx settings on Comet (Great)
& η Can maj.

	Watch Time	H A	δ
☄	10h 46m.5	9 58.7	−29 45.
η Can maj.	10 48.5	10 1.1	29 3.
☄	10 58.0	10 10.0	29 44.0
η Can maj	10 59.5	10 12.1	29 2.5

	η Can maj (1882.0) α =	7h 19m 26s	−29° 4′.4
C.M.T.	☄ − ★	+30	−41.7
Dec 29d 10h 52m	☄ (1882.0)	7h 19m 56s	−29° 46′.1
	Ephem. gives	7 20 26	−29 43.1
	Approx O−C	−30s	−3′.0

Almucantar Jan 2, 1883 5 CC obs

ε Aurigae (E)	0	25	inst't [illegible] poor obs
f Tauri (E)	0	32	
f Cygni (W)	0	37	wind blowing
ε " (W)	0	44	
ι Aurigae (E)	0	48	some 1/4 B of C list
λ Cygni (W)	0	52	A_3 — C_5
~~τ Tauri (E)~~			
ξ Cygni (W E)	1	0	C_1 ½ sec early
τ Tauri (E)	1	4	

During above obsns wind was blowing; disturbing ~~[illegible]~~ instrument & illumination Obsns made with great difficulty.

Jan 2, 1883

~~W. A. R.~~ SCC obs.

SCC observer

ζ Androm	(W)	4	14		SCC
κ Urs Maj	(E)	4	18	B A	SCC

W. V. Brown observer

δ Androm	(W)	4	26		(WVB
π Androm	(W)	4	32		WVB
ι Cancri	(E)	4	49		WVB
ν Piscium	(W)	4	56		WVB
μ Androm	(W)	5	4	(Aus rejected)	SCC
~~40 Lyncis~~	~~(E)~~	~~5~~	~~13~~	Lost	~~WVB~~
10 Leo Min	(E)	5	15		WVB
δ Cancri	(E)	5	22		WVB
α Orion	(W)	5	[illegible]		SCC
~~λ Urs Maj~~	~~(E)~~	~~5~~	~~44~~	Lost?	"
μ " "	(E)	5	51		"
ε Leonis	(E)	6	3		"

SCC Jan 3, 1883

7 58 22.55 28 7 3.5	χ Gem	(E)	4	9	
0 41 9.30 23 38 0.3	ζ And	(W)	4	14	
8 55 40.54 47 36 47.5	κ Urs Maj	(E)	4	18	B A
0 33 54.5 30 13 27.3	δ And	(W)	4	26	
0 30 39.45 33 4 44.2	π And	(W	4	32	B
8 39 39.17 29 10 58.2	ι Cancri	(E)	4	49	
1 13 3.51 26 39 57	ν Piscium	(W)	4	56	

Jan 7, 1883

~~ζ~~ f	Gemini	7 21 37.69 32 0 46.0	(E)	3	23		SCE
α	Gemini	7 27 10.41 32 8 25.8	(E)		28		EFS
ζ	"	6 57 12.60 20 44 16.4	(E)		33		SCC
δ	"	7 13 10.53 22 11 36.8	(E)		44	C3 – A1	E.F.S.
α	Andr	0 2 21.21 28 26 52.9	(W)		50		SCC
ι	Andr	23 32 24.57 42 37 30.5	(W)		58	in st. oscillating poor obs	EFS
~~χ~~	~~Gemini~~		~~(E)~~	~~4~~	~~9~~	Lost	~~S.C.C.~~
ζ	Androm	0 41 9.25 23 37 59.9.	(W)		14		SCC
δ	Andr	0 33 5.40 30 13 27.0	(W)		26	fair	E.F.S.-
~~π~~	~~Andr~~		~~(W)~~		~~32~~	~~lost~~	~~SCC~~

Jan 7, 1883

Circle Setting on ~~Cruls~~ Great Comet & ε Can Maj

		H.A	
☄ (F)	4 50 25	9 54 52 3 48 9 58 40	28° 12'.5
ε Can Maj	54 13	9 59 52	28 45.5 33' 3~~5~~.0"
		+1 12	
ε Can Maj (app) 1883		6 54 4	−28 49 0.0
		h m s	' "
☄ app Place at C M T − 9h 40		6 55 16	−28° 46'.0"
Ephemeris gives		6 55 56	−28 11.5
Approx O − C		−40s	−4'.5

Wednesday Feb 21, 1883

Clear – moonlight

28. S Orionis
✓ selection of comp^{n} stars

~~a 4 b 2 c 2 d~~
a 5 b 3 c 4 d 5 e 4 f

f 2 g 1 h 2 k 3 l 4 m 3 n

m 1 S 2 n

13. S Persei; comp^{n} stars selected
✓

a
a 5 b 2 c 5 d 4 e 3 f
f 3 g 2 h 1 k 2 l

f 3 S 1 g

In both above stars, the intervals between stars at brighter end of scale are relatively uncertain.

Friday Feb 23, 1883.

L ~ 37
8: 0 R Geminorum
✓ ~~could not see~~ not visible

S ~ 167
D.M. +23°, 1599 = not visible.

✓ Sky ~~dark~~ tolerably dark; moon not yet risen

(38a) V (?) Gemin ;
✓ Selection of Compn Stars

a ~~4~~ b 5 c 2 ~~4~~ ~~3~~ d 3 e 2 f 3 g
g 2 h 3 K 3 L

K is not in D.M.

V 3 d
2 c
b 3 or 4 V

Feb 23, 83

(40a) U (?) Canis Minoris

✓ Selection of compar^n stars

a 3 b 4 c 3 d 4 e 5 f
2 g 3 h 2 k 3 l 2 m

U = m

Sus Var (1875) 7 59 44 + 23 10±

✓ (DM 23.1899) – = S.V 167

not visible in 6 1/4 inch

(82a) V Leonis not visible in 6 1/4 inch
✓

43 a. U Puppis

✓ not visible ; strong moonlight

Prof P. IV type star near it not over 11 mag

Saturday Feb 24 83

Brooks-Swift ☌ (a) 1883

		HA		
β. Pegasi (P)	4 48.1	5 49.8	27°	28'.0
Susp object	5 4.0	5 56.2	30	29.

Obs with ring micrometer – BAC 1182
1st set Star north & central

S1	6	52	22.0
S2			33.0
S3		53	19.0
S4			31.0
C1		54	18.0
C2		54	30.5
C3		55	23.0
C4			35.0

For Redn
Redn
See Book
p 15

2d Set Star north Comet South

S1	6	57	5.5
S2		57	15.5
S3		58	10.0
S4		58	20.5
C1		59	9.5
2			23.0
3	7	0	7.5
4	7	·	23.5

Saturday Feb 24. 1883

	h	m	s	H	a	ρ	
Compn Star (P)	7	1	28.	6	21.2	30	33.0
do (P)	7	4	23,5	6	22.3	30	31.5
β Pegasi (P)	7	7	47.0	6	35.0	27	31.0

B 394	7	37	0.0
BDC 1182	7	29	11.0
		7	49.0
			15.5
B394 – BDC 1182		+ 7	33,5

For reduction see p. 6–9 of Redn book

Monday Feb 26, 1883

High Wind

☄ (a) 1883 – (Brooks Swift)

~~β Persei~~

~~☄~~ P 5 13.6 5 47.4 31 14

1st compn star × n. ∈ δ

6 compns rej't 1st

all on outer ring only

2d compn × 3 compns both n

1st compn only got ∈ on outer

1st compn × 1 compn

on outer ring not good for δ

~~☄~~ (P)	6	12.2	6	46.1	31	13
Bst × foll		14.6	6	45.7	31	13
2d compn ×		15.8	6	52.9	31	14
1st " ×		17.4	6	51.1	31	27

Times by ~~H~~ J Watch which was 31s sec ~~fast~~ slow of sid. t. @ S.t. 6h 30m

Monday Feb 26, 1883

Note — In making preceding observ. ✓ I noted that one of the D M stars

				1855		
30°. 4951 ✓	(9.5]	20	21	16.4	+30	57.1
30. 4954	[9.5]		21	38.1	30	55.9

appeared to be missing: Look these stars up again to make sure of the fact.

Feb 27

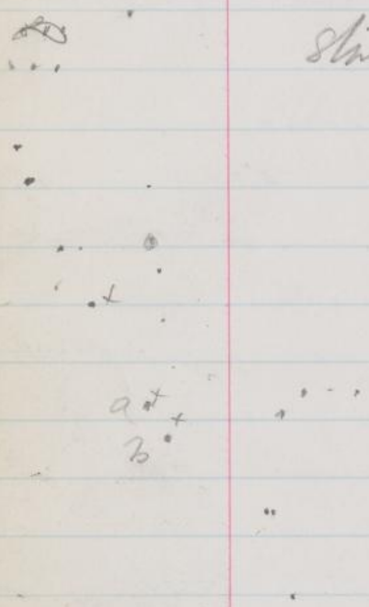
a

HV

~~M~~(a) P. 6 29.1 5 23.8 31 28.
−1 29.6
4 59.5

α = 23 35.7 δ = +31 28

watt 6 31.6
Sid t. 5 2
1 29.6 Ri



Start a & b
a central b & ~~c~~ S. of centre

~~9~~ 8 sets
order ~~c~~ a b
b double taps

1st set inner ring poor – reject
" " contains three extra taps before
~~5th set lost~~

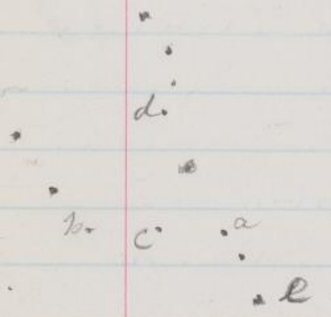
For Reduction, see Red.n Bk p 10–14

Feb 28

⊕ Setting 23 45 13 + 31 40.5

1 27

D M. this allineation



ac⊕ is a ∟
c⊕ = d⊕
ea = a⊕
a⊕ = d⊕

Corr of Ephem appears to be about
C − O Δα = +4 Δδ − 0'.3

~~Loc~~ D.M. star 30.4951
(1855) 23 21 16.4 + 30 57.1 (see note Feb 26)
was looked for and not seen, altho' it was so low down ~~that~~ near horizon that stars of 11 mag only could be seen.

Mar 1 1883

☄ Brooks (a) 1883

Approx. set with ring micrometer

	Star α	
S_1	6 57 39	
S_2	49	
S_3	58 36	
S_4	46	Star south 3′
	±	
C_1	59 45	
C_2	60 59	Comet north 4′
C_3	0 38	
C_4	55	

	Star δ	
S_1	1	46
S_2	2	1
S_3		30
S_4		45
C_1		47
2	~~S^2~~	59
C_3	3	46
C_4	4	1

Comet & Star north ,

☄ s of X ½ or 1′

Friday Mar 2, 1883
Clear

(23) V Tauri ; selection of comp^{n} stars
✓ V not visible

a 3 b 4 c 2 d 2 e 4 f
2 g 2 h 3 k 2 l 4 m
4 n 2 o

~~T Can Min.~~

(27a) S Aurigae
✓ S not visible

a 3 b 4 c 4 d 3 e 3 f

Mar 2, 1883

U Puppis

Clouds prevented further obs

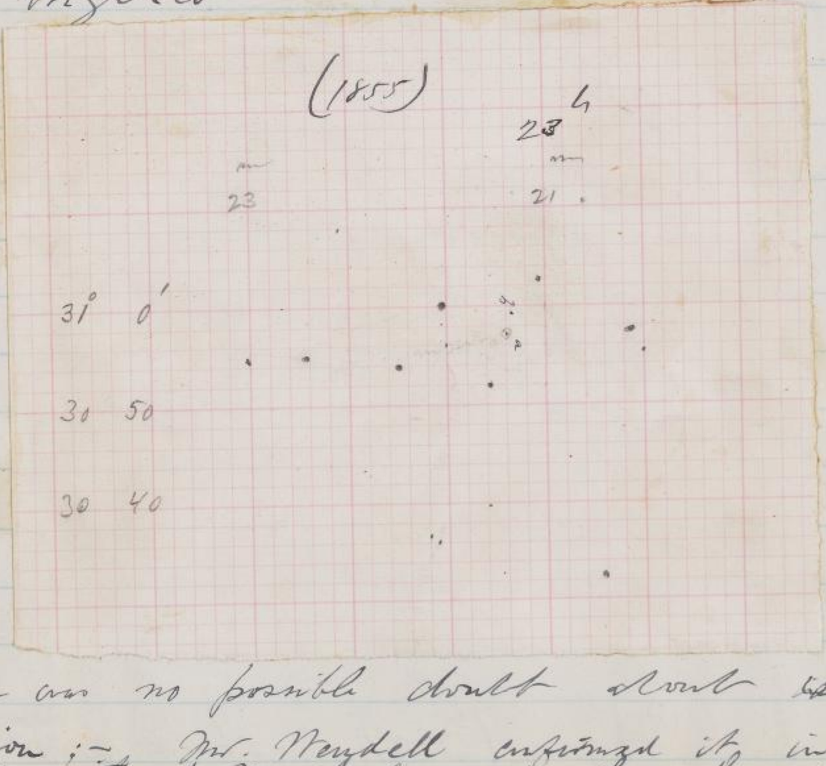
Belongs after p. 96

Mar 1, 1883

D. M. +30°. 4951 (See obs Feb 26 & 28)

✓ Looked for carefully
with 6 1/4 inch. a star suspected in its
place; certainly not above 12 mag.

7h. 30m ± Examined region with 15 inch. In the accompanying chart (made from D. M. places of neighboring stars) a · and ~~is missing star~~, b are ~~is a~~ faint stars ~~neighbor~~ inserted by alterations near the place of D M. 30. 4951. a appears to occupy the place of the missing D M. star almost exactly, and was estimated to be not over 13 mag. b is a little brighter star about 2' north, and was estimated to be 12th mag. certainly not brighter



There was no possible doubt about identification of region; — Mr. Wendell confirmed it independently by comparison with D. M. chart, and also above sketch, and agreed with me in the above estimates

Mar 4, 1883

Ring micro obs ☄ (a) 1883

☄ & star both south

order ~~✱~~ ☄ ☄ ☄ ☄ × × × ×

2 or 3 sets

(Inner ring only good for Decln)

☄ & star both north

3 sets

order ☄ ☄ ☄ ☄ × — — ×

(~~Inner~~ outer ring only on star)

1st set triple taps for last of ×

Comparison star BD 31°.69

Approx. Place (1883.0) 0 24 57 +32° 4.0'

☄ (P) 7 22.0 5 46.7 32° 4'
6 11.7

× 7 24.7 5 47.3 32 5.5
6 14.4

☄ 0 25.0 32 4

× 0 27.1 32 5.5

1327 6 15 42

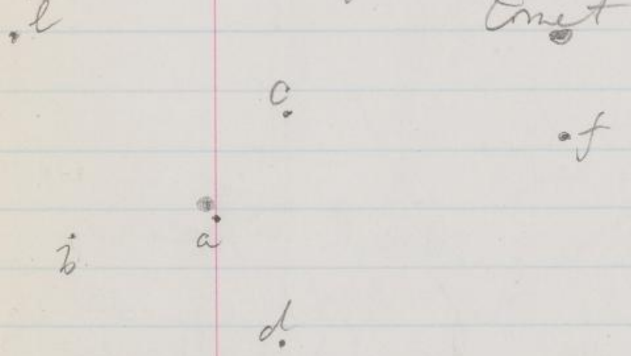
Watch 7 26 0

Red Book pp 34/35

Mar 5,

~~Occn~~ Transit of ~~[illegible]~~ (a) 1883
over an 8 1/2 mag star
(a of following sketch

Comparisons of light with
neighboring stars made with
Comet eye piece (power 40)



Reduction Book
p 76

Watch time

6^h 45 ~~b 5 d~~ a 5 b twilight
~~c 4 a~~ a 4 c
~~d 6 d~~ d 6 a

6 54 ~~e 1 a~~ e 1 a
~~b 4 a~~ a 4 b
~~c 5 a~~ a 5 c
~~a 5 d~~ d 5 a at 6 57 ±

Comet nearly central
a little south
& a little past
star

6 59 ~~f 3 a a 3 f~~
~~e 1 a~~ f 3 a
e 1 a
á 5 b
a 4 c

Mar 5 — 83

7 : 4 a 3 b
a 4 c
e 2 a
d 5 a
f 3 a

☄ separated from and foll. star

7 8 a ~~4~~ 4 b
a 4 c
f 4 a
d 5 a
e a

7 11 a 4 c
a 4 b
a 1 e
f 2 a
d 3 a

☄ = b

~~☄ 3~~

a 3 ☄

Total impression of light of ☄ about equal to b; and a little less than a

a has a decidedly reddish tinge.
the other comparison stars are all white.

Mar 5

7 16 f 2 a
a 3 b
a 4 c
a 2' e
d 3 a

Obsd position with ring micr

BAC 1182

13^m

⊘ a × South

~~× 3.5 × 44~~
~~× 15.0 ⊘ 56~~
~~⊘ 16.0 × 57.5~~
~~⊘ 31.0 ⊘ 12~~

× 7 13' 44
⊘ 56
× 57.5
⊘ 14 12

lost

h × m s
7 14 44
× 48½
⊘ 58

Both South

h m
7 × 16 26
× 39.5
⊘ 40
⊘ 52
× ——
× 17 28
⊘ 29.5
⊘ 43.5

" "

×	7	18	56.5	ø α × South
×		19	8½	
ø			11	
//			26	
×			—	
×		21	1	
ø/			2	
//			14	
		m	s	
×	7	22	35	ø α × South
×			48	
//			51	
//		23	6	
×		23	27	
×			40	
//			41.5	
//			54½	
Sla	7	27	√6.8	
S		28	8.0	
C			13.2	Both north. Two complete sets.
C			20.0	
S			√3.4	
S			√.6	
C			12.5	
C			24.0	

March 5, 1883.

S	31	1.4	
S		15.3	
C		18.3	Both north
C		32.8	
S		46.8	
S	32	1.7	
C		7.0	
C		22.2	

S	32	49.2	
S	33	1.7	
C		8.0	Both north
C		19.4	
S		43.0	
S		55.4	
C	34	4.2	
C		15.7	

S	34	54.0	
S	35	8.3	
C		15.3	Both South ~~north~~
C		30.7	
S		40.3	
S		53.7	
C		57.2	
C	36	12.4	

S	36	39.3	
S		53.2	Both South
C	37	1.0	

March 5, 1883.

c	37	18.2	Set continued
s		23.7	
s		38.5	
c		40.3	
c		58.7	
~~S~~	~~40~~	~~12.8~~	
		~~29.7~~	
		~~36.3~~	
		~~52.5~~	
S	41	20.0	
S		32.5	
c		43.3	Both South
c		58.3	
S	42	11.0	
S		23.3	
c		30.3	
c		46.2	

B 394 7 57 0
56 44.5
B & C 1182 7 48 26.0

+8 18.5

Redn Bk pp 30, 32 & 33

Mar 8. 1883

☄ Brooks
obs with great difficulty thro clouds
and got only two sets; use only
inner ring.

Comp star (7.2 mag) (1883) 0 59 45 +31° 33′ 18″

(~~Center~~ Star's position is in Leyden Zones Zone 132
order ×× ×× = = ==
last taps on 1st set (☄) lost
☄ ×× both South
The sets obtained are the 1st on chron sheet
and the one followed by double rattle

Readings are as follows δ = 31 36 cos δ 9.93030 1 52

1327
6 25 29.9 1st Set
☄ ×

6 26 55.1 6 25 29.9, 26 35.0 } outer 65.1
wt 1 −3′ 59.7″
d = 3 58.3
27 18.5, 27 50.3 — 27 30.4 25 43.1, 26 21.8 } inner 39.8 38.7 — 26 2.45

2d Set
☄ ×
6 32 33.7, 33 39.1 65.4 — 33 6.40 6 31 2.0, 32 7.4 65.4 — 31 34.70
wt 1 d −4′ 1.3″ +1 31.70 −3′ 56.7
32 46.5, 33 23.9 37.4 — 33 5.20 31 15.2, 31 54.4 39.2 — 31 34.80

α − α
☄ − × +1 27.95 ☄ × +1 30.40
wt 3 −4 4.7 −4 ~~outer~~ 9.7 d ~~inner~~ d ~~3 58.3~~ wt 3 −4 17.0 −4 6.4
~~Δα~~ ~~Δδ~~ −4m 4.7s −4 7.2 −4 13.0 −4 4.0
☄ − × +1 27.95 +0′ 2.5″ wt (1) +1 31.05 −0′ 9.0″ wt (2)

The estimated corr^n to Ephem. tonight is
at C M T Mar 8d 7h 25m ☄ obs 1h 1m 13 +31 33.3
Ephem 1 0 13 31 36.5
O − C +60s −3.2′

Mar 8, 1883

From Preceding Page we get

☄ − × $\Delta\alpha = +1^m\ 30.02^s$ $\Delta\delta\ -0'\ 5.2''$

at $6^h\ 31^m\ 14^s$ Frodsham 1327

−49.5

6 30 24.5
23 4 10.3

7 26 14.2
1 13.2

7 25 1.

See Redn completed, Redn Bk p. 27

Mar 9, 1883

☄ a 1883   S C C

Star (6-8m) foll & south of ☄   (Star 30.196)
order ☄ ☄ ☄ × ☄ - - ×
in all except 1st set where last comet
& star taps should be × ☄   (× south
star on outside wire only   (☄ north
☄ on North

6 Sets
Some false taps & trouble in
1st two sets

2d Star 31°.207 (1855) 1 6 39.1 31 146 or
☄ × prec & north (9.3)   (1883{ 1 8 12 / 31 24 0
☄ & star both south
order ×× ×× ☄ - - ☄

3 Sets

(Prec
+1 32
8'.9

30.196 (1855) 1 9 23.1 +30 59.5
3

Reduced on p. 28/29 of Redn Book

Mar 9

Clear

18. R Persei
✓
Selection of Compar Stars

a 4 b 2 c 5 d 5 e 2 f
f 3 g 2 h 3 k 3 l 3 m 3 n
n 4 o 3 p 5 q 4 r

p is at $3^h 20^m 36$ +35 15 (1855)

~~R~~ m 2 R
R 2½ n
R 3½ o

43. U Geminorum
✓
Place examined:
Hazy; stars f, e, d; and b or g ~~so~~ all ~~be~~ visible; c suspected; also something suspected near U but whether U or a was not certain

note; r is O.K (See note on Chart) it is a little n.p.q. – Insert therefore on chart

Mar 11 83

Determination of Comp^s ~~of S~~ Stars
of Mar 4 by using micrometer comp^n

~~a~~ a = comp^n star of Mar 4
b = reference star

a ~~south~~ north b south (a south b north ?)

order aa bb aa bb
5 sets
and a 6th incomplete
Wind high and instrument unsteady

3^d set; 2 false taps between a_4 & b_3

a	is	(1855)	0 23 29	+31	54.8
b	"	("	0 23 41	32	1.0

~~☄ (a) 1883~~

4 Sets with ☄ North } order ☄
a north } ☄☄ ☄☄ aa b--b aa
b South } (5 b of double taps and ~~on~~ outer ring only)

3 (1st) set, series of taps for b passing just outside of outer ring

4 Sets ☄ South
a South
1st set a only on outer
order ☄☄ ☄☄ aa aa

b = Leyden 2,139 #20 α 0 24 44.54 δ 32° 8' 16".1

Per Bk p. 43

Place derived?
(1883.0) 1h 28m 19s.25 +30° 38′ 15″
See Red. Book p 41
or (1883) 1 28 45.0 +30° 29′.6

Nov 11,

There is a star ~~pst~~ preceding
a 20s ± and 3′ south which
is not in D. M. altho ½ mag
brighter than other D M 5½
stars.
~~+tt~~ 1 ~~set~~ compn. taken with a
for position; ~~and~~ the star not
in D. M. called x.
Order xx aa xx aa
x & a south

mag				h	m	s		
8.4	a is Leyden Z, 136	(1883)	~~8h~~	1	28	52	+30	41.2
9.4	b ,, BB VI, & Z 136	,,		1	28	40	+30	31.8

1869 (3.0721 / 1.30222)

		b				a
BB VI (1855)	1	27	6.77	30	23	17.5
(Ley Den Z #73 1284)	1	28	14.83	30	28	29.75

a
Ley Den Z, 136 #125 1 28 25.68 30° 38′ 50″.45

Reduction Book pp 38-42

s.t. m.m. 23h 16m 0.0
ξ 1327 − 48.2

Mar 11, 1883

33 R Monocerotis
✓ Selection of compⁿ stars

d 3 c 3 b 3 a

R 2 b
C 1 b

(Haze rendered the ~~rela~~ intervals of compⁿ stars uncertain; but the ~~[illegible]~~ order is well marked.

Mar 13. 1883

Star a ☄ X
× n ☄ S
order × ☄ ☄ × ☄ ☄
X on outer only 3 sets

Star b
☄ n × S
order × ☄ × ☄ ×× ☄ ☄
2 sets
2d set 54 turtips take 2d.

The above with chronograph
Then took full sets with
B & C 1182 ~~☄~~
star b

7 55
s 7 ~~26~~
s 21
c 30
c 46.5
56 s 6
s 18
c 24
c 34.2 Cont st 8.5

Star 7b

8
√7 s 13
s 25
c 32
c 45
√9 s 5
s 17,2
c 24,5
c 27,5

S.
E. J. Panzer Obs
Patek Phillipe
Chron

Star C2

	h	m	s
S	8	17	20.0
S			31.5
C			44.0
C			57.5
S		18	13.0
S			26.2
C			32.7
C			46.5
S		20	11.7
S			24.5
C			36.0
C			51.0
S			7.2
S			18.8
C			28.9
C			43.5

Mar 13, 1883

Star a

S	8	25	2.5	x	north
C			29.5	E	South
S			39.7		
C			50.0		
C		26	9.2		
C			26.5		
S		26	56.0		
C		27	25.3		
S			32.8		
C			44.8		
C			54.5		
C		28	23.0		
o					

Star b =	D.M. 29.309	(1855)	1h	42	19.9	+29°	45'.8	(Lc)
a =	" " 30 287	"	1	42	7.2	+30	5.4	(K. + Leyden 2)

apparent Places 1883 are

b =	–	(1883.0)	1	43	55	+29	54.2
a =		"	1	43	42	+30	13.8

Mar 13, 1883

38. ✓ R Can Minoris

f ~~6~~ 4 R   Scl-obs
R 4 e   (R about 8 [illegible]
R 2 g
l 6 R

E F Sawyer estimates R 5 e
R 3 f
g = R
l 5+ R

39. ✓ S Can Min.   about 8 mag
g 3 S   Scc
S 1 e
f 1 S

E. F. Sawyer estimates
~~asf~~
S = g
f 1 S

Mar 13. 1883

43. U Geminorum

✓

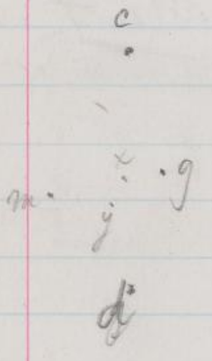
a visible, but
not the variable SCC

E.F.S. thinks he sees the
variable; and estimates
& a 3 U.

41 S Geminorum

✓

Configuration does not conform
to chart; is as follows



where x and y are inserted with
reference to their alinement
with c g d & m.
x or y is probably the
variable; which cannot
be determined.
The star l is not
visible

~~x 4~~ c 4 x
x 4 y

Mar 14 1883

B & C 1182	23^h	53	40.7
Bond 394	20	3	0.0
B394 − B&C ~~B&C~~	+9		19.3 −14.5
Corrn B&C 1182	+9		4.8

Mar 5^d Corrn was	+8	18.5
Mar 13^d $9\frac{1}{2}^h$ " "	+9	0.0

Mar 15

Times with B. & C. 1182

~~37 0~~
~~41 2~~
55
26 20

b south
a north

b₁ 35 41.5
a₁ 52.5
b₂ 58.0
a₂ 36 7.0
b₃ 21
a₃ 34
b4 38
a4 49.5

~~b1 26.0~~
~~37.2~~
~~42.0~~

Mar 15

7

b1	39	32.5
a1		44
b2		49
a2		59.5
b3	40	13.5
a3		24 8
b4		30.5
a4		40.5

b1	41	47 2
a1		59 5
b2	42	4.5
a2		14.5
b3		29
a3		39.5
b4		
a4		55.

Mar 15, 1882

(43)ᵐ 55.2
7.2
12.2
22.7

36.2
47.2
52.5
2.5

~~5.7~~
~~18~~
21 2
47 8.1
21
23.8
38.2
52.0
5
59.0
7
7 48 16.0

Mar 15

(Proper motion δ

~~79.7~~

7 50 47.5

51 0.

2.5

16.2

0.1

08.0

---

51 55.3

Mar 15 ⋹ (a)

Comp Star 7.8 mag. (Bessel) 1883.0 2h 0m 52s +29° 12′

= ~~6.0~~ 58 28.7 δ 8 S

⋹ ~~16.5~~ 40.7 South

= ~~44.7~~ 59 17.3

= ~~0.0~~ 29 2

× ~~9.0~~ × 34.0

1 52.7

0 6.8

8 0 25.0

8 1 31.3

45.2

2 17.0

31.5

36.0

× 3 1.0

2.0

26.0

δ α × South

Mar 15

= 8 4 24.2 o & x south

37.3

5 9.0

24.0

27.3

48.0

57.0

6 18.2

(7 41.0 16 36.2

= 56.5 o 56.5

= 8 19.2 & 20.2

× 03 x 32.2

= 37.2 north

× 45.7 ± ½

× 24.7

× 37.1

Mar 15, 1883

~~8 12 21.2~~
~~36.1~~
~~13 2.0~~
~~14~~
~~20.5~~

Obsn of Variables

51 R Leonis Minoris (10½ m)
✓
g 1 R
R 3 h

g & h inserted tonight

For rdg of tonight's obsns with Ring Micr.
See Rdg Bk pp 48 – 51

B&C 1182 · 8 16 5.5
B 3924 8 25 30.0
9 24.5
−15.5

B&C [illegible] 9 9.0

Mar 16. 1883

~~☄ a 2 7 2~~ ☄ − a (1883) 2^h 7^m 2^s +28 46

(~~1855~~) (−1 36) −7.9

(1855) 2^h 5^m 26 +28° 38′

Dm 28.370 (9.5) (1855) 2 4 51.97 / 52.1 +28 47.7 / 45.6

" " 369(K) (8.0) " 2 4 2 +28 30.7

3.0718 1.30224. Bond W. II₂ 69 (1825) 2 2 17.45 (3.436) +28 22 21.7 (17.27)

1st series star a × & ☄ South

(× South ☄ north ?)

4 sets

× × × × ☄ ☄ ☄ ☄

2d Series star b (9½) star n ☄ S′

several incomplete sets

1st set × × × ☄ ☄ × ☄ ☄

2d " × × × ☄ × ☄ ☄ ☄

3 " " " ..

4 incomplete

5 × × × ☄ × ☄ ☄ ☄

~~6~~ false sets in here

6 × × × ☄ ~~×~~ ☄ ☄ ☄

Nov 16

137a R Lacertae 9 10

✓

~~b~~ b 6 R
a 4 R
c 2 R
d 1 R

Star obs'd with diff. in twilight ~~nothin~~ nothing fainter could be seen in neighborhood.

13 S Persei (9)

✓

~~f~~ S 3 f
S 4 g
d 7 S
l 3 S

24 R Orionis (9 m)

✓

R 2 g
R 1 h
d 5 R
~~R 3 m~~

~~Other m is assigned to star west R~~
~~see chart R Ori~~

Mar 16, 1883

26 R Leporis (6½)
✓

R 4 c
b 4 R
R 6 a

28 S Orionis 10 m.
✓

g 5 S
h 3 S
S 2 n

35 R Lyncis 9½
✓

f 2 R
R 3 l
d 4 R

Mar 16. 1883

38 a. V (?) Gemin 9

✓

V 1 d
V 3 e
C 5 V
b 3/4 or 1 mag V

V ~~[illegible]~~ red

40 a U (?) Can. Min 9/13

✓

U 2 k
U 4 l
h 3 U

R.A of U is too great on Chart by 10^{sec} ±

(star m is not exactly placed: it should be $\frac{4}{10}$ from d to c a trifle above line

Corrected on chart 3/17/83

Mar 17. 1883

☄ a ~~1883~~	(1883)	2 14 17	+28° 20′
	Prec	−1 37	−7.7
☄	(1855)	2 12 40	+28 12½
D.M. 28. 393 (7.3 Ll #4322)	"	2 12 25.4	+28 4.0
" " 398 (9.1 BBVI)	"	2 13 50.9	+28 15.0

1st star was obsd for R.A. Paris Obsns 1871 Tome xii – ~~☄~~
~~no corresponding det. of declination~~ in any volume

Lunette Gambey (1871.0) 5 Nov 13 2 13 20.71
" " 17 20.97

(1871.0) mean 2 13 20.84

Decl. obsd 1874 Paris Obsns

Gambey Mer. Circ. (1874.0) Nov 27 +28° 9′ 24.5″

B 236

S1	6h	56m	12.8
S2			24.3
C1			24.3
C2			38.0
S3		57	4.0
S4			16.2
C3			18.0
C4			31.8

Star south, Comet north

Mar 17

S1	6	58	23.2
S2			35.2
c1			36.3
C2			48.6
S3		59	14.7
S4			27.0
C3			30.4
C4			42.3

S1	7	0	15.8
S2			28.0
C1			29.2
C2			42.3
S3		1	7.8
S4			19.8
C3			23.2
C4			35.4

S1		2	33.3
S2			45.5
C1			48.7
C2		3	1.6
S3			25.8
S4			38.2
C3			41.4
C4			54.2

March 17, 1883.

S1	7	4	21.4
S2			33.5
C1			36.7
C2			49.0
S3		5	13.3
S4			25.3
C3			29.7
C4			42.0

Star b; Comet South, Star South
Comet on outer ring only

C1	7	13	18.2	
C4			50.4	
S1		14	9.2	
S2			21.2	
S3		15	27	
S4			14.4	
~~C1~~		~~16~~	~~36.3~~	Object class covered
~~C4~~			~~5.5~~	by dome.
C1		17	39.0	
C4			~~6.9~~	
S1		18	8.1	
S2			27.8	
~~S~~			40.0	
S3		19	21.2	
S4			33.2	

Mar 17

C1	7	20	11.3
C4			39.8
S1			58.7
S2		21	10.6
S3			52.2
S4		22	4.2

Next three sets Comet and Star both North. Star on outer only

C1	7	23	19.3
C2			32.4
C3		24	15.2
C4			27.0
S1			41.1
S4		25	14.6

C1		25	34.3
C2			46.7
C3		26	30.3
C4			43.2
S1			55.2
S4		27	29.4

J

		h		s
J 1327	7	33 32	30 42.5	
B 236	7	32	30	

+ 12.5

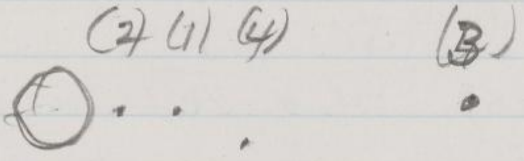
B 394 7 54 0
B 236 7 34 28.7

Mar 18

Eclipse of Jupiter's IV satellite

Disappearance — rec

Power 225



Sky covered with thin clouds:
Jupiter & sat. visible through them
, but images blurred

Times taken by B 236

~~10h 10m~~ ~~Sat~~ Comparative estimates of light

10:10 (4) = (2) (1) 3 (4)

15 " "

22 clouds
continuing until phenomenon
had past

Mar 21. 1883

		h	m	s		
☄ (Brooks (7¾h.)	(1883.0)	2	41	4	+26°	22′.5
			1	37		7.2
(7¾) ☄	1855	2	39	27	+26	14.8
W₂ 913 (8.5)	"	2	37	53	26	26.6
2 937 (8.1)	"		38	44	26	7.7
" 963 (8.1)			39	36	26	27.9
DM 26 460 (9.2)	BBVI 1855	2	38	19.87	+26 ~~4~~	48.1

Prec 3.48 +15.4

~~accurat~~

accurate ☄'s place Green. midnight ~~7 15 29~~ c.m.T.
Time of obsn = 7 15 29
11 5
7 26 34 c.m.T.

h m s
2 40 59.5 +26 22 33

Hourly motion +15.60 −75″.3

Star a ☄ n ✗ ~~s~~ s

×× ☄ × ☄ × = = ~~☄~~

three sets

Star b ~~☄~~ s × n

order. × ☄ ~~☄ ×~~ ☄ ×

on outer ring only

three sets

3d set poor

Mar 22, 1883

Strong Moonlight; also haze

8h 0m CMT

20 T Tauri

✓ looked for; merely suspected
must have been < 10½

~~21 & 22 R~~

21 ✓ R Tauri } ~~set on~~
22 S " } region examined

✓

10 mag. stars not visible on acc. of
haze; R & S certainly below 10

37 ✓ R Geminii 9¼

d 3 R
c 5 R
e 2 R
R 5 b

S. v. 167

See var 23.1599 " not visible; < 11

Mar 22, 1883

39 S Can Min. 8 mag

✓

s 4 l
S 2 f
S 7 m
g 6 S

40 T Can Min

✓ suspected; about 11½ mag
if seen

42 T Gemin. <10?

✓ 10 m star not certainly seen
T not seen

43a U Puppis <11

✓ ~~H~~ U not vis; certainly
less than 11 m.

shld be Mar 22, as shown by Tally Book

Mar (23), 1883

44 R Cancri <10
✓
10 mag. stars visible
R not ~~seen~~ visible.

45 V Cancri 8½
✓
a ~~5~~ 6 V
b 4 3
V = c
V 4 d

the D.M. star at 8 13 25 +18 7 is very faint for 9.5; I should estimate it 10½ at most.

46 U Cancri < 9½
✓
10 mag star not visible
U not vis.

9^h 0^m cmt Mar 22 '83

38 R Can min 8 incr

✓

R 4 f
R 2 g
l 6 R

50 T Hydrae < 9½

✓ 9½ or 10 mag stars not certainly seen in haze & moonlight

T not vis.

48 S Hydrae 8½

✓

S 1 c
S 4 a
S 3 b
S 3 e
d 4 S

Should be Mar 22 (as shown by Bailey Book

Mar [~~2~~3), 1883

9^h 15

49 T Cancri 9 m.

√

T 3 b
T 1 c
e 2 T

52 R Leonis 6 m

√ Est. in finder
R 2 a

See also Book of Notes & Eye & O.S obsns.
same night

Mar 25, 1883

Gr midnight 22 (+13.67 hours) (−76″.7 hours)

(1883) (~~7½~~) 3 4 21.9 +24° 20′.2 13″
−1 39 −6.1

1855 3 2 43 +24 13.7

Log Δ 0.147
Abr Time − 11ᵐ 38

Dm 24.450 (8.9) (Nr 35) (1825) (3 0 50.19 +23 54 32.1
1 44.73 7 3.9
3.491 +14.13 30
10.470 4239
3 2 34.92 +24 1 36.0
1 37.75 +6 35.6
× 1883 3 4 12.67 +24 8 11.6

× S. = n × on vertical only

1st set order × = = × = =
2d " " × = = = × =
3 " × = = × = =
4 × = = × ~~[illegible]~~ =
5 " " "
6 " " "

1327 fast 45 sec
St mean 0 11 11.7
Red to app (+0.10 −0″.13)
3.0718 1.30224

$9^h 30$ Mar 25, 1883

Moon Rising

24 R Bootis — 9

✓

R 4 g
R 2 h
d 4½ R

1 T Cassiop 9+

✓

a 4 T
b = T
T 3 c

7 S Cassiop 8

✓

S 4 d
S 2 c
b 4 S
a 5 S

10^h 0 Mar 25, 1883

27 R Aurigae 9
✓
R 1 c
d 2 R
R = e
b 6 [illegible] > R

37 R Gemin. $8^3/4$
✓
b 2 R
R = c
R 3 d
Dm 23.1599 not visible

39 S Can Minr. $8^1/2$
✓
g 5 S
f 4 S
S 3 e
S 4 m

Mar 25

40 a U Can Min

✓ u 4 l

h 1 u

u 2: k

f 3½ u

45 V Cancri

✓ a 2 V

c 1 V

b 4 V

V 2½ d

46 U Cancri < 11

✓ Not vis :

Mar 25

10h 30

52a V Leonis
not vis < 11

~~sus~~
Sus var 9h 49 10 +20 24
nothing seen in place
& < 11

D.M. star 9 49 22 +20 40½
seems to be missing
if it exists it is < 11 mg

~~not~~ On examination I find
this star was an error of my chart.
Corrected. (3/26/83)

262.45
10.93

~~29~~45
-72.7

~~Mar 28, 1883~~

Apr 1, 1883

					Mo				
☄ (1883.0) (Gr. mid)	3	38	35.6		+10.93	20	49	40	-72.7
Prec		-1	36					-5.6	
☄ (1855)	3	37	0			+20		44.0	

W_2 827 (Fm)	3	35	20.39	3.478	20	41	28.6	+1183
Prec		3	22.07	10434 20868 20172		11	19.8	2549 709.8
(~~☄~~ 1883)	3	38	42.46		+20	52	48.4	

52°15 20 47
9.57925
9.90933
1.70224
976666
0.79082 6.1778
1.06890 4118
3.484
20904

11.72
703.2

☄ & × north × on outer only

~~4 Sets~~ 1st set ☄ ☄ × ☄ × ☄ .3 late
2 " "
3 " "
4 " " 4th set last × ½ sec late

☄ & × South ☄ on outer only
1st set × ☄ × ☄ × × × 1st on ☄ .6 early
2 " " " " "
3 " " " " " " "
same taps ; foll. a few sec after by grad. [illegible] taps
4 " × × ☄ ☄ × ×

April 1, 1883

Clear

11 R Arietis 12

✓

R = d

a 1 R

b 5 R

c 4 R

26 R Leporis 6

✓

R 4 a

R = d

R 3 c

Sus. Var # 201 <13 ~~<13~~

✓ nothing visible in place of this star; there is however an ~~[illegible]~~ 11 mag. star near it ~~[illegible]~~ (a on chart).

April 1, 1883

Sus. Var. # 209 ✓

only one star is vis. here; it appears to be 209 a; the other is certainly < 13 m

48 ✓ S Hydrae   9 m

b 5 S
S 2 a
c 4 S

S is almost colorless - a slight tinge of orange.

Sus. Var 269 ✓

No star in place brighter than 13 m.; there are some 12 mag stars at a b c d. a is brightest of these, about 11½

Apr 1, 1883

52 b U Leonis <13

✓ not visible ; <13

53 R Urs Maj: ~~9~~ 8¾

✓

c 6 R
R 4 b
R = (c)
d 3 R

Note ; ~~there is no star at place~~
~~marked~~ ~~10h 28m 40 +69 56~~
~~marked ? on chart ; look up in~~
~~D. M. to see if this is an~~
error of chart

Yes, error
Corrected in chart.

Apr 1, 1883

55 R Crateris 8 3/4
✓

R 4 a
R 1 mag ± b
d 3 R
R 1 e

56 S Leonis 10 m
✓

S = c
S 3 d
S 2 e
S 4 b
a 6 S

57 T Leonis <13
✓
not vis
a and b inserted in chart
by estimation.

Apr 1, 1883

Sus Var #311 (Harrington's)

✓

(S.v) = b

a 5 (S.v)

61 a. $\overline{Y}$ Virginis 10X

✓

d 2 $\overline{Y}$

Y = a

Y 4 b

c not visible

hazy is

Sus. Var 337 & ~~338~~ 339? ✓ (Weiss')

✓

337 = b

~~338~~ 339? = a

Monday Apr 2, 1883
Hazy

24 R Orionis 9
✓
d 5 R
h 1 R
R 3 g

1 T Cassiop 8½
✓
T 4 d
T 1 c
a 5 T

7 S Cassiop 8½
✓
S 2 c
S 1 d
e 2 S

Apr 2 – ,83

37 R Gemin. 8.6 m ~~8.36~~

✓ R 3 c

a 1 R

38 R Can. Min. 8.5

✓ R 3 e

f 5 R

39 S Can Min. 8.4

✓ S 3 m

g 7 S

e 2 S

Hazy

Stars dim.

April 2, 1883

45
~~46~~ ✓ V Cancri 7.8

f 4 V
V 3 a
V 6 or 7 c

40 a ✓ R Can Min 9.3

R 4 h
R 3 k
e 5 R
R 1 f

62 ✓ T Urs Maj 8½

T 3 b
T 5 c
a 7 T
h 5 T
T 1 or 2 ~~d~~ e (d is ~~calle~~ assumed to be the brighter of the pair: look ~~this~~ up

Note - next day, decided to call ~~d~~ the fainter d, and the brighter e; above record changed in red ink accordingly, and letter e inserted on chart against the brighter.

9h 0m April 2, 1883

78 δ Coronae 8.0

✓

g ~~f~~ 3 s

s 5 d

s 1 f

s 3 e

u 5 s

91b R Draconis 9.7

✓

R 2 c

b 3 R

a 5 R

18 R Persei < 12

✓ R only suspected

p & q easily seen

star low; sky hazy

Apr 2, 1883

20 R Tauri <11½

✓ not visible

Star low; sky hazy in this region

42 ~~R Gemin~~

Haze & clouds

Ended at 9^h 30^m M.T.

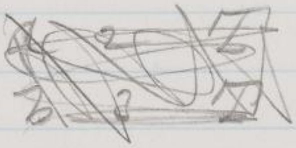
Apr 3, 1883

Probably clear

$8^h\ 30^m$

42 T Geminorum 12½

✓



m n o p
~~a~~ and B inserted tonight by estimation, on chart.

T = 0
n 2 T
m 4 T

44 R Cancri 9.7

✓ m = R
n 2 R

Apr 3, 1883

Hazy

63 R Virginis 9.5
✓

[illegible] n 3 or 4 R
R = m

65 U Virginis < 11
✓
Sky Hazy

g is very ft. ; some 3/4 or 1 mag less
than other 9½ stars on chart.
There is a star at 9 44 40 +6° 26′
which is as bright as n or p ~~other of 9½ stars on~~
I have inserted it on chart.

U not visible

Apr 3, 1883

64 S Urs. Majoris 10.0
✓

k and l inserted tonight

k 3 S.
S 3 l
S 1 b

71 S Bootis 9.5
✓

S 2 A
S = b
c 3 S

73 R Bootis 11½
✓

p inserted

R. 5 or 6 p
l 4 or 5 R
R 1 magnitude > m

Apr 3, 1883

91a R Ursae Minoris 9.0

✓

R 2 b
R = a
R 1 g
s 4 R

88 ~~P~~ U Herculis 7.5

✓

o 2 U
U 3 n
U 4 q

52 R Leonis 6

✓ Est. in finder

a 2 R
r 4 R

8h 30m Wednesday Apr 4 1883

Somewhat hazy

23 V Tauri <12
✓

not vis.

all near ft: stars on chart easily seen

24 R Orionis
✓

d 6 R 9.2

R 4 g

h = R

Hazy: est somewhat uncertain

28 S Orionis 9.5
✓

S 2 n

h 2 S

k 3 S

Apr 4. 1883

33 R Monocerotis <11
✓

~~33~~ R is indistinguishable in the nebula
a b and c easily seen

35 R Lyncis 9.8
✓

a and b inserted
e 2 R
b 3 R
R 2 a

38a V Geminorum
✓
e 6 V
f 4 V
V = g
V 2 h

Apr 4, 1883

9h 25m

40 T Can Min. 9.7

✓

~~Hazy Cloud~~
Stars only seen at intervals
thro' clouds
T certainly identified ~~and [illegible]~~
from casual glimpses thro'
clds it seemed nearly or
quite as bright as a

51 R Leo. Minoris 10.0

✓

R 2 h

g 3 w 4 R

$9^h 40^m$ Apr 4, 1883

58 X Virginis 10.0

✓ X 3 a

X 1 b

c 2 X

d 4 X

59 R Comae Ber <12

✓

R suspected but not certainly seen – star hazy if visible, about 12 mag

61 R Corvi 7.7

✓

R 6 b

R 4 a

c 2 R

Monday Apr 9, 1883

~~☄~~ Bruhns Gr. mid (1883.0) 4 9 50.8 | +8.75 | +17 9 39 | −64.6

− 1 36 − 4.3

☄ 1855 4 8 15 +17 5.3

~~[illegible]~~

(+3.429) (+9.37)

{ Künker #1142 (1836) 4 8 28.875 +16 59 25.96 }
2 4144 7 16.0

8½ mag (1883.0) 4 ~~11~~ 10.34 +17° 6 42.0

☄ + × South ⊗ × on outer only

order ☄ ☄ ☄ ☄ × − − ×

four set

1st set on Bon Mer-Circle Sheet

~~St~~ Sky very hazy! · obsn very diff

H 9 49
62 29

9.48664
9.94773
1.30224
9.66513

0.73666
1.96737
5.4532
5.3637
3.4356
+ 9.276

171.78
10 34
16147
4637.8
27 8

~~#~~ Apr 9, 1883
$8^h\ 48^m$

37 R Geminorum 7.7
✓
R 5 a
R 1 g
g 5 R

Sus Var #167 Sus. Var. ☆ 4 < n 12½m
✓

46 U Cancri 13
✓
visible by glimpses
1 mag < n

50 T Hydrae
✓
~~region~~ T not certainly identified; neighboring configuration on chart not recognizable; the ~~principal~~ ~~only stars~~ I see a h & d as on chart, ~~but no~~ also g & l & m but not i or T
l & m entered tonight;

$7^h\ 15^m$ Apr 9, 1883

7 δ Cassiop 8.6

✓

~~[illegible]~~

δ 1 c

e 2 δ

82 R Leonis 6

✓ R = a

65 U Virginis 12/12

✓ r 5 U

U very faint; only vis. by oblique vision.

$9^{h}\ 45^{m}$ Apr 9 83

Sus. Var # 383 (Peters) — < 13

not vis.

Compr star ~~a~~ b (just inserted) steadily visible

note — made 4/21/83 — Peters notation for a b c adopted in chart hence above ~~orig~~ record corrected in red ink to correspond.

.88 U Herculis 7.5
r

o 2 U
U 3 n
U 5 q

91 a R Urs. Min 9.5
✓

s 5 R
b 3 R
a 2 R
R 1 p

10h 5m Apr 9, 1883

91b R Draconis 8.9
✓
R 2 a
d 5 R
e 2 R

62 T Urs Maj; 8.3
✓
T 4 e
T 4 b
T 5 c
a 4 T
h 2 T

78 S Coronae 7.8
✓
g 2 S
S 3 f
S 5 d

Apr 9, 1882

$10^h\ 25^m$

45 ✓ V Cancri 7.7

f 2 V

V 2 a

V 2 b

Tuesday Apr 10, 1883
Clear

8h 0 R, S, & T Tauri, looked for but were too near moon to be seen; all less than 10 mag.

~~20 T Tauri~~

24 R Orionis 9.0
✓
d 5 R
R = h
R 3 g

28 S Orionis 9.6
✓
h 2 or 3 S
S 2 or 3 n
g 5 S

I notice and insert tonight on chart an 11 1/2 star 1' ~~South~~ north of S.

Apr 10, 1883

1 T Cassiop — 8.3

✓

a 3 T
T 3 c
T 2 b
T 4 d

35 R Lyncis — 10.0

✓

R 1 a
b 2 R

38 R Can. min. — 8.5

✓

f 6 R
R 3 e
g 2 R

Apr 10, 1883

8^h 30

38 a V Semin. 10½

✓

V 5 k
v 1 g
f 6 V

These is an 11½ mag ~~3'~~ 0'.8 ± south of V
and 3^{sec} ± foll.
also ~~as~~ a 12 mag 3' exactly south of V
~~and as sam same night~~ same R.a.
and 0^s ~~± foll~~

39 S Can. Min. 8.3

✓

S 3 m
e 3 S

Apr 10, 1883

~~40 T' Can. Min~~

8 45

40 T' Can. Min. 9.5

✓

d 5 T'
c 4 T'
T' 2 a
T' 3 b

40 a U Can Min. 9.0

✓

e 3 U
U 5 k
U 4 f

43 a. U Puppis <13

✓ invisible

~~a~~ [illegible] ~~a~~ a and b, and one or two other stars inserted

~~a has~~ a is 12 mag. and has a 13 mag 0'.5 north of it, this is the nearest to U of anything visible.

Apr 10

43 n a Puppis Cont'd

✓

I insert the star p tonight; it is about 8½ mag. and brighter ~~than~~ by ½ 1 mag than the star on chart foll it and the one south of it. the two latter being on chart already. ~~There is some d~~ This group should be examined

43 U Gemini ∠13

✓

Not visible
all neighboring stars well seen
except a which was ~~of~~
only suspected.

9^h 30^m Apr 10

44 R Cancri 11½

v

o 3 R
R 6 a
R 4 p

o, a, and p inserted
a is about 12 mag
p " " 11 "

51 R Leo. Min. 11~~½~~

v

two or three small stars inserted near place of R for ~~future~~ use in future identification

b 3 R
R = h
R 2 a

Apr 10

58 ✓ X Virginis 11

d 3 X
c 2 X
b 1 X
X 2 a

X ~~appears~~ is ~~to be~~ double
~~above~~ above estimates are for brighter component; the other ~~is~~ lies 0'.7 ± north 2^s ± foll. in the direction of a from X

63 ✓ R Virginis 11

R = a
R 2 b

Apr 10, 83

64 S Urs. Maj. 9.7

✓

a 2 S
5 1 k

68 R Hydrae 6

✓

too bright for
comparisons with finder

61 R Corvi 7.5

✓

R 5 b
R 3 a
R = c

$11^h 30^m$ Apr 10, 83

71. S Bootis 9.4
✓

S 2 a
S = b
S 1 c

73 R Bootis 11½
✓

R 5 b
2 4 R

Sunday Apr ~~16~~ 15, 1883

8h Clear — moonlight

13 S Persei 9.5

✓

S = e

d 5 S

S 4 f

S 5 g

23 V Tauri <11

✓

moonlight very strong

V suspected only

27 R Aurigae 9.5

✓

c ~~R~~ 3 R

R 2 f

49 T Cancri 8.6

✓

f 5 T

T 1 e

T 4 c

T 3 d

T very red

Apr ~~16~~ 15, 1883

50 R Hydrae ?

✓ nothing seen in ~~exact~~
place of R on chart

star l is nearest star to
R visible

l is 3 > g

55 R Crateris 8.5

✓ R 3 d
R 2 f
e 3 R

56 S Leonis 9.3

✓ S = e
S 3 b
d 2 S
c 5 S

8:45 Apr ~~16~~ 15, 1883.

66 W Virginis 10.0
✓
W 3 a
c 3 W

a and b are badly placed on charts

67 V Virginis <11½
✓
V not vis < 11½

69 S Virginis 9.5
✓
h 3 S
S 3 p

r is not in place:
It should be at 13 25 0 −6 34.0

15
Apr ~~16~~

69 a Z Virginis <12
✓
not vis; must be
at least 1 mag < a

72 R Camel <12
✓
not visible
a inserted
b 5 a

73 a U Bootis 12
✓
~~There is a 11½ or 12 mag~~
There is a 11½ or 12 mag star
about 0'.7 south of place of U
which is probably the var.

b 3 a
U 3/4 mag < a
U 3 c

9ʰ 45 Apr ~~16~~ 15

77 S Serpentis 9.1

v

d = S

S 4 f

e 2 S

c 6 + S

80 R Serpentis 10.0

v

k 3 R

l 5 R

R 3 m

80a V Cor. Boron 11.

v

V 1 b

a 4 V

15
Apr 16, 83

83 R Herculis < 12
v R not visible
q " "

Monday Apr. 16, 1883

7 Clear; Strong moonlight

7h 50m

~~1 T Cassiop~~

24 R Orionis 9.1

v

R 3 g
h 1 k
d 5 k

k is v. ft. scarcely vis; say 10 mag

28 S Orionis 10.0

v

S 1 n
h 4 S

S seen with diff. on acc. of moon, & low position of star.

Apr 16 '83

1 Z Cassiop 8.0

✓

a 1 Z
Z 3 b

7 S Cassiop 8.2

✓

S 1 c
S 2 d
S = e
b 5+ S

3

37 R Gemin, 7.6

✓

R 4 t
R 5 q
q 3 R

sm nr 167

fus Bar
23. 1599" – not visible < 11½

✓

Apr 16, 1883

~~38 R Can Min.~~

Clouds interrupted obsn

Monday Apr 16, 83

1 [illegible] Cassiop

Wednesday April 18, 1883

Tolerably clear; strong moonlight

8^h 0

38 R Can. Min. 8.4

✓ f 5 R
R 3 e
g 4 R
R 3/4 mag d

39 S Can Min. 8.5

✓ S 3 d
S = m
S 5 n
S 3/4 mag c

52 R Leonis 6.4

✓ a 3 R
~~b~~R 5 b

Apr 18 83

62 R Urs Maj 8.0
✓
R 5 a
R = h

64 S Urs Maj 9.0
✓
S ~~5~~4 a
c ~~34~~4 S

78 S Coronae 7.6
✓
h 6 s
s 4 g
s = u

Apr 18, 83

88 u Herculis 7.5

✓

u 3 n

u = o

k 4 u

91a R Urs. Min. 10½

✓

a 5 or 6 R

g 4 R

p 3 R cloudy

~~g~~ R = q

91b R Draconis 8½

✓

R 4 l

R = d very cloudy

f 3 R

$7^h 45^m$ Friday Apr 20, 1883
Clear - Full moon

40 T Can Min. 10½

✓

c 3 T
T 3 ~~b~~ a
T 4 b

40a U Can Min 9.2

✓

d 4 U
U 1 e
U 4 f

Color ~~Red~~
Red 3

43 U Gemin. <11½

✓

f e g b d ~~vis~~ all visible
a and U invisible

8^h 25^m Apr 20, 1883

Sus. var 205.— < 11½

✓ region examined

c has a faint × 11½ m preced 4 or 5 sec
a visible, and also a star which
I suppose is b. Sus var. not
visible; moonlight strong;
var must be < 11½

45 V Cancri 8.2
✓ color 2

V 2 a
V = b

46 U Cancri ≤ 11½
✓

m & n vis by glimpses, in moonlight
U invisible < to 11½

Apr 20 '83

55 R Crateris 8.5

✓

R 4 d
R 2 f
e 3 R
R 3½ a

Color 4½

58 ~~X Virginis~~

Too near moon to observe

61 R Corvi 7.7

✓

R 4 b
R 3 a
c 4 R

Color 3

Apr 20. 1883

8h 45

~~61a (V?) Virginis~~ too near moon

71 S Boötis 9.3
✓ color 2(?)

S 4 a
S 3 c
S 3 b
S 1 d
e 4 S

73 R Boötis < 11?
✓

k & h visible
l & R invisible

$9^h 45^m$ Apr 20. 1883

100 Z Herculis < 11

✓ Yes.

Chart corrected 4/21/83

? is not bright 8 star near Z ($7\frac{1}{2}$) misplaced 30' n
Decl: ?

Z invis in moonlight

There is a red star preceding c about 6^s of 9 mag - not on D.M.; its brightness is

is 3 < e
1 > d

e = 8.8 in D.M. } Hence red star is 9.1 mag.
d = 9.2 " "

Wednesday Apr 25 1883

Clear — ~~D~~ No moon

Bna Var 21^h 5 33 +55 7.2

✓

Star = a
〃 4 or 5 b
〃 1 c
d 3 Var
e 4 Var

D. M. mag. of Comp Stars

a = 9.2
b = 9.2
c = 9.0
d = 9.0
e = 9.1

Hence mag. Var $= \begin{pmatrix} 9.2 \\ 8.8 \\ 8.9 \\ 9.3 \\ 9.5 \end{pmatrix} = 9.14^m$
9.

Brooks
Est.^{d} Place
at 8^h 20^m C M T.
as indicated on D. M. Chart
about 4 55½ +11° 1
see D M chart for pencil
allineation of comet

Wednesday Apr 25 83

43 U Gemini <12
✓
not vis
a not visible

46 U Cancri 11½
✓
z 2 U
U 3 m
U 1 n
a 3 U

Sus. Var # 294
✓
not vis
c & b easily visible
a not visible

Apr 25, 83

61a V Virginis 10½
✓
Y = b
a 3 Y
V 2 e

R.a of V seems small 8^s (±)

63 R Virginis 10½
✓
m 3 R
R 4 b
R 3 a
n 6 R

9h 35m Apr 25, 83

66 W Virginis /12

v

W scarcely vis
g 3 W
W = f

67 V Virginis < 12

v

V not visible or
only occasionally suspected.

a & b more correctly placed
on chart)

69a Z Virginis <12

v

not vis,
a & b very easily visible

Apr 25, 83

10^h 30

Moon Rising

74a T Libræ < 11

✓

T not visible in moonlight

~~S~~

76 S Libræ 8.8

✓

S 1 l
k 3 S
e 3 S
S 3/4 mag b

100 T Herculis < 11

✓

not vis in strong moonlight

star 6^s foll c is 3 < e
1 > d

Apr 25/83

13 S Persei 9.5
✓
f 4 S
S 3 g

27 R Aurigae 10½
✓
f 4 R
~~g~~R 2 g

49 T Cancri 9.0
✓
T = e Color 3
T 3 a
T 3 c

Apr 25, 83

Schjellerup Red Star at
✓ 18h 35 +0 2' ±

Red Star is a
Dm −0°.3539 is b
" +0.4005 is c

a 3 b
c 2 a

See my obsn 3 May 12, 1875
. My f (of that ~~day~~ obsn is estimated) now as about 9 mag.
My d (of that obsn) is faint

Determinations of Rad. of Ring Micrometer.

		outer	inner	
1882 Nov 19		493.8	363.5	From Celaeno & Taygeta in Pleiades
		491.1	368.7	
		497.8	364.1	
		496.9	361.3	
	Mean	494.7	364.4	
1882 Nov 18		476.8	350.2	From g & 17 b Pleiadum
		481.8	355.5	
		475.6	356.3	
		479.7	349.2	Anon 24 & η Pleiadum
		482.8	355.1	
		478.7	356.9	
	Mean	479.2	354.7	
1882 Nov 1		479.9	349.2	From zone observations
		473.6	346.9	
		479.9	342.2	
		477.5	336.1	
	Mean	477.7	344.6	
1882 Nov 27		476.9	353.9	Celaeno & Electra (not reduced)
		480.4	351.0	
		480.3	351.3	
		481.0	351.6	
		476.7	350.5	
	mean	479.1	351.7	
" "		480.0	351.6	Celaeno & Taygeta
		481.7	350.0	
		481.1	351.0	
"	mean	480.9	350.9	
		481.9	352.3	η & Anon 24
"		480.3	351.7	
		480.6	350.7	
	mean	480.9	351.6	
"		480.8	352.6	Celaeno & Taygeta
		479.8	352.2	
		480.2	351.7	
	mean	480.3	352.2	
		481.1	351.6	Celaeno & Electra
"		479.2	353.0	
		480.3	352.1	
	mean	480.2	352.2	
		479.4	350.1	η & Anon 24
		480.1	351.6	
		480.2	349.5	
	mean	479.9	350.4	
1883 Jan 2		481.6	350.2	

See p 216

Reduction of obsns Sept 19, 1882 (p. 4, 5, 86) of passage of Jupiter thro' ring micrometer, for the approximate determ: of radii.

On 6 1/4 inch.

	outside ring ~~I–IV~~ IV–I	Inside ring III–II
	$69^{s}.5$	50.6
	69.9	50.6
	69.2	49.9
	68.3	50.1
	69.6	50.5
	69.3	50.3
	69.3	50.3
	69.6	50.1
	70.0	50.4
	69.9	50.3
Mean time interval	69.46	50.31
Sid " "	69.65	50.45
log t	1.84292	1.70286
" 1/2	0.87506	0.87506
" cos δ (+22 57 18)	~~9.59167~~	~~9.59167~~
	~~1.13558~~	~~0.99550~~
	9.96406	9.96406
	2.68204	2.54198
r	480″.9	348″.3

Set on finder

	IV–I	III–II
Mean time	$262^{s}.3$	$185^{s}.8$
Sid. "	263.0	186.3
	2.41996	2.27021
	~~9.69897~~	~~9.69897~~
	~~9.59167~~	~~9.59167~~
	~~1.71060~~	~~1.56085~~
	9.96406	9.96406
	0.87506	0.87506
	3.25908	3.10933
r	1815″.8	1286″.3

See Red Bk p 475

1882 Nov 9	476.9	356.8	Zone obses
	481.0	349.4	
	481.9	349.9	
	489.3	349.9	
	477.4	346.2	
	476.2	349.4	
	471.9	348.0	
	478.8	349.9	
	475.7	354.3	
	468.7	348.6	
Mean	477.8	350.1	

adopted dimensions
[illegible]

			wt.	
Sept 19	480.9	348.3	2	
[Oct 19	494.7	364.4	~~4~~	reject
Nov 1	477.7	344.6	4	
Nov 9	477.8	350.0	8	
" 18	479.2	354.7	6	
" 27				
1883				
Feb 27	481.6	350.2	3	

Nov 8 482.7 353.7

assume until further data are had

480 351.4

− .05
+ .15
+ .22
2) .32
+ .10

P 5 15.1 5 15.6
T 5 15.75 5 15.0
2) 0.3
+ 0.15
10

☉ 20 26
Int 20 22½
2½

Int 20 21.5
☉ 20 26.
(4½)

P 5 28.7
T 28.25
2) 0.45
+ 0.22

P 5 47.9 47.9
T 5 49.55 47.15
2) − 0.75
0.37

P 18 7.8 7.8
T 18 9.55 7.35
2) 0.45
0.22

T 6 16.65 18.80
P 6 19.05 19.05
2) 0.25
+ 0.10

2.14

☉ 2 12.4 6 18.6
2 16.2 4.1
3.8