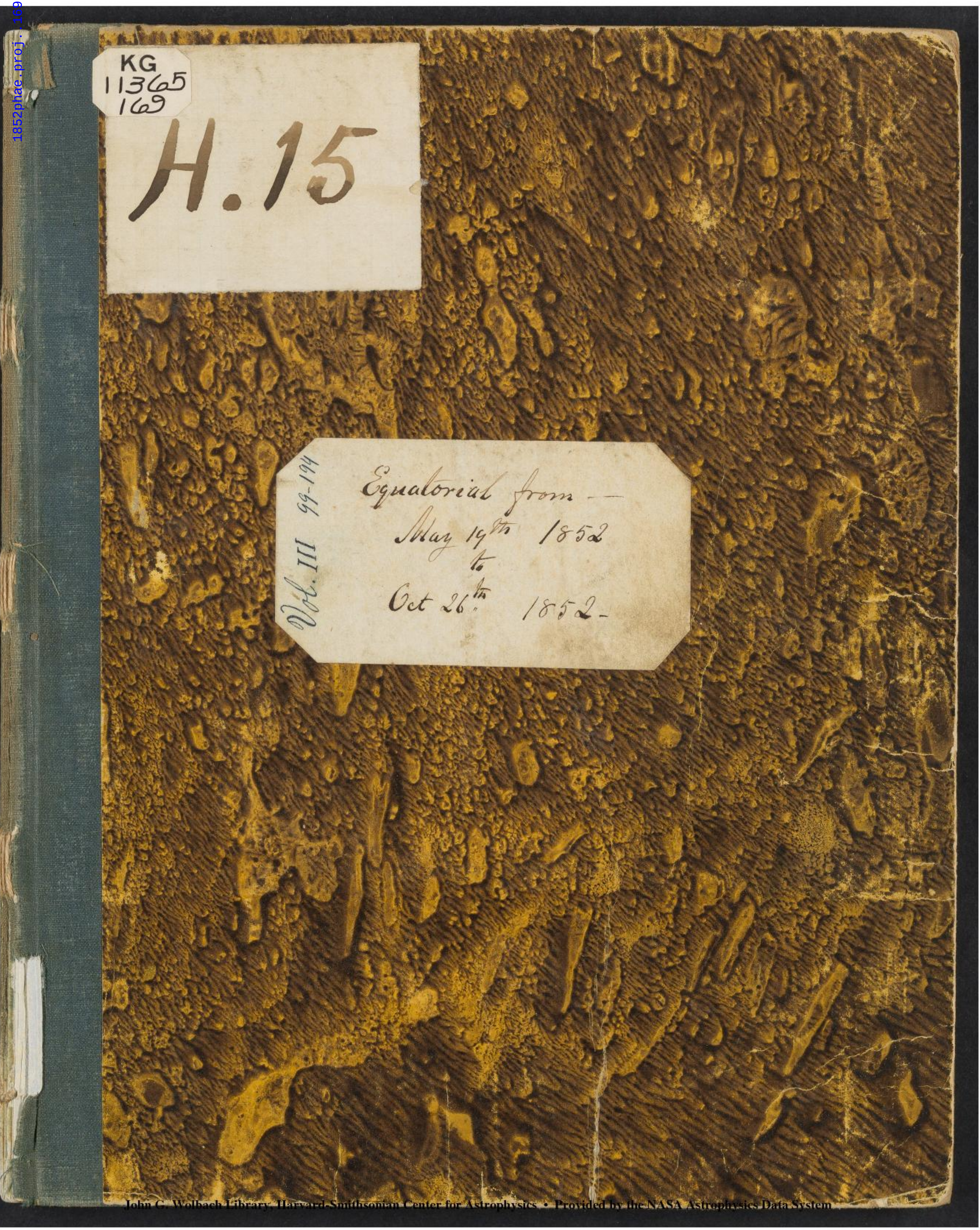

KG
11365
169

H.15

Vol. III 99-194

Equatorial from —
May 19th 1852
to
Oct 26th 1852 —

KG 11365.169

Nebula Sept 1

KG 11365.169

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May 19^{th} 1851 – ~~$9^h 38^m 01^s.9$ M.S.T.~~

cor. for motion of comet between R obs & dec obs.

at $9^h 36^m 10^s$ m.s.t. Comet prec Gr. 3821 dR $1^m 12^s.18$ | by 9 obs

" " N of Star " dδ $3' 50''.6 + 1''.5 = 3' 52''.1$

* R 22 27 24.65

D. 76 49 23.1

~~22 25 00.29~~

May 19^h $9^h 36^m$ ~~09~~.0 → 10^s Camb M.S.T. Comets R 22 26 12.47 } Mean Eq by 9 comparisons

+76 53 15.7 } 1852.0

Comet appears somewhat brighter tonight

motion in R in 1^m = $-0^s.180$

Dec " = +6".78

Reduction to Appt. R & Dec – α 22 27 24.65 + 76° 49' 23".1

−1 −0.09 − 19.2

H 208° 47 −4".18 = i 0.62118 App R ★ 22 27 24.56 76 49 03.9

α 336.51 cos δ 9.35800 − 1 12.18 + 3 52.1

H+α 185.38 9.97918 = −0".95 App R comet – 22 26 12.38 76 52 56.0

sin( ) 8.97894 cos(H+α) 9.99802

sec δ 0.64205 sin δ 9.98841

+20".00 = h 1.30100 h 1.30100

0.93199 = −8".60 −1".28743 = −19".38

G 77 22

G+α 54 13

sin( ) 9.90915 cos G+α 9.76695

tan δ 0.63045

+1.85 = g 0.26717 g 0.26717

0.80677 = +6.41 0.03412 = +1.08

g = +0".93 − 20.33

7.34 − 19.25

− 8.60

− 1.36

45

dα $-0^s.091$

dδ − 19.25

May 19 comet north prec. star star 9 mag. = Gr. 3821–

☄ 13..01..06.8 1..07.7 4..20 0..44
* 2..14.5 5..04

☄ - 13..3..32.2 1..10.1 4..30 0..50
× 13..04..42.3 5..20

☄ 13..06..03.8 1..05.2 3..30 1..14
* 13..07..09.0 4..44

scale reversed

☄ 13 10..47.5 1..07 6 6..38 1..52
* 13..11..55.1 4..41

☄ 13..13 00.6 1..07.1 5..30 1..48
× 13..14..07.7 3..42

☄ 13..16..52.8 1..12.7 5..30 2..21
* 18..05.5 3..09

1 51..23.7 50.4 229

13..08..33.98 1..08.40=da 8..49

13..29..41.65 1..14.73 1..28.2

15.61 2..28.13

1..14.06=da

cor. for scale – 0.3

1..27.9=dδ

8..36.0

10..04.7

dδ = 5..02.35

6) 529
88.2 = 1..28.2
~~8..49.0~~

8
18
26
8

13 3.5
13 6.1
13 10.8
13 13.0
13 16.8
14 8.4
14 11.3
14 15.3
266 3

13..29..36
1..51.9
13..27..44.1
3..50..00.2
9..37..43.9
1..34.9
9..36..09 0

3..49..13.43
46.94
3..50..00.17

☄ 14..08..27.2 1..19.8 9..30 8..22
* 14..09..47.0 1..08

☄ 14..11..20.0 1..19.8 8..20 8..31
* 14..12 39.8 – 0..11

~~12..39.5~~

☄ 14..15..17.7 1..19.6 8..30 8..59
× 14..16..37.3 –0..29

22 112

35 04.9 8..37.3

1..19.73

14..11..41.63

1.08 40
631) 11..37 (0.180
631
5020
4417
6030

cor for scale – 1.5

8..36 0
1..27.9
7 08.1
631) 428.1 (

Comet prec * 9m = Gr. 3821–

dR = 1..08.40
= 8.40
= 19.73
36.53

631) 428.1 (6.78
3786
4950
4417
5330

dR = 1m..12s.18 ☄ prec * Gr 3821

at 194 = 13h..29m..37s

dδ = 3'..50".6 +1".5 dδ × dt

13..29..37
3..50..00.2
9..39..36.8
1..34.9
9..38..01.9 = ~~1437~~
194 + 1..51.9
9..36..10 0 = 1437

13..08..34
13..8..34
14..11..42
40 27..110
13..29..37

~~14..11..41.6~~
~~14..11..41.6~~
~~13 8..34.0~~
151..57.2
9) 34..41
3..51.2
scale –.7
3..50.5

1..27.9
1..27.9
8..36.0
10..91.8
3'..50".6

13..26..37.0
1..53
13..24..44
9..1..10
22 4 3..5.4

H 2..58..50
9..01..10

288..09
Dec. +76..51

13 49..57.0
1..53
13..47..58.0
8..38 23
22 26.23

H 3h..21m..37s
8..38..23

May 19

0′.. 06″

14.0~~0~~.. 25.3
14 / 43.2

= Groomb. 3756

.8.47
1694
1694
63

3388

3821 = * of Comp.

8′.. 47″

4.. 02.7
4.. 01.0

5.. 27.0
05.. 44.2

Radcliffe Obs. give for the stars Dec. + 76°.. 49′.. 23″.05

Star of comp. Groombridge No. 3821

* Æ 22ʰ.. 26ᵐ.. 49ˢ.79 1810.0
Prec. in 42 yrs. + 34.86
22.. 27.. 24.65 1852.0
da *–☄ 1.. 12.18
☄ Æ 22.. 26.. 12.47

*N.P.D. 13°.. 23′.. 30″.2 1810.0
Prec. in 42 yrs. – 12.. 53.26
13.. 10.. 36.94 1852.0
+76.. 49.. 23.06 1852.0
dδ *–☄ 3.. 50.6 +1.5
+ ~~76°.. 53′.. 3″.41~~
+ 76°.. 55′.. 32″.46
+1.5
55 34.0

76.. 49.. 23.06
3.. 50.6 + 1.5
76.. 53 .. 13.66
1.5
76.. 53 15.16

An. prec. – 18″.411
sec. var. 0.0
– 18.411
42
36822
73644
773.262
– 12′.. 53″.26

An. prec + 0ˢ.847
sec. var – .017
0.830
42
1660
3320
+ 34.860

Star of Comparison Groombridge No. 3821
* Æ 22ʰ.. 27ᵐ.. 24ˢ.65 } 1852.0
* δ + 76°.. 49′.. 23″.06 }

May 19 – ~~9ʰ.. 46ᵐ.. 39ˢ.41~~ 9ʰ.. 36ᵐ.. 09ˢ.0 M.S.T. Camb.

Examined

☄ – *
da – 1ᵐ.. 12ˢ.18
dδ + 3′.. 50″.6 + 1″.5

☄ Æ 22ʰ.. 26ᵐ.. 12ˢ.47 } Mean Eq.
☄ Dec. + ~~76.. 55.. 32.46~~ 76°.. 53′.. 15″.2 } 1852.0
+1.5
+76.. 55.. 34.0

May 20 New Comet s *of Comp. is n of Arg. 109

☄*a stan 11 mag. south following *a α *b = Arg 109.

	' "	' "				' "			
☄	6..30	2..59	13..24..58.0	2..22.7	x of comp	9..16		13..52..03.8	
*	3..31		13..27..20.7			9..17	2nd wire	52 25.	7..04.9
							2..53		7 04 8
☄	5..40	3..28	13..28..22.2	2..22.3	Arg.*	6..23	2..52	13..59..08.7	
x	2..12		30..44.5			6..25		13..59..29.8	
☄	6..00	3..47	13..31..38.0	2..24.1	x of comp.	7..21		14..03..23.2	
*	2..13		13..34..02.1			7..22		14..3..44.7	7..04.9
							2..52		
☄	6..30	4..15	13..36..06.3	2..22.2		4..29	2..53	14 10..28.1	7..04.9
x	2..15		13..38..28.5		Arg.	4..29	—	14 10 49.6	35
									7..04.87
							2..52.5		
						ds	-0.5		
☄	8..30	4..48	13..41..12.0	2..23.6		dδ* =	2..52.0		
x	3..42		43..35.6						
			~~2..23.6~~						
☄	7..27	5..16	13..45..37.0	2..26.5					
*	2..11		13..48 3.5						
		24..33	2nd wire 48 25.2	21.4					

dδ = 4..05.5 207..53.5 m s 2..23.57 = da

Scale err - 0.8

motion in Dec. + 1.0 13..34..38.92

Diff. of Dec 4'..05".7 1..49.4

3..53..09.99 13..32..49.52

46.74 3..53..56.79

56.73 9..38..52.79

1..34.83

9..37..17.96 M.S.T.

13..57..55.6 14..14 26.5 H 3..42..51 280..34..30

8..17 09 Dec 79..25..30

May 20

~~42.0~~

14.. 02.. 11 ~~[illegible]~~ H 3.. 37.. 40   R ~~10.. 25~~   14.. ~~35~~ 42.8
8.. 22.. 20   8.. 22.. 20   − 0.. 20

22.. 24.. 31
194   + 1.. 49
22.. 22.. 42

Arg. 109 = ✶ ~~of Lam~~ Compared with ✶ a

194   13.. 57.. 55.6   colt =
+ 1.. 49.0
13.. 56.. 66.6

14.. 14.. 26.5
1.. 49.0
14 12.. 37.5
H E   8.. 17.. 09
R 22.. 29.. 46   Dec 79.. 25.. 30   by Instrument
Inst corr   + 1.. 05   Inst corr   − 40
22.. 30.. 51   79.. 24.. 50

Arg. Zone 45 No. 109 $k = +24.04''$

22.. 30.. 39.. 11
k + 24.. 04
$\frac{\delta-D}{100}k'$ − .82
$\left(\frac{\delta-D}{100}\right)^2$ + .02

$\frac{(\delta-D)}{100} = 51$
$= +.005$
$k' - 64$
$- .320$

$\left(\frac{\delta-D}{100}\right)^2 = .025$ $k'' - 8$
$\frac{1}{3}(k'' - k) = 0.0$

$\frac{\delta-D}{180} = +.004$

+24.04
− .32
+ .02
+23.74
+ .11
2374
2374
− 2.6114

$\frac{1}{3}k'' - k''$

$k'' - 8.0$
+ .3
− 2.7

− 2.7
+ .004
− .108

+ .004
− .3
− .012
− 8.0
+ 8.012

79°.. 21′.. 19.5″
24.81
79.. 21.. 44.31   1842.0

d = + 24.8   + .005
+ .01   + 2.3
+ 24.81   015
010
~~[illegible]~~
+ .0115

May 20

2.38
42
476
952
9996

2.38

19.9 840
838

Star of 3 mag.

23..31..38.7
1..40.0
23..30..18.7

13..25..39
13..58
13 11..41
6 1 48..19
° ″
283..71..
76.49

10..25 14..35..42.8
— 0..20 14 38..22.7

14..41..02.3
194 1..48.6
14..39..13.7
8..52..59

H 3..07..01
8..52..59

Inst AR 23..32..12.7 Dec 76..49
Tab α 23..33..18.7 α 76..48..19
+1..5.0

Cor. of Scale reading at 5′

Arg. 109 Zone 45

ac on 5 years δ = 79..21
D = 78..30
δ-D + 51
a = 337°..25′

α	22..30..39.11	+79..21..19.5	An prec in AR +0.378 - 0.008
K	+24.04	d +23.8	= 0.370
	- 0.28	$\frac{\delta-D}{100}$ d, +1.2	" in Dec + 18.56
	- 02	79..21..44.5	3′.05″.6
1842.0	22..31..02.85	3..05.6	
prec	+3.70	79..24..50.1	1852.0
1852.0	22..31..06.55	~~4..05.7~~	Arg.109
dAR	~~2..23.57~~		
	22..31..06.55	79..24..50.1	
Red to ap.	- 0.07	+ 2..52.0	obsd dif (There is no correction for since
app. AR	22..31..07.48	79..27..42.1 = Dec * a	dif of cor to appt Equinox
obsd dif.	7..04.87		
	22..24..02.61	Appt AR of * of comp = a	
Red for Mean Eq	+0.19		
	~~22..24 02.80~~		
	22h..24m..02s.42	Mean AR of * of comp	~~Dec = 79..21..~~
	79°..27′..42″.1	" Dec "	
Comet prec a	- 2..23.57		
" N of a	+4..05.7		
AR	22..~~26..25.44~~ 4h 21m 38s.85	Mean Eq	
Dec	79°..31′..47″.8	1852.0	

p = 46″.0591 + 20″.0547 sin a tang δ
p′ = 20..0547 cos a

cos a 9.96640
1.30222
1.26862
+18″.56
sin a 9.57824
1.30222
tang δ 0.72573
~~1.60330~~
~~2.6931~~
1.60619
- 40.382
+ 46.059
+ 5.677
1.893
+ 3784

May 20th 9h 37m 18s.0 M S T.

May 20

f + 1".07   g + 1".87   G. 75°.28'   h + 20".01   H 207°.52'   i − 4".06

a = 22ʰ.30ᵐ = 337°.30'   337.30

δ = +79°.22'   H 207.52   G 75.28

H+a 185.22   ~~67~~.58

52.58

sin H+a 9.97095ⁿ   cos H+a 9.99809ⁿ

sec δ 0.73395   sin δ 9.99248

log. h 1.30125   h 1.30125

1.00615ⁿ − 10".14   1.29182ⁿ − ~~19.43~~

− 19.58

sin G+a 9.90216   cos. G+a 9.77980

tang. δ 0.72643   log. g 0.27184

log. g 0.27184   0.05164 + ~~0.701~~

0.90043 + ~~9.~~ + 7.95   + 1.126

− 10.14

f + 1.07 + 9.02   log i 0.60853ⁿ

+ 10.30 − 1.12   cos. δ 9.26605

− 37.74   37   9.87458ⁿ − 0.75

− 27.44   −0ˢ.075   − 20.33

914   + 1.13

da 1ˢ.8~~30~~   − 19.20

a 22ʰ.30ᵐ   337°.30'   337.30

H 207.52   G 75.28

545.22   418.58

H+a = 185.22   G+a = 52.58

sin H+a 9.97095ⁿ   cos H+a 9.99809ⁿ

sec δ 0.73395   sin δ 9.99248

log. h 1.30125   h 1.30125

1.00615 − 10.14   1.29182 − 19.58

sin G+a 9.90216   cos G+a 9.77980

tang δ 0.72643   log g 0.27184

log g 0.27184   0.05164 + 1.13

0.90043 + 7.95   log i 0.60853ⁿ

f + 1.07   cos δ 9.26605

+ 9.02   9.87458 − 0.75

− 10.14   20.33

1.12   1.13

37   dδ − 19.20

da −.075

Star δ Camp

a 22ʰ.21ᵐ.00ˢ = 335.15   335.15   22.24.02.42   79.27.42.1

δ 79°.19.00 = 207.52 = H   75.28 = G   − 0.07   − 19.2

H+a 183.07   50.43 G+a   App. R ✱ 22.24.02.35   79.27.22.9

sin 8.73535ⁿ   9.88875 sin   Δa − 2.23.57   Δδ + 4. 5.7

sec δ 0.73194   0.72434 tan δ   app. a 22.21.38.78   δ + 79.31.28.6

h 1.30125   0.27184 g   B

0.76854ⁿ   0.88493

− 5.87   + 7".67

+ 7.67

+ 1.80

f = 1.07

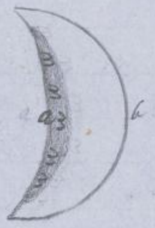
+ 2.87

096

da + 0.191

May 21.

Venus CWT.



Venus unsteady – Not well seen
It exhibits a remarkable diminution of light on the inside of the concave portion of the illuminated crescent, as at n n n n n and extending inward towards b about one third of the distance from a to b

---

May 21st 1852 New Comet

22..15	22..12
12..37	12..53
9..38	9..19
	2..41

Zero 50.115
50.163
50.129
50.160
50.110
171
50.134

a double * 7.8 mag,
dist. 51″.51

May 21

New Comet

☄ north fol. star of 11 mag.

240
36
276

	dδ		Dif. M	
12..58..32.0	50.99	* 13..06..44.7	☄ 13..08..46.5	2..01.8
13..00..33.0	52.89	* 13..07..27.3	☄ ..09..28.2	2..00.9
13..04..30.0	55.00			
13..20..44.0	66.10	* 13..10..28.7	☄ 13..12..28.2	1..59.5
13..23..47.3	67.58	* 13 11 16.2	☄ 13..13..14.8	1..58.6
13 27..07.0	69.98			
79 135..13.3	362.54	13 58.4	☄ 13 15..56.7	1..58.3
13..12..12.22		13..14..45.3	☄ 13..16..42.0	1..56.7
1..46.75	60.423		76..36.4	11 235.8
13..10..25.47	50.194		13..12..46.07	1..59.30
	10.289		1..48.75	1..59.30 = dα
	9.8		13..10..59.32	
	82212		3..57..53.28	
	92601		9..13..06.04	
	100.8222		1..30.60	
	1'..40.82 = dδ		9..11..35.44 M.S.T.	
motion in 34^s	3.6			
	1..44.42			

3 cw
35

555

75
73

☄ − *

dα $+1^m..59^s.30$ dδ $+1'..44''.42$

May 21^{st} $9^h..11^m..35^s.4$ m.s.t.

Comet follows * 11^{th} mag $1^m..59^s.30$

" is n of " $1'..44''.4$

Approx place of * 11^{th}

α $22^h..12^m..18^s$

δ $+82^\circ..01'..50''$

The place of the star is probably within 5^s of α & 1' of δ.

May 21 b = star of comp.

b north fol. star of 8 mag. dδ by scale is 6'..28" by last obs.

~~dδ by scale is 6..22~~

dδ

b & ✶ 8 mag.

~~89.89~~

89.19

89.22

89.23

89.21

50.13

39..0.8

78

3830' = 6'..23".0

Dif. AR

7..49.2	b	14..00..08.7	2..19.5
13..58..04.2	b	14..00..23.1	2..18.9
14..01..24.4	b	14..3 43.4	2..19.0
14..01..39.3	b	3..58.0	2..18.7
			2m..19s.02

The Star of comp. b follows HC. 2m..19s.02

" north of " 6'..23".0

Star in Hist. Cel. p.351- 384

p351 April 1st 1790-

3rd wire 10..15..34.0

2-3 wire 2..53.4

10 12..40.6

mid-wire 12..42.0

mean t 10..12..41.30

12..00..00.00

k − 1..03.93

$\frac{z-Z}{100}k'$ − 7.95

−1..11.88

1790.0 α 22h..11m..29s.42

k' − 3.77

211

377

377

754

7.9547

2

46

126

84

9.66

z = −49..29

Z = −53..00

$\frac{z-Z}{100}$ = + 2.11

− z 49°..28'..51".0

p 48..53..56.7

$\frac{z-Z}{100}p'$ − 9.7

48 53..47.0

180-δ 98..22..38.0

δ 81°..37'..22".0

17

31

17

51

5.27

Hist. Cel.

p 384 March 13th 1791-

3rd wire 10..14..38.0

2-3 2..53.53

10..11..44.47

mid wire 35.50

10..11..34.98

12..00 00.00

k − 26.64

$\frac{k'}{100}(z-Z)$ − 5.27

−31.91

~~ℓℓ~~.. ..~~28.19~~

z-49..28..30

Z -50 00 00

$\frac{z-Z}{100}$ +.31..30

= +0.315

z- 49..28..30.0

p 48..54..01.4

− −1.2

48..54..00.2

98..22..30.2

81..37..29.8

194 fast +1ᵐ 46ˢ.7 15ʰ 05ᵐ

May 21 a double star 7.8 mag – the largest s. p. is used –
β north fol. double star

~~Zero~~

* 14 14 19.0
β 14 24 54.3
10 35 3

~~33.~~
35ʳ.76
50.134
14.374
2.87
140.87 = 2′ 20″.9 β n of *

Obsd for R by passage through centre
of chord in lower part of field

preceding star used

1st w *	15 04 21.8	β	15 14 33.2	10 11.4			Dsns for mean of Decs
2 w	15 05 15.6	β	15 29.3	10 13.7	*	β	′ ″
scale	15 08 17.0	β	15 18 28.7	10 11.7	1 17	9.28	8 11 } 15ʰ 18ᵐ 36ˢ
	15 08 45.7		lost		1 20	9.30	8 10
							8 10.5
							scale corr – 1.6
							8 08.9

da

wire 3 *	15 30 26.9	β	15 40 25.3	9 58.4	92ʳ.67 – 29.192 = 10′ 22″.1	Zero
" 4	30 56.5		40 55.8	9 59.3		29ʳ.19
" 5	31 26.0		41 22.3	9 56.3		29.20
" 6	31 55.0		41 53.2	9 58.2	93.78 = 10′ 33″.0	29.20
" 7	15 32 24.5	β	15 42 22.4	9 57.9		29.23
	7 08 8.9		255 30.2	80 326.9		29.192
	15 31 25.78		15 31 58.27	10 03.36 = da	94ʳ.69 = 10 42.9	
			15 42 45			

Zero

94.69
11.14
93.71
29.192

74.68
84339
413.58
15.18.36

92.67
29.19
63 48
12.7
6221
10′ 22″.1

93.78
29 19
64 59
129
6330
10 33.0

94.69
29 19
65 50
121
6429
10 42.9

double star BAC 7732

14 27 58.8
194 1 46.8
14 26 12.0
7 38 59
22 05 11
Inst Cor – 2 30
22 02 41

H 4 21 01
7 38 59

~~[illegible]~~ 278° 50″
δ + 82 10

Inst α 22ʰ 05ᵐ 10.7
α 22 03 19.0
Inst Cor – 1 51.7

The star was obsd on the edge of the scale
& this is not in the line of collimation –

May 21
star 5 mag.
~~15 47. 13.8~~

h m s
15.. 50.. 06.0 --- H 4.. 57.. 53
1.. 46.8 — 7.. 02.. 07
15 48.. 19.2
7.. 02.. 07
22 .. 50.. 26.2
AR 22.. 47.. 54 Dec 82.. 22
- 2.. 32

° ′
277.. 37
δ 82.. 23

3.. 57.. 06.54
46.74
3.. 57.. 53 28

Obs for dif. AR with B.A.C. 7732 -

194 14h.. 24m.9 — 10m.. 35s.3 ☄ fol *
15.. 14.6 — 10.. 11.4
15.. 15.5 — 10.. 13.7
15.. 18.4 — 10.. 11.7
15.. 40.6 — 9.. 58.85 {Mean of 2} w = 1
15.. 41.9 — 9.. 57.47 {Mean of 3} w = 1
96.9 — 68.42
15.. 16.15 — 10.. 11.40 ☄ fol *

at 194 = 15h.. 16m.. 08s ☄ fol. BAC 7732 by 10m.. 11s.40 — 6. obs
194 + 1.. 46.6 ☄ n of " — 7′.. 50″.5 — 5. "

15.. 14.. 21.4
3.. 57.. 53.28
11.. 16.. 28.12
1.. 50.82
11.. 14.. 37.30 M.S. Time

Obs for dδ with B.A.C. 7732 -

14h.. 24m.9 — 2′.. 20″.9 ☄ n of *
15.. 18.6 — 8.. 08.9 "
15.. 40.4 — 10.. 22.1 "
15.. 41.4 — 10.. 33.0 "
15.. 42.4 — 10.. 42.9 "
1077 — 42.. 07.8
15.. 21.54 — 8.. 25.6 ☄ n of *
motion in Dec 5.39 — - 35.1
15.. 16.15 — 7.. 50.5 ☄ n of *

14.. 45.. 16.2 — H 4.. 38.. 19
1.. 46.8 — 7.. 21.. 41
14.. 43.. 29.4
7.. 21.. 41
22.. 05.. 10.4

May 21

f + 1″.22 g + 1″.90 G 73°.39′ h + 20″.03 H 206°.57′ i − 3″.94

α = 22ʰ.03ᵐ.19ˢ = 330°.49′.45″ 330.49.45
δ 82°.09.23 H 206.57 73.39
H+α 177.46.45 G+α 44.28.45

sin. H+α 8.58747
sec. δ 0.86498
log. h 1.30168
0.75913 + 5.568

sin. G+α 9.84553
tang. δ 0.86089
log. g 0.27875
0.98517 + 9.664
f + 1.22
+ 16.56
552
+ 1ˢ.104 = dα

cos. H+α $\overset{n}{9}$.99967
sin δ 9.99591
log. h 1.30168
$\overset{n}{1}$.29726 − 19.83

cos G+α 9.85337
log g 0.27875
0.13212 + 1.364
log i $\overset{n}{0}$.59550
cos. δ 9.13502
$\overset{n}{9}$.73052

− 0.54
− 0.~~64~~
− ~~2.831~~ ~~88~~
+ ~~1.356~~ 20.37
+1.36
− ~~1.165~~ − 19.01 = dδ

α 22ʰ.13ᵐ = 333°.15′ 333.15
δ + 82°.19′ H 206.57 73.39
540.12 406.54
H+α 180.12 G+α 46.54

sin H+α 7.54291
sec. δ 0.87388
log. h 1.30168
9.71847 − 0.523

sin G+α 9.86342
tang δ 0.86996
log. g 0.27875
1.01213 + 10.28
f + 1.22
+ 11.50
− 0.52
+ 10.98
866
+ 0ˢ.732 = dα

cos. H+α $\overset{n}{0}$.00000
sin δ 9.99608
log. h 1.30168
1.29776 − 19.85

cos. G+α 9.83459
log. g 0.27875
0.11334 + 1.298
log. i $\overset{n}{0}$.59550
cos. δ 9.12612
$\overset{n}{9}$.72162 − 0.524
− 20.37
+ 1.30
− 19.07 = dδ

May 21

B.A.C. 7732

N.P.D.
An. prec − 17.51
+ .00
17.51
2
− 35.02

AR
An. prec − 1.652
sec. var. − .004
− 1.656
2
− 3.312

1850 AR $22^h..03^m..22^s.28$ 1850.0 N.P.D. $7^\circ..51'..12''.8$ 1850.0
− $3^s.31$ − 35.02
AR 22..03..18.97 * 1852.0 7..50..37.78 1852.0
cor. to app. + 1.10 δ + $82^\circ..09'..22''.22$ 1852.0
App. AR 22..03..20.07 * ap. Eq ———
dAR 10..11.40 dδ 7..50.5
22..13..31.47 Ap. AR ☄ + 82..17..12.7 = ☄ mean Dec

Dif Cor to ap. Eq in Dec < 0″.07 in arc

cor mean Eq − 0.73
22..13..30.74 = ☄ mean AR

+ 82..09..22.22 1852.0
− 19.01
appt AR * 82..09..03.21
Δδ + 7..50.50
82..16..53.71 = Appt Dec ☄

May 21^{st} $11^h..14^m..37^s.3$ M.S.T.

☄ $\alpha = 22^h..13^m..30^s.74$ } Mean Eq
$\delta = +82^\circ..17'..12''.7$ } 1852.0

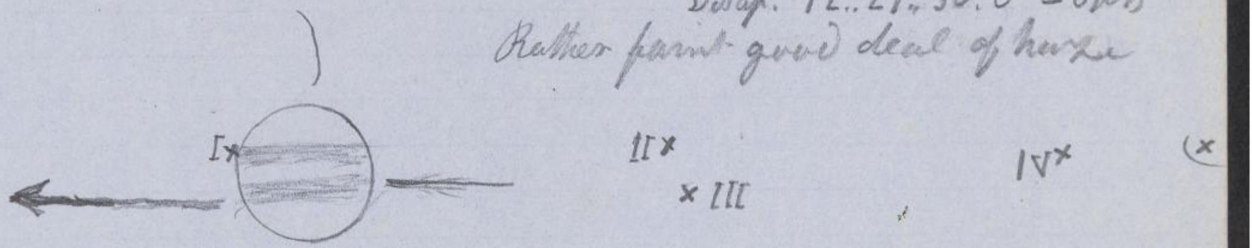
By 6 obs in AR & 5 in Dec with
B.A.C 7732

The comet appears somewhat brighter.

1852

May 22 Jupiter

C. W. T. obs.
Chronometer 194 Hutton
Occultation of I Satellite
Disap. 12h..21m..30s.0 – obs
Rather faint good deal of haze



12..40
22..03
9..23
2..37

22..06
12 52
9 – 14
+84..10
2..46

	12..21..30s.0
	1..44.9
4..01..03.10	12..19..45.1
46.74	
4..01..49.84	4..1..49.84
	8..17..55.26
	1..21.57
Occultation of Jupiter's I Satellites	8..16..33.69 M.s.t.

May 22

New Comet
comp. star 11 mag. of north prec.

Dif. AR
12..59..20.0 31^r94
~~13..01..45~~ ~~36~~

Zero
29^r14
29.10
29.12
36
29.12

Comet placed halfway between wires so that the measured distances in R are double the true

	Dif. AR	a and β		h m s			
dd	13..01..45..	$36^r.23$	dd	13..03..10	$37^r.23$	dd 13..04..30	37^r41
	h m s			h m s		h m s	
dd	13..14 38..	38^r74	dd	13 15 51	39^r04	13..17..33	40^r36

24)600

25.5

May 22nd 1852

M.S.T = $9^h..04^m..30^s.5$ Comet prec *a $0^m..31^s.27$

Approx R of *a 11th mag
α $22^h..00^m..23^s$
δ +84°..32'..42"

" north of " $1'..28''.9 + 0''.4 = d\delta \times dt$
= 1'..29.3

22..00..23
31.27
β AR 21..59..51.73

° ' "
84..32..42
1..29.3
β δ+84..34..11.3

Dif. Dec
13..06..56.0	36^r95
7..55.0	37.18
13..08..47.0	37.97
13..10..5.0	37.98
13..11..08.0	39.28
13..12..18.	40.02
57..09.0	229.18
13..09.31.50	38.197
1..44.9	29.120
13..07..46.80	9.077
	9.8
cor to time of R + 3s.00	72 606
	81 693
	88.9536

10.s 1.1

' "
1..28.95

39.34 1.59483

* of comp 1~~3..32.03~~.7   ~~No~~ 2   No. 1   82..09..03 sec 0.86466

5ˢ.372 = 0.73017

13..36..52.7
1..44.65
13..35..08.05
8..24..28
21..59..36.05

H 3ʰ..~~25~~ᵐ..32ˢ
35
8..24 28

95°..27′..00
84..33

h ** 13..50..43.5
1..44.62
13..48..58.88
8..13..32
22..02..30.88
21..59..36.05
..02ᵐ..54ˢ.83 da

H 3..46..28
8..13..32

22..02..30.88 = Inst R of Double star prec.
22..03..20.22 Appt R "
+ 0..39.34 cor

97°..50′..20″ 2..23..20
82 09..40
84″..33..00
2..23..20 = dδ

β prec *

194 13ʰ..03ᵐ..08ˢ.3
13..16..00.7
19..09.0
13..09..34.5

dif. R	Double dif		
13..01..45	36ʳ23	13..14..38	38ʳ74
13..3..10	3723	13..15..51	3904
13..4..30	3741	13..17..39	4036
9.25	2087	48..02	11814
13..03..08.3	36,957	13..16..00.7	39ʳ38
16..00.7	29,120		29.120
19..09.0	7.837		10.260
16..09..34.5	9.8		9.8
	62696		82080
	70533		92340
	76.8026		100.5480
	256009		335160
5.12017	5ˢ.12017		6ˢ.70320
	0.70927		0.82627
	1.02371		1.02504
	1.73298		1.85130
	54.07		71.01
			54.07
			125.08

194 cor. for error − 1..44.7
13..07..49.8
4..01..49.84
9..05..59.96
1..29.44
9..04..30.52 M.S.T.

4..01..03.10
46.74
4.01..49.84

β — *
da 0ᵐ..32ˢ.27 + 1′..28″.45

double * App. R

$\frac{1}{2}$(62.54) = da   dR = 0ᵐ..31ˢ.27

May 22 f + 1".37 g + 1".89 G 73°.00' h + 20".04 H 206°.02' i − 3".82

α = 22h..00m, α 330°..00'
δ = + 84°..32' H 206..02
H+α 176..02

α 330..00
G 73..00
403..00
43..00

sin H+α 8.83996
sec. δ 1.02106
log h 1.30190
1.16292 + 14".55

cos. H+α 9.99896n
sin δ 9.99802
log. h 1.30190
1.29888 − 19".90

sin G+α 9.83378
tang δ 1.01908
log g 0.27646
1.12932 + 13".47
f + 1.37
+ 28".59
1.91s
dα + 1.960

cos. G+α 9.86413
log. g 0.27646
0.14059 + 1".38
log i 0.58206n
cos δ 8.97894
9.56100n − 0".36
− 20.26
dδ − 18".88

α = 22h..03m..19s 330°..49'..45" α 330..50
δ + 82°..09'
206..02
176..52

G 73..00
43..50

sin. H+α 8.73767
sec δ 0.86461
log. h 1.30190
0.90418 8.020

cos. H+α 9.99935n
sin δ 9.99591
log h 1.30190
1.29716n − 19".82

sin. G+α 9.84046
tang. δ 0.86052
log. g 0.27646
0.97744 9.494
f 1.37
+ 18".88
6.29
dα + 1.259

cos. G+α 9.85815
log g 0.27646
0.13461 + 1.362
log. i 0.58206n
cos. δ 9.13539
9.71745n − 0.52 ~~17~~
~~70~~
− 20.34
+ 1.36
dδ − 18".98

Mean place of double star 1852.0

R	22..03..18.97	Dec. +	82°..09'..22".22
cor. to app.	+ 1s.26	cor. to app.	− 18.98
App. R	22..03..20.23	App. Dec. +	82..09..03.24
app. dif. a and b	2..54.83	app. dif. δ a and b	2..23..20
comp ☆ app	22..00..25.40	Comp. star app.	84°..32'..23".24
cor. to mean	− 1.96	cor. to mean	+ 18.88
comp. ☆ R	22h..00m..23s.44	comp. ☆ δ	+ 84°..32'..42".12
	31.27		1..28.95
	~~1..0..00.4~~		
p R	21h..59m..20s.98	p δ	+ 84°..34'..10".07
	21..59..52.17		

Approximate only – as the place of comp star is not known

May 25 Determination of place of comp. star of May 22

Zero of coll. 5R47

× 11 mag 13..11..08.8
double ✱ 14..03.5 2..54.7
2 doubl × 14..09.7

✱ 11 mag 13..17..48.2 Dec. 275°..26′..50″
2..54.0 2..23..10
dx 20..42.2 277..50..00 for prec of the pair
comp 20..49.8 ~~27~~2..23..10

11 mag. 13..37..06.2 Dec. 95..27..10
39..59.0 2..52.8 97..50..20
40..05.8

May 25

In measuring dif. Dec allowance was made for the curvature of the arcs.

Comet south of star comp. star 9 mag.

Comet precedes *

Dif. Dec.	
14„ 44„ 20.0	52r49
46„ 14.0	53 61
47„ 31.0	53 44
14 49„ 60.0	55 31
15 01 „ 40	61 72
15„ 03 „ 21	62 25
15„ 5„ 15	63 49
15„ 06„ 45	146
27.05	62.49

28.5
53.71
62.49
8 78
4.39
58.10
29.09 Zero
29 01
5.8
284.3 = 4′ 44″.3
motion in 10s +0.9
4..45.2

87.8
1.8
16.6) 86.0 (5″.2
83 00 mojn
300
332

Dif. AR		Zero
14„ 52„ 22	65r65	29r.11
54„ 00	65 84	29.09
56„ 10	66 64	29 05
58„ 30	66 66	29 10
21 .62	24 79	.35
14„ 55„ 15.5	66.20	29.087

29.09
37.11
7.4
363.7 = 6′.. 03″.7
= measured diff of AR

This is the chord of the arc arc = 2 sin ½ dAR × sec δ

2) 6..03.7 2.56074
3..01.85 sin 1″ 4.68557
7.24631
0.30103
6.94528
Star of Comp 9 to 10 87°..44′ sec 8.54749
8.34779

14„ 46 „ 46.2
10 „15
15„ 03„ 25.0
29 50 „112
14„ 55„ 05.6
1„ 38.6
14„ 53„ 27.0
4„ 13„ 39.5
10 „39„47.5
1„44.8
M.S.T. 10„ 38„ 02.7
cor to dif AR + 9.9
10„ 38„ 12.6

4„12„ 52.77
46.74
4„ 13„ 39.51

Comet prec * 10m..12s.53 } 4 obs
„ S of * 4′..45″.2 } 7 obs

α 12„43„05 } Eq.
δ 87„ 45„ 40 } 1852.0

1°..16′..34
2
2 ..33..08
8 .. 0.53
2..12
10m..12s.53 = dAR.

The distances in AR were measured with the Micrometer & in the reduction corrected for dif of chord & arc.

194 15h„ 18m„ 28s.8 H 9h„ 30m ± 5m Dec + 87°„ 45′„ 40″

Star of Comparison 9th..10th mag Appt AR 12h.. 43m.. 21s

Approximate place „ Dec +87°..45′..56″

12..43..21 +87..46..10
10..12.5 −4..45
AR app 12 ..33 ..08.5 +87..41 ..25
cor mean Eq −14.3 −16

α 12h.. 32m.54s.2 δ 87°..41′..09″ May 25th.. 10h..38m..02s.6 M.S.T.

Mean Eq of Jan 1st 1852 –

Star of Comp. above pole H = 3h W
Polaris below pole H = 9h E

Star of comp. Dif. alt = 3°.43' × sin 50° = 2°.26' Dec + 87°..45'.46" 3..42..32 = * + 10" ? = Polaris
Polaris Ref. for Star of Comp. h = 50°.12' 91..28..18
Star of comp in AR 1m..18s.3 in Dec 38".5 ~~for dif alt 1°~~ 87..45..48 3..42..34
Polaris Inst cor = 4s.56 × sec δ 91..28..27
comp. star alt * = 43°.40' r = 59".7 × cos h = 38".5 87..45..52 3..42..36
Polaris 59.7 sin h = 46.1 r × sec δ = 91..28..28 comp *.

For place of Star AR in Dec 46".1 1.6637
Polaris Dec 88°.30'.58".5 16..14..14.3 87..45..50.0 88..30..58 sec δ 1.4060
180 − Dec 91..29..01.5 h 3..25..45.0 ref + 36.5 3..22..36 1174 = 3.0697
12..48..29.3 391
Inst. 91..28..27.5 194 1..39.0 inst cor −8.5 92..13..34 78.3
Inst. AR = 12..46..50.3 Polaris
cor in Dec −0.34.0 h = 3h.16m E ref −1..18.3 Appt Dec 87..46..18.0 87..46..24 49.1 1.6910
ref. +0..43 12 45..32.0 of Star of comp. sec δ 1.5867
Inst cor + 0..09" Inst. cor −1..56.3 1843 = 3.2771
Appt AR * 12..43..35.7 631
of Comp by obs of Polaris 126.2

~~Dif. alt = 1°~~
16..12..14.3 Ref in AR = 49".1 sec δ = 126s.2 in time
Comp. * 16..14..14.3 194 1 40 " Dec = 41"
Polaris 16 12 34
3..25 45
12..46..49
42..22 − 0..58 = alt = 41°.24 h = 50°..11m

C 27..08.6 Comp of Polaris h m s r = 64"
16..27..30. Polaris H 3..25..45 West Ref in AR = r sin h sec δ, in Dec = r cos h
194 +1..39.0 Applying cor for Ref
12h + 16..25..51.0 = Inst. AR of Polaris + 3..25..45 13..00..06.0
3..25..45.0 cor Ref +2 6.2
13..00..06.0 Inst AR of Polaris uncorrected for R 13..02..12.2
12h + AR 13..05..08.5 In Dec 13..05..08.5
15) 50.5 (3.37 5..02.5 = 302.5 Tab. Dec 88°..30'..58".5 176s.3 = 2..56.3
45
55
45
100 302.5 = 2.48073 ref 42.5 = 2.2462
88°..30'..58" sec = 1.58667 88..31..41.0 1.5867
+7s.835 = 0.89406 91..28..19.0 0.6595 = 4s.56
ref. −3.37 obsd 91..28..27.5 sec δ 1.4060
+4.46 + 0s.10 cor obsd −8.5 116.3 = 2.0655

The deviation of the axis of rotation of the micrometer of the Equatorial from ~~[illegible]~~ true pointing in Dec 88°.31' H 8h.35' is 1'..9" space

124

dif of 4."5 in 57 = 3.77

Inst
Ref
116.3 + ~~78.3~~ 85.4
45.5 + ~~28.8~~ 31.3

comp.* 16..49..37.1   comp.* ~~16..57..29~~.7   Dec. + ~~87..17..55~~

B.A.C. 4339 16..52..22.3] 2..45.4

4342 52 30.5] 2..53.4

comp.* 17..04..27.8   2..45.2   Dec. + 87..46..08   3..32..24 + 4.0   BAC 4339

B.A.C. 07..13.0]   Dec. + 84..13..44

17..07..20.7]   2..52.9

pre *   ref   in Dec

+ 87..46..09   fol. *   BAC 4342

B.A.C. double fol. *s Dec   84..13..24   3..32..45 + 4.0

h m s
12..47.58   84..13..20
2..45   3..32..24
12..45.13   + 87..45..44

for comp* r = 46.1
3.77
f BAC   r = 42.33 = 1.6266
sec δ   0.9979
421.2 = 2.6245
1404
Dif alt   28.08 = cor ref for comp*

84..13..36.6   84..13..18.9
3..32..28   3..32..49
87..46..04.6   87..46..07.9

Appt Dec of Star of Comp

By BAC 4339   + 87°..46'..04".6   w = 1
4342   46..07.9   = 1
Polaris   46..18.0   = 1
Adopted   87..46..10.2
Red. to mean   − 16.5
1852.0   + 87..45..53.7

Inst cor = 4.56 × sec δ
0.6595
sec 84..14   0.9979
45.45 = 1.6574

BAC 4339 & 4342

4339 ~~True~~ Dif R = 2..45.30 + (−45.45 + 78.2) = 2..45.30 + 32.85 = 3..18.15
4342 2..53.15 + 32.85 = 3..26.00

Appt R of Star of Comp

B.A.C 4339 appt R 12..48..04.4   4342 12..48..12.2   By BAC 4339 12..44..46.3
Dif appt R 3..18.1   3..26.0   4342 44..46.2
12..44..46.3   12..44..46.2   Polaris 44..36

+116.3   −45.5
+78.3   −28.1
+194.6   −73.6
73.6
121.0
3.9
124.9

3.2
0.7
3.9

Inst cor   Ref cor   Ref & Inst cor

True Dif R = 2m..45s.30 + 116.3 − 45.5 + 78.3 − 28.8 = 2m..45s.30 + 124s.9 = 4m..50s.2 = True dif R
85.4 − 31.3

BAC 4339 Appt R 12h..48m..04s.40
Comp* prec   Dif R   4..50.2
h m s
By BAC 4339   12..43..14.2
By Polaris   43..35.7
BAC 4342   43..14.2
Appt R * of Comp   12..43..21.4
cor to m eq.   − 16.33
12..43..05.07

2..53.1
2..04.9
4..58.0
12..48..12.2
12..43..14.2

1.8
20
360

2.3

125

May 25 B.A.C. 4339

a b c d
−9.8123 −9.1393 +9.5061 −9.8101
−0.9010 −1.2668 +8.5932 +0.2643
+0.7133 +0.4061 +8.0993 −0.0744
+5.168 +2.548 +0.013 −1.187

2.548
5.168
+7.729
−1.187
+^{s}6.542

a′ b′ c′ d′
−9.3985 +9.9882 +1.2926 −9.3175
−0.9010 −1.2668 +8.5932 +0.2643
+0.2995 −1.2550 +9.8858 −9.5818
+1.993 −17.99 + 0.768 −0.381

−0.381 +1.993
−18.371 2.761
$''$2.761
−15.610 in N.P.D.

5°46′ … 0.9979
87.46 · 1.4093
= 0.4114
6.54 0.8155
16^{s}.86 1.2269

BAC 4342 An. prec. +0^{s}.321 An. pre N.P.D. +19.62″
Apt AR $12^{h}48^{m}$ ~~..~~ $12^{s}.2$ sec. var. + .002 sec. var. − .00
Dec. 84..13..18.4
0.323 +19.62
2 2
+0.646 +39.24

B.A.C. 4339 AR 12..47..57.21 N.P.D. $5^{\circ}45'59''.8$ 1850.0
+ 0.646 + 39.24
12..47..57.856 1852.0 5..46..39.04
cor to apt + 6.54 84..13..20.96 1852.0
+ 15.61
Appt. AR. 12..48..04.40 84 13..36.57
comp. + 7.8 − 17.7

$f + 1''.81$ $g + 2''.00$ $G\ 66^{\circ}.50'$ $h + 20''.13$ $H\ 203^{\circ}.18'$ $i - 3''.46$

$3^{\circ}..32' = 212' \times \cos 62 = 106'$

h = 62° a, alt 45°..00 & dif alt = 1°..46′
b, alt 47..46

a, r = 57″.0 × sin h =
b, r = 53.4 sin h =

57.0 1.7559
sin h 9.9459
sec δ 1.4060
1281 = 3.1078
427
85.4

53.4 = 1.7275
9.9459
0.9979
469 = 2.6713
156
31.3

$a = 12^{h}..45^{m}..13^{s} = 191^{\circ}..18'$ $191^{\circ}..18'$
$\delta = + 87^{\circ}..45'..44''$ $H\ 203^{\circ}..18'$ $G\ 66^{\circ}..50'$
$394..36$ $258^{\circ}..08'$
$H + a = 34..36$

sin. H+a 9.75423
sec. δ 1.40928
log. h 1.30384
2.46735 + 293.30

cos. H+a 9.91547
sin. δ 9.99967
log. h 1.30384
1.21898 16.55

sin G+a 9.99062^{n}
tang δ 1.40895
log. g 0.30103
1.02308^{n} − 50.59
1.70060
f + 1.81
31.14
+295.11
− 50.59
244.52
81.64
+ 18.97
da = + 16.328

cos. G+a 9.31810^{n}
log. g 0.30103
9.61413^{n} − 0.415
log. i 0.53908
cos. δ 8.59072
9.12980^{n} − 0.14
− 0.56
+ 16.55
+ 16″.00
dδ + 16.00

May 25

$\alpha = 12^{h}.33^{m} = 188^\circ.15' \qquad 188^\circ.15'$

$\delta = +87^\circ.41' \quad H \;\; \underline{203^\circ.18'} \quad g \;\; \underline{66^\circ.50'}$

$391^\circ.33' \qquad 255^\circ.05'$

$H+\alpha \;\; 31^\circ.33'$

sin $H+\alpha$ 9.71870
sec δ 1.39338
log. h $\underline{1.30384}$
2.41592 + 260.6

cos. $H+\alpha$ 9.93053
sin δ 9.99964
log h $\underline{1.30384}$
1.23401 17.14

sin. $g+\alpha$ $\overset{n}{9}.98511$
tang δ 1.39302
log. g $\underline{0.30103}$
$\overset{n}{1}.67916$ − $\underline{47.77}$

f = + $\underline{1.81}$

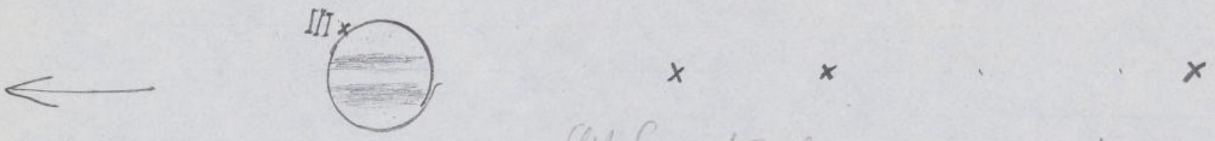
262.41
$\underline{-\;47.77}$
+ 214.64
$\underline{-\;71.55}$
$d\alpha$ = + 143.09

cos. $g+\alpha$ $\overset{n}{9}.41063$
log g $\underline{0.30103}$
9.71166 − 0.514

log i 0.53408
cos. δ $\underline{8.60662}$
$\overset{n}{9}.14570$ − $\underline{0.14}$
− 0.65
$\underline{17.14}$
$d\delta$ = + 16.49

1852

May 26 Pm



Gt. Equatoreal

Disapp. of III Satellite 194 h m s 13.. 46.. 35.0 − 0 hb G.W.T. ob.

1.. 36.38
13.. 44.. 58.62
4.. 17.. 36.07
9.. 27.. 22.55
1.. 32.95
9.. 25.. 49.60 M.S.T.

4.. 16.. 49.33
46.74
4.. 17.. 36.07

13.. 46.. 35.0
1.. 36.38
13.. 44.. 58.62
4.. 17.. 36.07
9.. 27.. 22.55
1.. 32.94

4.. 16.. 49.33
46.74
4.. 17.. 36.07

May 26 Occultation of Jupiter's III Satellite M.S.T. 9.. 25.. 49.61

June 5th 1852 Petersens Comet of May 17th

12^h +80 Comet is South following a star (b) 9th.. 10th mag

(a) of 9th.. 10th [illegible]

Zero 29.07

b is n fol. a

^{h} ^{m} ^{s}	^{r}					
194 = 14.. 13.. 40	42.83			08		
16.. 00	43.17	43.37	14.. 14.. 00	06		52.04
18.. 20	44.18	49.78	14 32 43			
		6.41	18.43	08		
		13		29	14.. 43.. 22.8	44.. 32.5 1.09.7
		18.7) 63.8 (3.41		29.07	44.. 01.7	45.. 11.5 1.. 9.8
		56 1				
14.. 20.. 35	19 beats	7 0				
22.. 10	20 "	74 8				
		220				
23.. 40	20 "					
24.. 52	20 "					
26.00	21 "					
27.. 49	19 "					
25.. 06	119					
14.. 24.. 11.0	2)19.83					
	9.91 = dα					

Comet moves δ 3".41 a minute

Comet is much fainter than it was 10 days since & is now difficult to observe

			h m s	
14.. 30.. 45	49.32	233	14.. 24.. 11.0	
32.. 28	49.78	49.78	1.. 16.2	4.. 56.. 14.50
34.. 55	50.23		14.. 22.. 54.8	46.74
146.. 08	279.45		9.. 57.. 01.64	4.. 57 01.64
14.. 24.. 21.33	46.57	-	9.. 25.. 53.16	
	29.07		1.. 32.70	
	17.50		9.. 24.. 20.46 ~~M.S.T.~~	
	9.8		$- 2^s = 465$	
	14000		9.. 24.. 18.46 M.S.T.	
	15750			
	171.500			
	2.. 51".5 = dδ			
cor to time of dα ∓10^s	-0.6			
	2.. 50.9			

Place of Comet computed by Elements published in Astr. Jour. - G.P.B

		α	δ
June 5th.. 7h.. 15m	comp	$10^h.. 58^m.. 01^s.0$	+ 67°.. 28'.. 50"
	obsd	10.. 58.. 00.5	+ 67.. 28.. 30
	c-o	+ 0^s.5	c-o + 20"

b = star of Comp on axis of rotation in Dec & 5' of Scale in AR all on left

194 $14^h..52^m..20^s$ 67..22..56
HW 3..52..44 − 2 20 ..
1..16 67..20..36
14..51..04
3..52..44
10..58..20
Inst cor − 29
AR 10..57..51 * Comp
α Ursæ Maj
* 2nd mag
194 15..14..24 62..35..30
HW 4..18..06 62..33..10 appt Dec
194 + 1..16 Inst cor − 2..20
15..13..08
h 4 18..06
10..55..02
AR 10..54..33
Inst Cor 29^s

ρ 9 of b
194 15..03..00 63.18
194 14..16 43.38
47 19.80
4.0
194.0
=

ρ Jol b
15..05..40 ~~17 beats~~ 17.5 beat
14..16 20.0
2)2 5
1.25

Star of comp. Arg. Zone 176 No. 116
AR $10^h..57^m..23^s.35$ Dec. + $67^\circ..24'..45''.0$
k − 15.68 d + 55.2
k' − 0.11 d' + .4
10..57..07.56 + 67..25..40.6 1842.0
39.63 3'..13''.0
10 57 47.19 + 67..22..27.6 1852.0
9.91 2..51.5
ρ AR 10..57..57.10 ρ δ + 67..19.36.1

Star of Comp
Appt AR $10^h..57^m..51^s$
Dec $67^\circ..20'..36''$

p = 46''.05910 + 20''.05472 sin. α · tang δ
p' = 20.05472 cos α

150
14..15
1
α = 164..16

1.30221
sin α 9.43323
tang δ 0.38099
1.12643
+ 13.38
46.05910
+ 13.38
59''.439
19813
+ 3^s.9626
10
+ 39^s.6260

cos α 9^n.98342
1.30221
1^n.28563
− 19.30
10
193.00
− 3..13.0

9..24
7..15
2 09
47) 129 (2.75
94
350
329
210

194
3
582
48
534
= 8'..54''
67..19..36
67..28..30

1.25
3
3.75
31
3.44
10..57..57.10
10..58 00.54

June 5th $9^h..24^m..18^s.5$ m.s.t.
Comet follows * 9^h $0^m..9^s.91$ 6 obs
" South of " 2'..50''.9 6 "

Reduction of Appt place -

June 5th 1852 α 10..57..47.19 δ +67°..22′..27″.6

164..27

H 193..08 −2.06 = i $0^{n}.31387$

α 164..27 cos δ 9.58527

H+α 357..35 $9^{n}.89914$ = −0″.79

sin( ) $8^{n}.62497$ cos( ) $9^{+}.99961$ 10..57..47.19 +67..22..27.6

sec δ 0.41473 sin δ 9.96520 −0.12 +15.9

+20.31 = h 1.30771 h 1.30771 Ap. R * = 10..57..47.07 67..22..43.5

$0^{n}.34741$ = −2″.22 1.27252 = +18.73 $\Delta\alpha$ +9.91 $\Delta\delta$ −2 50.9

G 51..10 App. R of ß 10 57..56.98 67..19..52.6

G+α 211..37

sin( ) $9^{n}.71952$ cos $9^{n}.93022$

tan δ 0.37992

+2.41 = g 0.38202 g 0.38202

$0^{n}.48146$ = −3.03 $0^{n}.31224$ = −2.05

f = +3.49 −2.84

−5.25 +18.73

−1.76 +15.89

58

dα − $0^{s}.117$

dδ + 15″.89

June 9, 1852

In accordance with previous arrangements some fifteen or twenty members of the Senior class came in about 8 o'clock for the purpose of viewing some celestial objects through the great Refractor.

Pretty strong wind from the south west — very clear. Turned the telescope on Venus — atmosphere in great commotion — Venus dances and occasionally has a glimmering. Clock goes too fast Every student remarks the blue light with which it is bordered especially when a little out of the centre of the field.

Pulled round to Jupiter — less commotion in the atmosphere — Jupiter looks pretty well — two belts easily distinguished — three satellites only in the field the fourth being at too great elongation eastward. All are delighted with the appearance of Jupiter.

Cluster in Hercules — being near the zenith looks finely — draws forth expressions of admiration — its dim nebulous appearance in the finder and its gorgeousness in the telescope are transitions too sudden, to be fully realized.

Moved down on α Lyrae — several had looked at this when it was thought better to look at ε as it was getting late. This did not excite much interest, — and much less after some declared that they could see it double with the naked eye. Possibly they might; but rather think they mistook the star in question for ζ Lyrae.

Next turned to the annular nebulae in Lyra. Notwithstanding the lateness of the hour and weariness which must nessesarily follow, as well as the little interest which the last object created this roused up a fresh and agreeable excitement, which produced a promptness of attention that enabled 'm to soon get through.

Conduct of the students, very good — Not a little amusing to hear them discourse among themselves on the use of various parts of the machinery of the telescope, from the fact of their attributing to it, a function entirely different from the real one.

June 10 P.m.
Some 15 or twenty more came in to-night- Atmosphere in a very bad state- great deal of cirrus Venus looks exceedingly bad- Jupiter with three satellites seen. To see the belts requires some effort. Looked at ε Lyrae, α Lyra and the annular nebulae.
The annular nebulae was an object of much interest, as was also the Cluster in Hercules which was the next and last object examined.
Students very quiet-

June 11 P.m. Twenty or more students came in to-night- Atmosphere a little disturbed- Venus looks pretty well- the blue light with which it is bordered is subject to much discussion Some attributing it to the want of achromatism in the telescope. It is more apparent from Venus being not in the centre of the field- and as the clock goes indifferently, and being alone cannot keep it exactly in the centre, where it exhibits very little color.
Turned on Jupiter- belts very distinct- three satellites in the field- Much annoyed with fleeting clouds- caused some little delay- Students noisy- few inclined to be rowdy- hushed up by the others.
Cluster in Hercules- gives more satisfaction than any other object- students leave as soon as they have looked at it- glad of it
Aurora Borealis making a fine display. Two students came just as the others had gone out- a council consisting of R.F.B. & C.W.T. resolved that it was a little zu spät for visitors, and they retired with instructions to appear with the others in good season to-morrow eve.

June 12 Pm

No students came to-night — looked for Petersen's Comet too much cirrus - stars dim - impossible to see a faint object

Reduction to appt place of the Comet observation of June 14th 1852 — α 10.56.48.06 δ +56°.14′.09″.5

	H	189°.00		−1″,39 = i′	0.14301	
	α	164.12		cos δ	9.74692	
	H+α	353.12			9.88793^n	= −0,77
	sin ( )	9.07337^n		cos	9.99693	
	sec δ	0.25507		sin δ	9.91976	
+20″.37	= h	1.30899		h	1.30899	
		0.63743^n	= −4.34		1.22568	= +16.81
	G	45.03				
	G+α	209.15				
	sin ( )	9.68897^n		cos	9.94076^n	
	tan δ	0.17483				
+2″.64	= g	0.42160		g	0.42160	
		0.28540^n	= − 1.93		0.36236^n	= −2.30
		f =	+4.29			−3,07
			−6.27			+13.74
			−1.98			
			.66			

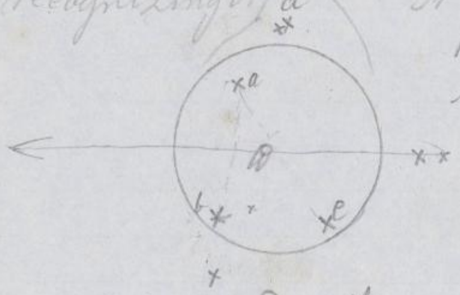
dα −0s.132

dδ +13″.74

	10h 56m 48s.06	+56° 14′ 09″.5
	− 0.13	+ 13.7
	10.56.47.93	56.14.23.2
Δα	+ 24.45	Δδ − 4.18.4
Comets Appt AR	10.57.12.38	+56.10.04.8

June 14 Pm. Petersen's Comet

Comet extremely faint - swept over it several time before recognizing it. It will not bear the slightest Illumination



194 h m
At 15.. 40.. 00

b * of 10 mag. a * 10.11
Dif. Dec b & ☉

15.. 54.. 00
57.. 30
11 1.. 30
15.. 55.. 45

53.75
~~53.30~~
~~57.30~~ 52.21
b

53.75
52.21
1 5 9 6
52.98
29.04
23 9 4

☉ fol. a and ~~north~~ of a

h m
16.. 02 Comet is in a line joining a and c about 1/3 (perhaps a little greater) the distance reckoning from a - also in a line joining d and b
b is Arg. Zone 92 No. 112

17.23
10.. 56
6. 27
17.35.00
16.. 56 48
6.38.12

(194) b 16 15.. 24.5 H 5.16.42 Dec. + 56.. 15.. 20
West h m s

57.5
16.. 14.. 27.0
5.. 16.. 42
10.. 57.. 45.0
10 56 48

56 14 9
1 .. 11

(194) B W 16. 19.. 05 H 5.. 24.. 20 Dec + 57.. 11.. 44

57.5
16.. 18.. 07.5
5.. 24.. 20
10.. 53.. 47.5
10 52 52.75
54.75

57.. 10 28
1.. 16

15.. 55.. 45
57
15.. 54.. 48
5.. 32.. 30.7
10 22.17.3
1.. 41.9
10.20.. 35.4 M S J

Obs. made Jun 23rd for the diff of place where comet was seen and b

194
18.. 05.. 11.4 24.4
35.8

02.4 23.6
26.0
24.4
24.4

03.2
27.6 24.4

1.. 12 25.4
29.. 04 17 8
27 92 24.45
56 96

Too early 57.2
29.2 23.0

03.8 25.4
29.2

23.94
23.94
23.94
27.92
19 7 4
24.93
9.8
19 9 44
22 4 37
244.314
4.. 04.. 31

June 14 8m   Petersen's Comet of May 17, 1852

$\frac{2}{50}$

b Arg. Zone 92. No. 112

$\delta - D = +\frac{47}{100}$, +.20
k′ − 18
160
20
−3,60

+1.5
$+\frac{.20}{300}$

mark

10„56„42.31
k −27.58
$\frac{\delta - D}{100} \cdot k$ = −3.60
10 56„11.83 1842.0
+ 36.23
× Æ 10„56„48.06 1852.0
24.45
Æ 10„57„12.51

+56„17„00.3
d + 21.6
+ .30
+ 56„17„22.2 1842.0
− 3„12.7
× δ + 56„14„09.5 1852.0
4 4.31
δ + 56.~~10~~„05„19

sin. α 9.44034
tang. δ 0.17565
1.30220
0.91819
+ 8.2.83
46.06
+ 54.34
1811
An. prec + 3.623

motion in one minute = 2″.65
1.04   10″.5

h m s
16„02„00
57
16„01„03
5„32„30.66
10„28„32.94
1„4296
10„26„49.38 M.S. Time

5„31„43.92
46.74
5„32„30.66
1

194 15„54„00 53″.75
57„30 52.21
52.98
Zero 29.04
23.94
4.8

27.92
5.6
273.6 = 4′„33″.6

M.S.t 10h„20m„35.4 234″.6 = 3′„54″.6 δ S of × b 2 obs.
10„26„49.4 dδ = 4„33.6 „ 1
10„26„49.4 dα 0m„24s.45 follows × b

1.30220
9.48284
−1.28504
−19″.27
.10
19.270

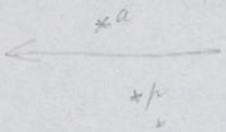
10„20„35.4 3„54.6
20„35.4 3„54.6
26„49.4 4„33.6
1202 4 228
10„22„40.1 +4„07.6
4„09.3 cor = 10.8 to time of dα
10„26„49.4 4„18.4

Mean Result

M.S.T. 10h„26m„49s.4 Comet fol. × b 0m„24s.45 1 obs
„ S of „ 4′„18″.4 2 „

The observations in declination are the mean of two by the micrometer and one by lineation with stars in the field – The obs. in Æ depends on allignment alone. As the comet was exceedingly faint the latter mode of determining its place was perhaps nearly as accurate as if the micrometer had been used.

June 15 Pm



a comp. star
p planet supposed Psyche

Dif. Dec.
14,,54,,00 73^{r}40
56,,10 73 55
57,,00 73 64
15,,30 35 74.00

Dif. AR
15,, 01,, 4.5
p 15,,01 12.5

1 58.0
02 06.5

2 34.0
15,, 02,,42.0

3,, 3.5
3,, 11.4

9.5
15,, 04,,19.4

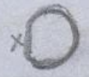
44.5
20,, 52.4

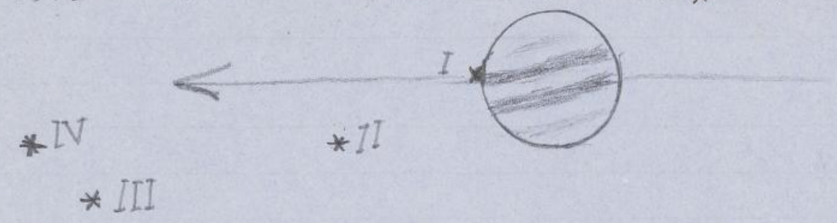
36.
21,,44.0

June 21 Pm   Jupiter   1852

Occultation of I Satellite

The edge of the disc of Jupiter where the satellite appears in contact with it seems truncated or flattened Thus -





obs. C. W. T.

194.. 15..51..35.0 – obs
46.08
15..50..48.92
6..00..6.56
9..50..42.36
1..36.77
9..49..05.59 MST

5..59..19.82
46.74
6..00 06.56

15..51..35.0
46.3
15..50..48.7
6..00..6.56
9..50..42.14
1..36.76

5..59..19.82
46.74
6..00..06.56

June 21 Occultation of Jupiter's I Satellite M.S.T. 9..49..05.38

June 23^{rd} 1852 II Comet of 1852.

Comet's AR $11^{h}.. 00^{m}, 44^{s}$
" Dec +48°.. 05'

194-16.. 44.. 30	1653
45.. 00	1700
46.. 15	1675
55..	1675

July 7th 1852 Obs for value of Scale B Temperature 75°
Polaris
3rd Set

1st obs. is of Companion
over the wire 0 a break
& then follows Polaris

Commenced at − 0'.20"

4'.20" too early 1s
Break both before & after 5'.00"
6'.00 1s.5 early
7.30 0.5 late
8.10 1.0 early
9.30 Break?
10.10 1s early
10.20 0,5 late

For wire line 4 there was
no signal the 1st mark
during the observation
9th No signal and the
obs of Comp. several seconds
perhaps too late.
10th lost

1st Set were passages over each
division of the scale in the ordinary mode of
observing zones rarely used & following in R
2nd Set passages over the scale
commonly used prec. in R
3rd same scale with Polaris &
companion-

2.20 0,5 late
3.10 1.0 ~~late~~
4.00 2s + early Day of Subtract
Break before & after
5.
5.40 1s early
6.00 2nd mark
6.50 2s late
8.00 1s early
9.00 Short break

July 7th 1852 The following observations read off from the Spr. Gov. sheet were made for the value of a division of the Scale B used in the Zone Observations.

Times by E.C. Daily Rate.

Set A = I, Transits of Polaris - S.P. over the scale which is in greatest AR when the numbers are in their natural position. This is not the group of divisions ordinarily used

-0..20	14..03..34.3	1399	4..40	14..16..30.5	1720
-0..10	4..2.0	27.98	50	16..56.5	3440
0..00	4..29.3	14..4..27.98	5..00	17..21.3	14..17..22.40
0..10	4..55.2		10	17..48.2	
20	5..19.1		20	18..15.5	
30	5..46.7		30	18..40.2	
40	6..12.7	1370	40	19..05.6	1623
0..50	6..37.9	27.40	50	19..31.1	3246
1..00	7..2.6	14..7..3.40	6..00	19..56.8	14..19..56.46
10	7..28.9		10	20..22.1	
20	7..54.9		20	20..46.7	
30	8..19.7		30	21..13.0	
40	8..46.5	1300	40	21..38.4	1520
50	9..11.5	2600	50	22..5.6	3040
2..00	9..38.1	14 9..38.00	7..00	22..29.7	14..22..30.40
10	10..04.1		10	22..55.6	
20	10..29.8 +0.5		20	23..22.7	
30	10..54.5		30	23..48.0	
40	11..22.1	1205	40	24..13.0	1445
50	11..46.4	2410	50	24..41.1	2890
3..00	12..12.8	14..12..12.10	8..00	25..04.0	14..25..04.90
10	12..36.1		10	25..29.9	
20	13..03.1		20	25..56.5	
30	13..31.2		30	26..22.4	
40	13..53.3		40	26..47.1	1362
50	14..21.5		50	27..13.0	2724
4..00	14..49.8 47.2	1737	9..00	27..39.1	14..27.39.24
10	15..11.9	3474	10	28..07.0	
20	15..37.8	14..14..46.74	20	28..30.0	
30	14..16..04.6		30	14..28..56.1	

Value of Scale B. Temp = 75°

July 7th 1852.

Set I continued

9.. 40	14.. 29.. 23.9	1293
50	29.. 48.6	2586
10.. 00	30.. 12.0	14.. 30..13.86
10	30.. 38.8	
10.. 20	14.. 31.. 6.0	

Set II. Transits of Polaris over the scale preceding in AR & that which is ordinarily employed in Zone Observations-

-0.. 20	14.. 36.. 42.9	1213	3.. 00	14..45.. 18.2	14.. 45.. 20.08
-0.. 10	37.. 10.6	24.26	10	45.. 44.8	
0.. 00	37.. 35.0	14.. 37..36.26 { Mean of five	20	46.. 12.7	
10	38.. 3.9		30	46.. 40.8	
20	38.. 28.9		40	47.. 01.7	154.4
30	38.. 55.3		50	47.. 28.0	30.88
40	39.. 19.8	1195	4.. 00	47.. 55.6 -2.0	14.. 47 ..54.88
50	39.. 46.5	2390	10	48.. 22.3	
1.. 00	40.. 11.0	14.. 40.. 11.90	20	48.. 46.8	
10	40.. 39.2		30	49.. 12.7	
20	41.. 3.0		40	49.. 39.2	1520
30	41.. 30.1		50	50.. 6.0	3040
40	41.. 53.7	1679	5.. 00	50.. 30.4	14.. 50.. 30.40
50	42.. 19.8	3358	10	50.. 55.3	
2.. 00	42.. 44.6	14.. 42 ..45.58	20	51.. 21.1	
2.. 10	43.. 11.3		30	51.. 48.8	
20	43.. 38.5 -0.5		40	52.. 13.2	1418
30	44.. 2.7		50	52.. 36.2	28.36
40	44.. 29.9	.60.4	6.. 00	53.. 05.9	14.. 53..0436
50	14.. 44.. 54.8	320.8	10	14.. 53.. 30.1	6
		14.. 45..20.08			

Value of Scale B Ther = 75°

Set II (Continued)

6..20	14..53..56.4		0..
30	54..21.7		
40	54..48.3	1336	
50	55..14.5	2672	
7..00	55..36.5	14..55..38.72	
10	56..3.9		
20	56..30.4		
30	56..56.7		
40	57..23.7	1292	
50	58..49.2	2584	
8..00	58..11.2 +1.0	14..58..13.84	
10	58..39.8		
20	59..05.3		
30	59..29.3		
40	14..59..54.4	1703	
50	15..00..20.4	34.06	
9..00	00..44.7	15..00..46.06	
10	1..11.8		
20	1..39.0		
30	2..04.6		
40	2..28.3	1686	
50	2..56.3	33.72	
10..00	3..21.3	15..3..21.72	
10	3..49.5		
20	4..13.2		

Set III

0..00	C	15..07..36.2	
	P	7..57.6	
1..00	C	10..11.2	2..35.0
	P	10..34.3	2..36.7
2..00	C	12..45.2	5..09.0
	P	13..07.8	5..10.2
3..00	C	15..19.2	7..43.0
	P	15..42.7	7..45.1
4..00	C	17..54.1	10..17.9
	P	18..13.7	10..16.1
5..00	C	20..29.2	12..53.0
	P	20..49.5	12..51.9
6..00	C	23..2.5	15..26.3
	P	23..27.7	15..30.1
7..00	C	25..36.5	18..00.3
	P	26..00.1	18..02.5
8..00	C	28..9.9	20..33.7
	P	28..33.1	20..35.5
9..00	C		
	P	31..08.2	23..10.6

To dark to see the rest.

Value of Scale B (continued) Ther. 75°

Times of Transit from the zero line to each minute – Set I gives the times for the scale ordinarily following in R A least used – Set II for the scale preceding in R A most used – Set III for the middle between the two groups of divisions all being on the same slip –

For set I and II – each result is a mean result from the times of transit of the five divisions of which the central one is an even minute – Thus for 6..00 the value given is the mean of 5..40 – 5..50 6..00 – 6..10 and 6..20. For set III – the mean given is derived from a single passage of Polaris and its companion & corresponds with a declination 8" South of Polaris

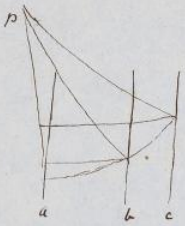
$d_0 - d_n$	Set I $h_0 - h_n$	w	Set II $h_0 - h_n$	w	Set III $h_0 - h_n$	w	Mean by wt. $h_0 - h_n$	w
0 to 1	$2^m..35^s.42$	2	$2^m..35^s.64$	2	$2^m..35^s.85$	1	$2^m..35^s.59$	5
0 .. 2	5..10.02	.	5..9.32		5..9.60		5..9.66	5
0 3	7..44.12		7..43.82		7..44.05		7..43.99	5
0 4	10..18.76		10..18.62		10..17.00		10..18.35	5
0 5	12..54.42		12..54.14		12..52.45		12..53.91	5
0 6	15..28.48		15..28.10		15..28.20		15..28.28	5
0 7	18..2.42		18..2.46		18.01.40		18..02.23	5
0 8	20..36.92		20..37.58		20.34.60		20..36.72	5
0 9	23..11.26		23..09.80		23..10.60	0.5	23..10.54	4.5
0 10	25..45.88	-	25..45.46				25..45.67	4

	$\frac{h_0+h_n}{2}$	$\cos\frac{h_0+h_n}{2}$,	$2\cos\delta$,	$\cos\frac{h_0+h_n}{2}\,2\cos\delta$.
$h_0 = + 12^m..54^s$				
$h_1 =$ 10..18	$11^m..36^s$	9.99945	8.71448	8.71393
$h_2 =$ 7..44	10..19	9.99956		.71404
$h_3 =$ 5..10	9..02	9.99967		.71415
$h_4 = +$ 2..36	7..45	9.99976		.71424
$h_5 =$ 0..00	6..27	9.99983		.71431
$h_6 = -$ 2..35	5..10	9.99989		.71437
$h_7 = -$ 5..08	3..53	9.99993		.71441
$h_8 = -$ 7..43	2..36	9.99997		.71445
$h_9 = -$ 10..16	1..19	9.99999		.71447
$h_{10} = -$ 12..51	0..02	0.00000		.71448

Polaris δ 88..30..56.8
Comp δ' 88..30..40.8

δ_0 for mean of all the Sets $= \dfrac{(2+2+\frac{1}{2})\delta + \frac{1}{2}\delta'}{5}$

$\delta = 88^\circ..30'..55.2$
cos 8.41345
2 0.30103
8.71448



$\sin d_o = \sin h_o \cos \delta$

$\sin d_n = \sin h_n \cos \delta$

$d_o - d_n = \sin d_o - \sin d_n = 2 \cos \frac{h_o + h_n}{2} \sin \frac{h_o - h_n}{2} \cos \delta .$

$ac = d_o$ $ab = d_n$ $d_o - d_n$ = dist of b to c , h_o = time of transit from c to a h_n from b to a

$\frac{1}{2}(h_o - h_n)$		$\sin \frac{1}{2}(h_o - h_n)$,	$2\cos \frac{1}{2}(h_o + h_n) \cos \delta$,	$\sin d_o - \sin d_n$,	obs'd values $d_o - d_n$,	comp. values	o − c	
1..17.79 =	0°.. 19'.. 27''	7.75264	8.71393	6.46657	1'.. 00''.40	1'.. 00''.07	+0''.33	1089
2.. 34. 83 =	0 .. 38.. 43	8.05161	.71404	6.76565	2.. 00. 25	2.. 00. 13	+0.12	144
3.. 51. 99 =	0 .. 58.. 00	8.22713	71415	6.94128	3.. 00.18	3.. 00. 20	−0.02	4
5.. 9. 17 =	1 .. 17.. 18	8.35187	71424	7.06611	4.. 00.18	4.. 00. 26	−0.08	64
6. 26. 95 =	1 .. 36.. 44	8.44924	.71431	7.16355	5.. 00. 59	5.. 00. 33	+0.26	676
7.. 44. 14 =	1 .. 56.. 2	8.52823	71437	7.24260	6.. 00. 60	6.. 00. 40	+0.20	400
9.. 1. 12 =	2 .. 15.. 17	8.59486	71441	7.30927	7.. 00. 43	7.. 00. 46	−0.03	9
10.. 18. 36 =	2 .. 34.. 35	8.65274	71445	7.36719	8.. 00. 40	8.. 00. 53	−0.13	169
11.. 35. 27 =	2 .. 53.. 49	8.70363	71447	7.41810	9.. 00. 16	9.. 00. 59	−0.43	1849
12.. 52. 84 =	3 .. 13.. 13	8.74954	8.71448	7.46402	10.. 00. 42	10.. 00. 66	−0.24	576
					55)55.. 03. 61		n−1 =	9)4980

Mean giving to each a weight proportionate to its distance from zero i.e. by least squares   1.. 00.066

553
24
67

Final value of 10 div of the Mica scale B = 10'.. 00''.66 − Temp = 75°   168

Prob. error of any one division = 0''.16   .09   Ref cor   144

10'.. 00.57

Prob. error 0''.1608 of a division

Value of Mica scale B (continued)

Ref

at Ther 39.4 — 10 div = $9'\,58''.10 - 0''.05$

75.0 — " — $10\,.\,00\,.\,66 - 0.09$

35.6 — $35.6)\,2\,56\ (0''.072$

2492

680

$72)\,66\ (9.2$

648

120

75.0

9.2

65.8

264

72

528

1848

1.90

Value of 10 div of scale = $s = 10'\,00''.00 + \cancel{t}\ 0''.072\,(t - 65^\circ.8)$

See Below

$s = 10'\,00''.00 + 0''.072\,(t - 65^\circ.8)$

t being the temperature Fahr.

The wire 5 was carefully adjusted to be parallel with ~~the~~ hour circle and the focus was adjusted by the condition that there should be no parallax of the wires & image of the star.

Combining the above values with those derived on Dec 22nd 1852 after correcting all for Refraction we have

$$s = 10'\,00''.00 + 0''.062\,(t^\circ - 67^\circ.0).$$

See Zone Book No 4.

July 15th 1852

Observations to determine the angle of the AR with the Declination wires of the Mica scale B.

δ Ophiuchi   Tel E of pier

Zero on left hand (prec in AR) open field above (S)

upper (S) AR wire A   lower AR wire B
270..03   270°.03'

Dec wire 5   359..52   Scale in its upright position i.e. the figures
259..52   are upright & the open field is in greater AR

Dec wire 5   359..46
..50

upper AR wire   90..04 = B
lower "   90..01 = A

Dec wire 5   179.50   Scale upside down   open field fol-
179.50   lowing in AR.

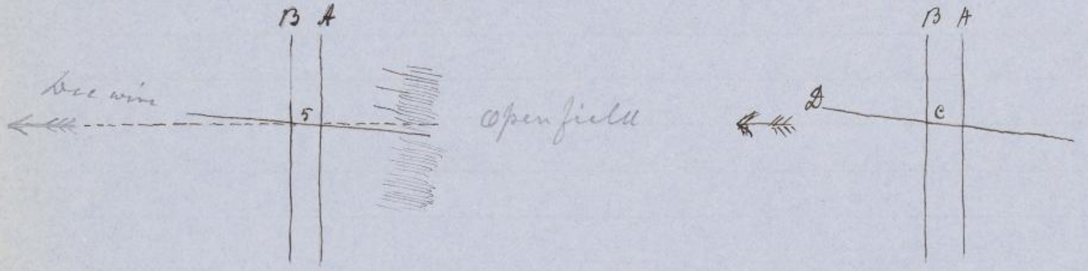
330 = 2.5185
cos 89°..48'..15"   7.534
1".13 = 0.052

Perpendicularity of divisions of Scale B.

When the Scale is in its proper position & so adjusted that the AR wires are perpendicular - and the declination scale readings upright Tel. E of pier - the open field being on the folg. side in AR - owing to the dec scale not being at right angles with the AR wires the scale following in AR reads larger than the 1st scale by about 1".5

That is in the quadrants made by the wires - the s f & n p are larger than 90° s p & n f less than 90°

Position I.



By δ Ophiuchi	Zero of Dec for AR wire	A	270°.03'	270°.03'	
	"	B	270.03		
	" Dec wire	5	359.52	359.52	
		Angle BCD.		=89.49	89.49.0
By a star of 8th mag. near the equator	Zero of Dec for AR wire	A	90°.04'	90°.02'.30"	
		B	90.01		
	" Dec wire	5	179.50	179.50.00	
		Angle BCD		89.47.30	89.47.5
				Mean	89°.48'.15"

The distance between the two sets of divisions is at the middle of each 5'.30" = 330" Then an observation of declination in the position I would read off on the second set too large by

330" cos 89°.48'.15" = 1".13

So that a declination read off on the 2nd set of divisions (rarely done) must have the reading in position I diminished by 1".1

This has always been done mentally before such observation has been recorded.

Perpendicularity of divisions of Scale B.

Ordinarily observations are made within $0'.30''$ of the center of the first set of divisions which is $2'$ wide - & the ordinary error to which a reading off is liable from the divisions not being parallel to the declination circle is

$$30'' \cos. 89^\circ.48'.15'' = 0''.10$$

which is further reduced from the circumstance that in most instances the star is traced across the divisions & the judgment formed by a mean estimate.

In the few instances where the readings are taken from the 2nd set of divisions, the 1st set being employed in the great body of the observations, I have hitherto corrected the readings of the 2nd Scale to the 1st mentally before recording them in the book the amount being ascertained by trial - in future it will be sufficient to deduct $1''$, $(1''.10)$ from each reading Under similar circumstances in Position I of the scale.

July 27 Place of Biela's Comet at $13^h..16^m$ Camb. m.t.

hourly mot in AR $+11^s.5$ ☄ AR $4^h..40^m..13^s$ $+11^s.7\,t$

$\delta + 6''.8$ $\delta+27°..44..31''$ $+4''.0\,t$

star B.A.C. No. 1497 AR $4^h..43^m..33^s$ } 1852.0

7 mag. δ+27°..38..42'' }

Searched one or two hours over this region unsuccessfully

3.736 0.495

1868 247

7.5 1.0

HC 11951 1800 194.3

6..5..39.40 63..30..26.7

3..14 3 + 25.7

Aug. 13

Aug. 13 0 90°..29'..06'' δ + 26..43..59.7 ∗ 8^m 1850 AR 6..8..53 7 NPD 63..30 52 4

15 93..9..44 + 26..22..14 10 − 46 52

2..40..38 21..59'' ∗ 7^m 6..9..03.7 62..., 44

1..20..19 10..49

20..04 2..42 h m s

1..00 16 8..07 ∗ 8^h 6..8..54 26..29.08

^{h} ^{m} 90..29..06 26..43..59 ∗ 7^t 6..9..04 27..16.00

Aug. 13 13.15 91..29..22 26..35..46

6..04

1..56

h m s 1,4 h m

☄ α 6..05..57.4 at 13..15 CWT 23..48..03 23..48..03

δ+26°..35..46 29 30..08 54

23..48..26 6.20..51

at $3^h..15^m$ AM AR $6^h..6^m..24^s$ hly mo $+13^s.3$ 6.19.35 6..19.35

Dec $26°..35'$ " $-26''$ 30 08.01 1..16

6..08..01

No Comet to be found after two hours hunting for it with favorable circumstances

150
Aug 13/14 Att

Looked at Saturn The minor-axis is not scarcely so large as to become equal to the diameter the ball bulges out a trifle beyond the outer edge—

Aug. 18 1852 Westphal's Comet

Star south preced. A

21.. 26.. 00 26r 23 a x 22.6 7.9
27 .. 35 25 91 A 21.. 34.. 30.5
29 .. 25 25 37
257
25.84
21 02

5.2 8.3
21.. 35.. 18.5

0

40.2 8.3
21.. 35.. 48.5

21 41.. 00 21r 51 Zero 20.0 8.2
42.. 15 21 93 29r 01 21.. 36.. 28.2
21 44.. 80 20 33 28 96
210 .. 45 20 58 29 03 12.8 8.9
21.. 35.. 07.5 23.43 29 02 21.. 37.. 21.7
33.2 29.005 3602
9.. 48.. 00.10 21.. 35.. 40.7 5.575 29.005 59.8 8.2
46.74
9.. 48.. 46.84 9.. 48.. 46.84 9.8 21.. 38.. 08.0 498
11.. 46.. 53.86 44600 38 30.4 8.30 = dα
1.. 55.80 50175 21.. 36 25.07 mo
M.S.T. 11.. 44.. 58.06 54.6350 = dδ motion for 1.. 18 -.04
21.. 35.. 7 8.26

Aug 18. at Camb m s t
Comet follows * 11th dα = 0m.. 8s.26
" N of " dδ = 0'. 54".69

61 44
23 25
38 19

26) 38.3 (1.5
26
123

21h 27 40 25.84
21 42 35 21.02
14 55 4.82
10
14.9) 47.2 (3.17
447
250
149
1010

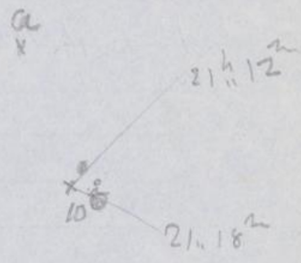
Apparent Daily mo in Dec
+1°.5

3 17
465
1585
1902
1268
147405 = 2' 27"

star of comp. n.p. * b

b = * 9 mag = Weisse 945
c = * 8,7 = Weisse 1020
a = * of comp. = 11 mag.

62r69 = dif. δ a & b
29 01
33 68
6.7
33 01 = 5' 30".1



Dist least 7"
Comet fol.

a 1 30.0
b 22,01 43.1

11.3
2,, 24.2

21.. 36 fol * 8s.30
22.. 4 " 9.20
28 " .9
man in 1m of time 9/280 = 0s.032

a 22,,04,,08.0 a south of c
4,,017.2 9.2
c 22,,07,,38.1 3..20.9 a & c 45r88
Zero 29.01
16 8.7
3.37
165.33

18.1
27
12 67
36 2
48.87

c = W 1020

1825 +23° 14' 46"
+ 8 9
1852 23 22 55

a S of c 2'..45".3
a S of Comet 0..54.6
c N of Comet 1 50.7 at 21h35
Mo in 46m.5 2 27
C S of Comet 0 36 (22h 21) 1825

b - W 945

18.2
27
1274
364

ℛ a 1h..40m..30s
Δα 3.. 21
ℛ * c 1h.. 43m..51s
Dec * c 23°.. 28'

1852

23 6 32
9 11
23 14 43
5 30
a 23 20 13 by b
23 20 10 by c

ℛ 22..21..37
3 18 24
194 Slow 30
22.. 22.. 07
3 18. 24
α Comet 1 ..40 ..37

H 12- 8..41..36 PD 66..34..36
3 18..24 δ 23°..25'.24"
c N of Comet 0 36
Dec c 23 24 48

Aug. 24 Pm. Observer C. W. T. Disappeared instantly – good observation

Immersion of 26 Sagittari 6 mag.

Chron. 194

$18^{h}\,42^{m}\,48^{s}.0$ – 4 kts

-2

18 42 46.0

E.C. 19 06 00

194 19 06 05.8.

Aug. 24/25 Am.

Looked for Biela's Comet with great care, but was unable to find it. Atmosphere steady and clear.

Searched with the Comet-seeker for Dr. Westphal's Comet – could not see it – appeared to be pretty clear in the place where it ought to be ha[illegible] seen.

New Nebula?

Aug. 31/52 Am.

Place of Biela's Comet according to Santini's Ephemeris, Ast. Nach. No. 756 at $13^h\,44^m$ Camb. M. Time

AR $7^h\,44^m\,26^s.3$ } 1852.0
Dec. $+21^\circ\,05'\,35''$ }

68.55

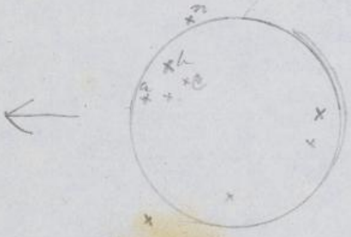
1..40

2..47
7..44.26
5..03..26
457

7..44..26
6..04..26

2..2.8
7..44.26
5..16.26

Diagram made at $2^h\,45^m\,00^s$ by 194



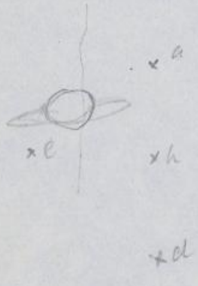
h ✻ of 10.11 mag or 11 mag
h in centre of field disappears 16^s after a
" " " n " 6.5 after h

c is suspected to be the comet — it is seen only by looking obliquely, as an extremely faint nebulous light, scintilating occasionly.

Light cumuli have been floating so continually since 2^h Am, that an opportunity to bring the telescope on the place of the comet did not occur till it was considerably illuminated by the approach of day. Moon pretty bright

Saturn

See next page

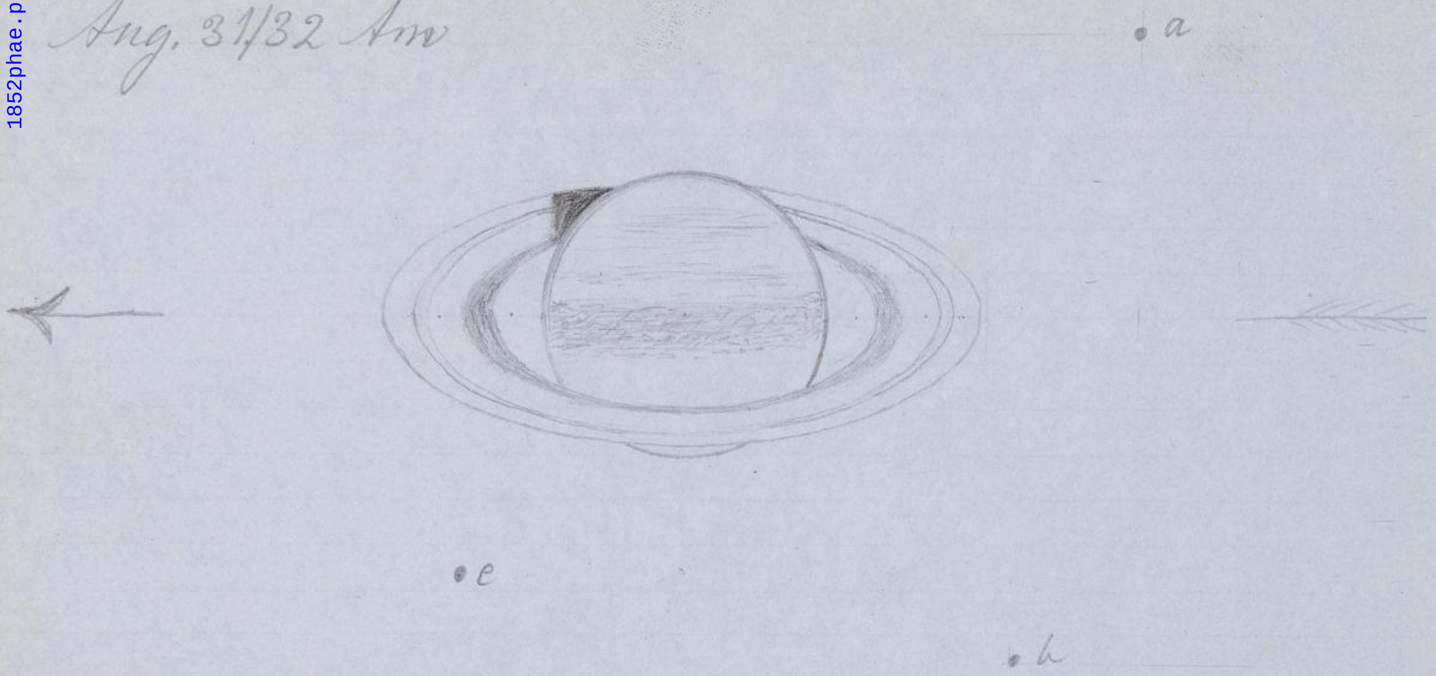


a 20" above plane h fol centre 23"
e 17" below d " " 20
h 30" " a " " 35
d 1'..08"

Unfortunately the moment the above measures were made was not marked. It was about $16^h\,45^m$ M. Time. This cannot, however, be in error more than 20^m either way.

160

Aug. 31/32 Am



Saturn never looked better — Perfectly steady and admirably defined The new ring holds a conspicuous place — it is about half the breadth of the inner one — the termination, exterior, is not sharp but fades away gradually and the point where it ceases to be invisible is as just stated, about half way between the outer edge of old inner ring and the inner edge of new ring The interior edge is sharply defined and equally [illegible] regular as the others

There is a very large belt crossing the ball near the centre and a few linear stripes above There is too much daylight to allow a very nice examination of the planet.

The satellites were measured off the mica scale with care, and from the centre of the ball For measures see prec. page
The above diagram represents the planet and position of the satellites

Sept. 1/2 Am.

Nebula.

Place of Biela's Comet according to Santini's Ephem. Ast-Nach. 756

h m s
β AR 7..55..16
δ +20°..39'..59"

daily mot. +10ᵐ..50ˢ
−25'..36

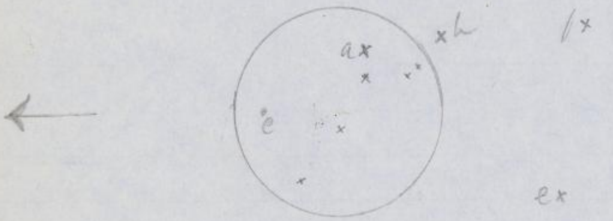
7..55..16
2..11
5..44

1..22
7..44..26
6..22 26

7..44..26
7..28
6..16

60
24)1536(64
144
96
96

64 1..4



Time from e's disapp. to a disapp
e extremely faint; nebulous and
comet-like in appearance

bts	h m s
52	2..28.00
53	2..28..30
51	2..32..00
51	33..00

e = β n. prec. a

s Diff. Dec

2..41..00 44ʳ71
43 46.00
44..30 45 82 good wt. 2
47..00 45 60 " wt 2
16..30 33 53
2..43..52 45.591
29.036
16.555
9.8
132440
149005
1622490
2..42.25 = dδ a&e
corr for mot 21.
2..21.25

e & a
Diff. AR by mic. | bts

2.. 50.45 53
2 54..00 53
2 56..00 54
3, 03.. 55
3 04.00 55 5
14 47 45 20.5
2..57..33 54.1
52.8 27.05 = dAR

10..43..11.85 2..58..25.8
46.74 10..43..58.59
10..43..58.59 | 6..14..27.21
2..39.69
16..11..47.58 M.S.T

Over

Sept. 2/3 Am.
e is not the Comet

Sept 1/2 Continued

a n.p.
Dif. R * a & b

a	3„ 12„06.0	
b	12 31.8	25.8
e	13„ 10.	38.2
f	13 13	3.0

a	3„ 14„ 17.0		
b	3 14„ 43.0	26.0	
e	3 15„ 21.0	38.0	41
f	3 15 24.0	3.0	47

a
Dif. Dec. a & b
44.60
44.40
44.60
44 42
202
44r50

Dif. b & e   e north fol

79r.31	44.50
79 48	29.03
79	15.47
79.395	9.8
29.030	12376
50.365	13923
9.8	151,606
402920	2„31.61
453285	
4935770	
8„13,58	

a 10.11 mag   Zero

b	10 „	29r 010
e	10	29 010
f	10,3	29 050
		29 050
f 10" south of b		120
		29r,030

The above mag. are too small, probably owing to the strong daylight

Dec a + 20° 33′ 6″
Δδ − 2 32
Dec b 20 30 34

This probably refers to * a not b

Star b h m s
194 3„ 33„ 32 − 0 Lb− H 7„38„56 N.P.D. 69°„24′„00
52.8 " 4„ 21„04 Dec 20„36„00
3„34„24.8
4„21„04.0
7„55„28,8
Cor mot − 34
R 7 54 55

Sept. 1/2 Continued

Star of comp. is Bessel's Zone 277 9th mag

$AR = t + k + k' \cdot \frac{\delta - D}{100}$

$Dec. = \delta + d + d' \cdot \frac{\delta - D}{100}$

t 7„53„31.07
+ 4,26 −0.01
7„53„35.23 1825.0
1„36.01
7„55„11.24 1852.0
daeα 27.05
7„54„44.19 = e AR

k + 4.261
~~k' − 0.029~~
+4.232
δ−D + .003
1852.0

k' − 0.029 .029
$\frac{\delta - D}{100}$ + .003
− .00087
.138
232
87
−.01102

d' + 2.22
$\frac{\delta + D}{100}$ + .003
+0.06 66

° ′ ″
+20„38„03.0
− 35.66 +0.84 ′ ″
δ + 20„37„28.34 1825.0 −0.11
4„22.17
20„33„06.17 1852.0
~~2„21.25~~
cδ + ~~20„35„27.42~~
2 42.25
20 35 48.42 −0.11

Anp 9.65
sec. Von .06
9.71
27
6797
1942
26217
4„22.17

s
Anp. 3.556
27
24892
7112
96,012
1„36.01

d − 35.66
+ .00
− 35.66

+2.22
38
1768
663
0.8398

20 38 03.0
− 35.61
+ 0.84
20 37 28 23

New Nebula α 7h 54m 44s } 1852.0 faint observed when searching for Biela's Comet
δ +20° 35.8 }

Compared with star 9th mag. B.Z. 277

Nebula prec. star Δα 0m 27s.05
" north of " Δδ 2′ 42″.2

Sept. 2/3 Sun.

7„ 55„ 11
1„ 38
~~6~~„ 17„ 11

Read off on place of e last night
1„ 47„ 35 H 6h„ 06 N.P.D 69 24
1„ 47„ 35
7„ 53„ 35
10„ 30
8„ 04„ 25
1„ 57
6„ 07

25
69„ 49

3„ 15
4„ 45
7 2„ 7 16, 2
.27 136„ 1
6. 96 135„ 46 α 9^h„ 3^m„ 4^s
6„ 33" δ + 13°„ 39'„ 35"
13„ 33
13„ 39„ 35

Sept. 13/14

Place of Biela's Comet according to Santini's Ephemeris Ast. Nach. No. 856

$15^{h}..15^{m}$ M.T. Camb AR $8^{h}..53^{m}..03^{s}$

Dec. + $14^{\circ}..44'..04''$

	h m s	° ′ ″		mag.
AR	8..49..04.54	+14..54..04.1	1825.0	8.9
	Anp 1..30	Anp 6..04		
AR	8..50..34.54	+14..48..00	1852.0	
AR	8..53..38.09	14..52..10.6	1825.0	
	1..29.9	6..12		
	8..55..07.99	14..45..58.6	1852.0	9

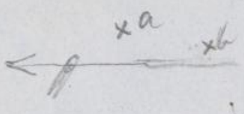
Searched nearly 2 hours for Biela under circumstances every way favourable, but no object was seen which could even be suspected to be the comet. for 1° in AR & 20′ or more in Decl perfectly clear

Santini's Ephemeris was wrong -

Sept. 13 Pm

Westphal's Comet

comet n. p. (a)



dif. δ a & b $21^{r}86$
22 11
22 01

dif: AR a & b
a 24,,43.5 b ☆ 25,,48.5
a 25 13.0 b 26,,18.5

1,,05

Zero
$43^{r}83$
82
43 88
13
4384
22

Dif. δ
20,,38,,00 $9^{r}85$
40,,00 852
42,,00 752

20,,57,,00 $1^{r}73$
20,,59,,00 1 03
21,,00.0 0 59
4236 2924
20,,49,,20 $4^{r}87$
4384 Zero
38.97
9.8
31176
35073
381.906
6' 21.91" = dδ

Dif. AR
a 20,,46,,48.0 34.5
a 47,,22.5

a 20,,48,,10.0 34.0
48 44.0

20,,49,,22.5 32.5
49,,55.0

50,,38.5 33.5
50,,12.0

20,,51,,48.0 33.0
20,,52,,21.0

a 20 52 59.5 33.5
a 20,,53,,33.0
299 226.5

21.0
33.5 = da

20,,49,, 57.75
− 2 = 4^{bt}
20,,49,,55.75
1,, 9.00
20,,51,,04.75
11,,31,,17.23
9,,19,,47.52
1,,31.70
9,,18,,15.82 M.S. Time

* a
194 21 29,,31.0 − 4^{bts}
1,,10
21,,30,,41

East
H 7,,18,,16
4,,41,,44
21,,30,,41
2,,12,,25

N.P.D. 28,,16,,00
61,,44

Comet has a pretty well defined nucleus, and a tail of about 50' in length turned from the sun.

21,,45
2,,15
2,,12
4,,27

Sept 13/14 Looked for Biela

2..35 00
1 7
2..36..07
8..50 34
6..14 24

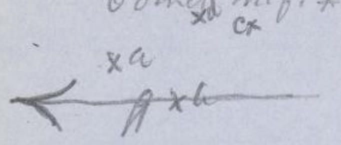
℞.. 36..21.0 - 4 beats
~~4..33.4~~
℞.. 40..54 4 - 4 beats 14..40..52.5
~~4..33.4~~

36.. 21 0
14..40..52.5
31 5
2..48..16
52..51
4 35.0
4..33.5
obsd diff 4..33.2
true 4..33.4

A few mornings ago (cannot recall the precise date) while sweeping with the comet-seeker for Biela's comet in the region pointed out by that abominable Ephemeris of Santini's, I found a cometary looking object in considerably greater R and not far in Dec from Santini's. — The approach of day prevented our getting any place of it –

September 15 Pm Westphal's Comet

Comet n.f. *a



a comp. * = 10m
c = 8.9 mag
d = " "
b = 10.5

Comet bright as on the 13th
— Tail somewhat increased in size

Zero
$44^{r}00$
43 98
43 95
11 93
$43^{r}98$

† Dif. Dec a & g

194
20.. ~~[illegible].00~~ ~~$34^{r}38$~~
~~18.00~~ ~~34.00~~
20.. 16.. 00 $32^{r}82$
17.. 10 32 38
18. 10 31 66

20.. 28.50 $27^{r}98$
30 25 27 02
32 00 26 10
142.95 177 98
20.. 23..45.8 $29^{r}66$
43 98
$14^{r}32$
9.8
11 4 56
128 88
140.336
2..20.34
2
2..18.34

240
35
275

Dif. R a & g

	bb
20.. 21..16	15.0
22 10	15.0
22 40	14.5
23..25	14.5
24..00	14.0
24 50	14.0
25 40	14.2
24 181	31.2
20..23.. 25.8	14.46
1..12.7	7.23

20..24..38.5
11.. 39..10.33
8..45..28.17
1..26.08
8..44..02.09 M.S.T.

$43^{r}98$
28.17
15.81
9.8
12648
14229
154.938
2..34.94

Dif. Dec d & e $28^{r}17$

Dif. Dec a & b $34^{r}20$

Dif. Dec a & c $27^{r}46$
27 40
27 44
10
27. 43
43 98
$16^{r}55$
9.8
13240
14895
162.190

Dif. R a & c 2..42.19

a 20 58 01.0 c 20..59.48.0
a 58 24.5 c 21..00 12.5

a 21..00..48.0 c 2..35.0
a 1..12.0 c 21..02 59.5
d 51.0
2 15.5

1.. 47.0
1.. 48.0
1 47.0
1 47.5
29.5
1.. 47.37

East

194 *c h m s 21..05..20.04 bb H 6..49..48 N.P.D. 25..10..00
1..12 5..10..12
21..06..32 21..06..32
† Zero altered since last night 2..16..44

Sept. 15 P.m. Continued

Stars c & d are Arg. Zone Nos. 81-82

No. 81
α 2..17..18.53
k − 1..02.95
− 5.60
*c α′ 2..16..10.48 1842.0

δ + 64..47..31.9
d − 12.3
+ 0.3
*c δ′ + 64.47..19.9 1842.0
2..47.63
64..50..07.53 1852.0

17/100 . −30
+ .17
210
30
− 5.10

+.17
+ 2.0
.000
34
+.340

140
20
.340

Dif. Dec c & R
20..49..30 3.02
51..10 2.48

.284
142

α 2..17..11 p 46.06
δ + 64..51.1 p′ 20.06

sin α 9.7509
tag. δ 0.3284
1.3023
1.3816 +24.08
46.06
15)70.14
+4.676 for 1838.5
10
+46.760

+16.763
210
1167.630
2..47.63

No. 82
α 2..16..34.00
K −1.. 2.95
− 4.20
*d α′ 2..15.26 85 1825.0

δ + 64..44..59.5
d − 12.4
+ 0.3
*d δ′+64..44..47.4 1825.0

+.14
− 30
−4.20

+.14
+2.0
+.280

*c + 64..50..07.53 1852.0
dδ c & α 2..42.19
α Dec. 64..52..49.72
dδ β & α 2..18.34
β δ + 64..55..08.06

2..16..10.48 1842.0
4676
*c 2..16..57.24 1852.0
dα α & c 1..47.37
*α R 2..15..09.87
d R β & α 7.23
β R 2..15..17.10

Westphal's Comet
1852 Sept. 15 − 8..44..02.09 M.S.T. Camb.
β R 2..15..17.10 }
β δ + 64..55..08.06 } 1852.0 M. Eq.

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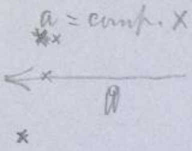
September 17 Pm

Westphal's Comet

Comet n.f. * Comet has a well defined nucleus-equals a star of the 14 mag. It has also a tail streaming from the sun and of about 40-50 in length. comp star a, is double. b is an elegant double star-compan. small

a = comp. x = 9 mag



Zero
43.99
97
97

Dif. Dec

		Dif. R	
20„54„00	16.63	a ~~21„01„29.0~~	β
56„00	16.55	a ~~21„01„55.3~~	
57„30	15.58	a 49.0	β 21„03„38.0
		a 21„03„15.4	β 21„04„05.0
21„19„00	7.54	a 21„05„5.4	β 21 05„55.8
21„00	6.78	b 21„05 31.5	β 21„06„21.0
21 23„00	5.98		
		07„21.0	β 10.5
		21„07 47.0	β 21„08„36.4
		9„30.0	β 10„19.5
		21„09„56.0	β 21„10„46.0

Another star 8.9 mag double
north prec. a

Dif. R

star 8.9 h	21„14„22.0
8.9 h	21„14„48.0
a	16„50.5
a	21„17 17.0

Dif. Dec b & a
15.40

4399

Sept 22..15..15
4..45
20.08
143..24..13 12/145.8
1..12..55 121
144..37..08
12..9
144..25 = $9^{h}..36^{m}$
135 1..40
9 9..37..40
* 9^{th}
$9^{h}..33^{m}..40.9$ $9^{\circ}..36'..15''$
1..26.5 −7..15
9..35..07.4 $9^{\circ}..43'..30''$
* 8^{th}
9..35..55.6 $9^{\circ}..31'..41''$
1..26.4 −7..18
9..37..22.0 9..38..59
2..14.6 4..31

10..10..54
34..02
9..36..52
5..40
9..42..32

3205 4/1611
80.12 403
6.41 6..43
86.53 32
7..15
16..23
406
6..46
32
7..18

Sept $22^{nd}..15^{h}..15^{m}$ mst
Comet AR $9^{h}..37^{m}..40^{s}$
Dec $+9^{\circ}..42'..32''$

From Weisse
* 9^{th} AR $9^{h}..35^{m}..07^{s}.4$ Dec $+9^{\circ}..43'..30''$
* 8^{th} 9..37..22.0 9..38..59
$2^{m}..14^{s}.6$ − $4'..31''$

Sept 25

Just so! Dr. Gould has issued a circular announcing the discovery of Biela's comet by Secchi at Rome on Aug. 25th

It will be seen by referring to the preceding pages that we were laboriously engaged with both the great telescope and comet-seeker in hunting for this comet, at, and even long before the 25th of Aug. But that outrageous Ephemeris of Santini's misguided us. I got it however once in the comet-seeker

Biela Aug 23/24

324.6

81.15 9..39..34.9 +9..6..36 1641 1..11 9..42..32

65 1..24.4 −7..23 410 15 34..10

87.6 9..40..59.5 33 $4^m..44^s$ Dec $+9°..08'..22''$

312.7 443 9..37..40 AR $9^h..42^m..24^s$

78.18 7'..23 9 42..24

6.25 c ✱ 8th AR $9^h..40^m..59^s.3$

844 Dec $+8°..59'..13''$

a ✱ 8th AR $9^h..37^m..21^s.6$ Dec $+9°..24'..23''$

b ✱ 7th AR 9..37..24.1 +9..33..42

9..35..55.6 9..31..41

35..58.1 9..41..00

1..260 −7..18

$9^h..37^m..21^s.6$ $+9°..24'..23''$

37 24.1 9 33..42

c follows a 3..37.7

c S of a 25'..10''

Sept 26/27 Made about the twelfth unsuccessful attempt to get a place of Biela's Comet which has disturbed us out of so many morning slumbers — I saw it however in the Comet Seeker not very faint in Dec +6°30'

pretty large say 20' AR 10h..10m

Could not with all my pains get it in the Equatorial —

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30h..00h
25..15
4..09

h m
15..52
5..0

Aug.25 - 15h..02m G.M.T. p α 7h..29m..31s.4 δ +21°..48'..37" Obs'd
7..10..24 23..31..30 Santini's Ephemeris
19m..07 1..43..0

For Sept 24/25 Biela by Ephemeris 9..47..30 +8..33
cor +19..07 −1..43
10..06..37 +6..50

Sept ~~Aug~~ 26/27 corrected Place of Biela AR 10h..16m to 10h..13m
Dec +5°..42' to 4°..50'

26..16..55 AR 10h..5m..05s ★7th AR 10..24..37
4..45 ★6th +5°..21' Dec +5°..24'
26..21 00
4..9 ★6th AR 9h..57m..03s
31..6 Dec +5°..43'

10..03..58 +3°..52' pB - S. R - psbM - 15"
10..6..0 4..10 Brighter of two - dα 29s.25 as.p - dδ 2'
10..19..0 4..46 eF - Sf a ★ 6.7 mag 31s.5

10.. 24.. 37
4.. 31.. 30
5 53

~~Sept~~ 26/27 Think I saw Biela in the Comet seeker am confident of it -

α♌ $+10^\circ .. 20'$ β $+4^\circ .. 5'$
12 41
2 21

26/27 α $10^h .. 10^m$ δ $+6^\circ .. 30'$
2 days +9.. 20 −1.. 08
28/29 10.. 19.. 20 +5.. 22

26/27 α $10^h\ 10^m$ δ $+6^\circ\ 30'$
3 days + 13 20 − 1 46
$10^h\ 23^m\ 20^s$ $+\ 4^\circ\ 44'$

Sept 29/30 Swept once more for Biela - no success - very clear & fine - Moon bright

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Sept 29/30 1852 Saturn

After searching in vain for Biela turned upon Saturn alt 50° in W.S.W. Definition not very distinct - The minor axis of the outer edge of the outer ring does not yet quite equal the diameter of the ball where the ring passes behind the ball, (on the true S limb) it is plainly within the limb - in front (on the true N limb) the limb is not so evidently outside of the ring, but pretty certainly so - The new ring is not well made out - The primary division very clear as well as the difference of shading of the old outer & inner rings - the former has rather a bluish tinge ~~lighter~~ the latter inclines to yellowish -

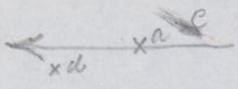
A remarkably fine white belt extends across the Northern equatoreal region of the ball - to 10° of Latitude - one or two dark belts ~~occupy~~ cross in ~~the~~ higher latitudes - ~~N.B. the white [illegible] is that which has [illegible] from [illegible] by the ring~~

No new divisions were evident though looked for But the state of the atmosphere was not favourable - the shadow of the ball falls on the prec. side of the ring

180

October 2 P.m. Westphal's Comet

Zero
4392
4393
4394



a comp.* c comet a 12 mag. d 11.12

comet south fol. star of comp.

Extremely* difficult to discern where the nucleus lay — The comet being elongated (as in the diagram) and of uniform brightness

(194) Dif. δ β south fol.
21..04 41r00
06 41 10
8 41 34

β north fol.

21..36 ~~4~~813
38 4860
39 4886

Computed dir. of Sun
should be 239 52 of Tail

Dif. R
a 21..16..52
β 21 18 26

a 21..21..26.5
β 21 23..9.5

a 21 25..23.5
β 21 27..9.5

a 21..28..48.0
β 21..30..46.5

a 21..32 11.0
β 21..34..12.5

dif. Dec.
a & d d n.p a
5271 51.86
5235 43.93
5205 7.93
5215 16
346 77.7

Dif R
a & d
d 21..53..52.5 a 21..58..04.0
d 21..54..54.5 a 21..59..06.5
da = 4..11.5
= 4..12.0

Comet's R. and Dec. from Astr. Nachr. 828.

$9^{h}\ 20^{m}$ Camb. t α 68° 50′
δ 86 56.2

Computed angle of pos. of great circle from Sun through Comet 239° 52′

da = 251.75^{s} 2.40097
cos δ 8.73365
1.13462
15 1.17609
9.35647
2.31071

Stars a and b
Δα cos δ 204.5″ ~~518.0~~
Δδ 77.7
4182
604
4786
a to b 218.8″

Star a (194) $22^{h}..05^{m}..11^{s}$ H 5..58..32 East N.P.D. $3^{\circ}..06'..16''$

Oct 5th 11 P.M.

Looked at Saturn - singularly bad atmosphere - a small satellite close above the globe -

Oct. 11 P.m.
a is W

Search for the new planet – 19th Fortuna

Dif. AR

44.4 a 52,5
21„ 03„ 55,5 a 21„ 06„ 03,4

27.0 35.3
21„ 07„ 38.0 a 21 09„ 45.6

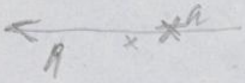
45.0 52.5
22„ 00 55.5 22„ 03, 03.5

October 15 Pm

Made several unsuccessful attempts to measure Westphals Comet Clouds continually opening and closeing over it — Much fainter than last week

Oct. 15/16 Am

October 16 Pm   Westphal's Comet   Bad seeing



a is comp. ✱ = 7.8 mag.
comet north prec. star

(Comet has a sparkling nucleus
perhaps = a star of 19 mag.
Envelope extremely attenuated - nucleus nearly
centrally situated - Tail about 20' long and
(a little fol. north

(194) Dif. Dec

~~20..49..60~~   ~~19.70~~
20..56..30   18.60
58..00   18.48
59 45   18 80
24 15   188
20..58..05   18.63

21..21.30   22.93
23..00   22 86
21 24..00   23 10
8 30   8 89
22.96
21..22..50   18 63
20..58..05   4.33
2 20.55   9.8
3464
21..10..27.5   3897
mot of A in 24..45 m s = 42.434

h m s   41.59
21..10..27.5 d8 = 20.795
43.99 Zero
23.195
9.8
185560
208755
217.3110
3'..37".31
cor. for mot - 1.3
3..36.0

Dif AR

A 21 04..55.5   a 21..07..01.5   2..06.0
A 05..53.5   a 21 07..59.0   2..05.5

A 21..08..50.5   a 21..10..57.5   2..07.0
A 21..09..47.5   a 21 11..54.0   2..06 5

A 21..12..45.4   a 21..14..51.5   2..06.1
A 21..13..42.0   a 21..15..49.0   2..07.0

A 21..16..35.0   a 21..18..40.5   2..05.5
A 21..17 33.0   a 21..19..38.0   2..05.0
90..363.4   48.6
21..11..15.43   2..06.08 = da
-2
21..11..13.43   13..40..36.73
46.74
13 41 23.47
13 41 19.00
21..11..32.43
13..41..23.47
7..30..08.96 M.S.
1..13.74
7..28..55.22 M.S.T.

Zero
44.00
43 98
43 98
11 96
43.99

star a
(194) 21..32..45   H 7..55..52 T. West   350..06..30
20   9..53..30 = N.P.D
21..33..05
7..55..52
13..37..13

October 16 Am. (Continued) Westphal's Comet

Star a (194) 22..23..03 48..46..13
20
22..23..25
8..46..13
13..37.12

350..07.12
9..52..48 = N.P.D

Star of comp. Groombridge Cir. polar Cat. No. 2037
Radcliffe Vol. IX No. 732

Radcliffe

℞ 13h..36m..41s.60 N.P.D. 9°..52'..30".8 1848.0 An. prec. ℞ − 0s.074 An. prec in N.P.D. +18".30
4y An. p − 0.30 An. p + 1..13.2 4 ys. 4
13..36..41.30 9..53..44.0 1852.0 − 0.296 + 73.20
δ + 80..06..16.0

Groombridge
13h..36m..46s.07 NPD 9..40..54.8 1810.0 An. p ℞ − 0.110 An. p + 18.29
42y An. p − 4.62 +12..48.18 42y 42y
13..36..41.45 9..53..42.98 1852.0 220 3658
13..36..41.30 δ + 80..06..17.02 440 7316
75 80..06..16.00 − 4.620 768.18
18.02 12'..48

comp *s α 13..36..41.37 Mean
dα *a ☄ −2..06.08 comp *s δ + 80..06..16.51 Mean
☄ ℞ 13..34..35.29 dδ *a ☄ + 3..36.0
☄ δ + 80..09..52.51

Star of Comparison
Groombridge 2037 Radcliffe Vol. IX No. 732
mean *α 13h..36m..41s.37 } M. Eq.
*δ + 80°..06'..16".51 } 1852.0

October 16th − 7h..28m..55s.22 M. S. Time Camb.
☄ ℞ 13h..34m..35s.29 } Mean Eq. 1852.0
☄ Dec. + 80°..09..52.51 }

☄ − *
dα = − 2m..06s.08 dδ = + 3'..36".0 by 8 comp in α and 6 in δ

October 19 P.m. Westphal's Comet

Star of 8 mag

(194) ☄ 22„ 03„ 02 H 8„ 20„ 04 (h m s)
* 22„ 13„ 49 8„ 31„ 48

☄ 22„ 21 20,5 8„ 38„ 22
* 22„ 28„ 6,0 8 46„ 06

☄ 22„ 34„ 30 8„ 51„ 31
* 22„ 40 27.5 8„ 58„ 28

„58„ 52,5
Mean 22„ 19„ 37.5

22„ 03„ 22 22„ 13„ 49
8„ 20„ 04 8„ 31„ 48
☄ 13„ 42„ 58 * 13„ 42„ 01 57.0

22„ 21„ 20,5 22. 28„ 06.
8„ 38 22.0 8„ 46„ 06
☄ 13. 42„ 58,5 * 13. 42„ 00 58.5

22„ 34„ 30 22„ 40„ 27.5
8„ 51„ 31 8„ 58„ 28.0
☄ 13„ 42„ 59 * 13„ 41„ 59.5 59.5
* 13 „ 41„ 59.5 25 0
59.5

da 58,33 Mean

22„ 19„ 37.5
-2
22„ 19„ 35.5
28.6
22„ 20„ 04.1
13„ 53„ 13.13
8„ 26„ 50.97
1„ 23.00
8„ 25„ 27.97 M.S.T.

13„ 52„ 26.39
46.74
13„ 53 13.13

348„ 04„ 56 = 11„ 55.04
348„ 40„ 48 11„ 19„ 12
35„ 52 35„ 52

348„ 04„ 38
348„ 40„ 48
36 18 36,18

348„ 04„ 40
348„ 40„ 50
36„ 10 36,10

18,20
dδ 36„ 06,6
cor for ref. 1
07,6

Star of comp. Groombridge No. 2053

h m s
Æ 13„ 42„ 00,29 1850.0 An. p. +0.104
4.37
* Æ 13„ 42„ 04.66 1852.0
N.P.D 10° 59′ 02″.0
+ 12„ 39.86
11„ 11„ 41,86
* δ + 78„ 48„ 18.14 1852.0
36„ 07.6
☄ δ + 78„ 12„ 10.54
h m s
13„ 42„ 04.66
58.33
h m s
☄ Æ 13„ 43„ 02.99

42
208
416
4368
+18.092
42
36184
72368
759.864
+ 12′ 39″,86

Hourly mot. of comet by Ephem. + $0^{s}.15$

October 19 P.m. (Continued)

The observations on the preceeding page were taken by bringing the ϱ and star successively on an intersection of ~~two~~ lines of the Isinglass micrometer, ~~a~~ noting the time and reading the Circles

Star of Comparison Groombridge No. 2053

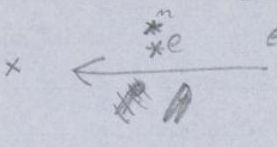
$\ast\ \alpha\ 13^{h}..42^{m}..04^{s}.66$ } M. Eq.
$\ast\ \delta + 78..12..10.54$ } 1852.0

October 19 – $8^{h}..25^{m}..27^{s}.97$ M. S. Time Cambridge
$ϱ\ \alpha\ 13^{h}..43^{m}..02^{s}.99$ } Mean Equinox
$ϱ\ \delta + 78^{\circ}..12'..10''.54$ } 1852.0

$ϱ - \ast$

$d\alpha + 58^{s}.33 \quad d\delta = -36'..07''.6$

October 22 Pm. Westphal's Comet



e comp. ✱ = 8 mag.
n prec. 10s, e

Comet faint - very hazy
Wind N.N. East

Zero
46r07
46 05
4606
18
46r06

comet north fol.
Dif. Dec

(194) 23„37„00 | 2r83
40„00 | 2 65
42„90 | 2 80
„ 9„30 | 2r59
Mean 23 39„50

23 59„00 | 5 90
00„01„00 | 5 75
00„02„90 | 5 69
| 168
12 02„50 | 5r56
Mean 24. 00„50 | 2.59
23„39 50 | 8.15
7„40 40 | 4r.07 Mean

2r.97
4.8
2376
2673
29.106

Mean 23„50„20.0 | 46.06 | mot. in 20m 29″.106
41r.99
9.8
33592
37791
411,502
6′„51″,50
cor. for mot. in 0m„30s = -1.
6„50,50 = dδ

Dif. Dec

✱e 23„45„52.5 | 23„46„49.5 | 58.0
×e 23 46„32.0 | 23„47„30,4 | 58.4

× 23„50,15.5 | 23 51„18.0 | 57.5
× 23„50 56.5 | 51„54.5 | 58.0

× 23 53„02.5 | 23„54„01.0 | 58.5
× 23„53„43.0 | 23„54„42.0 | 59.0
306230.4 | 48.4
23„51„07.23 | 58.07 = dδ
2
23„51„5.23
34.6
23„51„39.83 | 14„04„16.06
14„05„02.80 | 46.74
9„46„37.03 | 14 05 02.80
1„36.10
9„45„00.93 M.S.T.

(194) 00„08„10.0 ~~10.0~~ ~~H~~ 10„20„20 | 346„18„12
10„20 54 | 34 | N.P.D 13„41„48
13„47„16 | 54 | 76„18„12

October 22 Pm (Continued) Westphal's Comet

Star of comp Arg. Zones 194 No. 15

AR 13ʰ..46ᵐ..46ˢ.63 Dec + 76°..20′..11″.8
K + 1..05.27 d + 48.3
$\frac{\delta - D}{100}$ K′ + .10 + .1
13..47..52.00 1842.0 Dec + 76..21..00.2 1842.0
+ 5.60 − 2..58.7
* α 13..47..57.60 1852.0 + 76..18..01.5 1852.0
dα ☄ − * 58.07 dδ ☄ − * 6..50.5
☄ α 13..48..55.67 ☄ δ + 76..24 52.0

δ 76°..20
D 75..30
δ − D + .50 = +.050 +.050
K′ 100 K′ 2 + 1.8
+ .100 400
50
+ .0900

p = 46″.05910 + 20″.05472 sin. α . tang δ
p′ = 20″.05472 cos. α
α = 206°..58′
δ = + 76..21

1.30220
cos. α 9.95001 sin. α 9.65655ⁿ
1.30220 tang δ 0.61466
1.25221 1.57347ⁿ
p′ = − 17″.87 − 37.45
10 46.06
178.70 + 8″.61
− 2′..58″.7 p = + 0ˢ.56
10
+ 5.60

Star of comparison Arg. Zone 194 No. 15
* α 13ʰ..47ᵐ..57ˢ.60 } M. Eq.
* δ + 76°..18..01.50 } 1852.0

☄ − *
dα = + 58ˢ.07 dδ = + 6′..50″.5
by 6 comp. in α & 6 in δ

October 22 − 9ʰ..45ᵐ..00ˢ.93 M. S. Time Camb.
☄ AR 13ʰ..48ᵐ..55ˢ.67 } Mean Equinox
☄ Dec + 76°..24′..52″.0 } 1852.0

Oct 22nd 1852

Looked at Saturn sky hazy & definition somewhat tremulous – The only peculiarity noticed was that the shadow of the ball upon the ring is visible upon *both* sides of the ball but a little more evident on the left hand (appt) of the ball –

There is a dark belt above (appt) the conspicuous white equatorial belt –

October 25 Pm   Westphal's Comet

Comet south prec. * 10 mag. = a   G. P. B observes – C. W. T. Records

Observed by G. P. B – C. W. T. Recorder –

Zero
46.04
46.06
46.05
46.05

(194)

Dif. AR			
☄ 21..50..47.5 = 466 *	21..51..57.8	1m	10.3
☄ 51..3.8 *	21..52..14.5	1	10.7
☄ 21..52..45.0	* 21..53..56.0	1	11.0
☄ 21..53..01.8	* 21..54..12.7	1	10.9
☄ 22 06..55.0	* 22..08..05.3	1	10.3
☄ 22..07..15.5	* 22..08..25.7	1	10.2
☄ 22..09..07.5	* 22..10..17.3	1	9.8
☄ 22 09..28.0	* 22 10..37.9	1	9.9

8 / 176 0 24.1
22 0 3.01
14 16 53.03 = S. T. Camb. m. N.
7 43 9.98
Chr. Corr. = +39.74
7 43 49.72
−1 15.98
7 42 33.74 = Camb. m. S. T. obs. in R. A.

8 / 83.1

Δα(☄ − *) = −1m 10s.39 (O. C. W.)

Dif. Dec.

21..57..45	79.53
22..00..10	79.77
22..2..32	80.08

3 / 0 27.
22h 0m 9s

3 / 239.38
79.79
46.05
33.74
9.8
26992
30366
Δδ(☄ − *) −330".652 (O. C. W.)

= A star of the 9-10m 4' 3 s. f. a 22h 18m..44s..0
12m 5 .. 19..5.2
10m 5.30" 19..30.0
10 further S
Star of Comp 0'..00" 23..32.4

(O. C. W.) another

194 = 22..25..7 II – 344°..58'..48"
H = 8..31..24
+74° 58' 48"

22h 25m 7s
+0 40.6 Chr. corr. (assumed by extrapolation).
22 25 47.6
8 31 24.
R. A. * a = 13h 54m 24s (O. C. W.)

22h 0m 9s
+39.74 Chr. corr.
22 0 48.74
14 16 53.03 S. T. Camb. m. N.
(194) 7 43 55.71
−1 16.00
7 42 39.71
= Camb. m. S. T. obs. in Dec.

Above reductions, in ink, ~~Reduced~~ by O. C. W.)

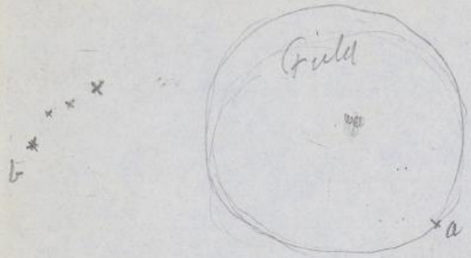


Diagram of stars in the next field to Comet

Comet has a decided concentration of light - almost a stellar nucleus so that it can be observed very exactly

Bright moonlight & some haze in the sky - but the Comet is easily observed -

$15^{m}\,40^{s}$

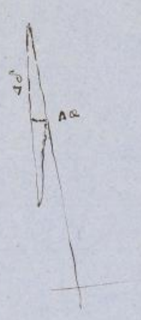
$3\,..\,45$

$3\,..\,47$

$225 \cos 84..37 = 21$

63

$227' \times \cos 88^{\circ} = 0^{\circ}\,31'$



On the 24th its N.P. Distance was 1°.02'
at which time its rate of motion in AR was 130° daily

June 5th $10^{h}\,10^{m}$ +63°

June 5th .. $7^{h}\,15^{m}$ Camb m s t
AR $10^{h}\,58^{m}\,01^{s}$
Dec $67^{\circ}\,28'\,50''$

Comet of May 18th/19th 1852

For time by 194

13h 35m		α	Δ'	Δ²		δ	Δ'	Δ²				
1852 May	18	22h 29m 12s				+74° 13' 20"				22nd	84.37	
			−2m 59s				+2° 40' 25"					
	19	22.26.13		−1.35		76.53.45		−2' 22"		23	87 04	2.27
			−4.34		1.24		2.38.03		+1.29			
	20	22.21.39				79.31.48				24	89.28	2.24
			−7.33	−2.59			2.36.12	−3.51				
	21	22.14.06		7.43	4.44	82.06.00			−0.22	25	88.06	
								3.29				
	22	21.58 46	−15 20			84.36.43	+2.30.43					
	23											
	24											
	25