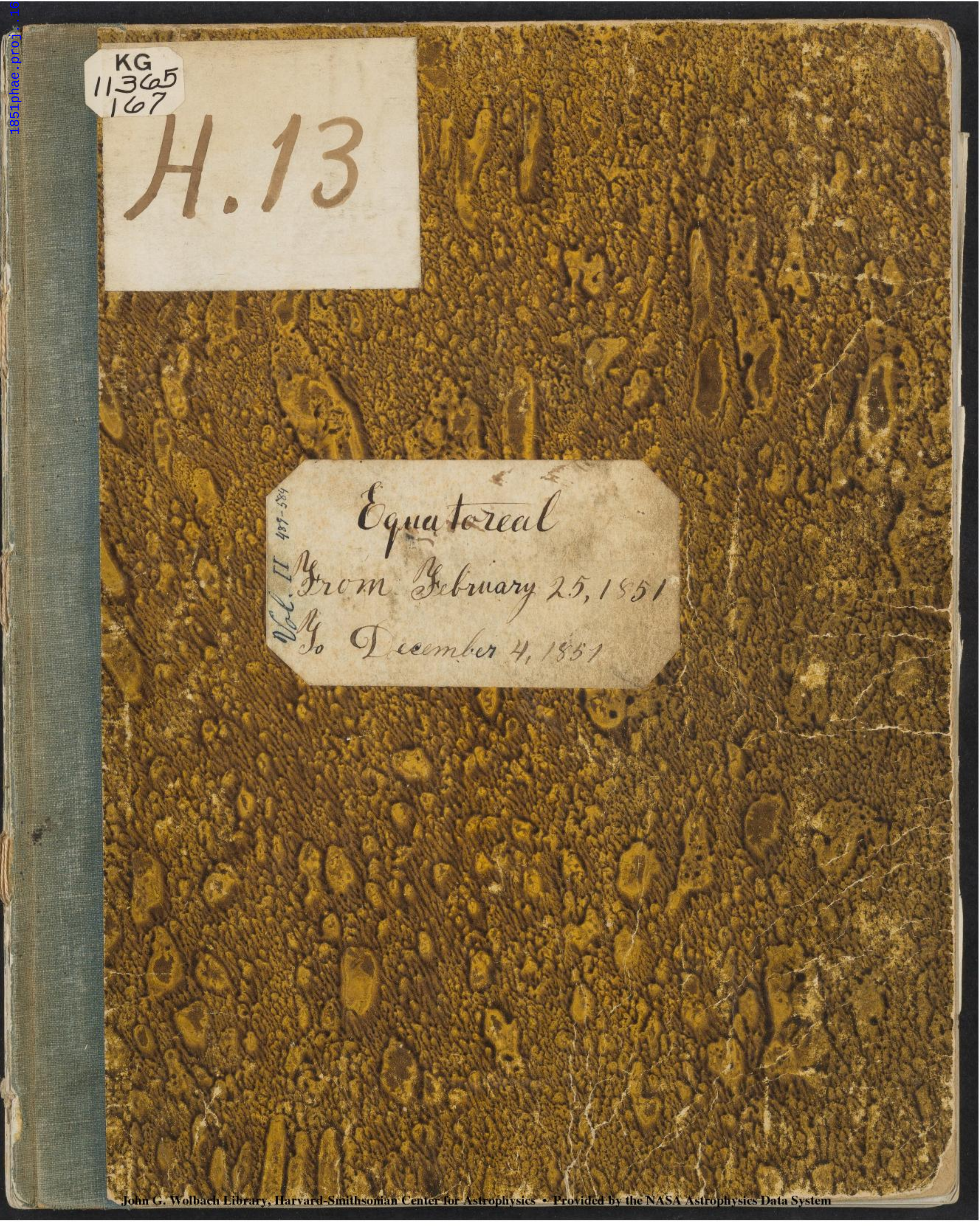
KG
11365
167

H.13



489-584

Vol. II

Equatoreal

From February 25, 1851
To December 4, 1851

Mr Whipple Dagr Moon

1851 Sept. 6th. No 1 – 9.. 29 — 15
2 – 9.. 38 – 17
3 – 9.. 44 – 18 c gamd a little.
4 .. 9.. 49 — 17. rather unsteady.
5 .. 9.. 51 – 17 – steady.
6 – 9.. 56 — 18 unsteady
7 – 10.. 03 – 15 steady

KG11365.167

KG 11365.167

HARVARD
UNIVERSITY
LIBRARY
APR 28 1956

490

Feb. 25 P.m.

E. C. 5..15..00
f. Cy. 5..17 15.2

Catalogue Star of Comp. B is n.p C

Dif in R
23.1
6.. ~~07.. 38.0~~

6h.. 38s	94.53
6.. 43	94.71

11..55.2 & 16..15 4..19.8
6.. 12..10.2 6..16..30 4..19.8

17..12. 21..31. 4..19.0
6.. 17..27. 6.. 21..46.0 4..19.0

41.2 27..00 — 4..18.8
6.. 22 56.1 6..27..15.1 4..19.0
4.. 19.23 = dif in R

94.53
94.71
189.24
94.62
Qes = 50.09
44.53
9.8
356 24
400 7 7
436.394
7′..16″.39 = dif in dec

B. A. C. 490

R 1h..29m..42s.55 Dec. +11°..18′..44″.7
+ 3.17 an. pre. + 18.54
+ .01 secv. − 2
1.. 29..45.73 11..19..03.22
4..19.29 7..16.39
1.. 34 04.96 = C R 11..11..46.83 = C δ

C is the R and Dec. of the star of comparison with Victoria on Feb. 18 and 19
Determined from star 490 B. A. C.

Feb 25th 1851

A is Another Star is n p B, 7th mag
73..10

Star A is 7th mag
Dec +11°..25'..40"

Star A	Star B
6..47..11.4	6..47..43.4
26.7	47..58.7
6..48..19.3	..48..50.8
48..33.5	49..05.8

Zero 50.09

SG 6..51..30
SH 5..19..37

Star B is B.A.C. 490

March 1st

Hinds New star of Nov. 4th
n is south foll s

80 95
60 90

n 27„ 20.2 s 28„04
6„ 27„ 37.1 6„ 28„ 21.1

57.2 29„ 34.6
6„ 29„ 08.1 6„ 29„ 51.8

30„ 29.3 31„ 13.3
6„ 30„ 46.2 6„ 31„ 30.0

E.C. 7„ 15„ 00 7„ 15„ 11.8
J.G. 7„ 17„ 38.4 7„ 17„ 38.4
2„ 26.6

$\,^{h}\ \ ^{m}\ \ ^{s}$
J.G. 6„ 35„ 34„ *s 2°„ 16′„ 00
H 5„ 09„ 40

6„ 35„ 34
2„ 26.6
6„ 33„ 07.4
5„ 09„ 40
1„ 23„ 27.4

March 3d

E.C. 5,,25,,00

f.G. 5,,27,,48   6,,49,,25.2   41.1

50. 0*0,2   50,,18.

03

51 23.   51 39.7

~~25 2~~   32   6,,51,,59   6,52,,15

512

15   212

02   59,,18

h ~~6~~20 07   * 14   53,,38   ~~54~~ 5 47

20902

947   48.2   55,,56

6,,56,,15.7   56 32

00

412   48

59 06   59,,21.2

25   37,,31,7   6,,59 40,2   ~~59~~,,56.2

6,,37,,47   37,,47.

39 09   39,,16 2   23.   7 01,,38,8

6,,39,,27   6,,39,,33   7,,02,,58.   02,,13.0

01   7,,03,,12,2

40,,59   00,1   03,,32   03,,47.

6,,41,,10   41 16.1

7,,04,,40,2   04,,56.3

32,3

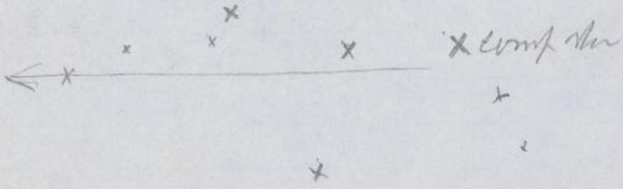
~~487~~

181   6,,43,,25

6,,43,,359   26.1

March 3d

7,, 21,, 15	7. 21,, 30,4
7,, 22,, 40	22 57,8
7,, 24 19,2	7,,24,,29,1
25,,37,	25 53
06	7,,27,,21.2
7,, 28,,90	28 46,7
7,, 31,,09.2	7,,31,,25.9
7,,32,,34.	32, 50.6



March 4th
B.A.C. 1241

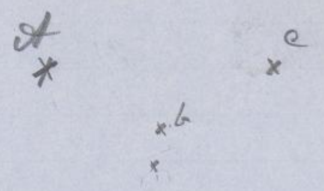
J.G. 7,,29,,16.8
2,,43.61
7,,26,,33.19
H 3,,33,,35.
3,,52,,58.19
1241 3,,52,,25.62
32 57

hourly rate = +.23

δ +12,,06,,00
1241+12,,09,,56 8
2,,03.2

March 4th

h m s
E.C. 6..00..00
J.G. 6..02..53.5



Zero 49r.75

6..00..10.2
6..02..53.5
2..43.3

19
28

Zero altered by accident,
and adjusted before taking dif in δ

Dif in Dec

6..37..0 Star 7th 8th = A 6..37..05 14
b 37..19
c 37..28 23

h m ~~s~~
7..29..16.8
H 3..33..35
δ +12° 06'..00"

A 38 14.7 13.6
b 28.3 22.5
c 37.2

A 39..52.1 14.0
b 40..06.1 22.9
c 15.0

h m s
7..00..00 27r.34
02 02 27.30
04 30 27.35
07 30 27.15
09..30 26.58
7..12 10 26.70
h 35..12 6)163 52
7..05..52 27r.25
49.75
22.50
4.8
180.00
202.50
220.500
3..40.50

~~12.0~~
* 45..50.2 14.5
μ 6..46 04.7
6..44.6
6..46 59.0 14.4
48..05 14.8
6..48 19.8
6..48..45 15.0
6..49 00
49..34.8 14.9
6..49 49.7 72.6
81.5
10)154.1
15.41 = Mean dif in h

~~31.3~~
01.7
7..16..17.3 15.6
20.3
7..17 38.1 16.8
17.2
7..18.33.1 15.9
59.2
7 19..04.7 16.5
42.
7..19.58.7 16.7
81.5

h m s
6..46..04.7
6..46..59.0
6..48..19.8
6..49..00.0
6..49..49.7
7..16..17.3
7..17..38.1
7..18..33.1
7..19..04.7
7..19..58.7
290.1
7..03..11.0
7..05..52.
2..41 motion in h = + .17
15.44
15.61

h m s
7..05..52 =
−1.6
7..05..36
2..49.75
7..02..52.35

1851phae.proj..167B

496

March 4th Reduction of Observation on Victoria

h m s s
7 .. 02 .. 52.25 dR = 15.61
7 .. 02 .. 52.25 dδ 3′ .. 40″.50

Star of comp Weisse Hora I No 1042

h m s
* R 1 .. 57 .. 04.34
prec. sec var = + 1 .. 23.82
1 .. 58 .. 28.16
15.61
☆ R = 1 .. 58 43.77

3.216
sec.var. .008
3.224
26
19 344
6 448
83.824
1m 23.82

° ′ ″
* Dec + 12 .. 37 .. 19.6
7 .. 42.80
12 .. 45 .. 02.40
3 .. 40.50
☆ δ = + 12 .. 48 .. 42.90

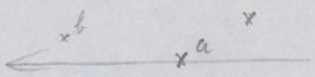
prec 17.56
sec.var. + 30
17.86
26
10 6 80
35 6 0
46 2.86
7′ .. 42″.80

7 .. 02 .. 52.25
24
31 .. 02 .. 52.25
22 .. 47 .. 22.97
8 .. 15 .. 29.28
1 .. 21.17
8 .. 14 .. 08.11 = M.S.T. of obs.

22 .. 46 .. 36.23
46.74
22 .. 47 22.97

March 11th

7 .. 11 .. 59 7 .. 12 .. 15.2
7 13 .. 01.2 7 .. 13 17.2
7 .. 14 .. 03.0 7 .. 14 .. 19.
7 .. 15 .. 07.0 7 .. 15 .. 29



March 5th
E.C. 7..43..00
J.G. 7..42..59.7

March 11 P.m.

	b	a	
	56..18.	56, 51,7	33.7
6..49..45 58r33	+ 6..56..30.	* 6..57..03.3	33.3
	57..54	28.0	34.
	6..58 05.2	6..58..39.6	34.4
	19.2	6 59 52.3	33.7
	6..59..32	7..00 04.	33.0
			~~33.7~~
	38	04..06.7	33.7
	7..03..45	7..04..18.2	33.2
	39	13.0	34.0
	7..06..56.2	7..07 24.1	33.9
	27.2	35.6	32.4
	7..17 17.6	7..17..51.0	33.4
	34.4	07.2	32.8
	7..19 45.8	7..20..19.1	33.3
	27.	00.9	33.9
	7, 24, 38.8	7..25..11.8	33.0

March 14 P.m. Daguerreotype of Jupiter

$4^{h}..52^{m}\ 10^{s}$ 4..53..40
59..20

March 14th. P.M. Messrs Whipple & Jones continued the experiments in daguerreotyping the Moon which they had recommenced on the 12th. Though much troubled by clouds & with an unsteady atmosphere - they made trial of 5 or 6 plates on the 12th & of 13 on the 14th

On the 12th the chief progress made was in ascertaining that the proper Time for exposure was from 10^{s} to 15^{s}

On the 14th they decided on trying the effect of altering from the visual focus - to find the photogenic focus

The effect was at once apparent in the great improvement of the picture which is now obtained so as to give a better representation of the Lunar surface than any engraving of it, that I have ever seen

The photogenic focus was decided to be about 1/2 an inch longer than the visual -

March 22nd Succeeded in Daguerreotyping Jupiter at about 11 P.M. - took six plates more than 24h old -

Could distinguish the two principal equatorial belts. Time about as long as the Moon required or not much longer.

March 25

202 7„ 31„00
jes. 7„ 30 26.5

a 8„ 35„ 23,4 8„ 35„ 35.3 33,6
b 35„ 57 36 09 33.7

37„ 00 8„ 37„ 11.4 33.5
33,5 37„ 45.2 33.8

28,5 38,40 32.7
8„ 39„ 01.2 8„ 39„ 13,5 33 5

39„ 51 40„ 02,4
40„ 24

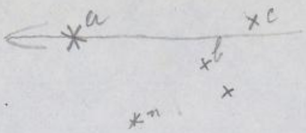
12,5 8„ 43„ 24 32,9
8„ 43„ 45.4 43 58 34.

~~8„ 44„ 464 44„ 58,5~~

8„ 46„ 10.8 8„ 46„ 22,1 32,2
46„ 43.0 46„ 55.1 33 1

26.5 48 38,5
8„ 49 00.1 8„ 49„ 12.

04.5 16.5
37.4



47. 56„ 59.2 33 4
8„ 57„ 20.4 8„ 57 32,2 33 0

07.4 19.4 33.0
8„ 54„ 40.4 8„ 54„ 53.0 33,6

Another Star

a 8„ 58„ 36 8 58 48 45.0
c 59„ 21 59 33 45.0

9„ 01„ 10.4 9„ 01„ 22,4 45.6
56. 02„ 07.5 45.1

02„ 39.5 9„ 02„ 51,5 45.1
03 24.6 03,36.5 45.0

08„ 56. 9„ 09„ 07.5 45.0
9„ 09 41 9„ 09„ 53.0 45,5

a 9 9„ 55 a 25 13.5
n 9 11 07.5 n 9„ 13„ 39 14.

a 14 26 16„ 03.1 14.0
n 9„ 14„ 40 9„ 16„ 20. 149

25„ 39 49.5 14.0
9„ 25 53 9„ 27 23. 13.5

11.5 55 12.5
9„ 30„ 24. 31 07.7 12.7

57.6 45.4 12.6
9„ 32„ 10.4 9„ 32„ 58.0 12.6

500

1851

March 26 Pm

Im. Jupiters 1st Satellite

202 $9^{h}..19^{m}..38^{s}$ very bad seeing; unsteady

22.4

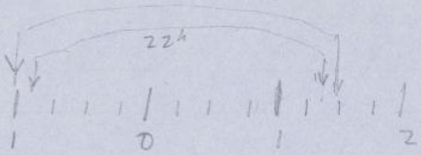
0..13..20.38 9..19..15.6

46.74 0..14..7.12

0..14.07.12 9..05..08.48

1..29.30

M.S.t. 9..03..39.18 $20^{h}..22^{m}$



(202) fast at $9^{h}..19^{m}$ sid.t. 22.4

Daily rate of (202) losing $3^{s}.7$

C.W.T. observer

Im. I Sat. $9^{h}..03^{m}..39^{s}.18$ m.s.t. Camb.

1851phae.proj..167B

Battery off	Battery on
1..02.7	1..01.5
1.01.6	0..03.7

$$\left.\begin{array}{l} = \frac{6.7}{4} - \frac{5.5}{4} = \frac{12}{4} \\ = \frac{5.6}{4} - \frac{3.7}{4} = \frac{19}{4} \end{array}\right\} \frac{15}{4} \qquad \frac{15}{61} = \frac{1}{4}$$

502

March 29th Att 1851

Observations with the Spring Governor with the Great Equatoreal Micrometer

Com. of obs.

Power

Zero

49.999

987

991

49.997

50.001

Jupiters

1851phae.proj..167B

Ap^l. 23^d. 8..20

Procyon

Pos. Zero 87°..50′

α Can min α ✱ 12-13 mag - 82°..45′

Dist

44″..91″

45..06

44..92

45..24

44..90

224 93

44..99

49. 98

4 99

1 0

Dist 48″.90

Zero

49″.98″

49.98

82°..45′

81..10

83..12

83..00

82..47

412..54

82.35

87..50

5..15

93

5

465

J. Gibson gaining daily 0.8^s

" " fast at 11^h..56 4.4^s

April 23 Occ. II Satellite

C. W. T. observed

first contact J G 11..54..24.0 = 9^h..48^m..12.4^s M.S.t. Camb.

central " 11..56..20 = 9..50..8.1 " "

disap. last " 11 59..41 = 9..53..28.5 " "

2..03..43.86

46.74

2..04.30.60

11..54..24.0

4.4

11..54..19.6

2..4..30.6

9..49..49.0

1..36.6

9..48..12.4 M.S.t.

11..56..20

4.4

11..56..15.6

2..4..30.6

9..51..45.0

1..36.9

9..50..08.1 M.S.t.

11..59..41

4.4

11..59..36.6

2 4 30.6

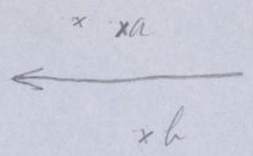
9..55..06.0

1..37.5

9..53..28.5 M.S.t.

1851phae.proj..167B

April 1st



Search for Victoria

a8,,15,,04.2 b8,,15,,11.2 07.0

~~8.05~~

a8,,17,,03, b8,,17,,09 06.0

a 18,,09.1 b. 8,,18,,17.0 07.9

8,,19,,06 8,,19,,12,2 06.2

8,,19 48 8,,19 55, 07.0

8,,21,,07,8 8,,21,,14,7 06.9

8,,22,,20.4 8,,22,,27.5 07.1

a 841,,13. b 841 205

41

8,,45,,18.2 8,,45,,23.0

~~34~~

8,,48,,54 8,,49 02,0

8,,50,,45 8,,50 51.0

8,,51,,40.9 8,,51,,47.5

8,,54,,17 8,,54 24.0

8,,55,,38,3 8,,55,,44.5

8,,57,,35 8,,57,,42

9,,04 50.0 9,,04 57.4

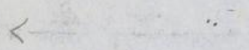
Dif in Dec

8,,28,,00 00r 66
31.10 00 85
32.30 00 89
34.00 00 72

These dif. in dec. are worthless – because the dif in δ of the two stars was so great that I was compelled to move the fixed wire in order to place it on one of the stars while the moveable wire was carried as far from the centre of the field as possible and placed on the other star.
Before I had taken a Zero (after ~~this alteration~~) adjusted it anew — G.P.B

April 1/2 1851

η Coronae very easily divided



Pos

302°..30′ + 30′
308..30 30
304..00 30
309 30
24
pos 306..00
Zero 0.30
306..30
Dist 0″.4

0.987

0.045
.042
.042
0.043
0.001

0.090
Zero
0.005
.007
995
.000
007

Clockoff ζ Herculis Beautifully seen Companion small

~~266..15~~
~~270..15~~
~~270..30~~

274..40
273..00
272..40
272..40
273..15

0.170
168
150
0.163
0.002
Dist 0″.63

pos 273..15

for 23d See obs. on Procyon 4 pages back

April 24 Procyon & star 16 mag. allowance being made for its proximity to Procyon, otherwise I should estimate it at 18th mag. (9 P.M.)

Zero dist
50.04
50.05

Zero Pos
87..30

Cloudy

Dist - good
44.90
.95
.91
44.92
50 045
5 125
1 02
50".23

Pos
80..00
78.30
82.45
82 10 = 82..10

Companion very faint, measures difficult

5
0.2

1851 G.P.B left for Europe in April returned Nov 14th after return was sick till Jan 1852 -

---

April 26th

10..05..34.5
5.3
10..05..29.2
2..16..20.26
7..49..08.94
1..16.85
7..47..52.09 m.s.t.

2..15..33.52
46.74
2..16..20.26

10..08..26.0
5.3
10..08..20.7
2..16..20.26
7..52..00.44
1..17.33
7..50..43.11 m.s.t.

10..11..31.0
5.3
10..11..25.7
2..16..20.26
7..55..05.44
1..17.83
7..53..47.61 m.s.t.

10..16..30
5.3
10..16..24.7
2..16..20.26
8..00..04.44
1..18.65
7..58..45.79 m.s.t.

J. Gibson gaining daily $0^{s}.4$

April 26

Transit Ingress of first Satellite

J. G.

7..47..52.09 m.s.t
first contact 10.. 05.. 34.5
7..50..43.11 m.s.t.
central contact 08..26.0
7..53..47.67 m.s.t
last contact 10.. 11..31.0

7..55 m.s.t
Satellite at 10..12 quite bright. below north belt silvery bright: very distinct

$7^{h}..58^{m}..45^{s}.79$ m.s.t

at 10..16..30. Sat yet bright, seeing not very good at times tremulous and indistinct

$10^{h}..21^{m}$ Satellite continues visible rather faint

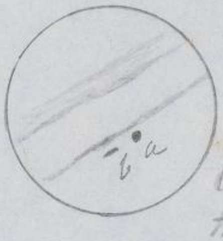
$^{h}\ ^{m}$
10..25 Satellite Just perceptable
27 Yet visible
10 29 Satellite disappears
41 Satellite seen by glimpses
10 .50 Satellite seen by glimpses
11..25 Satellite ~~dark~~ darker and is seen for a moment when steady as a dark spot - 1/4 the size of the shadow - of this form 5 minits after very minute
11..28 Satellite continues to be seen at intervals is dusky not so dark as the shadow
11..30 Satellite visible

Ingress of Shadow

8..15..06.11 m.s.t.
first contact of shadow 10.. 32..53.0
8..17..00.80 m.s.t.
middle contact 34..48.0
8..18..46.51 m.s.t.
last contact 10 36..34.0

10..32..53	10..34..48.0	10..36..34.0
5.3	5.3	5.3
10..32..47.7	10..34..42.7	10 36..28.7
2..16..20.26	2..16..20.26	2..16..20.26
8..16..27.44	8..18..22.44	8..20..08.44
1..21.33	1..21.64	1..21.93
8..15..06.11 m.s.t.	8..17..00.80 m.s.t.	8..18..46.51 m.s.t.

11..30



a shadow
b, black or Dusky spot on the 1st Satellite

12..11 Satellite invisible
..14 Satellite visible not very bright
Egress 12..14..40 last internal contact
17..35 central contact
12..21..55 last external contact

1851. April 29^{d} – 8..20 Procyon & Star 14 mag preceding

Pos.
$80^{d}..03'$

Cloudy

There is a double star about 10' north of Procyon, very nearly same str – May – 12 & 15. dist estimated at .8''

Procyon & Star 14 mag

May 2^{d} ~ 9^{hs}

dist.	Pos
49.85	84..40
49.88	84..30
50.07	83..30
50.04	83..30
49 ~~50~~.87	

~~57.74~~ 5)471
~~50.154~~ 49.942

difficult, high wind

Zero dist	Pos
50.06	88.20
50.07	88.15
50.01	

Procyon & Star 8.9th mag. Preceding

Dist	Pos
$10^{r}.45^{d}$	76.27
10.65	77.00
10.74	76.38

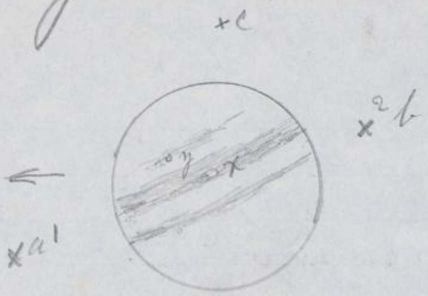
3)184
10.61
9
95.49 = 1'..35''

Procyon & star 9 mag foll^{g}

Dist	Pos
17.20	93.05
17.05	93.00
17.17	93.15

510

June 17



C. W. T observes

Very good seeing

a & b first and second stellites.
c a small star
x a very bright spot in the dark belt.
y another on the bright part of Jupiter
very much brighter than any part
of the planet

daily rate of J.G. $-\overset{s}{1}.20$

Reap III Satellite J.G.
Internal cont. 15„ 45„ 30.0
External cont. 15„ 51„ 40.0

15„ 45„ 30.0
51„ 40.0
97„ 10 Sum
15„ 48„ 35.0 Mean
30.39
15„ 49„ 05.39
5„ 41„ 21.18
10„ 07„ 44.21
9„ 58„ 21.70
6„ 58.85
43.87
.21
10„ 06„ 04.63

Not so good seeing

Ingress II Satellite

First contact 16„ 07„ 25.0
Last contact 16 14„ 58
22. 23.0
16„ 11„ 11.5
30.40
16„ 11„ 41.90
5„ 41„ 21.18
10„ 30„ 20.72
9„ 58„ 21.70
29„ 55.08
29.94
.72
10„ 28.37.44

Reapp. of III Satellite
$10^{h}\,06^{m}\,04^{s}.63$ M.S.T.

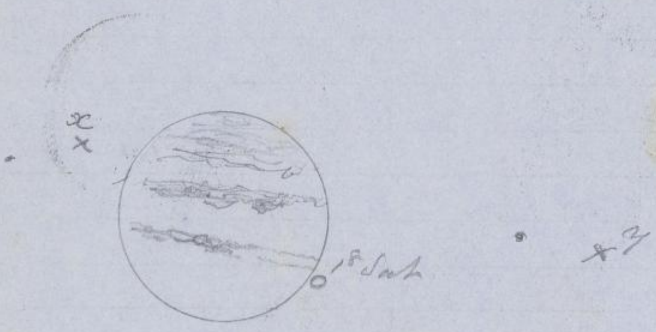
Transit II Satellite
Ingress $10^{h}\,28^{m}\,37^{s}.44$ M.S. Time

1851phae.proj..167B

June 18

Irene R h m s 15.. 35.. 22

Dec.



x & y 10 mag

Jupiter's Satellites

Transit first Satellite

W.C.B. observes

Not very good seeing

Satellite appears small

J.G.

First contact 15.. 10.. 15.0

Middle contact .. 12.. 05.0

Last contact 15.. 14.. 25.0

Appears quite white, much whiter than Jupiter

h

15.. 17. 00

Not so bright

---

15. 26

1st Sat. not visible

---

15. 41

No appearance of the Satellite either dark or light

15.. 48

nothing seen as yet

15.. 10.. 15.0
12.. 05.0
14.. 25.0
3)36 .. 45
15.. 12.. 15.0 Mean
31.35
15.. 12.. 46.35
5.. 45.. 17.73
9.. 27.. 28.62
8.. 58.. 31. 53
26.. 55.58
27.92
.62
9.. 25.. 55.65

5.. 44.. 30.99
46.74
5.. 45.. 17.73

Transit I Satellite

Ingress 9h 25m 55s.65 M.S. Time

June 19

h m s
B. A. C. 5188 R 15,, 35,, 00
Dec. −14°,, 33,, 27

Irene R 15,, 34,, 22
Dec. −14,, 27,, 25

Clouds

June 25
Comparison Stars for Irene
h m s
B. A. C. R. 15,, 35,, 38 Irene R 15,, 35,, 10
5190 Dec. −15°,, 01,, 25 Dec −15°,, 08,, 18

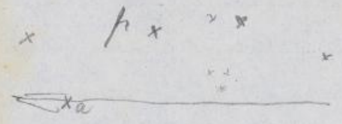
Clouds prevented observation

15,, 35,, 38
15 15
20,30

6,, 20,, 00,01
46,74
6,, 20,, 46,75

June 27   Zero 50.08   J.G. 15,, 57,, 23

Irene R 15. 34. 32   H 00. 22. 36
Dec − 15. 17. 42   Dec. 15. 10. 00



+ comp star

p was found not to be the planet
a is missing and must have been Irene

15. 34
15. 15 −
,, 19

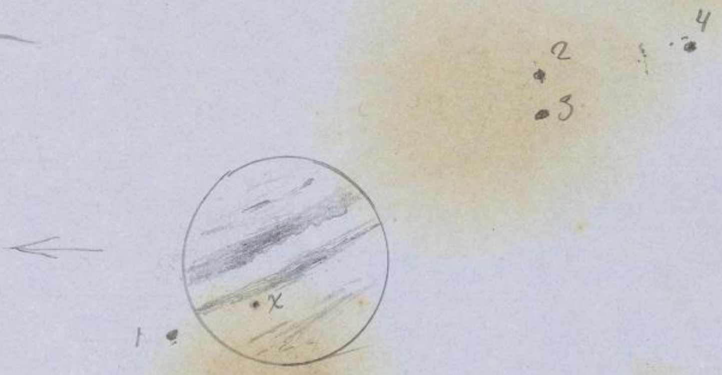
planet preceds and south

Dif in Dec

p 15,, 28,, 27,1   28,, 36.5   52.1
* 29,, 19.2   29 28.7   52,2
15,, 45,, 0   3.93
31,, ~~11.5~~   31,, 21.5   52.5
32,, 04.0   32,, 19.2   51.7   15,, 47,, 0   3.88
~~15,, 32,, 35.0~~   ~~15 32 44.4~~   15,, 48   3,, 95
~~09.5~~
~~36.1~~   15,52   3,,78
33,, 58,,   33,, 46.4   52.4   152   15.64
15,, 34,, 30.4   15,, 34,, 40.0   51.6   15,, 48   3.91
50.08
46.17
~~10.9~~
15,, 35,, 49.0   15,, 35,, 58   51.3   9,8
* 36,, 40.3   36,, 49.9   51.9   36936
12905.6   129,, 44,4   415.7   41559
15,, 32,, 16.8   32,, 26.1   51.96 da   452466
26.1
42.9   change in 6^m = 7,, 32,47 ds
+ 4
7,, 36, 47
15,, 32,, 21.45
1,, 0682   5190
15,, 33,, 28, 27   R B.A.C. 15,, 35 38.69 (h m s)   Dec − 15° 11' 25".3
Δα − 51.96   Δδ 7,, 36, 47
6,, 20,, 46, 75   Irene R = 15,, 34,, 46.73   −15,, 19,, 01.77
9,, 12,, 41, 52   cor. par   0^s.00   +5.07
8,, 58,, 31, 53   15 34 46.73   −15 18 56.7
11,, 58, 03   Red to app. eq + 5.09   −12.9
40.89   Red. to app eq. and 15 34 51.82   −15 19 9.6
58   cor. for parallax
9,, 11,, 10, 97   Green. time and cor. for aberration June 27. 57191

June 27

Jupiter



J G 14.. 47.. 00

x d y

y y

x is the shadow of first Satellite — full two thirds as large as the first satellite which is near the edge of Jupiters disk

Appears well defined — resembles a hole in the disc of Jupiter

y is a star of 8th mag.

15.. 40 52
1.. 30
15.. 42.. 22
7.. 44
15 34-38

25.0 19
41 24
157 16

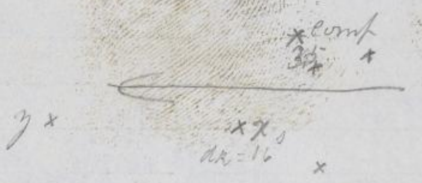
07 [illegible]
08 [illegible]
52.0

Zero 50.08

June 30

B.A.C. 5184
R 15h 34m 20.25
an. prec + 3.37
15h 34m 23.62

Dec − 15° 31′ 45.6
+ 11.91
− 15° 31′ 57.51



x is planet
y another star, seen may
y was the planet
July 1st

h m s
Iron 15h 33m 52.3
Dec − 15° 29′

planet precedes and is north

See measures of y on next page

Dif in R

p 15h 47m 42.3
* 47m 54 11.7

15h 48m 27.4
48m 39.0 11.6

49 54.8
15h 50 06.2 11.4

50 51.2
15h 51 03.0 11.8

51m 26.1
15h 51m 38.0 11.9
clouds

52 16.1
15h 52m 28.0 11.9

52 57.0
53m 08.6 11.6

53m 33.5
15h 53m 45.4 11.9
4~~3~~97m 08.4 11.72 mean
15h 50m 53.55
− 1.67
15 50 51.88

Dif in Dec

15h 58.00
15 59.90
1~~1~~6h 00.25
1~~6~~ 61.50
16. 02.30
16 03.15
~~28~~ 125.30
1~~6~~h 00.55
1.67
1~~6~~h 58h 88.00
1h 30.44
16h 00 58 44

81r 32
81 25
81 33
81 27
81 34
81 23
174
81.29
50.08
31.21
9.8
249.68
27089
295.858
4h 55.86

h m s
B.A.C R 15h 34m 23.62
Δα = 11.72
α 15h 34m 11.90

B.A.C. Dec − 15° 31′ 57.51
4′ 55.86
δ 15° 27′ 01.65

Comp. star B.A.C. 5184
h m s
* R 15h 34m 20.25 1850.
Prec. + 3.37
* R 15h 34m 23.62 1851.0

° ′ ″
* N.P.D. 105° 31′ 45.6 1850.0
Prec + 11.91
105° 31′ 57.51
* Dec − 15° 31′ 57.51 1851.0

June 30 Continued

Chron. J. Gibson

comparison of η with com. star

Zero altered by accident before this measure took place and is now $50^{r}.14$

η north free.

Dif in R Dif. in Dec Interrupted by clouds

h m s

η 16„ 15 18.3 16„ 15„ 33.0 51.9 16„ 48„ 10 $73^{r}.14$

* 16„ 10.2 16 25.3 52.3 ~~72.99~~

16„ 50.00 72.99

16„ 53.2 17„ 08.5 52.2 16„ 52,30 73.25

45.4 16„ 18„ 00.3 51.8 16„ 54,00 73.30

204.10 12.68

η 16 18„ 40.0 18„ 55.0 52.0 16„ 51.02 $73^{r}.17$

19„ 32.0 19„ 46.7 51.7 1,67 50.14

16„ 49.35.0 23.03

21„ 56.8 21„ 37.1 51.8 9.8

16„ 22„ 48.1 16„ 22„ 03.2 52.1 184 24

72„ 47.8 72„ 47.6 414.8 207 27

16„ 18„ 41.95 18„ 11.90 51.85 = Δα 225.694

1.67 3„ 45.69 = clds

16„ 18„ 10.28 cor. for 30^{m} +06.

1.29.46 3„ 51.69

16„ 19„ 39.74

6„ 31„ 49.68
46.74
6„ 32„ 36.42

BAC 5184

AR $15^{h}\,34^{m}\,23^{s}.62$ Dec. −15„ 31„ 57.51

Δα 51.85 Δδ 3„ 51.69

15„ 33„ 31.77 15„ 28„ 05.82

Sid. Time of ob. 16„ 19„ 39.74
6„ 32„ 36.42
9„ 47„ 03.32
1„ 36.16
9„ 45„ 27.16
8„ 58„ 31.53
46„ 52,50
2.99
.92
9„ 45„ 27.14

June 30 $9^{h}\,45^{m}\,27^{s}.14$ M.S.T.

Irene AR $15^{h}\,33^{m}\,31^{s}.77$ } Mean Eq.
Dec. $-15^{\circ}\,28'\,05''.82$ } Jan. 1st 1851
05

4 comparisons in δ and 8 in AR with 5184 B.A.C.

Star of Comp. B.A.C. 5184
* AR $15^{h}\,34^{m}\,23^{s}.62$ } 1851.0
* Dec. $-15^{\circ}\,31'\,57''.51$ }

Irene − *
Δα − $00^{m}\,51^{s}.85$ Δδ − $3'\,51''.69$

July 1st

Zero 0.10

Iren diminished in R 11.1 daily
Increased in Dec 4.96"

79.15.54 11

H 00.21.10

planet south of star x is planet
x preceds

Dec−15.90'

26.29
27 321
1.09

Dif in Dec hazy thin clouds Dif in R

15.33.00 47"42
36.00 47 30
38.20 47 10 faint
39.40 47 17
41 50 47 04
15.44.00 47 02
232.50 105
15.38.75 47.175
1.67 50 10
15.38.73.33 2.925
1.40.27 9.8
15.40.53.60 23400
6.36.22.48 26325
9.04.30.62 286650
1.29 20 ds 28".66
9.03.11.42
8.58.31.53
3.59.34
29.92
.62
9.03.01.41

6.35.46.24
46.74
6.36.22.98

x 26 12.0 * 7.16 1.04.0
x 15.46.26.2 * 15.47.303 1.04.1

47.54.6 48.58.3 1.03.7
48.08.9 49 12.5 1.03.6

49.40.8 50.44.5 1.03.7
15.49.55.3 15.50.59.8 1.04 5

51.43.0 52.46.5 1.03.5
15.51.57.0 15.53 01.2 1.04.2
391.57.8 31.3
15.48.44.82 da = 1.03.91
1.67 cor. −05
15.48.43.15 1.03.86
1.40.20
15.50 23.35
+.05

B.A.C. R 15h.34m.23.62 Dec.−15°.31'.52"51
da − 1.03.86 dδ + 28.66
15.33.19.76 15.32 26.17

July 1st 9h.03m.01s.41 M.S.T.
Irene R 15h.33m.19s.76
Dec−15°.32'.26".17 } Mean Eq. Jan. 1st 1851

8 comp. in R and
6 comparisons in δ
with B.A.C 5184

Irene — *
Δα — 1m.03s.86 Δδ + 00'.28".66

518

July 2d Irene July 2nd

Dif Æ

27 41.4 55.6 1 14.2
15 27 54.8 = 15 29 8.9 14.1

29 50.9 45.5 1 14.6
15 30 04.2 ~31 18.9 14.7

31 42.9 57.3 1 14.4
15 31 56.0 33 10.6 14.6

33 27.5 42.2 1 14.7
15 33 41.0 34 55.7 14.7

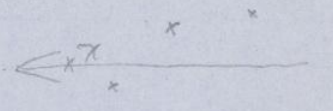
124..18.7 da = 1..14.50

15..30..47.34 Dif. Dec

1 14.5

0.07 Zero J.H.S. ~~[illegible]~~
50.11 records and
13 G.W.J.
13 observes
50.12

0.3
0.4
0.1
0.2
0.1
0.1
0.2
0.2



+e

x is planet

15..30..47.34 Comp ✱
1..49,10
15..32..36.44
6..40..29.34
8..52..06.90
7..58..41.36
51..51.48
6.98
9.0
8..50.39.72 M.S.G.
Sid. Tim
15..47..38

6..34..42.80
46.74
15.05 6..40 29.54
18.80
18.87
18.70
5 46
18.865
50.12
31.25 5
9.8
250 040
281 295
306.2990

ds 5'..06".30
− 3".00
5..03.30 = dδ

15 43 39 D 19.09 Ⓡ L 0.61 22t
46 7 18.80 0.06 ot
49 24 18.87 Ⓡ L
51 22 18.70 50.14
53 42 18.45 : 18.86
55 28 31.27

15 47 38 mean. Dec time 312.75
05 30 47 .. Æ −. 6.25
5' 6"5

Dif Æ 1m 14s50 Dec 5' 6"5
Æ ✱ 15 34 23.62 −15 31 57.5
15 33 9.12 −15 37 4.0
Dif. Dec in time + 3"3
Dec for Æ.time −15 37 0.7

15 30 47
+ 1 49
15 32 36
6 40 29
8 52 7
− 1 27
8 50 40

✱ Æ 15..34..23.62 ✱ Dec, − 15..31..57.51
da − 1..14.50 dδ + 5..03.29
15..33..09.12 15..37..00.80

Irene − ✱
Δα − 1m..14s.50 Δδ + 5'..03".29

July 2nd 8h..50m..39s.72

By 8 comp. in Æ and 4 comp. δ with B.A.C. 5184

Irene Æ 15h..33m..09s.12
Dec − 15° 37'..00".80 (8)
} Mean Eq. Jan. 1st 1851

July 12/13 Am Eclipse of the Moon

Occultation star of 8th mag]

Chron 167 Hutton

12h 55m moon partially obscured with penumbra
" thin clouds flying rapidly through the field
" 04 penumbra is of a dark copperish color

13, 08 first contact of umbra
13 umbra appears of a dull leadish color

13, 15 edge of umbra next the bright part of the moon appears darkest

13, 17 Umbra advances—first contact with edge of Mare Humerum
Edge of umbra very badly defined

13, 21 Spots within the umbra seen distinctly
Thin clouds skip across the field

13.. 24 Contact of the edge of umbra with Tycho
25 Lost sight off — thick clouds

13.. 30 Moon reappears for a moment

14 05 Moon reappears — the obscured part resembles dark red copper

14.. 08 Tycho with its radiations appears quite distinct
09 That part of the umbra which borders on the illuminated part of the moon appears of a grayish green — spots better defined within this than in the copperish color

14.. 18 32-4 bts Occultation of a star of 8 mag. 4' south of center projected on the moons limb 2 or 3 seconds

July 12/13 Am,

h m
14.. 20 Moons light dull on the buildings and landscape as if decaying — produces a disagreable sensation.

14.. 25 There is a singular contrast between the color of the inner edge of the umbra, and the other obscured part —

14.. 30 There appears to be no sudden termination between the grayish portion of the umbra, and the copperish portion

14.. 33 Tycho and radiation are still quite distinct —

14.. 38 Contact of umbra with the centre of Mare Serenitatis

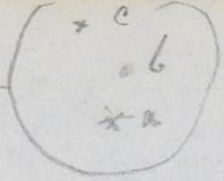
14.. 40 The appearance of the buildings, is most gloomy

Cloudy, no prospect of seeing the end

Note — What I have above called umbra, is the penumbra; at 12.. 55 there appeared over about one third of the moons disc, a thin redish haze, resembling the red appearance seen in the horrizon after sunset — this appeared to be concentric with the umbra and penumbra

522

1851. Not the Comet
D'~~Arrest~~ ~~Comet~~ at 23



a Star comp
b. Comet
c Star

July 23/24 Ar

Intl Comet = h 193 Nebula

2964 — 22h .. 44m .. 43s.7 ✝ — 8 .. 44 .. 46 N.P.D. 79 .. 41 .. 12
3 .. 15 .. 14
1 .. 59 .. 57.7

Star of comp 9-10 mag

— " — 22 .. 50 .. 55.2 — ✝ — 8 .. 52 .. 0 — " — 79° .. 40′ .. 16″
3 .. 8 0
— " — 22 .. 58 .. 30.0 — " — 8 .. 59 .. 33 — " — 79 .. 40 .. 16
δ = + 10° ,19 .. 44″
3 .. 00 .. 27
1 .. 58 .. 57
1 58 .. 55
56.0

Mean 1h .. 58m .. 56s.1 = Inst R of *
* R 1 .. 58 .. 58.8 Inst R of R
R - * + 0m .. 2s.7

Comet

— " — 23 .. 05 .. 05.5 — ✝ — 9 .. 06 .. 06 — " — 79 .. 41 .. 12
2 59 54
1 .. 58 .. 59.5 9?
1 .. 59 .. 57.7
18 57.2
R 1 .. 59 .. 58.60 Mean R
* 1 58 .. 56.1 Mean *
1 .. 02.5 = dR Comet follows * at 14h .. 50m .. 37s.9 M.S.T.
By hour circles

R 10 .. 18 .. 48
* 10 .. 19 .. 44
Δδ = 56.0″

diff stars and R by inst 56.0″
diff R stars and R by inst. 32s.50

Zero mic
50r .. 81
50 .. 82
163
81

Saturn

2964 — 23h .. 14m .. 23s.5 — ✝ — 9h .. 06m .. 0s. N.P.D — 79° .. 29′ .. 56″
23 .. 18 .. 47.4 — " — 9 .. 10 .. 24.0 " — 79 .. 30 .. 00
2 .. 49 .. 36
2 .. 08 .. 23.4

79 .. 29 .. 58
h δ + 10 .. 30 .. 02

23 .. 14 .. 23.5
2 .. 54
2 .. 08 23.5
2 .. 08 .. 23.4
Mean 2 .. 08 .. 23.45

23 .. 05 .. 06.5
22 .. 44 .. 43.7
5 .. 49 49.2
22 .. 54 .. 54.60
1 .. 26.8
22 .. 56 .. 21.4
8 .. 03 .. 17.23
14 .. 53 .. 04.17
2 .. 26.31
14 .. 50 .. 37.87 M.S.T.

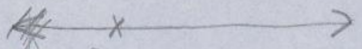
8 .. 02 .. 30.49
46.74
8 .. 03 .. 17.23

R — *
Δα + 00m .. 32s.5 Δδ — 0′ .. 56″.0

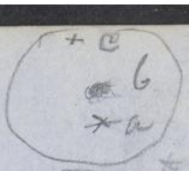
July 23 — 14h .. 50m .. 37s.87 M.S.T.
Not the Comet

Not the Comet -

July 23/24 Am ~~D'Arrest~~ ~~Comet~~



New Comet = h. 193 nebula ☄



a, star 10 mag
b _ Comet

Comet south following star 10 mag

Dif in ~~Æ~~ Dec.

h m s			
22..01.45	56.12	22..09.30	55.26
03.33	56.03	11 50	55.40
04.30	55.81	13.20	55 88
03.23	55.65	14.45	56 05
22.. 06 40	55.54	22.. 15..45	56 02
22.. 04..23	55.83	22.. 13..06	55.72
22.. 13.. 66	55.72		50 81
17.. 29	3|111.55		4.91
22.. 08.. 44	55.77		9.8
	50.81		3928
	04.96		4419
	9.8		48.114
	3968		
	4464		
	48.608 = d Dec.		

Inst Æ * Inst Æ ☄
1h.. 58m.. 55.7 1.. 58.. 58.15

at 22h..27m — ☄-* = + 0m..02s.45
22.. 54 - " = + 0.. 02.70

Therefor the object was not the Comet

hourly mot. Æ + 9.2s
☄'s hourly mot. in δ - 14"

2964 Instrumental place of the Comet H - 8h.. 20m.. 0

Dec circle

☄ 22.. 18.. 57.5 — 10°..18..48

~~NPD~~ 79°..41..12" NPD

h Inst. place of ~~* of comparison~~

* 22.. 26.. 33.7 — NPD 79°..40'..16"
3.. 32.. 22
1.. 58.. 55.7

H - 8h.. 27m.. 38s

δ 10..18..48
10..18 48
☄ δ+10..18..48 by circles
* 10..19..44
56

h m s
☄ 22.. 35..19.8 — {NPD - 79..41..12
{H — 8..38..21
3.. 21.. 39.

3..21..39

1.. 56..58.8
1.. 58..57.5
15 56.3

Δa

☄ — *

22..35..19.8
22..18..57.5
54..17.3

☄ 1.. 57.. 58.15 Mean
* 1.. 58.. 55.70
57.55 = dif Æ *☄

22..27..08.65
1..26.9
22..28..35.55
8..03..17.23
14..25..18.32
2..21.75
14..22..56.57 M.S.T.

22..18..57.5
3..40
1..58..57.5

July 23/24 Am.

New Comet

h m s
22..58..30.0
1..27.36
22..59..57.36
3..00..27.00
2..00..24.36 = Stars R

h m s
Compt H 8..59..33
H = 3..00..27

° ′ ″
79..40..16 N.P.D.
δ = +10..19..44

Weisse H I Num. 1078

h m s
1..58..46.75
1..22.96
* R 2..00..09.71

s
3.191
ow
3.191
26
19146
6382
82.966

° ′ ″
+10..21..13.7
7..34.48
* δ = +10..28..48.18

″
17..42
0.60
17.480
26
104880
34960
454.480

Augt 5 –
occultation of 7 Ophiuchi

1570 – 13.. 00.. 27.5 – 6 beats

2964 – 17.. 18... 10
1510 – 13.. 11.. 23

EC – 8.. 26.. 0
1510 – 13.. 13.. 45.8

Augt. 6

239 – 8.. 2.. 30 – 96.965

8.. 5.. 25 – 95.433
8.. 7.. 00 – 94.885
8.. 8.. 50 – 93.810

8.. 10. 33 – 92.862
8.. 11.. 41 – 92.175
8.. 12.. 52 – 91.743
8.. 15.. 20 – 90.146
8.. 16. 38 – 89.555
8.. 19. 10 – 88.385
8.. 20.. 30 – 87.792
8.. 22. 10 – 87.053
8. 24.. 46 – 85.610
8. 25. 47 – 85.120
8.. 27.. 37 – 84.288

8.. 29.. 49 – 83.245
30. 57 – 82.703
32. 32 – 81.760
33. 45 – 81.300
35. 01 – 80.716 nearest approach
36. 00 – 80.265

Zero
50.965 51.035
50.980
50.976
51.000
51.000

EC. – 9.. 12.. 0
239 – 9.. 12.. 19.5

Aug 21st the micrometer has been put on the great Telescope this afternoon and adjusted —— Has been off for a long time for the daguerreotypes &c. M. Whipple

Aug. 21st Brorsen's Comet W. C. B. observes C. W. T. records

Star of comp 9–10 mag. north preceding really

Dif. δ comp $*^a$ & comet

m s

2964 18..33..25 28^r317

35..54 28.545

39..56 28.890

40..34 29.695

42..32 30 045

18 38 28 145 432

29.086

50.019

20.933

m s

18..58..49 68^r220

19..00..31 68 065

19 01..25 67 780

19..02 40 67 565

19..03..55 67 445

19..01..28 339.075

18..38..28 67.815

2)37 39 56 −50 019

18..49..58 17.796

20.933

2)38 729

$19^r.364$

9.8

154912

174276

189.7672

$3'..09''.76$ = dδ a & comet

☄ + 1".2 in 1min.

* of comp Dec $40°..56..54.62$

☄ Dec = + $40°..53..44''.80$

comp. star determined from B.A.C. 4820

Dif in R ☄ and star 10 mag. = star a

☄ *

6 31.5

18..46..48.8

49.5

48..07.1

18.8

49..36.3

37.6

18..50..54.9

08.6

18..52 26.2

9..56..50.59

46.74

9.57 37.33

☄ –

47 13.0 41.5

18..47..29.7 409

48 30.7 41.2

48..48.2 41.1

49 59.6 40.8

18..50 17.1 40.8

51 18.9 41.3

18..51..36.6 41.7

52 50.2 41.6

18..53..07.8 41.6

18..50.07.18 12.5

1..22.60 41.25

18..48..44.58

9..57..37.33

8..51..07.25

1..27.01

8..49..40.24 M.S.T.

Star of comp. R $14^h..35^m..27^s.52$ δ + $40°..56'..54''.62$ 1851.0

* of comp R $14^h..35^m..27^s.51$

41.25

☄ R = 14..36.08.76

☄—*

$\Delta a + 00^m.41^s.25$ $\Delta\delta - 3'..09''.76$

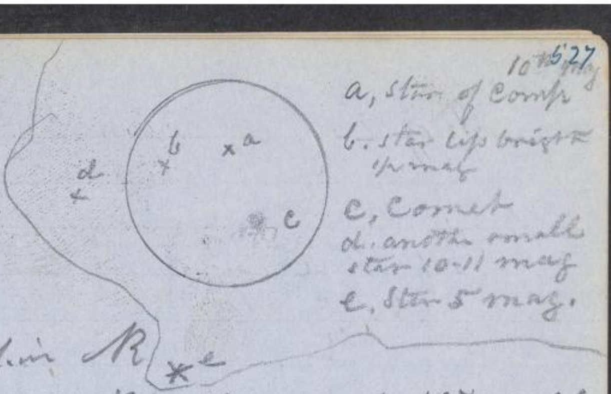
Aug. 21st $8^h..49^m..40^s.24$ M.S. Time Camb. Observatory

☄ R $14^h..36^m..08^s.77$ } Mean Equinox by 10 comp. R and 10 in δ

☄ δ + $40°..53'..44''.86$ } Jan. 1st 1851

Aug. 21 x alias ~~e~~ is B.A.C. 4870

Star of comp and star of ~~6~~ 5th mag.
Star of comp south ~~of~~ preceding



10th mag
a, star of comp
b. star less bright 9th mag
c, Comet
d, another small star 10-11 mag
e, Star 5 mag.

Dif. in Dec. a & b

2969 ~~15.39.49~~

19.12.50 102.54
14.35 47
15.40 002.46
.25 147
19.13.42 002.49
50.02
852.47
92.249.56
41976
47223
514.206
8.34.20 = dδ a & b

a star of 9-10 mag.
e star of 5 mag.

Dif. in R

comp * and * 5th mag

24.12.8 x 6.42.7 2.29.9
19.24.29.7 19 26.59.6 29.9

56.8 27.0 30.2
19.28.13.2 19.30.43.8 30.6

16.8 48.7 29.9
19.31.33.6 19.34.03.3 29.7

38.1 .08.2 30.1
19.34.54.7 19.37.25.0 30.3
2406
dR = 2m 30s.08

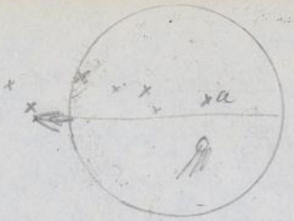
S.T.

* of 5th mag.
2964 19h 41. 45.1 H − 5h 01m 45s Dec + 41° 7′ 20″ P
1.22.85
19.40 22.25
5.01.45 45
14.38.37

Zero
50.065
50.005
49.997
50.032
50.000
250.099
50.019

B.A.C. 4870 R 14.37.55.26 Dec 41° 05′ 44″.3
An prec + 2.329 An prec − 15.48
sec var − .000 sec var + .00
R = 14h 37m 57.599 δ = 41° 05′ 28″.82
2.30.08 8.34.20
comp * R = 14.35.27.52 comp * δ + 40.56.54.62
41.25 3.09.76
daily rate of 2964 is + ~~2~~7s8 08.77 Dec + 40.59.44.86
14.36.08.77

Aug. 23 Brorsen's Comet



a comp star
19-10 mag.

2964

Dif in Dec. ☄ north of star

h
18.. 53.. 30 21.67
CT 8 57.45 21.36
8 58.. 10 20.76
19.. 02.00 20.63

Dif in R ☄ precedes ✶

s
☄ 19.. 07.. 27.0 0..06.0
✶ 07.. 33.0

8 30.0 .05.5
08.. 35.5

9.. 57.0 05.5
19.. 10.. 02.5

11 54.0 05.0
11.. 59.0

11 41.5 05.2
19.. 11.. 46.7

☄ 12.26.0 05.2
✶ 19.. 12.. 31.2

13.. 23.5
13.. 28.4
19.. 11.. 37.0

04.9
37.3
.05.33 = dR

19.. 15.. 40 19.57 Ill. bad
9 17.. 35 18.85
MB 9 19.. 10 19.20 good
19.. 20.. 20 18.90
19.. 08.. 10.9 | 16.94

20.. 12
49. 89
29.. 87
9.8
23896
26883
29.27.26

4.52.73 = dδ
corr for m 1.36.1
4..53.33

h m
19.. 27. ✶ Dec. +41°.. 49'.. 48"
.. 49.. 46
+41°.. 49'.. 47"

h m s
19.. 11.. 37
− 2 fls = 4

19.. 11.. 35
1.. 36.30
19.09.. 58.70

10.. 04.. 43.64
46.24
10.. 05.. 30.43

10.. 05. 30.43
9.. 04.. 28.27
1.. 29.2
9.. 02.. 59.07 M.S. Time

h m s
19 33.. 43.5 H 4.. 49.58
36.. 10.5 4.. 52.26
1.. 36.3
19.. 34.. 34.2
4 52.. 26.
14.. 42.. 08.2

18.. 30
14 42
9 - 48

7 comp. R and 8 in δ

56.. 16.1

☄ − ✶
Δa − 00m.. 05s.33 Δδ + 4'.. 55".33

Aug^d. 26^th. for place of star obs^d with Brorsen' Comet
by C. T. on the 23 Bar, Ther.

h m s h m s ° ′ ″
2964 a 20,, 11,, 47.5 H_5,, 27,, 45 Dec. 41,, 50,, 12 * of Comp

h m s
* 2-3 mag 20,, 18,, 52 ,, — 5,, 20,, 00 ,, 41,, 00,, 20 β Bootis
1, 56, 3 49. 52
20,, 16,, 55, 7
5,, 20,, 00
14,, 56,, 55, 7

h m s
B.A.C. 4958 R 14,, 56,, 17.91
An. prec 2, 26, 3
R = 14,, 56,, 20.173
14,, 49 50
14,, 41,, 30,, 67

Aug. 27 h h m s ° ′ ″
2964. 18,, 36,, 04.1 H–3,, 54,, 34 – Dec + 41. 50,, 0 * of Comp – 23 – double

h m s
β Bootis 18,, 44,, 06.5 H – 3,, 47,, 47 ,, + 41. 00,, 00

β Bootis 18,, 50,, 12.1 H_ not read ,, + 40,, 59,, 56

18,, 35,, 13.7 H – 3,, 58,, 54 ,, + 40,, 59,, 56

40,, 59,, 06.00
An. prec – 14.41
δ = + 40,, 58,, 51.59
+ 50,, 02, 67
comp * Dec. + 41,, 48,, 54, 26
dδ * ~~a~~ g = 4,, 55.33
A δ = + 41,, 53,, 49.59

* a β
18,, 36,, 04.1 18,, 44,, 06.5
3,, 54,, 34 3,, 47,, 47
14,, 41,, 30.1 14,, 56,, 19.5
14,, 41,, 30.1
14,, 49.4 = dα dδ = 50,, 02,, 67

h m s
comp * R 14,, 41,, 30,, 67
dR * g = 05,, 33
A R = 14 41,, 25.34

Comparison *^s place determined from B.A.C 4958 by reading (the circles)

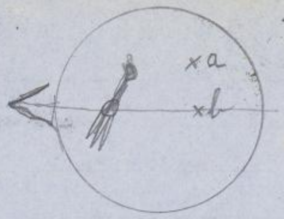
Comparison star R 14,, 41,, 30.67 δ + 41,, 48,, 54.26 1851.0
determined from B.A.C. 4958 by reading the circles
7 comp. R and 8 in δ

A — *
Δα – 00^m,, 05^s.33 Δδ + 4′,, 55″.33

h m s
Aug. 23 9,, 02,, 59.07 M.S.T.
A R 14,, 41,, 25, 34 } M. Equinox
A Dec. + 41,, 53,, 49. 59 } 1850.0

Brorsen' Comet Chro - 2964

Aug. 26 Brorsens Comet
Comet precedes *
* 8-9 mag.



W.C.B. Observes C.W. Tracewell
dif. in R a & b $\overset{s}{2.1}$
a follows b
a is star of comp

Dif in R T observes Ill bad

a is star in Lalande No 27279

15.35 * 04.5
☄ 18.. 50.. 28.3 * 18.. 51 16.0

01.0 49.0
☄ 18.. 52.. 12.7 18.. 53.. 00.2

58.5 42.0
54.. 06.0 54.. 53.5

Dif in Dec
☄ South of *

Dif Dec a & b
a is South

19.. 17.. 15.^{s}	49.^{r}18	25.^{r}55
19.. 00	49.27	25.53
19.. 40	49.42	25.54
20.. 25	49.47	50.01
19.. 21.. 19	49.59	24.47
97 29	1.93	9.8
19.. 19.. 29	49.386	19576
	50.01	22023
	0.624	239.706
	8.9	3.. 59.70
	5616	
	4992	
	5.5536 = ds	

B observes

29.2 16.0
☄ 19.. 03.. 40.6 * 19 04.. 27.6

59.0 45.0
05.. 10.0 05.. 56.5

17.5 08.. 29.0
06 29.1 07 15.7

h m s
19.. 38.. 07.5
1.. 56.6
19.. 36.. 10.9
4.. 45.. 02
14.. 51.. 089

1.0 = cor for mot. in 1^r
6.56
m s
47 - 4.. 45.. 02 Dec + 43°. 25'.. 08''

34.6 20.8
19.. 07.. 45.7 19.. 08 32.2

07.2 53.4
09.. 18.7 19.. 10.. 04.7

28.. 07.6 52.0
29.8 25.. 14.
3
33.6 17.5
29.. 55.6 30.. 39.5

12.6 55.8
31.. 33.9 19.. 32.. 18.0

continued

continued

2 50.6 34.7
☄ 19.. 33 12.2 * 19 33 56.1

26.0 04.6
34 48.4 19 35.. 31.5

Zero
50.01

1856131

Aug. 26 Brorsens Comet

Lalande 27279 AR 14..48..39.30 An. prec $\overset{s}{2}$,215
am prec 1,, 52,96 51
sec. var + .00 2215
Mean AR 1851.0 = $\overset{h}{14}$..$\overset{m}{50}$..$\overset{s}{32}$.26 11075
da = −$\overset{s}{45}$.06 112965
☄ AR = 14..49..47.20 $\overset{m}{1}$..$\overset{s}{52}$.96

Transcribed from prec. page
Dif in AR

☄	08..29.2	4 16.0	46.8
☄	19..03..40.6	* 19..04..27.6	47.0
	04..39.0	45.0	46.0
	19..05..10.0	19..05..56.5	46.5
	06..17.5	7..04.0	46.5
	06..29.1	07..15.7	46.6
	07..34.6	20.8	46.2
	07..45.7	19..08..32.2	46.5
	09..07.2	53.4	46.2
	09..18.7	10..04.7	46.0
	28..07.6	52.0	44.4
	28..29.8	29..14.0	44.2
	29 33.6	17.5	43.9
	29..55.6	30..39.5	43.9
	31..12.6	55.8	43.2
	19..31..34.9	32..18.0	43.1
	32..50.6	34.1	43.5
	19..33..12.2	33..56.1	43.9
	34..26.0	09.6	43.6
☄	19 34 48.4	* 19 35..31.5	43.1

19..18.57.68 1012
1..56.62 45.06 = dα
19..17..01.68
10..17..20.10
8.59..41.58

8..59..41.56
1..28.41
8..58..13.15

27279 Dec. + $\overset{\circ}{43}$..$\overset{\prime}{36}$..$\overset{\prime\prime}{19}$.1 An. prec
An prec − 12,,35.82 14.869
sec var − .05
Mean δ 1851.0 = + 43,,23,,43.28 14.82
dδ = − 6.56 51
☄ δ = + 43..23..36.72 1482
7410
12 755.82
20 comp. AR 5 Dec. 12..35.82

☄ − *
Δα − $\overset{m}{00}$..$\overset{s}{45}$.06 Δδ − $\overset{\prime}{00}$..$\overset{\prime\prime}{06}$.56

comp. star Lalande 27279
* AR $\overset{h}{14}$..$\overset{m}{50}$..$\overset{s}{32}$.26 δ + $\overset{\circ}{43}$..$\overset{\prime}{23}$..$\overset{\prime\prime}{45}$.83

Aug. 26, $\overset{h}{8}$..$\overset{m}{58}$..$\overset{s}{13}$.15 M. S. T.
☄ AR $\overset{h}{14}$..$\overset{m}{49}$..$\overset{s}{47}$.20 (Mean Equinox
☄ δ + $\overset{\circ}{43}$..23..$\overset{\prime\prime}{36}$.72 (1851,00

Aug. 27

star 8-9 mag north following ☄

Dif in Dec.

2964	h m s	
	19,, 11,, 30	80ʳ 010
	13,, 14	79 843
	14,, 38	79 800
	15,, 45	79 625
	16,, 33	79ʳ 493
	19,, 14,, 20.0	398.771
		79.754
		50.231
		29.523
		9.8
		236184
		265707
		289.3254
		4..49.32=d

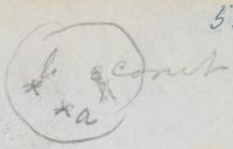
Dif in R

☄ 19 19 46.5

✱ 19 19 56.1

	Comet	Star	
1W 2?W	1 53.4	22,, 03.1	09.7
	22 19.0	22 29.6	10.6
	2,, 44.0	54.0	10.0
	19 23 10.4	23,, 20.6	10.2
	3,, 39.1	23 49.4	10.3
	4,, 05.3	24 15.8	10.5
	4 36.0	24,, 45.7	09.7
	19,, 25,, 02.5	19,, 25,, 12.0	09.5
	~~58.6~~	26,, 07.2	
	~~26 24.6~~		
	6,, 57.8	27,, 08.0	10.2
	27 25.0	27 ,, 33.6	8.6
	28,, 10.3	28,, 19.7	9.4
	19,, 8 36.7	8,, 46.1	9.4
	19,, 24,, 58.29		118.1
			9.84 da

10,, 20,, 29.91	19,, 40,, 08.0
46.74	10,, 21,, 16.65
10,, 21,, 16,65	9,, 18,, 51.35
	1,, 31.55
	9,, 17,, 19.80 M.S.T.



August 27

Star b, of full 8th mag. north preceding * of Comp. a

Diff AR   Stars a & b in Bessel's Zone No. 473   Dif in Dec a & b a South of b

* b — 34,,57.6   44.1   10.3   60r843

* a — 35,,13.7   96,,00.0   36.261   60 832   ~~.167~~

60 813   .533

Comet & stars a & b.   50.231   .523

* north following.

10.584

b 19,, 8 38.2   07.9   Dif in Dec. a & ☄   9.8

☄ 38 46.1   09.2   171   19,,43,,06 76r680   840   stars a AR 14..51..38.96

a 38 53.3   45,,00 76410   945

102.40

45,, 50 76.202

46,,52 75 860   1-42-9

4..14 39

48,,10 75.792   5..57.29

19.45.48   30.944

76.189

b 9 04.7   07.4   15.9   50.231

☄ 39 12.1   08.5   25.958

a 39,,20.6   9.8

207 664

233692

254.3884

b 39,,46.1   08.4

☄ 39,,54.5   07.6   16.0   4,,14.39 = dδ

a 40 02.1   cor. for mot in 5 min. 6.00

4,,20.39 = dδ

b 40 12.8   08.7

☄ 40 21.0   07.6   163   For reduction see next page ☞

a 19 40,,28.6   2..54.2

19,,39..33.4   329   2..54.7

34.6   8.22 = dδ

19 40.08.0

Star of comp. a. *a 19h,,54m,,34.2s — H 5h01m..40s   Dec + 44°..0'..0"

28th * of Comp. a — 18,,28,,30.7   H - 3..35..38   44°..0'..0'   Zero 50r200

34   225

18 29.04.7   240

29st Star of   3,,35,,38   253

14,,53,,26.7   220

223

186

50.231

From preceding page Bessel's Zone No. 473

Star a Æ 14ʰ 51ᵐ 38ˢ.96 Star a Dec + 44° 04′ 26″.3

+ 18.06 k + 45.67 d

− 0.01 = k′ $\frac{\delta - D}{100}$ − .07 d′ $\frac{\delta - D}{100}$

14.51.57.01 44.05.11.90

D 56.94 − 6.22.20

* Æ 14.52.53.95 * δ + 43.58.49.70

Δα − − 00.08.22 Δδ − 4.20.39

☄ Æ 14.52.45.73 ☄ δ + 43.54.29.31

An prec 2.19 26 1314 1438 56.94

An prec 14.67 sec var + .03 14.70 26 8820 2940 38220 6.22.20

58

0 5

$p = 46''.05910 + 20''.05472 \sin a \cdot \tan \delta$

$p' = 20''.05472 \cos a$

a = 14.51.57

δ + 44.05

Sec var of prec in Æ 12 years = 0.000

" in Dec .. 0″.03

cos a 9.86413ⁿ

" 1.30220

p′ = −14″.67 1.16633ⁿ

sin a 9.83378ⁿ

Tang δ 9.98610

1.30220

−13″.24 1.12208ⁿ

46.06

32.82 = 2ˢ.18 = p

An. prec. α + 2ˢ.188 } in

" " δ − 14″.67 } 1850

prec in Æ + 2ˢ.188 } in 1838

" Dec − 14″.70 }

+ 19 5.27 5.36 9.

18.54.49.1 38 18.55.27.1 3.59.10 14.56.17.1

.03 .75

19.02.12 38 19.02.50 4.05.56 14.56.54

0.014 4)1.4 0.35

14ʰ 51ᵐ 38ˢ.96 + 44° 4′ 26″.3

k + 18.06 + 45.67

− 0.01 − 0.07 $\frac{\delta - D}{100}$ = −0.04

14.51.57.01 44.5.11.9

prec + 0.56.90 − 6.22.2

Æ 14.52.53.91 * Dec 43.58.49.7 1851.0

Δα − 0.8.22 Δδ − 4.20.4

Æ 14.52.45.69 Dec 43.54.29.3 of Comet

An Prec in Dec − 14″.67

Æ + 2ˢ.202

4)220.2 55.05 220 57.25

4)1467 366.8 6′ 6″.8 14.7 6 21.5

☄ − *

Δα − 00ᵐ 08ˢ.22 Δδ − 4′ 20″.39

Aug. 27 9ʰ 17ᵐ 19ˢ.80 M.S. Time

☄ Æ ~~14ʰ 52ᵐ 45ˢ.69~~ } Mean Equinox

☄ Dec. + ~~43° 54′ 29″.30~~ } 1851.0

☄ Æ 14.52.45.69

☄ Dec. + 43.54.29.30

by 4 comp. Æ and 5 in δ

Bessel's Zone No. 473 9 mag.

comp. star Æ 14.52.53.91 } 1851.0

δ + 43.58.49.70 }

Instrumental place, no star near ☄

August 28 Inst difference of Brorsen's Comet & β Bootis
2964 Slow 38s

☄ 18h 54m 49s.1 H – 3h 59m 10s – Dec + 44° 25′ 2~~4~~″
*β 19 02 1~~2~~3 7 23.2 H – 4 05 56 6.46 " + 40 59 58 3 25 26″
*β 19 08 43.1 H – 4 12 26.0 – " – 40 59 58 3 2540
☄ 19 16 23.1 H – 4 20 38.5 – " – 44 25 38 3 25 40
106
3 25 35

daily motion of comet in R + 2m.4
hourly motion + 7s.0

19 16 23.1
4 20 38.5
14 55 44.6
14 56 17.0
32.4

*β R 14h 56m 20s.17
da ☄ & * – 32.1
☄ R = 14h 55 48.07

18 54 49.1
19 16 23.1
19 05 36.7
36.24
19 06 12.34
10 25 13 20
8 40 59 14
1 25 35
8 39 33.79 M.S.T.

~~4~~ 3 25 26
3 25 42.0
2) 6 51 08.0
dδ = 3 25 34

19 08 43.1
4 12 26.0
14 56 17.1
14 55 44.6
32.5

32.4
31.7
37.9
37.2
139.2
34.8s = da

βR 14 56 17.91
An. prec + 2.26
14 56 20 17 1851.0
Δα – 34.8
☄ R 14 55 45.37

19 02 12.3
4 05 56
14 56 16 3
14 55 44.6
31.7

*β Dec + 40° 58′ 51″.59
dif δ + 3 25 34.00
+ 44° 24 25.59

Inst R * 14 56 16.3 1st obs * 14 56 17.1 2nd obs
" ☄ 14 55 39.1 1st obs ☄ 14 55 44.6
37.2 32.5

18 54 49.1
3 59 10
14 55 39.1
14 56 17
37.9

β Dec. + 40° 59′ 06″.0
An. prec – 14.41
40 58 51.59
Δδ + 3° 2~~5~~ ~~35.00~~
40 ~~55~~ ~~26.24~~
☄ Dec + 44 24 26.59

The comet and star differing but little in R from each other, renders any correction for refraction in R unnecessary, and as the circle of Dec at the time of observation was nearly perpendicular to the vertical, the ref. in Dec. must have been nothing.

There is some uncertainty about the first observation of β Bootis i.e. there appears to be

14 56 16.3
14 55 39.1
37.2

☄ – *
Δα – 00m 34s.8 Δδ + 3° 25′ 35″
By two readings of Circles
Star of comp. B.A.C. 4958 = β Bootis
* R 14h 56 20.17
* δ + 40 58 51.59 } 1851.0

Aug. 28. 8h 39m 33s.79 M.S.T.
☄ R 14h 55m ~~45.37~~s
☄ Dec. + 44 24 26.59 } Mean Equinox 1851.0
☄ R 14 55 45.37
☄ Dec. + 44 24 26.59

536

August 29

	h m s	h m s	Dec	
☄	18„46„29,1	H – 3„47„47 —	44°„55„28	
β	18„54„58,2	„ 3„58„43	40„59„58	3„55„30
β	18„59„01.0	„ – 4„02„46	40„59„58	3„56 02
☄	19„04„06,7	„ – 4„05„22	44„56„00	3„55„45
	4„05„22			17„17
	14„58„44.7			3„55„46

☄ 3„56„39.5
β 3„00„44.5
4 05.0

Comet has a sparkling nucleus, sometimes seen as a minute, bright point of light – The coma is somewhat radiating – It is difficult to bring the centre on the wire with any certainty

Place of Comet by reading Circles twice

☄ – *

$\Delta\alpha + \overset{m}{2}„\overset{s}{28}.30 \quad \Delta\delta + \overset{\circ}{3}„\overset{\prime}{55}„\overset{\prime\prime}{46}$

18„46„29.1
3„47„47
☄ 14„58„42,1
* 14„56„15,2
2„26,9

0 18„54„58,2
3„58„43,0
* 14„56„15,2

18„59„01,0
4„02„46.0
14„56„15.0
☄ 14 58„44.7
2,29,7
2,26,9
16.6
2 28.30

~~19„04„06~~ * R 14„56„20.17
dα 2„28,30
☄ R 14„58„48,47

40„58„51.59
3„55.46
☄ δ + 44„54.37.59

18„46„29.1
19„04 06.7
17 50„35.8
18„55„17.90
38.20
18„55 56,10
10„29„09,76
8„26„46.34
1„23,02
8 25„23,32 M.S.T.

Star of Comp. B.A.C. 4958 = β Bootis

* R 14„56„20.17 } 1851.0
* δ + 40°„58′„51″.59 }

August 29. 8„25„23.32 M.S. Time
☄ R 14„58„48.47 } M. Equinox
☄ Dec. + 44„54„37.59 } 1851.0

August 30 Brorsen's Comet

☄ precedes * Star 8 mag

☄ ~~19 02 49~~ Comet South of star

Dif in Dec

			Diff Dec
☄	19..02..49	* 19 05..46.5	$52^{r}12$
☄	19 07.. 17	* 19.. 10 12.2	$51^{r}94$
☄	19. 11 31.2	* 19 14 24.7	$51^{r}49$

Comet North of *

			Diff Dec
☄	19 .. 38 47.8	* 19.. 41.. 37.8	$47^{r}29$
☄	19..43..25.	* 19.. 46.. 15.7	$46^{r}80$
☄	19..48..21.6	* 19..51.. 10.7	$46^{r}78$
	19..25..21.		49.303

For the last reading of star of comparison
H − 4.. 46.. 18 Dec + − 45°.. $27'$.. 16" * of comp

β Böotis 20.. 01.. 38.0 − H − 5^{h}.. 5^{m}.. 24^{s} Dec + − 41.. 00.. 00 −
47

Arg. Zone

Position 264,55
90
354,53

Zen
50.48
50 18
26
50 31
50.21
5 30
168
5028

Dif in AR

☄	19.. 24.. 34.7	*	27.. 28.1	2..53.4
☄	19.. 24.. 52.6	*	19.. 27.. 45.7	2..53.1
☄	28..18.3	*	11,6	2..53.3
☄	19.. 28.. 36.1	*	19.. 31.. 29.4	2.. 53.3
☄	32. 12.1		5 04.6	2..52.5
☄	19.. 32.. 30.1		19.. 35.. 22.4	2..52 3
	19.. 28.. 30.65			17.9

dAR = 2^{m}..52^{s}.98

20..01..38.0
40.50
20..02..18.50
5.. 5..24
14..56..54.50

19.. 51.. 10.7 −
40,50
19.. 51.. 51,20
4.. 46.. 18
15..05..33.20
14.. 56.. 54,50
08..38.7

49.303
50. 28
0,98
9.8
784
882
9".604

19.. 28.. 30.65
40 2
19.. 29.. 10.85
10.. 33.. 06.31
8.. 56.. 04,54
1.. 27.83
8.. 54 .36.71 M.S.T.

$p = 46''.05910 + 20''.05472 \sin a . \tan\delta$

$p' = 20''.05472 \cos a$

$a = 225^{\circ}.55'$

$\delta + 45^{\circ}.28'$

cos a 9.84242^{n}
1.30220
$1^{n}.14462$

p' −13.95

sin a 9.85632^{n}
tang δ 0.00707
1.30220
$1^{n}.16559$

−14".641
46".059
2 31.418 = +2^{s}.094 = p

10.. 32.. 19,57
46,74
10.. 33 06.31

An. pre + 2^{s}.094
sec. var. .000
2.094
9
+ 18.846

An prec − 13".95
sec. var − 0.00
13.95
9
125.55
2'.05.55

occultation of two stars ☽ D.L.

August 31^d M.T.C. 7..19..0

239 - 7..18..52.3

239

*6 mag - 7..11..14.2 - 5^h

Star 9th mag on ☽ South Limb

Star 6 mag - 47^r.413

* 9th mag - 7..11..16.5 - 5

Aug 30 For observations see prec. page

Arg. Zone III No 130

^{h} ^{m} ^{s}
15..08..50.01
−4..07.94 k
−.09 k'
15..04..42.08 1842
An prec + 19.01
* R = 15..05..01.09
dif R * & ☄ 2..52.98
☄ R 15..02..08.11

45°..28'..11.3"
+ 6.7 d
+ .5 d'
45..28..17.57 1842
An. prec. 2..04.73
45..26..12.84
dif De + 9".60
45..26..22.44
our format 1".5
☄ Dec + 45..26..24.84

2,112
9
19.008

13,855
9
124.731
2..04.73

$\frac{\delta - D}{100} - \frac{32}{100} \cdot - 3$

300
1".5
100
32) 1500.9 | 47
128
220
224

D = 46° $\frac{\delta - D}{100} = -\frac{1}{3}$

15..8..50.01 45..28..11.5
− 4..7.94 + 6.8
+.01 − 0.5
15..04..42.18 +45..28..17.6 1842.0
prec. + 18.85 prec. 2..05.55
15..05..01.03 +45..26..12.05 1851.0
Δα − 2..52.98 Δδ + 0..12.90
15..02..08.05 +45..26..24.95

6 comp. in R & 6 in δ

☄ — *
Δa − 2^m..52^s.98 Δδ + 00'..12".9
Comp. star Arg. Zones III No. 130 8.9 mag.
* R 15^h..05^m..01^s.03 } 1851.0
* δ + 45..26..12.05 }

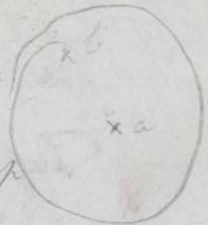
Brorsen's Comet
August 30. 8^h..54^m..36^s.71 M. S. Time
☄ R 15^h..02^m..08^s.05 } M. Equinox
☄ Dec. 45°..26'..24".95 } 1851.0

Sept 1st Am
Aug. 31/32nd

D'Arrest's Comet

Instrumental Place

263
455
19



d daylight prevented our getting another comp

	h m s		PD ° ′ ″
	~~2.. 51.. 58.0~~		
29 6th ☄	2.. 53.. 12.9	— H 10.. 51.. 52	Dec + 86.. 39.. 46
6 mag ✳	3.. 06.. 50.6	— H 11.. 05.. 16.5	PD 86.. 01.. 44

comp ✳ - a. 5/6 mag
b - 8/4 mag toward preceding

38.02 = dδ ✳ ☄

43.6
3.. 07.. 34.2
.54.. 43.5
4.. 02.. 17.7

δ + 3°.. 58′.. 16″ Star of comp
Weisse
Hora 4 - No. 20

☄ 2.. 53.. 12.9
✳ 1.. 08.. 08.0
☄ 4.. 01.. 20.9
✳ 4.. 01.. 34.1
13.2 = dR

3.. 06.. 50.6
54.. 43.5
4.. 01.. 34.1

Weisse Hora 4 No. 20

			h m s
δ + 3°.. 54.. 50.4		R	4.. 00.. 40.13
Prec. + 4.. 20.78		Prec. +	1.. 25.36
✳ Dec. + 3.. 59.. 11.18		✳ R	4.. 02.. 05.49
Δδ 38.. 02.00		Δα	- 13.2
☄ Dec. 3.. 21.. 09.18		☄ R	4.. 01.. 52.29

10.. 36.. 16.12
46.74
10.. 37 02.86

2.. 53.. 12.9
43.60
2.. 53.. 56.50
10.. 37.. 02.86
16.. 16.. 53.64
2.. 40.04
16.. 14.. 13.60 M.S. Time

An. prec. 9.98″ An. pr. 3.283ˢ
sec. var + .05 sec. var .000
10.03 3.283
26 26
6018 19698
2006 6566
26.078 85358
4′.. 20.78″ 1ᵐ.. 25.36ˢ

D'Arrest's Comet
Instrumental place

August 31st 16ʰ.. 14ᵐ.. 13ˢ.60 M.S. Time
☄ R 4ʰ.. 01ᵐ.. 52ˢ.29 } M. Equinox
☄ Dec. + 3°.. 21′.. 08″.08 } 1851.0

☄ — ✳
Δα — 00ᵐ.. 13ˢ.2 Δδ — 38′.. 02″.0

Star of comp. Weisse H. IV No. 20
R 4ʰ.. 02ᵐ.. 05ˢ.49 } 1851.0
Dec. + 3.. 59.. 11.18 }

By reading the circles once

541

Septembes 1st Brorsen's Comet from the Position Circle 17.0.0
Star south prec. Star 8 mag.
Zero - 264..30

Dif. R Dif. Dec.

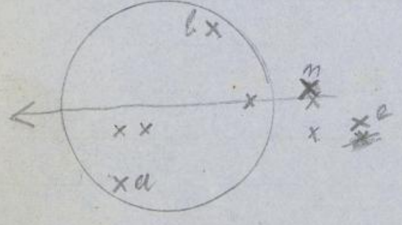
* 2,, 33.6 ☄ 9 07.6 34.0
42,, 50.3 18,, 43,, 24.1 33.6 * 18,, 47,, 57.3
48,, 33.5 — 27r 00

3 45.6 4 19.1 33.5 ☄ * 51,, 09.0
* 18,, 44,, 02.5 ☄ 18,, 44 36.1 33.6 ☄ 51,, 46.1 — 25r 81
☄ 18,, 53,, 01.2

4 58.2 5 31.8 33.6 ☄ 53,, 36.0 — 25 69
* 18,, 45,, 15.5 ☄ 18,, 45,, 49.3 33.8 18,, 51,, 18.53 78.50
18,, 43,, 54.32 18,, 44,, 28.00 221 26.17
44.4 44.4 33.68 = da 50 26
18,, 44,, 38.75 18,, 45,, 12.4 24.09 Zero
10,, 40,, 59.42 10,, 40,, 59.42 9.8 50.26
8,, 03,, 39.30 8,, 04,, 12.98 19 272
1,, 15.22 1,, 19.32 21 68
8,, 02,, 20.08 8,, 02,, 53.66 M.S.T. 28 6,082
3,, 56.08 = dδ
8m cor for mot. 8
3,, 48.08 = dδ

* 18h,, 56m,, 16s — AR 3h,, 48m,, 16s. Dec + 46°,, 24′,, 32″ star of Comp.
~~44~~ 44.4 43 — 36
18,, 57,, 00.4
3,, 48,, 14
15,, 08,, 46 4 20,, 30
9,, 15 15,, 08
~~14~~ 5,, 53 5 - 22
~~14,, 26,, 00~~
15,, 08,, 46 [illegible]
4,, 17,, 14

× ×12s×



dif in dec e & b 27r 19 = 3′ 23″ dif in R 22 a 31s
a & e 17 40 = 5′ 19″ 47,, 53 b
dif R n & e 19s 58,, 44 e 51

a comp star

542

September 1st Brorsen's Comet

Reduction of observations — for observations see preceeding page

The plac of a has been determined from H. C. 27992 on the 20. March 1852 see fol. Eq. Book

a AR 15..08..13.28
a Dec + 46..23..14.78

☄ → *
Δa + 00ᵐ..33ˢ.68 Δδ + 3′..48″08

6 comp. in AR & 3 in δ

h m s
15..08..13.28
Δa + 33.68
☄ AR 15..08..46.96

° ′ ″
* + 46..23..14.78
dδ + 3..48.08
☄ δ + 46..27..02.86

star of comp. 8 ~~9~~ mag.
* AR 15..08..13..28
* Dec + 46..23..14.78

Sept. 1st – 8ʰ..02ᵐ..53ˢ.66 M. S. T.
☄ AR 15..08..46.96 } M. Equinox
☄ Dec + 46..27..02.86 } 1851.0

Sept 3/4

An. prec 3ˢ.120
86
18720
6240
81120
mˢ
1..21.12

An. prec 9″.62
sec. var + .05
9.67
26
5802
1934
25142
4′..11″.42

Star of comp. Weisse H. IV. No. 118
AR 4ʰ..06ᵐ..42ˢ.24 } 1851.0
Dec. + 2°..37′..41″.12 }

Sept 3/4 time h m −2 beats

star of comp 3..02..05 H 10..55..47 N. P. D comp 87°..19′..40″ + 2°–40′–32″
3..12 43.2 11..06..25 87..19..40 2..40 20
3..54..34 11..48.14 87..19..40

3..02..05 = 2ˢ
46
3..02.49
1..04..46
4..07 35

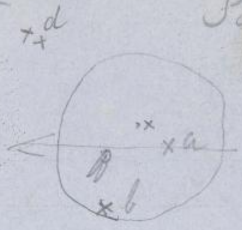
Weisse Hora 4 No. 118
Bessels Zone No. 41

1851phae.proj..167B

C.W.T. observ and records 543

September 3/4 Am D'Arrests Comet

☄ north prece. ✱ Star 8 mag



Position circle 275.20

Zero

d is double
a comp star
d R a & b 36^s
d ☄ a & d 1..05^s.5

50^r.28
27
28
50.277

Comet faint; very brilliant aurora

Dif in Dec.

m
2.. 05..50 48^r.55
08 40 48.51
10..55 48,45
13..50 48 74
2 15..45 49 12
2.. 11..00 43 37
48,67

Dif in Dec
☄ South of ✱

2.. 50.30 50^r.77
54..85 51.13
55..20 51^r.33
58..05 51^r.75
2..54.30 51.73
2..55..42 6.71
2.. 11.00 51.34
66 42 48 67
2..33.21 100 01
−2 50.00
2..33..19 50.27
00,27
9,8
216
243
2,646

Dif in R

☄ 28 58.5 ✱ 32.5 34.0
☄ 2.. 29 10.0 ✱ 2..29.. 44.2 34.2

30 26.5 30 59.5 33.0
30 38.4 31 12.0 38.6 2.. 33..20.9
46.48
32.. 42.5 16.4 33.9 2.. 34.07.38
32..55.0 33 28.5 33.5 10.. 48..52.52
15 .45..14.86
34.. 13.5 47.0 33.5 2..34.87
2.. 34.. 26.7 2 34..59.0 32.3 15..42..39.99 M.S.T.

35.. 55.5 29.0 33.5
36.. 08.4 36 41.0 32.6

☄ 37.. 24.0 ✱ 58.0 34.0
☄ 2.. 37..36.5 ✱ 2.. 38 10.0 33.5
2.. 33.. 22.9 41 6
−2
2.. 33 20.9 33.47 dα

Weisse Hora 4 No. 118
✱ R 4..05..21.12 1825.0
An. prec. 1.. 21.12
✱ R 4..06..42.24 1851.0
Δα −33.47
☄ R 4..06..08.77

✱ Dec + 2°..33'..29''.7 1825
An. prec +4..11.42
✱ Dec. + 2..37..41.12 1851.0
Δδ +2.65
☄ Dec. + 2..37 43.77

☄ − ✱
Δα − 00^m..33^s.47 Δδ + 00'..02''.65

D'Arrests Comet
Sept. 3^d 15^h..42^m..39^s.99 M.S. Time
☄ R 4^h..06^m..08^s.77
☄ Dec. + 2°..37'..43''.77

By 12 comp. R and 10 in δ

September 3/4 Am

Observations on α Aurigia for determining the errors of great Equatoreal

Dec. 45°,, 50′,, 28″
50,, 26
50,, 28
45,, 50,, 27.3
46,, 50,, 15.
Mean erros + 12

6,, 41,, 21.4
-2
6,, 41,, 19.4
46.5
6,, 42,, 05.9
1 35,, 51,0
5,, 06,, 14.9
5,, 05,, 42.86
erros 32,04

6,, 39,, 10.5
-2
6,, 39,, 08.5
46.5
6,, 39,, 55 0
1,, 33,, 39.5
5,, 06 ,, 15.5
5,, 05,, 42.86
32.64

6,, 39,, 10.5
41,, 21.4
6 44,, 24.4
-2
6,, 44 22.4
46.5
6,, 45,, 08.9
1,, 38,, 52.0
5,, 06,, 16.9
5,, 05,, 42.86
erros + 34s.04
32.04
32.64
8.72
Mean err. + 32.91

+1h,, 33,, 39.5
35,, 51.0
38,, 52

September 3/4 Am.

Great Equatoreal
Zero in R 00h.. 00m.. 32s.91
" " Dec. 00°.. 00′.. 12″

546

September 5/6 Am. D'Aarrest Comet

Comet north prec. * Star of 7 mag. Position Circle 88°.00

268.00

	Dif in Dec.		Reduction / Motion	Dif. in R			
☄	2„ 39„ 12	59r683 +	1'32".7 −7".6	2„ 49 59.7 *	40	40.3	
*	~~49„ 54~~	~~58 222~~		☄ 2„ 50 07.1	* 2„ 50 48.6	41.5	Zero
☄	2„ 41„ 08	58 222	1 18.4 −6.6				50r20
	2„ 42„ 11	59.980	1 29.7 −5.8	51 10.6	51 51.1	40.5	.25
☄	2„ 43„ 07	58r249	1 18.6 −5.3	51„ 147	52 00.0	40 3	22
☄	2 44„ 20	58r000	1 16.2 −4.6				
☄	3„ 03„ 17	56,99	1 6.1 +6.1	52 20.0	00.0	40,0	
*	~~3„ 03 55~~			2„ 52 28.1	53„ 08.1	40 0	
☄	3 05„ 27	56r88	1 5.2 +7.3				
	3„ 06„ 53	56 67	1 3.2 +8.1	53 31,4	11.6	40.2	
	3 07„ 47	56 58	1 2.2 +8.7	53„ 407	54„ 21.0	40 3	
☄	3„ 09 03	56 59	1 2.4 +9.4				
	2. 06 05	77 21 8		55 15.0	* 54.7	39,7	
	2..54..20	57r72		2„ 55„ 23.4	* 2„ 56„ 03.6	40 2	
		56.22		525 24 57		13,0	

1„13.50 7,50 2..52..31.70 ✓ 40.30 = dR

cor. for mot +1. 9.4 48.8

1..14.50 6000 2„53„20.5

dR a & b 6750 10„56..45.63

b south of a 73500 15„56„34.87

11.5 1..13.50 = dδ H. 2..36 70

57„21.1 dδ 3 cor mot −1 15„53„58.17 M.S.T.

Star of comparison

H m s h m s

2564 — 3„ 09„ 43.5 H — 11.. 00..39 Dec NPD — 87°..48'..04"

4889 59..52 2„ 11.. 56

3 10„31„39

59„52

4„10„29

An.p 3.113 An.P 9".40

26 see var. .05

18678 9.45

6626 26

80,938 5670

1„20,94 1890

24570„

4..05.70

Comp. star Weisse Hora 4 No 180

R 4.08„11.07 Dec. +2°..05'..24".3

Prec. + 1„20.94 Prec + 4..05.70

R 4.09.32.01 1851.0 * Dec + 2„09.30.00 1851.0

Δα 40.30 Δδ 1..14.50

☄ R 4„08..51.71 ☄ Dec. 2..10..44.50

☄ — *

Δα — 00m..40s.30 Δδ + 1'..14".50

D'Arrest's Comet

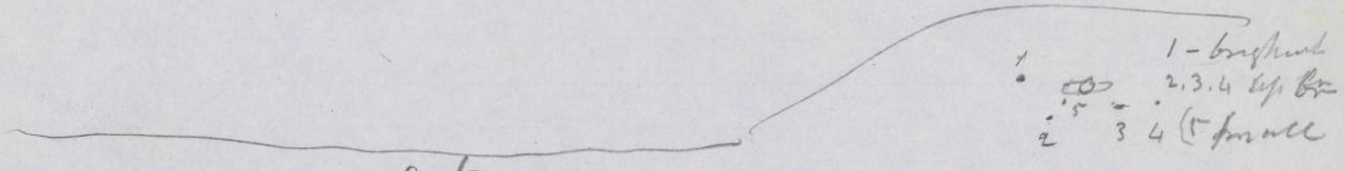
September 5th 15h..53m 58s.17 M.S.T.

☄ R 4h..08m..51s.71 } Mean Eq.

Dec. +2°..10'..44".50 } 1851.0

By 10 comp. R and 10 in δ

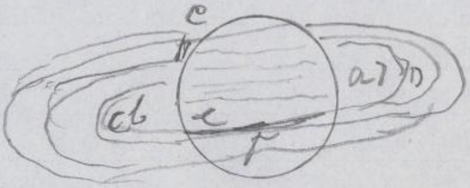
September 5/6. D'Arrest's Comet
A nucleus seen occasionally



Saturn

Sept. 5/6th hrs

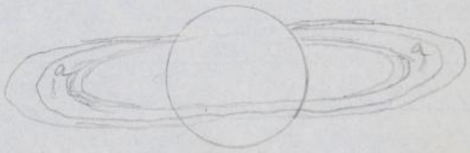
Fine definition, new ring well seen, is separated from old ring, that is, is not so bright next the old ring –



The shadow of the planet on the ring at c. is broadest outside, and the line of shadow on the ring is straight if not a little curved inward, convex to the Planet. a belt at e. is quite as bright as the old inner ring – darkish shade at f. on the Planet above the ring, all the way. no subdivisions of the old ring
excellent definition B.

Saturn

Very good seeing – the new ring appears very distinct – think I can see a division of the inner bright ring at a a in the diagram – am almost certain that the ring is divided J.
power 140



Sept. 5th
Star of Comp. Weisse H. IV. No. 180
Æ $4^{h}\,09^{m}\,32^{s}.01$ } 1851.0
Dec. $+2^{\circ}\,09'\,30''.00$

(Note entry for 6 Sept on inside front cover – MHL 10/1970)

September 10th Brossen's Comet

place of AR 15h 34m = 15h 50m
Dec +49° 54′
2° 30′
52° 24′

Sept. 15

Star of comp. H. C. No. 29768

* AR 16..10..54.70 1800.0
1..13.90
* AR 16..12..08.60 1851.0
Δα +1..59.18
☄ AR 16..14..07.78

N.P.D. 36°..15′..34.5″
7..47.52
36..23..22.02
* Dec. + 53..36..37.98
Δδ + 7..31.42
☄ δ + 53..44..09.40

An. prec. + 1ˢ.449
sec var .000
1.449
51
1449
7245
73.899
1..13.90

An. pre. 9″.192
sec. var. −025
9.167
51
9.167
45835
467.517
7′..47″.52

* AR 16..12..08.60
* Dec. + 53..36..37.98 } 18510

Comparison star H. C. No. 29768
* 7 mag
☄ AR 16h..14m..07s.78
☄ δ + 53°..44′..09″.40 } 1851.0

September 15 Brorsens Comet

comp star 7 mag. south prec

Position 82°.10′ * in Hist. Celeste No. 29768

Dif in Dec

* 19„ 28„36 ☄ 19„30„27.2 6.540

* 31 46.1 33 44.0 6330

35„16.7 19„37„17,1 5790

19„33„44,1 18710

6.237

50.26

44.023

9.8

352184

396207

431.4254

7′„11″„42 = dif Dec

cor for mot. 20″

7„31.42

Dif in ☄

* 19„44„05.1 ☄ 19„46„03.7 1„58,6

* „44 29,0 ☄ 446„282 1„59.2

13.4 49 12.7 1„59.3

19„47„38.6 19„49„356 1„57.0

50„25.8 52 26.1 2„00.3

19„50„49.3 19„52„50.0 2 00 7

19„49 36.0 dif. ☄ 1„59.18

57.27

11„35„24.41 19„50 53.27 11.44

46.74 11„36„11.15 13.47

11„36 11.15 8„14„22.12 2.03

1„21.00 Z Lun

M.S.T. 8„13„01.12

50„28 7.28

,30

Bad illumination not well seen } ,22

,25

27

132

50.26

Instrumental place

* of comparison

19„54„53.0 — H – 3ʰ„43ᵐ„09ˢ. Dec + 53°„37′„32″

☄ 20 00„37,0 — H – 3„46„50 " + 53„45.00

19„54„53.0 Aug. 9.192 N.P.D. 36°„15„34″.5 1,449

57 Sec.ra .025 51

19 55 50 9.167 ☄ prec + 7„47.52 1 449

3 49 09 51 N.P.D. 36„23„22.02 7 245

16„12.41 9167 * N.P.D 36„23„23.18 7 3.899

45835 4.13.90

467.517 * Dec + 53„36 37.98

7′„47″.52 dif. * & ☄ δ + 7„31.42

☄ Dec + 53„44„09.40

cor for ... – 29.

53„44 08.24

* ☄ 16„10„54.70

An. prec 1„13.90

Sec.var. + .003

16„12„08.603

1„59.18

☄ ☄ 16„14„07.78

Brorsen's Comet

September 15 – 8ʰ„13ᵐ„01ˢ.12

☄ ☄ 16ʰ„14ᵐ„07ˢ„78 } Mean Equinox 1851.0

☄ Dec. + 53°„44′„09.40 }

☄ – *

Δα + 1ᵐ„59ˢ.18 Δδ + 7′„31″.42

By 6 comp. in ☄ and 3 in δ with H. C. No. 29768

Sept. 16

There is no star large enough near the Comet to compare it with – besides the Micrometer is off for daguerreotyping

September 17th

After replacing the micrometer this evening we found the fixed wire broken out

Both wires were loose –

N. B. – 18th – Put in new wires. from the cocoon of 1848 !! N.B.

September 18 Brorsens Comet

Instrumental readings

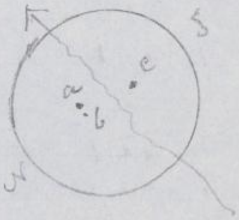
	h m s	h m s	
☄	19.. 43.. 16,5	H – 3.. 09.. 39	Dec + 55°.. 09'.. 32"
* a	19.. 54.. 05.8	3.. 21.. 52	53 .. 14 .. 14
			dif δ 1°.. 55'.. 18"

16.32.13.8

19.. 54.. 05.8
56
19.. 55.. 01.8
3.. 21.. 52
16.. 33.. 09

* is B.A.C. 5574

Comet will not bear illumination
a good deal of cirrus cloud



a, star of comparison

☄ 16 . 33 .. 37.5

19.. 43.. 16.5
3.. 09.. 39
16.. 33.. 37.5
16.. 32.. 13.8
dif R 1.. 23.7

19.. 54.. 05.8
3.. 21.. 52
16.. 32.. 13.8

B A C 5574

16.. 32.. 38.83
An. prec. + 1.411
Sec var. 0.001
* R 16.. 32.. 40.241
dif. R 1.. 23.7
☄ R 16.. 34.. 03.941

N.P.D 36°.. 47.. 47.9
An. prec + 7.46
Sec var 0.00
36.. 47.. 55.36
* Dec 53.. 12.. 04.64
dif dec 1.. 55.. 18.00
☄ Dec. 55.. 07.. 22.64

11.. 47.. 14.07
46.74
11.. 48.. 00.81

h m s
19.. 43.. 16.5
56.13
19.. 44.. 12.63
11.. 48.. 00.81
7.. 56.. 11.82
1.. 18.01
7.. 54.. 53.81 M.S.T

By reading the circles once

☄ – *
Δα + 1m.. 23s.7 Δδ + 1°.. 55'.. 18"
Compared with B.A.C. 5574 5.6 mag.

* R 16h.. 32.. 40.24 } 1851.0
* Dec + 53°.. 12'.. 04".64 }

Sept. 18 – 7h.. 54m.. 53s.81 M. T. S. Time Camb.
☄ R 16h.. 34m.. 03s.94 } M. Equinox
☄ Dec. + 55°.. 07'.. 22".64 } 1851.0

September 19th Brorsen's Comet

Comet precedes * and north of *

~~51.7~~ Dif. R

~~076~~

A	59„27.7	* 0 29.1	1„01.4
A	19„59„43.2	* 20 00„44.1	1„00.9
A	01 29.2	2, 30.6	1„01.4
A	20„01 44.2	* 20„02„45.6	1„ 1.4
	03„52.1	52.0	0„59.9
	20„04 06.1	20 05„06.0	0„59.9
	5 37.5	36.0	0,58.5
	20„05„51.3	20„06„50.5	0„59.2
	7 37.3	29.9	0,58.6
	20„07„457	20 08„44.5	58.8
	19„15.6	20„10.2	0„54.7
	20„19„30.6	20„20„26.1	55.5
A	21 01.1	1 54.6	53.5
A	20 21„16,6	20„22 10.0	53.4
	22 56.6	43.7	0„53.1
	20„23„067	20 23„59.2	0 52.5
	22 30.7	24.7	54.0
	24 46.8	25„40 5	0„53.7
	26„22.3	15.1	0„52.8
	20„26„38.6	20„27„31.0	0„52.4

20„12„49.0

dif R 00„56.78

17.2

20„13„06.2

11„51„57.36

8„21„08.84

1„22.09

8„19„46.75

11„51„10.62

46.74

11 51 57 36

Dif. in Dec.

h m s	
20„10„30	40^{r}525
11„45	40 600
12„45	40 660
14„04	40 746
14„55	40 705
20„12„48	3236

40.647

50 021

9.374

9.8

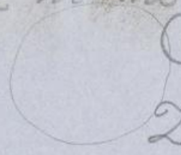
74992

84366

91,86,52

dif δ 1„31.86

Septembes 19h Brossen's Comet — continued from prec page
Comet very faint — just visible in the Comet ~~seeker~~ (Seeker



20..29..27.6
a 30 08.5 mid wire * of comp
30 48.5
b 20 31..24.5 mid wire * same mag. north following
1..16.0 Diff AR   Diff Dec 5..00″

Zero
49r998
50 040
50 037
50 018
50 010
250 103
50.021

Place of * of comp — 6th magnitude.
a = 20h 32m 43s.5   H = 3h..50m..34s   Dec + 55°..36′..0″
56.5   * of Comp is Arg. Zone 13 No 47
20..33..40.0
3..50..34
16..43..06.0

d
1.5
6

1850 {p = 46″.06910 + 20″.05472 sin α tang δ
{p′ = 20.05472 cos α

α = 250°.30′
δ + 55°.36′

cos α 9n.~~52860~~
1.30220
~~60.30~~ ~~0.78070~~
−6.695″ 0n.82570

sin α 9n.97435
Tang δ 0.16449
1.30220
1n.44104

−27″.610
46.059
18.449

+1s.230

An. prec. α + 1.230
" " δ − 6″.695

h m s
16..42..18.72
+04.86 K
+ .07
16..42..23.65 1842.0
prec + 11.07
* AR 16..42..34.72 1851.0
Δα − 56.78
☌ AR 16..41..37.94
16..41..37.74

° ′ ″
55..36..09.9
− 2.8 d
+ .09
55..36..07.10
prec − 1..00.21
* Dec. 55..35..06.89 1851.0
Δδ +1..31.86
☌ δ + 55..36..38.75
55..38..38.00

6.69
9
60.21
− 1..00.21

s
1.230
9
11.070

By 20 comp. AR and 5 Dec. with Arg. Zone 13 No. 47

☌ − *
Δα − 00m..56s.78   Δδ + 1′..31″.86

Comp. star AR 16h..42m..34s.72 } 1851.0
" " Dec + 55..36..06.89 }

Sept. 19 — 8h..19m..46s.75
☌ AR 16..41..37.94 } M. Equinox
☌ Dec. + 55..36..38.75 } 1851.0

Sept-19th

Extensive nebulous spot - breadth abt 12' in AR an 20' in Dec -

$^{h}\ ^{m}\ ^{s}$
21 56 .. 19 — AR ~ 23h .. 35m .. 20s Dec - 338° .. 23' = -21° .. 37' -
24 .. 40

Sept: 24

$^{h}\ ^{m}\ ^{s}$ 20 .. 01 .. 23.22	
55.10	12 .. 10 .. 53.38
20 .. 02 .. 18.32	46.74
12 .. 11 .. 40.12	12 .. 11 .. 40.12
7 .. 50 .. 38.20	
1 .. 17.09	
7 .. 49 .. 21.11 M.S.T.	

Sept. 24 Brorsen comet extremely faint. too faint to bear illumination of the wires. Inst Places

2964 = $^{h}\ ^{m}\ ^{s}$ 19 .. 52 .. 41.0	AR - ^{h}3 .. ^{m}16 .. ^{s}48	Dec + 58° .. 01' .. 44"
19 .. 58 .. 09.0	" - 3 .. 22 .. 17	" + 58 .. 01 .. 48
20 .. 04 .. 02.6	" - 3 .. 28 .. 08	" + 58 .. 01 .. 48
20 .. 10 .. 40.3	" - 3 .. 34 .. 46	" + 58 .. 01 .. 48
15 .. 32.9	101 .. 59	58 .. 01 .. 47
	3 .. 25 . 29.8	53 .. 14 .. 40
		4 .. 47 .. 07 = dy. Dec.

moved in Dec and reset at each obs.

20 .. 01 . 23.22
3 . 25 . 29.8
16 .. 35 .. 53.42

Double * same as the one taken on the 18th

$^{h}\ ^{m}\ ^{s}$
20 .. 37 .. 19.0 — AR - 4 .. 5 .. 02 Dec + 53° .. 14' .. 40"

4 .. 05 .. 02.0	$^{h}\ ^{m}\ ^{s}$ 16 .. 32 .. 40.24	53 .. 12 .. 04.64
* 16 .. 32 .. 17.0	Δa + 3 .. 36.42	Δδ + 4 .. 47 .. 07
☄ 16 .. 35 .. 53.42	☄ AR 16 .. 36 .. 16.66	57° .. 59 .. 01".64
3 .. 36.42 = da		

doubtful obs.

☄ — *
Δa + 3m .. 36s.42 Δδ + 4° .. 47' .. 07"

Comp. star B.A.C 5574
* AR ^{h}16 .. ^{m}32 .. ^{s}40.24 } 1851.0
Dec. + 53° .. 12' .. 04".64 }

Sept. 24 - ^{h}7 .. ^{m}49 .. ^{s}21.11 M.S.T.
☄ AR ^{h}16 .. ^{m}36 .. ^{s}16.66 } M. Equinox
☄ Dec. + 57 .. 59 .. 11.64 } 1851.0

for D'Arrest's Comet.

1851 Sept. 3 ~~Lal. 7916~~
W. 4.118

Sept. 5 Lal. 8020
W. 4.180

a W. 4 5 21.12 + 2 33 29.7
+ 1 21.21 + 4 8.8

Ast. Tabular Reg. 4 6 42.33 +2 37 38.5
+0.02 +0.9

b. Lal. 4 6 53.78 +2 1 35.3
+ 2 38.77 + 7 59.5
4 8 11.07 2 5 24.3
+ 1 20.97 + 4 3.1

4 9 32.55 +0.03 2 9 34.8 −2.7
31.98 −0.02 27.4 +0.9

Ad.

a 4 6 42.31 + 2 37 39.4
b 9 32.27 9 30.2

4 6 42.31 2 37 39.4
Red. + 1.33 +7.5
[illegible] − 33.47 +0 2.6

4 9 32.27 2 9 30.2
Red + 1.37 + 7.7
− 40.30 + 1 11.9

Final Places of D'Arrest's Comet,

Cambr. m.t.		app. α	app. δ	f. Par.		
Sept. 3	15 42 40	4 6 10.17	+ 2 37 49.5	−0.165	+5.48	−1 37.0
5	15 53 58	8 53.34	2 10 49.8	−0.137	5.67	−1 15.5

3. 38 5
21 20 45 .3894 −444
31 37 3 .39726 445

1835.00
61. 28.06 62. 10.55
α 4 5 52.24 4 8 42.20
δ + 2 35 5.9 +2 6 58.3

log δ 8.65463 8.56763
sin α 9.94376 9.94664
· 0.12616
· 1.30225
sin α 9.67912 9.66909

8.72455 8.64043

Prec 1800 3.111
25 3.120 3.113
35 3.1233 3.1140

1800 9.502
25 9.620 9.40
35 9.580 9.361

3.1235 3.1142
9.548 9.349

~~3.1132~~ 3.1132
9.401

Red. to app.

G' 23 38 23 12
α 61 40 62 23
N 110 45 108 40

log δ 8.664 8.578 f +17.05 ~~17.05~~ +17.23
sin(G+α) 9.9986 9.9987 g″ +0.37 +0.31
g 0.9055 0.9117 h″ +2.49 + 2.94
h(G+α) 8.9135 8.8865 19.91 20.48

tan δ 0.0004 0.0003 g′ + 0.66 +0.65
· 9.1204 9.1919 h′ −0.57 −0.71
h 1.2760 1.2760 i′ +7.67 +7.75
· 9.9962n 9.9947n
sin δ 8.664 8.578 7.46 7.67

Stars the places of which for 1875 are requested by R. Spitaler.

~~Magn.~~	~~Approx. places for 1875~~	
~~7.5~~	~~16 12 ~~44.34~~ 43.4~~	~~+53 32 56~~
~~9~~	~~17 58.8~~	~~+54 40 24~~
~~9 to 10~~	~~24 48.0~~	~~+54 31 18~~
~~9~~	~~25 3.7~~	~~+54 28 29~~

Observations of Brorsen's Comet 1851, (disc. Aug. 1, 1851).

Aug. 21 }
23 } A. J.
26 }
~~28~~
~~29~~
27
28 }
29 } A. J.
30
Sept. 1
15
18
19
24

Obs. of Brorsen's Comet. (Notes)

Aug. 21. The comet was compared with a 10 mag. star, and then this star was referred to star B.A.C. 4870 (Filar mic. used in both cases.)

Aug. 23. Comp. star 9th to 10th mag. Its position was determined from B.A.C. 4958 by reading the circles. — (7 comparisons for this purpose in R.A. and 8 comps. in δ)

The diff. in position of comet and comp. ✱ was also determined from 7 comps. in R.A. and 8 comps. in δ. with filar micrometer.

Aug. 26. Comp. star = Lalande 27279. (20 comps. in α and 5 in δ.)

Aug. 27. " " in Bessel's Zones No. 473. 9 mag.
4 comparisons between comet and star. in R.A. and 5 in Dec.

Pos. of Comp. Star ✱ for 1851.0 = R.A. 14h 52m 53s.91 Dec. 43° 58′ 49.7

Aug. 28. Comp. Star = B.A.C. 4958 = β Boötes.
~~4 comps. in α and 3 in δ — All~~ comparisons on this date by ~~circle~~ readings circles, twice, as there was no near star available.

Aug. 29. Comp. Star = B.A.C. 4958 = β Boötes.
Place of Comet obtained "by reading circles twice."

Aug. 30. Comp. star is Arg. Zones 111. No. 130 ~~= [illegible]~~, 8.9 mag. Six comparisons in R.A. and 6 in Dec.

Sept. 1. Six comparisons in R.A. and 3 in Dec. Comp. star 8 to 9 mag. Pos. of star =

$$\left.\begin{array}{llll} \text{R.A.} & 15^h & 8^m & 13^s.28 \\ \text{Dec.} & +46 & 23 & 14.78 \end{array}\right\} \text{m. Eq. } 1851.0$$

Sept. 15. Six comparisons in R.A. and 3 in Dec. with H.C. No. 29768

" 18. One comparison of comet with B.A.C. 5574 (mag 5.6) by circle readings. Comet will not bear illumination on account of a large amount of cirrus cloud.

" 19. 20 comparisons in R.A. and 5 in Dec. with Arg. Zone. 13. No. 87. Comet very faint, — just visible in comet seeker.

" 24. Comet extremely faint — too faint to bear illumination of the wires. 4 diff. of circle readings in R.A. and 4 in Dec. Comp. star is double — same one as used on the 18th "Observation doubtful".
Position obtained from mean of four circle settings on comet and one on star.

Aug. 21. 10 comps. ~~in~~ each in R.A. and Dec. between Comet and star. Position of comparison star as determined from B.A.C. 4870, was for 1851.0

R.A. Dec.
$14^h\ 35^m\ 27^s.52$ $+40°\ 56'\ 54''.62$

~~Aug. 23. Position of comparison star determined from that of B.A.C. 4958 by reading circles. (7 comps. in R.A. and 8 in dec) Position of Comet determined by filar micrometer.~~

Aug. 30. Position of Comp. Star for 1851.0 is

R.A. Dec.
$15^h\ 5^m\ 1^s.03$ $+45°\ 26'\ 12''.05$

Sept. 1. The place of comp. star was determined from that of H.C. 27992.

554

Sept 15th

h m

21 56.,

Sept: 24

Sept

2964

2

*

A

doubtf

$\Delta\alpha + \overset{m}{3}.3$

Brorsen's Comet.

E − ✱

Date. 1851	Time.	Δα	Δδ
Aug. 21.	8h 49m 40.24 M.S.T.	+0m 41.25s	−3′ 9.76″
″ 23.	9 2 59.07 M.S.T.	−0 5.33	+4 55.33
″ 26.	8 58 13.15 ″	−0 45.06	−0 6.56
″ 27.	9 17 19.80 ″	−0 8.22	−4 20.39
″ 28.	8 39 33.79 ″	−0 34.80	+3 25.35
″ 29.	8 25 23.32 ″	+2 28.30	+3 55.46
″ 30.	8 54 36.71 ″	−2 52.98	+0 12.90
	~~16 14 13.60~~ ″	~~−0 13.2~~	~~−38 2.0~~
Sept. 1.	8 2 53.66 ″	+0 33.68	+3 48.08
″ 15.	8 13 1.15 ″	+1 59.18	+7 31.42
″ 18.	7 54 53.81 ″	+1 23.7	+1° 55′ 18″
″ 19.	8 19 46.75 ″	−0 56.78	+1′ 31.86″
″ 24.	7 49 21.11 ″	+3 36.42	+4° 47′ 7″

~~Comp. * − B.A.C. 4270.~~
~~B.A.C. 4270 and comp. *~~

Δα Δδ

$-2^m\ 30^s.02$ $-2'\ 34''.20$ = (Comp. * − B.A.C. 4270)

$-14\ 49.50$ $+50\ 2.67$ = (" * − " 4952)

~~(Compared with Star a)~~

556

1851

Sept 24/25 Am D'Arrests Comet

dif R a & b 6.5s

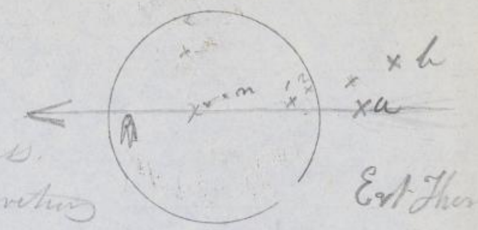
Ɑ north of star

Dif Dec a & b 64r on

Stars look bluiry in great Telescope

— moisture must be condensed on the object glass.

— too much daylight to get any more observation



Ext Therm 31°

Dif in dec

4,,45,,30 - 52r422
50 15 52 040
54.00 52 400
4,,49,,35 862
— 2 52.287
4,,49,,53 50 021
2,,266
9.8
18128
20394
22.2068
dif δ 22.21"
cos. for min 10m 6
dif. δ = 16,21

Dif R

4 58,,16 9,,22
Ɑ 4 58,,29 × 4 59,, 35
5 00 57,0 02,0
Ɑ 5,, 01,, 11.4 × 5,, 02,,16,2
4,, 59,, 43.2
— 2
4,, 59,,41.2
chron error 54.9
5,, 00,,36,1
12,, 11,,40.12
16,,48,,55.98
2,,45.29
M.S.T. 16,,46,,10.69

1,, 06.0
1,, 06.0
1,, 05.0
1,, 04.8
21.8
dif R 1m,,05s.45

a comp. ~~Star~~ 9 mag

Comet quite as bright as on the 5th

place of a determined from a star in Bessels Zone 50. No 1049

12,,10,,53.38
46.74
12,,11,,40.12

Star 8 mag South 10 or 9
13m,26s a
15,, 00
03 dif 3' south

comp sta 3h, 53 51,5
56 ,,42. m
57,, 56.5 — m n north of a 5'
59,, 06.5 p p ,, ,, a 3

*s place
5,, 08,,07s
54.9
5,,09,,01,9
44.08
4,,24,,53,9

H 00m,,44,,08s South 2°,,12',,36" = Dec

star's Dec. — 2°,,14,,47.17 star's R 4h,,24m,,28s.89

dif δ 16.21 dif *Ɑ 1,,05.45

Ɑ δ = — 2°,,14,,30.96 Ɑ R = 4,,23,,23.44

Ɑ — *
Δα — 1m,,05s.45 Δδ — 00',,16".21

Star of Comp. 9 mag. place derived from Weisse H.IV No. 553 see Nov. 19

Comp* R 4,,24.28.81
* Dec. — 2,,14,,47.17 } 1851.0

D'Arrest's Comet

Sept. 24 — 16h,,46m,,10s.69

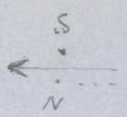
Ɑ R 4h,,23m,,23s.44
Ɑ Dec. — 2°,,14',,30".96 } M. Equinox 1851.0

30.96

Septr – Look at star 7+ mag – red colour

17h..57m..30s

close double



11th mag. near the Equator

for Mr Clark

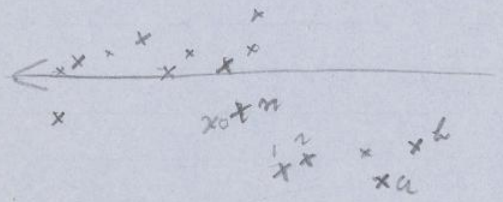
2.. 5'

Sept. 25/26 The little star which is designated by x in the ~~f~~ diagram of stars in the vicinity of the Comet – yesterday morn. is missing

May it not be a planet – ?

Diagram of the positions of some stars in which the planet may be if it be one. If time would have permitted I should have measured the stars in the diagram below

The object of reviewing this cluster of stars was to determine more precisely the place of the comp. stars of the ☄



Several stars in this diagram are the same as in the preceding, and the same letters are used to denote the same stars

The missing star is of same mag. as n and 1 & 2

Oct. 1st What luck! The sky has been hidden by thick clouds since the 25/26 Sept. So now my dear planet you have made good your escape —

See Nov. 19th

558

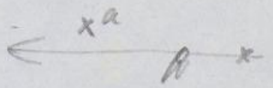
Sept 25/26

D'Arrests Comet

Dif R

5.. 20.. 26.8
21 12.5
45.7

*	5.. 03.. 41.0	p	04 11.5	30.5
	38.5	A	5.. 06.2	27.7
	45.0		06.. 13.0	28.0
	03.5		31.0	27.5
	7 42.0		08.. 14.0	32.0 ×
	39.9		07.0	27.7



a, comp. Star
Star 6-7 mag.

* $\overset{h}{5}$.. $\overset{m}{12}$.. $\overset{s}{15}$ # $\overset{h}{0}$.. $\overset{m}{49}$.. $\overset{s}{44}$ Dec = $\overset{\circ}{2}$.. $\overset{\prime}{31}$.. $\overset{\prime\prime}{04}$

.. 1.. 02.. 36 — " — = 2.. 31.. 28

5.. 25.. 08.1
1.. 02.. 36
4.. 22.. 32

Quite clear last night at 9 P.M but at two o'clock this morn. a thick haze entirely obscured all, but the principal stars. It did not, however, pass off till daylight which became so strong as to deprive us of anything more than a glimpse at the Comet

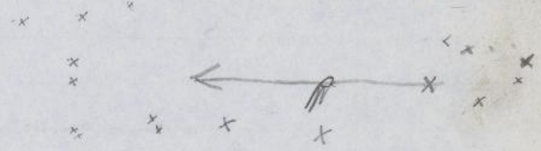
1851phae.proj..167B

560

Oct. 1st Place of Irene
at 8h Pm R 16h 51m 44
Dec − 23° 47 00
R * B.A.C 5750 16h 54 26
Dec − " " 24 01 30

Oct. 2/3 Am D'Arrest Comet
C.W.T. obs

Star of comp. south of Comet



Dif in Dec ; precedes

2964 5 08 20	56 58
5 09 35	56 46
5 10 50	56 48
31 30	54 98
5 34 00	53 09
35 40	54 87
5 21 42.07	55.74

56.09
5.65
9.8
4520
5685
55″.370 = dδ
Cor. for mot in 2m 1.5
56.87

Dif. R

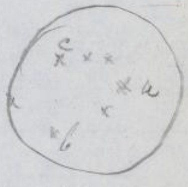
5 14 46.6	* 5 15 49.5	1 02.9
5 14 57.5	* 5 15 00.3	1 02.8
5 16 36.2	* 5 17 38.1	1 01.9
16 47.6	* 5 17 48.9	1 01.3
18 22.6	* 5 19 24.9	1 02.3
5 18 32.7	* 5 19 35.5	1 02.8
20 28.0	1 30.3	1 02.3
5 20 38.9	5 21 41.2	1 02.3
22 51.6	3 33.5	1 01.9
23 00.0	* 24 04.5	~~1 03.5~~
24 26.7	25 28.1	1 01.4
5 24 36.3	5 25 38.7	1 02.4

5 19 40.48 Mean
−2
5 19 38.48
45.20
5 20 23.68
12 43 12.54
16 37 11.14
2 43 36
16 34 27.78 M.S.T.

1 02.21 = dR

12 42 25.80
46.74
12 43 12.54

5 41 08.0
1 17 01
4 24 07



a star of 9–10 mag
b north a 4′ 30″
b prec a 3s
c south a 1′ 30″
c prec. a 3s
a order of mag
b
c

very bad seeing
dense fog

Star of Comparison
h m s
5 36 56.5
5 41 08.0
5 47 15

H − 1h 12m 50s
" 1 17 01 R 4h 24m 07s
1 23 07

Dec − South − 4° 00′ 20″
4 00 24
4 00 20

N. B. This comp. star not in any Cat.

October 2/3 Am D'Arrest Comet
continued from prec.

Star of 4 mag.
5„ 58„ 44 — H—1..30..12 — Dec—3°..38'..20" south
6„ 03.39.6 — „ — 1..35..09 — „ — 3..38..20

Zero
50.15
50 20
50 00
50 02
37
50.09

Place of a determined from B.A.C. 1427 on March 20.1852 see fol. E.Q. Book

B.A.C. 1427 = Weisse H. 4 No. 621 = b — Star B.A.C place

Star Weisse Place — *Dec. —3„55„23.0 — *Æ 4^h„28^m„32.41^s

*Æ 4^h..27^m..18.53^s 1825.0 *Dec. — 3°„58'„48.5" 1825.0 Prec — 7.79 — Prec. + 2.97

Prec. + 1„17.61 — Prec — 3„23.84 — —3„55„15.21 1851.0 — 4„28„35.38 1851.0

*Æ 4„28„36.14 1851.0 *Dec—3„55„24.66 1851.0

By giving Weisse a weight of 2 we obtain for the star's mean place

1851.0 Æ 4^h„28^m„35.89^s Dec. — 3°„55'„21.51"

da a & b	4„07.49	dδ a & b	7„31.22
a's Æ	4„24„28.40	a's δ	— 4„02„52.73
da a & ☄	1„02.21	dδ a & ☄	0„56.87
☄ Æ	4^h„23^m„26.19^s	☄ δ	— 4°„01'„55.86"

D'Arrests Comet

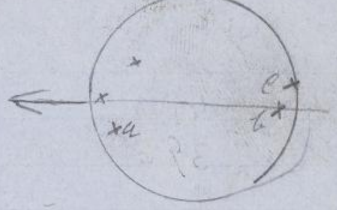
☄—*
Δa — 1^m„02.21^s Δδ — 00'„56.87"

October 2—16^h„34^m„27.78^s M.S.T. Camb.
☄ Æ 4^h„23^m„26.19^s } M. Equinox
☄ Dec. — 4„01„55.86 } 1851.0

5„36„56.5
44.95
5„37„41.45
1„12„30
4„24„51

October 7th Neptune — 4 bts on this observation

comp. stas South following Nep
Stas of comp Weisse
Hora 22 No. 774



Dif. R — Dif. Dec

K 6 43.4 * 15.0 31.6
K 21" 06" 52.5 * 21 07" 24.0 31.5

8" 14.4 46.0 31.6
21" 08" 23 3 08" 54.5 31.2

10 06.0 37.3 31.3
10" 14.5 10" 46.0 31.5

11" 13.5 45.0 31.5
11" 22.3 11" 53.9 31.6

12" 27.0 12 58.5 31.5
21" 12" 35.6 21" 13" 07.4 31.8

37" 14.4 46.0 31.6
37" 24.4 2 37" 56.3 31.9

38 28.9 00.6 31.7
38" 38.9 39 10.5 31.6

39 42.7 14.6 31.9
21" 39" 52.8 21" 40" 24.5 31.7

40" 52.4 24.8 31.9
41" 02.4 41" 34.4 32.0

42" 12.0 43.9 31.9
21" 42" 22.0 21 42" 53.9 31.9
496 03.4 33.2
21" 24" 48.17 31.66 = da
− 2
21" 24.46.17
37.42
21" 25" 23.59
13" 02" 55.31
8" 22" 28.28
1" 22.32
8" 21" 05.96 M.S.Y.

13" 02" 08.57
46.74
13" 02" 55.31

21" 22" 15 40r 762
25. 00 40 715
26 20 40 736
21" 28" 00 40 747
30" 15 40 680
33 15 40.770
165 05 4410
21" 27" 50. 40.735
49.96
9.225
9.8
73800
83 025
90.4050
1" 30" 405
cor for mnt-4 mi. − 06
1" 30.34 = dδ

a Neptune
b comp Stas
dif 13 b Dec 1.7s

Full moon within
6° of Neptune
No Satellite vis.
Dif Sec b 34.80

Zero
49.95
97
95
287
49.96

October 7 Neptune continued

Comp. star Weisse Hora XX No. 774

* AR 22..35..02.14 1825.0
Prec. 1..22.00
22..36..24.14 1851.0

* Dec. − 9°..56′..16.1″ 1825.0
Prec 8..06.72
* Dec. − 9..48..09.38 1851.0
Δδ 1..30..34
♆ Dec 9..46..39.04

* AR 22ʰ..36ᵐ..24ˢ.14
Δα 31.66
♆ AR 22..35..52.48

An Prec. + 3ˢ.154
sec. Var. .000
3.154
26
18924
6308
82.004
1..22

An. prec. − 18″.69
sec. Var − .03
18.72
26
11232
3744
486.72
8′..06″.72

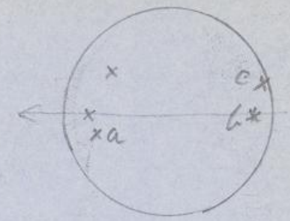
Comp. star Weisse Hora XX No. 774
*ˢ AR 22ʰ..36ᵐ..24ˢ.14 } 1851.0
*ˢ Dec. − 9..48..09.38 }

♆ — *
Δα — 00ᵐ..31ˢ.66 Δδ — 1′..30″.34

October 7 – 8ʰ..21ᵐ..05ˢ.96 M. S. T. Camb.
♆ AR 22..35..52.48 } 1851.0
♆ Dec − 9..46..39.04 }
By 20 comp. in AR and 6 in Dec.

October 8th Neptune

comp. Stas same as on 7th
planet north preceding



a Neptune
b comp. Star same
as on 7th

Dif. in ~~Ra~~ Ra,

				s
	16 35.8	*	17 12.0	36.2
K	20,, 16,, 47.0	*	20,, 17,, 23.0	36.0
	18 49.3	*	25.4	36.1
	20 19,, 00.2	x	20,, 19,, 36.5	36.3
	20,, 11.8		47.9	36.1
	20,, 22.9		20 20,, 59.0	36.1
	21,, 27.0		03.0	36.0
	21,, 37.9		20,, 22,, 14.0	36.1
	22 58.5		33.8	36.3
	20 23,, 08.5		20,, 23,, 44.9	36.3
	46 52.3		28.5	36.2
	20,, 47,, 03.0		47,, 39.4	36.4
	48 04.1		40.4	36.3
	20,, 48,, 15.0		48,, 51.0	36.0
	49 22.9		59.4	36.5
	20 49,, 33.8		20,,50,, 10.0	36.2
	49 50.4		26.8	36.4
	20,, 50,, 01.0		20 51,, 37.4	36.4
	52 08.0		44.4	36.4
	52,, 19.0		20 53 55.3	36.3
	694 27.3			48
	20,, 34,, 43.36			36.48 Mean

20,, 34,, 43.36
— 2
20,, 34,, 41.36
13 36.70
20,, 35,, 18.06
13,, 06,, 51.86
7,, 28,, 26.20

13,, 06,, 05.12
46.74
13,, 06,, 51.86

7,, 28,, 26.20
1,, 13.47
7,, 27,, 12.73 M.S.T.

Dif in Dec

20,, 32.20	56 595
35.00	56 480
38 10	56 455
20,, 39,, 50	56.590
41 42	56 600
20,, 44.00	56 560
20 231,, 02	3320
20,, 38,, 30	56.553

49.46
6.593
9.8
52744
59337
64.6114
1,, 04.61″
cor. for motion 4m — .06
1,, 04.55

October 8

Found Parthenope but no comp star

Neptune continued

Comp. star Weisse Hora XX No. 774

* Æ 22..36..24.14 1851.0

Δa −36.48

♆ Æ 22..35..47.66

* Dec. − 9°..48′..09″.38

$\Delta\delta$ 1..04.55

♆ Dec − 9..47..04.83

Comp. star Weisse Hora XX No. 774

* Æ 22..36..24.14 } 1851.0
* Dec. − 9..48..09.38 }

By 20 comp. in Æ and 6 in δ

♆ — *

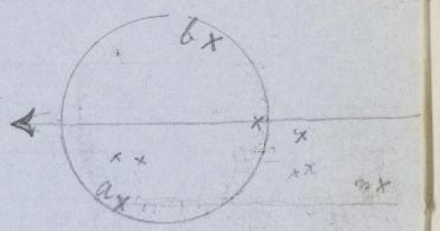
$\Delta\alpha$ − 36.48ˢ $\Delta\delta$ − 1′..04″.55

October 8 − 7ʰ..27ᵐ..12ˢ.73 M. S. T. Camb.

♆ Æ 22..35..47.66 } 1851.0
♆ Dec. − 9..47..04.83 }

October 9

Determintion of place of comp. stas of Brorsen's ☄ Comet compared with stas on Sept 1st †



Dif. R a & b   Dif. Dec a & n

a 45 07 $\overset{s}{32.5}$ a & x 65.34
b 45 39,5   a & m 57.61

a 46 12,9 $\overset{s}{32,1}$
b 46 45.0

a 8 38,5 15.5
a 20 48 54.0   a & n 3 29,5
        a & n 3 29 5

x 37,5 15.0
x 51 52,5

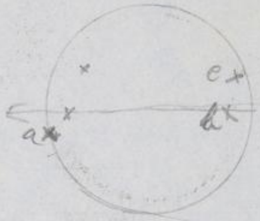
n 2 08.0 15.5 4 29.5
n 20 52 23,5

a comp. stas
7,61
95
6088
6849
74578
1 14

† This comp. stars $\overset{\text{place}}{\text{was}}$ determined from H. C. No. 27992 on March 20. 1852 see following Eq. Book

October 9 Neptune

comp. Stas same as used on 7 & 8
Nep. north prece



a Neptune
b comp sta

Dif R

4	1 39 " 46.3	x	27.3	^{s} 41.0
4	21 " 39 " 59.7	*	21 40 " 40.4	40.7
	1 41 44.0		25.2	41.2
	1 41 " 57.4	x	21 " 42 38.4	41.0
	1 43 04.4		45.4	41.0
	1 43 " 17.5		43 " 58.4	40.9
	1 44 24.5		05.5	41.0
	21 " 44 " 37.8		45 " 18.7	40.9
	1 45 44.5		25.4	40.9
	21 " 45 " 58.0		21 " 46 " 38.9	40.9
	2 3 00.3		41.4	41.1
	22 " 03 11.9		22 " 03 " 53.0	41.1
	2 4 23.6		04.9	41.3
	22 " 04 " 35.5		22 " 05 " 16.5	41.0
	2 5 57.0		32.0	41.0
	22 06 " 02.9		06 " 44.0	41.1
	2 7 04.0		44.9	40.9
	22 07 " 15.6		07 " 56.4	40.8

lamp flickers

2 8 30.0		11.0	41.0
22 " 08 " 42.0		22 " 09 " 23.0	41.0
38 " 09 10.9			41 8.8
21 54 " 27.59			40.94 = da

21 54 " 27.59
− 2
21 " 54 " 25.59
36.00
21 " 55.01.59

21 " 55 " 01.59
13 " 10 " 48.41
8 " 44 " 13.18
1 " 25.90
8 " 42 " 43.28 11.82

13 " 10 " 01.67
46.74
13 10 48.41

Dif in Dec

21 " 51 . 40	53^{r}798
53 . 30	53,640
55 20	53 620
56 " 30	53 680
58 " 10	53, 695
21 59 " 30	53, 684
34 . 10	4087
21 " 55 . 42	53,681
	49.96
	3,721
	9.8
	29768
	33489
	36.4658

36.47" = dδ

cor. for mot. in r − .02
36 " 45 = dδ

October 9 Neptune continued

Comp. star Weisse Hora XX No. 774

h m s
*s Æ 22..36..24.14 1851.0
Δα — 40.94
♆ Æ 22 35..43.20

*s Dec. — 9..48..09.38
—36.45
9..47.32.93

Comparison star Weisse Hora X X No. 774
*s Æ 22..36..24.14 }
* Dec. — 9°..48'..09".38 } 1851.0

By 20 comp. in Æ and 6 in δ
♆ — *
m s ' "
Δα — 00..40.94 Δδ — 00'..36".45

h m s
October 9 – 8..42..43.28 M.S.T. Camb.
♆ Æ 22..35..43.20 }
♆ Dec. — 9..47..32.93 } 1851.0

October 10

Comparison star B.A.C. 687
h m s
* Æ 2..05..41.57 }
* Dec + 4..18..48.52 } 1851.0

P — *
m s ' "
Δα — 00..15.31 Δδ + 6'..02".48
By 12 comp. Æ and 6 in δ

h m s
21..44..05.57
13..13..58.22 34.36
46.74 21..44..40.93
13..14..44.96 13..14..44.96
8..29..55.17
1..23.55
8..28..31.82

h m s
Octobes 10 – 8..28..31.63 M.S. Time
Parthenope's Æ 2..05..26.26 } Mean Eq.
Dec + 4..24..51.00 } 1851.0

October 10

Place of comp. star for Parthenope

Weisse Hora 2 No. 27
* R 2.. 03.. 08
* Dec + 4.. 22.. 40
Pas. R 2h.. 05m.. 43s
Dec + 4.. 26.. 07

20.. 59.. 33.5
+ 4.. 22

20.. 26
26.. 03
5.. 35

comp *

* comp 07.. 56.5
star foll 09 26.5

Dif R

* 2.34.9 p 4 54.5 2.. 19.6
* 20 52.. 46.5 20 55.. 06.3 2.. 19.8

* 21.. 06.. 50 09.. 25 45.5

Dif R

		dif R
30.. 22.0 *	30.. 36.5	14.5
p 21 30 31.0	* 21.. 30.. 45.5	14.5
31 21.0	31 35.9	14.9
31.. 29.9	21.. 31.. 44.5	14.6
32 13.5	2 28.8	15.3
32.. 22.5	32.. 37.5	15.0
55.. 19.5	5 29.5	16.0
21.. 55 20.9	55 06.8	15.9
57.. 07.5	7 23.1	15.6
57.. 15.0	57 31.0	16.0
58 01.0	* 8 18.9	15.9
58.. 11.0	* 58.. 24.5	15.5
		63.7
21.. 44.. 07.57		15.31 = dR
− 2		

October 10
Comp star B.A.C. 687
Parthenope north prec

20.. 59.. 33.5 H 6.. 54.. 24 = 5.. 05.. 36

20.. 59 33
34
21 00 07
5 05 86
2 05 49

Dif in Dec

		Zero
21.. 39.. 50	12r 118	49 952
44.. 00	12 480	49 922
46 30	12 406	49 940
48 00	12, 325	114
49 30	12 430	.938
21.. 51 00	12 390	
6)278.. 50	2149	
21.. 46.. 28	12 356	

49 380
37.022
9.8
296176
333198
362.8156

6.. 02.82 = dδ
cor. for mot. .34
6.. 02.48

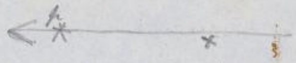
* R 2.. 05.. 38.45
prec + 3.12
* R 1851.0 = 2.. 05.. 41.57
15.31
planet R = 2h.. 05.. 26.26

* Dec + 4.. 18.. 31.4
prec + 17.12
4.. 18.. 48.52
6.. 02.82
planet δ = 4.. 24.. 51.34
cor. for mot. 34
δ + 4.. 24.. 51.00

1851phae.proj..167B

October 14

This is not Parthenope



Place of Parthenope

Star of comp Weisse Hora 2 No. 35

× δ +4°.03'.48" Parth δ 4..02.49

× R 2h..03..47 " 2..02.15

Dif. AR planet South prec. *

p 27..21,0 * 8 30.3 1..09,3

p 22..27..31.5 * 28..41.3 1..09.8

29 43.0 52.5 1..09.5

22..29..54.0 31..03.5 1..09.5

31 31.3 39.9 1..08.6

22..31..41.4 22,32..49.8 1..08.4

29 177..42.2 52.1

22..29..37.09 1..08.68 = da

−2

22..29..35.09

p Dif Dec

22..54.30 28r404

Interrupted here by clouds no probability of clearing up

28.404

49.94

21.5~~3~~86

9.8

172288

193824

211.0528

3..31.05

Cor for mot in 25m 6.10

3.37.15 = dδ

Not Parthenope

h m s

× AR 2..02..27.29 1825.0 An prec + 3s.117

Prec +1..21.04 sec. var. .00

2..03..48.33 1851.0 3,117

Δα 1..08.68 26

2..02..39.65 18702

6234

81042

m s

1..21.04

° ' "

* Dec. +3..56..20.9 1825.0

Prec 7..29.54 An. prec. +17".26

* Dec +4..03..40.44 1851.0 sec var + .03

Δδ 3..37.15 17.29

4..00..03.29 26

10374

3458

449.54

7'..29"

October 15 **Irene** This is not Irene

Place of Irene
R 17..14 24^s
Dec −24°..$40'$..$38''$

Star of comp B.A.C. 5851 B.A.C 5851 is not the star
R 17..12..57
δ −24..50..45

Star of comp south prece
doubtful whether this is the planet or no

Dif. R

× 30 ..11 h 32 05.0 1..54.0
* 20..30..26.8 p 20 32 20.4 1..54 0

32 57.5 4 46.0 1..54.5
20 33 07.4 20..35..01.0 1..53.6

36.5 30.5 1..54 0
20 35..52.4 20..37..46.0 1..53 6

02..45.6 38.0 52.4
* 21..03..01.6 20..04..54.9 9.3

30.4 23.0 52.6
21..05..46.1 20..07..39.2 1..53 1

21..08..58.0 52.0 54.0
9..14 0 20 10 07.9 last 53 9 = H. $3^h..55^m..28^s$ dec − $24^\circ..36'..0$

Dif. Dec

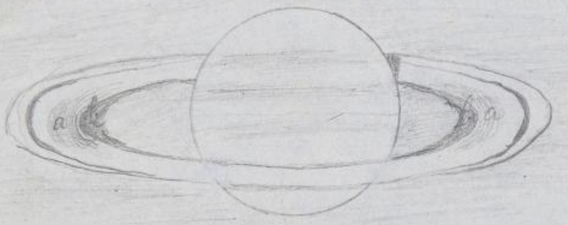
* 20..47..30 ′
p 49 00 00′ 793
* 50 32 ′
p 52 ..27 00′ 815
* 20 54..12
..56..08 00′ 775

1851phae.proj..167B

October 20 P.m.

Saturn looks most beautifully steady-distinct ~~—~~ — while the bright inner ring reveals more distinctly than on Sept. 5 * its several subdivisions at a & a in the diagram below.
With a power of 800 it appears as is seen in the diagram below — with a power of a hundred and forty it appears like a dark spot.
There can be no uncertainty in regard to the divisions. —
b b New ring No appearance of division in the outer ring with a power of 140. — did not look with the higher power —

W. C. B and R. F. B see these divisions distinctly



Saturn is represented in the diagram as being excentrically situated within the ring. This is mere accident (in drawing) not so in the Telescope

Remarks extracted from the Comet seeker book — "There is no mistake but the inner bright ring is minutely subdivided into a great number of small rings. The divisions commence on the inside next the new ring and extend over about two thirds of the inner bright ring — These divisions are quite apparent with a high power."

Notes added to the above — March 1852

These divisions were not unlike in appearance to a series of waves, whose summits might correspond with the narrow bright rings, while the cavities correspond to the spaces between the rings. The rings and spaces between them were of equal breadths; and could be traced in the direction of the ring till lost in its curvature —
The exterior rings were not so well defined, but were, however, seen to approach very near the inner edge of the remaining portion of the bright ring —

* Sept. 5 Only one division was seen — it was thought at the time of writing the above remarks, that there were several — See Sept. 5

October 23 h m

Parthenope R 1..53..00 22..05..20 8..13..20

Dec + 3°..14′ 9..46..40 22..15

comp star R 1..53..55 86..42 1..53..55 25..53

Weiss 1-963 Dec + 3..19..48..28 5..40..35 9..38

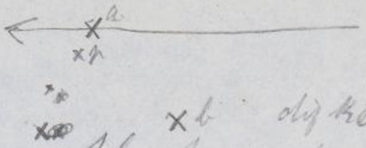
8..22

86..41

22..03..17

1851phae.proj..167B

October 27 Parthenope



dif Ra a-b 8s

planet very faint —
a comp star

Dif Dec

~~23,,00,,00 43 27~~
~~02,, 43 93~~
~~03~~,, 30 43 67
~~23,,18,,~~
another star
23,,18,,25 43 60
20,,10 43 39
21,,45 43.31
22,,45 43 38
23.20,,36.2/ 73.68
43.42

planet north prece
86,40
90
176,,40

Dif R

p 23,,26 35 06.0
* 26 41

19,5 5.0
27,,24.5

p 00.4 06.1
* 28,,065

48,0 06.0
23,, 29,,49 0

35.5 06.0
30,,41.5

18,0 05,8
23,, 31,,23.8

Nov. 17th 1851 - Rings of Saturn - 8h to 10h.30 P.M.

Angle of Pos. of Ansa 85°.55′ ± Zero

Set for Meas. at 355°.55′

First obs. on return from Europe
Absent since April.

Prec. side. Inner edge of Dark ring from Globe

	49″.76	forward
	50.14	backward
twice Dist	38	
Dist	0″.19	
	49.77	"
	50.17	"
	40	
Dist	0.20	

Prec side Outer edge of Dark ring from Globe

50″.37	49.47
49.44	50.37
2) 93	2) 90
4″,65	4″,50

Prec. side Outer edge of bright ring from Ball

50.90	48.98	50.88	50 96
48.89	50.89	48.97	48.96
)2.01	1 91	1 91	2 00
1.005	0.955	0.955	1.00

Prec side Outer edge of outer ring

51,26	48.60	48.62
48.57	51,22	51.28
2) 2.69	2 62	2.66
1 345	1 310	1.330

Whole breadth of ring -

45.26	54.55
54.54	45.29
)9.28	9 26

Outer Diameter of Ring - 4 64 4 63

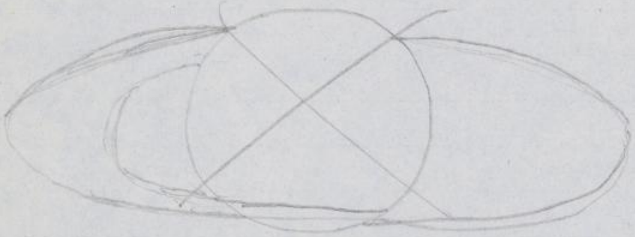
4.63
4.635
93
45.42

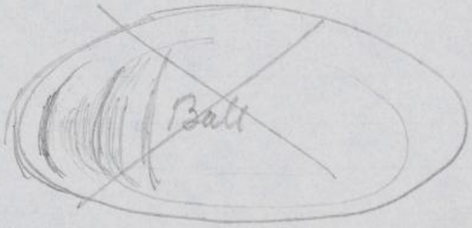
½ dist 0.92152
mean " 0.97968
9.94184
45.42 = 1.65725
39.73 = 1.59909

Nov 17^{2}

The interval from Globe to inner edge of bright ring is less than
[the breadth of the] distance from the i e of bright ring to o e of outer ring
By as much as the breadth of the great division

40.09
26.66
2) 13.43
6.71





The outer edge of o.r. is distant from the o.e of bright ring by 2/3 of breadth of bright ring.

Est Thr 30

G.P.B taken sick – Did not observe again for two or three months.

D'Arrest's Comet

star precedes A south of star

dif Dec	
1,, 41. 00	42 986
43,,	42 615
45,,30	42 66
2,, 01.00	41,40
02.30	42,25
05.20	42.77

Dif R		
* 1,, 50,, 56.8	A 1,, 51..19.2	22.4
51,, 50.6	1,, 52,,13.8	23,2
2,, 57.7	53,,22.0	24.3
46.8	54,, 12.4-	25.6
1,, 54. 50.2	1,, 55,, 13.5	23,3
55,, 40.7	56 04.8	24.1
56,, 32.1	56 56.0	239
		268
		0,, 23.83
8 48.1	29,,11.7	23.6
9,, 28.2	29, 50.7	22,5
05.0	30,, 27.0	22.0
30,, 55.6	18.5	22.9
2,, 31 44.5	2,,32,, 07.5	23.0
32,,47.5	3 10.6	23,1
34,, 10.2	34 34.0	23.8

2,, 08,, 59.6 − 8..27..20
A 10 .. 31 .. 18.0
.. 42

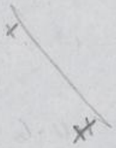
Nov 18th 10 P.M. Place of D'Arrest's Comet

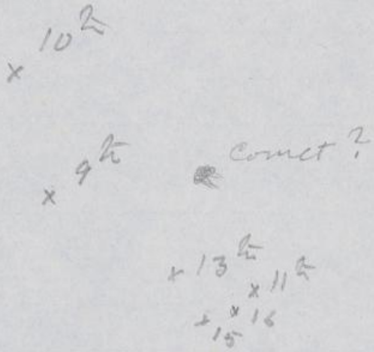
AR $3^h.. 38^m..00^s$ δ Eridani. AR $3^h.. 36^m.. 04^s$ 3/2 mag.
Dec $- 8^\circ.. 32'$ Dec $- 10^\circ.. 17'$

3.. 35.. 25 -8.. 26.. 32 $2^s.91$ 11.83.
1.. 13 4.. 56 72.8 296
3.. 36 38 -8.. 31 .. 28

Passes Star of 8th mag.

Another of 9th mag is following d AR $0^m.. 48^s.7$
& South $9'.. 05''$

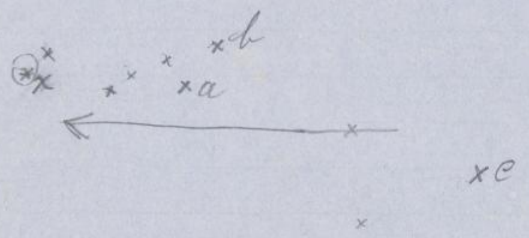




November 19

287.30
90
357 30

Determination of place of comp. star of D'Arrest Comet. Comet comp. with star on 24/25 Sept. see prec. pages
also, determination of place of missing star



a old comp. star
c new comp star
x missing star's place

Zero
49.93
49.98
50.00
49.95
199.86
49.96

c is followed by another star by $1^m\,11^s$ the other star is south 6'

Dif. Dec a & c

35.43
9.8
28344
31887
1347.214
5'.47."21

85^r39
85 40
85 395
49.96
35.43

Dif. Dec a & x   x south of a

12.96
9.8
10368
11664
127.008
2.07.00

62^r92
49 96
12.96

Dif. R a & x   x prec

x 1 56.30 44^s
a 57.14
x 57.33   44
a 58.17

Dif R a & c

a 9.36.5 c 01.15.01.38.5
a 1.59.47.8 c 2 01.26.57 38.7

a 2.53.9 c 52.5 1.38.6
a 2.02.25.0 c 2.04.04.0 1.390
34.8
1.38.7 = dif. R a & c

c is Weisse H.IV No. 533
c is Bessel's Zone 540
No. 1049

$4^h\,4^m\,^s$
4.24.48.91
1.18.60
c ✱ R 4.26.07.51 1837.0
Δa a & c 1.38.70
a R 4.24.28.81
Δa a & x 44.
x R 4.23.44.81

60.007
An prec $3^s.023$
26
18138
6046
78.598
An prec $1^m\,18^s.60$

x − 2°.12'.28."8
Prec. − 3.28.84
c ✱ δ − 2°.08'.59."96
Δδ a & c 5.47.21
✱a Dec − 2.14.47.17
Δδ a & x 2.07.00
x δ − 2.16.54.17

$R = c + K + K' \cdot \frac{\delta - D}{100}$

202 Chron.
2.07.07.5
+ .7
2.07.382

Ho $9^h\,41^m\,20^s$
2.18.40
2.07.38.2
4.26 182 = R

South 2°.06'.20"

An prec − 8".09
Sec. var + .05
8.04
26
4804
1608
20884
3.28.84

Nov. 19

$$
\begin{array}{lr}
 & h\quad m\quad s \\
c\,R & 4,,26,,07.59 \\
\text{dif } R\,a\,\&\,c & 1,,38.7 \\
\hline
a\,R & 4,,24,,28.89
\end{array}
$$

$$
\begin{array}{lr}
c\,\delta & -2,,08,,59.96 \\
 & 5,,47.23 \\
\hline
a\,\delta & -2,,14,,47.19 \\
\text{dif. } \delta\,a\,\&\,x & +2,,07.00 \\
\hline
x\,\delta & =-2,,16,,54.19
\end{array}
$$

$$
\begin{array}{lr}
 & h\quad m\quad s \\
a\,R & 4,,24,,28.89 \\
\text{dif. } R\,a\,\&\,x & -44.00 \\
\hline
x\,R & 4,,23,,44.89
\end{array}
$$

The missing star was not.
Astrea, Hebe, Iris, Flora
Metis, Hygiea, Parthenope, Irene
Eunomia Irene Egeria
Ceres Vesta Pallas Juno -)
I have compared all these
with the Ephemerides -

Mean place of the missing star
of Sept. 24, 1851

Sept. $24^{th}\ 16^h\ 54^m\ 00^s$ m.s.t $*^2$ R $4^h\ 23^m\ 44^s.89$ } Mean Eq.
$*^s$ $\delta - 2^\circ\ 16'\ 54''.15$ } 1851.0

The above place of the missing star has been determined from its mapped position on the 24th, and from recollection.
The error of its place in R does not prob. exceed ± $0^s.6$ and in Dec. ± 20"

1851phae.proj..167B

82

Dec 4th

Place of Brorsen's 2nd Comet – deduced from its daily motion

AR 16..5^{m}2

Dec. +60°.. 12

Diameter of the field of
the great Telescope power 140
In arc $11'.\,26''$
" time $45^s.7$

Ephemeris of Irene

{Transcribed from a letter of Mr. G. P. Bond
{Dated Hamburg Observatory July 14, 1851

1851	R h m s	Dec. ° ' "
Aug. 1	15..40..39	−18..15..00
.. 2	41..18	20.8
.. 3	41..58	26.7
.. 4	42..40	32.6
5	43..23	38.5
6	44..07	44.4
7	44..52	50.3
8	45..38	18..56.1
9	46..25	19..02.0
10	47..14	07.9
11	48..04	13.8
12	48..55	19.7
13	49..47	25.6
14	50..40	31.5
15	51..35	37.4
16	52..32	43.3
17	53..30	49.2
18	54..28	19..55.0
19	55..27	20..00.8
20	56..27	06.7
21	57..28	12.5
22	58..30	18.4
23	15..59..33	24.2
24	16..00..36	29.9
25	01..40	35.7
26	02..46	44.5
28	03..54	47.3
28	05..02	53.0
29 29	06..11	20..58.7
30	07..21	21..04.4
Aug. 31	16..08..32	−21..10.0

Ephemeris of D'arrests Comet

1851	R	Dec.	Br.
July 26.5	36°..42'	+9°..39'	0.9
Aug. 5.5	44..13	8..20	0.8
.. 15.5	50..21	6..41	0.7
.. 25.5	55..05	+4..47	0.6

1851phae.proj..167B

Br.
0.9
0.8
0.7
0.6

Dec. +45°.50'