

KG
11365
184

H.30

Equatorial Vol. 7
1859 -
May 4 to Oct. 26

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KG-11365.84

KG 11365.184

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1859 May 4 Comet (Watson's) II 1859

Saw the Comet again under fine definition. There has been no evident change of aspect. The whole light of the head seen in the finder if concentrated would equal a star of the 8th mag.

The nebulosity has the same tendency & dimensions as on the last date of observation.

The deficiency occurs between

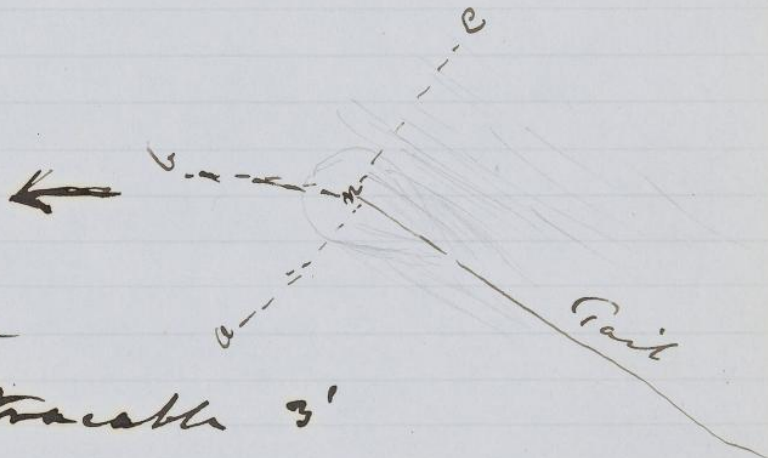
to a and b where

the light is barely traceable 3'

from n. There is more between b & c

& near the latter direction it extends 5'

Tail 15' or possibly 20'. No evident increase of brightness.



G. P. B.

no

Inst. Position of Comet

May. 5. 1839.

236 11 28 3 $\delta + 39^{\circ} 21' 2''$
 Alt. $+ 56'$
 Sid. Time 11 27 55
 H $5 27 4$
 A. $6 5 47$

Angle of Pos. of Tail
 $121^{\circ} 57'$ Comet. South fol. two stars a and b (10 - 11 mag)
Alt on Spr. hor.

* a $\epsilon.6 = 10''$ 44 9.9 - 15.0
 no sig * b 44 13.7 - 19.0
 44 39.0 43.9

Scale " $\delta - *$
 7 7 - 2 34
 5 18 0 45
 4 33

* a 45 17.6 - 22.7
 * b 45 21.3 - 26.6
 45 46.2 - 51.3

6 19 2 43
 4 30 0 54
 3 36

* a 46 35.0 - 40.2
 * b 46 39.0 - 44.3
 47 3.7 - 8.9

6 19 2 46
 4 31 0 58
 3 33

B.

There is another star of .11 mag which precedes a $1'$ and is
 $4' 40''$ north of a. Star b fol. a $4''$.

The time of the Dec of ~~the~~ is $15'$ before the time of Alt.

June 19th 1859. At 13^h 24^m m.t.

Comet's R. $3^{\text{h}} 20^{\text{m}} 15^{\text{s}}$ H.h. $-1^{\circ} 9'$
 $+40^{\circ} 5' 0''$ $+3' 3''$

BZ 512 9th May.

$3^{\text{h}} 16^{\text{m}} 21.2^{\text{s}}$ $+39^{\circ} 59' 58''$
 $-1 \quad 6.0$ $-1 \quad 50$

$\alpha \quad 3^{\text{h}} 16^{\text{m}} 21^{\text{s}}$ 9.8783
 $\delta \quad 40^{\circ} 1' 8''$ 9.9263
 $0.848.6$ 9.9287

1845.0

$3 \quad 15 \quad 15.2$ $39 \quad 58 \quad 8$

Run 34 years.

$-3 \quad 12.7$ $+7 \quad 27$

1859.

$3^{\text{h}} 17^{\text{m}} 27.9^{\text{s}}$ $40 \quad 5 \quad 35$

3.919

Preceding star in B.Z. 8th
 Another precedes about 36th
 in nearly same dec

$3 \quad 16 \quad 2.1$ $+39 \quad 51 \quad 53$
 $-1 \quad 6.0$ $-1 \quad 50$

$\alpha \quad 3^{\text{h}} 16.2$ 9.8778
 $\delta \quad 39 \quad 53.8$ 9.9222
 9.9261

$+2 \quad 13.0$ $+7 \quad 27$

3.914

$3 \quad 17 \quad 9.1$ $+39 \quad 57 \quad 30$

Star a (North Preceding b) $\alpha \quad 36^{\text{h}}$
 Star b (South Preceding a) $\alpha \quad 20.8$
 Star of comparison = c $3 \quad 17 \quad 27.9$

$\delta \quad 0' 20''$ about.
 $\alpha \quad 8' 5''$
 $40 \quad 5 \quad 35$

Occultations. May 7. 1859.

obs. by A.H. with Great Refractor.

Imm. of * of 9-10 mag. near the centre of Moon's dark limb.

$$\begin{array}{rcl}
 \text{E.b. by Spr. Cor.} & = & 13^h \ 34^m \ 3.3 \\
 \text{E.b. fast} & & 5.26 \\
 \text{Sid Time} & = & 13 \ 33 \ 58.04 \\
 & & 2 \ 59 \ 58.60 \\
 & & 10 \ 33 \ 59.44
 \end{array}$$

$$\begin{array}{rcl}
 \text{Camb. M.T. of Imm.} & = & 10^h \ 32^m \ 43.86 \\
 & & 15.58
 \end{array}$$

Imm of γ Cancri

$$\begin{array}{rcl}
 \text{E.b. by Spr. Cor.} & = & 14^h \ 33^m \ 57.4 \\
 & & 5.26 \\
 \text{Sid. Time} & = & 14 \ 33 \ 52.14 \\
 & & 2 \ 59 \ 58.60 \\
 & & 11 \ 33 \ 53.54
 \end{array}$$

$$\begin{array}{rcl}
 \text{Camb. M.T. of Imm.} & = & 11^h \ 31^m \ 53.68 \\
 & & 59.86
 \end{array}$$

The moon was quite low at the time of the last observation and there was considerable haze so that the moon's limb was not very well defined.

A.H.

May 13th 1859.

Comet (I?) discovered by Tempel.

Position for Feb Cambridge = $7^h 36^m$.

1. By Watson's ephemeris

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 47 & 35 \\
 1) & - & 5 & 28 \\
 & 5 & 42 & 18 \\
 & & & 29^{\circ} 1.3 \\
 & & & - 245.1 \\
 & & & 3.9 \\
 & & & + 26^{\circ} 12.3
 \end{array}$$

$$\begin{array}{l}
 \text{Diff. (H-S)} + 6' + 2.3 \\
 \text{May 15th$$

2. By J.H.S.

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 42 & 12 \\
 & & & + 26^{\circ} 10.0
 \end{array}$$

B.Z. 523. (~~also in B.Z. 405~~)

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 39 & 22.70 \\
 & - & 1 & 34.8 \\
 1825.0 & 5 & 37 & 48 \\
 \text{Proc. 34 years} & 2 & 6. & \\
 1859.0 & 5 & 39 & 54 \\
 & & & 26^{\circ} 0' 28.6 \\
 & & & - 42.3 \\
 & & & + 25^{\circ} 59.8 \\
 & & & + 1.0
 \end{array}$$

Star's Place 1859.0

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 39 & 54 \\
 & - & 1 & 34.8 \\
 B.Z. 523 & 5 & 40 & 8.5 \\
 & - & 1 & 34.8 \\
 1825.0 & 5 & 38 & 34 \\
 \text{Proc. 34 years} & 2 & 7. & \\
 & 5 & 40 & 41 \\
 & & & + 26 19 31 \\
 & & & - 42.3 \\
 & & & + 26^{\circ} 18.8 \\
 & & & + 1.0 \\
 & & & 26 19.8
 \end{array}$$

$$\begin{array}{lcl}
 9^{\text{th}} & 1) & 5^h 39^m 54.0 + 25^{\circ} 59' 24.8'' \\
 8^{\text{th}} & 2) & 40 41.1 \quad 26 19.8 \\
 & 3) & 42 2.1 \quad 26 0.147
 \end{array}$$

The last star is Baily 11022.

B.Z. 405

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 40 & 49.50 \\
 & - & 53.5 & \\
 1825.0 & 5 & 39 & 56 \\
 & 2 & 6 & \\
 & & & + 26 0 12.9 \\
 & & & - 33.1 \\
 & & & + 25^{\circ} 59.7 \\
 & & & + 1.0
 \end{array}$$

$$\begin{array}{rcl}
 & ^h & ^m & ^s \\
 & 5 & 26 & 0 \\
 & 11 & 8 & 40 \\
 & 5 & 42 & 40
 \end{array}$$

$$\begin{array}{lcl}
 11 & 15 & 9.0 \quad 35.0 \quad 6' 20'' \\
 & 17 & 16.3 \quad 42.8 \quad 6' 00''
 \end{array}$$

May 13. 1859 Comet I.

G. P. B. obs.

Ex. Ther. 52°
 Bar. 30.112
 Alt. Ther. 66°

Eb fast. 2.1

236 = 11^h 36^m 8^s ~~8~~ - * 12^s and + 11^s

* β north from * α * β of 10 mag.AR on Spr. Gov.
Dots

Scale

* β E.b. 11 39 35.7 - 40.0
 * α 40 16.9 - 21.3
 41.2 41.3

6' 49" 3 52
 2 57

B.

* β 11 40 49.1 - 53.8
 * α 41 30.6 - 34.9
 41.5 41.1
 41.28

6 24 3 52
 2 32

B. D.

* β E.b. 11 43 18.9 - 23.6
 44 16.0 - 15.3
 52.1 52.7

2 10 6 8
 8 18

Long Dots

* β 11 45 27.0 - 31.3
 46 19.1 - 23.3
 52.1 52.0

2 27 5 59
 8 26

* β 11 48 40.0 44.4
 49 31.6 36.4
 51.6 52.0

2 44 5 51
 8 35

B. B. 52.08 Eb = 11 46 42.8 Diff. = 5' 55.9
 Time of Sun precedes time of AR 14^s Diff. = 11 46 40.7

May 13. 1859. Comet I.

Dir. of Pos. used ~~180~~ $90^{\circ} 31'$

Reading of Pos circle for angle of Pos of Tail = 96°

Tail North. Following nucleus.

In strong twilight the comet was but $25''$ in diameter.

(*3) AR on Spr. Gov. ~~North~~ north. fol *

*a $\epsilon b = 12$ 11 17.5 - 22.2
 // 11 25.2 - 30.2
 7.7 8.0

Scale
 1 04
 9 23 8 19

D.B.

ny *a 12 12 50.5 - 55.0
 n ~~2~~ 12 58.0 - 62.3
 7.5 - 7.3

1 10
 9 20 8 10

D.B.

*a 12 13 58.6 - 63.0
 // 14 6.0 - 10.6
 7.4 - 7.6

0 52 8 11
 9 03

*a 12 14 34.0 - 38.8
 // 14 41.5 - 45.9
 7.5 7.1

0 57 8 5
 9 02
 8' 11.2

$$7.51 + 0.03 = 7.54 = \text{diff AR}$$

$$8' 11.2 = \text{diff Dir.}$$

$\epsilon b = 12^h$ 13 20.0
 Sid Dir = 12 13 17.9

Motion in AR in 14^h (by Ephemeris of D.T.H) = 0.03

(*) Time of Sec. precedes time of AR. 14^h .

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Comet 1859

The Comet observed in strong twilight.

At first only a condensed, slightly oval (major axis in line with the Sun) nebulosity, 25" in diameter, with hazy outline, could be seen. Subsequently it attained a diameter of 1' with a tail of 2' pretty decided & a general effusion of light still further in the same direction but scarcely perceptible.

I see nothing in the diminution of the volume of the Comet which is not accounted for by the effect of twilight.



All but central nebulosity
is here too strongly marked
by far

G.P.B.

May 13. 1859. Comet I.

$$\begin{array}{rcl}
 *a = 13.2.405'' & \text{Sun } \alpha \text{ and } \beta & \\
 5 \quad 40 \quad 49.50 & + 26^\circ \quad 0' \quad 12.9'' & \\
 31 \quad 31 \quad - 53.43 & - 33.1'' & \\
 \hline & 0.00 & 0.0 \\
 1825.0 \quad 5 \quad 39 \quad 56.07 & + 25 \quad 59 \quad 39.8 & \\
 A = 5^h 41^m 0^s & D = 26^\circ 02' &
 \end{array}$$

$$\begin{array}{r}
 \sin A \quad 9.99858 \\
 \log D \quad 9.68223 \\
 0.12614 \\
 \hline
 9.81288
 \end{array}$$

$$\begin{array}{r}
 \cos A = 8.97807 \\
 1.30223 \\
 \log 34 - 1.53148 \\
 \hline
 1.75779 \\
 + 56.50
 \end{array}$$

$$\begin{array}{r}
 + 0.6499 \\
 3.0704 \\
 + 3.7208 \\
 \hline
 34 \\
 14.8822 \\
 111.609 \\
 + 126.4902
 \end{array}$$

$$\begin{array}{rcl}
 5 \quad 39 \quad 56.07 & & \\
 + 2 \quad 6.49 & & \\
 \hline
 5 \quad 42 \quad 02.56 \\
 1859.0
 \end{array}$$

$$\begin{array}{rcl}
 25 \quad 59 \quad 39.8 & & \\
 + 0 \quad 56.5 & & \\
 \hline
 26 \quad 0 \quad 36.3
 \end{array}$$

$$\begin{array}{rcl}
 \text{Delande 1800} \quad 5 \quad 38 \quad 22.91 & & \\
 \quad \quad \quad 3 \quad 39.48 & & \\
 \hline
 5 \quad 42 \quad 2.39
 \end{array}$$

$$\begin{array}{rcl}
 64^\circ \quad 1' \quad 08.0'' & & \\
 25 \quad 58 \quad 57.0 & & \\
 \hline
 1 \quad 42.7 & & \\
 26 \quad 0 \quad 39.1
 \end{array}$$

$$\begin{array}{r}
 3.720 \\
 59 \\
 \hline
 33480 \\
 18600 \\
 \hline
 219480
 \end{array}$$

Bessel double weight.

1859.0

*a

$$AR = 5^h 42^m 2.50 \quad Dec + 26^\circ 0' 37.2''$$

$$f = + 24.56$$

$$G = 325^{\circ} 19'$$

$H = 214.45$

$$\alpha = 85.305^\circ$$

$$\alpha = 85^\circ 30.2'$$

$$\begin{array}{r} \lg q = 1.1137 \quad G + \alpha \text{ of } 0.49.5 \\ -(G + \alpha) \quad 9.8894 \quad \text{as} \\ \hline \lg \delta \quad \underline{9.6882} \\ 0.6913 \end{array}$$

1.1137 $H \times Q = 300$ 15.5
9.8005
 0.9142

h 1.2977
 $w(H_{12})$ 9.9366 n
 $w(P)$ 0.0463
 1.2804 n

$\sim \delta$
 $\begin{array}{r} 1.2577 \\ 9.7028 \\ \hline 9.6419 \\ 0.6490 \end{array}$

$$\begin{array}{r} 4.913 \\ \underline{24.56} \\ 29.47 \\ \underline{-19.87} \\ 15) + 10.40 \text{ (} \\ + 0.69 \end{array}$$

by 0.6 9055
9.9 536
0.6 441

*a. 1859.0	5	42	2.50	Sec	+ 26°	0'	37.2
			+ 0.69				+ 8.2
app place of *	5	42	3.19		+ 26°	0'	45.4

Red. of times

11	46	40.7
<u>3</u>	<u>23</u>	<u>37.9</u>
8	13	2.8
	1	22.4
8	21	42.0
86	21	40.4

$$\begin{array}{r} 12 \quad 13 \quad 17.9 \\ 3 \quad 23 \quad 37.9 \\ 8 \quad 99 \quad 40.0 \\ \hline \quad 1 \quad 26.8 \\ 8 \quad 48 \quad 13.2 \end{array}$$

May 13 1859. Comet

cor. Refraction

* a x //

$$\begin{array}{r} \text{Sid } \alpha = 12 \quad 13 \quad 17.9 \\ \quad \quad \quad 5 \quad 42 \quad 5.4 \\ \hline \tau = 6 \quad 31 \quad 12.5 \end{array}$$

$$\begin{array}{r} A = +26^{\circ} 4' \quad 2 = 78.2 \\ 2A = +52 \quad 8 \\ \psi = -8 \quad 34 \\ \psi + 2A = +43 \quad 34 \\ \psi + A = +17 \quad 30 \\ m(\psi + A) \quad 9.4751 \quad \sec A = 0.0466 \\ \quad \quad \quad 8.9562 \quad \quad \quad 0.0932 \end{array}$$

$$\begin{array}{r} \log R = 1.7233 \\ (\delta' - \delta) \text{ in } 7.3768 \\ \quad \quad \quad 1.0438 \end{array}$$

$$\begin{array}{r} \log \tau \text{ in } \psi \quad 0.1439 \quad \text{cor in den} = +1.39 \\ \quad \quad \quad \sec^2 A \quad 0.0307 \\ \quad \quad \quad \cos(\psi + 2A) \quad 0.0932 \\ \quad \quad \quad \text{comp } 15' \quad 9.8601 \\ \quad \quad \quad \quad \quad \quad 8.8239 \\ \quad \quad \quad \quad \quad \quad 8.9518 \quad \text{cor. in } AR = +0.089 \end{array}$$

* β x //

$$\begin{array}{r} 11 \quad 46 \quad 40.7 \\ \quad \quad \quad 5 \quad 41 \quad 48.0 \\ \hline \tau = 6 \quad 4 \quad 52.7 \end{array}$$

$$\begin{array}{r} \log R = 1.7412 \\ (\delta' - \delta) \text{ in } 7.2369 \\ \quad \quad \quad 0.7546 \end{array}$$

$$\begin{array}{r} 9.7327 \quad \text{cor in den} = +0.54 \\ \quad \quad \quad 0.0395 \end{array}$$

$$0.0937$$

$$9.8004$$

$$8.8239$$

$$8.4902$$

$$\text{cor. in } AR = +0.031$$

$$\begin{array}{r} A = 26^{\circ} 8' \quad 2 = 73.6 \\ 2A = 52 \quad 16 \\ \psi = -1 \quad 20 \quad \log \eta = 0.0395 \\ \psi + 2A = +50 \quad 56 \\ \psi + A = +24 \quad 48 \\ m(\psi + A) = 9.6227 \quad \sec A = 0.0468 \\ \quad \quad \quad 9.2454 \quad \quad \quad 0.0937 \end{array}$$

May 13. 1859. Comet.

Refract $\ast \beta \times \ast a$

$$\begin{array}{r} 11 \quad 40 \quad 33 \\ 5 \quad 41 \quad 43 \\ \hline \tau = 5 \quad 58 \quad 50 \end{array}$$

$$\Delta = +26^{\circ} 3' \quad 2 = 7.26$$

$$2 \Delta = +52 \quad 6$$

$$\psi = +0 \quad 18 \quad \log \eta = 0.0397$$

$$\psi + 2\Delta = 52 \quad 24$$

$$\gamma + \Delta = 26 \quad 9$$

$$\log R = 1.7433$$

$$(\beta - \alpha) \sim 7.0511$$

$$0.7116$$

$$9.5060 \quad \text{corr for } \Delta = +0.32$$

$$0.0397$$

$$0.0930$$

$$9.7887$$

$$8.8235$$

$$8.2480 \quad \text{or } \alpha \beta = 0.048$$

$$\text{arc}(\psi + \Delta) \quad 0.3558 \quad \text{arc} \Delta \quad 0.0465$$

$$0.7116$$

$$0.0930$$

$$\begin{array}{r} \ast \beta - \ast a = -0 \quad 41.28 \quad + 3' \quad 52.0 \\ \text{corr for refr.} \quad + 00.02 \quad + 0.3 \\ \text{corr. for temp.} \quad - 0.4 \\ \hline \beta - \alpha \quad - 0 \quad 41.26 \quad + 3' \quad 51.9 \end{array}$$

$$\begin{array}{r} \ast \beta + 0 \quad 52.11 \quad + 5' \quad 55.9 \\ \text{corr for refr.} \quad + 0.03 \quad + 0.5 \\ \text{corr. for temp.} \quad - 0.6 \\ \hline \ast \beta + 0 \quad 52.14 \quad + 5' \quad 55.8 \end{array}$$

$$\begin{array}{r} \ast \alpha + 0 \quad 7.54 \quad + 8 \quad 11.2 \\ \text{corr for refr.} \quad + 0.09 \quad + 1.4 \\ \text{corr for temp.} \quad - 0.7 \\ \hline \ast \alpha + 0 \quad 7.63 \quad + 8 \quad 11.9 \end{array}$$

May 13 1859. Comet.

α	5	42	3.19	+26° 0'	45.4
	-		41.26	+ 3	51.9
β	5	41	21.93	26 4	37.3
$\beta - \alpha$	+	0	32.14	+	5 55.8
	5	42	14.07	+ 26 10	33.1

At 8^h 21^m 42^s Camb. m. 2.

26

α	5	42	3.19	+ 26	0	45.4
$\beta - \alpha$			+ 7.53		+ 8	11.9
	5	42	10.82	+ 26	8	57.3

At 8 48 13. Camb. m. 2.

47 59

May 23. 1859. Biela's Comet.

June 2. 1859.

Personal Equation

G. P. Bond & Dr. Peters

Power 206.

Dr. Peters leads.

clouds came on

R. $3^h 42^m 24^s$
Dec. $+20^\circ 16'.6$

hly mo -8.2
 $+3'.8$

Jan 5/6 1859.

Personal Equation.

G. P. Bond & Dr. Peters

	P_r	B.	
20 ^m	52.70	60.40	7.70
	12.35	19.85	.50
	32.20	39.60	.40 7.67
	49.30	57.15	.85
	8.00	15.40	.90

7.67

7.63

.60

80

7.675

	B.	P.	
22	30.65	38.15	7.55
	52.10	59.20	.10
	13.80	21.00	.20 7.28
	36.60	43.85	.25
23	55.60	62.90	.30

7.28

.34

27

23

7.280

7.675

2) 0.395

+ 0.198 = B - P

	P.	B.	
24	32.95	40.85	7.90
	20.00	27.50	.50
	37.00	44.75	.75 7.63
	55.70	63.00	.30
26	14.30	22.00	.70

	B.	P.	
26	36.90	43.95	7.05
	1.20	8.55	.35
	22.35	29.80	.45 7.34
	43.00	50.65	.65
28	6.05	13.25	.20

June 5, 1859

Personal Equation

G. P. Bond & Dr. Peters

P.	B.		
28 ^m 29.35	37.00	.65	
49.35	57.00	.65	
7.70	15.20	.50	.60
29.45	37.00	.55	
29 52.80	60.45	.65	

B.	P.		
30 17.85	25.05	.20	
43.40	50.75	.35	
5.60	12.95	.31	.27
28.00	35.30	.30	
32 53.80	60.95	.15	

P.	B.		
32 13.40	21.10	.70	
35.30	43.15	.85	.80
54.80	62.65	.85	
15.00	22.80	.80	

B.	P.		
34 27.00	34.00	.00	
46.65	53.95	.30	
6.80	14.20	.40	.23
30.80	37.95	.15	
50.55	57.85	.30	
36 13.05	20.30	.21	

Gt. Equatorial

June 6 and 7/6 Examined zero of position circle and
found it $272^{\circ} 57'$

June 7. 1859 Personal Equation

G. P. B. & Dr. Peters

Break precedes the obs. of G. P. B. & Dr. Peters

	B	P.			
8 ^m	31.45	35.85			
	55.00	59.65	4.65		
	10.75	15.90	5.15		
	24.20	29.15	4.95	4.83	4.83
	40.35	45.05	4.70		4.93
10	56.35	61.25	4.90		4.80
	10.60	15.20	4.60		4.90
					4.865
					5.372
					<u>2)0.507</u>
					+ 0.253 = B - P.
	P	B.			
10	52.40	57.55	5.15		
	8.90	14.30	5.40		
	27.70	33.00	5.30	5.38	
	45.70	51.10	5.40		
	5.20	10.70	5.50		
12	21.60	27.15	5.55		
	B	P.			
12	38.00	43.05	5.05		
	53.50	58.45	4.95		
	9.15	14.10	4.95	4.93	
	25.25	30.25	5.00		
	41.50	46.20	4.70		

Personal Equation

	P.	B			
14	2.10	7.50	5.40		
	16.30	21.95	5.65		
	33.15	38.80	5.65	5.49	5.49
	50.75	56.00	5.25		5.38
15	5.30	10.80	5.50		5.33
					<u>5.29</u>
					5.372

	B	P.			
15	26.15	31.05	4.90		
	41.90	46.45	4.55		
	57.70	2.75	5.05	4.80	
	14.95	19.90	4.95		
16	31.70	36.25	4.55		

	P.	B			
17	19.50	25.00	5.50		
	36.95	42.00	5.15		
	53.20	58.55	5.35	5.33	
	8.75	14.15	5.40		
	26.00	31.30	5.30		
18	41.00	46.25	5.25		

	B.	P.			
18	59.70	4.50	4.80		
	16.25	21.25	5.00		
	30.90	35.65	4.75	4.90	
	46.35	51.35	5.00		
	0.75	5.55	4.80		
	18.75	23.80	5.05		

Personal Equation

P	B.		
20 ⁿ 36.05	41.50	5. 45	
50.00	55.00	5. 00	
6.90	12.00	5. 10	5. 29
21, 30	26.80	5. 50	
21 37.90	43.30	5. 40	

P.	H.			
24 ⁿ 32.70	37.95	5. 25		5. 30
52.00	57.25	5. 25		5. 19
7.70	13.00	5. 30	5. 30	5. 21
24.75	30.00	5. 25		<u>5. 32</u>
43.45	48.90	5. 45		5. 255
				<u>4. 952</u>
				2) 0.303
				+ 0.156 = H-P.

H.	P.		
26 41.50	9.60	5. 10	
23.40	28.20	4. 80	
44.75	49.60	4. 85	4. 88
2.60	7.45	4. 85	
27 19.45	24.25	4. 80	

Personal Equation

	P.	H.		
27	53.80	58.70	4.90	
	10.10	15.25	5.15	
	25.30	30.65	5.35	5.19
	42.85	48.15	5.30	
28	58.00	63.25	5.25	

	H.	P.		
29	18.10	23.00	4.90	5.05
	34.30	39.60	5.30	4.88
	49.70	54.70	5.00	5.03
	6.15	11.00	4.85	<u>4.94</u>
30	24.10	29.20	5.10	4.952

	P.	H.		
30	48.30	53.35	5.05	
	4.75	10.00	5.25	
	20.85	26.15	5.30	5.21
	39.00	44.20	5.20	
31	55.50	60.75	5.25	

	H.	P.		
31	19.15	24.15	5.00	
	34.30	39.15	4.85	
	31.10	36.10	5.00	4.91
	5.80	10.40	4.60	
	27.85	32.95	5.10	

Personal Equation

	P.	H.		
34	0.75	5.95	5.25	
	16.80	21.95	5.15	
	33.50	39.00	5.50	5.32
	48.85	54.20	5.35	
35	5.50	10.85	5.35	

	H.	P.		
35	20.45	25.95	5.00	
	37.95	42.85	4.90	
	56.20	61.20	5.00	4.97
	12.05	17.05	5.00	
	26.80	31.70	4.90	
	43.10	48.85	5.05	

Comet I, 1859.

Stars in Bessel's Zones m. 396.

Phase for 14^h 48^m

	$3^h 32^m 33^s$	$\frac{2.1}{-5.5}$	$+ 26^\circ 10' 4'' + 3'.69$
Comet.			
Star I	3 26 30		26 7.9
Star II	3 34 0		26 7.1

236 = 20^h 30^m 0^s 3' north of center of field

236 = 20 32 42 3' north of center of field

1 28 3

East H = 5^h 2^m 8^s $\cos + 26^\circ 17'$
 6 57 52

3	30	40	3	30	40
20	29	40	20	17	40
7	01	00	7	13	00

+ 27° 38'.7

Comet I. 1659.

Stamper's Ephemeris (Ann. 1195) agrees within $1''$ with the one at the
end of this book.

For ~~April~~^{June} 12th 14^h 48^m Cambridge.

B. α $3^h 27^m 30^s$ R.A. -3.6 $+30^\circ 32'.3$ $+3'.54$ $\lambda. \text{Act.}$

B. 7 (398) $\left\{ \begin{array}{l} 7^{\text{th}} \\ 8^{\text{th}} \end{array} \right. \begin{array}{l} 3 \ 28 \ 24 \\ 28 \ 46 \end{array}$
and also 536)

$30 \ 39.3$
 $30 \ 39.0$

The diff. of dec. is either $22''$ or $12''$.
That of λ is 22.3 don't

Nomalla for Apr June 12th 1859 at Harb. Camb. 12^h 40^m.

12^h 40^m Camb. m. t. (52) α 21^h 39^m 21^s (5) (2) - 3° 0.0
 Hor. mot + 0.6 + 0.13

Weisse 21,942 7.8 21 39 15 - 2 51.6
 21,952 8. 39 51 - 2 56.2
 dif. R 35.3 Dec. 4' 35"

Stars of Comparison.

Cant I. 1859. June 15th 15^h Cambridge.

W. Main	3 ^h 23 ^m 47 ^s	34 46.0	Safford
H. H.	- 2.7	+ 3.46	

~~27.55~~B. Z. 533 ~~1859~~

ms.

7

3^h 23^m 42^s 3

34° 58' 42"

8

24 9.7

34 54 59

9

24 20.4

34 53 19

9

26 21.6

34 39 24

Comet I. 1859 June 22^d 13^h 24^m Cambridge

Comet
A.M.

$3^h 18^m 10^s + 43^\circ 59'.5$
 $- 1.8 \quad + 3'.21$

B.Z. 531. (a)	~~3 16 10.6~~	~~43 46 21~~	1825.0
	$3^h 18^m 28^s$	$43^\circ 54'.7$	1859.0

Star (b) foll. a	0^s	$3' 8''$ south of it
(c) foll. a	15.7	$0 51$ south " "

Comet 1859. I.

1859 June 28th 13^h 24^m Cambridge.
 α 3^h 15^m 55^s $\delta + 49^{\circ} 1.3'$
 H.A. - 1.3 + 3.08

Oeltzen

 2 mag 3782 3^h 17^m 35.1 + 49° 5' 12"
 9. 3789 18 25.2 8.6

 It is possible that this star has a companion,
 foll. 0.6 no. 0.9

 60. 44.0 8 00
 51. 33.8 6 02

236	=	20	0	29.0	13 0	43
		19	59	29.	49	17
7	44	42	4	45	18.	
19	59	29	8	45	49	
27	14	11	7	15	11	2 Persei

 9 9
 1 44
 10 53

 δ per. a. -15° -1'5"
 -1 36.9 -4.5

 236 = 20 32^m 11.0 32^m 26.0 * (a)

is 1' 30" south of a

2	58	
4	28	
46	6	12
49	1	44
49	1	12
0-0	+ 26"	19 3 6
		+ 1 22

15
1 22
1 37
3 17 31.1
3 15 58.1
3 15 55
0-0 - 3.1

June 26/27^E

Comet I 1859 J

236

* (a)	20	35	9	5'	18"
3782		36	31	8	17

* a	21	7	58.0	1'	40"
3782		9	19.8	4	37

Mean Place of a $\overset{n}{3} \overset{n}{16} \overset{v}{13.2} + 49^{\circ} 3' 14''$

June 26/27. 1859

Searched for Comet I, 1859, this morning. The Stars 3782 & 3789
 Batten were found but Mr Bond could not with certainty rec-
 ognise the Comet although something was observed as above.
 The seeing was good with the old Moon giving some light.

Comet exceedingly faint & diffuse ^{A.H.} and its
 place can only be estimated by the eye - On the

June 27th 1859. Memausa.

12^h Cambridge

No star in Bailey's. Wain

21^h 40^m 25^s ✓ - 2° 31' 5"
 alt. - 0.5 + 2"

Comet I 1859

 α Persei,
 $3^h 14^m 28^s + 49^{\circ} 22'$

June 27th $13^h 24^m$ mst
 R $3^h 15^m 23^s$
 Dec $50^{\circ} 14.8'$

Peltzer 3763
 1859.0 8th mag.

$3^h 15^m 16^s 30$ 50 17 5.4
 72.0 1 58.7
 ~~$3^h 15^m 54.8$~~ + 50 19 4.8
 $3^h 16^m 28.3$

* $b = 11$ mag
 $c = 3763$ Peltzer

236
 * b 20 49 6.8
 * b 55 16.0
 @ 56 31.3

4 18
 4' 17"
 7 40

1 15.4 50 19 4
 1 13.4 50 14 21
 3 16 28.8 50 14 48
 3 15 14.9 + 25
 2 15 23.0 50 17 48
~~0-0 + 74.6~~
 0-0 + 8.1 50 17 48

* b 57 12.2
 @ 58 27.7

5 10
 8 33

At 21^h.00^m

It is $1' 20''$ south of * b and follows it by 2nd.

The observation is uncertain by the amount of $\pm 30''$ or more

I am confident that there is a very faint
 diffuse nebulosity having its
 center within $1'$ or $2'$ of the place
 indicated

$86 = 21 \quad 28 \quad 00$
 $236 = 21 \quad 28 \quad 0.3$

Mean Place of 2. th mag

$3^h 15^m 12.9$ $50^{\circ} 15' 41''$
 + 2.0 - 1 20

B - b
 Res. to app.

~~Comet I 1859.~~
Calypso June 30th

12^h 24^m lamb. m.s. $\delta = 18^{\circ} 58'$ sidereal

Planet's α 17^h 37^m 24^s ✓ δ -17° 14' 0"
H.M. - 2.1 - 2.0

17 37 45
20 00 00
2 22 15

Aug. α δ
8. Star Arg. 218.6 17^h 36^m 5^s ✓ -17° 22' 1"
8.9 8 36.45 17 9.6
9.10 9 37.5 17 10.4

17 38 00
16 8 00
1 30 00

Planet of the 12-13 magnitude.

The declination is not very far out, probably.

Count 1859.I

1859 June 30th 13^h 24^m local.3^h 13^m 47^s + 53° 51' 5"

Altair 3816/17

3^h 19^m 49^s

53° 48' 5"

9th May.

19	55	00
3	20	49
7	25	49

20	45	00
3	20	49
6	35	49

236	20 ^h		
+ 10 mg	48	33.0?	
A		19.2	

5'	5"
7	04

A + 10 mg	20 ^h	50	19.5	6.0	7' 03"
B Altair		56	11.0	57.3	4 09
		5	51.5	57.3	
3	19	49			

~~59 42.0~~
~~54.1~~
Spec. A 15^h and 30" South of A

1857	Altair	3 ^h	18	33.92	53°	44'	46" 4
3816			1	15.4	+ 3	40	
		3	19	49.7	50	48	26
			5	51.45	2	59	
		3	13	58.3	50	51	20
			+ 1		+ 4		
		3	13	59	50	51	24
			- 15		- 30		
		3	13	44	50	57	54

Mean place of A

June 30. 1859

Calypso

6	236	20	5	21.0	44.3	5	29
9 ^E				41.2	9.8	3	04
p-		6		—	26.5	0	32

(*) 9 ^E	7	12.8	— 17.2	5	05
p		30.0		0	32

* 9 ^E	8	14.4	— 17.6	8	37
p 12mg		32.0		4	05

p	10	18.2			
9	13mg				

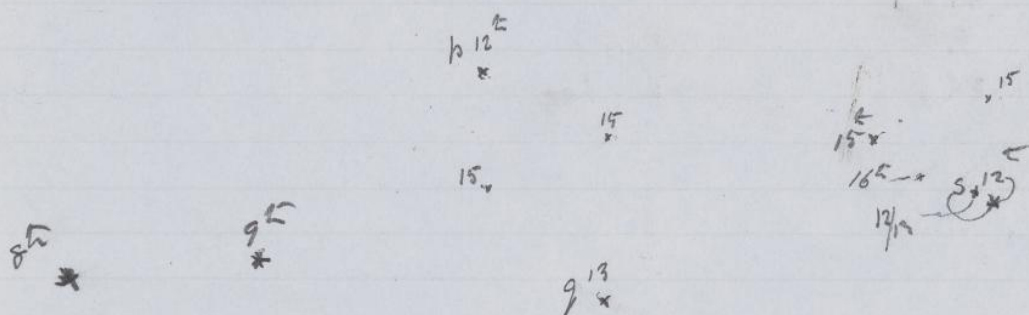
p	11	37.6		4	08
9		49.8		9	50
r	13			2	0
s	12	20.2		7	20

p	12	30.4		4	06
9		50.8		10	50
r		144 ?		2	01
s		21.2		7	20

p	13	49.2		4	07
9	14	1.4	11.2	9	10
r		15.2	22.3 ?	2	01
s		70.7	1.5	7	31

June 30

Calypso



9^{12}	20	30	17.2	852
p			54.6	421

9^{12}	31	29.1	853
p		46.4	422

p	~~32~~	~~58.6~~
		5

p	30	44.6	
9^{12}		57.0	12.4
9^{13}	34	21.0	24.0
s		27.8	6.8

July 1. 1859.

Calypso

S' prec S 10.6

(S) of preceding night

S' 1' 30" north of S

236	16				
mg	13	58	10.8		7'
	17		18.6	7.8	
	12		26.2	7.6	
	13		28.7	12.5	
	12		14.3	15.6	5'
	13	follows	1		
	13	0	6.0	5	20
	12		11.6	5.6	6 0

12-13	41.0		7	30
13	49.1	8.1	10	0
12	56.7	7.6	1	0
13	9.0	12.3	7	30
11-12	12.0	7.0	- 0	20
12	45.1	7.1	5	0
	36.0	10.9		
	42.0	6.0		

Repetition

	4.2	
	12.7	8.1
	20.0	
	32.0	
	35.0	
	8.8	
13	0.0	
	5.6	

July 1. 1859

Calypso.

236

17 13^m

35.0 8.2

42.2 7.4

Same stars

50.6 12.4

as on previous page

2.0 3.7

6.7 31.4

39.1 51.1

30.2 5.8

36.0

28

19.0

27.6 8.2

34.7 7.1

47.0 12.3

50.4 3.4

23.0 12.6

14.1 51.1

20.0 5.5

31

24.6

42.0 8.4

50.3 7.3

2.1 12.1

6.1 2.6

39.0 32.9

30.1 51.1

26.0 5.5

5.0 8.4

12.4

1859 July 5th *Halysia*Sph. gives for 12^h 24^m Cambr. α 17^h 33^m 29^s
26.4 - 2.0 δ -17° 18' 6"
- 5"

Belknap Sp. No.

17^h 29^m 0^s - 17° 10' 5"

236 = 17 29 8.3

9' 14"

236 = 17^h 30^m 56.0
A 34 46.00' 22"
9 58

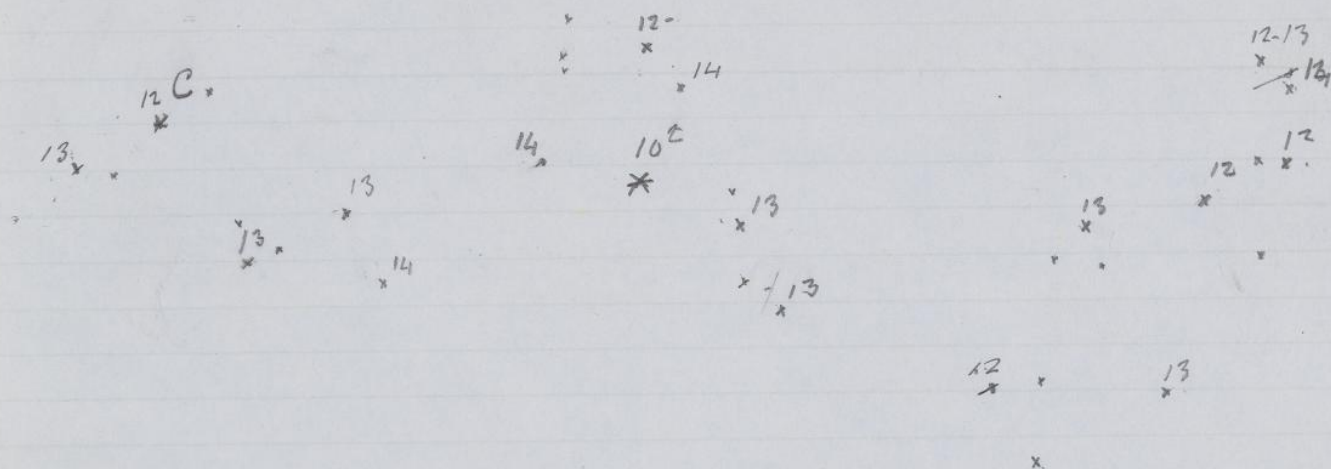
α 13-14	C 17	44	22.3		
			43.8	21.5	
β 10		45	95.8	31.0	
γ 13			28.7	12.9	
δ 13		46	23.6	54.9	
ϵ 12			39.2	15.6	
ζ 12			48.6	9.4	

4' 37"
8 58
6 04
6 51
7 17
6 00
4 23

Same	48	13.6
		34.7
	49	7.0
		20.0
	50	15.0
		30.2
		40.0

4 37
8 58
6 04
6 54
7 18
8 01
4 22

Calypro July 5. 1859



14	68	4 7 8
21	7.0	4 3 6
		8 5 5
21	0.2	6 0 2
	13.0	7 1 8
	8.0	5 5 0
	23.4	11.4
	33.0	9.6
		4.23

Handwritten notes on lined paper:

- Top left: "13" above a small arrow pointing right.
- Top center: "v" above "x".
- Top right: "C12" written diagonally.
- Middle left: A series of marks: "x", "y", "x", "x", "v", "x".
- Middle right: "13" above "x". Below it, "12-13" above "y". To the right of "12-13" is an "x".
- Bottom center: "N" with a small dot below it.
- Bottom right: "J.D." above "S-8.6".

17.8
19.0^{21.2} 56.7
21.2 17.8^{21.1}

July 6.

Calypro

Reviewed the chart of Stars made July 5
& recognised them all. They extend $1^m 30''$ about
on each side of Ephemeris place in R & $3'$ or $4'$
on each side in Dec.

Proper Motion,
 Lalande 21646 (Bailey) has been observed by Bessel
 and in the Harvard Zones 1859. The proper motion seems to
 be large.

(Not definite results)

Star 21646 Bailey seems to have a considerable
 proper motion.

$$\begin{array}{rcl}
 \text{21647} - \text{21646} & 1800 & + 2.52 - 4 \text{ } 35.7 \\
 & 1825 & 2.25 \quad 27.4 \\
 & 1859 & 1.30? \\
 & & 1.575 \quad 4 \text{ } 22.0
 \end{array}$$

$$\begin{array}{rcl}
 \text{21647} & \text{21647} & \text{21647} \\
 \text{216} & &
 \end{array}$$

$$\begin{array}{rcl}
 7 & 0.65 & \\
 8 & 0.98 & \\
 16 & & \\
 + 0. & &
 \end{array}$$

$$\begin{array}{rcl}
 + 9/10 & 1 - 0.26 & \\
 12 & + 0. &
 \end{array}$$

$$\begin{array}{rcl}
 9/10 & 9/10 & 1 - 0.09 \\
 10.50 & & \\
 11.50 & &
 \end{array}$$

$$\begin{array}{rcl}
 x = 0.53 & & \\
 53 & & \\
 68 & & \\
 44 & &
 \end{array}$$

$$\lambda = 0.562 -$$

$$\begin{array}{rcl}
 \lambda - 0.09 \lambda' & = & + 0.55 - 7.8 \\
 + 1.03 & & 0.72 \quad 0.7 \\
 + 1.10 & & 0.95 \quad 1.9 \\
 + 1.28 & & 0.75 \quad 1.4
 \end{array}$$

$$\begin{array}{rcl}
 4x + 2.35\lambda' & = & + 3.03 - 7.8 \\
 3x + 3.40\lambda' & = & 2.48 \quad 4.0 \\
 2x + 2.50\lambda' & = & 2.26 \quad 4.95 \\
 \lambda' & = & + 0.244 + 1.072
 \end{array}$$

1859 July 25th / 26thExperiments on motion of Spr. Gov. afended by recording 5.
beats of Mean Solar Chronometer 234.

G. P. B. Brewer.

~~4.7~~	0.9	1.0	1.2	1.4	1.5	1.7	1.9	2.0	2.2	2.4	2.5	2.7
5.7	5.8	6.0	6.2	6.4	6.5	6.7	6.9	7.0	7.2	7.4	7.5	7.7
10.7	10.9	11.0	11.2	11.4	11.5	11.7	11.9	12.0	12.2	12.3	12.5	12.6

2.9	3.0	3.1
12.9	13.0	
12.8	13.0	

57.8	59.9	0.1	0.2	0.4	0.5	0.7	1.0	1.1	1.2	1.4	1.6	1.7	1.9	2.0
4.8	4.9	5.1	5.3	5.4	5.6	5.7	5.9	6.1	6.2	6.4	6.6	6.8	7.0	7.1
9.9	10.0	10.1	10.3	10.4	10.6	10.8	11.0	11.1	11.3	11.5	11.6	11.8	12.0	12.1
14.8	15.0	15.2	15.3	15.5	15.6	15.8	16.0	16.1	16.3	16.5	16.6	16.8	17.0	17.1
19.8	20.0	20.2	20.3	20.5	20.6	20.8	21.0	21.1	21.3	21.5	21.6	21.8	22.0	22.1
24.9	25.0	25.2	25.3	25.5	25.7	25.8	26.0	26.1	26.3	26.5	26.7	26.8	27.0	27.1
29.9	30.0	30.2	30.3	30.5	30.7	30.8	31.0	31.2	31.4	31.8	31.7	31.8	32.1	32.2
34.8	35.0	35.2	35.4	35.5	35.7	35.8	36.0	36.2	36.3	36.5	36.7	36.8	37.0	37.2
39.9	40.0	40.2	40.4	40.5	40.7	40.8	41.0	40.2	40.4	40.5	40.7	40.9	41.0	41.2
44.9	45.1	45.2	45.4	45.6	45.8	45.9	46.1	46.2	46.4	46.6	46.7	46.9	47.1	47.3
49.9	50.1	50.3	50.4	50.6	50.8	50.9	51.1	51.2	51.5	51.6	51.7	51.9	52.1	52.2
54.9	55.0	55.2	55.4	55.5	55.7	55.9	56.1	56.3	56.4	56.5	56.8	56.9	57.1	57.2
27.30	27.50	27.25	27.83	27.99	28.17	28.31	28.52	28.68	28.83	29.02	29.17	29.31	29.52	29.65
62.2														

Number of separate figures

0	1	2	3	4	5	6	7	8	9	
22	21	23	13	15	15	13	14	23	16	(Rough count of all)
8	7	6				1	7	5		Subtract last 3 minutes.
14	10	17	13	15	15	13	13	16	12	1 st 12 minutes
16	13	17	13						13	
16	13	17	13	15	15	13	14	17	13	12 th 10 [✓]

See preceding page —

In 12th 10th there will be found the following number of final figures of tenths of a second.

0 16

1 13

2 17

3 13

4 15

5 15

6 13

7 14

8 17

9 13
146

From 0.0 to 0.5

73½

0.5 to 1.0

72½

Sum
The

That is, the tenths read off by the scale fill the following portions of the second

0.0 from -0.055 to +0.055

.1 +0.055 .164

.2 .164 .260

.3 .260 .349

.4 .349 .452

.5 .452 .555

.6 .555 .644

.7 .644 .740

.8 .740 .856

0.9 0.856 0.945

mean

And the ~~probable~~ error of any tenth read off by the scale will be ± 0.0505 .

From 0

July 27, 1859.

New Nebula by H. P. Tuttle

$$\text{chron. } 236 = \begin{array}{r} 17 \quad 41 \quad 6 \\ + 1 \quad 26 \\ \hline \end{array}$$

236

$$\begin{array}{r} 17 \quad 39 \quad 40 \\ \hline \end{array}$$

$$\text{E. h.} \quad \begin{array}{r} 1 \quad 36 \quad 35 \\ \hline \end{array}$$

$$\text{R} \quad \begin{array}{r} 19 \quad 16 \quad 15 \\ \hline \end{array}$$

$$\text{E. H.} = \begin{array}{r} 12^h \quad -10^m \quad 23^s \quad 25^s \\ = 1^h \quad 36^m \quad 35^s \end{array}$$

$$\text{N. P. D.} = 52^\circ \quad 27'$$

$$\text{Dec.} \quad + 37 \quad 33$$

Appears as a faint cometary object in the Comet Seeker
In the Great-Refractor as a cluster just resolved of
2' or 3' in diameter.

Discovered by Minnick Dec 1853 Vids Anders Catalogue

Nemansa.

Approximate Place for July 28. - 12^h 36^m Comb.~~221° 7' 9"~~ ~~22~~

$$\alpha = 21^{\circ} 24' 32'' \quad \delta = -3^{\circ} 57' 3''$$

$$H.N. \quad -2.0 \quad H.N. \quad -13''$$

Nisse 21.621 9th May.

1825.0	21	25	3.00	- 1° 13' 5"
342 y.		+ 1	48	+ 9.0
		l	m	v
1859.5	21	26	51	- 1° 4' 5"

A

Nisse 21.624 8th 9th May

1825.0	21	25	8	- 1° 10' 9"
342 y.		+ 1	48	+ 9.0
		.		
1859.5	21	26	56	- 1° 1' 9"

B

624-621

1825.0	+ 5.12	+ 2' 31" 5
		+ 0.3
1859.5	+ 5.12	+ 2' 31.8

Object discovered by M.P.J. July 28th 1859.

(P?) ref * / 5 beats. at 19 3. about

236 = 19 24 30.6
 26 4 7 43

+ 5° 36'

(h) 1919

Search for Nemansa.

a	*	~~11~~	3 49	23.2
b		11/12	19 58	38.3
c		11	9 30	19 43 58.2 ?

Same stars

—

—

		26.3
		41.4
19	46	1.5

a	48	39.8
---	----	------

b

Preceding star of comp. = A

~~A~~

50 59.3

a	3 44	26.4
b	9 44	41.5
c	9 17	19 58 1.4

a

b

c

c'

		17.7
		32.7
19	58	52.8

* Comp. with c,

c' Precedes c

c'	7 40	57.1
c	4 06	7 58.6 (3.6)

13.5

20.2

6.725

37.0

43.9

20	7	57.7
	8	4.5

14 14.6
21.4

14 46.3
53.4

20 15 5.4
12.5

19 47.1
54.4

20 20 12.5
19.8

20 24 20.9
28.5

Nemansu

c'	8' 39"	20	26	2.5	—	7
A	0 32		27	54.7	58.7	1
B	3 35 (5?)			58.9	—	

c'	9' 02"		29	51.?	55.1	
A	0 59			~~47.8~~	47.5	
B	3 28		30.	48.		

c'	0 32		31	50.4	54.2	
A	1 28		33	42.6	46.6	
B	3 59			—	51.4	

c'	3		34	57.8		
c		20	35	5.6		

c' - c + 29"

Magnitude - 10/11. or 10.6 10.7

Not much above the 11th.

c' is the planet Nemansu

c' 20 26 28.5 32.4 }
 A 28 20.5 24.5 }
 B 28 25.4 29.4 }

By Spring Governor. Nemausa

c' 29 16.0 20.0 }
 A 31 8.3 12.2 }
 B 13.0 17.0 }

c' 32 16.2 20.1 }
 A 33 8.4 12.4 }
 B 13.3 17.2 }

⑤1 - x A.

20 26 30	- 1	52.0	52.1	.10	+ 8' 7"
29 18		52.3	52.2	.10 20	3
32 18		52.2	52.3	.10 20	4

20 29 14 - 1 52.18 + 8 4.7
 Temp. (62°) - 0.2
 Refr (Tables) + 0.3 ✓

20 29 22 - 1 52.19 + 8 4.8 (52) - A.
 E.L. + 1 51

20 27 31 Sid. Time
 8 23 16

12 4 15
 - 1 59

12 2 16 Mean Solar Time.

⑤1 - x B.

- 1	56.9	57.0	+ 8' 34"
	57.0	57.0	33
	57.1	57.1	33
- 1	57.03		+ 5 33.3

Temp.

Refr

- 0.2

+ 0.2

12 2 8 m.s.t

- 1 57.03

+ 5 33.3

(53) - B.

Reduction to Apparent Place, of A and B.

1859p
 A. Weiss 21.621 21^h 25^m 3.10^s - 4^h 13^m 27.9^s α^0 21 25 57^s
 1st part of procession 1 44.39⁺ ~~8~~ δ^0 - 4^o 9'0"
 2nd — — 2.05⁺ + 8 53.5
 Mean Plu for 1859.0 α 21 26 49.54⁺ δ - 4 4 34.4⁺ $\sin \alpha^0$ - 9.7942
 + 3.80 + 13.5 $\tan \delta^0$ - 8.8607
 Apparent Plu 21 26 53.34 - 4 4 20.9 $\alpha_1 \alpha^0$ + 9.8934

B. Weiss 21.624 21 25 8.22 $-4^{\circ} 10' 56.4''$ α° 21 26 21
1 44 39 δ° - 4 6.5
2.03 $+ 8 53.7$
mean place for 1859.0 α 21 26 54.64 δ - 4 2 2.74
 $+ 3.80$ $+ 13.5$
21 26 58.44 - 4 1 49.2
 $\mu \alpha^{\circ}$ - 9.7940
 $\mu \delta^{\circ}$ - 8.8563
 α° + 9.8935

Reduction of Lalande

α° $21^{\circ} 25' 17.2''$ δ° $21^{\circ} 25' 42.2''$
 α° $-4^{\circ} 12' 16''$ δ° $-4^{\circ} 9' 40''$

$$\begin{array}{rcl} \sin \alpha^\circ & -9.7958 & -9.7956 \\ \csc \alpha^\circ & 8.8664 & 8.8668 \end{array}$$

$$\cos \alpha^\circ + 9.89247 + 9.89259$$

$\Delta \alpha$ A 3- ~~4.30~~ $\Delta \alpha$ + 15' 23" 8
 B 4.72 24.1

Lat. Mean of 3 obs. (1800.0) $21^{\circ} 25^m 44^s.45 - 4^{\circ} 19' 50''.3$
3 4.76 15 23.8

A. $1859.0 \quad 21 \quad 26 \quad 49.21 \quad -4 \quad 4 \quad 26.5$

$$\begin{array}{r} 21 \quad 23 \quad 49.80 \quad - \quad 4 \quad 17 \quad 21.1 \\ \quad \quad 3 \quad 4.72 \quad + \quad 15 \quad 24.1 \\ \hline \end{array}$$

B. 1859.0 21 26 54.52 - 4 1 57.0

Not used.

Q	336 35	
α	321 42	321 44
β	146 51	
$\log$	-8.8527	-8.8483
$\log \alpha$	-9.9448	-9.9447
$\log$	1.2451	1.2451
$\log \alpha$	+9.6756	9.6761
$\log$	0.0011	0.0011
$\log(\alpha)$	+9.9769	9.9768
$\log$	1.2986	1.2986
$\log(\alpha)$	-9.5026	9.5033
$\log$	-8.8516	-8.8472
f	37.07	37.07
g	+1.10	+1.09
h	18.90	18.90
i	+8.33	+8.34
j	+0.45	0.45
k	+4.71	4.71

57.07/57.06

13.49 13.50

July 28th 12^h 2^m 8^s 16^o Cambridge m. s. t. Nemansa.

21 26 53.34

- 1 52.19

21 25 1.15

- 4 4 20.9

+ 8 4.8

- 3 56 16.1

(51) by comparison with W. 21, 621

21 26 58.44

- 1 57.03

21 25 1.41

- 4 1 49.2

+ 5 33.3

- 3 56 15.9

(51) by comparison with W 21. 624

Star. Ang. - 0^h 57^m 6

Par. X Δ - 0^s 106 + 6^s 16

Sent to Dr. Brinnow July 30

Observation of Nemansa.

Date.	Camb. m.s.t.	(51) - *	(51) app. Par. X Δ	(51) app. Par. X Δ.	Star of Comp.
1859 July 28 th	12 ^h 2 ^m 8 ^s 16 ^o	Δα - 1 ^s 52.19 Δδ + 8 ^s 4.8	21 ^h 25 ^m 1.15 - 0.106	- 3 ^h 56 ^m 16.1 + 6 ^s 16	a.
"	12 ^h 2 ^m 8 ^s 16 ^o	57.03 533.3	25 1.41 0.106	56 15.9 6.16	b.

Mean Places for 1859.0 of Comparison = Stars.

a

b

21 26 49.54

- 4 4 34.4

W. 21. 621

26 54.64

- 4 2 2.7

— 21. 624

The stars occur each 3 times in Lalander but their places do not agree^{very} well, either with each other or with Bessel.

Solar Eclipse

July 29 1859

Beginning Observed by G. P. B. Sid. Chron No 236 B & S
5 ft Equatorial

14 3 30.0 - 98 beats

49.0

14 2 41.0

1 28.6

Sid. Time 14 1 12.4 5 21 44.3

8 27 12.9 8 27 12.9

5 33 59.5 13 48 57.2

54.7 13 50 28.7

hamb. m.s.t. 5^h 33^m 04.8 236 fast 1 28.5

M.T.C. = 5 23 00.0

236 14^h 50 25.7

M.T.C. fast 2 8.4 *

5 20 51.6

52.7

5 21 44.3

EC 14 12 00.0

236 14 11 33.4

26.6

E.C. fast 1 55.2

236. fast 1 28.6

R. T. Paine

with State Eq 5 33 00.4

4 ft ship

The time noted was perhaps a little too late as I was not looking precisely at the point on the limb where the contact took place. The limb was tranquil - The sun was obscured in a dense cloud a few seconds after the first contact
G. P. B.

* This correction of M. T. C. has been obtained from the correction of July 27 by applying the rate for 2 days. A. H.

July 29. 1859.

Solar Eclipse.

Beginning observed by A.H. with Finder of Gr. Equatorial

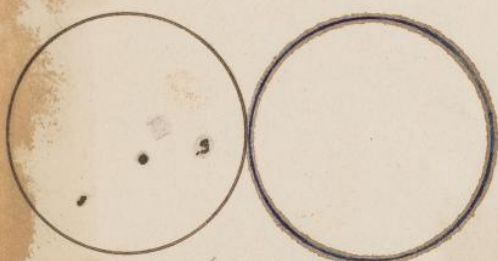
E. C. =	14 ^h	3	19.8
		1	55.2
Sid. Time	14	1	24.6
	8	27	12.9
	5	34	11.7
			54.8
Calc. m.s.2.	5	33	16.9

The observation is two or three seconds too late

July 29. 1859.

Solar Eclipse.

Beginning observed by H. P. Tuttle



First contact
at 5^h 33^m 8^s.4

Partial Eclipse of the Sun July 29th
A thin cloud covered the sun
at the first contact, but its limb
was nicely defined and quite free
from motion. The telescope used
was a Fraunhofer of about $2\frac{5}{8}$ apera-
ture, and a power of about 20

The time of the first contact was
5^h 33^m 8.4 C. M. T. In less than
twenty second after the contact,
the sun became obscured behind
a dense nimbus cloud, and did not
appear until after the end of the
eclipse

H. P. Tuttle

1859 Aug 18th

hemama

(51)

Cambridge

10^h

d

21

21

44

✓

- 2.1

- 17"

H.M.

Weisse 649

1859.8

{

2

21

27

44

✓

- 2.1

- 17"

{

d

- 4°

21.4

Star of the 7th mag. (W. 656) follows 649
And is faint13^h 41

12' 3.4"

Nemansas

(51)

Jart

1859 Aug. 1. G.P.B. obs. I.H.S. records.

Cloudy.

122	33 ^m	✓	<u>wire</u>	25.4	-1	same	12
222				~~25.4~~	-2		

Nemansa

1859 Aug. 6th9^h 24^m Camb m. s tBy Ephemeris
Cor. of Eph.
Assumed
$$\begin{array}{r} \alpha \quad 21^h \ 16^m \ 48^s \\ + \quad 36 \\ \hline 21 \ 16 \ 84 \\ \hline 21 \ 17 \ 24 \end{array}$$

$$\begin{array}{r} \delta \quad -4^\circ \ 57' \ 9'' \\ + \quad 1.6 \\ \hline -4 \ 56 \ 3 \end{array}$$

	312	21	14	158
Waste H 21	320	21	14	33.0
	325	21	14	41.1

$$\begin{array}{r} -5^\circ \ 5' \ 00'' \\ -5^\circ \ 0' \ 20'' \\ -5^\circ \ 2' \ 30'' \end{array}$$

$$\begin{array}{r} \frac{8}{9} \frac{2}{9} \\ 9 \text{ mag.} \\ 9 \end{array}$$

6.0

22.0

$$226 = 17 \frac{56}{58} \quad 2.2$$

(51) follows * (14) by 5.1

AR on Spr. Gov.

$$\begin{array}{l} \text{H} = \text{H} \\ \text{E} \\ \text{mag} \text{ E} \\ 15 \text{ mag} \end{array} \quad (51)$$

Scale

1	27"	8 mag
6	09	9-10
4	00	9
8	08	11

D

E

F

(51)

0. 48

5. 30

3. 18

7. 27

B. S. B.

B. S. B.

Aug 6,

Kernansa.

Scale

1' 43"

6 26

4 14

8 23

S

H

ing E

(51)

c c c

c c c

S

H

ing E

(51)

1 46

6 28

4 16

8 25

c c c

W 21. 387

21 15 31.15

- 5 1 5.5

- 9

12 46.2

8 8 48.8

The star observed above for Kernansa proved not to be the planet.

Aug. 6.

Nemusa.

G = 35. W, 21

nearby (51) 2.6.18 47 0.0 - 4.0 2.30
2.3 - 6.3

Scale
5' 12" 41" 9 mag
5' 53" 11 "

B.D.

G 47 28.7 - 32.6 2.25
(51) 30.9 - 34.9

4 37
5 14 41

G 47 54.3 - 58.3 2.30
(51) 56.6 - 0.6

4 05
4 46 41

G ~~right~~

3 56

(51)

B.D. D

G 48 52.4 - 56.5 2.25
(51) 48 54.7 - 58.7

3 55 39
4 24

L.B.

G 49 27.4 - 31.3 2.25
(51) 49 29.6 - 33.6

3 43 40
4 23

G 50 1.7 - 5.7 2.20
(51) 50 3.9 - 7.9
12 = 2.26

3 22 40
4 02
48 = 40.03

18 47 4.3

47 32.9

47 58.6

48 56.7

49 31.6

50 5.9

18 48 32.

18 48 32

2 13

18 46 19

4 58 45

19 47 34

1 36

19 46 58

no corr for refr. or temp.

Aug. 6.

Break

Nemusa.

Scale

D E.C. =	19	50	40.0 - 44.1	7.05
E		50	57.1 - 61.1	8.35
F		51	5.4 - 9.5	
G		53	42.3 - 46.3	2 36.85

0	06	4' 41"
4	47	2 12
2	35	6 00
8	35	

W. H. 21. 312.
320
325
387.

D	19	54	246 - 28.5	7.00
E		54	41.5 - 45.6	8.30
F		54	49.8 - 53.9	2 36.90
G		57	26.8 - 30.7	

0	38	4 42
5	20	2 11
3	09	6 00
9	09	

$$D - E = - 7.02 \quad - 4' 41.5$$

$$E - F = - 8.32 \quad + 2 11.5$$

$$F - G$$

$$E - G = - 2 36.87 \quad - 6 00.0$$

(Tables) $\text{refr.} = - 0.01 \quad - 0.2$

$$\text{Temp (62)} \quad + 0.2$$

$$E - G \quad 2 36.88 \quad 6 00.0$$

$$D - G \quad - 3 \quad 2.23 \quad - 8 30.0$$

$$\text{refr.} \quad - 0.01 \quad - 0.3$$

$$\text{Temp} \quad + 0.3$$

$$D - G \quad - 3 \quad 2.24 \quad - 8 30.0$$

$$E - G \quad - 2 \quad 45.20 \quad - 3 \quad 48.5$$

$$\text{refr} \quad 0.00 \quad - 0.1$$

$$\text{Temp} \quad + 0.1$$

$$E - G \quad - 2 \quad 45.20 \quad - 3 \quad 48.5$$

Reduction of Stars. of Aug. 6.

S. W. 312	21	12	28.98	-5°	13'	29.3	$A = 21^{\circ} 15' 20''$
Proc		+1	47.12		+8	29.6	$\omega = -5^{\circ} 9.5'$
1859.0	21	14	16.10	-5	4	59.7	$m A = 9.8226n$
			+3.98			+10.8	$on A = 9.8774$
	21	14	20.08	-5	4	48.9	$5d = 8.9554n$
		3	2.24		8	38.0	
G	21	17	22.32	-4	56	18.9	
H. W 320	21	12	46.23	-5	8	48.8	$A = 21^{\circ} 13' 40''$
Proc		+1	47.08		+8	30.1	$\omega = -5^{\circ} 4' 35''$
1859.0	21	14	33.31	-5	0	18.7	$m A = 9.8220n$
			+3.97			+10.8	$on A = 9.8739$
	21	14	37.28	-5	0	7.9	$5d = 8.9485n$
		2	45.20		3	48.5	
G	21	17	22.48	-4	56	19.4	
I. W 325	21	12	54.33	-5	10	58.7	$A = 21^{\circ} 17' 48''$
Proc		+1	47.09		+8	30.4	$\omega = -5^{\circ} 6' 45''$
1859.0	21	14	41.42	-5	2	28.3	$m A = 9.8217n$
			+3.97			+10.8	$on A = 9.8741$
	21	14	45.39	-5	2	17.5	$5d = 8.9516n$
		2	36.88		6	06.0	
G	21	17	22.27	-4	56	17.5	
G. W 387	21	15	31.49	-5	5	5.9	$A = 21^{\circ} 16' 25''$
Proc		+1	47.01		+8	35.5	$\omega = -5^{\circ} 0' 49''$
1859.0	21	17	18.50	-4	56	30.4	$m A = 9.8160n$
			+3.97			+11.0	$on A = 9.8785$
	21	17	22.47	-4	56	19.4	$5d = 8.9430n$
G from the Stars	21	17	22.36	-4	56	18.8	
G	21	17	22.42	-4	56	19.1	
(37) - *G			+ 2.26		+ 0	40.0	
(37)	21	17	24.68	-4	55	39.1	

Aug 6. 9^h 45^m 58^s Camb. m.s.t

Stars of Aug 6.

$$\begin{array}{rcl}
 312 & \alpha = 337^{\circ} 4' & H = 138.32 \\
 & \alpha = 318.34 & 318.34 \\
 & 295.38 & 97.6 \\
 & (312) &
 \end{array}$$

$$\begin{array}{rcl}
 g & 1.25983 & 1.25983 \\
 (G+a) & 9.98363n & 9.43053 \\
 \log \delta & 8.94917n & 0.69036 \\
 & 9.19263 &
 \end{array}$$

$$\begin{array}{rcl}
 h & 1.29336 & 1.29336 \\
 (H+a) & 9.99666 & 9.09202n \\
 \mu\delta & 0.00171 & 8.94746n \\
 & 1.29173 & 9.33284
 \end{array}$$

$$\begin{array}{rcl}
 +38.51 & +4.90 & \mu\delta \ 9.99829 \\
 +01.56 & +0.22 & 0.75205 \\
 +19.58 & +5.63 & 0.75034 \\
 10) 59.65 & +10.75 & \\
 +3.98 & &
 \end{array}$$

(320)

$$\begin{array}{rcl}
 \alpha = 317^{\circ} 4' & H = 138.32 & \\
 \alpha = 318.38 & 318.38 & \\
 \alpha + a = 295.42 & H + a = 97.10 &
 \end{array}$$

$$\begin{array}{rcl}
 1.25983 & 1.25983 & \\
 9.98349n & 9.42232 & \\
 8.94237n & 0.69216 & \\
 0.18569 & &
 \end{array}$$

$$\begin{array}{rcl}
 1.29336 & 1.29336 & \\
 9.99659 & 9.09606n & \\
 \mu\delta \ 0.00166 & 8.94072n & \\
 1.29161 & 9.33014 &
 \end{array}$$

$$\begin{array}{rcl}
 +38.51 & 4.92 & \\
 +1.53 & 0.21 & \\
 19.57 & 5.63 & \\
 59.61 & +10.76 & \\
 3.97 & &
 \end{array}$$

$$\begin{array}{rcl}
 9.99829 & & \\
 0.75205 & & \\
 0.75034 & &
 \end{array}$$

$$\begin{array}{rcl}
 337 & 4 & 138.32 \\
 318 & 40 & 318.40 \\
 \alpha + a & 295.44 & 97.12 \\
 & (325) &
 \end{array}$$

$$\begin{array}{rcl}
 1.25983 & 1.25983 & \\
 9.98342n & 9.43323 & \\
 \log \delta & 8.94547n & 0.69306 \\
 & 0.18872 &
 \end{array}$$

$$\begin{array}{rcl}
 1.29336 & 1.29336 & \\
 9.99656 & 9.09807n & \\
 \mu\delta & 0.00169 & 8.94378n \\
 1.29161 & 9.33521 &
 \end{array}$$

$$\begin{array}{rcl}
 +38.51 & +4.93 & 9.99831 \\
 +1.54 & +0.22 & 0.75205 \\
 19.57 & +5.63 & 0.75036 \\
 10) 59.62 & +10.77 & \\
 +3.97 & &
 \end{array}$$

(387)

$$\begin{array}{rcl}
 337 & 4 & 138.32 \\
 319 & 19.5 & 319.195 \\
 296 & 23.5 & 97.515
 \end{array}$$

$$\begin{array}{rcl}
 1.25983 & 1.25983 & \\
 9.98198n & 9.45056 & \\
 8.93683n & 0.71039 & \\
 0.17864 & &
 \end{array}$$

$$\begin{array}{rcl}
 1.29336 & 1.29336 & \\
 9.99590 & 9.13587n & \\
 \mu\delta \ 0.00161 & 8.93521n & \\
 1.29087 & 9.36444 &
 \end{array}$$

$$\begin{array}{rcl}
 +38.51 & +5.13 & \\
 +1.51 & +0.23 & 9.99839 \\
 19.54 & +5.63 & 0.75205 \\
 59.56 & +10.99 & 0.75044 \\
 +3.97 & &
 \end{array}$$

Occultation of β^2 Sagittarii, (which was not occulted)

Aug. 10. 1859. A.M.

86	19	57	00
236	19	56	22.2

Moon's Limb from Star, β^2 Sagittarii

236 = 19 ^h	16 ^m	0 ^s	61.566	Zero of Wires
	18	35	59.802	49.912
	19	50	59.104	49.882
	21	58	57.693	49.892
	23	45	56.491	
	25	25	55.259	

Memoranda Aug 21st 1859.

10^h Washington = 9^h 36^m Cambridge

eph.	315° 57' 1"	6° 57' 3"
corrected	316 7.0	6 55.7
	21 ^m 4 ^m 28 ^s	
Alt	- 28"	- 21"

Weiser 21.99 7^m 8^m 8^s mag.

1825.0	21 4 21	- 7° 10' 8"
	+ 1 48	+ 8.2

1859.0	21 ^m 6 ^m 9 ^s	- 7° 2' 6"
--------	---	------------

Aug 22	21 ^m 3 ^m 40 ^s	- 7° 4' 3"
--------	--	------------

1859 Aug. 21

Search for Neuman

H. M. M. M.

Star a

15.8

28.4

24.5

Star b

28.4

Group of stars c

46.0

Error in the date.

At 19^h 30^m 31^s L.At 19^h 32^m

a

4.5

b

5.0

c

d

3.0

e

2.9

19 50 34.3
10 42 2

1859 Aug. 22 for Nemara

a 19 57 24.7
2 ✓ 39.7

a 4 beats
d 10 1/2 beats at 19 58 30 ^{h m s} ✓

3 21

20 9 55.7 59.7

1859 August 22^d Nemata Orion G.P.B. Remer MS

236

Planet	3' 21"		20	9	55.7	59.7	} 34.85
Star	5 23	2 2		12	31.6	35.5	

Planet	4 05	2 3	13	28.3	32.1	} 35.95 12
Star	6 8	B. D.	16	4.2	8.1	

Planet	4 28	2 5	17	49.3	53.2	} 36.15 14
	6 33	2 3.1	20	20	25.4	

Planet 10/11 May

Zero of Portian limb $98^{\circ} 27'$

Aug. 22. 1859.

Nemansa

Ex Ther. 63.7

Bar 30.203
Alt Ther 70°

P. E.C. 20 10 25.1 - 39.1 36.05
* 13 11.1 15.2

14 7.8 11.6
16 43.7 47.6 35.95

18 28.8 32.8
21 4.9 8.9 36.10

clock error 20 14 25.9 2^m 36.03
sid line 20 11 44 ref cor 0.00
10 1 50 Temp
10 9 54 4x-2^m 36.03
comb. m.f. 10^h 8 40
14

2 3.1 El. 20 14 14
- 2 3.2
- 0.1
0.0
48 - 2 3.3

Aug. 22

Nemara

W. 21.99.

$$\begin{array}{r} 21^h \quad 4^m \quad 20.65^s \end{array}$$

$$\begin{array}{r} -7^\circ \quad 10' \quad 50.2'' \\ A = 21 \quad 5 \quad 16 \\ D = -7 \quad 6.6 \end{array}$$

sin A 9.83927 n

lg D 9.09597 n

4.65762

0.59286 + 3.92

+ 104.34

+ 108.26

cos A 9.85924

2.82271

2.69295 + 493.1

+ 1 48.26

21 4 20.65

21 6 8.91

+ 4.10

21 6 13.01

- 2 36.03

21 3 36.98

+ 8 13.1

-7 10 50.2

-7 2 37.1

+ 14.2

-7 2 22.9

- 2 3.3

-7 4 26.2

1859.0

$$\begin{array}{l} \Delta x \\ \text{Planet} \end{array}$$

$$\text{Camb. Aug. 22. } 10^h \quad 8^m \quad 14^s$$

Aug. 22

Memana

	g	1.2794	1.2794
G = 377 27		9.46 08 n	9.60 90
a = 316 32		9.09 18 n	0.8884
298 19		0.23 20	

H = 122 41	h	1.2885	1.2885
a 216 32		9.9920	9.2721
99 13		0.0033	9.0885 n
		1.2890	9.6440 n

+ 2.15		9.9967	+ 7.73
+ 19.02	t	0.8455	+ 6.95
+ 40.75		0.8422	- 0.44
61.55			+ 14.24
+ 4.10			

Aurora Borealis

Sept 1/2 1859

There was a fine Auroral display on Sunday ev'g last. At 2 A.M. the merry dancers over the whole sky & especially active at the South.

On several subsequent evenings Aurora has been strong. A well defined narrow & not very bright arch until 10^h 30 P.M. of the 1st. But at 1^h 30 A.M. a very brilliant display of red masses S. & E. of the Zenith seen by H.P.T. Vide his account in Comet seeking notes.

It was so light that print below the medium size of 800 books could easily be read.

Double Stars

Aug 26 1859

R. 18^h 01^m Dec 30° 33'

6^h mag
10^h ?

Aug. Pos	16° 40
Zero	00 28
	16 12

99 Herculis

Aug Pos	343 48
Dist	1".7

New Nebula

Elongated faint nebula
Longest Diam 80"

Dec $74^{\circ} 29'$

Visible in Comet Seeker

236 20 10 30
H W 1 43 9
18 27 21

L Finder of $3\frac{1}{2}''$ ap.

236 part $R = 18 24 55$

Discovered Sept 1 1859

by H. P. Tuttle

G. P. B.

236 slow E.C. = 50°

This Nebula is not in Sir John Herschel's
nor Dr. d'Arrest's catalogues

17 20 - 1.19
12 34 - 2.84

18 44 0.85
15 39 - 1.85 + 2.1
29
189
42
60.9

18 24 27 +74 29.2
- 28 + 5
1845 18 23 59 74 29.7 tan 0.55687

275° 56' in 9.99767
Answers Cat. p. 75 0.55454
1830.0 18 24 27 1.337 0.12613
prec. - 50.0 - 4.794 0.68067
1859.0 $\alpha = 18 23 37$ + 3.071
- 1.723

1830.0 74 29.2 29
prec. + 15507
74° 30' 43" 3446
49.967

Personal Equation.

1859 Oct. 20th Comparisons for Personal Equation between G.P.B.
and A. Sontag Great Refractor power 141.

The star was of 8th mag.

When G.P.B. lead the transit over the two wires
ended with a Break

" Sontag " " " Dots.

Personal Equation. ^{between} A.S. and G.P.B. A.S. observes later
 1859 Oct 20th

A.S.	10.6	G.P.B.	19.7	9.1	9.3	+0.10
	50.5		41.2			
	6.7		16.2	9.5	9.0	-0.25
	41.4		32.4			
	54.3		3.5	9.2	8.4?	—
	21.0 ?		12.6 ?			
	34.7		43.6	8.9	9.8	+0.45
	8.1		58.3			
	23.5		32.4	8.9	9.2	+0.15
	51.1		41.9			
	5.0		13.9 ?	8.9	9.7	+0.40
	39.5		29.8			
	52.2		1.3	9.1	9.5	+0.20
	27.3		17.8			
	40.5		49.5	9.0	9.1	+0.05
	12.8		3.7			
	23.6		32.6	9.0	9.2	+0.10
	54.7		45.5			
	5.0		14.0	9.0	9.3	+0.15
	38.1		28.8			
~~54.3~~	~~50.0~~	~~34.1~~	~~59.0~~	9.0	9.3	+0.15
~~22.6~~	~~20.3~~	~~113.6~~	~~11.0~~			
40.0	33.6	49.3	42.5	8.9	9.1	+0.10
	3.4		54.3			
13.6		22.6		9.0	9.3	+0.15
49.3		40.0				

(Turn over)

Personal Equation between A.S. and G.P.B.

1859 Oct. 20thA.S. 58.9
28.0G.P.B. 7.4
18.9

8.9 9.1 + 0.10

39.5

48.7

9.2 9.2 0.00

11.1

1.9

23.0

31.9

8.9 9.2 + 0.15

54.4

45.2

4.6

13.4

9.2 9.6 + 0.20

33.46

24.2

47.3

56.2

8.9 8.7 + 0.10

29.0

20.3

42.5

51.6

9.1 9.4 + 0.15

19.4

10.0

35.4

44.7

9.3 9.3 + 0.00

7.9

58.6

26.9

35.8

8.9 9.2 + 0.15

59.9

50.7

12.8

23.0

9.2 8.9 - 0.15

44.9

36.0

A.S. observes later 0.^s 107

1859Oct 26th

Search for

Mnemosyne

a 0 17

6.2

b 7 6

25.8

} Doubtful

57.7

16.3

7.4

23

20

26.1?

W. a 7 35
4 0

21 1.3

22 31.4

1 38

8 28

35

29.9

48.7

36

28.6

47.3

2 39

8 28

37

28.6

42.4

Oct 10th

8 10

39

28.7

35.3

✓

4 14

40

27.8

41

45.5

52.0?

58.6

4.8

c

33.8

7

c
7 13
1 111.8
24.8c
6 53
0 4044 13.7
26.66 51
0 41

45 26.7

6.7

7 11

46 39.9

a 0 42
b 7 30a 0 50
b 7 40a 1 22
b 8 15c 7 58
1 45

51 30 alt

c 7 50
1 38

2 52 30 circ

d
Ben. Star.57 45.7
58 4.7

δ 2' 41" 22.3
 Base of star 1 09 40.9

C 8 38 26.7
 D 2 24 39.7

a - 0 28 15.7
 b 6 22 24.6

c 10' 15" 52 57.6
 W 1004. Base of star - 0 10 54 9.4

1859 Oct 26 11^h 30^m

x 10

Planet-search

x 12

* Betel

x 11

* 11 d

a 10-11
x

. 12

13-14
x

x 6-10-11

x 11

x 10 c

x 11

x 11

x 10

Comet II 1839. Watson.

$T = 1839$ May 29. 2399.60. m.t.

$\pi = 75^\circ 9' 46.2$ }
 $\delta = 337 \quad 7 \quad 56.8$ } Mean Eq. 1839.0

$i = 84 \quad 9 \quad 3.2$

$\log q = 9.303308$

Motion Retrograde

From obs. Ann Arbor 23 Apr.
Camb. 27 Apr and May 2.

* e 2 ^h	16	58.3	9.18	
* f	17	28.97	8 9	
* g	18	0.2	2 34	Dr Peters says the 2 nd planet

* a	18	55.7	9 17	
* f	19	26.8	8 9	
* g	19	58.2	2 36	

Ar	2	20	29	} 2° 36' 10" () ?
	2	23	1.46	

27	12.8	9 15
----	------	------

27	(50.5)	8 7
----	--------	-----

28	21.4	2 32 or 33
----	------	------------

30		9 16
		8 8

33	50	<u>2 34 or 35</u>
		9 17
		8 7
		2 36

Reduction from 1825.0 to 1859.0

in R.A.

$$\Delta \alpha = 104.394 + (1.65762) \ln \alpha^\circ \text{ to } \delta^\circ$$

$$\Delta \lambda = (2.83371) \ln \alpha^\circ$$

Where $\alpha^\circ \delta^\circ$ denote R.A. and Dec. for 1842.0

from 1800.0 to 1859.0

$$\Delta \alpha = 3.14 + (1.89702) \ln \alpha^\circ \text{ to } \delta^\circ$$

$$\Delta \delta = (3.07311) \ln \alpha^\circ$$

Where $\alpha^\circ \delta^\circ$ denote R.A. and Dec. for 1829.5

from 1842.0 to 1859.0

$$\Delta \alpha = 52.200 + (1.35657) \ln \alpha^\circ \text{ to } \delta^\circ$$

$$2.53267 \ln \alpha^\circ$$

Boston Journal.

FRIDAY MORNING, MAY 6, 1859.

THE NEWLY DISCOVERED COMET. James C. Watson of Ann Arbor, Mich., who discovered a telescopic comet on the 23d ult., in the constellation Lynx, says it has increased very considerably in brilliancy since the date of the discovery, but will not be visible to the naked eye. It may, however, be seen very readily by means of a good spy-glass. The nucleus is now as bright as a star of the tenth magnitude, and the tail is estimated to be at least half a degree in length. He gives the following as the elements of its orbit: Perihelion passage 1859, May 28, 9711, Washington mean time; long. of Perihelion, $282^{\circ} 54' 55''$. 2; long. of Asc. Node, $19^{\circ} 38' 54''$. 3; inclination, $87^{\circ} 53' 35''$. 8; long. of Perihelion dist., 9.320172. Motion direct. These elements show that the comet is moving from the earth, and towards the sun.

Elements of the Comet 5.1859 (Computed from Elements II.)
12^h Wash. m. t.

Date	α	Δ	δ	Δ	δ	Δ
June 3	3 50 26	4.2	+17 01.6	0.0506	7.4560	
4	46 26	4.3	18 31.1	13.75		
5	42 46	8.2	20 1.5	2.72	5.90	
6	39 53	7.2	21 32.2	3.77		
7	37 12	6.3	23 2.6	3.75	0.590	7.5926
8	34 50	5.6	24 32.4	5.72		
9	32 44	5.0	26 1.5	3.72		
10	30 51	4.5	27 29.8	3.66		
11	29 10	4.0	28 57.2	3.62	0.653	9.6583
12	27 38	3.6	30 23.7	3.58		
13	26 15	3.3	31 49.1	3.54		
14	25 1	2.9	33 13.6	3.50		
15	23 54	2.7	34 37.0	3.46	0.710	9.7507
16	22 53	2.5	35 59.6	3.42		
17	21 56	2.3	37 21.2	3.38		
18	21 5	2.1	38 41.9	3.34		
19	20 17	1.9	40 1.7	3.31	0.709	9.8479
20	19 32	1.8	41 20.7	3.28		
21	18 51	1.7	42 38.9	3.24		
22	18 12	1.6	43 56.3	3.21		
23	17 36	1.5	45 12.9	3.18	0.833	9.9030
24	17 1	1.4	46 28.8	3.14		
25	16 28	1.4	47 43.8	3.11		
26	15 56	1.3	48 58.2	3.08		
27	15 24	1.3	50 11.8	3.05	0.903	9.9504
28	14 52	1.3	51 24.8	3.02		
29	14 21	1.3	52 37.0	2.99		
30	13 48	1.2	53 48.5	2.97		
July 1	3 13 15	1.1	54 59.4	2.94	0.980	9.9998

Stamper
July 3 26 18 + 31 48 7 - 3 + 0.4
26 13 48
16 13

Stamper
3 17 32 + 45 14.4

15 536 } 49 3.72
208 } 186
12 45 } 53 54.5

J.H.S.

