

KG
11365
201

H. 47

Equatorial
July 6th 1862

to

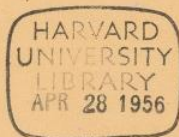
Aug. 19th 1862

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KG11365.201



KG-11365.201



Comet II. 1862.

July 18, 1862.

G.P.B. obs.

Comet in Center of Field

236 = 16 59 59

3 27

16 56 32

3 39 10

AR 13 17 22 + 5° 47'

EC 17 51 00

236 17 53 11.9

(236)

*(x) 17 20 41.2 - 48.6

R 58.6 63.7

D.D

* 21 22.2 40.3

R 50.5 57.6

north fol. * (x)
AR on Spr. Luv.

E.C. = 17 18 29.4 36.6

18 46.6 53.7 + 17.15

19 21.2 28.4

38.4 45.5 + 17.15

Dec.

(236) = 17 25 34.0

25.68

Zero

59.37

33.69

27 34.5

25.55

59.36

33.61

29 48.0

26.65

59.34

32.69

31 32.0

27.10

59.52

32.32

AR
D.D.D

* 34 52.7

R 9.7

17 32 33.3 40.4

50.2 57.6 + 16.45

* 35 29.0 - 36.2

R 46.0 - 53.5

33 17.0 24.3

24.0 41.5 + 17.10

July 18,

* x is by Str. V. No. 2741
 " " " " 2736.

						Scale			
* A (236) =	17	39	54.9	El.	17 37	36.6	42.8	1' 58"	
* x		43	3.5		40	47.7	51.7	6 36	4 38 3 9.00
* A		43	54.7		41	36.6	42.8	1 19	
* x		47	3.6		44	47.9	51.7	5 55 4 36	9.10

Comet - Star x

El.

	ΔL	ΔS	
17 18 50	+ 17.15		
19 42	17.15		
23 22		+ 5' 30.2	
25 23		31.3	
27 36		20.4	
29 20		16.7	
32 54	16.65		
17 23 38	17.10		
Reduce to El			
17 26 21	Mean -	+ 17.06	+ 5' 24.8
+ 2	Refr.	+ 0.01	+ 0.3
Star x - A	Temp.	+ 3	+ 4 37.0
20.16 1662.0		+ 0.01 - 0.02	+ 0.2 + 0.1
Comet - A	+ 3	26.13	+ 10 2.3

Met 1862 II (Bond)

1862 July 18th

Star A = Bailey 24743 = Weisse XIII. 210. = 1768 Bradley. = 2853 Robinson =

1862 B.B. observed also at Dorpat in 1849.

Mader's ^{declination} position is probably erroneous

Br 1755.0				+6 7 16.9	
				-34 4.4	
Lal 1500.0	13	10	27.90	+5 52 50.6	
	+3		7.79	-19 42.6	
Bapl 1825.0	11		43.19	44 54.5	
	1		52.09	-11 45.1	
Rob 1540.0	12		28.90	40 11.32	
1.2 cl 1853.3 1852.3	1		6.65	-6 59.0	
Wagn 1849.0	12		56.32		
			39.39		
Farb. 1857.0	12		59.39	36 58.63	
			36.36	-3 46.44	
					L.L.
1862.0 Lal	13	13	35.69	+0.4 Br. +5 33 12.5	
Bapl.			35.28	-0.2 Lal.	8.0
Robinson			35.55	+0.05 Bapl.	9.4 + 0.9
Wagn.			35.71	+0.7 Rob.	12.3
Farb.			[35.75]	Jacob.	10.2 0.0
Myer	13	13	35.69	+5 33 10.9	
Rob. to app.			+2.81	-11.4	
Comb - A	3		26.13	+10 2.3	
Comb's 2. D.	13	17	4.43	+5 43 1.8	
El 17 26 21					
Int. 1 15					
17 25 6					
17 44 56					
9 40 10					
1 35					
9 35 35					
Cambr. m. t.					

Ann. Rev	$\frac{d\alpha}{dt}$	$\frac{d\delta}{dt}$
1755	+45.399	-19.182
1800	45.418	19.119
1840	45.438	19.064
Lat. 1840	+0.046	-0.147
1805.5		19.107
1831.	45.434	19.074
1843.5	45.440	19.056
1851.	45.443	19.045
1856	45.446	19.037
1860	45.446	19.037
	5.40' 19"	
	13 12 25.9	
	9.49278	
	8.99686	
	8.68964	
	8.61579	
	3.0292	
	9.97791	
G	43	8.988
2	198 24	9.582
H	155 52	1.261
		9.966
F	+41.79	
9	-0.68	mid 0.002
10	-2.02	9.000
		1.304
01	-16.86	9.998
N	+1.94	mid 8.986
11	+3.55	

New Comet (discovered by H.P.T.) 1862 III.

July 18, 1862

Alt. obs. H. P. T. Records.

Star in centre of field

Comet in Center of Field

First seen a little after 10 P.M. $\frac{2}{3}$ below.

236 19 57 19

3 27

19 53 52

H.C. (Sun) 2 29 48 Dec. 22° 20'

AR 5 24 4 + 67 40

21 541^m 22^s

R cir. 41 37 8

5 17 14

3 27

$\alpha = 5^{\circ} 13' 47''$

$\delta = +67^{\circ} 48'$

Comp with 58 18

(Star of Comp. by Obs. 57 87 prob)

Star of comp. is north preceding comet, and is of

8th mag. (It is a double star)

(5.16 2.1 17.15
2 5.2 1.10
5.16 30.6 17.16)

(Chro. 236)

* 20^h 36 46.0
* 20 37 12.5
+9 24.80
A 20 46 10.0
A 20 46 38.1

21 32 5.2
21 32 25.1

+9 29.75

* 20 47 49.5
* 20 48 16.0
+9 24.70
A 20 57 14.1
A 20 57 40.8

21 412 36.0
21 412 55.8

+9 29.10

21 5-2 41.8
21 5-2 25.2

Obs. for declinations.

(236) = 20 46 24.0 + 9 24.80
20 57 27.5 9 24.70
21 41 44.9 9 29.75
21 52 15.0 9 29.10
21 19 27.8 + 9 27.09
21 17 7.5 Red - 0.20

Time 21 11 25 40.69 Zero of wires
" 21 22 50 41.93 = 59.26 18.57
= 59.29 17.36 Mean
48 - 17.965 = 2 56.06

The Comet is quite bright but diffuse and without any well defined center for drawing. It is about 1.5" in diameter. First seen a little after 10

Comparison Plan for July 18th

1862phae.proj...201B

1862 July 21st
H. W. D.

Plan of comp = x has minute comp. 12th mag.
Compared with A.C. 5856 = a.
~~at H. W. D.~~ x is south from a

x 23 9 32.7 - 50.7
a 13 38.3 16.5

Lat. fixed
x on wire
a 15.465

Altitude 59.028
43.563
15.465

Hour
x - a - 4 5.70 - 7 6.9

Alt. A.C. 5856

1842.0 5 16 21.65 + 67 53 9.0
2 6.11 1 14.1

1862.0 5 18 27.76 + 67 54 23.1

Red. to July 18. app. + 2.82 - 7.2

a 5 18 30.58 + 67 54 15.9

x - a - 4 5.70 - 7 6.9

app x 5 14 24.88 + 67 47 9.0

g - * + 9 26.89 - 2 56.1

app x, d 5 23 51.77 + 67 44 12.9

- 0.70 - 7.0

276 = 21 17 7.5

236 Jan 3 27.8

21 13 40.

7 44 56

13 28 44

2 12

Cont. m. L. 13 26 32, July 18

Red to app. Place July 18.

G = 4° 3'

α = 79 37

H = 155 52

G + α = 83 40

H + α = 235 29.

sin(G + α) 9.9973

g 1.2608

cos(G + α) 9.0426

g sin(2 + α) 1.2581

f δ 0.3915

sin(H + α) 9.9159

h 1.3038

cos(H + α) 9.7533

h sin(H + α) 1.2197

sin δ 0.4247

cos(H + α) 1.0571

f + 41.79 i + 1.34

sin δ 9.9669

g + 44.63 q + 2.01

i 0.5527

h + 44.10 h + 10.56

cos δ 9.5753

A + 42.32 A - 7.21

Red to 1862.

A = 5 17 24.8 D = +67 53 42

sin A 9.99246 cos A 9.26658

1.42715 2.60324

g δ 0.39130 1.86982

1.81091 Δδ + 1' 14.1

64.701

61.412

Δa + 2 6.11

0.1517

-35.28

12 51 4

C. 80 56 21.2

67 44 16.8

Reduct.

+1 26.4

+2.0

0 80 57 46.0

78.7

Corr Eph.

-1".6

+ 8"

Element II. D. S.

Comet 1862 II (G.P. 13).

July 19th
185.

Comet 13 16 31 + 5° 7'

77 13 17 44 + 5° 7'

Comet compared with star (1855.0) 13 17 22.9 + 5° 9.7 7.7 = Arg. Stc. + 5° 27.42

This star has nowhere been determined, except ^{probably} at Bonn, as it is brighter than the 8th mag.

It can be compared with the following Bessel's star

1855.0	13 21 42.1	+ 5 13.3	2	8.5
	24 1.5	+ 5 2.3	3	8.7

The following is a copy of the original minutes

Comet	South preceding star	Reduction	Δ ⁰	Red
(Angle 351° 5')				
Comet (Chro 236)	17 41 31.8 38.5			
Star	42 40.2 46.9	-1 6.40	-0.37	
C	17 43 42.3 48.7			
S	44 51.3 57.8	-1 8.95	-0.33	
C	17 46 16.5 23.3			
S	47 24.9 31.5	-1 8.30	-0.29	
changed angle to 261° 5'				
C	17 50 20	15.45		-41.1 -17.7
Star		49.64		
C	18 3 48	42.21		-1' 22.6 + 1.1
Star		50.77		
C	18 8 0	44.67		-1' 24.6 + 7.1
Star		51.30		

next page

Met 1862. (II) G. 13

1862 July 19.
245

Co 18 13 3 43.63 -1' 20.2" + 14.3
Star 51.86

242
Com. 18 18 24.3 31.3 -1 9.80 + 0.27
Star 19 33.8 41.4

Com. 20 51.7 59.0 -1 9.15 + 0.31
Star 22 0.6 8.4

Com. 24 17.8 25.5 -1 9.85 + 0.37
Star 25 27.8 35.4

It was quite hazy, and sometimes cloudy. The nucleus could not be
(in general) fairly seen; and it was not possible to observe further, as intended up.

AR in α -1.04 in δ -1' 26".

Reduced to Chro. 18 3 3

AR

-1 8.77	10	- 58.8	13.2	149
9.28	4	1 21.5	10.5	110
8.59	29	1 17.5	6.5	42
9.53	20	1 11.4	4.6	21
8.84	6			2/222
9.48	16			17
-1 9.08 ± 0.11		-1 11.0 ± 3.4		26.9

Met 1862 II (G.P.B.)

1862 July 19th
1862

Star a	1800.0	13 14 52.67	+5 21 13.5	20	13 20 29.1	13 22 52.3
Pro.		+3 7.68	-19 27.6	80	+5 21.51	+5 9.60
1805.0		20 10.94	-22 23.7	400	8.97219	8.95577
Pro.		+1 52.02	-11 31.1	1000	9.53657	9.54872
					1.91456	
Star b	1800.0	13 21 17.61	+5 19 23.4			3.09665
Pro.		+3 7.70	-19 23.1	1000	9.97215	9.97097
1805.0		22 31.13	11 28.6			
Pro.		+1 52.04	30.411 33.3	1000	0.42732	0.42299
					-2.675	-2.648
a	Ll.	13 22 2.35	+0.04	+5 11 45.9	-2.6	190.352
	B.	2.96	-0.02	47.6	+0.8	1643.5
	Ad.	2.76		46.6		
1862.0	x-a	-4 18.92		-4 27.8		20
						13 21 6.9
						13 23 30.1
						80
						+5 17.58
						+5 5.74
	Ll.	13 24 25.31	+0.04	+5 0 0.3	-2.6	8.96641
	B.	26.17	-0.02	4 59 55.3	+0.8	8.95023
	Ad.	25.90		4 59 56.6		9.54001
1862.0	x-	-6 42.46		+7 22.0		9.55186
Adopted x		13 17 43.64	+5 7 18.7			1.69434
To aff.		+2.62	-11.4			2.87043
Print - x		-1 9.08	-1 11.0			9.97215
Comet x. D.	13 16 37.18	+5 5 56.3				9.97051
						0.20166
						0.19643
						-1.585
						-1.572

1862 July 19th
1862

Chro 18 13 3
Canfar 17 59 34
17 48 52
10 10 42
1 40

Ambr. 2/0 9 2
mean time

	1862.0	1862.5
20	13 20 29.1	13 22 52.3
80	+5 21.51	+5 9.60
400	8.97219	8.95577
1000	9.53657	9.54872
	1.91456	
		3.09665
1000	9.97215	9.97097
1000	0.42732	0.42299
	-2.675	-2.648
	190.352	
	1643.5	
20	13 21 6.9	13 23 30.1
80	+5 17.58	+5 5.74
	8.96641	8.95023
	9.54001	9.55186
	1.69434	
	2.87043	
	9.97215	9.97051
	0.20166	0.19643
	-1.585	-1.572
	+13.608	
	Rev. to aff.	
a	4 4'	
b	201 6	199 26
c	201 6	199 58
d	8.9591	8.950
e	8.9591	8.950
f	8.9591	8.950
g	8.9591	8.950
h	8.9591	8.950
i	8.9591	8.950
j	8.9591	8.950
k	8.9591	8.950
l	8.9591	8.950
m	8.9591	8.950
n	8.9591	8.950
o	8.9591	8.950
p	8.9591	8.950
q	8.9591	8.950
r	8.9591	8.950
s	8.9591	8.950
t	8.9591	8.950
u	8.9591	8.950
v	8.9591	8.950
w	8.9591	8.950
x	8.9591	8.950
y	8.9591	8.950
z	8.9591	8.950

Cont 1862 II (G.P.B.)

1862 July 19
J.H.

This observation can hardly be considered a very good one. It would not be surprising if the resulting position were in error 5" of space.

Phys for Count		Observed 1862 July 21.		Scale not quite in solar focus	
Total [Angle 35' 50"]					
x	3' 52"	16 54	42.0	45.9	3' 54"
a	8 18	18 10.8	16.9	8 -	-4 18.90 - 4 26
x	3 57	16 59	25.7	29.5	3 54
a	8 21	17 3	44.7	48.8	8 -
					-4 19.15 - 4 30
x	2 56	17 5	4.6	8.9	2 56
a	7 24.5	9	23.6	27.1	7 24
					-4 18.75 - 4 28.2
					Mean -4 18.93 - 4 28.1
x	8 15	17 12	1.7	5.7	
a	0 54	18	44.3	46.3	-6 42.60 + 7 21
x	10 40	17 20	6.0	10.0	
3	3 17.5	26	48.5	52.4	-6 42.45 + 7 22.5
a = W. III 341 = 21.24938		to app. Δx			
b = W. III 390 = 44.25705		a +39.66			
		b 39.56			
		x 39.33			
		Δδ			
		a -11.15			
		b 11.11			
		x -11.37			

(57°)	x-a	-4 18.93	-4 28.1
	Rfr	- 0.01	-0.2
	Temp		+0.3
	Red to 1862.0	+ 0.02	+0.2
	x-b	-6 42.52	+7 21.8
	Rfr.	+ 0.02	+0.4
	Temp		-0.5
	To 1862.0	+ 0.04	+0.3

New Comet (H¹), 1862 III1862 July 19th
285.as it appears in an
ordinary telescope

Eccentric condensation - perhaps nucleus - on the n.p. side

Comet comp. with star of the 10th. Circle reading 354° 5'

Comet south preceding

Comet 19 51 17.0 38.0

Comet 19 52 43.6 53.5
Star 53 28.0 37.554 32.7 41.4
55 16.5 25.7

56 9. 17.

56 51.5 07.3

for reduction and H¹ in $+3.49'' + 49.2''$ $dx = +0.86''$ $dy = +0.36''$ This method will not be accurate.
Comparison with same star.
Position and Distance (Angle 4° 45' 1" left)

Chro. 20 4 13 33.007 Comet

Comet 20 6 30 33.535 Comet
Star at Zero20 10 37 33.574 Comet
Star at Zero20 12 59 33.566
Star at Zero20 15 10 33.586
Star at Zero

Zero 58.842 (mean of 4) 4' 13.2"

1.5

Comet (HAT) 1862 III

1862 July 19th
M.

Set 2. Angles

				Zero 271.08	Angle of Position
20	21	3	272°.9 Below the wire		
35	49		270.95 Above "	20 28 26	271.92 259° 10'
40	56		266.9 Below "		
42	17		268.8 Above	41 36	268.85 262 14
44	0		267.95 Above		
45	57		268.2 Below	44 58	268.08 263 0

Set 3. Distances at angle 354.3

21	9	26	36.312 Comet
	~~16~~	~~17~~	Comet Star
	16	17	37.280 Comet
			Comet Star
	19	15	36.846 Comet
			Comet Star

Reduce to 20 36.2 Chro. Time

The observations were interrupted by clouds, which did not permit the star to be determined. Through the clouds, the comet was more easily seen [full 10th according to Anglamer], than the comparison star; and

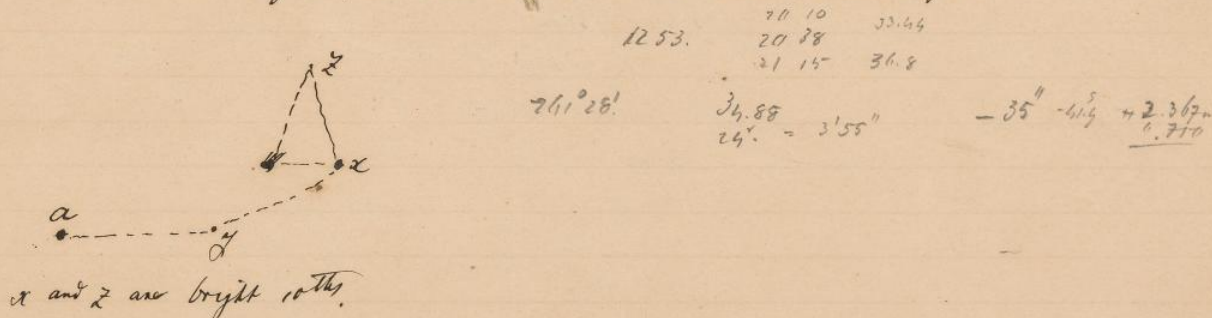
The comet was quite conspicuous to the finder:

Comet's position by 5: foot at 18° 54' sid T. $5^h 25^m + 68^s 0'$

Star a =
Star x, used above was about 4th and 3^m south following, Alt. 59° 20', most probably

After star a, came y, 10th, about 4^m 30^s following and on same parallel,

About 6' north South of x, and about same Alt was star z, same mag. as x.



New Comet (HP 7th) 1862 III

July 19th

Star compared with $\alpha = \text{Alt. } 5920.$

α s. p. z.

Scale. Angle $352'' 50'$

Obs. 1862 July 21.

α	$8' 1''$	$20''$	$1'''$	23.2	33.6	$8' 3'' 5$	Second $5''?$
α	$5' 25.5$		3	42.5	58.2		

α	$7' 22.5$	6	16.3	26.9
α	$4' 48.5$	9	36.0	$47.$

α	$6' 49$	11	26.4	37.2
α	$4' 14$	14	45.7	56.6

Hor. Ang. $14' 44'' 5$
 $+ 618'' 8'$

$+3' 19.45$	$-2' 35'' 5$
19.70	34.0
19.75	35.0

$2-a$ $13' 19.46$ $-2' 35'' 8$ Ref. and temp. compared each other
 To 1862.0 $+0.03$ 0.0 $\alpha + 0.820$ $\gamma + 0.363$

Temp	γ	$+0.15$
$20' 7'$	33.352	$3. 4' 7.2$
$14' 5'$	33.576	$2. 7.6$
		$44' 58$

$T = 70' 36'' 2$ $n = -37''$ $n = 233''$

$T - T'$	$-25' 88$	$-21' 95$	$-7' 10$	$+5' 57$	$+6' 93$	$+38' 95$
	$-23' 7$	$-18' 0$	$-6' 12$	$+4' 6$	$+7' 2$	$+31' 9$
	$-16' 5$	$-8' 0$	$-2' 3$	$+2' 0$	$+3' 2$	$+14' 1$

Correction of distance $0''$
 0.0
 $+0.1$

$h'm'$	1.7832	1.7404	1.6355	1.5705	1.4742	0.7076	Cor.
$h'n'$	2.3815	2.3820	2.3728	2.3636	2.3612	2.3402	
v'	$255' 0'$	$257' 9'$	$259' 37'$	$262' 1'$	$262' 37'$	$268' 40'$	
$h'z'$	23996	23930	23797	23678	23649	23603	
z'	$250' 9$	$247' 2$				$216' 9$	
$\alpha - d\alpha$	$+1'' 1$	-6.4				$+2.9$	
$d\alpha$			$+27'$	$-13'$	$-23'$		
zdu			$+1'' 9$	$-0'' 9$	$-1'' 6$		

$dm = +0.39$ $dn = +1'' 33$
 ± 0.72 ± 0.64

New Comet Apr. 1862 III.

1562 July 19. To
JMS.

Orbit. 18/12. II [G.P.B.]

1862 July 21st
21.5Orbit compared with star x. [$13^h 15^m 7^s + 40^\circ 7' 1855.0$]Angle $352^\circ 50'$ (by accident: should be $351^\circ 3'$)ad Comp? Corr. to $\Delta\alpha$ motion

St. 17	36	67.0	53.6						
Const	37	13.0	19.8	+ 24.10	17 37 16	+ 15"	- 0.03	- 0.83	25.94
Star	38	39.4	45.9						
Const	39	54.8	11.0	+ 25.25	17 39 8		- 0.03	- 0.10	25.12
		9.4							
Star		53.0							
Const	41	18.6		+ 25.60	17 41 19		- 0.02	- 0.06	25.52
		3.4	0.0						
		26.4	32.9						
	43		58.5	+ 25.60	17 43 58		- 0.02	- 0.03	25.55
		7.7	9.5						
	45	26.7	35.3	+ 25.69	17 45 32	+ 7"	- 0.01	- 0.02	25.66
					17 41 27	Reduced to 17 46 42. (Ad 1)			25.56
						$\Delta\alpha$ Comp? $\Delta\alpha$			1.67
	53	24				Const and Star	+ 25.5	- 4.4	
	55	34					25.5	- 2.0	
	57	20					25.5	- 1.0	
						Revs 351° 3'	Mean	- 2.6	
							Motion	+ 7.0	

Const seems to be def. star: at 17 55 26 $\Delta\alpha$ about $-4''$ Reduced to 17 46 42: $\Delta\alpha$ in α $-0.8''$ in δ $-1' 2''$

Chron. just 3 31

17 43 11

7 58 46

1 36

9 44 49

[$\Delta\alpha$ + 6.14
at 17 46 42]

Star determined 1862 Apr. 9.

Comet 1862. (III) H.P.V.

1862 July 21.
1875

Comet	3'	8" 18	18	58.2	6.8	?	Probably interchanged.
a	9	4	19	59.3	10.5	?	
b	8	43	21	6.4	17.4		526 14 68 40.9

Comet	2	48	26	12.5	23.7		
a	8	36	27	16.3	27.5		
b	8	14	28	23.8	54.5		

Comet	1	48	31	27.8	36.7		
a	7	36	32	29.5	41.1		
b	7	16	33	37.7	—		

The above are very rude, and were taken in order to secure a position of the

Comet	8' 36"	18	41	53.6	4.5		
-------	--------	----	----	------	-----	--	--

c	4	7	47	3.8	14.8		
---	---	---	----	-----	------	--	--

c = Arc 6116-17 ^{21.10592} a = 6031-32 b = 6052-53.

Comet compared with α & γ = 11 B. Position and Distance

Comet N. 7. Star α .

At angle 16.2

but.

Distances	18	58	34	34.197			
	19	0	6	34.338	19	0	6 34.213
	1	45		34.103			
	3	6		33.960	4	6	33.868
	5	7		33.776			4 5.73

Positions	19	8	24	107.95 Above	19	9	30	108° 41'	63° 1'
	10	32		108.2 Below					
	12	24		108.55 Below	14	18		108 57	62 14
	16	13		109.35 Above					
	18	30		109.20 Above	19	33		109 13	61 52
	20	36		109.25 Below					
	23	50		109.6 Below	21	50		109 58	61 7
	25	50		110.35					

Count 1862 (III) [H.P.T.]

$$\begin{array}{r} 145.5 \\ 129. \end{array} \quad 17. M. w \quad + 66'' \quad \text{in } d \quad + 53'' 0$$

there $dg = +0.400$ $df = +0.883$

Debury 19	29 17	32.076	19 30 14	31.566	4' 28.09
	31 20	31.095			
	32 50	31.356	19 33 31	31.385	4 30.06
	34 12	31.414			

Reduce to 19 M 2.

Zero 58.942

Star α has disappeared, owing to haze.

Count again comp. in α and δ with a .

Wire at $351^\circ 5'$

Count 19	41	49.5	63.8	-56.20
a	42	45.5	60.2	

Count	44	2.8	17.7	-56.20
a		59.4	73.5	56.20

19 44 41

194410

$$\begin{array}{r} 31.47 \\ 58.94 \\ -27.47 \\ \hline 11.5 \end{array}$$

-429.2

+1.0" 173" = in δ

The count has largely increased in brightness. Tail 1" long acc. to H.P.T., with $\mu = 16$.

Count-rates... Noting not quite decidedly observable on the wire; the observations are perhaps a little more precise than last night.

Comet 1862. (II) NPV

1862 July 21.

Stars reduced to 1862.0 for scale-observations

1862.0 a	5 27 18.40		+68° 46' 42.2		20 5 28 28.2	5 29 30.5
	+2 9.65		+ 55.15		20 16 47.15	-68 46.56
1862.0 b	5 28 25.69		+68 46 25.0		19 00	0.41099
	+2 9.67		+12.2		20 10	0.99586
1862.0 c	5 29 28.05	+0.05	+68 47 38.4			1.42715
" d	30 35.36	+0.05	47 18.2			2.60324
Red to app.	+2.92		- 8.0			9.13831
Comet - a	- 1 2.75		- 5 50.7			9.1272
" - b	- 2 10.15		- 5 31.0			1.83100
Comet's L. J	5 28 28.22		+68° 41' 39.0			1.83417
Par.	- 0.20		+ 5.9			+68.234
						0.613

[This is not worth much]
[Probably too far south]

18 16 58

26 12

31 28

18 25 33

3 36

18 21 57 1.57

7 56 46

1 43

10 23 28 Comet mt

-16.20

- 6.2

Elements II B5

C 82 5 36 68 41 53.4

Red. +129.6 +1.1

82 7 0.3 68 41 46.9

Ca. -5"3 - 9.6

Red to app. $\frac{(a+b)}{2}$

G 3 57

L 82 30

H 153 9

19 00 0.4112

20 10 0.9992

2 1.2653

20 10 8.7918

20 10 0.4116

20 10 0.9968

L 1.3025

20 10 0.9751

20 10 0.9696

7 +42.23

10 +47.39

20 - 65.80

20 + 1.14

20 - 10.56

20 + 1.42

Ant 18hr ~~TH~~ 14th July

18hr July 21st

Reduction of comparison with α .

Reduce to Chron 236. = 19^h 16^m 2^s

$dx = +1.883$ $dy = +0.400$ $m = +119''$ $n = +225''.5$

	-15 ^h 50	-11 ^h 40	-6 ^h 53	-1 ^h 73	+3 ^h 52	+8 ^h 40	+14 ^h 27	+17 ^h 48
	-14 ^h 0	-10 ^h 5	-5 ^h 8	-1 ^h 5	+3 ^h 1	+7 ^h 8	+12 ^h 6	+15 ^h 4
	-6 ^h 4	-4 ^h 8	-2 ^h 6	-0 ^h 7	+1 ^h 4	+3 ^h 5	+5 ^h 7	+7 ^h 0
by m'	2.0212	2.0354	2.0539	2.0700	2.0868	2.1031	2.1193	2.1284
by n'	2.3406	2.3438	2.3481	2.3518	2.3558	2.3598	2.3640	2.3664
by d'	2.3855	2.3909	2.3980	2.4062	2.4111	2.4179	2.4249	2.4290
ν'	64° 23'	63° 49'	63° 4'	62° 25'	61° 42'	61° 2'	60° 21'	59° 58'
Z'	267° 9'	246° 0'					266° 0'	264° 5'
C-o dv			+3'	+11'	-10'	-5'		
C-o dz	+0.5	+0.3					-2.1	-1.6
2dv			+0.2	+0.8	-0.7	-0.4		
wt.	1.5							

Equation giving 111 wt. = 1.5

	aa	ab	an	ba	bn	nn	nnid	
Q.	0.6 + 0.53 dm + 1.10 dn	28 + 58	32	1.21	26	36	1.33	1.77
	0.3 + 0.44	19 + 40	13	0.81	27	9	.70	.81
	0.2 - 0.89	79 - 40	14	.20	09	4	.14	.03
	0.8 - 0.89	79 - 41	7	.71	37	64	.76	.61
	-0.7 - 0.88	78 - 41	62	.22		33	.49	.71
	-0.4 - 0.88	78 - 42	35	.23		19	.16	.41
	-2.1 + 0.49	24 + 43	1.03	.76	48	1.83	4.41	-1.51
	-1.6 + 0.50	25 + 44	80	.76		1.39	2.56	-4.04

4.10 +.21 -1.30 4.40 P3 -2.35 8.75
0.64 9.92 0.114

- .01 +.07

Jump ± 0.74

$$d\delta = dm = +0.29 m + dm + 119.29 \text{ by } 2.0766$$

$$dn = +0.52 n + dn + 226.02$$

$$d\delta = \frac{1.7363}{1.19} = +41.48 \frac{1.3403}{1.6779}$$

$$\frac{4.39}{-2.28} \frac{-1.19}{7.11} d \pm 0.74$$

Comet 1862. (44) A.P.P.

1862 July 21st

Comet compared with star 2

Not yet corrected for ref.

Comet - x $\Delta x + 41.58$ $\Delta d + 1.59''$

Ref. very small, as the objects are nearly at the same altitude.

Pro. 1

19 16 2

2 36 pm

19 12 26 Alt. 7m

7 58 46

1 50

11 13 50 Comet

True Pos

Comet - a

- 58.4

- 5' 14" rough interpolation

Hence x - a

- 1" 39.9

- 7' 0"

which fixes the place of x.

x can be best determined by comparison with c.

Comet 1862^{III} [H.P.Z.]

1862 July 22.
1862.

Comet comp. with star 9.10 = x
It has been seen on the meridian lower culmination, and could have been observed
Comet ref. x.

5-30

4 54
6 40

Hence Comet - x + 20.2 + 1.56" at 17° 47' 10" (id)

8.4
17 50 28.6

Co Position
M used in reducing / in x + 4.50 d + 56.4" Hence dx = +0.94 dy + 0.404

Obs.	Time	Alt.	Dist.	Dir.	Zero	addition	Alt.
236.	17 53 33	303.8	Right	17 54 37	303.475	47° 36' 10"	
	55 41	303.15	Left				
	56 58	303.1	Left	17 57 48		47 36	
	58 38	303.85	Right				

Distance at height 215.5

Zero 58.992

Time	Alt.	Dist.	Dir.	Zero	addition	Alt.
16 3 50	41.144	16 4 49	41.064	17 32 35	+2' 55.779	
5 48	40.984					
7 14	40.609	16 7 56	40.163	16 30 32	2 59.4	
8 38	40.758					
9 46	40.675	16 10 15	40.460	16 31 10	3 1.4	
10 46	40.386					

Position

Time	Alt.	Dist.	Dir.	Zero	addition	Alt.
16 13 15	305.5	Right	16 14 8	305.6	45 29	
15 2	305.7	Left				
16 20	305.75	Left	16 16 55	306.125	44 58	
17 30	306.5	Right				

There is still "dead motion" to the screw. The zero is determined by turning the head & the screw the same direction as the star is moving.

Comet 1812. III [NAT.]

1812 July 22
1815.

The nucleus is quite conspicuous; and the comet easier to observe
 & comp. with α at angle $352^\circ 55'$

x	846	18	35	14.2	25.2	-33.65	+554.5
a	251.5			48.0	58.7		
x	96.	38	20.4	31.7		-33.65	552
a	314			54.5	64.9		
x	947	40	11.4	22.4		-33.75	554
a	353			45.1	56.2		
x	946.5	41	52.4	63.8		-33.70	554
a	342.1	42	26.6	37.4		-33.69	+553.6

 $a = \text{Altair } 6046.$

The above are pretty rough, as the scale is not in focus.

The true Position in (Chron.) 1816.44 $m = +123''$ $n = +129''.5$
 $dm = -0.17$ -1.11

	-12".12	-8".93	-1".92	+1".20	+3".53	+7".40	+10".18		dx	dy	dz	dx	dy	dz
m'	111".6	114".6	121".24	124".13	126".32	129".96	132".57	$0 = +1".6 + 0.67 dm + 0.75 dn$	45	+50	+107	56	120	
m''	124.61	125.90	128.73	129.99	130.93	132.49	133.61	$+0.15 + 0.68$	46	+50	+0.10	15	0.11	
$h'm$	2.0476	2.0598	2.0632	2.0938	2.1015	2.1138	2.1225	$+1.0 - 0.73$	53	-57	-0.73	48	0.69	
$h''m$	2.0955	2.1000	2.1097	2.1139	2.1171	2.1222	2.1259	$+0.2 - 0.72$	52	-57	-0.14	42	0.19	
								$+0.5 - 0.72$	52	-50	-0.28	42	0.36	
v'	48° 9'	48° 39'	46° 45'	46° 20'	46° 2'	45° 33'	45° 13'	$+0.2 + 0.70$	49	+50	+0.14	50	0.14	
								$+0.8 + 0.70$	49	+50	+0.10	50	0.57	
$h'z'$	2.2234	2.2313	2.2473	2.2545	2.2599	2.2666	2.2748	Final Eq.						
			176".7	179".6	180".9			$0 = +0.64 + 3.46 dm + 0.50 dn$	346	0.50	0.64	2.09	3.57	
$C-O$								$+3.19 + 0.50 dm + 3.55 dn$						
dx	+33'	+3'	+1.0	+0.2	+0.5									
dy	+33'	+3'				+4'	+15'	$dn = -1.11 \pm 0.15$						4.55
dz	+1".6	+0.15				+0.2	+0.8	$dm = -0.17 \pm 0.14$						0.59

Aug 1862. III. 1412

1862 July 22

	h	m	L	L
Star A. 1862.0	5	29	11.46	+68° 54' 23.1
		+2	10.14	+53.6
Σ - a + 1862.0	5	30	21.60	+0.05 68 55 16.7
			-33.69	+5 53.6
Σ (1862.0) provisional	5	29	47.96	+69 1 10.3
red to app.			+2.99	-8.2
Comet - x			+23.92	+2 2.8
Comet + L. d	5	30	14.87	+69 3 4.9
Par.			-0.125	+6.9

Chro 18 6.44
 3.36
 18 38
 8 0.44
 10 2.26
 1 39

10 0.47 N. Camb.

m + dm = 122.83
 m + dm = 128.39 by 2.1085
 15th do 0.7297
 1.3788

Very small correction not here applied. see in AR for zero of wave, red to 1862.0: in dec. for temp. left. red to 1862.0

C (Elements II 135) 82 32 17.7 69 3 14.5
 Reduct. +1 30.5 + 1.2
 O. 82 33 41.1 69 3 11.0
 Cor g. 1.3 - 4.7

Star b
 G 3.55 f
 L 82.27
 H 152.14
 ty 1 0.4162 f 42.38
 n (6.24) 0.9991 90 + 58.09
 g 1.2667 10 - 45.69
 G. 10.12 8.8019 44.78
 L. 0.1460
 H + 4 0.9117 91 + 1.16
 L 1.2021 11 - 10.83
 H + L 0.7620 11 + 1.95
 G. 9.9702
 1/2 0.606

Comet 1862 III

1862phae.proj...201B

1862 July 25.
MS.

Comet compared with Argelander (Oltzen) 6082 9th mag.

Comet not coll.

At angle 351° 4' H.M. 2 + 5.77 in d 64.4
Star 18 5 26.5 36.8 Change in Par. Motion
Comet 9 52.6 62.8 + 4 26.05 + 0.23 + 4.79

Star 15 57.9 70.4
Comet 20 24.8 37.2 + 4 26.85 + 0.16 + 3.78

Star 22 28.2 36.4
Comet 26 57.5 66.5 + 4 28.70 + 0.15 + 3.14 Motion

Star 53.391
Comet 18 34 13 37.003 16.388 + 2' 40.60 + 23.1

Star 46.804
Comet 16 44 28 29.744 17.060 + 2 47.49 + 16.4

Reversed
Star 37.392
Comet 19 2 44 56.542 19.070 3 7.67 - 2.7

Star 46.968
Comet 19 9 9 66.692 19.724 3 13.30 - 10.0

Star 65.240
Comet 19 15 22 85.578 20.338 3 19.33 - 16.8

Angle 351° 4'

Star 19 14 58.8 67.4
Comet 23 32.0 40.7 Ch. in Par. + 4 33.20 - 0.11 - 2.29

Star 19 24 45.8 56.5
Comet 29 19.7 28.2 + 4 33.80 - 0.13 - 2.85

Star
Comet

19

31

4.5

18.6

35

38.5

53.8

+ 4

34.60

- 0.15

- 3.46

Star
Comet

36

48.7

62.8

41

23.7

38.2

+ 4

35.20

- 0.18

- 4.01

Sun 1320

Reduce to Chro. 18^h 59^m 18^s

The comet has a bright stellar nucleus, about 10th mag. with power 141.

Chro time 19^h 45^m



*

270° pos.

x // 350° Cir Read Dist 13.
y // 249.5 " 11

350
351.1
1.1

249.5
351.1
101.6

The nucleus is very nearly of the 10th magnitude
It is less bright than an Arg. 9th 10th
// + 2^m 30^s + 8'

With next higher power (218?)

The nucleus (20^h 12^m) seems elongated. The direction of the elongation is

234°
225
218

220
224.2
357.1

127.0 The fainter portion looks somewhat like this & the brightest part
being towards the Sun.

Comet 1862. III.

July 25
JWS

S

Sun
132°

with hour 141 the same elongation is perceptible; was measured
 219° = Angle of Pos. 132°

The shape of the nucleus is possibly



2.0" about

The comet is distinctly visible to the naked-eye.

HJ came up soon after and gave his opinion that the nucleus
 was elliptical, the major axis being at Cir. Reading 221° .

The ^{apparently} lower edge according to him is much more sharply defined than the
 upper 

The nucleus has increased in brilliancy remarkably since the 22^d

Comet 1862. III.

1862 July 25th
J.H.S.

Δ (reduced)	$\Delta\delta$
4 ["] 31.07	3 3.7
30.81	3.6
31.99	5.0
30.80	3.3
30.82	2.5
30.99	
31.01	
+ 4 31.06	+ 3 3.62
	+ 0.29
	+ 0.1

Chro. Rfr.
18 59 48

Argelande (Altzen) 6082

1862.0	5 ["] 29 42.03	+ 70° 10' 57.8	L ^o 5 30 49.5
	+ 2 15.04	+ 50.9	S ^o 70 11.39
1862.0	5 31 57.07	+ 70 11 48.7	Tr ^o 0.46343
Red trapp.	+ 3.19	- 5.9	tan ^o 9.99647
Comet - Mar	+ 4 31.06	+ 3 4.0	14.715
Comet's L.O.	5 36 31.32	+ 70 14 43.8	2.60344
S. J. P. R.	5 36 59.2	70° 14.2	ln ^o 9.10365
	9.6267	0.8761	1.86705
Chro. 18 59 48	9.6260	0.8031	0.7594
fact (3 45)	9.6260	0.8031	0.7594
Lat 18 56.3	0.4711	0.7556	
8 12 32	9	0.7090	0.2863
10 43 31			
1 45			
10 41 46 Eimb mt			
Harby 13 19 32			
			G 3 48 50 0.6437
			" 82 59 14.7 9.9993
			H 149 30 8 1.2711
			f 42° 51' 45 8.7490
			go +51.78 1.0 0.4706
			10 -66.76 1.71 9.8992
			3' + 1.05 1 1.7013
			2' -11.64 4.11 9.7866
			i' +1.49 1.0 9.9750

Mr p Comet 1862 III

Star x compared with a. = A.C. 6159.

x south. foll. a.

At angle $357^{\circ} 57'$

a	19	18	20.3	46.5	
x		23	29.0	53.0	+5 8.60

a		25	15.7	40.2	
x		30	23.8	48.5	5 8.20

a		31	38.6	62.7	
x		36	47.4	71.5	5 8.80

a		38	26.7	57.0	
x		49	35.9	59.6	5 8.90
					+5 8.60
					2.12

then transits seem badly taken from some causes.

At angle $260^{\circ} 50'$

		a				
19	48 14	46.665	48	0.128	20	1.76
	49 4	46.642	48	0.132	21	1.29
	49 48	46.755				
		46.697				
	x					
	53 21	26.484		0.016	219	0.96
	54 4	26.325				
	54 48	26.356	49	0.032	212	0.50
		26.358			175	4.29
						+19'

 $263^{\circ} 00' 5''$

		a				
19	97 8	56.800	55	70	80	809
	44	55.180	57	21	38	91
	58 21	55.660	15	20	117	1728
	59	56.370	18	158	5125	18.93
	x					
20	2 39	36.865	45		45	1097
	320	37.452	49		50	721
	4 16	38.260	3 14	3700	26	16

Star for Comet 1862 III

1862 July 27
21.5

At angle $260^{\circ} 29'$

20	6 12	55.692
	54	.374
	7 42	.239
	<u>56</u>	<u>475</u>
	11 35	37.353
	12 27	37.089
	13 9	37.182
	<u>12 24</u>	<u>208</u>

213 252

223 1.92

242 1.42

214 .35

896 6.11 + $\frac{1}{142}$ + 241

59.059 (on side)
59.430

18.812 (the other)
58.806

261 7 2

260 53

261 17 3

261 5

58.927 = Less of wins

I

19 49 2	46.687
54 5	26.388
63	<u>-0.014</u>
	-18.5113

II

19 58 18	55.502
20 3 24	37.522
+ 33	<u>+0.45</u>
	-17.935

III

20 6 56	55.435
12 25	37.208
- 213	<u>+0.72</u>
	-18.195

Rejecting the ~~interest~~ ^{obs. made at the outside of the field}
(this will be used)

19 49 4	46.462
54 4	26.325
+ 85	<u>-0.019</u>
	-18.5136

19 58 4.5	55.420
20 3 20	37.442
- 6.5	<u>-0.96</u>
	-18.074

$25.07 \Delta \delta - 18.132$
363

-2 57 74

- 24

- 08

- 2 58.1

20 6 54	55.374
12 23	37.089
- 253	<u>+0.85</u>
	-18.209

Rp.

Comp

Met 1862 III

62 July 27
1865

Station in 1862 112" w & 70.6" n
 45.2 7.732 2.069 da + 2.604 + 1" 177
 by dy 9.781 by + 1" 58 + 0.604

Assumed:
 to Ch. 1848 562 6 359.6 1169 7 722 - 3' 55" 3 22 + 45" 2

	-17.15	-10.03	-4.02	+0.30	+3.70	+10.95	+14.43
dx	-20.28	-11.41	-4.79	+0.35	+4.36	+12.96	+17.02
dy	-10.26	-6.06	-2.46	+0.18	+2.23	+6.61	+8.72
m'	-255.6	-247.1	-242.1	-235.0	-230.9	-222.3	-218.2
n'	+34.8	+39.1	+42.7	+45.4	+47.6	+51.8	+52.9
	2.40752	2.39292	2.38012	2.37112	2.36342	2.34702	2.33892
	1.5416	1.5912	1.6304	1.6571	1.6758	1.7143	1.7316
	2.4115	2.3983	2.3871	2.3791	2.3724	2.3585	2.3518
			243" 9	239" 4	235" 7		
	172 15	171 0.5	169 55	169 4	168 24	166 53	166 8
C-0 dx	-14'	+3' 5				-12'	-24'
2dx	-1.05	+0.25				-0.8	-1.6
dx			-0.1	+0.1	+0.45		

181.5

Q = -1' 05 - 0.14 dm - 0.99 dm
 + 0.25 - 0.16 0.99
 - 0.1 - 0.98 + 0.18
 + 0.1 - 0.98 + 0.19
 N 1.5 + 0.55 - 1.20 + 0.25
 - 0.8 - 0.23 - 0.97
 - 1.6 - 0.24 - 0.97

da	ab	an	ba	ba
2	+14	+15	98	+104
3	+16	-04	98	25
96	-18	+10	3	.02
96	-19	-10	4	.02
144	-30	-66	6	.14
5	+22	+18	94	.48
6	+23	+38	94	1.55

dm = -0" 32 ± 0.24
 dm + 0.02 ± 0.22

m+dm - 3' 55" 28
 n+dm + 41.38 by 1.6472
 1862 0.6560

- 3 55.28
 Rfr. - 0.38
 hmb (67) - 0.1

0.9612

Q 15 = dx

Δd
 x = 2 57.74
 Qfr. 7 - 0.36
 2 58.1

3.52 + 0.08 + 0.01
 3.97 + 0.06
 1.68
 - 2.67
 5/2.01 m 2
 0.40
 ± 0.42

Met 1862 III

1862 July 27
M.S.

Arg. (Oltz) 6159. 7th. any.

1862.00	5 33 51.38	+71° 13' 18.2	29 535 1.3
	+2 19.04	42.6	20 71° 13.27 14.00
1862.00	5 36 11.02	+71 14 21.8	40° 0.46880
r. a	+5 8.62	-2 58.41	Lat 20 9.99741
Ret to 1862.00	+0.06	+0.1	1.42715
at 1862.00	5 41 19.75	+71 11 43.8	Lat 20 2.60324
Ret to app.	+3.26	-9.5	9.03653
Count - x	+9.15	-3 55.8	1.89336
Count's & d	5 41 32.16	+71 7 18.5	61.413
Ly in par.	9.5738	0.8813	78.227

Corrected 1862 Jan 31
for an error of 10" in Oltzen.

Chro.

1848 56
 1848 56, Lat 1
 8 20 25
 10 28 29
 1 43
 10 26 46 Camb. mt

13 700 9.6160 0.30212 0.7594
 9.4572 9.9814 9.5100
 0.4900 9.9760
 9.57 0.7595
 0.2694

	a.	x
3 43		
84.3	85.20	
147 43		
40°	0.4669	0.4677
Lat 20	9.9997	9.9999
1	1.2740	1.2740
alt. 20	8.5707	8.2196
Lat 20	0.4927	0.4915
Lat 20	9.8951	9.9026
L	1.2993	1.2993
alt. 20	9.7416	9.7790
Lat 20	9.9763	9.9762
f	43.09	43.09
20	+55.29	+55.16
10	-46.65	-49.37
71	+0.73	+0.31
N	-11.67	-11.34
11	+12.79	+1.69

Comet 1862. II

62 July 30th

A very faint nebulous object was found at the place where Comet II should be by Mr. Wall's spectrum confirmed.

Star of Comparison

(18550) $9^h.5$ $2^m.13$ $14^s.19.1$ + $1^s.24.6$ B (observed accurately at Bonn)

Position - Comet & foll. star

Chs. 236 C. Reading

17 39 10 $30^s.75$ above wire

110 20

42 46 29.6 " "

141 29

46 41 28.5 below wire

142 35

48 59 27.6 " "

163 29

Distances

17 55 27

 $36^s.607$

Right of wire

Zero $58^s.922$ 218.7

18 1 8

 36.303

Left "

 221.7

9 24

 35.428

Right "

 230.3

15 51

 35.510

Left "

 226.9

Position

18 20 48

 27.3 $\Delta\alpha = 0^s$ $\Delta\delta =$ 143.77
 -0.54

These measures were taken with extreme difficulty.

The comet shows signs of ^{star-like} ~~stellar~~ condensation about the nucleus.

Reduce to Chs. $17^h.58^m.8^s$ $\Delta\alpha = 220^s$ Pos. $142^s.42'$ $m = 775.0$ $n = +133.3$

	-1.63	$+0.25$
	-176.63	$+133.55$
Ref.	-0.12	-0.04
Temp. (185°)	-0.08	$+0.06$
$\Delta\delta$	$-2^s.56.18$	2.1257
$\Delta\alpha$		0.1762
		$+8.591$

Comet 1862. II

1862 July 30th

$\log(T-T')$	+ 10"2	+ 8"3	+ 6"2	+ 4"9	+ 1"4	- 3"2	- 6"1	- 9"5	- 12"2
$\log m'$	2.2170	2.2719	2.2274	2.2307	2.2396	2.2509	2.2579	2.2660	2.2723
" n'	2.1248								
$\log x'$	2.3263	2.3293	2.3326	2.3367	2.3402	2.3474	2.3519	2.3572	2.3613
					218"9	227"5	226"9	227"6	
	141° 2'	141 21	141 42	141 55	142 29	143 12	143 39	144 9	144 33
C-0	+ 12'	- 8'	- 53'	- 9 34'					+ 46'
zdv	+ 2"6	- 0"5	- 3"2	- 5"9					+ 5"1
dz					+ 0"2	+ 0"8	- 5"4	- 1"3	-

Equations

+ 1"6	- 0.63	dm	- 0.76	dn	aa	ab	qa	b_1	z_1	m
- 0.5	- 0.63		- 0.78		40	+ 49	1.64	61	2.03	1.8
- 3.2	- 0.62		- 0.79		40	+ 49	0.32	61	0.39	0.2
- 5.9	- 0.62		- 0.79		36	+ 49	2.03	62	2.53	10.2
+ 0.2	- 0.79	+ 0.61	dn		38	+ 49	3.66	62	4.66	34.8
+ 0.8	- 0.80	+ 0.60			62	- 48	0.16	37	0.12	0.0
- 5.4	- 0.80	+ 0.59			64	- 48	0.64	36	0.48	0.6
- 1.3	- 0.81	+ 0.59			66	- 48	4.37	31	2.19	29.2
+ 3.1	- 0.58	dm	- 0.61		66	- 48	1.05	31	0.77	1.2
					34	+ 47	1.80	66	2.57	9.6

$$4.48 + .57 + 7.19 \quad 4.55 - 0.52 \quad 93.1$$

$$2691 \quad 9708 \quad 9857 \quad - 11.7$$

$$dm = -1.63 \pm 1.09$$

$$dn = +0.25 \pm 1.06$$

$$- 0.06 - 0.02 - 0.3$$

$$4.49 - 1.14$$

$$7 / 81.1$$

$$11.59$$

$$\pm 2.129$$

(246 unq. not 8)

Comet 1862 II

1862 July 30.th
1875

Refraction

17 58.8			$\log n$	$\sin \eta$				$\cos L' d$	
$t = 1.4328$	-	4	$19.45, 46$	9.98672	9.85505	$+ 1.22'$	9.55678	$- 9.41167$	$14.57.62$
$z = 1.4319.1$			$47, 51$	9.98673	9.85515	$+ 19.06$	9.55669	9.41164	$14.57.14$
		$\frac{7.86666}{\sin p}$	$\frac{\sin p'}{\sin p''}$	$\frac{\sin p''}{\sin p'}$	$\frac{\sin p''}{\sin p'}$				
Δt	9.97532	9.98503	9.83675	9.83981	r	$3.32.69$	$\text{G.M.D.} - \text{P.M.D.} =$	$-0''04$	
Δz	9.97522	04	9.85864	9.83993	g	$3.32.78$	$\star - \gamma$	$-0''12$	

Comet - Star

Δx			$+ 8.91$	Δd	$- 2' 56.8$
Star 1855.0	13	14	19.1	$+ 1$	24 36
Pro.			$+ 21.43$		$- 2$ 13.0
1862.0	13	14	10.5	$+ 1$	22 23
Red to app			$+ 2.57$		$- 12.1$
	13	14	43	$+ 1$	22 11

Chro 1758.8
fast 6

1758.2 Lid. J.
 18.32 14.5
 $- 1.32.6$
 $9.24.15$ Comet int.
 32.47
 $8.57.28$

1862 July 30th (noon)
 $8^h 45^m$ fast of 80 18.3
 El slow 11.4
 Chr. fast 6.9

0.0386
24.5

g 3.36
 $\angle$ 198.40
 H 144.51

$q d$ 8.378 f $+ 43.50$
 $\angle(GM)$ 9.57862 g^0 $- 0.17$
 1.2781 h^0 $- 5.63$
 9.96632

fin d 0.0001 $g1$ $- 17.56$
 w(H+g) 9.4525 N $+ 0.48$
 h 1.2976 i' $+ 4.95$
 a(H+g) 9.9618
 end 8.378

50
2
13
56
58
25-

Comet 1862 III

1862 July 30th
115Comp: with [Alt 6362 = Sec. 36. ?] Comet follows nearly on parallel.
Cor.*

Chro)	18 36 54	28.505	At angle 344.9	58905	30.417	298.1
136}	36 12	28.288		942	30.634	300.2
	39 17	28.403		620	30.579 + .003	299.1
	40 25	28.350		58922	30.572 + .004	299.7

	45 19	297.2	below		351° 51'	Angle
	47 1	257.8	above		257° 30'	93 35
	48 42	258.3	above			
	51 44	258.85	below		258 34	
✓ 18	53 46	259.4	below		258 51	92 14
19	5 40	261.6	above		262 6	88 59
	7 30	262.6	below			

	12 14	25.902	Left	351° 3' = 89.5	Angle of 00	
	13 54	26.027	Right		87.6	33.020 + .023
	14 56	25.985	Right		87.2	32.695 + .040
	16 42	25.604	Left		86.9	32.937 + .064
					86.3	33.318 + .069

Reduce to Chro. 1855 29

The nucleus is not so definite as on the 25th. is yet quite visible
on the wire, and with a higher power by glimpses,
nucleus about 10th mag. but enveloped in the hazy matter of the head.

* What was observed was the projection of the distance upon the line perpendicular to the wires.

(U_{obs})^{*} $dx = -1.33$ $dy = 0.76$ $dz = -0.08$ $+dy = 0.68$ $alt = 511''$ $Pa. Q_1^0 24'$ $m = -7''6$ $n = +310''9$

WT	18 37 33	18 39 57	18 46 10	18 54 24	19 6 35	19 13 6	19 15 49	$\theta = +1''45$	-0.10 dm	$+0.99$
				1.5				$+2.2$	-0.10	1.00
	-18.93	-15.63	-9.32	-4.08	$+11.10$	$+17.62$	$+20.33$	$+0.9$	-1.10	-0.06
	$-23''85$	-20.8	-12.4	-5.4	$+14.75$	$+23.45$	$+27.05$	$+1.2$	-1.22	-0.05
by z	-12.2	-10.6	-6.35	-2.8	$+7.6$	$+11.0$	$+13.8$	-1.5	-1.00	$+0.02$
								0.0	$+0.05$	$+1.00$
	1.4976	1.4533	1.3070	1.1139	0.8543	1.2000	1.2879	$+0.1$	$+0.06$	$+1.00$
	2.4752	2.4775	2.4836	2.4887	2.5031	2.5091	2.5115			
v	2.4776	2.4794	2.4845	2.4891	2.5032	2.5096	2.5123	$\theta = -1.21$	$+3.52 \text{ dm}$	$+0.01 \text{ dm}$
								$+3.30$	$+0.01 \text{ dm}$	$+3.99 \text{ dm}$
	96°	$95^\circ 10'$	$93^\circ 45' 5$	$92^\circ 25'$	$88^\circ 43'$					
	$300''3$	308.6	$+10.5$	$+11'$	$-16'$	$323''3$	$325''3$	$dm = +0''34 \pm 0''44$		
C-O dx	$+1.15$	$+2.2$				0.0	$+0.41$	$dm = -0.83 \pm 0.41$		
zdr			$+0.9$	$+1.0$	-1.5					

10.67
 -0.41
 -2.74

 $5) 7.52$
 1.50

 ± 0.82 2 comp

$$\begin{aligned}
 m + dm &= -7''26 & n + dn &= +310''07 \\
 \text{Temp. } 65^\circ & & + 0.15 & 15 \text{ in } 8^\circ \\
 & & & 2.4916 \\
 & & & 0.6518 \\
 & & & 1.8398
 \end{aligned}$$

Refr. amounts to very little as the δ and ϵ were in nearly the same altitude

* There are not very accurate consequently the probable errors are a little too large.

Comet 1862 III

1862 July 30th
1875.

Schweizer 346

1828.0

5 45 40.91

+4 9.21

1842.0

5 47 24.10

+2 26.62

Super.

5 49 50.12

+0.05

Avg.

50.72

+0.01

Mean

5 49 50.47

+72 36 0.4

Red to off.

+3.43

-10.4

Comet-Star

+1 9.14

-7.13

Comet's d. d

5 51 3.04

72° 35' 42.7

-0.75

+6.8

-6.98

+0.4

-8.62

-1.16

Hro 18 55 29

fast 6

18 55 23

8 32 14.5

1 42.7

10 21 26

Liv. Fin

Cambs. Mt.

Elements II 135

C

57 47 52.0

72 35 52.59

Rev.

+1 44.0

-0.7

O

87 15 40.3

+72 35 49.5

C

-5.5

+0.8

Cora. Gp.

+14.3

+5.6

0.0370

542

-32.49

948.62

7.33

1845.0

1852.0

7.33

547 45.8

548 47.1

72 35 42.6

72 35 52.2

Sun

9.99932

9.99946

0.50381

0.50382

1.65762

1.42715

2.83371

2.60324

8.72728

8.69584

2.16081

1.93068

+144.813

61.412

104.397

85.208

L

3° 36'

L

87 28

H

144 52

L

0.5039

f + 43.50

L

9.9999

30 + 60.52

L

1.2781

10 - 52.52

L

8.2699

L

0.5243

g1 - 0.35

L

9.8985

h' - 11.57?

L

1.2975

i' + 1.48

L

9.7861

-1

L

9.7777

L

0.694



Comet 1862 III

1862 July 31
1875.

Com. with star if $10^{\text{th}}(H) = 2$

Comet n. pr. α

Chro 19 12 42
15 9
16 48
17 48

196.6 Left
192.65 Right
192.05 Right
191.45 Left

dist $\alpha + 1.62$

193.32'

191.45

dy $\frac{+0.55}{-0.77}$

$161^{\circ} 5'$

337 33

339 20

Lamp went out

35 40

38 16

39 8

41 30

42 44

44 20

at angle 274.6

43.342

43.262

43.116

42.725

42.620

42.464

Zero

58.970 (2)

Corr

+4

+11

+12

+1

→

α

15.632

15.739

15.841

16.251

16.350

16.506

153.71

157.40

161.00

Return to Chro.
19 36 18

48 6

50 3

52 7

54 50

177.85 Right

178.45 Left

177.6 Left

176.8 Right

178.46

177.12

α comp: with $\alpha =$ Apr. 1882.

α is north preceding α

ca

$391^{\circ} 5'$

α 19 58 15.5 39.4 19

α 20 4 22.8 47.5 -6 7.70

α 20 10 59.4 82.9 11

α 17 6.7 30.8 -6 7.60

α 20 19 30.3 54.4 11

α 25 34.6 62.4 -6 8.10

α 20 34 26.0 49.4

α 19 36.4 58.3 -6 4.45

-6 7.96

Apr. -0.04

Comet 1862 III

1862 July 31
JMS.

x	20° 46' 20"	56.388	45.785
	47 12	56.250	
a	52 38	10.538	
	53 28	10.530	
x	20 55 11	68.543	45.822
	56 5	68.542	
a	1 22	22.721	15.603
	2 16	22.721	9.6

+7' 28" 87
 Alt. +0.60
 Temp. 63. +0.15
 7 29.4

x separated from the comet being brighter; perhaps 9.5

x and a are so far distant in dir. that their positions had better be repeated.

Nucleus again bright and distinct: somewhat oblong in shape.

Observed for Aug. 19 36 18	Dist = 2' 32" 5	Pos. = 348° 0'	m = 14.9 ²	n = -31.15			
19 13 56	19 17 18	19 36 48	19 40 19	19 43 32	19 49 4	19 53 28	0 = -0" 2 + 0.38 dm + 0.92 dn
-22.37	-19.00	+0.50	+4.02	+7.23	+12.77	+17.17	0.0 + 0.35 + 0.93
(T-T)/dx	-31.4	-27.0	+0.7	+5.2	+10.3	+14.1	-0.6 + 0.98 -0.40
dy	-17.2	-14.6	+0.4	+3.1	+5.6	+9.8	+0.1 + 0.98 -0.14
2.0697	2.0891	2.1758	2.1900	2.2028	2.2235	2.2396	+0.3 + 0.99 -0.16
1.6875	1.6637	1.4928	1.4533	1.4133	1.3365	1.2624	+1.0 + 0.13 + 0.99
2.1042	2.1160	2.1849	2.1972	2.2084	2.2292	2.2438	+0.3 + 0.10 + 0.99
Pos. Comp	337° 28'	339° 20'	343 8	349 13	352 37	353 59	Final
Dist "	+	+	153 67	157 47	161 29	+	+0" 16 + 3.20 dm + 0.38 dn
C-O dx	-0' 51	-0'				+0' 20'	+0' 61'
2dr	-0" 14	-0' 70				+0" 97	+0" 31
dx			-0" 64	+0' 67	+0' 29		dm -0.01 ± 0.11
							dn -0" 31 ± 0" 10
m+dm = +14.9" 19							
n+dn = -31.31							
R. 2amp ± 0" 198							
m 1.59							
-0.61							
-1.15							
5) 0.43							
0.							

Met 1862. III

1862 July 31.

75° 0'	$\log n + \Delta n$ 1550-0.0	$\frac{1.5026}{0.6387}$		
Met - x	-	7.31	+ 2' 29" 19	
Scap. (63)			+ 0.02	
Ref		+ 0.01	+ 0.18 (from Table - not very exact)	
	-	7.30	+ 2' 29" 4	

	$\frac{a}{x}$	$\frac{x}{a}$
G	3.34	
+	90° 19'	88° 47'
14		143 56
log	0.5143	0.5177
antilog	9.9990	9.9996
2	1.2794	
antilog	8.8308	8.6128
51		0.704
ind	0.5338	0.5369
antilog	9.9093	9.9007
		1.2269
	9.7666	9.7823
sin	9.9806	9.9809
4	+ 43" 63	
90	+ 62.06	62.62
20	- 53.76	56.26
	50.71	57.99
21	- 1.29	- 0.78
22	- 11.02	- 11.48
23	+ 1.48	+ 1.47
	- 10.84	- 10.79

Amet 1862 III

1862 July 31.

Star a = γ 1082 = Feb 844 + 2. = Arg. DrThe term depending on the 3rd power of the time is quite inconsiderable for γ perhaps -0.04

1790.0	5 52 21.27	sup.	+72° 58' 58.8"		1836.0	1852.0
	+8 55.65		20.3			
1810.0	5 52 47.63		72 59 9.7		2° 5 58 2.0	6 0 1.0
	+6 26.89		+9.0		3° 72 59.26	72 59.27
1842.0	5 58 46.62		72 59 15.8		4° 20 0.51433	0.51433
	+2 28.81		1.0		4° 20 9.99998	0.00000
1845.0	5 59 8.95		+72 59 16.1		0.12615	0.12612
	+2 6.49		0.0		1.30225	1.30221
7	6 1 17.02		+72 59 19.0		7.93704	
7 Sept.	14.40		18.7			
γ	14.52	+0.48	18.7	+0.5	4.3698	4.3697
Arg.	15.43	+0.04	15.8	0.0	3.0703	3.0706
Redl.	15.44	-0.04	16.1	(+0.08)	7.4401	7.4403
					+0.174	-0.0015
Star a 1862.0	6 1 15.43		+72 59 15.6			
Pm.			-0.0531	-0.0531	2nd Equal lat	C-0
$\alpha - a$	-6 8.00		+ 7 29.4		1790	18'45 19.62 +0.52
Red. to 1862.0	-0.09		-0.1		1812	19.20 18.36 -0.94
					1842	15.80 16.66 +0.86
Star α 1862.0	5 55 7.34		+73 6 44.9		1845	16.90 16.50 -0.40
Red. to app.	+3.47		-10.8		1822	17.69
Comet - α	-7.30		+2 29.4		32 3 =	1.16 135
					10	1.51 218
Comet's α 0	5 55 3.51		+73 9 3.5		20	1.99 339
2 nd for Pm	9.7942		0.8546		23	0.79 063
Chro. 19 36 18					1024	37.12
fast	8				100	15.10
19 36 10	Tw. T.				400	37.80
8 30 11					529	18.12
1 48					2053	109.09 183
Aug 10 58 18	Comet lat				-0.0531	5.79
						2.04
	96260	0.80216	0.7894	0.2216		
	9.9304	9.9584	9.4622	0.7395		
	0.1778	0.0810				
13 41.1						

Comet 1862 III

1862 Aug 4th
 19 36 30.6 50.8
 25.8 68.0 - 1 57.70
 Comet 30. preceding
 At ang 391° 51'

Comet 39 59.0 74.9
 41 52.4 72.4 - 1 57.45

43 56.5 76.7
 45 52.4 72.2 - 1 59.70

48 13.0 33.6
 50 7.4 27.6 - 1 54.20

52 9.6 28.9
 54 2.3 22.2 - 1 53.00
 55

Log 15.118 0.572

Comet Aug 26.0 M. of Times 48.925
 57 25.0 69.896
 Star 58 49 19ⁿ 57^m 28.5 + 1.0 - 1.0 48.925 69.803
 " 19 59 57 69.694

Comet 20 2 10 44.516
 Comet 3 6 20 2 34 44.406
 Star 4 25 69.285 + 0.2 - 1.0 + 2.0
 " 5 11 64.171

Comet 20 7 30 47.085
 8 20 20 7 55 47.135
 Star 9 24 71.136 + 1.0 - 1.0 + 2.0
 10 35 70.982

Aug 26.20
 Comet 13 26 20 13 59 42.875
 14 30 42.908
 Star 15 24 60.729 + 0.2 - 1.0 + 2.15
 16 22 60.948

* 1 66.
 * 4 65

$397^{\circ} 3' 5''$

Comet	20	20	17.5	33.3	-1 44.65
Star		22	2.2	17.9	+
C.		23	20.9	36.5	-1 44.00
S.		25	4.8	20.6	
C.		25	59.8	75.8	-1 42.75
S.		27	42.5	58.6	
S.		28	53.7	69.8	-1 42.50
S.		30	36.3	52.2	
C.		31	49.6	65.6	-1 41.30
S.		33	31.2	46.6	

Sun 135°

Dir. prec. in R.

$ab \approx 35''$

The direction ab is very nearly that of the circle of position $\odot$.

Thus the line ab was nearly parallel with the wires when observing transits

ab is a straight tail? it can be seen farther by glimpses & say to $35''$ in length

There seems to be trace of a tail s. f. about 30° inclination: but not near so decided.

Much aurora.

a	45	0.6	16.5	
b	46	1.3	17.7	915 N

20 47 58 13.8

20 57.7

11.11" - 14 30 0 284° 14'

Chart 1862 III

62 Aug 4th
1862

Star of Comparison = Alt. 6857

1862.0	6 15 51.76	+75° 39' 32".7
	+2 45.68	-30.4
Rev to app.	6 18 37.44 +0.05	75 39 2.6
	+3.58	-12.3
	-1 49.29	75 -3 10.3
Comet's L. S.	6 16 57.73	+75 35 10.0
Reduc.	(-0.85)	+7.3
2297	(-7.71)	

L.	6 17 14.7
S.	75 39.30
log D	0.59221
sin Q	9.99877
	1.42715
	2.62324
	2876012
	2.01813
	104.263
	61.413

G	3.5
L	94 39
N	160 10

log D	0.5921	+ 14.15
log sin Q	9.9957	90 + 74.53
g	1.7845	10 - 64.97
log (h + g)	9.1471	53.71

log D	0.6058	g' - 2.70
log sin Q	9.9924	h' - 11.00
L	1.2945	i' + 1.36
log (h + g)	9.7606	
log D	9.9863	

1.8723
1.81272

Obs 20 5 30
first 12
20 5 18
8 57.57
1505

11 11 30 Cambr. mt

Reduce to Chro 20 5 30

Mk in Sec. assumed $+100''$ in $\alpha +18^\circ$

19 57 28 - 20.868
20 2 38 49.16
7 55 16.936 (Cor by 5R)
13 58 17.912

- 3' 24" 2 + 13" 4 - 3 11.3
3 14.2 + 4.8 9.4
3 5.6 - 4.0 9.6
- 2 55.6 - 14.1 97
Mean - 3 10.0 = 0" 30

7h AR

Red. to 19 44 19

19 36 41 - 1 57.70 + 2.29 - 1 55.41
40 5 1 57.45 1.27 56.18
44 7 1 55.70 + 0.06 55.76
48 23 1 54.20 - 1.22 55.42
52 19 1 53.00 2.40 55.40
19 44 19

Red. to 20 26 12

20 20 25 - 1 44.65 + 1.74 - 1 42.91
23 28 44.00 + 0.82 43.18
26 8 42.75 + 0.02 42.73
29 2 42.50 - 0.65 43.35
31 58 41.30 - 1.73 43.03

19 44 19 - 1 55.634

20 26 12 - 1 43.040

Motion in α
41" 53" + 12.57
by 1.622
20 1.099
9.477

Motion in μ
20 5.16 - 1 49.337
+ 0.070
- 1 49.27

D+ - 1 49.37 $\Delta\delta$ - 3' 10" 0

Ref. - 0.02 - 0.2

Temp. - 0.1

Comet 1862 III

Corrected
+ South 150°

171° 43'

1862 Aug. 6

Notwithstanding bright moonlight Comet is visible easily to naked eye
In telescope the jet thrown off towards Sun is very distinct & attracts
instant notice. In the rear

Corrected dir. of
prog. in R0' 1' 2' 3'
1 . . . 1 . . .

In drawing the angle ~~is~~
how circle is too large
It is correctly given in
measure of angle of
prog.

Sun 159°

Nucleus is scarcely distinguishable from the jet. Aufströmmung
for 15" from it

Draw nucleus 3" perp. to jet.
Mag. in diam. 3" is 8th

Side Scale Zero

B ϕ =9^h 30^m m.s.c.

181° 50'

179 55

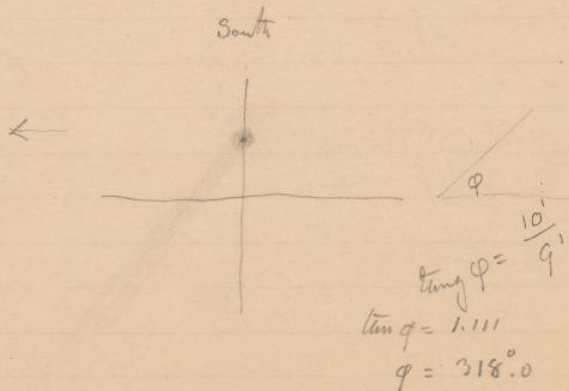
180 27

262 20 - 352 105

81 53 171 43

B ϕ is angle $a \hat{ n } b$

Faint tail in Finder

At 11^h 30^m m.s.c.

Zero

B ϕ 359 30
0 45

0 07 0 07

82 20 352 10

82 13 352 3

172 3

Comet 1862 III

#862 Aug. 7

A decided change since last evening in the aspect of the jet from the nucleus it is broader near nucleus & generally larger. It has also the appearance of being bent strongly towards side preceding in R. at a point 10" from nucleus from original direction to a new direction

Sum
140°

Zero determined Side of Scale
262 15

$$340^{\circ} 00' = 340 00$$

$$82 20$$

$$102 20$$

$$\text{Avg. Pos.} = 192 10$$

$$\begin{array}{r} 9^{\circ} 15' \\ 262 20 \\ \hline 352 10 \end{array}$$

$$73 5$$

$$12 10 - 180^{\circ}$$

$$\text{Pos.} = 162 55$$

at 19^h 25^m

$$9 15$$

$$352 10$$

$$342 55$$

$$170 00$$

0' 1' 2' 3'
1 1 1 1

For the zero of side of Scale

Aug 6 262 20

7 262 15

12 261 44 (wt=2)

19 261 46

Spt 2 262 10

Adopt 262 10

$$90 = 00$$

$$352 10 = \psi$$

$$\text{Angle of pos.} = \psi - \text{reading}$$

$$\text{or} = \psi - " - 180^{\circ}$$

In computing direction of R. on Diagrams the observed angles of pos. as well as the direction marked in original diagram are combined in mean.

Comet 1862 III

~~1862~~ 1862 Aug 7th
PMS.

Comet compared with Alt 7251 (probably)

	Alt angle	301° 5'	<u>EL</u>	
Star	19	55	32.4	50.0
Comet		58	45.8	2.7
				+ 3 13.05
Star	20	30	6.7	16.4
Comet.		33	28.6	47.2
				3 29.35
Star	20	34	24.7	33.9
Comet.		37	57.1	66.2
				3 32.35
Star	20	38	26.0	34.1
Comet		41	58.8	6.9
				3 33.50

Shooting ill-defined.

This observation is not to be considered as of the usual weight.

Computation of H. H. in α from Eph

const.		2.1561
$\frac{d\delta}{dt}$	-0.00591 by	7.7716
	100° 5' - 16.2	9.9918
$\frac{d\eta}{dt}$	-0.01862	8.2700
	in α	9.2838
		7.7634
		7.5538
		7.9722
		0.1283
	Δ_{and}	9.2558
Mobin	space in 1 ^m	0.8725 = +7"456
	time	+ 0.497

Comet 1862 III

261° 51'

I $\frac{261^{\circ} 51'}{15m}$ }
 46.362 }
 46.466 }

Comet }
 69.535 }
 69.238 } Time lost.
 69.277 }
 69.024 }

II $\frac{41.112}{41.267}$ }
 41.006 }
 41.262 }

Comet	63.400	20 19 3	- 22.038	- 3 36.0	+ 14"1	3' 21"9
	63.270	20 5	21.908	34.7	12.2	22.5
	63.296	[20 43]	21.934	35.0	11.1	23.9
	62.776	21 21	21.414	29.9	9.9	20.0
		20 20 18	- 21.824			

III $\frac{55.198}{55.218}$ }
 55.325 }
 55.247 }

Comet	75.966	20 25 51	20.719	3 23.0	+ 0.5	21.5
	75.656	26 49	20.409	20.0	- 0.3	20.3
	75.623	67 28	20.376	19.7	1.5	21.2
	75.692	28 0	20.445	- 3 20.5	2.5	3 22.9
		20 27 2	- 20.697			- 3' 21"8

8.9
 * following bright * 1" and in 16" m.

Comet south following.

Alp.
 Long. 64°
 - 3 22.1

Reduce to $\frac{E.C.}{20 26 40}$.
 at 64°.

Motion in α in 1" + 0.492
 in δ in 1" + 1.86

Observations in A.R.			Reduction		Ch. of Parallax		Δx reduced
CC.	19	58 54	part. Par. +13.80	-0.135	+0.28		3 27.13
	20	33 43	-3.50	0.194	-0.07		3 25.78
		38 2	-5.65	0.200	-0.10		3 26.60
		42 3	-7.64	0.202	-0.14		3 26.02
	20	26 40	13 41.9	0.162		Mean	+3 26.38
					Rpt.		-0.03

Const 1862 III.

Aug. 7

1862.0

Lc

$$\begin{array}{r} 6 \ 88 \ 5.61 \\ +3 \ 3.17 \end{array}$$

$$\begin{array}{r} +77^{\circ} \ 48' \ 10.5 \\ -1 \ 9.0 \end{array}$$

$$\begin{array}{r} a^{\circ} \ 6 \ 39 \ 37.2 \\ \delta^{\circ} \ 77^{\circ} \ 48' \ 61 \end{array}$$

1862.0
Red to app.
Const - 1862.

$$\begin{array}{r} 6 \ 41 \ 8.78 \\ +8.56 \\ +3 \ 24.35 \end{array}$$

$$\begin{array}{r} +0.04 \ 77^{\circ} \ 47' \ 1.5 \\ -13.6 \\ -3^{\circ} \ 22.1 \end{array}$$

$$\begin{array}{r} \log \delta^{\circ} \ 0.66489 \\ \sin \alpha^{\circ} \ 9.99347 \\ 1.627 \ 15 \\ 2.603 \ 24 \end{array}$$

Parallax
Computed.
Cor. Eph.

$$\begin{array}{r} 6 \ 44 \ 38.69 \\ 44 \ -1.01 \\ \hline 64 \ 22.17 \\ +16.3 \end{array}$$

$$\begin{array}{r} +77^{\circ} \ 43' \ 25.8 \\ +8.1 \\ \hline 62 \ 51. \\ +43. \end{array}$$

$$\begin{array}{r} a \ a^{\circ} \ 9.23557n \\ 2.08551 \\ +121.76 \\ +61.41 \end{array}$$

$$\begin{array}{r} G \ 3 \ 18 \\ a \ 100 \ 17 \\ H \ 137 \ 18 \end{array}$$

$$\begin{array}{r} \log \delta \ 0.6645 \ f +44.52 \\ \sin(G+a) \ 9.9877 \ g + 67.14 \\ g \ 1.2880 \ h - 76.27 \\ \sin(G+a) \ 9.3708n \end{array}$$

$$\begin{array}{r} \log \delta \ 0.6745 \ g' - 4.56 \\ \sin(H+a) \ 9.9264n \ N - 10.28 \\ h \ 1.2927 \ i' +1.22 \\ \sin(H+a) \ 9.7292n \\ \sin \delta \ 9.9900 \ 0.7612 \end{array}$$

Chro. 20 26 40
fact. 16

$$\begin{array}{r} 20 \ 26 \ 22 \\ 9 \ 3 \ 47 \\ \hline 11 \ 22 \ 35 \end{array}$$

Lio Time

1 52

11 20 43

Lamb. ind

11 20 43
alt. 7.7
11 13 39
10 49 58

$$\begin{array}{r} \epsilon \ -0.03482 \ 8.54058n \ 101 \ 3.33 \\ \eta \ +.17770 \ 9.24969 \ +2.20 \\ \zeta \ +.83152 \ 9.91987 \ 77 \ 42.03 \\ \Delta \text{ind} \ 9.25724 \ -0.08 \end{array}$$

Comet 1862 III

1862 Aug 10

Moonlight - Clear

Direction = $147^{\circ} 30'$
(Not from nucleus)

At $17^h 45^m$ E.C.

To naked eye at $4\frac{4}{5}$ mag

Dir. of R by mean.
of J & and
Diagram

Sides of Scale $82^{\circ} 20'$ $\angle$ Dir. of R pre
(mean $82^{\circ} 10'$)

$147^{\circ} 30'$	$191^{\circ} 15'$
$352 \quad 10$	$352 \quad 10$
$204 \quad 40$	160.55

Scale 1'

73° $\leftarrow$

Tail dimly but I think certainly seen
in Comet Zuckers is very nearly parallel with
horizon! at $18^h 00^m$ Sid.

Comet 1862 III

1862 Aug 10th
1862Positions Comet n.p.⁺x. 9th Fr

Chs 226.	18 24 13 } 241.65	[2° past of EL]
	26 54 } 240.0	
	28 28 } 238.8	
	30 11 } 237.7	

	Co. Red.	Zero taken next morning
18 34 44 } 410.877	< 322.6	
36 26 } 41.238	idem } 41.058	58.870
37 27 } 41.503	idem }	58.885
38 35 } 41.266	< 318.4	41.585
39 55 } 41.422	idem }	58.878
41. 8 } 41.828	idem } 41.625	
42 58 } 41.563	idem }	
44 54 } 41.905	< 315.4	41.834

18 68 20 } 220.1	[These positions were taken by setting the pointer a little beyond the true position, keeping the star bisected by the movable wire, and waiting for the micrometer to be bisected]
50 27 } 217.7	
53 5 } 214.6	
54 34 } 213.0	

* x compared with * a = 186 8170 ckt. x is north preceding a.

x	54.770 } 16.779	Diff. Dec by wire. 3' 1" 0 wt 2
	54.708 }	

a	36.229 } 36.275
	36.322 }

		by scale	3' 1" wt 1
			3 3.5 " 1
			5 1 " 1

x	54.695
	54.593

a	36.087	18.557
	36.087	

 $\Delta 8$ By all.
Apr
Temp

$$\begin{array}{r}
 3' 1".9 " 2 \\
 + 3' 1".6 \\
 + 0.2 \\
 \hline
 [70.0]
 \end{array}$$

Comet 1862 III

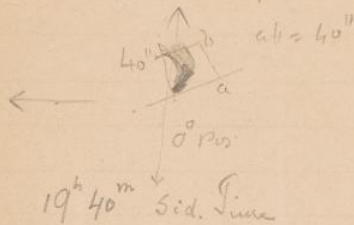
1862 Aug 10th
Hrs.

x and a compared in AR

> 381° 5'

x	19	22	50.8	70.3	Low power	
a		24	4.0	24.4	"	± 13.65 Wx 2
x		26	33.6	46.8	High power	
a		27	47.0	60.0		1 13.30
x		29	15.5	28.8		
a		30	28.8	42.3		1 13.40
x		32	9.0	20.5		
a		33	22.3	33.7		1 13.25
						- 1 13.36

Comet with power 140°.



$\frac{dx}{dt}$	-0.0591	7.772	
	-1.12	9.964	7.736
$\frac{dy}{dt}$	-0.1871	8.272	
	1.12	9.590	7.862
			0.105
			2.156
			0.264
			9.883
			0.378

$$dy = +2'' 39$$

$$dx = +1.83$$

Reduced to Chron. 18 39 31

Assumed Dist = 170" Pos. 302° 0'

or Pos.	9.7262
Dist	2.2304
hi Pos.	9.9284

$$m = +90.1$$

$$n = -144.1$$

Conut 1862 III.

1862 Aug 10

Combine the obs.								
pair by pair (T-T)	-13"96	-10"20	-3"94	-1"50	+1"00	+4"41	+9"87	+14"30
dx ()	-25"54	-18"67	-7"21	-2"74	+1"83	+8"07	+18"06	+28"17
dy ()	-33.36	-24.38	-9.42	-3.58	+2.39	+10.54	+23.59	+34.18
log . ml	1.8100	1.8539	1.9165	1.9413	1.9634	1.9920	2.0340	2.0655
" n'	2.2491	2.2765	2.1862	2.1693	2.1514	2.1257	2.0810	2.0411
" z'	2.2761	2.2624	2.2417	2.2365	2.2278	2.2195	2.2093	2.2041
Pos. Comp.	289°59'5	292°58'5	298°22'	300°36'5	302°58'	306°19'	311°54'4	316°36'5
" Dist	290 15.5	292 50					312 11	317 17
z dv	-0"9	+0"5					+0"8	-1"9
Ex Com			174"48	171"60	168"96	165"77		
" Oh			174.64	171.43	169.02	167.03		
dz								

Reduced to Chro. 18° 39' 31"

Equation.

$$\begin{aligned} \sigma = & -0".9 + 0.94 \Delta u + 0.34 \Delta v \\ & + 0.5 + 0.97 \Delta u + 0.39 \Delta v \\ & - 0.2 + 0.48 \Delta u - 0.88 \Delta v \\ & + 0.2 + 0.51 \Delta u - 0.87 \Delta v \\ & - 0.1 + 0.74 \Delta u - 0.65 \Delta v \\ & - 1.3 + 0.59 \Delta u - 0.61 \Delta v \\ & - 0.8 + 0.74 \Delta u + 0.67 \Delta v \\ & - 1.9 + 0.69 \Delta u + 0.73 \Delta v \end{aligned}$$

an	ab	ac	ad	ae	af	ag
0.88	+0.32		84	0.12		31
.85	+0.36	46		18	19	
.83	-0.42	10		.77	18	4
.26	-0.44	10		.76		17
.29	-0.46	5		.72	8	
.35	-0.48	77		.66	1.05	
.55	+0.50	59		.45		.54
0.48	+0.50	1.31		.53		1.39

$$\begin{aligned} \sigma = & -3".10 + 3.89 \Delta u - 0.12 \Delta v \\ & - 0.91 \Delta u - 0.12 \Delta v + 4.16 \Delta v \end{aligned}$$

$$+3.89 - 0.12 - 3.10 + 4.16 - 0.91$$

$$-2.47$$

$$-0.24$$

$$\Delta u = +0".24$$

$$\Delta v = +0.81$$

$$m_2 = 4.38$$

$$0.73$$

$$\text{Pr. Error of } \bar{r}_{\text{comp}} \pm 0".58$$

$$\begin{aligned} m + \Delta u + 90".91 & \quad \Delta u = 1.9586 \quad z + \Delta v = 143.86 \quad \log 2.1560 \\ & \quad \Delta u = 15.00^\circ \quad \Delta v = 0.4192 \\ & \quad \Delta u = 1.7388 \end{aligned}$$

Comet 1862.III

$a = \text{Feb. 11.41} - \text{G } 13.44 = \text{Schw. 45.2} = \text{Ade. } 81.70$

1790.0	7 22 21.02	+80 0 43.2
	+ 12 3.70	- 9 3.2
1810.0	25 40.96	79 58 19.9
	+ 8 40.64	- 6 39.4
1828.0 (204)	28 43.84	79 56 3.55
	+ 5 39.48	- 4 25.23
1842.0	31 4.82	79 54 15.4
	+ 3 19.18	- 2 37.9
1849.0	31 34.57	79 53 52.3
	+ 2 49.20	- 2 14.6

Li

Feb.	7 34 24.72	+0.02	79 51 40.0
Gr.	21.81	+0.80	51 40.5 +0.5
Schw. 2061	23.28	+0.05	51 38.3
Argel.	23.98	+0.04	51 37.5
Radt.	23.71	-0.04	51 37.7 +0.9
at Fairbank 1862.6	22.35		51 36.1

Pr. in a doubtful: adopt [Ade R17]
in 8 [7 1/2 A 1/2 Schw Gr 1/2 Radt 1] - 0"0595

Adopted 7 34 23.79 + 79 51 37.4

[1862] [wt: Feb 1/2 G 1/2 Schw 1 A 1/2 Radt 1 Feb 1]
using Dr. Förster, we get by least squares Pr in = -0"0064 ± 0"0085

AR 1862.0 7 34 23.23

C-0	
Feb.	-1.86
Gr.	+0.98
Schw.	+0.12
Arg.	-0.66
Radt.	-0.39
Förster	+0.38

Seculus	Variation in	AR.
	1790.	1862.
2	110° 35'	113° 36'
8	+60 8	79 52
h0	0.7540	0.7479
17 1/2	1.5144	1.5026
	9.628	9.616
16 1/2	9.818n	9.866n
15 1/2	9.229	9.223
	9.566n	9.621n
5	-0° 340	-0° 371
Per. 1830	1830	1850
Q	7 29 3.9	7 32 24.4
8	+79 55.80	+79 53.22
16 1/2	9.96635	9.96370
17 1/2	0.75059	0.74870
	0.12617	0.12612
	1.30226	1.30222
6 1/2	9.57854n	9.59369n
dt/dt	10.0362	9.9655
dt/dt	-7"400	-7"869
Per.		Gr.
1826.0	-10.0524	-7.546 + 0"14
1836.0	10.0166	7.551 + 0.05
1849.0	9.9834	7.801
1852.0	9.9582	7.895
1853.5	9.9527	7.916
	9.943	9.925
h	0.044n	0.113n
	9.619n	9.609n
o	-1"387	-1"323
	1830	1850

Comet 1862 III.

1862 Aug 10th
11.5

+0.097 +7.08

A 1862.0 7 34 23.79
 $\{ a-x$ -1 13.36
 { Red to 1862.0 -0.03

r 1862.0 7 33 10.40
 Red to app. +2.64
 Comet - r - 54.80

Comet's A. D. 7 32 18.28
 Parallax +0.72

Corr. of Ephemer. +43.5

Chri 18 39 31
 fast (22)

18 39 7 Sid Time

G 15 37

G 23 32

1 32

G 22 a Canals mt

8 51 58

57

E 7.05195 h 6.71559

η +12322 h 9.09064

ζ +75218 h 9.87632

1 9.1621

7 31 26.6 79 55 9
 app. +7.5 -9

+ 79 51 37.4
 + 3 1.8
 + 0.2

+ 79 54 39.4
 - 15.2
 + 1 30.9

+ 79 55 55.1
 + 9.4

+ 64"

Place a x

G 3 11
 α 113° 36' 113° 14'
 δ 134 26

190 0.74176 0.74198
 $\sin(G+\alpha)$ 9.9507 9.9519

1.2916
 $\sin(G+\alpha)$ 9.6536 9.6542

Red 0.45144 0.45165

$\sin(H+\alpha)$ 9.9673 9.9682

1.2907

$\sin(H+\alpha)$ 9.5730 9.5756

$\sin \delta$ 9.9931 9.9932

ϕ + 44" 90 + 44" 90

g + 97.70 + 98.46

L - 102.90 - 103.17

$\Delta \alpha$ + 39.70 + 40.21

g' - 8.82 - 8.93

N - 7.19 - 7.29

i' + 1.05 + 1.05

$\Delta \delta$ - 14.96 - 15.17

Comet 1862 III.

Sun 157°

1862 Aug. 11 Moonlight + Twilight - Clear

Began E.C. 17^h 40^m Ended 18^h 5^m

Scale

Comet has changed decidedly since last night but I am confident of tracing the remains of its figure there, with new developments superadded

Brighter in this direction earlier (Dir 142° 30' edge of scale)

b = 186° 15' edge of scale
224°

Corrected Dir R. direction of obs

Nucleus 2" mag. 9th

Trace light of head on side not seen 5'

Towards a - certainly seen - a bright expansion or wisp in the angle of position reading of edge of scale
142° 30'

(not measured from nucleus)

b & c very narrow rays
c shortest v. v. narrow & most recent - b may be last night's continued now to 1' from nucleus

Tail seems to flow from base of head

By above diagram direction of axis of tail 324° (not from nucleus)

In finder



Moonlight still interferes with fainter parts & tail.

	186° 15'	224° 00'	142° 30'
Scale	352 10	352 10	352 10
	165 55	128 10	209 40

Ang pos tail by above diagram 318.5
then $\frac{11.5}{10} = 1.15 \log 0.0607 = 41^\circ$
360
Ang. pos. tail 319

Comet 1862 III-

1862 Aug. 12 Fin & Clear no Moonlight

Faint twilight

Sun 164°
G.P.BBegan at 17^h 55^m E.C.

The "Aufströmung" is very beautiful & bears a great resemblance to some of Bessel's drawings of Halley's Comet in 1835-36

Corrected Dir. diurnal motion
light & diagram

Features clearly marked & distinct

E.C. 17^h 57^m
Smith's direction
142° 50' 183
Side Seal

1' 2' 3' 4'
1' 1' 1' 1'

←

Axis of Aufströmung E.C. 18^h 10^m

143° 50'

Newly Determined Zero

142 00

142 55 = 142 55

261 44 = 262 10 = Ang. pos.

Tail in finches - axis

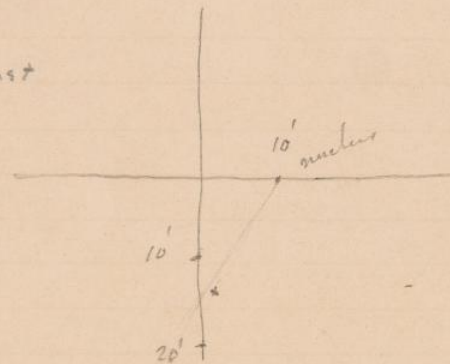
tan ϕ 10.0
14.5log 1.0000
" 1.1614

tan 9.8386 = 34° 6'

360.0

Ang. pos. tail 325.4

Breadth at nucleus 3" ?

At 9^h 01^m mst

Light in G.R. cavity traced 4' towards Sun

Perp to axis 10' ??

At 20^h 55^m I found that there is a slight bend close to nucleus

Diam nucleus 2"

Light shades insensibly into rays of "Aufstr."

At 12^h 1^m mst

Axis 139° 44'

352 10
212 - 26

There seems to be a haze itself attaching itself close to right of nucleus & extending a few seconds as represented above quite faint

Boy edge of Seal

Axis E.C. 20^h 55^m

139 45

140 12

138 45

140 45

27

139 52

352 10

212 18

Comet 1862 III

Aug 12 cont

G.P.B

The light is so bright in the ray that with a smaller telescope the centre of brightness or assumed nucleus might readily be taken 10" from true nucleus or with a low power at 15" or 20"

Comet to naked eye is just 4th magRay Axis EC 21^h 41^m

141 00

141 10

141 5

352 10

Aug per 21 1. 5

Comet 1862 III~

1862 Aug. 13. A thin haze - but pretty clear sky.

G.P.B

The change suspected last evening at the 20 55 remarks. has now fully developed itself very much as I had anticipated - That is - we have a repetition of the Aug. 10th phase

General aspect dim & diffused
compared with 12th

Light from nucleus towards Sun traced 5'

The wisps (undoubtedly the debris of last night's ray)
inclines in its upper part a little to right.

Wisp may be traced 2'

Cor. Dir. dim. mo.

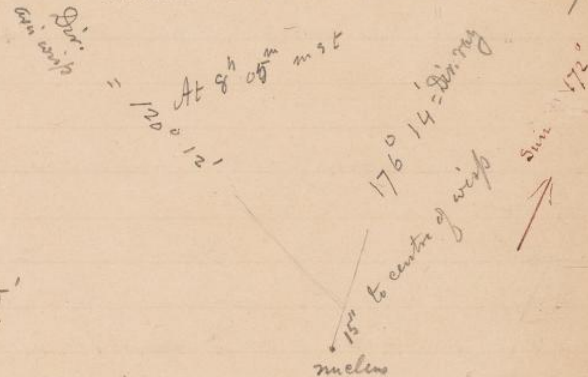
The Ray is not nearly so bright nor
decided as on 12th

8^h 5^m 15^s

Wisp axis	Ray
120 12	176 14
352 10	352 10
Aug. 13. 231 58	175 56

A dim suspicion of two large
hazy envelopes

from 4^h 1^m



Comet 1862 III

1862 Aug 13 Cont

G.P.B

At 11^h 30^m Appearance of Comet not essentially changed - but the ray direct from nucleus is perhaps a little longer & more decided than direction is as at 8^h viz 11^h 30^m mst Ray

176° 20' $\psi = 352^{\circ} 10'$

Ang. Pos = 175.50

Wisp ^{not} difficult to observe but getting diffuse

Wisp

117 35

Ang. Pos = 234.50

I see that the ray decidedly penetrates and crosses the axis of the wisp. extending fairly across it & through the opposite side

At 11^h 30^m mst

At 13^h mst

Ray 173 30
172 40
173 35
45

Ray is not above 2" broad in brighter part at 15" from nucleus

173 15

ψ 352 10

Ang. Pos. 178 55

At 1^h 15^m

13^h 5^m mst

Wisp 113.00
115 30
114 15
352 10

Ang. Pos. = 237 55

At 15^h mst by Wisp

H.P.T. Ray 171° 5'

Wisp 112° 5'

Wisp Zero 171 5 171 5

0 0 59 0

Ang. Pos 180.00' 239.00'

Companion of β Aquilae

1862 Aug 13

Seen by H.P. Tuttle with G. Refractor - Obs'd as follows by G.P.B.

Ang. of pos. Comp. $14^{\frac{1}{2}}$ mag.Edge of Scale
Zero $335^{\circ}.45'$ 261 44Dist $14''$ Comp. is n of β & follows it

←

*

Comet 1862 III

1862 Aug 13

G.P.B. Obs.

Spr. Gov Sheet started 1st second = E.C. 21^h 39^m 00^s
 End last 22 47 00

Determined Zero of Scale at beginning
 of Obs. & at pointing of telescope on comparison star
 at Zero 262° 00'

83 1

Good Observations

Comet compared with Star of 4/5 mag. n.f. it

Scale

Star

1' 00"
 7 15

Signal mark for p Dec after DDD 22 5 33.0 61.1 -4 49.80
 10 22.8 50.9 -

Star

2 00
 8 7

Signal after B.D.
 Signals for R after L.D.

14 16.2 44.7 -4 34.15
 18 50.5 76.7

Star

1 33
 7 34

Dec Signal after DDD. R after D.B.
 R of Star after B.B.D.

21 25.8 53.4 -4 20.95
 25 46.2 74.9

For Acc.

114. +50'' 0

22 4 26
 13 23
 20 27

Reduce to 22 13 24 E.C.

-6 15 + 7.5 -6 7.5
 -6 7 7.0
 -6 1 -5.8 6.8
 -6 7.1

5 57

14 Dif. NR

Rev.

Reduced (en. Tor)

22 215 47.0
 14 30.4
 21 39.6

+ 13.57
 - 1.68
 14.72

-4 36.23
 36.03
 35.67

Comet 1862 III

1862 Aug 13th
4.23

Hr. tot. in AIR

$\Delta\alpha$	-0.0591	7.772 m
$\Delta\delta$		9.830 m
$\Delta\alpha$	-0.1676	8.233 m
$\Delta\delta$		9.868 m
		7.602
		8.141
		8.251
		2.758
$\Delta\alpha$	1.009	
$\Delta\delta$	8.960	
$\Delta\alpha$	2.029	

El	22 13 24	$\Delta\alpha$	-4 35.98	
		$\Delta\delta$	0.06	-6 7.1
		Ref.	+0.08	-0.3
		Temp. (65°)	-4 35.90	-6 7.4

Star = 1 Draconis Herulin from Polar Catalogue

Comet 1862 III.

1862 Aug 13
5.13.13

Stars Place from Fundamental Polar Catalogue (H.S.)

1 Draconis 1865.0
- 3a
- 3u
+ 9v
1862.0*
9 17 34.65
-27.675
-0.012
+0.036
9 17 7.00

Log a 9.5562
" b 9.4908
" c 0.9647
" d 9.5520
9.7969
9.8754
1.1821
9.8143

Sun.

1865.0
3. P.
P.M.

+ 81° 55' 6.41
+ 48.63
0.00
+ 81° 55' 52.04

Log A 1.1643
B 1.1086
C 9.9924
D 0.0231

Red to aff.
Comet - Star. - 0.54
- 4 35.90

- 6 7.4

Aa - 5.254 - 9"15
Bb - 3.974 + 9.63
Cc + 9.059 - 14.95
Dd - 0.376 - 0.69

Comet a.d. 9 12 30.56
Mallac. - 1.15

+ 81 49 29.5
+ 10.3

Comp.

9 10 33

81 49.1

22 13 24
fast. 29

22 12 55
9 27 26
112 45 29
2 5

12 13 24 Combr. mt.

12 14 11

* These obs. made 1862 Apr 19 Apr 25 above } indicate that this
Aug 11 below }

(*) AR is very exact. $\Delta x = +0.004$ sec d. = +0.01

Comet 1862 III

1862 Aug 15/16

Comet drawn by H.P.G. 3 A.L. see his mem book

Comet 1862 III

G.P.B

1862 Aug. 16th Sat.

Edge of Scale
Corrected Ang. Pos. 270°

Wisp
75° 25'
78 44
77 05
ψ 352 10
275 05

Wisp

The repetition of the aspect of the 13th is almost perfect even to the reflexure of the upper part of wisp.

Nucleus shades off imperceptibly into the ray. as usual. I have not yet seen it stellar though the ray at nucleus is only 2" or 3" broad.

Ray not bright but rather hazy.

20'
10'

In fuller tail decidedly curved & comes from prec. side of head for most part. Comma-shaped - 10' broad at nucleus & at 30' from it.

By this diagram ang. pos tail = 19.7

Edge of head faintest in following dir.

At 9^h 30^m brighter edge of tail upper side passes * 4 1/5 [2° from nucleus] 6" from Polaris in line little below Arcturus star is say 5' inside of edge

8^h 30^m on 5th Ray
140° 17'
141 20
140 48
352 10
Aug. Pos. 211 22

Wisp
72° 50'
74 10

ψ 73 30
352 10
Aug. Pos. 278 40

at 11^h 45^m on 5th

Ray
137° 50'
138 25
138 08
352 10
214 12

Strongly suggestive of an envelope formation

Cont 1862 III.

1862 Aug 16
2015

Compared with Carrington 1741.

Cont n.p. star. at by.

Distances		Angle at which obs was made	Perid.	
Chro 26. 18 9 26	293.9 117.516	57.2	332.3	5.01 11.307 + .045
" 11 47	148.478		334.3	9.1 10.345 + .132
" 13 25	286.5 46.912	64.6	340.0	5.4 9.911 + .044
" 15 10	283.0 49.555	68.7	344.3	6.2 9.168 + .056

Positions		
18 18 28	357.25	353.44'
20 22	350.9	0 17
21 56	346.5	4 35
23 55	336.65	12 26
25 58	330.15	20 56
27 43	323.65	27 38

Distances	43.5 angle			
29 37	57.292	307.8	32.0	0.6 7.531 + .000
30 52	57.260/36.2	"	41.7	4.1 7.563 19
32 21	50.786/30.8	314.9	46.9	2.0 8.037 5
34 12	50.780	320.3	52.9	2.6 8.063 8

Distance to Chro. $18.22 \frac{h}{m} 32.4$
Zero

58.900
58.896
58.774
58.762
58.823

Assumed Δx mid $= m$ + 10"6
 $\Delta \delta = m$ + 72.2

Pointing more easy to observe than distances.

171 36	$\frac{\Delta \delta}{\Delta x}$	- 574 24	7.774 m	6.832	+ 4"73	dec. d in 1" = $\frac{\Delta \delta}{\Delta x}$
		- 1840	7.655 m	8.271	- 1.97	ad " = $\frac{\Delta x}{\Delta \delta}$
			8.274 m	8.285		
			9.497 m	0.4426		
				9.768		
				0.6746		

1852 Aug 16th
2115.

	14 ^h 9 ^m 43 ^s	14 ^h 11 ^m 34 ^s	14 ^h 13 ^m 42 ^s	14 ^h 15 ^m 17 ^s	14 ^h 18 ^m 47 ^s	14 ^h 20 ^m 37 ^s	14 ^h 27 ^m 43 ^s	14 ^h 23 ^m 9 ^s	14 ^h 25 ^m 32 ^s	14 ^h 27 ^m 7 ^s
$T-T$	-13.11	-10.46	-9.14	-7.37	-4.07	-2.17	-0.64	+1.38	+3.43	+5.18
$(T-T)/dn$	+20.3	+20.4	+17.6	+14.2	+7.9	+4.2	+11.2	-2.7	-6.6	-10.0
" dy	-62.0	-50.9	-43.2	-34.9	-19.3	-10.3	-2.9	+6.5	+16.2	+24.5
dy $m+x$	1.9890	1.9685	1.9530	1.9365	1.9036	1.8631	1.8657	1.8420	1.8169	1.7938
" n	1.7110 _n	1.6053 _n	1.5132 _n	1.3856 _n	0.9395 _n	0.4771	0.8865	1.2330	1.4281	1.5453
	2.0423	2.0059	1.9802	1.9529	1.9281	1.8831	1.8681	1.8548	1.8504	1.8539
z' Com	440"26	101"38	97"32	89"72	110"00	112"21	175"82			
z'							179"38			
V	332°12'	336°34'	340°31'	344°46'	353°48'	0°17'	5°59'	13°49'	22°13'	29°26'
$Ch. m. 1^m$										
$C-O$					+ 4'	+ 6'	+1°24'	+1°23'	+1°17'	+1°48'
z' $Corr$										
dx	-1"0	-1"3	-0"2	-1"6						
$z' dv$					+0"1	+0"1	+1"8	+1"7	+1"6	+2"2
$T-T$	18 29.62	18 30.87	18 32.35	18 34.20						
$(T-T)/dn$	+7.04	+8.33	+9.81	+11.66						
" dy	+13.7	+16.1	+18.9	+22.5	0 = -1"0	0.00 _n	9.95	9.67 _n	+0"1	
	+33.5	+29.4	+46.4	+55.2	-1.3	0.11 _n	9.96	9.60 _n	-0.3	
					-0.2	0.30 _n	9.97	9.53 _n	+0.8	
$dy m$	1.7672	1.7490	1.7267	1.6964	-1.6	0.10 _n	9.98	9.43 _n	-0.7	
" n	1.6444	1.6990	1.7559	1.8142	+0.1	0.00	9.01	9.98	-1.7	comp. $\pm 13"79$
	1.8649	1.8759	1.8923	1.9163	+0.1	0.00	2.59 _n	0.00	-1.1	
C	73"26	75"14	78"03	82"47	+1.8	0.26	9.02 _n	0.00	+0.5	7:7
O	73.80	74.30	78.81	78.82	+1.7	0.23	9.38 _n	9.99	+0.3	
					+1.6	0.20	9.58 _n	9.97	+0.2	
	37°0'	41°42'	46°56'	52°56'	+2.2	0.34	9.69 _n	9.94	+0.8	
					-0.5	0.70 _n	9.90	9.78	-0.8	
$C-O$ dx	-0"5	+0.8	-0"8	+3"6	+0.8	0.90	9.67	9.82	+0.3	
					-0.8	0.90 _n	9.83	9.86	-1.4	
					+3.6	0.56	9.78	9.90	+2.9	

$$O = -4.02 + 5.85 \text{ } dn - 0.54 \text{ } dn \quad dn = +0.56$$

$$O = +10.90 - 0.54 \text{ } dn + 8.11 \text{ } dn \quad dn = -1.31$$

$$\text{Prob. Error } dn \pm 0.33$$

$$dn \pm 0.28$$

Comet 1862 III

1862 Aug 17

Edge of Seal

Wip of 16th ??

69° 30'

352 10

282 40

Wip

119° 00'

352 10

233 10

Cor. E. of Seal

11th 20th m: t

New Ray bright

98° 55'

98 43

98 49

98 49

352 10

253 21

Hazy indistinct
map wip of 16th ?

Sun 220°

G.P.B

Wip of 17th ? decided legit

N.B. That the Ray which appears on the left side (as tonight) is commonly a much brighter emission than the right hand ray which as on the 16th alternates with it

Thus for instance the emissions on the 12th & 17th were bright - Those on 11th 13th & 16th comparatively fainter

Count 1862 III

1862 Aug 16
MPS

Arrington 1741. from

L.I

L.I

1855.9

11 32 53.77

+29.70

+

+81° 23' 5.8"

-2 -19.4

*

L.I

11 33 8.2

81° 21.94

1862.0

11 33 22.47

-0.42

+81 20 46.4

-1°0

L.I

0.91859

Rev to app.

-4.86

-8.5

L.I

9.06799

Count - Star.

+4.07

+1 12.8

0.99120

Count + J

11 33 21.26

+81° 21' 49.7"

L.I

2.41730

Cor.

+4.73

+3.56

L.I

9.99701

Cor. Epa.

-0.8

-4"

0.85778

n+dn 9"29 by 0.968

1862.0

0.353

6.17

-0.65 Rf

+4.07

n+dn 72.763

72.763

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Chw. 18 22 32.4

18 21 57.8

9 39 16.0

1 25.6

8 11 16.

-18 36

8 12 40

Wash.

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Lid Line

Cambr. mt

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Comet 1862 III

1862 Aug. 18th

Began observing at 2.C 18^h 20^m

corrected direction
270°

by edge of Scale

Sun 230°

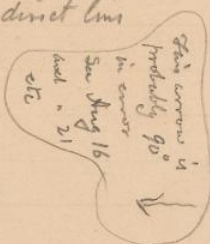
Remarkable change of aspect - For the first time a definite stellar nucleus - very decidedly brighter than adjacent nebulosity - Near it a secondary nucleus in direction of Tail nearly separated by a decidedly dark region. I took this at first for a star of 10th mag. Sec nucleus seems more sharply defined on side towards primary

Carefully drawn

Ray evidently does not pass in direct line from nucleus but as in sketch

A clearly distinguished halo envelopes both nuclei & ray. Light well marked on side towards tail

Secondary nucleus



dark space in this direct. between two nuclei.

at 2.C 18^h 35^m 107° 30' Dist. 9"

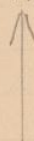
7'	352	10
Aug. Pot.	244	40
	180	00
	64	40

axis of tail (about)

9^h 30 mst 107 20 Dist. 9"

	352	10
Aug. Pot.	244	50
	180	00
	64	50

Probably dir of AR see above



In Finder ang. pos of bright light near following edge of Tail is 45°. This seems to be as nearly as can be defined the axis of tail

Axis of bright ray
8^h 55^m mst 73° 56'
72 5
72 57
352 10

Aug. pos. 279 13

See 4 pages forward

Comet 1862 III

862 Aug 18
2115

Compared with Feb. 2. 189 (1) south proc. of a pair 2' dist.

20.59.49

16.73

1st
2nd
3rd

357" 3' 2
357 7 }

Zero 58.946

58.932

58.724

58.713

In Zero of Position

Zero

Star

80° 51'

21 23 26

55.777

25 24 70 21

for 100^s + 0.014

80° 52' 2

25 4

55.840

17 29 2 6

25 58

55.785

64 - 16 45-11

80 57

24 07

55.601

0.0036 ave. 5

81° 30'

21 27 50

56.007

100^s - 0.186

81 4.6

29 1

55.968

30 4

55.758

80° 30'

21 31 54

55.758

83 222

100^s + 0.260

81 0.0

33 32

56.018

15 - 58

34 24

56.164

67 164

Mean

81 0.4

33 17

960

62 185

Corr. for Refr.

81 2.7

3

2 - 6

Zero

81 6.1

45 123

116 302

100^s = 1500"

0.100 = 0.92

rd. 9.2896

2.4657

9.9912

7.5255

11' 53"

Cor. for Refr. Zero

at 7 9.8787

in 9.9018

43.00 7 7.9780

4 - 32.19

in 9.8602

43.00 7 0.0165

4 + 10 46.27

in 9.7620

43.00 7 0.4772

at 7 5h 41'

in 9.7620

43.00 7 9.9606

43.00 7 0.7578

Comet 1862. III.

1862phae 18th
M.B. ✓

A.M. in Dec. - 442

C.B.

Zero.

Red.

Comet

Coincidence

20 57 24

58.829

= 6' 52" 5 - 18" 5

7 11.0

+

20.59 44

16.736

Comet

21 2 29

Coincidence

21 2 28

7 13.5 + 3.9

9.6

+

14.591

Comet

21 6 33.5

Coincidence

21 6 34

7 32.3 + 22.1

10.2

+

12.623

 $\Delta\delta$

- 7' 10.3

C.B.

M. diff.

Reference to C.B. 21 13.7

Assumed

C

39.01 - 0.31

Comet

20 43 29.5 39.3

20 43 34.4

- 2 34.70

39.01 - 0.31

Star

46 4.4 13.8

Comet

20 47 30.7 40.6

20 47 35.6

2 29.00

28.97 + 0.03

Star

50 0.0 9.3

Comet

20 50 29.2 38.3

20 50 33.7

2 24.60

24.52 + 0.08

Star

52 53.5 63.2

Diff. as above

Comet

21 12 55.3 65.7

21 12 0.5

- 1 50.45

50.85 0.00

Star

14 46.3 56.4

C.

21 15 12.8 22.7

21 15 17.6

- 1 46.25

47.42 - 1.17

S.

16 58.8 69.2

C.

21 17 39.2 49.5

21 17 44.4

- 1 44.20

43.76 + 0.44

S.

19 23.6 33.5

For 21 1 34.7 - 2 7.84 = 0.17

Action in 1. + 1.504

+ A break at 13.2 refers to a preceding star 5' S. of star of Comp.

 $\Delta\alpha$ - 2 7.84
 $\Delta\delta$ + 0.16

Temp. [50°]

 $\Delta\alpha$ - 7 10.3
 $\Delta\delta$ - 0.2

- 0.1

Comet 1862 III.

1862 Aug 18th
MS

Hd. Suppl. 159.

1790.0

Pec.

13 6 4.96

1086

+79 8 39.0

-19.223

+ 1 19.46.

-23 3.3

1862.0

13 1 5

13 7 24.62

+78 45 35.7

-2.3

Red. to app.

-3.14

-7 10.6

Comet - Har.

-2 7.68

13 5 13.60

+78 38 22.8

+2.25

+78

Parallax

Christ. V.

5 14.4

38 39.

Corr. Ep.

+ 1.54

-78

$\frac{2}{9} \frac{1}{48} \frac{3m.8}{91}$
 $\frac{11}{13} \frac{43.0}{50.4}$

11 11 52.6 Lamb. mt

It will perhaps be necessary to re-determine the H.R. of star.

ξ -10005 9.08022
 γ -01928 8.66692
 β +51930 9.71564
 196 12.40 9.01205
 78 39.97 9.72602

$C. \frac{h}{13} \frac{m}{5} \frac{s}{10} +78 \frac{39}{3} \frac{3}{3}$
 Red. H. -19

1826.0

1862.0

13 6 45.0

13 7 24.4

18 57.12 78 45.60

H₂

9.70911

0.70174

sin α

9.45811

9.46244

sin δ

0.12618

0.12610

1.30227

998121

0.29370

0.29008

+1.1036

+1.1206

1.28358

3.14091

L

254

V

196 57

H.

126 36

H₂

0.4012

1.5307

sin (H+ α)

9.5288

1.7709

L

1.2002

sin (H+ α)

9.9737

L

0.7102

+45.62

sin (H+ α)

9.7749

30-33.94

L

1.2858

10-19.01

sin (H+ α)

9.9049

-47.13

L

9.9916

2' -18.79

H' +10.22

3' +1.31

Comet 1862 III

1862 Aug 18 (continued) *Cont. 270°*

E.C. 21^h 40^m

Ray

$$\begin{array}{r} 66^{\circ} 30 \\ 68 \quad 17 \\ \hline 67 \quad 24 \\ 252 \quad 10 \\ \hline 284 \quad 46 \end{array}$$

Change very marked within
the last three hours
2 halos quite distinct

Sec. nucl. has moved off &
is becoming diffused so as
to form part of inner halo

Outer halo 3' in diam

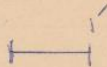
Sun 230°

Sec. Nucl. 113° 00' Dist 16"

$$\begin{array}{r} 352 \quad 10 \\ 239 \quad 10 \\ \hline 180 \quad 00 \\ \hline \text{Aug. pos.} \quad 59 \quad 10 \end{array}$$

12^h in 5^r not very unlike

Dark outside



Bright ray in tail 120° 15'



120 15
Cor Scale edge 352 45
231 55
180 00
Aug. pos tail = 51 50

Comet 1862 III

Cor. 270° ↑1862 Aug. 19thBegan at 17^h 50 of Z.C.

Nucleus decided Diam 1".5

General direction of upper
broad hazy wisps axis $52^\circ 34'$ $352 \quad 10$

Ang. pos. 299 36

Initial axis of ray

 $106^\circ 36'$ $352 \quad 10$

Ang. pos. 245 40

Bright ray issuing from head a little to left of ? nucleus
Its right hand forming apparently the right edge of Tail.
18^h 20^m $110^\circ 5'$ Changes from last evg. very marked
continuity can scarcely be recognized

The nucleus with its ray form a perfect miniature comet

ZC 21^h 30^m Initial axis of ray
 $100^\circ 15'$
Tangent to left edge at
Dist. of 60" from nucleus.
 $124^\circ 30'$ $352 \quad 10$

Ang. pos. 251 55

With pos. circle at 230° the tangent at a is
distant 120" from n Bright Aurora fills this region of the heavens & prevents faint details from
being seen. Head of Comet to naked eye isZero edge of Scale $81^\circ 46'$

C.P. 13

Sun 224° 

110 5

Scale

 $352 \quad 10$

241 40

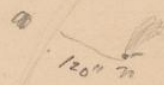
242 5

180 00

Ang. pos. tail

61 40

52 5



2240

1962 photo, p. 51, 2018

Sec. var. in $\Delta R =$

$$5 \quad 0.0019 + 0.01300 \left(\frac{1}{2} \delta^2 + \frac{1}{2} \right) \sin 2\alpha + 0.02987 \sin (\alpha + 91^\circ 6') \frac{1}{2} \delta' \quad \left. \begin{array}{l} \text{To be} \\ \text{tested} \end{array} \right\}$$

In Sec.

$$0 \quad -0.1950 \frac{1}{2} \delta \sin \alpha + 0.4481 \sin (\alpha + 91^\circ 6') \quad \left(\text{This last quite right} \right)$$

To reduce from one epoch to another including the 3^d term of prec.Let ΔR at p^0 be the prec. for the middle epoch

$$\alpha' - \alpha = (t' - t) p^0 + \frac{(t' - t)^3}{24} \frac{d^3 p^0}{dt^3}$$

$$\text{But } (t' - t) \frac{d^3 p^0}{dt^3} = \frac{5' - 5}{100} \text{ nearly}$$

Hence

$$\alpha' - \alpha = (t' - t) p^0 + \frac{(t' - t)^2}{2400} (5' - 5)$$

When a ^{const} star is near the pole it is often difficult to find $\frac{d\alpha}{dt}$, or its equivalent

from an observation. We have

$$\xi = \Delta \cos \delta \sin \alpha$$

$$\eta = \Delta \cos \delta \sin \alpha$$

$$\cos \alpha \frac{d\eta}{dt} - \sin \alpha \frac{d\xi}{dt} = \Delta \cos \delta \frac{d\alpha}{dt}$$

$$\text{Hence } \frac{1}{1440} \cos \delta \frac{d\alpha}{dt} = \frac{\text{star. exp.}}{d\gamma \text{ Struve}} = \frac{206264.8}{1440} \left[\cos \alpha \frac{d\eta}{dt} - \sin \alpha \frac{d\xi}{dt} \right] \quad \Delta$$

$$\text{Log } \frac{206264.8}{1440} \quad \frac{5.3144257}{3.1583626} = 2.15606$$

$$\text{Hence in seconds of time of } \alpha = \frac{206265}{15.24} \left[\frac{\cos \alpha \frac{d\eta}{dt} - \sin \alpha \frac{d\xi}{dt}}{\Delta \cos \delta} \right] \\ = [2.75812] \frac{\cos \alpha \frac{d\eta}{dt} - \sin \alpha \frac{d\xi}{dt}}{\Delta \cos \delta}$$

$$dr = -x (q \dot{\gamma} \sin \gamma + \dot{\gamma} \sin \gamma \dot{\gamma}^0)$$

$$d\dot{\gamma} = i \dot{x} (\dot{\gamma} \sin \gamma (\dot{\gamma}^0)^2 + \dot{\gamma} \sin \gamma)$$

$$r \propto x$$

$$- \dot{m} \propto \frac{d\dot{\gamma}}{dt}$$

$$- \dot{m} \dot{\gamma}^0 \dot{\gamma}^0 - \dot{m} \dot{\gamma}^0 \dot{\gamma}^0$$

$$[m + m \dot{\gamma}^0] \dot{\gamma}^0$$

mm

Comet 111

Washington			by a	by r.	Corr to sun d
July 19.5	81° 20' 50"	+ 68° 3'	0.1184	0.0296	
	82 10 58	68 47			
23.5	83 8 17	69 27 49	0.0802	0.0169	
25.5	84 15 17	70 16 49	0.0599	0.0110	-3.5 + 0.5 26
27.5	85 32 12	71 19 59	0.0359	0.0055	-6.1 32
29.5	87 14 3	72 9 59	0.0115	0.0002	-20.1 -2.2 30
31.5	89 17 23	73 13 12	9.9853	9.9984	-27.1 -2.1 31
Aug 1.5	92 0 37	74 25 19	9.971	9.910	
Aug 4.5	95 37 57	75 44 19	9.968	9.9484	-12.1 -1.3
6.5	100 64 34	77 9 55	9.938	9.938	-17.0 -1.1
8.5	104 18 12	78 39 12	9.884	9.9808	
10.5	120 0 53	80 6 10	9.800	9.985	
12.5	136 07	+ 81 6	9.7884	9.9767	

1842 547 26.10 +72 35 41.2
+ 2 26.6
549 50.7 72 36 0.7

90 Lamb. 5 52 24.. 72 37

11-21 Lamb. 5 52 22. 72 39.2

July 31.
1862. 6 115 +72° 57.3

The above is very accurate as AR.

True - Em. of Catalogue

Aug 16 - Sept. 11

Gr. a 95 m d 0.72
Pi. 1.50 - 0.97
Lal. 3.27 m d: 6 2.03: 6
Red. 1.78 m d: 6 1.92: 6
Myl. 1.60 m d: 6 1.92: 6
in medio
Lam. 0.8 6 0.6

Ephemeris of Comet 1862. III.

from 64-year Ellipse.

12 ^h UT. Wash. ington	α	δ	$\log \Delta$	$\log r$	Δ
Aug. 7	6 ^h 44.57 ^m 13 14	+77° 45.0'	9.9292	9.9993	.85
8	58 11 13 11	78 30.1	9.936	9.974	
9	7 14 22 13 7	79 15.4	9.946	9.984	Act. 7451.
10	34 29 13 0	80 0.8	9.959	9.990	Act. 2070 F.G.S.
11	59 42 12 52	80 43.4	9.966	9.994	
12	8 3. 14 12 46	81 20.9	9.977	9.990	Calc. 1226.3
13	9 10 8 12 46	81 48.9	9.977	9.997	Calc. 1343.3 + 51.0 from Calc.
14	9 56 20 12 47	82 1.9	9.981	9.995	Calc. 1481. late
15	10 47 13 12 47	81 53.1	9.984	9.974	Calc. 1611.?
16	11 34 28 12 47	81 18.9	9.981	9.965	Calc. 1226.2 1241.5
17	12 25 6 12 47	+80 13.7	9.7472	9.9897	.56

• July 10 7.
J.H.S.

1962phd4.pdf, 201B