

KG
11365
181

H. 27

Equatorial. Vol. VII.

1858.

July 14th to Sept 25

Sold by T. Groom & Co., Stationers, India Building, 82 State St., Boston.

KG-11365.181



July 15th $A =$ Star preceding Eyr. Brook-
~~Star of Camp Antander - June 23rd~~

* A in center of field

236	= 16	1	3.0	Sec + 27' 45"
	6	20	23.0	
	9	40	40.0	
R of A	9	37	12.3	
		2	57.7	
Error of Chron		2	29	
Ref & Inst. Cor		-0.	28.7	

Setting the Eye piece central
 with solid part of frame of
 Micrometer we find for
 the Ref. + Inst. cor.

By μ Leonis -0.32

By * A 132.369 -0.32

16	4	4	57
7		2	4
9	4	2	53

16	53	34.5
7	10	38.0
9	42	52.5

126

16 44 37.0

18

45 31.0

131

53 34.5

54 9.2

19.8 11.7

236 = 16 49 32.92

236 fast 2 27.90

Sid. Time 16 47 5.02

7 32 58.10

9 14 6.92

7 32 11.36

1 30 78

46.74 9 12 36.74

Camb. m.t.

7 32 58.10

Cornet V. 1858 July 13 1858
stars a and b of about 9 mag.

236 = 16 44 57.0
 45 31.0

~~5' 18"~~ in middle of field
5' 20" over wire

236 fast 2 27.9
 16 42 29.1

$H = +7^h \ 2^m \ 4^s$
Is AR by instr. 9 40 25.1
Inst. corr. Ref - 31
 9 39 54
*(a) 16 51 0.5
 34.6

$\Delta\alpha = +28^\circ \ 6'$

$1' \ 36''$
 $3 \ 44$

$\delta - * (a) = -6^m \ 3.5^s$
 6 3.6

*(b) 16 51 44.0
 52 17.6

5' 20"

$\delta - * (b) = -6 \ 47.0$
 6 46.6

$\delta \ 16$ 53 34.5
 54 9.2

6' 20"

in middle of field
over wire

$H + 7^h \ 10^m \ 38^s$

$\Delta\alpha = +28^\circ \ 6'$

*(a) 16^h 59^m 38.0^s
 60 12.3

$2' \ 34''$
 $3 \ 46$

$\delta - * (a) = -6^m \ 3.5^s$
 6 3.1

* b
17 0 55.2

6' 16"

over wire $\delta - * (b) = -6^m \ 46.0^s$

46.6

42.0

139.6

46.53

The Stars of July 15 1858. are found in B.D. 349.

*a	Tab. AR	=	9 ^h	43 ^m	25.73	Dec	=	+ 28°	6'	37.9
	k	=		+	31.32	d	=		+	1.30
	k' $\delta - \delta$	=		-	0.00	d' $\delta - \delta$	=		+	0.12
AR	¹⁰⁰ 1828.5	9		43	57.05	sun ¹⁰⁰	+ 28°	- 6'	39.32	
Per				+	1			- 9	8.59	
*a	1858. AR	9		45	51.56	sun	+ 27	57	30.73	
*b	Tab. AR	=	9	44	8.92	sun	=	+ 28	10	20.5
	k	=		+	31.32	d	=		+	1.30
	k' $\delta - \delta$	=		-	0.01	d' $\delta - \delta$	=		+	0.20
AR	¹⁰⁰ 1825.0	9		44	40.23	sun ¹⁰⁰	+ 28	10	22.00	
Per				+	1			- 9	9.71	
1858. AR	9			46	34.71	sun	+ 28	1	12.29	
Red to app Pleu				+	1.30				+	1.72
*b app. AR	9			46	36.01	*b app sun	+ 28	1	14.0	
k - *b				- 6	46.53				+	0.20
Os app AR	9 ^h			39 ^m	49.48	Os sun	+ 28°	1'	16.0	

* a 1858.0	99 ^h	44 ^m 51.56	sun	+ 27	57	30.73
Red to app		+ 1.30			+	1.72
AR	9	45 52.86	sun	+ 27	57	32.45
~~0~~ - * a		- 6 3.42			+ 3	45.00
Os AR	9	39 49.44	Os sun	+ 28	1	17.45

July 15. 1858. 9^h 12^m 36.1 Camb. m.t.

For Precession of stars of July 15

$$1825 + 16 = 1841$$

$$1750$$

$$91 = y$$

$$-y \times 0.00009702 = -0.00883, \quad y \times 0.000308645 = +0.028087$$

$$+20.06442$$

$$+46.02824$$

$$1841.0$$

$$n = +20.05559$$

$$m = +46.05633$$

$$\begin{array}{l} * (a) \\ \text{const } \log 1.30222 \\ \sin \alpha 9.74770 \\ \tan \delta 9.72780 \\ 0.77772 \end{array} \quad \begin{array}{l} \text{sam } 1.30222 \\ \cos \alpha 9.91851n \\ 1.22073n \end{array}$$

$$\begin{array}{l} * 6 \\ \text{const } 1.30222 \\ \sin \alpha 9.74573 \\ \tan \delta 9.72872 \\ 0.77667 \end{array} \quad \begin{array}{l} 1.30222 \\ \cos 9.91940n \\ 1.22162n \end{array}$$

$$\text{num} = +5.9940$$

$$46.0563$$

$$15) +52.0503$$

$$\text{Pre in AR} = +3.470$$

$$33$$

$$10410$$

$$10410$$

$$+114.510$$

$$\text{in den} = -16.624 \text{ in AR}$$

$$33$$

$$49872$$

$$49872$$

$$-548.592$$

$$\text{num} = +5.97957$$

$$+46.05633$$

$$15) 52.03590$$

$$+3.469$$

$$33$$

$$10407$$

$$10407$$

$$+114.477$$

$$\text{in den} = -16.658$$

$$33$$

$$49974$$

$$49974$$

$$-549.714$$

Reduction of * 6 to apparent place

$$f = +30.61 \quad g = +15.688 = 328.10 \quad h = +20.19 \quad \mathcal{H} = 158.37 \quad i = 3.20$$

$$\alpha = 146.38$$

$$\alpha = 146.38$$

$$g + \alpha = 114.48$$

$$\mathcal{H} + \alpha = 305.15$$

$$\log g = 1.19535$$

$$1.19535$$

$$\sin (g + \alpha) = 9.95798$$

$$\cos 9.62268n$$

$$\tan \delta = 9.72598 + 30.61$$

$$0.81803n$$

$$0.87931 + 7.574$$

$$38.184$$

$$\log h = 1.30514 - 18.677$$

$$1.30514$$

$$\sin (\mathcal{H} + \alpha) = 9.91203n$$

$$\cos 9.76129$$

$$\sec \delta = 0.05413$$

$$\sin \delta 9.67185$$

$$1.27130n$$

$$0.73828$$

$$+5.474$$

$$+2.825$$

$$+8.299$$

$$-6.577$$

$$+1.722 \text{ corr in den}$$

$$\text{corr. in AR}$$

$$+1.30$$

$$\cos \delta 9.94587$$

$$i 0.50515$$

$$0.45102$$

1858 July 15²

R paper center of field 236 16 44 57
 236 fast 2 28

16 42 29

H w 7 2 4

9 40 25

R 4 39 48
 Inst Cor & ref. = - 37

236 = 16 13 28.0
 6 36 44.0
 9 36 44.0
2 30

9 34 14
 Inst corr - 30
 9 33 44

* α_2 236 = 16 16 32.0
14 17 37.5
 1 5.5

α_1

Cornet V. 1858. July 19. 1858
Stars of June 28

choon 236	α_1 * 16 ^h	19 ^m	30.2 ^s	Diff	Scale	
	α_2	20	5.5	1 35.3	1.53	4' 12"
					6 05	

choon 236	α_1	16	22	25.0	37.7	65.1	Scale 3.03"
	α_2		24	0.7	13.0	40.5	7.76
	A		25	15.2	18.2	45.5?	1.57

* α_1 - * α_2 Diff AR	= - 1 ^m	35.3
	- 1	35.7
	- 1	35.3
	- 1	35.4
Mean	- 1 ^m	35.42

Diff dec	- 4' 12"
	4 13"
Mean	= - 4' 12.5"

* α_1 - * A Diff AR	= - 2 ^m	40.2
	- 2	40.5
	- 2	40.4
Mean	- 2	40.37

0.02 = cor for ref.]
Diff dec + 1' 6"

app. AR of * A June 28.	9 ^h	33 ^m	29.06 ^s	app. dec + 26°	33'	32.8"
α_1 - A		- 2	40.35		+ 1	6.3 + 0.3
app. AR of α_1	9	30	48.74	app. dec of α_1 + 26°	34'	39.8"
μ - *			- 47.37		- 7	4.4
μ R	9	30	01.37	+ 26	27	34.7

app. AR of α_2	9 ^h	32 ^m	23.96 ^s	app. dec + 26°	38'	53.6"
α_1 - α_2		- 1	35.42		- 4	12.5
app. AR of α_1	9	30	48.54	app. dec of α_1 + 26°	34'	41.1"
$\Delta \alpha$			- 47.37	$\Delta \delta$	- 7	4.4
Is app. AR = 9 ^h	30 ^m	01.37 ^s	Is app. dec = + 26°	27'	36.7"	

1858. June 28. 9^h 58^m 36.1^s

July 19. 1858 Comet V

South true * h of 8 mag

EC =

236 feet of EC 2^m 49.30

EC slow 9.97

236	*	h	16	33	23.0	9.08	diff	236 feet of EC	2 ^m 38.33
	*	g		34	55.0	4.30	4.33		

	h	m	s	"	diff AR	*h = -1 ^m 30.5
	16	36	58.5	8.44		
*h		38	29.0	5.45	diff	*h = -2' 5.0

	h	m	s	"	diff	2.3
	16	39	41.7	54.0	22.0	3.55
*h		41	11.8	24.5	52.2	5.38

	h	m	s	"	diff	2.3
	16	42	52.8	6.0	34.0	4.41
*h		44	23.2	36.0	3.8	6.46
*g		45	54.8		46 35.3?	2 12 4.34

*h	236 = 16	36	58.5	diff AR = -1 ^m 30.5
		39	41.7	1 30.1
		39	54.0	1 30.5
		40	22.0	1 30.2
		42	52.8	1 30.4
		43	6.0	1 30.0
		43	34.0	1 29.8

236 = 16	38 2	269.0	1.5
	40	57.25	30.21
			Mean = -1 ^m 30.21
			Δα = -1 ^m 30.21 ref. = -0.04

*h	236 = 16	36	58.5	diff	*h = -1 ^m 30.25
	16	39	54.0	diff	*h = -2' 5.0
	16	43	6.0		2 3.0

	h	m	s	"	diff	13.0
	16	39	59.5	11.9	4.33	
	16	41	37.25		0.40	
	1	37.75			3.93	ref. = -0.50
					4.4	

Reduced by C.W. J. Esq.

Lalande 19313
19314

$$\begin{array}{r} .070 \\ .007 \\ + 16.494 \\ \hline 16.501 \end{array}$$

$$\begin{array}{r} 131952 \\ 82470 \\ \hline 60 \overline{) 1356652} \quad (1356.65) \\ 60 \\ \hline 336 \\ 300 \\ \hline 36 \end{array}$$

$$\begin{array}{r} + 3.486 \\ \hline 3.486 \end{array}$$

$$\begin{array}{r} 27888 \\ 17430 \\ \hline 60 \overline{) 202188} \quad (3.22.188) \\ 1800 \\ \hline 22 \end{array}$$

Lal. 19354

$$\begin{array}{r} 9.42.27.23 \text{ N.P.D. } 61.22.11.6 \quad (1800) \\ + 3.21.90 \\ \hline 9.45.49.13 \end{array}$$

$$+ 16.00.48$$

$$61.38.12.08$$

$$8 + 28.21.47.92 \quad (1858.0)$$

$$(1858.0)$$

$$h \text{ Lal. } 19313 \text{ } 19314 \text{ } 9.44.17.35 \text{ Sec} + 28.26.25.85$$

$$\begin{array}{r} 9.45.49.13 \\ + 1.36 \\ \hline 9.45.50.49 \end{array}$$

$$\begin{array}{r} 9.45.50.49 \\ - 3.20.00 \\ \hline 9.42.48.49 \end{array}$$

$$9.42.48.49$$

$$8 + 28.21.47.92$$

$$+ 1.36$$

$$28.21.49.39$$

$$+ 2.29$$

$$28.24.18.99$$

end

$$9.54445$$

$$0.56820$$

$$0.51265$$

$$+ 2.635$$

$$+ 8.187$$

$$- 6.614$$

$$+ 1.573$$

$$\begin{array}{r}
 236 \text{ feet} \\
 \begin{array}{r}
 16 \quad 41 \quad 37.25 \\
 \hline
 2 \quad 39.33 \\
 16 \quad 38 \quad 57.92 \\
 7 \quad 48 \quad 44.33 \\
 8 \quad 50 \quad 13.59 \\
 \hline
 1 \quad 26.81 \\
 8^h \quad 48^m \quad 46.72
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 7 \quad 47 \quad 57.55 \\
 \hline
 46.74 \\
 7 \quad 48 \quad 44.33
 \end{array}$$

Camb. m.t. $8^h \quad 48^m \quad 46.72$

1858 Mer Plan of * p Saluti 19 213 AR $9^h \quad 44^m \quad 17.35$ Dec $+28^\circ \quad 26' \quad 25.85$
 Red to app Plan $+1.36$ $+1.57$
 app Plan of * p AR $= 9^h \quad 44^m \quad 18.71$ Dec $+28^\circ \quad 26' \quad 27.42$
 $\Delta\alpha = -1 \quad 30.21 \quad \Delta\delta = -2 \quad 03.93$
 Es app AR $= 9^h \quad 42^m \quad 48.50$ Dec $+28^\circ \quad 24' \quad 23.49$

Revised

1858 July 19th $8^h \quad 48^m \quad 46.7$
 $p \text{ app. } R = 9^h \quad 42^m \quad 48.5 + 7$ } $\Delta\alpha$ next
 $\Delta\delta = +28^\circ \quad 24' \quad 18.6$ } $\Delta\delta$ next

Red of * p to app Plan

$f = +31.20 \quad g = +15.90 \quad G = 328^\circ \quad 34' \quad h = +20.11 \quad H = 155^\circ \quad 0' \quad i = +3.70$
 $\alpha = 146 \quad 4 \quad \lambda = 146 \quad 4$
 $G + \alpha = 174.48 \quad H + \lambda = 30.1 \quad 4$

$\log g = 1.20140$
 $\log (g + \alpha) = 9.95798$
 $9.73356 \quad 31.200$
 $0.89294 \quad + 7.815$
 40.015

1.20140
 $9.62268n$
 $0.82408n \quad -6.614$

$\log h = 1.30341 - 19.570$
 $\log h + \lambda = 9.93276n + 20.445 \quad \cos$
 $\sin \delta = 0.05555 + 1.363 \quad \sin \delta$
 $1.29172n$

1.30341
 9.71268
 9.67680
 $0.69289 \quad + 4.931$
 13.256
 $9.94445 \quad + 8.187$
 $0.56820 \quad - 6.614$
 $0.51265 \quad + 1.573$

Lalande 19313 & 19314 are = p but the APD of 19313 is 10" too small by comp. on July 19th with g.

19313	9	40	55.09	61	17	27.9		
				Cor		+10.0		3.487
	9	40	55.09	61	17	37.9	2c. var	- .008 2997
19314			55.24			37.1		3 481
	9	40	55.16	61	17	37.5		58
				28	42	22.5		27 848
prec 58 g.			+3 21.90		-16	1 1		174 05
	9	44	17.06	28	26	21.4		201 898
			+1.36			+1.6		3 ^m 21.90
red to ap. Eq								
Ap plane of p	9	44	18 42	28	26	23.0		-16.478 497
			-1 30 25		-2	4.4	2c. var.	- 084
Ap. VR	9	42	48.17	28	24	18.6		16.562
								58
								132496
								82810
								960596
								16' 00" 6
								5
								16.01.1

$$\begin{array}{r}
 7.9830 \\
 \log A \quad 4.6856 \\
 \text{mi} \quad 2.6686 \\
 \log A \quad 0.477 \\
 \hline
 3.0456 \\
 5'' \quad 0.6990 \\
 \hline
 3.7446 = 5554 \text{ miles}
 \end{array}$$

On the 19th The comet could be observed without difficulty with the mica scale ~~illumination~~ although there was a dense haze near the horizon through which it was seen - showing that it is in reality brighter than the average of telescopic comets which we can seldom ~~observe~~ observe in this manner - With a strong illumination (rendered necessary by the twilight) ~~there~~ at most of the diffused light of the comet was obliterated but there still remained a central nucleus 5" in diameter which could be observed with precision.

Comet has always shown a strong stellar nucleus but no tail.

Aug 29th P.M. Comet is visible to the naked eye
It has a tail of 2° (seen in Comet bucket)

July 31. 1858

V 1858 7.8:
 * = d of 6 mag

* (cl) 236 = 17^h 27^m 4.8^s center of field
 27 22.7? (in a hurry)

north of * (d) 1 field - 15"

$$\begin{array}{r} \text{field} = 11' 30'' \\ \hline 15'' \\ \hline 11' 15'' \end{array}$$

* 17 30 23.0
 30 37.0

* 30 46.0
 31 0.5

* 17 31 16.8
 31 30.6

$$\text{EC} = 17 50 0$$

$$236 = 17 53 21.5$$

$$236 / \text{EC} = 3 21.5$$

$$\text{EC} \text{ error} = 8.2$$

$$236 \text{ from S.T.} = 3 13.3$$

* (d) in center of field

$$236 = 17^h 32^m 28.5^s$$

$$236 \text{ from} = 3 13.3$$

$$17 29 15.2$$

$$\text{west H} = 7 35 18.0$$

$$\text{AR} = 9 53 57.2$$

$$\text{corr ref} = - 34.0$$

$$9 53 23.2$$

$$\text{Dec} = + 29^\circ 36'$$

$$\text{corr ref} = - 8$$

$$29 28'$$

* X = 7 mag in center of field

$$236 = 17 40 8.0$$

$$236 \text{ from} = 3 13.3$$

$$17 36 54.7$$

$$\text{H} = 7 47 58.0$$

$$\text{AR} = 9 48 56.7$$

$$\text{err ref} = - 35.0$$

$$9 48 21.7$$

$$\text{Dec} = + 33^\circ 11'$$

$$- 8$$

$$+ 33 3$$

$$\begin{array}{r} 148.5 \\ 594 \overline{) 0} \\ 340 \end{array}$$
$$9 \text{ h } 54 \text{ m}$$

1858 Aug 5th Donati's CometBy Brunner Ephemeris
cor of 2nd p.
30° 28' - 0° 13'R 10^h 00^m
+ 30° 15'
$$\begin{array}{r} 17.41 \\ 33 \\ \hline 522 \\ 5742 \end{array}$$
6th mag. B.A.C. 3409 R 9^h 51^m 25^s = A
Dec. + 30° 19' 22"
$$\begin{array}{r} 3.45 \\ 33 \\ \hline 1035 \\ 1035 \\ \hline 11385 \end{array}$$
BZ 406 B = 8th

$$\begin{array}{r} 9.58 \ 9.81 \\ - 1 \ 5.00 \\ \hline 9 \ 57.4.81 \\ + 1 \ 52.80 \\ \hline 9.58 \ 58.6 \end{array}$$

Red to app. + 1.3

9 58 59.9

A-X - 0 27 4

9.58 32 5

$$\begin{array}{r} 30^{\circ} \ 21' \ 10''.2 \\ + 36.6 \\ \hline 30.21.46 \\ - 9.34 \\ \hline 30 \ 12 \ 12 \\ + 0 \ 44 \\ \hline 30.12 \ 13 \\ + 1 \ 45 \\ \hline 30.13.58 \end{array}$$

30.21.46

- 9.34

30 12 12

+ 0 44

30.12 13

+ 1 45

30.13.58

C = 9th

$$\begin{array}{r} 9.58.13.10 \\ - 1 \ 5.00 \\ \hline 9 \ 57 \ 8.10 \\ + 1 \ 53.80 \\ \hline 9.59 \ 01.90 \end{array}$$

9 57 8.10

+ 1 53.80

9.59 01.90

30.18.5.1

+ 36.0

30.18 41

- 9 34

30 9 07

* C was recognized

* (b)

9 58 9.81

k - 1 5.00

k. d-b 0.00

1825¹⁰⁰ 9^h 57^m 4.81

Preu + 1 54.28

1858.0 9 58 59.09

Red to app. + 1.40

9 59 00.49

A-X - 27.39

Red to app. 9 58 33.10

9 58 34.54

Aug 5th 8^h 59.9

30 21 10.2

d + 36.6

d. d-b + 0.3

30' 21' 47.1

- 9 34.7

30 12 15.4

- 0.4

30 12 15.0

+ 1 49.0

30 14 4.0

30 14 4.9

30 14 4.9

computation of pre two pages for

not corr for refrac.

Vide 2nd page by B.A.C. 3409Aug 5th 8^h 59.9 Camb. mt.

Have examined reductions but cannot explain the discrepancy in R.

Aug 5 1858

North preceding * b

Zero of position of Scale
87.17

(239)* A 17^h 0^m 1.8^s 25.2 10.03

$$\begin{array}{r} 7\ 8.0 \\ 7\ 8.2 \\ \hline 7\ 8.1 = \text{diff.} \end{array}$$

 5^h 17^m = diff. 7 8.1 = diff.

1st win 7 9.8
 2nd win 7 33.4⁴
 * b 8 1.0 27.6 2.57
 149

196

8 42.0 5.0 6 15
 * b 9.1 27.1 9 33.0 28.0 4 29 150

10 17.0 41.0 5-27
 * 10 44.5-27.5 8, 2 27.2 3 40 147

11 30.0 5-4.0 4 58
 * b 5-7.2 27.2 2 1.1 27.1 3 07 150
 Mean 1'49.0 diff. adn

27.1
 27.5
 27.2
 27.6
 28.0
 27.2
 27.1

Mean 27.39 diff. AR 236 = 17^h 9^m 33.0
 236 feet 3 27.0
 Sid time = 17 6 6.0
 8 55 45.8
 8 10 20.2
 1 20.3
 8 8 59.9
 8 54 59.06
 46.74
 8 55 45.80
 bank. m. t.

Precession for α of Aug 5 1858

$$\begin{array}{r}
 .000308645 \\
 \hline
 91 \\
 .000308645 \\
 .002777805 \\
 \hline
 .0028086695 \\
 46.02824 \\
 \hline
 46.05633 = m
 \end{array}$$

$$\begin{array}{r}
 .0000970204 \\
 \hline
 91 \\
 .0000970204 \\
 .008731836 \\
 \hline
 .0088288564 \\
 20.86442 \\
 \hline
 20.05559 = n \quad 1641.0
 \end{array}$$

$$\begin{array}{l}
 \log n = 1.30222 \\
 \sin \alpha = 9.70224 \\
 \tan \delta = 9.76522 \\
 \log p = 0.76968 \\
 p = +5.884 \\
 m = 46.0563
 \end{array}$$

$$\begin{array}{r}
 15) 51.9403 \\
 +3.4627 \\
 \hline
 33
 \end{array}$$

$$10389$$

$$10389$$

$$60) 114.279 (1$$

$$60$$

$$54.28$$

$$\begin{array}{l}
 \text{same } 1.30222 \\
 \cos \alpha = 9.93643n \\
 p \log = 1.23865n \\
 p' = -17.324 \\
 \hline
 33
 \end{array}$$

$$51.972$$

$$51972$$

$$60) 571.692 (9$$

$$340$$

$$31.69$$

Red. to apparent place

$$f = +33.86 \quad g = +17.04 \quad \delta = 329^\circ 50' \quad h = +19.67 \quad \alpha = 139^\circ 00' \quad i = +5.57$$

$$\alpha = 149.45$$

$$\alpha = 149.45$$

$$(\delta + \alpha) = 119.35$$

$$\delta + \alpha = 288.45$$

$$\log g = 1.23147$$

$$\sin(\delta + \alpha) = 9.93934$$

$$\tan \delta = 9.76501$$

$$0.93582$$

$$+3.860$$

$$+8.626$$

$$42.486$$

$$\log h = 1.29380$$

$$\sin(\delta + \alpha) = 9.97632n$$

$$\sec \delta = 0.06337$$

$$1.33349n$$

$$+20.934$$

$$1.396$$

$$\log g = 1.23147$$

$$\cos = 9.69345n$$

$$0.92492n$$

$$\text{same } 1.29380$$

$$\cos = 9.50710$$

$$\sin \delta = 9.70164$$

$$0.50254$$

$$\cos \delta = 9.93663$$

$$\log i = 0.74586$$

$$0.68249$$

$$+3.181$$

$$+4.814$$

$$+7.995$$

$$-8.412$$

$$-0.417$$

B. A. 6 3409

$$1850.0 \text{ AN} = 9^h 50^m 57.17^s$$

$$N.P.D. = 59^\circ 38' 22.5''$$

$$\begin{array}{r} \text{Prec} \quad + 3.488 \\ \hline \quad \quad \quad 8 \\ \hline \quad \quad + 27.904 \end{array}$$

$$\begin{array}{r} 1858.0 \quad 9 \quad 50 \quad 57.17 \\ \hline 9 \quad 51 \quad 25.07 \end{array}$$

$$\begin{array}{r} \text{Red to app. pln} \quad + 1.37 \\ \hline 9 \quad 51 \quad 26.44 \end{array}$$

$$\begin{array}{r} \text{K} - * \quad + 7 \quad 8.10 \\ \hline 9 \quad 58 \quad 34.54 \end{array}$$

$$+ 16.98$$

$$8$$

$$135.84$$

$$2' 15.84$$

$$59 \quad 38 \quad 22.5$$

$$59 \quad 40 \quad 38.3$$

$$- 0.2$$

$$N.P.D. \quad 59 \quad 40 \quad 38.1$$

$$\text{Sun} \quad + 30 \quad 19 \quad 21.9$$

$$+ 5 \quad 17.0 \quad \text{red corr for refra}$$

$$30 \quad 14 \quad 4.9$$

Red to app. plane

$$\log a = 8.8151n$$

$$A = 1.1085$$

$$9.9236n$$

$$- 0.856$$

$$- 0.615$$

$$b = 8.6153$$

$$- 1.471$$

$$B = 1.1734n$$

$$9.7887n$$

$$c = 0.5427$$

$$C = 9.8662$$

$$0.4089$$

$$+ 0.283$$

$$2.581$$

$$+ 2.844$$

$$d = 8.5188n$$

$$- 1.471$$

$$D = 0.9326n$$

$$+ 1.315$$

$$9.4514$$

$$\log a' = 9.0195n$$

$$A \quad 1.1085$$

$$0.1280n$$

$$- 1.34$$

$$- 6.37$$

$$b' = 9.6308$$

$$- 4.57$$

$$B = 1.1734n$$

$$12.28$$

$$0.8042n$$

$$- 12.46$$

$$- 0.18$$

$$c' = 1.2294$$

$$C = 9.8662$$

$$1.0956$$

$$d' = 9.7274$$

$$D = 0.9326n$$

$$0.6600n$$

Donati's Comet

1858

G.P.B. Observes C.M.T. Records

Aug. 19

Comet much brighter than at last observation - Nucleus equals star of 7th magnitude

(236)

18	12	12.2	13.6	Scale	4.24
----	----	------	------	-------	------

12	25.8				
----	------	--	--	--	--

18	12	55.7	29.9		
----	----	------	------	--	--

93.7

18	12	31.2			
----	----	------	--	--	--

Star of 9th mag. - perhaps 10th = a

*a	18	18	4.8	14.0
	18	18.8		

lost - two faint

Scale 4.48 Doubtful ± 4 Star of 9th = b Smaller star 2' north of b, and 11^s following
scale Strong wind blowing against the telescope

*b	18	20	20.6	14.1	5.04
----	----	----	------	------	------

x b	20	34.7	30.1		
-----	----	------	------	--	--

*b	21	4.8			
----	----	-----	--	--	--

p - * c

- 27 46.0

46.4

46.6

- 27 46.33

Cor ref.

+ 0.12

- 27 46.21

p - *

+ 1 16"

- - -

- - -

+ 1 16

+ 2.0

+ 1 18.0

Star of 8th mag = B.2 501

Scale

3.08

*c	18	39	58.2		
----	----	----	------	--	--

x c	40	12.2			
-----	----	------	--	--	--

*c	40	42.3			
----	----	------	--	--	--

236 18 12 31.2

fast 3 58.8

18 8 32.4

9 50 57.5

8 17 34.9

1 21.5

M.S.T. 8 16 13 4

Star 9-10 mag = d Scale

x d	18	40	51.1	6.20	± 5
-----	----	----	------	------	---------

x d	41	4.9			
-----	----	-----	--	--	--

Donat's Comet

1858 Aug 19 Continued

Star e

Star 9^h mag. = e BZ 501

x e

x e 18. 43. 20.7

sec^h
1.45

* e 18 43. 34.2

x e 18 44. 3.8

H 7.51..00 W Dec + 32.18

Star 10^h mag. = f

x f 18 50. 1.2?

7.40

x f 50 14.8

Star 6^h mag. = g BZ 501

* g 18. 52. 44.6

x g 59.2

7.55

x g 53. 28.2

BZ 501 $\delta_{\text{mag}} = c$ [c & g also recognised] 165

$10^h 43^m 2.59 + 32^{\circ} 16' 5.8$
 $-46.44 + 1 32.4$
 $-0.02 + 0.3$
 $10 42 16.13 + 32.. 17.. 38.5$
 $\text{prec} + 1 50.45 - 10 25.1$
 $10.. 44.. 06.. 58 + 32.. 7.. 13.4$
 Cor. to ap. place
 1858.0

Same Star

H.C. Lalande 20886

$10 40 52.37 57 34 32.4$
 $+ 3 14.30 + 18 17.2$
 $10.. 44.. 06.67 57 52 49.6$
 $+ 32 07 10.4$

~~BZ 501~~

$BZ 501 R 10^h 44^m 6.58 \text{ wt } \text{Dec.} + 32^{\circ} 7' 13.4$
 $H.C. 20886 10 44 6.67 1 32 7.. 10.4 1$
 $1858.0 10.. 44 6.61 32 7.. 12.4$
 $\text{Cor. to ap. place} + 1.49 - 3.1$
 $\text{Ap. R + c } 10.. 44.. 8.10 32.. 7.. 9.3$
 $R - * - 27 46.21 + 1 18.0$
 $R R 10.. 16.. 21.89 \text{ Dec } 32.. 8.. 27.3$

Aug. 19th 8^h 16^m 13.4 Cam. b. m. s. t.

$52 6.3$
 $13 13$
 $156 189$
 $52 63$
 $3) 676 3) 819$
 $22 206$
 $3.357 - 18.876 1800$
 $- 010 - 066 \text{ sec. var}$
 $3.347 18.942 1841$
 $33 33$
 $10.041 56 826$
 $100 41 56 826$
 $110.45 625.086$
 $10'.. 25'' 1$
 $3.357 18.876$
 $- 007 41$
 $3.350 18 917$
 $58 58$
 $26800 151 336$
 $16750 945 85$
 $194300 109 7.1 86$
 $3'' 14.30 18'' 17.2$

Red. to ap. place

$$\alpha = 10^h 44^m 06.6^s$$

$$\delta + 32.7$$

$$161^\circ 2'$$

$$g \quad 330 \quad 34$$

$$H \quad 125 \quad 40$$

$$g + \alpha \quad 131 \quad 36 \quad \sin \quad 9.8738 \quad \cos \quad 9.8221$$

$$H + \alpha \quad 286 \quad 42 \quad \sin \quad 9.9813 \quad \cos \quad 9.4584$$

$$g \quad +17.88 \quad \underline{1.2516} = \quad 1.2516$$

$$H \quad +19.28 \quad \underline{1.2851} = \quad 1.2851$$

$$1.1254 \quad 1.0737$$

$$\underline{1.2664} \quad \underline{0.7435}$$

$$\delta \quad 32 \quad 7 \quad \tan \quad 9.7578$$

$$\quad \quad \quad \sec \quad 0.0721$$

$$+ 8.38 = 0.9232$$

$$- 21.80 = \underline{1.3385}$$

$$i \quad + 6.80 \quad \underline{0.8325}$$

$$i \cos \delta \quad + 5.76 = \underline{0.7604}$$

$$\sin \quad 9.7256$$

$$1.0737 = - 11.85$$

$$\underline{0.4691} = + 2.95$$

$$\underline{0.8325}$$

$$0.7604 = + 5.76$$

$$+ 8.71$$

$$- 3.14$$

$$f \quad + 35.72$$

$$+ 46.10$$

$$22 \quad 30$$

$$\frac{2}{3} \cdot \frac{1}{10} \quad \underline{0.743}$$

$$+ 1.487$$

6^h BAC 3490R 10^h 6^m 55^s
+ 32° 11'32 24
6
32 184-5^h 364010 30 43
32° 43'

6/7 3661

10 34 13
32° 26'

1858 Aug. 20th Donati's Comet

G. P. Bond observed - Ex. Ast. Int'l. Recorder

Star g mag. = A

Comet north pol. star A, sp * B

Scale

Scale

* A 18. 06. 48.1 13.6 2.48
 * A 18 7. 17 29.5
 * A 7. 31.2

A 18. 13. 15.1 13.7
 B 13. 28.8 30.3
 B 18 13. 59.1

0.26"

Star B

A 18. 10. 25.4 13.8 5.10
 B 39.2 30.0
 B 11. 9.2

B 18. 21. 54.2 13.5 7.18
 B 22 7.7 29.6
 B 22 37.3

Star C

A - * A = + 3^m 37.3 + 2' 22"
 3 37.5
 3 38.0

C 4. 52.1 5.08
 C 18 25. 5.8
 C 25-35.4

Mean + 3 37.6
 236 = 18" 7^m 7.00

A - * B = - 8^m 39.1 - 6' 52"
 8 38.9

Hourly motion in AR = + 3.75
 " " Dec = + 24.3

8 38.2
 - 8 38.7

3 37.6
 motion in 6 27 + 0.41
 3 38.01

236 = 18" 13 34.33

236 part of EC 4 14.00

9 54 7.40

EC = 18 09 20.33

46.74

EC star 10.20

9 54 54.14

18 9 30.53

9 54 54.14

8 14 36.39

1 21.03

8 13 15.36 Camb. m. s. t.

Comet low in the twilight but red. concentrated
 & giving with traces of an incipient tail.
 The tail was of the full breadth i.e. not of the tad-pole type noted below
 This is 1st notice of tail



* A. B2 501. 9th may

3.4506							
33	10	13	5.57	+ 32	23	50.50	
10.3518			- 46.88			+ 85.99	
103.518			- 0.04			0.34	
113.8698	10	12	18.65	32	25	16.8	
			+ 1 53.87			- 9 51.3	
	10	14	12.52	32	15	25.5	

* B. B2 301 8th may

+3.422 1800.	10	25	23.51	+ 32	33	16.60	
-0.011 sur var			- 46.70			+ 1 29.18	
3.411 1841			- 0.04			+ 0.50	
33	10	24	36.77	+ 32	34	46.3	
10.233			+ 1 52.56			- 10 6.3	
102.33	10	26	29.33	+ 32	24	40.0	
112.563							

* B. Salanda 20440 9 may (2 obs.)

+ 3.4 22	10	23	10.87	57	17	33.1	
- 0.0 08			+ 3 18.01			+ 17 44.9	
3.414	10	26	28.88	57	35	18.0	
58				32	24	42.0	
27312							
17070							
198.012							

Precision for * A.

* B

const by	1.30223	same	1.30223	1.30223	1.30223
md	9.65230	wd	9.95110n	9.60253	9.96201n
lg	9.80180		1 25333n	609.80411	1.26424n
	0.75603	nom	-17.919	0.70907	
nom	= +5.70200			+5.117625	nm-18.375
	46.05633			46.05633	
15	51.75833			51.17395	
	3.45056			3.4116	

* A. B2 501. 9th may

3.4506							17.919
33	10	13	5.57	+ 32	23	50.50	33
10.3518			- 46.88			+ 85.99	53.757
103.518			- 0.04			0.84	537.57
113.8698	10	12	18.65	32	25	16.8	591.327
			+ 1 53.87	1	- 9	51.3	
	10	14	12.52	32	15	25.5	

* B. B2 301 8th may

+3.422 1800.	10	25	23.51	+ 32	33	16.60	in A.P.D.
-0.011 sur var			- 46.70		+ 1	29.18	+ 18.296 1800
3.411 1841			- 0.04			0.50	+ .077 sur var
33	10	24	36.77	+ 32	34	46.3	18.373 1841
10.233			+ 1 52.36		- 10	6.3	33
102.33	10	26	29.33	+ 32	24	40.0	55.119
112.563							551.19

* B. Salandi 20440 9 may (2 obs.)

+ 3.422	10	23	10.87	57	17	33.1	+ 18.296
- 0.008			+ 3 18.01		+ 17	44.9	+ .055
3.414	10	26	28.88	57	35	18.0	18.361
58				32	36	42.0	58
27.312							146.888
170.70							918.05
198.012							1064.938

Precision for * A.

* B

count by	1.30223	same	1.30223	1.30223	1.30223
sum	9.65230	wd	9.95110n	9.60253	9.96201n
by 8	9.80150		1.25333n	9.80411	1.26424n
	0.75603	nom =	-17.919	0.70907	
nom	= +5.70200			+5.117625	nom - 18.375
	46.05633			46.05633	
15	51.75833			51.17395	
	3.45036			3.4116	

apparent Plan of * B of Aug 20

$$f = +35.84 \quad g = +17.92 \quad G = 336^\circ 37' \quad h = +19.25 \quad H = 124.40 \quad i = +6.85$$

$$\begin{array}{r} d = 156 \quad 37 \\ 487 \quad 14 \\ \hline 360 \\ 127 \quad 14 \end{array} \quad \begin{array}{r} 156 \quad 37 \\ 281 \quad 17 \end{array}$$

$$\begin{array}{r} \lg g \quad 1.25334 \\ \sin(B+d) \quad 9.90101 \\ \lg d \quad 9.80271 \quad 35.840 \\ \hline 0.95706 \quad 9.059 \\ +44.899 \end{array} \quad \begin{array}{r} 1.25334 \\ 9.78180n \\ 9.03514n \end{array}$$

$$\begin{array}{r} \lg h \quad 1.28443 \quad -22.761 \\ \sin(H+d) \quad 9.99152 \quad n^{15} \quad 2.538 \\ \hline 0.07355 \quad +1.503 \\ 1.34950n \end{array} \quad \begin{array}{r} 1.28443 \\ 9.29150 \\ 9.72916 \\ 0.30509 \quad 2.019 \\ \hline 5.783 \end{array}$$

$$\begin{array}{r} * B. \\ \text{Obsd } A-* \quad -8.38.70 \quad -6.52.0 \quad \text{und} \quad 9.92645 \quad +7.802 \\ \text{Ref} \quad \quad \quad -49 \quad -8.4 \quad i \quad 0.83566 \quad -10.842 \\ \hline -8.39.19 \quad -7.00.4 \quad 0.76214 \quad -3.041 \end{array}$$

$$\begin{array}{r} * B \\ 1858.0 \quad 10 \quad 26 \quad 29.18 \quad +32 \quad 24 \quad 40.7 \\ \text{red to app plan} \quad \quad \quad +1.50 \quad \quad \quad - \quad 3.0 \\ 10 \quad 26 \quad 30.68 \quad +32 \quad 24 \quad 37.7 \\ B-* \quad \quad \quad - \quad 8 \quad 39.19 \quad (\text{Cor. for ref}) \quad -7 \quad 00.4 \quad (\text{Cor. for ref}) \\ \text{Obsd } A \quad 10 \quad 17 \quad 51.49 \quad \text{sun} \quad +32 \quad 17 \quad 37.3 \end{array}$$

Aug 20 $8^h 13^m 15.4$ Camb. m.t.

Aug 20 ~~$8^h 6^m 48.5$~~ Camb m.t. $8 \quad 10 \quad 26$

$$\begin{array}{r} * A \\ 10 \quad 14 \quad 12.52 \quad +32 \quad 15 \quad 25.5 \\ \quad \quad \quad +0 \quad 1.50 \quad \quad \quad -0 \quad 3.0 \\ 10 \quad 14 \quad 14.02 \quad \text{Ref} \quad +32 \quad 15 \quad 22.5 \\ \quad \quad \quad +3 \quad 38.01 + 0.12 \quad \quad \quad +2 \quad 24.4 \quad \text{Ref} + 1.9 \\ \text{Obsd } A \quad 10 \quad 17 \quad 52.14 \quad \text{sun} \quad +32 \quad 17 \quad 48.8 \quad \text{Ref} \end{array}$$

$$\begin{array}{r}
 210 \\
 1.05 \quad 16.0 \\
 \underline{.69} \quad \underline{.69} \\
 945 \quad 1440 \\
 \underline{630} \quad \underline{960} \\
 0.72 \quad 11.0
 \end{array}$$

$$\begin{array}{r}
 K = 1.536 \\
 \sin(\delta' - \delta) \quad 7.464 \\
 \tan \alpha \quad 0.276 \\
 \sin \psi \quad 9.659 \\
 \cos(\psi + \delta + \delta') \quad 9.899 \\
 \sin^2 \delta \quad 0.147 \\
 \hline
 8.981 \\
 7.920 \\
 11.5 = 1.061
 \end{array}$$

$$\begin{array}{r}
 35 \\
 0.71 \\
 .69 \\
 0.49
 \end{array}$$

$$\begin{array}{r}
 0.71 \quad 12'' \\
 \underline{-20} \quad \underline{4} \\
 0.51 \quad 8 \\
 \underline{.24} \quad \underline{.24} \\
 0.12 \quad 1.9
 \end{array}$$

$$\begin{array}{r}
 18'' 9' 30'' \\
 \underline{10 \quad 17 \quad 52} \\
 \tau = 7.51.38 \\
 117^\circ 54' 30'' \\
 \cos 9.67030 \\
 \cot \alpha \quad 0.03978 \\
 \psi - 27^\circ 9' \quad 9.71008 \cos = 9.9493 \\
 \delta + 32.18 \quad \sin 9.8286 \\
 5.9 \quad \sin 9.8793 \\
 \sin 8.9531 \\
 \cos \alpha \quad 8.8324 \\
 \text{Comet } \alpha = 86^\circ 6' 0'' \quad \cos \alpha \quad 8.8324 \\
 \alpha' = 88^\circ 58' 5'' \\
 \sin(\psi + \delta') \quad 8.9669 \quad 5^\circ 19' \\
 8.8462 \\
 \alpha' \quad 85^\circ 58' 30'' \\
 \sin(\psi + \delta) \sin(\psi + \delta') = (8.960)^2 \\
 7.920
 \end{array}$$

$$\begin{array}{r}
 32 \quad 18 \\
 \underline{32 \quad 28} \\
 64 \quad 46 \\
 -27 \quad 9 \\
 37 \quad 37 \\
 K \sin(\delta' - \delta) \quad 9.000 \\
 7.920 \\
 12.1 \quad 1.080 \\
 \underline{6.9} \\
 8.4
 \end{array}$$

Occultation of B. A. C. 6666. Aug 20. 1858

obs. by A. H. with Little Equatorial.

Imm. chron. John Hutton, 207 = $18^h 39^m 25.5^s - 22^h$ (moon's dark limb)

$$\begin{array}{r} 11.0 \\ 207 = 18 \quad 39 \quad 14.5 \\ 207 \text{ fast of E.C.} \quad \quad \quad 3 \quad 42.5 \\ \hline \text{E.C.} = 18 \quad 35 \quad 32.0 \\ \text{E.C. slow} \quad \quad \quad 10.20 \end{array}$$

$$\begin{array}{r} \text{sid time} = 18 \quad 35 \quad 42.20 \\ \text{sid. time at mean noon} = 9 \quad 54 \quad 54.14 \\ \hline 8 \quad 40 \quad 48.06 \end{array}$$

$$\begin{array}{r} 1 \quad 25.32 \\ \hline \text{Immersion at } 8^h 39^m 22.74^s \text{ Camb. m.s.t.} \end{array}$$

observation uncertain 1°. A. H.

Aug. 29/30. 1858. Occultations obs. by A.H. with little ^{five feet} Equatorial. power 52.

$$236 = 0^h 7^m 50.5 - 10^{\text{hurs}} \text{ Im of anony. } \gamma - 8 \text{ mag. br. l.} \quad \begin{array}{r} \text{EC} = 23 \quad 35 \quad 00 \\ 236 = 23 \quad 35 \quad 42.2 \\ \hline 42.2 \end{array}$$

$$0 \ 15 \ 21.5 - 10^{\text{hurs}} \text{ Im of } \epsilon \text{ Arietis br. l.}$$

$$0 \ 52 \ 00.0 - 18^{\text{hurs}} \text{ } \epsilon \text{ of } \epsilon \text{ Arietis dr. l.} \quad \begin{array}{r} \text{EC} = 1 \quad 21 \quad 00 \\ 236 = 1 \quad 21 \quad 42.4 \\ \hline 42.4 \end{array}$$

EC slow of sid time $12^s.38$

$$236 = 0^h 7^m 50.5 \\ \hline - 5.0 \\ 0 \ 7 \ 45.5 \\ \hline 42.33$$

$$\text{EC} = 0 \ 7 \ 3.17 \\ \hline 12.38$$

$$\text{Sid time} = 0 \ 7 \ 15.55 \\ \hline 10 \ 30 \ 23.13 \\ \hline 13 \ 36 \ 52.42 \\ \hline 2 \ 13.82$$

$$\text{Im of anon. } 13^h 34^m 38.60 \text{ Camb. m.s.t.} \quad 14^h 18^m 36.82 \text{ Em. of } \epsilon \text{ Arietis. Camb. m.s.t.}$$

$$236 = 0 \ 15 \ 21.5 \\ \hline - 5.0 \\ 0 \ 15 \ 16.5 \\ \hline 42.35$$

$$\text{EC} = 0 \ 14 \ 34.15 \\ \hline 12.38$$

$$\text{sid time} = 0 \ 14 \ 46.53 \\ \hline 10 \ 30 \ 23.13 \\ \hline 13 \ 44 \ 23.40 \\ \hline 2 \ 15.06$$

$$\text{Im of } \epsilon \text{ l. } 13^h 42^m 8.34 \text{ Camb. m.s.t.}$$

$$236 = 0^h 52^m 00.0 \\ \hline - 9.0 \\ 0 \ 51 \ 51.0 \\ \hline 42.38$$

$$\text{EC} = 0 \ 51 \ 8.62 \\ \hline 12.38$$

$$\text{sid time} = 0 \ 51 \ 21.00 \\ \hline 10 \ 30 \ 23.13 \\ \hline 14 \ 20 \ 57.87 \\ \hline 2 \ 21.05$$

$$10 \ 29 \ 36.39 \\ \hline 46.74 \\ 10 \ 30 \ 23.13$$

The anonymous star is 10' or 12' north of ϵ Arietis and in nearly the same A.R.

Am not certain of the minute in the observed time of the emission of ϵ Arietis. It may be 53 , but I think 52 . otherwise the observation is a good one.

A.H.

Aug 29th Comet visible to naked eye
A tail of 2° is visible in the Comet maker

Aug 30. 1858

Donati's Comet.

G.P. Bond. obs.

* a of 9 may. Mouth following * a

*	18	19	41.2	8 49"
♂			38.7	0 36

*	20	19.8
♂		42.9

*	21	5.8	9' 01"
♂		22.9	0 40

*	21	44.0
♂	22	7.0

kin center of field

236 =	18	25	56.0	
236 per			31.95	
Sid time =	18	25	24 0	
H =	7	49	3.0	124° 4' 30"
AR =	10	36	21.0	90
				Dec + 39° 4' 30"

Its nucleus 6" in diameter and very bright

Comet

Const.	2.6686
log Δ	0.2220
log 6"	0.7781
4664	3.6687

Aug 30. 1858.

Occultation of the Pleiades

G. P. B. obs.

Alt. records

Notes taken from chart of U. S. Coast Survey.

EC slow 12.30

EC = 20 19 00

236 = 20 19 44.4

44.4

EC = 20 19 00

236 = 21 19 44.5

44.5

236 feet

Emission of 30, 236 = 20 ^h 34 ^m 40 ^s -- 32.1	Sid. time = 20 ^h 33 ^m 31.9 0
" " 29 " = 20 37 31.0 -- "	" " = 20 36 58.9 0
" " 37 " = 20 47 20.8 -- "	" " = 20 46 48.7 0
" " 39 " = 20 54 0.5 -- 32.15	" " = 20 53 28.35
" " 45 " = 21 10 30.5 -- "	" " = 21 9 58.35
" " 44 " = 21 10 44.0 -- "	" " = 21 10 11.85
" " 50 " = 21 12 2.5 -- "	" " = 21 11 30.35

Sid time at Gr. m. nom. Br. N. Al. 10 33 32.95

46.74

" " " bomb

10 34 19.69

Sid intervals from mer. nom

9 ^h 59 ^m 12.21	-	1 ^m 38.16	=	9 ^h 57 ^m 34.05	bomb. m. s. t. Em. of 30
10 2 39.21	-	1 38.73	=	10 1 0.48	" " 29
10 12 29.01	-	1 40.34	=	10 10 48.67	" " 37
10 19 8.66	-	1 41.43	=	10 17 27.23	" " 39
10 35 38.66	-	1 44.13	=	10 33 54.53	" " 45
10 35 52.16	-	1 44.17	=	10 34 7.99	" " 44
10 37 10.66	-	1 44.39	=	10 35 26.27	" " 50

16^h

Sept 5/6 Curvature of tail of Comet of
Donati first run. by H. P. Gutter



Sept 5^h/6 New Comet by HPT
Discovered Sept 5 11 PM

recognized as a comet by its motion at J.C.C.O

about one o'clock Sept. 6
Chronometer 236

R.F.B. Obs

Bartholomew R.F.B.

First Comp * double = about 8 Mag

The Comet is in Auriga South of
Capella

Wires
Mic. reading in coincidence

Beats 41.89

Second 41.89 Reading *

Comet

63-40

63-83 Second reading
Gavel

2 3^h 41^m 236

65-43 Third reading

Mic reading of Comet

Wire in coincidence

43-13

Mic reading of Star

63.83

65.43

41.85

43.13

21.94

22.30

21.94

Mean = 22.12

236 = 2 41^m 0.

21.44

3 6 50

216.8

25 50

Motion is 25.8 + 17.2

48 = 234.0 = 3' 54".0 236 = 3 6 50.0

Position of reading circle

$87^{\circ} 25'$ P.C. longest 177-25

$$\begin{array}{r} 87.25 \\ 90 \\ \hline 177.25 \end{array}$$

Transits

Comet

$2^h 2^m 56^s$

~~$3^h 16^m 9^s$~~ Comet

Star

$2^h 56^m 33^s$

32+

34c

8

21.5+

30c

8.5

47+

56c

9.0

26+

34.5c

48.5+

56.5c

11+

17.5c

333+

441c

See next page

Sept 5/6th 1858 New Comet

Time of Star & Comet over
mic wire $m =$ Star of Comp. is double as in diagram
Star precedes.

$m =$ Star Comet

Chro 236-
R.F.B. obsd.

H. on.
3.4 5
29
2.5
30
2
34
58
20
43
6
H. m. 38
3.08.56

H. m. 5
3.4 13
38
5 12
38
6 9.5
42
7 6
27
50.5
8 13
44.5
3^h 9^m 3.

8
9 } 8.5
8.5
8 } 8.0
8.5 } 8.5
8 }
7
7.5 7.5 7.0
7.0 } 8.0
6.5 } 6.8 8.6
7.0 } 23.6
7.87



$$236 = 3^h 6^m 50.0 \quad \Delta\alpha = +7.87$$

Comet not very faint - with a slight
brush of a tail on side away from sun - Has suf-
ficient concentration of light for good obs. but
no stellar nucleus

Ch. Encke's Comet R. 7. 03 - $\delta + 35^\circ$

New Comet (qu. Faye's)

% E.C. Stars 13.83

236. Falt. 5%. 6th sid. 47.97

47.67

* of comp

236 3.46.43.0
-47.7
sid. 3.45.55.3
long. ang. 0.52.53
R 4.40.48.3
D. +45° 15.34.

Sept 5th

Cam. m. 1.6 } R - 4.40.49.3 - 8.1 = 4^h 40^m 41.2
16.14.42.18 } u Du + 45.12.12 - 27" = 45 11 50.

185-8 Sept 6th continued

H. n. n.
3. 16.9 Yins of Ch² when Comet
is in center of field = below
and the readings of Circles
in this position

The R circle reads V. No. 1

236 fast	3	16	9
			47.7
	3	15	21.3
			28.0
H. East = 12 ^h 10 ^m 34 ^s 2	4	25	49.3
236 = 1 25 28	Int. Cor.		- 8.1
R R	4	40	41.2

Dec Circle reads

Ver No 3 315° 13' 0" Mean of No 3 & 4
44 47 30
Int. Cor. - 22
Ver No 4 225° 12' 1" Dec 44 47 8
45° 12' 20" 11
Ver No 2 220° 13' 28" 1

3^h 46^m 43^s Stan. m.
R Comp * in center of field
Dead North

11^h 5^m 7^s

Ver No 4 225° 15' 42.8"

15.6
45
Ver No 4 45° 15' 40" Ver No 2

0 54 53
236 3 46 48.0

* 5 R " fast 47.7
Sept 5 3 45 55.3

Sept 6 0 54 53.0

236 - 6.10 1.8 4. 40 48.3

6. 9. 13.83 Int. Cor - 8.1

6. 10. 1.8 4. 40 40.2 = * R

236 fast 47.7 4. 40 40.2 = * R

20 Aug. p.m.

31.05
7/16 5242.42

* 8 mag.

Star o from B.Z. 514 to be used for finding the place of comp. star m of Sept 5/6

$$\begin{array}{r} \text{B.Z. 514} \quad \text{Star } o = 9^m \\ 4 \ 40 \ 49.2 \\ + 1 \ 8.6 \\ \hline 4 \ 41 \ 57.8 \end{array} \quad \begin{array}{r} 44 \ 40 \ 35 \\ + 2 \ 50 \\ \hline 44 \ 43 \ 25 \end{array}$$

$$\begin{array}{r} 33 \\ 7 \\ \hline 231 \\ \text{pre.} + 3' \ 51'' \\ d - 1 \ 01 \\ + 2 \ 50 \end{array} \quad \begin{array}{r} 4.3 \\ 33 \\ 129 \\ \hline 129 \\ 141 \ 9 = +2^m \ 21.9 \\ k - 1 \ 13.3 \\ + 1 \ 8.6 \end{array}$$

Another star of 9th precedes o by 50.2 and is 23' 24" South of it.

N.B. That the star m has a companion in near the same R.

$$\begin{array}{l} \text{Obsd. } m \quad R \ 4^h \ 40^m \ 40.2 \\ \text{Dir } 44^\circ \ 43' \ 56'' \end{array}$$

$$\begin{array}{l} \text{Sept } 8/9 \\ \text{Star of } 9/9^m \text{ Double} = m \quad 2 \ 50 \ 41 \\ \phantom{\text{Star of } 9/9^m \text{ Double} = m} 53 \end{array}$$

$$\begin{array}{l} \text{Eyes piece} \left\{ \begin{array}{l} 225^\circ \ 16' \\ 270 \ 00 \\ 44 \ 44 \end{array} \right. \quad \begin{array}{l} 2 \ 49 \ 48 \\ 10 \ 8 \ 42 \\ 4 \ 41 \ 6 \end{array} \\ \text{set in centre} \\ \text{of Micrometer} \end{array}$$

$$\begin{array}{r} 236 = 3 \quad 6 \ 50.0 \quad 10 \ 57 \ 12.77 \\ 236 \text{ less} \quad 47.7 \quad 46.74 \\ \hline 3 \ 6 \ 2.30 \quad 10 \ 57 \ 59.01 \\ 10 \ 57 \ 59.01 \\ 16 \ 8 \ 3.29 \\ \hline 2 \ 38.55 \\ \text{Sept 5-} \quad 16 \ 5 \ 24.70 \text{ Lamb. m.s. t} \end{array}$$

This star is double as in diagram of 5/6th and is of 9th mag. seems to be m but I cannot recognise o. From subsequent description by R.F.V.B. the star above obsd was undoubtedly m.

$$\begin{array}{r} * m \ AR = 4^h \ 40^m \ 52.37 \\ \text{Obsd. } * m \quad + 7.87 \\ \hline \text{Obsd. } AR \quad 4 \ 41 \ 0.24 \end{array} \quad \begin{array}{r} \text{Dir} + 44^\circ \ 43' \ 3.4 \\ + 3 \ 54.0 \\ \hline \text{Obsd.} + 44 \ 46 \ 57.4 \end{array}$$

Revised. Sept 5 16^h 5^m 24.7 Lamb m.s.t.

Place of m depends on two stars α & γ in B.Z. 514.

For determination of m see after date Sept 9/10

Sept 9/10

Comparison stars of Sept 5/6

For reduction of these stars see twenty pages forward

*m 236 2 53 44.5

56.8

56 33.3

57 26.7

18 55

6 22

25 17

Scale

3 11 13.0

51 50

*y 3 37 51.0 5 12.0

8.04

x*

12 11.1

52 47

38 25.1 5 12.9

ly*

15 40.2

2" 00

*m 43 3.0

1 32

17 34.2

8" 46

43 38.0

21

*g

3 18 55.2 5 12.3

46 40

*o 44 12.2 1 9.2

1 53

19 30.0 5 12.2

46.9 1 8.9

*m

24 7.5

0 07

24 42.2

20

*m for *o 1" 9.05

*m south of *o 20.5

*o

25 16.3 1 8.8

0 27

25 51.0 1 8.8

*m for *y 5" 12.35

*m south of *y 6' 32.0

*m

29 6.7

4 56

29 41.0

20

*o

30 15.8 1 9.1

5 16

30 30.6 1 9.6

*m

81 14.8

5 16

49.8

21

*o

32 24.0 1 9.2

5 37

58.6 1 8.8

This is Comet VII. 1858.

Sept 9/ 1858 Comet VI is Euckel H. P. Tuttle's Third Comet. 1858.

R. D. B. & C. W. D. obs.

$$EC = 1.45 \quad 00$$

$$236 = 1.46 \quad 04.0$$

H. P. Tuttle's Third Comet 1858.

* a of 8th may.

with * y of 10 may, north, preceding

(* see note below)

micrometer reads

$$(266.57)$$

$$\underline{90}$$

$$176.57$$

Diff. Dec

microm

$$54.75$$

$$236 = 2 \quad 40 \quad 45$$

$$53.44$$

$$39.69$$

$$13.75$$

$$236 = 2 \quad 40 \quad 45$$

$$= 3 \quad 10 \quad 34$$

$$236 = 2 \quad 55 \quad 39.5$$

$$\text{Diff. Dec} = 13.75$$

$$8.66$$

$$\text{Diff. Dec} = 11.205$$

$$2.24$$

$$109.8$$

Diff. AB

* (y)

2

15

48.6

52.8

4.2

*

16

26.2

30.3

4.1

*

16

47.2

51.8

4.6

comet's daily motion in Dec + 16'

hourly .. + 40"

motion in one minute + 0.6666

$$2 \quad 55 \quad 39.5$$

$$2 \quad 52 \quad 25.35$$

$$3 \quad 14.15$$

$$3.2 \times .67 = + 2.1$$

$$1' \quad 49.8$$

$$\Delta \delta = 1' \quad 47.7$$

$$* \quad 47 \quad 36.0$$

$$40.8$$

$$236 = 2 \quad 46 \quad 39.50$$

$$236 = 2 \quad 58 \quad 11.21$$

$$236 = 2 \quad 52 \quad 25.35$$

$$4.8$$

$$4.42$$

$$3.03$$

$$3.72 = 4\alpha$$

* By the diagram further on the comet is south preceding * y. but it is most probable that the comet was following y and south of it. The transits make p follow y and the diagram by a small change will give the same. It is moreover likely as p was distant from a by nearly a diameter of the field in Dec. That the small comp. star would have been between p & a in Dec.

Sept 6 1858

Comet continued

Diff. AR

236 *y 2 52 10.2 3
 *a 12.5 2.3

Sun

8' 50"
 X 0.00

*y 53 14.8
 *a 17.2 2.4

8 50
 0.00

*y 54 3.0
 *a 7.4 7.4

*y 54 43.7
 *a 46.0 2.3
 Mean = 2.35

8 5-2
 0.00
 8 50.7

Diff. AR
 $\delta - *y = + 3.72$
 $*a - *y = + 2.35$
 $\delta - *a = + 1.37$

Diff. Dec
 $\delta - *y = - 1' 47.7$
 $*a - *y = + 8' 50.7$
 $\delta - *a = - 10' 38.4$

Comet is S. of γ of $10^{\frac{1}{2}}$
 γ is S. of α of $8^{\frac{1}{2}}$

There seems to be an error in the measured diff. Dec which originated in in slipping of the micrometer head on the screw which was adjusted on the next day.

Sept 6 1858

Comet continued

* ~~g~~ 2 56 50.8 3.2
54.0 3.2

* ~~g~~ 57 13.2 3.5
16.7 3.5

* ~~g~~ 57 36.2 3.3
39.5 3.3

* ~~g~~ 57 58.6 2.8
1.1 2.8

* ~~g~~ 58 57.8 7.7
55.5 2.7

* ~~g~~ 59 10.8 3.0
13.8 3.0

* ~~g~~ 59 36.1 1.7
38.8 2.7
23 258.5 21.2
236 = 2^h 58^m 11.21 3.03

11 1 8.83
46.74

11 1 55.57

Sat time. 3 16 19.80

11 1 55.57

Sept 6 16 14 24.23 lamb m 11

to AR 4^h 37^m 38^s 77th Instrumental
to dec +45° 3' 12"

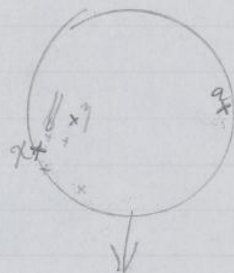
Sept-8 1858

corner continued

*X of 10 may south + yX proceed

236	*X	3	3	10.0	5.43
	*y			18.9 8.5	3.08

*X	4	27.0	5.43
*y		30.8 8.8	3.03



diff. between *y and *x

236 =	3 ¹	10 ^m	34.0	18.35-
				39.69
				8.66

Sum of micrometers
39.69

*a in center of field

236 =	3 ^h	17 ²	10.0
236 per			50.2
	3	16	19.8
(last) H =	10	38	34.0
	1/4	24	26.0
AR	4	37	37.4

Capella in center of field

Sum =	314°	46'	over 3
	224°	45'	30" 4
	+	45	14 30
	+	45	14
		45	14 15
			-22
Sum +	45	13	5-3

236 =	3	22	35.0
236 per			50.2
	3	21	44.8
H =	10	15	21.0
	1	44	39.0
AR =	5	6	23.8
Tabular.	5	6	15.7
Incl corr			- 8.1

Sum =	314°	9'	0" incl 3
	224	8	20 4
	+	45	51 40
	+	45	51 0
Sum =	+	45	51 20
		45	50 48
Incl corr			- 22.

	13.9
	1 4.1
236 per	50.2

Sept. 6. 1858.

Tuttle's III Comet. 1858 = Comet. V.II. 1858.

*(a) of Sept 6 is Salandi (8901) ~~8(8902)~~ Arg. 2.70

Salandi's Declinations differ 50".2, AR's agree well.

$$1800.0 \quad AR = 4^h 33^m 24.75^s \quad N.P.D. = 44^\circ 53' 18.2 \text{ (adopted.)}$$

1800.0	Procc	+ 4.317	This star is in	- 7.399
	sec ran	+ 0.0066	Arg. Zone 70.	sec ran + 0.166
1829.0		+ 4.3236		7.233
		<u>38</u>		<u>38</u>
		345888		57.864
		216180		361 55
60)		250,7688 (4)	60)	419,514 (6)
		<u>240</u>		<u>360</u>
		10.77		59.5

		4	33	24.71		44	53	18.2
			+ 4	10.77			- 6	59.5
1858.0	AR	4	37	35.48	N.P.D.	44	46	18.7

Reduction to apparent place.

$$f = +37.80 \quad g = 18.76 \quad G = 331^\circ 24' \quad h = 18.89 \quad \ell = 106^\circ 40' \quad i = +78.41$$

$$a = \frac{69 \ 29}{400 \ 48} = 40 \ 48 \quad \frac{69 \ 29}{176 \ 24} = 40 \ 48$$

log 1.27323		log 1.27323	
sin(G+α) 9.81519		cos 9.87909	
tand 0.00346	f = +37.800	1.15232	+ 14.201
1.09188	+ 12.356		+ 5.521
	+ 1.840		+ 19.722
log h 1.27623	15) 51.996	log h 1.27623	- 13.379
sin(ℓ+α) 8.83630	+ 3.466	cos - 9.99898 n	+ 6.343
sec 0.15225		sind 9.85121	
0.26478		1.12642 n	

$$\cos \delta = 9.84775$$

$$i \quad 0.89432$$

$$0.74207$$

*La) of Sept 6. 1858

$$\frac{p-d}{100} = .48$$

Arg. zone 70 No 53

$$\begin{aligned} \text{Tab AR} &= 4^h 36^m 59.87 \\ k &= -33.22 \\ \frac{p-d}{100} \cdot k &= +0.04 \\ 1842.0 \quad \text{AR} &= 4 \quad 36 \quad 26.19 \end{aligned}$$

$$\begin{aligned} \text{Sun} + 45^\circ & 12' 3.0 \\ d & -12.8 \\ \frac{p-d}{100} \cdot d & -0.7 \\ \text{Sun} + 45^\circ & 11 \quad 49.5 \end{aligned}$$

$$\begin{aligned} &+4.317 \\ \text{200} &+0.0114 \\ &+4.3284 \\ &\underline{16} \\ &259704 \\ &\underline{43284} \\ &+69.2544 \end{aligned}$$

$$\begin{aligned} &+7.399 \\ &\underline{-0.286} \\ &+7.113 \\ &\underline{16} \\ &42,678 \\ &\underline{7113} \\ &+113,808 \end{aligned}$$

$$\begin{aligned} &4 \quad 36 \quad 26.19 \\ &\quad \quad \quad \underline{1 \quad 9.25} \\ 1858.0 \quad \text{AR} &= 4 \quad 37 \quad 35.44 \end{aligned}$$

$$\begin{aligned} &+45^\circ \quad 11 \quad 49.5 \\ &\quad \quad \quad \underline{+1 \quad 53.8} \\ \text{Sun} + 45^\circ & 13 \quad 43.3 \end{aligned}$$

giving Argelander double weight

$$\begin{aligned} 1858.0 \quad \text{AR} &= 4^h 37^m 35.45 \\ \text{Red to app place} & +3.47 \\ \text{app} \quad \text{AR} &= 4 \quad 37 \quad 38.92 \\ \text{K} - \text{*(a)} &= +1.37 \\ \text{Ls} \quad \text{AR} &= 4^h 37^m 40.29 \end{aligned}$$

$$\begin{aligned} \text{Sun} + 45^\circ & 13' 42.6 \\ & +6.3 \\ \text{Sun} + 45^\circ & 13 \quad 48.9 \\ & -10 \quad 38.4 \\ \text{Sun} + 45^\circ & 3' 10.5 \end{aligned}$$

$$\begin{aligned} 236 &= \text{Not} \quad 2 \quad 52^m \quad 25.35 \\ 236 \text{ feet} & \quad \quad \quad 50.20 \\ \text{sid time} &= 2 \quad 51 \quad 35.15 \\ & 11 \quad 1 \quad 55.57 \\ & 15 \quad 49 \quad 39.58 \\ & \quad \quad \quad \underline{2 \quad 35.58} \\ \text{Sept 6} & 15 \quad 47^m \quad 4.0 \end{aligned}$$

Revised but
This place
is open to doubt
for we are from cause
explained on page 10
& in AR as properly the
direction of stars & comet from
each other may have
been misstated -

Sept 6/ 1858

Encke's Comet.

8 in center of field

236 = 3	28	52.5	Dec = 55	16	20	mag 2
236 per			235	17	00.	" 4

(east)	H	=	8	13	22.0
			3	14.6	.. 38.0

Encke's comet very different, no nucleus and about
4' in diameter

2^d hemisphere in center of field

236 = 3	34	48.5	Dec = 57°	47'	15"	mag 2
236 per			237	47	30	" 4
			Dec	32	12	38

H	8	8	24.0
1	..	33	.. 35.5
3	..	34	.. 00
8	..	07	.. 35.5

Dec	3	54	00
236	3	55	4.2

Sept 7/8 1858

Comet is 3' n.f. * a of 11th mag

Zero of Mic. times = 87.00'

236	0	32	50	34.82
		35	23	34.32
	0	34	6.5	34.57
				50.10
				15 ^h 53

Zero
50.16
.05
.09
.09
50.10

0	38	00	55.0	beats
	39	44	53.7	
	41	5	54.0	
	42	17	53.0	
0	40	16.5	53.925	= +26.96 = Δα
			3 45.50	
			3	18.54

← * γ = -3 18.54

0	45	25	33.51
	47	7	33.25
0	46	16.0	33.38
			50.10
			16.72
0	34	6.5	15.53
236 = 0	40	11.25	16.14

$$16.14 = 16.40 - 3.23 = 15.17$$

$$+ .06$$

$$\Delta\delta = 15.23 = +2' 38.23$$

$$2 18.50$$

$$\leftarrow * \gamma = +4' 56.73$$

Star α compared with Scale with β ,

Zero of Scale $88^{\circ} 5'$. The first wire of each set is that of Micrometer on which the south-
ernmost stars come too early by cor. for inclination
of wires to scale - say 1°
 α is dr. p * γ of 8^{th}

1 1 46.5 2 21.2 9 27

	β	α			
236. 1	3 50.0	4 54.5	9 27	} Star of 9/10 = β " Comp. = α	
2 nd Wire	24.5	5 29.7	4 19		
	γ			2 19	Star of 8^{th} = γ
	8 40.0	3 45.5	2 00		
	9 15.2	3 45.5			
	Mean = 3 45.5				

	β	α			
1	11 50.0	12 54.8	9 16		β
	12 24.7	13 29.6	4 7		α
	γ			2 18	
	16 40.0	3 45.2	1 49		γ
	17 15.4	3 45.8			
	Mean 3 45.5				

Place of Star γ (is same as Star α of Sept 6/7)

R 4^h 37^m 55^s

Dec 45° 14'

* α north of * γ 2' 18".5
* α precedes * γ 3^m 45.5

μ in centre of field

236 = 1 21 57.0
H.E - 8 46 43 + 12^h
236 + 53
1 21 04
4 34 21

Incl. cor. = 4 34 13

Dec. N 134° 40' by J
= 45° 20'

* (a) of Sept 7/8 * (a) = * (g)

$$\begin{array}{rcl}
 1858.0 \text{ Mean AR} & = & 4^h \ 37^m \ 35.45^s \\
 \text{Red to app plane} & & + 3.30 \\
 \text{app. AR} & = & 4 \ 37 \ 38.95 \\
 \delta - * \gamma & = & - 3 \ 18.54 \\
 \text{Inttle} \ \delta \text{ AR} & = & 4 \ 34 \ 20.41
 \end{array}
 \quad
 \begin{array}{rcl}
 \text{Dec} + 45^\circ & 13' & 42.6 \\
 & & + 6.4 \\
 \text{Dec} + 45^\circ & 13 & 49.0 \\
 & & + 4 \ 56.7 \\
 \text{Dec} + 45^\circ & 18' & 45.7
 \end{array}$$

Revised

$$\begin{array}{rcl}
 236 = & 0^h & 40^m \ 16.5^s \\
 236 \text{ fort} & & 52.6 \\
 & 0 & 39 \ 23.90 \\
 & 11 & 5 \ 52.12 \\
 & 13 & 33 \ 31.78 \\
 & & 2 \ 13.28 \\
 \text{Sept } 7, 13 & 31 & 18.50 \text{ Camb. m.s.t}
 \end{array}
 \quad
 \begin{array}{rcl}
 & 11 & 5 \ 53.38 \\
 & & 46.74 \\
 & 11 & 5 \ 52.12
 \end{array}$$

$$\begin{array}{rcl}
 45 & 18.76 \\
 \text{At } (236) 1^h 22^m & & 0.66 \\
 & 45 & 19.20 \text{ of Dr}
 \end{array}$$

Red to apparent plane

$$\begin{array}{rcl}
 f = +37.92 & g = +18.80 & B = 331.25 \quad h = +18.87 \quad H = 106.1 \quad i = +7.87 \\
 a = 69.24 & & 69.24 \\
 400.49 = & 40^\circ 49' & 175.25
 \end{array}$$

$$\begin{array}{rcl}
 \log g = 1.27416 & & 1.27416 \\
 \sin(f+g) = 9.81534 & \cos & 9.87898 \\
 \tan \delta = 0.00346 & & 1.15314 \\
 & & + 14.228 \\
 & & + 5.543 \\
 & & + 19.771
 \end{array}$$

$$\begin{array}{rcl}
 \log h = 1.27577 & f = +37.920 & 1.27577 \\
 \sin(H+g) = 8.98260 & + 12.387 & \cos \ 9.99861 \\
 \sin \delta = 0.15225 & + 2.141 & \sin \delta \ 9.85121 \\
 0.33062 & 15) 52.448 & 1.12559 \\
 & + 3.496 &
 \end{array}$$

$$\begin{array}{rcl}
 \cos \delta & 9.84775 \\
 i & 0.89597 \\
 & 0.74372
 \end{array}$$

Sept 8. 1858.

Donati's Comet.

Zero of Scale
88.0

236 = 18

42 10.0 1st wire

42 40.0 2nd wire

Sale

5.05

EC = 19 6 0.0

236 = 19 7 9.0

1 9.0

* A. of 9¹⁰ mag

43 59.2

44 29.0

9 40

A = Lalande 212 86

B = Lalande 213 16

C = Lalande 214 11

* B. 9. "

45 8.2

45 38.8

2.09

C = B. 2. 359,

* C. 7.8

49 0.0

49 30.0

6 32

8 - *C = - 1' 27" = 48

" = - 6" 30.0 = 40

H corresponds to transit over micrometer wire which is in center of field, the declination applies to the comet.

$$\begin{array}{r} \text{west } H = 7^h \quad 42^m \quad 44^s \\ \quad \quad \quad 18 \quad 49 \quad 0 \\ \hline = 11 \quad 6 \quad 16 \end{array}$$

$$\begin{array}{r} \quad \quad \quad \quad \quad 56 \\ \hline AR = 11 \quad 5 \quad 20 \end{array}$$

$$\text{Dec} = + 35^\circ \quad 37'$$

$$\text{Tab. AR of A. 1800} = 10 \quad 56 \quad 23.27$$

$$M.P.D. = 54^\circ \quad 4' \quad 42.5''$$

$$\text{" " of B 1800} = 10 \quad 57 \quad 33.18$$

$$\text{" " } 54 \quad 12 \quad 13.6$$

$$\text{" " of C 1800} = 11 \quad 1 \quad 26.10$$

$$\text{" " } 54 \quad 7 \quad 42.3$$

Donati

$$\frac{8-2}{100} = -16$$

* C of Sept 8. B.D. 359

(For Reduction of * C to apparent place see 2 pages formerly)

$$\text{Tab AR} = 11 \quad 2 \quad 38.88$$

$$k \quad + 9.78$$

$$\frac{8-2}{100} k' \quad + 0.01$$

$$1825.0 \quad 11 \quad 2 \quad 48.67$$

$$\text{Dec} + 35 \quad 43 \quad 39.90$$

$$d \quad + \quad 8.30$$

$$- 0.23$$

$$+ 35 \quad 44 \quad 8.0$$

$$1800 \quad \text{Prec} + 3.314$$

$$\text{se var} - 0.012$$

$$1841 \quad + 3.302$$

$$33$$

$$9.906$$

$$9.906$$

$$+ 10 \quad 8.966 = + 1^m \quad 48.97$$

$$11 \quad 2 \quad 48.67$$

$$1858.0 \quad \text{B.D.} \quad \text{AR} = 11 \quad 4 \quad 37.64$$

$$- 19.408$$

$$\text{se var} - 0.051$$

$$- 19.459$$

$$33$$

$$58.377$$

$$58.377$$

$$- 6 \quad 4 \quad 2.147 = - 10' \quad 42.1$$

$$35 \quad 44 \quad 8.0$$

$$+ 35 \quad 33 \quad 25.9$$

$$\text{Prec} + 3.314$$

$$\text{se var} - 0.008$$

$$+ 3.306$$

$$58$$

$$26.448$$

$$16.530$$

$$+ 19 \quad 1.748 = + 3^m \quad 11.75$$

$$11 \quad 1 \quad 26.10$$

$$1858.0 \quad \text{Salandis AR} \quad 11 \quad 4 \quad 37.85$$

B.D. double weight

$$1858.0 \quad \text{Mean AR} = 11 \quad 4^m \quad 37.71$$

$$\text{Red to app Place} \quad + 1.59$$

$$11 \quad 4 \quad 39.30$$

* C

$$- 6 \quad 50.00 - 0.06$$

$$\text{B.D. AR} = 10 \quad 57 \quad 49.24$$

$$\text{Dec} + 35^{\circ} \quad 33' \quad 27.2$$

$$- 7.2$$

$$+ 35 \quad 33 \quad 20.0$$

$$- 1 \quad 27.0 - 0.8$$

$$\text{Dec} = + 35 \quad 31 \quad 52.2$$

$$236 = 18 \quad 42 \quad 25.0$$

$$236 \text{ for } 54.0$$

$$18 \quad 41 \quad 31.00$$

$$11 \quad 9 \quad 48.67$$

$$7 \quad 31 \quad 42.33$$

$$1 \quad 14.00$$

$$\text{Sept 8.} \quad 7 \quad 30 \quad 28.33 \quad \text{Camp. m. s. t.}$$

$$11 \quad 9 \quad 1.93$$

$$46.74$$

$$11 \quad 9 \quad 48.67$$

Revised

Sept 8/9 Comet VII

Earth near v of orbit of Donati

- 10 beats

- 10 beats

Capella

236	3	24	10.5	224° 20' 30"	3	30	44.5	224	7	45
H E	10	53	12		H.	10	23	25		

20,000 miles = 30.68"
 1" = 660 miles
 by Donati's 9th.

41	34
11	10
17	24
	3

Sun rise

17 ^h	21 ^m	m s t
17	33	

This morning Donati's Comet was followed in the Great Refractor up to 4^h 34^m Sid. - only the nucleus of 3" ^{1980 miles} Diam & a little nebulosity extending to 5" ^{3400 miles} Diam could ^{barely} be distinguished at 4^h 30^m Sid.

When the Comet is best seen the nucleus is 8" in Diam & remarkably intense & star like (that is as a star of 5th mag would appear in the same proximity to the horizon -

At 16^h 20^m Sid.

Tail 4° in Comet scope
 " 2° to Naked eye to which Comet appears as * of 4th mag with a brush of light

Tail is 2' to 3' wide say 3' from nucleus in all vanes of which the nebulosity is very faint beyond 1'

Vide obs. Sept. 12th for side brightest on 8/9

Scale of minutes
 6
 3
 0

* C of Sept 8, to app. Place

$$f = +37''.99 \quad g = +18''.82 \quad G = 331''.29 \quad h = +18''.86 \quad H = 105^\circ 12' \quad i = +7''.90$$

$$d = 166''.9 \quad \alpha = 166''.9$$

$$\delta = +35^\circ 33.5' \quad G + \alpha = 497''.38 = 137^\circ 38' \quad H + \alpha = 271''.21$$

$\log g = 1.27462$		1.27462	
$\sin(G + \alpha) = 9.82838$		$\cos 9.86855n$	
$\tan \delta = 9.85420$	$+ 37''.990$	$1.14317n$	$+ 6''.427$
0.95740	9.066		$+ 0.258$
	$+ 47.056$		$+ 6.685$
$\log h = 1.27554$	$- 28.177$	1.27554	$- 13.905$
$\sin(H + \alpha) = 9.99988n$	$+ 23''.879$	$\cos 8.37217$	$- 7''.220$
$\sec \delta = 0.08963$	$+ 1''.592$	$\sin 9.76457$	
$1.36505n$		9.41128	
		$\cos \delta = 9.91037$	
		$\log i = 0.89763$	
		0.80800	

Sept. 9/10. 1858

Comet. VII. 1858 G.P.B. obs. All. records

EC 1 35 00
236 1 36 13.1

*k of 8^{mag}, 8 south preceding *k EC slow 15.80

Zero of micrometer wires 87.15 236 4 8 13.4

Diff. Sec

236 1 58 25.0 61.53
2 2 4.5 60.98
2 0 14.75 61.26
50.08
11.18

Zero of wires

50.08
50.08
50.09
50.08

Diff. AR

2 6 36.2
2 6 52.7

*k 2 8 39.2 2 3.0
8 55.7 2 3.0

236 = 2 0 14.75 11.18
" = 2 15 31.50 10.03
2 7 38.10 10.60
21

103.9
motion in 26, +0.3
104.2

 $\Delta\alpha = -2^m 3.37$ $\Delta\delta = -1' 44.2$

2 9 16.8
9 33.0

236 = 2^h 8 4.67

236 fast 57.40

sid time = 2 7 7.27 11 12 58.49
11 13 45.23 46.74

*k 2 11 20.2 2 3.4
11 37.0 2 4.0

14 53 22.04 11 13 45.23
2 26.36

236 = 2 8 4.67 2 3.37 Sept 9 14^h 50 55.68 Camb. m.s.t.

Diff. Sec

2 13 44.5 39.91
17 18.5 40.19
2 15 31.5 40.05
50.08
10.03

Tuttle III

1858

Sept 9/10, Comet continued.

There is a star of 9/10 mag. which posn R $4^m 20^s$ nearly and is 3' south of it.

Comet in centre of field

$$\begin{array}{rcl}
 236 & = & 2 \quad 23 \quad 52.0 \\
 236 \text{ fast} & & \underline{\quad 57.4 \quad} \\
 & 2 & 22 \quad 54.6 \\
 H & 9 & 57 \quad 5.0 \\
 & 2 & 2 \quad 55.0 \\
 AR = 4 & 25 & 49.6
 \end{array}$$

$$\begin{array}{rcl}
 \text{Sun} & 22 \quad 4^{\circ} \quad 5' & 30'' \\
 & + 4 \quad 5 \quad 54 & 30
 \end{array}$$

* R Arg. Leone 70 No 42

$$\begin{array}{rcl}
 \text{Tab. AR} & = & 4 \quad 27 \quad 9.77 \\
 & k & - 33.17 \\
 & k' & \underline{\quad + 0.00 \quad} \\
 1842.0 & AR = 4 & 26 \quad 36.60
 \end{array}$$

$$\begin{array}{rcl}
 \text{Tab. Sun} & + & 45 \quad 54 \quad 36.5 \\
 & d & - 13.5 \\
 & d' & \underline{\quad - 0.1 \quad} \\
 \text{Sun} & + & 45 \quad 54 \quad 22.9
 \end{array}$$

$$1800 \text{ Pan} + 4.325$$

$$\text{Sun var} + 0.011$$

$$1842 \quad + 4.336$$

$$\underline{\quad 16 \quad}$$

$$26016$$

$$4336$$

$$69.376 = 1^m 9.38$$

$$4 \quad 26 \quad 36.60$$

$$7858.0 \quad AR \quad 4 \quad 27 \quad 45.98$$

$$\text{Mean AR} = 4 \quad 27 \quad 45.75$$

Red to app

$$\underline{\quad + 3.64 \quad}$$

$$4 \quad 27 \quad 49.39$$

$$* R \quad - 2 \quad 3.37$$

$$AR \quad 4 \quad 25 \quad 46.02$$

$$+ 8.194$$

$$- 0.276$$

$$+ 7.918$$

$$\underline{\quad 16 \quad}$$

$$47.508$$

$$2918$$

$$126.688 = + 2 \quad 6.7$$

$$45^{\circ} \quad 54 \quad 22.9$$

$$\text{Sun} + \quad 45 \quad 56 \quad 29.6$$

$$\text{Sun} + 45^{\circ} \quad 56' \quad 29.9$$

$$\underline{\quad 6.9 \quad}$$

$$+ 45 \quad 56 \quad 36.8$$

$$\underline{\quad - 1 \quad 44 \quad 2 \quad}$$

$$+ 45 \quad 54 \quad 52.6$$

Sept 9^h 14^m 50^s 55.7 Camb. m. S.T.

Revised

*R = Salander 8615

1800

1 23 34.08

NP 44 11 15.6

$$+ 4.325$$

$$\sin V + 0.006$$

$$+ 4.331$$

$$\underline{58}$$

$$34.648$$

$$\underline{21655}$$

$$251.198 = + 4^m 11.20^s$$

$$4 \quad 23 \quad 34.08$$

1858.0

$$AR = 4 \quad 27 \quad 45.28$$

$$- 8.194$$

$$\sin V + 0.158$$

$$- 8.036$$

$$\underline{58}$$

$$64 \quad 288$$

$$\underline{40180}$$

$$466.088 = - 7' 46.1''$$

$$44 \quad 11 \quad 15.6$$

$$44 \quad 3 \quad 29.5$$

$$\Delta = + 45 \quad 56 \quad 30.5$$

*R to apparent Place

$$f = 38.13 \quad g = 18.87 \quad G = 331.33 \quad h = 18.84 \quad H = 103.48 \quad i = 7.94$$

$$\alpha = \frac{66.56}{398.29} = 38.29' \quad \alpha = \frac{66.56}{170.44} = 103.48'$$

$$\log g = 1.27577$$

$$\sin(G+g) = 9.79399$$

$$\tan \delta = 0.01428$$

$$1.08404 + 12.135$$

$$\underline{4.363}$$

$$\log h = 1.27508^{15} \quad 54.628$$

$$\sin(H+g) = 9.20691 + 3.64$$

$$\sec \delta = 0.15777$$

$$0.63976$$

$$1.27577$$

$$\cos 9.89364$$

$$1.16941$$

$$+ 14.771$$

$$\underline{5.309}$$

$$+ 20.280$$

$$1.27508$$

$$\cos 9.99429$$

$$\sin \delta 9.85651$$

$$1.12588$$

$$\cos \delta = 9.84223$$

$$i = 0.89982$$

$$0.74105$$

To find the place of the comparison star of Sept 5/6, 1858
stars γ and δ observed on Sept 9/10 are in B. Ze. 514.

* γ Tab. AR =	4 ^h 34 ^m 27.70	Tab. Dec =	+ 44° 46' 37.0
k =	- 1 13.18	d	- 1 4.8
$\delta \cdot \delta \cdot k'$	- 0.24	$\delta \cdot \delta \cdot d'$	+ 0.6
Mean place 1825.0	AR = 4 33 14.28	100 Dec =	44 45 32.8

$$\log n = 1.30222$$

$$\sin d = 9.96986$$

$$\tan \delta = 9.99735$$

$$1.26943$$

$$\text{nom} = + 18.564$$

$$46.0563$$

$$15 \mid 64.6203$$

$$+ 4.308$$

$$33$$

$$12924$$

$$12924$$

$$142,164 = 2^m 22.16$$

$$1.30222$$

$$\cos d \quad 9.55630$$

$$0.85852$$

$$\text{nom} = + 7.217$$

$$33$$

$$21651$$

$$21651$$

$$238161 = 3' 58.1$$

	4	33	14.28		+ 44	45	32.8
		+ 2	22.16			+ 3	58.1
Mean place 1858.0	4	35	36.44		+ 44	49	30.9
Red. to app P			+ 3.42				+ 6.5
	4	35	39.86		+ 44	49	37.4

$$* m f. * \gamma \quad 5 \quad 12.35$$

$$* m \quad 4 \quad 40 \quad 52.21$$

$$f = + 37.72 \quad g = + 18.71 \quad G = 331.22$$

$$68 \quad 57 \quad 400 \quad 19 = 40.19$$

$$* m \text{ south of } * \gamma \quad 6 \quad 32.0$$

$$* m \quad 44 \quad 43 \quad 5.4$$

$$h = 18.90 \quad H. 107.49 \quad z = + 7.80$$

$$68 \quad 57 \quad 176 \quad 46$$

$$\log g \quad 1.27207$$

$$\sin(G+d) \quad 9.81091$$

$$\tan \delta \quad 9.99735$$

$$1.08033 + 37.720$$

$$\log h \quad 1.27646 + 12.032$$

$$\sin(H+d) \quad 8.75130 \quad 1.500 \cos \quad 9.99931 n$$

$$\sec \delta \quad 0.14919 \quad 51.252 \sin \quad 9.84809$$

$$0.17695 + 3.417 \quad 1.12386 n$$

$$1.27207$$

$$\cos \quad 9.88223$$

$$1.15430$$

$$+ 14.26$$

$$+ 5.53$$

$$+ 19.79$$

$$- 13.30$$

$$+ 6.49$$

$$\cos \delta = 9.85081$$

$$i \quad 0.89209$$

$$0.74290$$

see next page

* 0 of Sept 10 B. De. 514

$$\text{Tab. AR} = 4^h 40^m 49.20$$

$$k = -1 \quad 13.30$$

$$k' = - \quad 0.21$$

18250

$$4 \quad 39 \quad 35.69$$

$$\text{Tab. Dec} = 44^\circ 40' 35.3$$

$$d = -1 \quad 1.1$$

$$d' = + \quad 0.5$$

$$44 \quad 39 \quad 34.7$$

$$\log n \quad 1.30222$$

$$\sin \alpha \quad 9.97432$$

$$\log \delta \quad 9.99583$$

$$1.27237$$

$$\text{non} + 18.7226$$

$$46.0563$$

$$15) 64.7789$$

$$+ 4.318$$

$$33$$

$$12.954$$

$$12.954$$

$$142.494 = 2^m 22.49$$

$$1.30222$$

$$\cos \quad 9.52367$$

$$0.82589$$

$$+ 6.697$$

$$33$$

$$20.091$$

$$200.91$$

$$221.001 = + 3 \quad 41.0$$

$$4 \quad 39 \quad 35.69$$

$$2 \quad 22.49$$

1858.0

$$4 \quad 41 \quad 58.18$$

Red to app

$$+ 3.39$$

$$4 \quad 42 \quad 1.57$$

* m/p m o

$$1 \quad 9.05$$

* m

$$4 \quad 40 \quad 52.52$$

$$44 \quad 39 \quad 34.7$$

$$3 \quad 41.0$$

$$44 \quad 43 \quad 15.7$$

$$+ 26.2$$

$$44 \quad 43 \quad 21.9$$

$$20.5$$

south of 0

* m

$$44 \quad 43 \quad 1.4$$

$$G = 331 \quad 22$$

$$\alpha = 70 \quad 29.5$$

$$401 \quad 51.5 = 41 \quad 51.5$$

$$H = 107 \quad 49$$

$$70 \quad 29.5$$

$$178 \quad 18.5$$

$$1.27207$$

$$\sin(G + \alpha) \quad 9.82434$$

$$\tan \delta \quad 9.99577$$

$$1.09215$$

$$+ 37.720$$

$$+ 0.787$$

$$+ 12.364$$

$$15) 50.871$$

$$3.391$$

$$\log h \quad 1.27646$$

$$\sin(H + \alpha) \quad 8.47097$$

$$\tan \delta \quad 9.14841$$

$$9.89584$$

$$1.27207$$

$$9.82434$$

$$1.14410$$

$$+ 13.935$$

$$+ 8.342$$

$$+ 19.477$$

$$- 15.294$$

$$+ 6.183$$

$$1.27646$$

$$9.99981$$

$$\tan \delta \quad 9.84739$$

$$1.12366$$

$$\cos \delta \quad 9.85139$$

$$0.89209$$

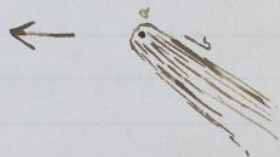
$$0.74368$$

$0.1105 = \cos 4^\circ$
 2.6696 Rad. Earth's orbit
 2.7791
 $60 \text{ miles} = 1''$

Sept 12th 7 to 8 PM

Comet of Donati is daily increasing in brightness & in length of train. This evening in the Comet seeker it was traceable fully 6° from the nucleus - & 4° by the naked eye - The nucleus presents the strongest concentration & the greatest intensity as well as quantity of light that I have ever seen in a comet. ~~With the unaided~~ aided by the surrounding light of the envelope & contiguous part of the tail it is as bright to the unaided eye as a star of the 3rd magnitude & seen in the great telescope it still in the quantity of light concentrated within an area of $10''$ diam. equals in brightness a star of the 5th or 6th magnitude as viewed at the same altitude.

It seems that the portion of the envelope & train between a & b (see in G.R.) is brighter than the rest.



I noticed a similar deviation from symmetry on the morning of the 8th/9th.

Sept. 12/13 1858

Saw Donati's Comet this morning at half-past three o'clock.
To the naked eye the nucleus appeared as large as a star of the second
magnitude, and the tail from five to six degrees long. A. H.

1858 Comet VII.

Compared with $\alpha = 10^{\frac{24}{11}}$ magComet / α

delt

11⁵ * 11⁵

236/

21^h 26^m

{ 8 beats
 7 "
 7.5 "
 9.
 8
 8.5

$\alpha = 10/11$

$\times 10^{\frac{24}{11}}$

 α / α

21 38 50 | 15.5 beats

15.0

15.5

15.5

21 40 53 | 16.0

Comet in exact line with α at

21 41 55

21 44 | 17.8 beats

17.0

18.5

19.0

21 46 25 | 19.5

Sep

24/0.7 6.03 0.97

13	10	33	0	47	13	3	18	.4
14	9	53		46	53		16	.6
15	9	13		45	53		14	8
16	8	33		44	13	+3	13	.0

BAC 243
7/8 mag-

R 0^h 46^m 3.8^s
Dec +3° 19' 18"

236	20	18	22.0
		1	18

	20	17	4
Herr	7	26	38
	12		
	14	33	22
	0	50	26

20	25	00
	1	18
20	23	42
24	46	4
4	22	22

Sept. 16. 1838

Search for the new planet

*a (10) 236 = 20 34 3.7
 b (8) 34 21.1 18.4
 c (11) 34 36.0 14.9
 d 35 22.8 1 9.3
 (243) e 35 45.3

a 54 3.1
 b 8 22.0 18.9
 b' (11)-(12) 42.1 20.1
 b'' (11) 56.8 14.9

b 37 29.9
 c 44.8 14.9

a 35 52.1
 b 11.2 19.1
 b' 31.8 20.6
 b'' 46.4 14.6

b' & b'' are four and five seconds north of b

a 42 14.6
 b 42 32.8 18.2
 c 42 47.6 14.8

b 20 58 39.2
 c 58 54.6 15.4 the planet

a 46 20.7
 b 38.9 18.2
 c 46 53.8 14.9
 d 47 44.2 1 9.2
 e 48 3.0

b 21
 c

d 49 25.1
 e 47.8

a 23 29.8
 b 48.8 19.0
 b' 24 9.4 20.6
 b'' 24 24.1 14.7

d 50 12.8 236 = 20 34 36.0 c - *b = + 14.9 c - *e = -1 9.3
 e 35.2 37 44.8 14.9

d 52 6.8 42 47.6 14.8
 e 52 29.2 236 = 20 40 30.55 +14.87 1 9.2

21 15 8.26

13.90

1 10.22

34 37.71 = .574 of an hour

planet's hourly motion $1.7 \times .574 = .97$

Sept 16 1858

The new Planet, discovered by Searle (Bradley Obj.)

* ℓ is B A b 243Diam of scale $268^{\circ} 0'$

* ℓ	21	23.6	27.6		Scale	5 51"
c	9	37.4 ^{13.8}	41.6	14.0	5 11	5 51"
* ℓ	10	48.7 ^{11.3}	52.7	11.1	7 52	2 59
					5 34	4 42

$$EC = 21 \ 33 \ 00$$

$$236 = 21 \ 34 \ 34.5$$

* ℓ	11	26.2	30.2		6 30	
c		40.2 ^{14.0}	44.1	13.9	3 30	3 00
* ℓ	12	50.7 ^{10.5}	54.6	10.5	8 13	4 43

* ℓ	15	16.9	20.9		4 37	
c		30.7 ^{13.8}	34.6	13.9	1 51	3 00
* ℓ	16	40.9 ^{10.2}	44.7	9.9	6 32	4 41

* ℓ	17	25.5	29.6		5 18	
c		39.6 ^{14.1}	43.4	13.8	2 18	3 00
* ℓ	18	49.6 ^{10.0}	53.6	10.2	7 00	4 42

* ℓ	20	39.8	43.7		6 25	
c		53.3 ^{13.5}	57.4	13.7	3 24	3 01
* ℓ	21	7.6 ^{10.3}	7.6	10.2	8 06	4 42

observations of Sept 16.

236 fast of ϵb $1^m 34.35$
 ϵb slow $1^m 15.80$

236 fast $1^m 15.80$

$$\begin{array}{rcl} 236 = 21^h 9^m 41.6 & c - *b & = + 13.90 \\ 11 & 44.1 & + 13.95 \\ 15 & 34.8 & + 13.85 \\ 17 & 43.4 & + 13.95 \\ \hline 20 & 57.4 & + 13.60 \end{array}$$

$$\begin{array}{rcl} c - *e & = - 1^m 10.20 & 1^s \text{ added to record.} \\ - 1 & 10.50 & \\ - 1 & 10.05 & \\ - 1 & 10.10 & \\ - 1 & 10.25 & \end{array}$$

$$\begin{array}{rcl} 236 = 21 & 15 & 8.26 \quad c - *b \quad + 13.85 \\ 21 & 15 & 8.26 \quad 13.90 \end{array}$$

$$\begin{array}{rcl} c - *e & = - 1^m 10.22 \\ - 1 & 10.22 & \text{by obs on preceding page} \end{array}$$

$$236 = 21 \quad 15 \quad 8.26 \quad c - *b \quad + 13.87 = \Delta\alpha$$

$$- 1^m 10.22 = \Delta\alpha$$

$$236 = 21 \quad 15 \quad 8.26 \quad c - *b \quad - 3' 00.0 = \Delta\delta \quad c - *e \quad - 4' 42.0 = \Delta\delta$$

$$236 \text{ fast} \quad 1 \quad 15.80$$

$$\text{sid time} = 21 \quad 13 \quad 52.46$$

$$11 \quad 41 \quad 21.11$$

$$9 \quad 32 \quad 31.35$$

$$1 \quad 33.79$$

$$\text{comb. mt. } 9^h 30^m 57.56$$

$$h = 3^h 30^m E \quad \text{No cor for ref. } > 0.1$$

$\text{By } BAC \quad 243$

$$\begin{array}{rcl} *e \text{ app } AR & = & 0^h 46^m 4.89 \\ c - *e & & - 1 \quad 10.22 \end{array}$$

$$\text{Sun} + 3^{\circ} 19' 20.7$$

$$- 4 \quad 42.0 \quad (\text{not corr. for ref.})$$

$$\text{planets } AR = 0 \quad 44 \quad 54.67$$

$$\text{Sun} + 3 \quad 14 \quad 38.7$$

Revised

$\text{By } W 775$

$$\begin{array}{rcl} *b \text{ app } AR & = & 0^h 44^m 40.74 \\ c - *b & & + 13.87 \end{array}$$

$$\text{Sun} + 3^{\circ} 17' 38.4$$

$$- 3 \quad 00.0 \quad (\text{not corr. for ref.})$$

$$\text{planets } AR = 0 \quad 44 \quad 54.61$$

$$\text{Sun} + 3 \quad 14 \quad 38.4$$

* B.A.b. 243. = *c of Sept 16.

$$1858.0 \quad AR = 0 \quad 45 \quad 36.44$$

$$K.D.D. = 86 \quad 43 \quad 42.7$$

$$Proc + 3.086$$

$$-19.66$$

$$\begin{array}{r} 8 \\ + 24.688 \end{array}$$

$$\begin{array}{r} 8 \\ - 157.28 \end{array}$$

$$0 \quad 45 \quad 36.44$$

$$86 \quad 43 \quad 42.7$$

$$+ 24.69$$

$$- 2 \quad 37.3$$

$$1838.0 \quad AR \quad 0 \quad 46 \quad 1.13$$

$$86 \quad 41 \quad 5.4$$

$$+ 3.76$$

$$- 26.1$$

$$app \quad AR \quad 0 \quad 46 \quad 4.89$$

$$app \quad K.P.D. \quad 86 \quad 40 \quad 39.3$$

$$" \quad Dec + 3 \quad 19 \quad 20.7$$

Red. to app. Place.

$$a \quad 8.8160$$

$$a' \quad 9.6253n$$

$$A \quad 1.2707$$

$$A \quad 1.2707$$

$$0.0867 + 1.221$$

$$0.8960n - 7.871$$

$$2.600$$

$$-16.565$$

$$b \quad 8.1206 + 3.821$$

$$b' \quad 8.7477n - 1.781$$

$$B \quad 0.3381n$$

$$B \quad 0.3381n - 26.217$$

$$8.4587n - 0.029$$

$$9.0858 + 0.122$$

$$-0.034$$

$$-26.095 = corr.$$

$$c \quad 0.4894 - 0.063$$

$$c' \quad 1.2936n$$

$$C \quad 9.9256 + 3.821$$

$$C \quad 9.9256$$

$$0.4150 + 3.758 = corr.$$

$$1.2192n$$

$$d \quad 7.5723$$

$$d' \quad 9.2960$$

$$D \quad 0.9547n$$

$$D \quad 0.9547n$$

$$8.5270n$$

$$0.2507n$$

*b of Sept 16 = W. 775

1825.0 Tab AR = 0^h 42^m 55.17 Sec + 3 6 22.8

Pre + 3.085

33

9.255

9.255

+ 101.805 = 1^m 41.81

42 55.17

1858.0

AR = 0^h 44^m 36.98

Red to app place

+ 3.76

0 44 40.74

+ 19.716 (should be + 19.684)

33

59 148

59 148

49.5

+ 650.628 = 10^h 50.6 = 1.1

3 + 6 22.8

Sec = + 3 17 12.3

+ 26.1

+ 3 17 38.2 = 1.1

3 17 38.4

Red to app Place

f = 38.99

g = +19.14

G = 331' 56"

h = 18.78

H = 96.42

i = +8.09

a = 11 9

α = 11.9

G + α = 343 5

H + α = 107.51

log g = 1.28194

sin(G + α) = 9.46386n

tan δ = 8.75937

9.50517n - 0.322

+ 38.790

log h = 1.27370 38.468

sin(H + α) = 9.97857 17.900

sec δ = 0.00071 15 756.392

1.25298 + 3.76 = corr

1.28194

cos 9.98079

1.26273

+ 18.311

+ 8.077

+ 26.388

1.27370

cos 9.48647n

8.75865

9.51882n

- 0.330

+ 26.058 = corr

and 9.99929

i 0.90795

corr = 0.90724

*A was afterwards found in the Radcliffe observations

$$1848.0 \quad M.A.R. = 3 \quad 33 \quad 13.37$$

$$N.P.D. = 41 \quad 57 \quad 54.5$$

$$+ 4.261$$

$$- 11.94$$

$$\underline{\quad 10 \quad}$$

$$\underline{\quad -10 \quad}$$

$$+ 42.610$$

$$- 119.40$$

$$3 \quad 33 \quad 13.37$$

$$41 \quad 57 \quad 54.5$$

$$\underline{\quad 42.61 \quad}$$

$$\underline{\quad -1 \quad 59.4 \quad}$$

$$1858.0$$

$$3 \quad 33 \quad 55.98$$

$$41 \quad 55 \quad 55.1$$

$$+ 4.17$$

$$\text{See } + 48 \quad 4 \quad 4.9$$

$$\underline{\quad 10.7 \quad}$$

$$\text{app } AR = 3 \quad 34 \quad 0.15$$

$$\text{app See } + 48 \quad 4 \quad 15.5$$

$$\delta - * \quad + 1 \quad 13.00$$

$$+ 4 \quad 26.1$$

$$\text{As } AR = 3 \quad 35 \quad 13.15$$

$$\text{As See } + 48 \quad 8 \quad 41.6$$

Sept 17^d 9^h 1^m 37.2 Camb. m.s.t.

to app place *A.

$$f = 38.99 \quad g = +19.18 \quad G = 331^\circ 39' \quad h = +18.78 \quad H = 95.42 \quad z = +8.10$$

$$\alpha = 53 \quad 29$$

$$\alpha = 53 \quad 29$$

$$G + \alpha = 385 \quad 28 = 25 \quad 28 \quad H + \alpha = 149 \quad 11$$

$$\log g = 1.28285$$

$$1.28285$$

$$\sin(G + \alpha) = 9.68345$$

$$\cos 9.95561$$

$$\tan \delta = 0.04660 \quad + 38.990$$

$$1.23846$$

$$+ 17.316$$

$$0.96290 \quad + 9.181$$

$$+ 5.413$$

$$\underline{\quad 14.397 \quad}$$

$$+ 22.729$$

$$\log h = 1.27370 \quad 13.62568$$

$$1.27370$$

$$- 11.999$$

$$\sin(H + \alpha) \quad 9.70952 \quad + 4.17$$

$$\cos 9.93390 \quad + 10.730$$

$$\sec \delta = 0.17506$$

$$\sin \delta \quad 9.87154$$

$$\underline{\quad 1.15828 \quad}$$

$$1.07914n$$

$$\cos \delta = 9.82494$$

$$z = 0.90849$$

$$\underline{\quad 0.73343 \quad}$$

Sept 17, 1858

Tuttle Comet III, 1858

* A of 2 may
of north following * A

Chron 236.

Less of wires 267° 15'

* A 20 ^h Diff AR
41 17.6 - 25.8 1 15.6
42 33.2 42.0 16.2

Less
50.02
50.03

* A 43 12.2 20.9 1 15.1
44 27.3 35.8 14.9
20 ~~42 32.58~~
43 34.6 1 15.45

3 34.6

20 ~~42 32.58~~ 1 15.45
20 56 31.98 1 10.55
20 ~~49 42.56~~ 40 = 1 13.00
50 3.29

236 = 20 Diff AR
47 25.5 77.13
50 17.0 77.46
32 58.0 77.01
20 50 13.5 77.20

30.02
27.18 = 266.4 - .3 = +4' 26.1 = Δδ

motion in 30^s

* A 20 Diff AR
54 49.2 0.1 1 10.9
55 0.1 10.2 10.1

~~* A being able to account for
this & 3 I have taken it into
by into account, in reducing
J.H.S.~~

* A 57 4.0 14.6 1 10.6
58 14.6 25.2 10.6
20 56 31.98 1 10.55

* A 21 0 25.6 - 36.0
1 34.7 45.1 } not in good

at the last transit the wires were set at zero of position of scale on 268° 15'

* A in Bailey's 6759 and Patch 868.

* A cannot be found in the catalogues

Sept 17, 1858

Comet continuua

EC slow 18.65-

(236)	* A	21	3	41.7	7.4	7.58	EC 21 19 00
	* of 9 may		4	43.2	9.0	5.55	236 21 20 37.4
							1 37.4
							18.65
							1 18.75

Comet in center of field

236 =	21	5	52.0		
236 for		1	18.7		
Sid time	21	4	33.3		
H	5	29	42.0 - 12	221	51
	6	30	18.0	Dec + 48°	9'
AR =	3	34	51.3		

See another page
* A was subsequently found
in Radcliffe St.

The agreement of the
place of A by Radcliffe St
with that in remarkable.

36.0 3 59

* A (from pages forward)

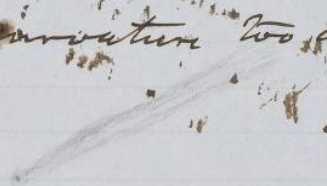
app. AR =	3 ^h	4	00.15	15.7
		33	59.65	Dec + 48° 4' 16.4
AR - *		+1	13.00	+ 4 26.1
AR	3	35	12.65	Dec + 48 8 42.5
			13.15	41.8

Revised

236 =	20	49	42.56	11	44	30.92
236 for		1	18.75			46.24
sid time	20	48	23.81	11	45	17.66
	11	45	17.66			
	9	3	6.15			
		1	28.97			

Sept 17 9 37.18 Camb m. s. t

Sept 17th 1858

Sky very clear with Moon 10 days old
in S.S.C. Comet of Donati has a nucleus
as a star of the 2nd mag. to the naked eye & the
tail near it brilliant for 1° - can be traced
now certainly only 4° owing to the Moonlight.
The south following side of its envelope a tail
is evidently the brightest. There is also
a pretty evident curvature to the tail. ^{Smith}
It is now rising higher every day. ^{h 40² m 50² s}
above the horizon. ^{Ar is N.W.} 
brighter - Drawing makes curvature too decided but
it is recognised with certainty. 
H.P.T. saw it in the A.M.

Note added June 3 1859 If we take the above sketches to represent
3° of length of tail we have

Breadth from ink sketch at extremity of tail $\frac{1}{7.2} 3^\circ = \frac{1}{3} 100' = 33.3' \approx 25'$

" pencil " $\frac{1}{12} 3^\circ = 15'$

Mr Lapelle Sept 12 gives 12' as breadth of tail but does
not say how near nucleus (at 20' from nucleus with Ref. account)

Probably at 3° from nucleus breadth $\approx 15'$ [20']

Stars for determining the place of *A of Sept. 17

AR =	3	37	15.1	Sen	48	3	48	
k			- 14.0	d			- 17	
	3	37	1.1		48	3	31	
Poe		1	9.	Poe		2	17	(mag)
Arg Zone 64. No 98	3	38	10.	98	48	5	38	8.9
			45-			- 1	45-	
No 99	3	38	55-	99 Sen +	48	3	53	9
		1	34.5-			+ 4	5-	
100	3	40	29.5-	100	48	7	58	9

$$AR = 3^h 33^m 40^s \quad \text{Sen} + 48^\circ 4.5'$$

A	19	42	16.8
b		43	18.8
98		46	51.0
99		47	16.0

Sept 18 1858.

Sonata's Corner

Comet in centre of field

236 = 19 20 16.0

236 fast 1.20

side line 19 18 56

H 7 40 28.0

11 38 28

- 20

7^h 27^m m.s.t. 11. 38. 8

14

7 13

18.333

19.500

4) 1.167

0.292

.292

23.3

20

876

876

584

6.8036

6 48

11 44 16

11. 37 28

27.5

20

174° 10'
11° 36' 40"

51
240

Dec +36 31

- 4
36 27

3.5
2

Sept 18 1858 Comparison Star of Sept 17

A is very much (more than 1 mag) brighter than *p* which is δ 8/9.

236

	^h	ⁿ	¹²	²⁰	³⁰	Scale	
*A	19	45	24.0	35.2	61.0	4 11	
p		53	38.0	49.2	14.6	6 43 ? cloudy	2 32
		4	14.0	14.0	13.6		

*A	19	57	42.4	54.6	19.4	4 01	
p	20	1	56.1			6 35	2 34
		4	13.7				

$$*A - p = -4^m 13.82$$

$$*A - p = -2^s 33.0$$

c	6	36.0	5 59
d	7	21.2	4 17

$$p \text{ Tab. AR} = 3 \quad 37 \quad 15.10$$

$$k \quad \quad \quad -13.83$$

$$k' \quad \quad \quad \underline{0.00}$$

$$1842.0 \quad AR = 3 \quad 37 \quad 12.7$$

$$\text{Tab. Lu} + 48 \quad 3 \quad 48.5$$

$$d \quad \quad \quad -17.2$$

$$d' \quad \quad \quad \underline{+0.1}$$

$$\text{Lu} + 48 \quad 3 \quad 31.4$$

$$+ 4.250 \quad 4.281$$

$$\underline{16}$$

$$25500$$

$$\underline{4250}$$

$$+68.000 = +1^m 8.50$$

$$3 \quad 37 \quad 1.27$$

$$1858.0 \quad 3 \quad 38 \quad 9.77$$

$$+4.20$$

$$\text{a/p.p.} \quad *p \quad AR = 3 \quad 38 \quad 13.97$$

$$*A - p \quad \quad \quad -4 \quad 13.82$$

$$*A \quad \quad \quad 3 \quad 34 \quad 00.15$$

$$+11.77 \quad 1.67$$

$$\underline{16}$$

$$70.26$$

$$\underline{1171}$$

$$187.36 = +3^s 46.7$$

$$48 \quad 3 \quad 31.4$$

$$48 \quad 6 \quad 38.8$$

$$+10.6$$

$$\text{Lu} + 48 \quad 6 \quad 48.7$$

$$-2 \quad 33.0$$

$$+48 \quad 4 \quad 15.7$$

p of Sept 18.

$$f = +39.01 \quad g = 19.22 \quad G = 332 \quad 3 \quad h = +18.77 \quad H = 94 \quad 38 \quad i = 8.12$$

$$\alpha = 54 \quad 32 \quad \alpha = 54 \quad 32$$

$$G + \alpha = 26 \quad 35 \quad H + \alpha = 149 \quad 10$$

$$\begin{array}{rcl} \log g & = & 1.28375 \\ \sin(G + \alpha) & = & 9.65079 \\ \tan \delta & = & 0.04725 \\ & & 0.98179 \\ \log h & = & 1.27346 \\ \sin(H + \alpha) & = & 9.70973 \\ \sin \delta & = & 0.17542 \\ & & 1.15866 \\ & & + 9.589 \\ & & + 14.408 \\ & & + 39.010 \\ 15 \overline{) 63.007} & & \\ & & + 4.20 \end{array}$$

$$\begin{array}{rcl} & & 1.28375 \\ & \cos & 9.95148 \\ & & 1.23523 \quad + 17.19 \\ & & \quad + 5.42 \\ & & 1.27346 \quad + 22.61 \\ & \cos & 9.93382n \\ & \sin & 9.87182 \quad - 12.00 \\ & & 1.07910n \quad + 10.61 \\ & & \cos \delta = 9.82458 \\ & & i = 0.90956 \\ & & 0.73414 \end{array}$$

$$\begin{array}{rcl} 1550.0 & 3 & 37 \quad 35 \\ 45 & 8.8 \\ 9 & 15 \\ 54. & 23.8 \sin & 9.91012 \quad \cos \quad 9.76505 \\ & & 1.30221 \quad 1.30221 \\ 48^\circ 5' 4'' \sin \delta & & 0.04685 \quad 1.06726 \quad 11.67 \\ & & 18.162 \quad 1.25918 \\ & & 46.059 \\ & & 64221 \\ & & 4.281 \\ & & 16 \\ 25686 & & 17002 \\ 4281 & & 1167 \\ 68496 & & 186.72 \\ & & 3' - 6.7 \\ & & 1'' 8.50 \end{array}$$

Sept 20th Comet of Donati

1858

Comet is $n p * \text{ of } 8/9 = \alpha$

236
 19.13.40 11.5 beats
 11.5
 11.0
 15 50 10.5
 10.2
 9.5
17 28 9.3
 19 15 50 10.50

Another $* 8^{\text{th}} = \beta$ near α
 by 18.0 and is 6'.30" S of it

Stars α and β are
 in Bessel's Zone 358.
 & also in 359.

19 19 35 7 13 Comet on Scale
 5 28 Star 1' 45"

19 20 40 4 43 Comet
 3 01 Star 1' 42"

19 21 44 5 44
 4 1 1' 43"

19 22 47 4 58
 3 17 1' 41"

19 23 43 4 47
 3 4 1' 43"
 1' 42.8"

19 26 30 4.7
 4.8
 4.2

19 28 00 4.1
 4.0

19 29 27 3.7
 3.4

19 28 00 4.3

Comet 2 Donati (Cont.)

236	19	36	48
	0	1	26
sidereal time	19	35	22
HW	7	45	53
AR =	11	49	29

+ 36° 22'

North

7 PM

Perhaps the lumen a b is an illusion



The tail (contrary to the remark of Mr. Hind in the London Times is plainly bifurcated near the nucleus & much the brightest on the following side xy ^(upper figure) so that with a strong illumination the tail would seem to point in the direction xy inclined 25° with hour circle whereas the true axis is such that the extremity of the tail much precedes the nucleus (correctly drawn above) from a to b there seems to be a ^{looking an obscure} crescent outline just distinguishable. The nucleus seems elongated towards b strongly concentrated & very bright.

1" = 470 miles
 90" = 42,000 miles
 45" = 21,000 miles
 (By this diagram angle of sector is 145° say 145° = 22.5° wide from 1860

1860
1858phae.proj..1813
I am sure that the light ^{outside of it} is unequally distrib-
uted - looks irregular - chaotic.

Altogether the comet is a most
improper & mysterious object. & its
light far more intense than any other I have
seen. It has a wild shaggy look - "crinibus
papis" calculated to inspire profound hor-
ror ~~and~~ for its malignant influence.

When the Moon leaves us admira-
tion will be unbounded for it is now approach-
ing its best estate & highest altitude.

$$\begin{array}{r} 0^h \quad 41^m 50^s \\ + \quad 30^m 09^s \end{array}$$

Searles Planet

Sept 20th 1858

$$\begin{array}{r} \text{pre } e \text{ by} \\ \text{Sij. Du} \end{array} \quad \begin{array}{r} 4^m 15^s \\ 10' 5'' \end{array}$$

4 15

1 24

2..51

$$\begin{array}{r} \text{pre } b \\ s \end{array} \quad \begin{array}{r} 2^m 51^s \\ 8' \end{array}$$

236

$$\begin{array}{r} 22^h 22^m \\ 32 \text{ beats } a, \text{ pre } b \\ 32.3 \end{array}$$

$$23.4 \quad a' (12/13) \text{ pre } a$$

$$\begin{array}{r} 45 \quad " \quad b \text{ pre } r \\ 19 \quad " \quad r \quad " \quad s \end{array}$$

$$\begin{array}{r} 31.8 \quad a \text{ pre } b \\ 32.0 \end{array}$$

$$\begin{array}{r} 22^h 27^m \\ 45.0 \quad b \text{ pre } r \\ 18.8 \quad r \quad " \quad s \end{array}$$

$$22^h 28^m \quad 59.5$$

$$22^h 31^m \quad 45.0$$

a_2 proved to be the planet - here carefully comp with a_1

$$\begin{array}{r} 22^h 35^m \quad 41.0 \text{ beats } a_2 \text{ pre } a_1 \\ 22^h 37^m \quad 41.0 \quad " \end{array}$$

$$22^h 42^m \quad 41.3$$

$$41.6$$

$$44 \quad 41.3$$

$$\begin{array}{r} 49 \\ 22 \quad 41 \quad 18.0 \quad 41.38 \end{array}$$

α_2 is of 10^{th} 11^{th} mag in extreme S of field
5' S of α

α' 12^{th} 0' 20" S of α

α 11^{th} ~~at~~

β 11^{th} 3' 30" N of α

γ 11-12 3' S of α

δ 11-12 4 "

Diff. Dec of Planet = α_2 and α_1

Planet is S.p. α_1

22 57 35 3' 3" = P
8 31 = α_1

5' 28.

5' 29

5' 28

22 59 15 2 29
7 58

Mean 5' 28.5 22^h 59^m 58.0 47.5

23 00 10 3 00
8 28

$\Delta\delta = 5' 28.5$

6

41.38

22 41 18.0

23 2 10 2 29
7 58

44.00

23 12 50.0

$\Delta\alpha = 42.69 = 21.34$ 22 57 4.0

1 26.35

Comp. again with α_1

sid time

22 55 37.65

11 57 7.32

10 58 30.38

1 47.88

10 56 42.45 bomb m.s.l.

23 9 45 44.0 beats

11 5 44.0

11 56 20.58

12 30 43.8

46.74

13 25 44.0

11 57 7.32

14 30 44.0

15 45 44.2

23 12 50.0 44.00

α , Comp with * b of Sept 16th

α is s.p. b

17 39 scale

23 18 41.5 - 10 beats 4' 44" 3.17
23 21 27.0 - " 8 1 3.17

Diff R

2 45.5

46.0

46.0

45.0

46.3

46.0

45.8

46.0

45.6

2 45.8

23 22 44.0 - 10 beats 4 45 1st min } * α
23 8.5 3.17 2nd

25 30.0 " 8 02 1st min } * b
25 54.5 " 2nd "

23 27 34.5 " 4 47 " 15
57.7 " 3

23 30 19.5 8 02
44.0

23 33 29.5 2 35 "
14.5 5 17
39.2

23 39 12.1
39 37.0

58.1

42 22.6

36 0.17 5 53
25.0

Diff α = 8' 16.5

$$\begin{array}{r}
 528 \\
 316 \\
 \hline
 8.44 \\
 246.0 \\
 213 \\
 \hline
 3.073 \\
 13 \\
 \hline
 3.205
 \end{array}$$

$$\begin{array}{rcl}
 1858.0 & *b & \\
 AR = 0^h & 44^m & 36.98 \quad \text{Sun} + 3^\circ 17' 12".3 \\
 & & + 3.82 \quad + 26.4 \\
 \text{app } AR = 0 & 44 & 40.80 \quad \text{app } \text{Sun} + 3 \quad 17 \quad 38.7 \\
 & 2 & 45.80 \quad \quad \quad 3 \quad 16.5 \\
 \alpha_1 & 0 & 41 \quad 55.00 \quad \quad \quad 3 \quad 14 \quad 22.2 \\
 & & 21.34 \quad \quad \quad 5 \quad 28.5 \\
 \text{planet's } AR = 0 & 41 & 33.66 \quad \text{Sun} + 3 \quad 8 \quad 53.7
 \end{array}$$

Sept 20 $10^h 46^m 42.4$ Camb. m.s.t

$$\begin{array}{rcl}
 f = +39.21 & g = 19.28 & Q = 332.18 \quad h = 18.77 \quad H = 92^\circ 30' \quad i = 8.13 \\
 & & 11.9 \quad \alpha = 11.9 \\
 Q + \alpha = 343.20 & & H + \alpha = 101.39
 \end{array}$$

$$\begin{array}{rcl}
 \log g = 1.28511 & & 1.28511 \\
 \sin(Q + \alpha) = 9.45758n & & 9.98136 \\
 \tan \delta = 8.75937 & & 1.26647 \quad + 18.47 \\
 9.50206n & & \quad \quad \quad 8.12
 \end{array}$$

$$\begin{array}{rcl}
 \log h = 1.27346 & & 1.27346 \\
 \sin(H + \alpha) = 9.99096 & & 9.30521n \quad + 26.59 \\
 \sec \delta = 0.00071 & & \quad \quad \quad -0.22 \\
 1.26513 & & \quad \quad \quad + 26.37
 \end{array}$$

$$\begin{array}{r}
 + 39.21 \\
 18.41 \\
 57.62 \\
 0.32 \\
 \hline
 + 57.30 = +3.82
 \end{array}$$

$$\begin{array}{r}
 \cos 9.99929 \\
 i \quad 0.91005 \\
 \hline
 0.90938
 \end{array}$$

1858 Sept. 23rd. Comet of Donati.
 By Naked eye head of Comet > Star of 1st mag* Train
 in full Moon traced 5° or 6° & at times 2° or 3° longer.
 A fine clear eng - Moon just past full

At 6^h 30^m Comet already very brilliant
 Saw at first glance with the Great Refractor
 a most extraordinary exhibition in the
 nebularity surrounding the nucleus

The nucleus itself is now smaller
 than it has been & very intense. Train 3''?
 at a distance of 15''^{14000 miles} from it is an arch of
 dark band & B & equidistant from this
 another (ie 30''^{12000 miles} from nucleus) & S

These arcs extend over 200 or 220° degrees of
 amplitude measured from the nucleus
 & can be traced further
 on the apparent lower side*
 than on the upper. But the latter ^{side} has always
 shown less strongly than the other.



The nucleus seems now ~~depressed~~ somewhat
 more compact than when last seen.

* Probably making allowance for damaging effect of proximity to horizon

This order was reversed after Oct. 6th

Sept 24. 1858

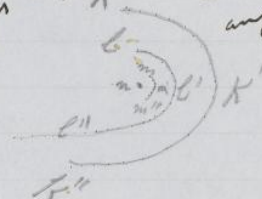
1" subtends 411 miles $90'' = 37$ arc

Donati's comet

Dir. of tail nearly in R circle

Dir. of Axis of tail

Measures of trans-
diam. through nucleus were
always difficult because the
line of $k k' k''$ there
was not at right
angles to this
transverse



$k k' k''$, $l l' l''$ represent the darker traces or
arcs. n in m is scarcely more than
a darker space. in front of nucleus
(Subsequently the ^{bright} edges of the ~~envelope~~ were observed not the middle of the dark spaces.
Diameter of nucleus

n is nucleus

Zero

$$\text{const log } 7.9830$$

$$\text{log } \Delta 9.9452$$

$$\text{log sin } 1'' 4.6856$$

$$2.6138$$

$$\text{log } 2'' = 0.3979$$

$$3.0117$$

$$\text{log } 5'' = 0.7709$$

$$3.3847$$

$$\text{log } 15.6 = 1.1931$$

$$3.8069$$

$$\text{log } 34.1 = 1.5328$$

$$4.1466$$

$$\text{log } 75.7 = 1.8791$$

$$4.4929$$

$$50.51$$

$$50.49$$

$$\frac{50.50}{50.24} = 2.5 = 1.027 \text{ miles}$$

$$n \text{ to } m$$

$$49.64$$

$$50.24$$

$$60 = 5.9 = 2.425 \text{ miles}$$

$$5.9$$

$$n \text{ to } l'$$

$$48.65$$

$$50.24$$

$$1.59 = 15.6 = 6.410 \text{ miles}$$

$$-1.5 - 6.20 = \frac{1}{2} \text{ breadth of } l l'$$

$$14.1 \quad 57.90 = \text{vertex of envelope}$$

$$n \text{ to } k'$$

$$46.76$$

$$50.24$$

$$3.48 = 34.1 = 14.016 \text{ miles}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

$$32.6 \quad 133.96 = \text{vertex of envelope}$$

$$-1.5 - 6.20 = \text{vertex of envelope}$$

Diameter of $l l' l''$ through n &
perpendicular to the axis.

$$4.5.85$$

$$50.24$$

$$4.39 = 43.0 = 17.700 \text{ miles}$$

$$4.39$$

$$4.39$$

Diameter of $k k' k''$ through n &
perpendicular to the axis

$$4.2.52$$

$$50.24$$

$$7.72 = 75.7 = 31.100 \text{ miles}$$

$$7.72$$

$$7.72$$

$$7.72$$

$$7.72$$

$$7.72$$

$$7.72$$

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$$7.72$$

$$7.72$$

$$7.72$$

(Note added Oct 7th between $24''$ & $25''$ the outer edge of
from the nucleus the envelope inside of n in m burst off

$l l' l''$ can be traced to an amplitude of about 270° .

In the ^{region} south of the nucleus the part within the arc $l l' l''$ is
twice as bright as that outside of it. The light outside of $k k' k''$ and
south of it is quite feeble and diffuse. The bifurcation is distinct.
The outline of the dark region in the axis of the tail is parabolic
with its vertex touching the nucleus & the nucleus is elongated
in the direction perpendicular to the axis.

Sept 24th (Cont)

Yail 7°

Bright Moonlight

The tail is curved so that

a tangent ^{of convex edge} near the
nucleus prolonged would

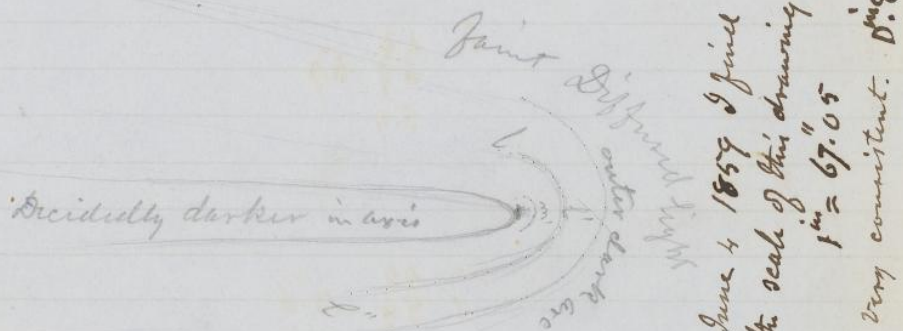
pass through *b. But the curve

prolonged would pass through *a

The upper side, (to naked eye,) is brightest

(This would correspond to an arc of small circle
of 30° radius)

Note added Oct 7th The envelope, ^{seen on next day 25} within m m m
had the appearance of a wisp attached to the
nucleus as described on next page



The parts measured for l l' & l'' were the centres
of the dark canals or bows - inside of l l' l'' is very
bright. Axis parabola has a definite outline

The above is too full & rounded - for
the envelope is rather taken as a whole
rather pointed although l l' l'' & of nucleus trans
verse diameter is much like an arc of a circle.

Breadth of dark arcs = 3" or 4" = 1400 miles

1" subtends 395 miles

Sept 25 1858.

Donati's Comet - A grand object

log 2.6686 n to l'

log 29.9282 48.41

2.5968

50.25

184

4

18.0 = 7,110 miles, too strong for tail to be seen is 240°

log 18 = 1.2553

3.8521

log 8.9 0.9494 n to m'

8.5462

49.34

50.25

97

8.9 = 3,520 miles

log 39.4 1.5955

4.1923

In strong twilight

outline of as bounded by l'l' The envelope is of the form of a half moon with the nucleus in the center (better given below)

Diameter of outer edge of envelop through the nucleus and perpendicular to the transverse axis.

46.23

50.25

41

02

8

39.4 = 15,570 miles

236 = 18 50

Breadth of bow l'l'l' about 4" = 1,580 miles

The nucleus has all the intensity of a star of 7th mag. in Gr. Refr.

1 2 3 4 5 6 7 8 9 10

Scale very consistent.

Counting the dark and bright regions there are seven distinct spaces including the outer edge and the outline of the dark space forming the axis of the tail.

Equivalent to 4 Envelopes.

Including dark axis & also background of sky there are 9 gradations of light & shade.

axis of tail which is dark

good

Shape of nucleus by this axis of nucleus = 2.6

Diffused light in front of nucleus can scarcely be traced 3' from nucleus

7,000 miles

1st dark space is axis of tail. 1st bright space is the little swirl from nucleus as above. 2nd dark space is not very decided, just outside of nucleus. 2nd br. space is very bright bounded outside by l'l' 3rd Dark space = l'l'l' 4th Dark space = "k k k" 5th Dark space = black ground of sky. The tail is 5 to 6' broad at dist. of 12 from nucleus.

Sept 25. 1858

Donati's comet continued.

* p of 9 mag south prec comet

236

EC 20 49 0.0

236 20 51 6.2

2 6.2

* 19 6 18.5 3.29
 6 46.0 27.5 6 37

The
 Tail of 236 fast 1 40.7
 Comet
 at

A rise
 reached
 a little
 more
 than
 1/2 way
 from
 nucleus
 to

* 7 39.2 2 23
 8 37.2 28.0 5 28

* 8 35.2 3 12
 9 33.8 28.6 6 17

* 10 18.0 3 59
 10 16.8 28.8 6 59

At 7^h 2^m 30^s,
 1st

of 2nd Mag. } $\frac{1}{2}(21^\circ) = 10^\circ 30'$
 strongly
 curved

* 11 27.3 4 22
 11 56.8 29.5 7 22

broad
 at
 Extram-
 ity-
 where

* 12 28.0 2 36
 12 57.8 29.8 5 34

it is
 seen
 only
 by
 glimpsing

comet in center of field

$$236 = 19 \quad 13 \quad 52.0$$

$$236 \text{ per} \quad \quad \quad 1 \quad 40.7$$

$$\quad \quad \quad 19 \quad 12 \quad 11.3$$

$$H = 6 \quad 47 \quad 36$$

$$AR = 12 \quad 24 \quad 35.3$$

$$\text{Watson} = 12 \quad 24 \quad 4$$

$$+ 31.3$$

Comp. fr. Ephemer.

$$\text{Dec} = + 34^{\circ} \quad 37' \quad 30''$$

$$\text{Watson} = 34 \quad 41 \quad 48$$

$$4 \quad 18$$

Washington obs. of comet 1858 VII.

M. T. W. 1858 VI. 8
 Sep 12. h m s h m s + 46. 46. 57. 5" 11. band
 11. 31. 57. 2 4. 10. 56. 19

The above place of the band is accurate - we have observations
 also of the 13. and 17. - but the stars of comparison
 are not determined. J. Ferguson.

M. T. W.				Observations of band 1858 VI.		Table		8
1858.	h	m	s	No. Com. L	$\Delta\alpha$	$\Delta\delta$	Δ	
Sep 12	11.	31.	57. 2	11	+ 1 - 0 0. 78	+ 3. 52. 80	4. 10. 56. 09	+ 46. 47. 3. 82
13	10	8	5. 8	2	2 - 0 17 17	- 4. 2. 33	4 5 12. 56	47 3. 41. 17
17	10	37	55. 7	4	3 + 0 27 53	+ 5 34. 78	3 34 28. 81	48 9. 32. 03

Mean. places for 1860.0 of comparison stars

AZ. 70. 22	4. 15. 41. 55	+ 46 43. 55. 64	Argelander Zores
* 1.	4. 11. 1. 73	46 43 20 96	W. Equat
AZ. 94. 64	3. 36. 37. 22	48 21. 14. 54	Arg. Zores
* 3	3. 34 5. 66	48 4 10. 36	W. Equat
BAC. 1266	3. 58 30. 74	47 20 5. 43	
* 2.	4 5. 34. 57	47 7. 54. 25	W. Equat

From St. Maury

