KG
11365
170

H. 16

Vol. III 195-288

Equatorial

From Oct 28th to March 10th

1852 - 1853

KG 11365.170

Nebula Dec. 8

KG 11365,170

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1851. Oct 21st.. Halifax N. S.

I arrived at this place last night by Steamer America from Boston, at ½ past 12 and immediately proceeded to Capt Shortlands residence.

This morning examined the observatory in which it was proposed to mount the transit brought with me and find with certain alterations it will be a suitable place there being already a fine oak pier placed there several years ago. the North meridian mark will be about two miles distant.

We then called on Mr Gisborne Supt of the telegraph line who will undertake to bring the line in connection with the Observatory and furnish an operator.

The distance necessary to carry the wires will be somewhat less than half a mile

Saturday Nov 1st

To day I have been adjusting Collimator &c to the transit. the pier is not quite ready yet to finish.

10th Recd telegraph from Boston in answer to say the paper sent for would be sent by ~~telegraph~~ Steamer of 12th to Halifax

11th Recd telegraph notice from Mr Bond & his inquiring if we were ready for work answered should not be ready until Friday.

13th Yesterday at 7.15 A M G. P. Bond arrived at this place by Steamer Cambria from Liverpool Eng and sailed at 12 M. Wind fresh from N. NE by N. last night observed Polaris for approximate adjustment carpenters will finish the stands to day. and the wires are to be put up in a day or two

1851. Nov 14t Halifax.

Sidereal Chronometer marked $13^h.05^m.55^s$ when Polaris was on mid wire Chro fast by watch $47^s.0$

Clouded up so we were unable to get any other stars

Wednesday 19t between Friday and to day the weather has been too cloudy to observe

Made observations for size of pivots

Ill end of axis East Shortland.

(1) W. reading	East reading	(2) Reversed Ill West W reading	E
71.6	73.4 +	+ 72.1	72.1
+ 72.0	72.9	70.8	73.7 +

(4) reversed Ill E.		W reading	(3) E reading
69.4	73.6 +	+ 72.0	72.0
+ 71.6	71.9	70.0	73.8

No 1. East + 0.7 of 1 div ~~axis~~ & Ill E.	Mean East + 0.1	* level high 0.45 of 1 div	Mean div 1.45
2 East + 0.7 .. .. Ill W		+ " + 1.45	
3 East + 0.9 .. .. Ill W		+ " + 1.90	
4 East + 1.1 .. Ill E.		+ " + 1.90	

~~By No 1 & 2~~ No 1=2 Give Ill pivot too small −0.05 Shortland made it +.45
3=4 " " " .. large +0.17

19th R.F.B obs for size of points

Ill E (No 1)		Ill W (No 2)	
West.	East	west	East
73.2	74.0 +	74.+	73
+ 73.7	73.8	73.3	73.5+
– Ill E west =	E (4)	73.4+ (3)	72.8
72.0	74.6+	72.8	73.2 +
73.0 +	73.0		

No 1 Ill + 0.9
2 .. + 0.8 } mean 0.97 of 1. div
3 .. + 2.0 } .97 ÷ 4 = .24 .. ..
4 " + 0.2

Oct 28 WestPhal's Comet Thursday

	Star 12^{m} = a			Comet 9f*		dR
1615	0^h.. 20..	0.3	0..	20	34.0	0^m.. 33.7
	20..	18.7		20..	52.5	33.8
	22	16.3		22	51.0	34.7
	22..	35.2		23..	10.0	34.8

0.. 26.. 15	33.81
27.. 55	33.50
29.. 40	33.36
31.. 40	33.04

0.. 34..	46.5	35	22.0	35.5
35	6.5	35	41.5	35.0
36	42.6	37..	18.2	35.6
37.	2.7	37..	38.5	35.8

Somewhat cloudy

b is a * 9th n f a

a	0..	36	42.6	2..39.4
b		39	..22.0	

* 12th = a

0..	40..	49.6	43 29.2	2..39.6
	41..	10.0	43..49.3	2..39.3

a is s p b dδ 26".61
26..57

The comet can be accurately observed notwithstanding a full Moonlight. It is not however quite so bright as it has been on previous nights - & has hardly as evident a concentration of light - approaching lower culmination.

	* a	
1615 =	0..58..03	163°..26'..52"
H	11..6..14	

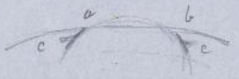
204

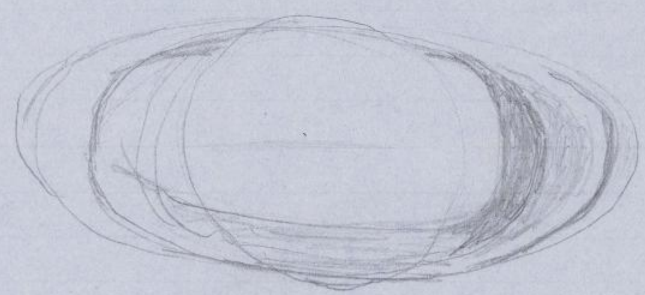
Oct 28th 1852   11 P.M.

Looked at Saturn with attention but the clouds are thickening & there is an annoying tremor in the air.

The new ring occupies half of the space between the old inner edge & the ball - next outside of it is a space nearly as wide having a decided dusky cast & probably an effect produced by a multitude of extremely small divisions - The outer rim of the old inner ring is much & decidedly brighter than the inner half - & nearly of the colour of the equatorial bright belt.

The outer ring is bluish. The shadow of the ball on ring is seen on *both* sides at a & b & I fancy something - a *wing* at c & c.





1

July 23d 1856
For the wood cut
Run fine two white line across ~~ring~~ B when finished
to represent the multitude of divisions

Nov. 3 P.m.

Great Equatoreal power 140 Saturn - pretty good seeing There is a very white belt extending across the ball near the centre and in a parallel with the ring Its width is, perhaps, less than one third of the diameter of the ball, and everywhere uniform.

Its whiteness is striking and remarably even.

The shadow of the ball is seen equally alike on both sides What can this mean?

Nov 3

Looked at Saturn vision not very satisfactory but I could distinguish that the shadow of the ball on the (ap) upper part of the ring edges the ball on both sides a very little stronger perhaps on the (ap) right of it

There is a broad & very bright zone over the equatorial region The ring comprises four distinct shadings
1st the new ring 2nd a dusky reddish or brownish shading on the broad ring occupying at least half or more of its breadth
3rd its outer edge is white like the equatorial belt
4th the outer ring is bluish & decidedly less bright -

Nov 4th Saturn viewed - tremulous - I think the shadows of ball on ring most decided on right hand side but have not much confidence in it the definition not being sufficiently good - The axis minor of the ring is still a little less than the polar diameter of the ball

We have had no fine definition for several weeks past -

Nov. 4th Westphal's Comet

Comet south fol. star of 8 mag. Star reddish

1615 Chron.	Dif. Dec			Zero
00..00..00	$57^{r}23$	*00,,08,,12.0	f 00,,09,,10.5	4603
03,,00	5790	*00,,08,,36.0	f 0,,09,,34.0	4608
4,,40	5808			03
		0,,10,,20.0	f 00,,11,,17.0	
0,,18,,20	$59^{r}72$	10,,44.0	f 0,,11,,41.0	
20,,00	5930			
00,,22,,00	5921	* 17.0	f ,,13.3	
		* 0 12,,40.5	f 0,,13,,38.0	
		× 0,,14,,39.0	f 0,,15,,36.5	
		0,,15 3.0	f 0,,16,,00.0	

E.C. 1,,10,,00
1615 1,,08,,18.9

Star of Comp.
1615 00..28..00 $10^{h}..28^{m},,40^{s}$ 340,,46,,00
N.P.D. 19,,14,,00

Friday
Nov 5th 1852

Westphals Comet

Comet

1615 − 1 .. 27 .. 54
H w = 11 .. 27 .. 01

250 .. 23 .. 30
19 .. 36 .. 30
+70° 23′ 30″

1 27 54.
+1 40.8
~~R.A.*~~ = 1 29 34.8
11 27 1.
R.A.* = 14h 2m 33.8s

+70° 23′ 30″ Dec.*

Comet n p * 8h

Chr ~~H~~ 15 1615 0 .. 56 .. 35
0 59 .. 05
1 2 35
178 15
0 59 25.0
Chr. Cor. +1 40.8
1 1 5.8

38.51
38.76
39.15
26.42
38.807

38.807
46.049
7.242
9.8
57936
65178
70.9716

Comet	Star	Δα ☄ − *
1 .. 06 .. 41.5	1 .. 08 .. 18.5	−1m 37.0s
6 54.0	8 31.7	−1 37.7
9 29.3	11 6.5	−1 37.2
9 48.8	11 26.4	−1 37.6
12 16.3	13 53.3	−1 37.0
12 36.2	14 13.2	−1 37.0
6)57 46.1		6)−9 43.5
1 9 37.7		−1 37.25

Chr. Cor. +1 40.8
S.T. R.A. Obs. = 1 11 18.5
S.T. Camb. m. n. = 15 0 15.13
10 11 3.37
Sid. Equiv. = −1 40.11
Camb. m. S.T. R.A. Obs. = 10 9 23.26

Δα(☄ − *) = −1m 37.25s

1 .. 16 .. 06   40.40
18 .. 45   40.54
21 .. 40   40.86
3)56 31   1.80
1 18 50.3   40.600
+1 40.8   46.049
1 20 31.1   5.449
1 1 5.8   9.8
2)2 21 36.9   43592
S.T. Dec. Obs. = 1 10 48.45   49041
S.T. Camb. m. t. = 15 0 15.13   53.4002
10 10 33.32   70.9716
Sid. Equiv. = −1 40.02   2)124.3718
C. m. S.T. Dec. Obs. = 10 8 53.30   +62.1859

Δδ(☄ − *) = +1′ 2.″19

Zero
46.045
058
043
050
4)196
46.049

The above red'ns by O. C. W.
June 20. 1907.

Clear

A singular & very evident change has taken place in the appearance of the denser part of the comet. The brighter stellar nucleus can no longer be recognised. it seems to have diffused itself in the direction of the axis of the tail. The brightest part is now so much elongated that there would be an uncertainty of nearly 5" as to the exact point to be observed whereas a week or more since it could be exactly defined –

The comet is quite brighter.

Nov 5th

No stellar nucleus. brightest part elongated in direction of tail for 20"

Oct 25th

A very small sparkling stellar nucleus on Oct 25th

There are almost two distinct centres of condensation

Compare with above the appearance Nov 10 Oct 2 where phenomenon is repeated. "well defined nucleus" Sept 17 See also Hind's remarks A.N. 839 p 372 D.Arrest & Astr. Soc Notices Vol XIII p 81

Nov. 10 Pm. Westphal's Comet S. Polo
Comet south prec. star of 11 mag.

Zero
46r 05
46 05

Dif. Dec.

1615	00.. 50.. 00	57r 08	f	00,, 55,, 03.8	* 00,, 55,, 21.0
	0,, 51.. 50	56 52	f	55,, 53.2	56 11.0
	53.. 00	56 10	p	56,, 17.3	56,, 34.8
			f	56,, 55.2	00,, 57,, 12.0
	00.. 59. 00	57r 46	p	57,, 19.0	00,, 57,, 35.8
	1.. 00.. 40	57 24			
	1,, 02 25	57 25			

Axis of tail 185.. 37
Zero 179 30
6..°

Sub Polo

<

It is very difficult to fix upon the
true centre of the comet in Dec the
brightness being not much greater at
the head than 1' dist from it

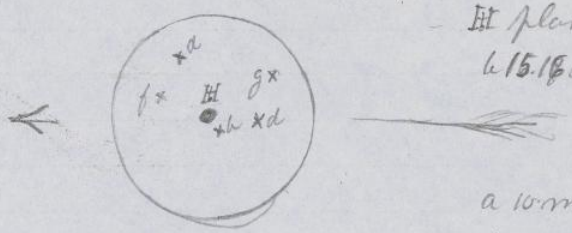
See Oct 2

*
1615 1,, 16,, 08.8 + 11h.. 12m.. 40s W 339°.. 59'. 00 S Pol
20 01 00

Nov. 12 Pm Uranus ℞ $2^h..15^m$ Dec. + $13^\circ..03'$ Chrom 1615

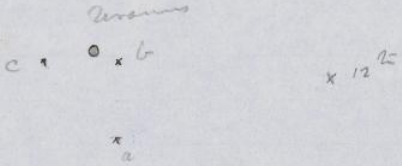
00..48
2..15
1..27

$1^h..10^m..00$ Sid. Time
♅ planet
h 15.16 mag



a 10 mag.
d 14 "
f 18 "
g 15 "

Planet is of a pale white color



a b & c are satellites b is dist 15″

1852 Nov. 22nd P.M.

Experiments made for determination of Velocity of Sound - for Capt Wilkes.

Wind SW 1.

	Ext. Ther	Bar.	att. Ther
9h.. 20m	34.7	30.286	68.2
	~~34.9~~		
10h.. 40m	34.9	30.196	65

Entirely Overcast -

Wind SW. 2

Chronometer J. Hutton 223

M.T.C. 8.. 35.. 00
223 9.. 35.. 40.3

S.C. 2.. 35.00
223 10. 27 4.4

10.. 38 00
10.. 38.. 40.2

East Window of Dome

1st Set

Charlestown	9.. 00.. 01.2	By 223	
Cambridge	" 1.. 46.5		
Watertown	3.. 49.9		
S Boston	6.. 1.5		

2nd Set Charlestown not heard

Camb	9.. 9.. 43.4	Doubtful	
W.	12.. 7.8	good	
S B	13 50.4	"	Flash 13^m.. 25.8 – 4 beats ?

3rd Set

Ch.	9.. 16 37.7	Doubtful if heard at all ?	
C.	17.. 43.5		
W	20. 39.8		
S B	22 01.7	good	Flash 21 37.4 – 4 beats

4th

Ch	not heard		
C	9. 25 42.7		
W	27. 55.6		
S B	30 0.5		Flash 33.9 no beats off

5th

Ch	not heard	
C	9.. 33 43.5	good
W	35 49.7	Possibly 1^s ± but tenth right
	38 5.2	Flash 39.

6th

Ch	not heard				
C	9 41 42.7				
W	44 .. 9.4	good			
S.B	46 .. 4.5	double dif = $0^{s}.2$	Flash	37.8	

7th Ch not heard

Camb	9 .. 49 .. 43.3	
W.	not heard.	
SB	54 .. 3.4	treble

C	9. 57. 43.6	Possibly 40.6

Last set.

Camb.	10 .. 13 .. 41.0		
	15 .. 49.5		
SB	18 .. 7.3	Flash	41.4

Nov. 27 Pm. Gt. Equatoreal Moon's limb tremulous

Im. 114 Tauri $\overset{h}{00}„\overset{m}{02}„0\overset{s}{8}.5$ – 4bt R. F. B. Chron. 1615

E. C. 00„09„00
1615 00„09„40.8

Nov. 29 Pm.   Obs'd by G P B.

Saturn
Distance of inner edge of New ring from ball

Fine definition

45^{r}940 prec. side
46 094 "
0.154 prec. side

45^{r}905 prec side
46 116 "
0.211 prec side

46^{r}335 fol. side
46 167 "
0.168 fol side

45^{r}943
46 095
0.152 fol. side

Distance of outer edge of New ring from ball
Outer edge of dark ring looks further off on the right hand side

45^{r}661
46 103
0.442 prec. side

45^{r}676
46104
0.428 prec. side

45^{r}626
46 192
0.566 fol. side

45.598
46.104
0.506 fol. side

Nov. 29 (Continued) Obs by G.P.B.

Saturn

Outer edge of outer ring from ball	47^{r}520 fol. side 46 156 1.364 fol. side
"	47^{r}581 46 145 1.436 fol. side
"	44^{r}776 prec. side 46 102 1.326 prec side
"	47^{r}467 46 153 1.314 prec. side
Outer diameter of outer ring	50^{r}951 46^{r} 50 885 50.918 46.153 4.768
"	50^{r}907 46^{r}152 50 937 46 155 50.922 46.153 4.769

Nov. 29 (Continued) As by G. P. 7 33^r.20

Breadth of outer ring including division or distance of outer edge of inner bright ring from outer edge of outer ring

45^r764 46^r113
45701
0.063 prec. side

45.733
46.113
380
8
3.72

Division of rings = breadth of wires = 0.″35

~~46^r115~~
46555 46^r175
46487 46162
0^r068 fol. side

0.153
083
2) 0.070
0.035

46.521
46.168
353
7
3.46

Position of Axis of ring 271°.20

The outer edge of New ring at the moments of most distinct seems perfectly sharp - & the edge of the old ring next to it commences abruptly bright without separation

The breadth of new ring is 5/8 - five eighths or 2/3 of the middle ring & nearly of the same breadth with the outer ring or a little larger - but little if any

The middle ring is made up of two distinct Zones or rings not separated as far as I can see from each other the inner of them is almost as broad as the New ring & in colour is intermediate between the bright outer rim & the darkness of the new ring but nearer the former (bright rim) -

The bright rim is very distinct & is not a half broader than the division of the rings or = 0.″5

The division of rings is plainly seen in its entire circumference excepting only an arc of about 11″ behind the ball - Tis distinctly seen on the whole arc between us & the ball

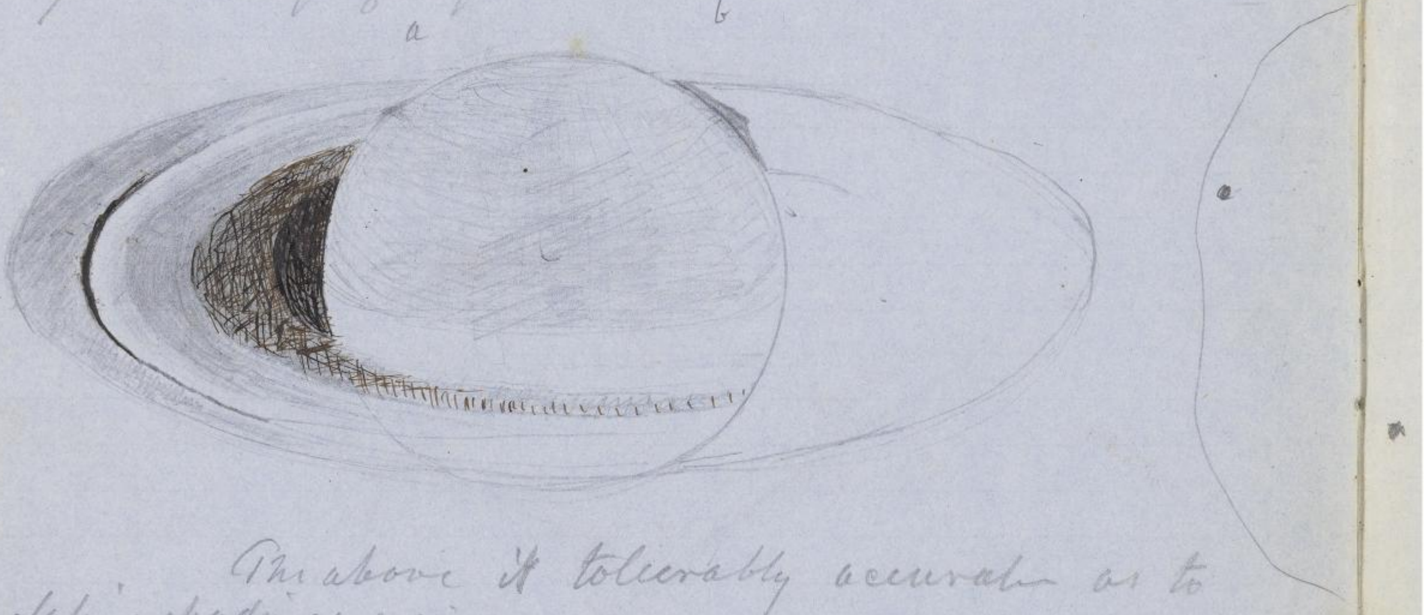
The Ring is not quite enough expanded to become a tangent to the ball wanting nearly a second on each pole or it has a minor? major axis 1.″5 less than ♄s diameter

I see with great certainty the shadow of the ball on the ring on the fol. side (s.f.) & also the shadow though much

Nov 29th

up conspicuously on the preceding limb - This is very remarkable But there can be no question of the fact. The dusky spot or part of the shadow is seen projected about midway on the ring where it passes behind the planet.

For obs with Spring Governor see Sheet for date
Before the Break-Dots-Break signal were transits for outer diameter of outer ring - After it for outer diameter of inner old ring or o edge of bright rim



The above is tolerably accurate as to relative shadings & sizes

The shadows at a & b are tolerably well represented both in place & shape
Both had an appearance like objects seen on a warm day over the sea a sort of mirage-

I thought at glimpses that there was an appearance on the outer ring as if the dusky & bright zones were repeated on it.

2) 1.26
.41
30.49
30.08
a'
b' 10.50

2) 15.78
7.89

1852phae.proj

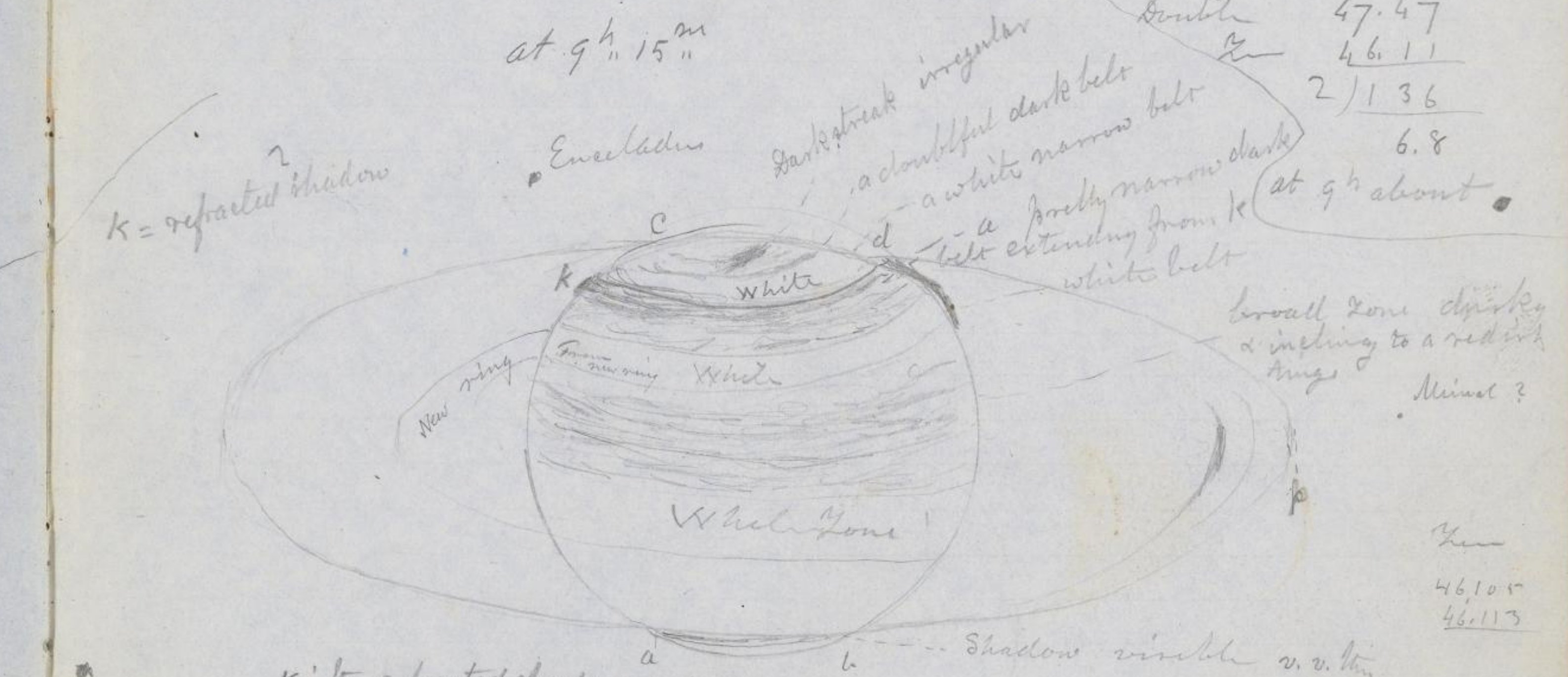
Dec 1st 1852

Wonderfully fine vision

Mimas from p = o c o r

Double	47.47
Zero	46.11
2)	1 36
	6.8

at 9^h 15^m



Shadow visible v. v. thin

Zero

46,105
46.113

K is the refracted shadow which seems to adhere to & partly overlaps the surface & is ~~a~~ a continuation of a dusky belt but is much darker.

a to b	47.04
Zero	46.11
	0.93 = a to b

Refracted shadow on the prec limb

C to d	45.02
	46.11
	1 09

Titan is 4' of arc fol η & in axis of ring

C to d appears > a to b

Pos of axis ~~271.15~~

The polar regions have a bluish cast while the Equatorial dusky regions are reddish

It seems certain that the shadow of ball on ring is visible on both sides of it

There seemed a division or difference of shading a seam as it were in the outer ring but v. uncertain

Mimas to p = o.e. or fol. side   Well.

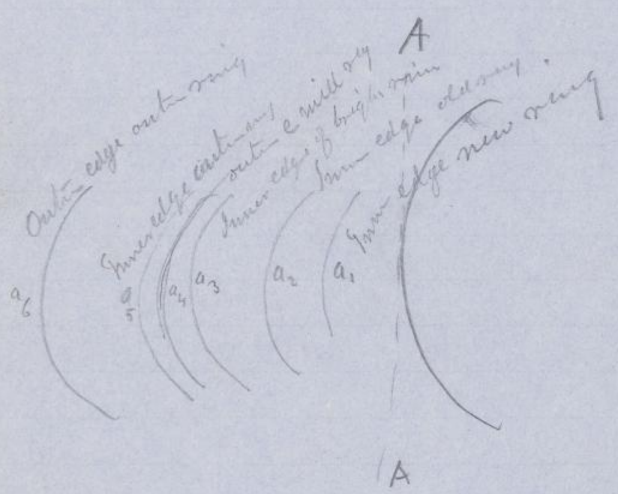
46.07
07
.08
46 071

44.67
44.73
44.74
44.713
Zero 46.073
2) 1 360
6.80

Mimas from p = a_6

9^h 35^m M.S.T.
Perhaps a very little below axis

11^h 04^m m.s.t.
46".94
46.94
46.94
46.07
2) 87
Mimas from p = 4,35



I saw appearances on the outer ring suggestive of a similar succession of dark (the interval) & bright zones seen on the rest of the ring. The extreme edge on the prec side was touched with whiter light than the rest.

Wed. Dec 1st Continued

$Aa_1 = a_1a_2 + 0''.2$ $\mp 0''.2$

$Aa_2 = a_2a_4 - 0.1$ ∓ 0.2

$a_4a_5 = \frac{1}{4} a_2a_1$ ± 0.1

$a_1a_2 = a_5a_6 - 0''.2$ ± 0.2

$a_3a_4 = \frac{1}{2} a_5a_6$ ∓ 0.3

Vision has deteriorated
$11^h.20^m$ Ext th 28.7

This has been the finest night we have had for many months past. Unfortunately the Cannon signals for velocity of sound prevented us from making full use of it.

Division of Ring seen with the utmost distinctness between us & the planet

Dec 2nd

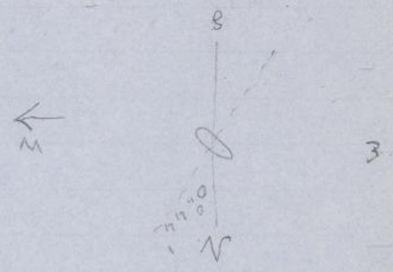
Indescribably fine definition

Zero of pos for wires 89°.16'

p = -0.44 N.A
0.00

Pos circle perp to ring reads 0.00

1615 is 2d part of sid time



Mimas ap. above ~~axis of ring~~ true n pole

M S T 7.27 - 44.92 ap above n pole
0.13.20 sid tim .86

Zero = [46.073 Dec 1
46.087 Dec 8]
= 46.080

1615 0.17.10 46.86 below s pole
46.94

0.13.20
16.47 55
7.25 25

Signals first are for transit of prec limb of ball & M.
Break & then " fol "

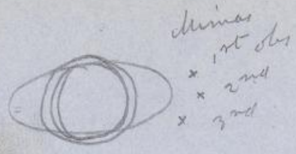
Then follow two breaks & Dots

~~D.D.D~~ passages of o e o r

D.D.D

passages o e mid. ring (brighter rim edge)

BBB
prec o e o r & fol limb of ball fol
long B — D.D.
prec limb & o e o limb ball prec



Power 144

Mimas from fol Edge of Ring

Double dist right left

44.77 47.52
1615 1h. 21m. 63 1. 25 65
MST [8h. 33m] .73 Mst 47 55
172
Mean 44.710 47.573
Zero 46.080 46.080
2) 1.370 1.495
0.685 0.747

Following side $Aa_1 = a_1a_2$ 0″ ~~± 0.″~~ ± 0.′0.″2
Prec " $Aa_1 = a_1a_2 - 0.''4$ ± 0.0.2
$a_1a_2 = a_2a_3 (1 - \frac{1}{3})$ ± 0.0.″23

$a_3a_4 = a_4a_5 (1 + \frac{1}{2})$ ± 0.0″1

a_4a_5 = thickness of wires × $(1 + \frac{1}{3})$ ± 0.″1

$a_1a_2 = a_5a_6 - 0.''2$ ± 0.″2

M fol. oe or right left
45.05 47 00
2.. 17 06 2.. 22.. 20 47.04
02 46.98
13 2
Mean 45 065 47.007
Zero 46.080 46.080
2) 1.025 2) .927
Perpendicular to axis of Ring. 0.507 0.464

M below s pole ap. M above lower pole

2.32 47.54 2..35 45.54
47.50 45.63
47.520 45.585
46.080 46.080
1.440 0.495

2.. 17 = Sid
16 48
9.. 29 MST

2.. 35
16 48
9. 47

Dec 2nd Continued 11..15 PM

Seeing has deteriorated

2nd Spr-Gov Sheet contains

1st Passages of Enceladus & 1st & 2nd Limbs of ♄

Enceladus is in the axis & precedes ♄

Record discontinued

at recommencement Enceladus prec ♄ 1st & 2nd limbs

Break long

Enceladus, OC OR prec, 1 limb, 2nd limb
OC O* fol

long. long Break-
Passages of OC of new ring.
Dots
OC m r (bright rim)

Disconnected signals & breaks
Dots Break Dots
Encel- prec & fol sides of Division of rings (Qu. if middle of Divin)
Break

(This last obs is probably of the inner edges of the outer ring.)

Nov 29th

~~B.D.B~~

① Transits o.d.o r

B D B

② o.d.m.r.

Dec 2nd 1st Sheet

1st transit prec. limb of ball & Mimas follower

2nd Break- fol " "

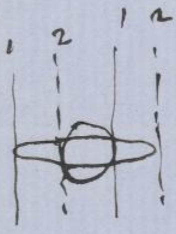
B.B.D

Transits oe o r

D.D.D.

o d m r

B B B



prec oe o r & fol limb of ball = 1.1

Blong - D D

~~fol oe o r & prec limb of ball~~

prec limb of ball & oe o r = 2.2

Dec 2nd 2nd Sheet-

1st Enceladus & 1st & 2nd limbs of ball E precedes

long B

Spring Governor observations upon Saturn -

Nov. 29th

①

Transits for outer diameter
of Outer Ring -

2C	3..	58..	0,45	3.05	M	-0.094
			3.50			
			0.80	3.20		+ 0.056
			4.00			
			0.47	3.07		-0.074
			3.54			
			0.50	3.18		+0.036
			3.68			
			0.48	3.17		+0.026
			3.65			
			0.44	3.06		-0.084
			3.50			
			0.38	3.14		-0.004
			3.52			
			0.27	3.23		+0.086
			3.50			
			0.30	3.10		-0.044
			3.40			
			0.20	3.25		+0.106
			3.45			
			0.20	3.20		+0.056
			3.40			
			0.26	3.16		+0.016
			3.44			
			0.30	3.06		-0.084
			3.36			
			0.95	3.25		+0.106
			4.20			

46
46
276
184
21

0.95
4.00 3.05 −0.094

0.330
3.54 3.21 +0.066

0.30
3.38 3.08 −0.064

0.52
3.73 3.21 +0.066

0.30
3.40 3.10 −0.044

0.25
3.35 3.10 −0.044

0.40
3.65 3.25 +0.106

0.45
3.50 3.05 −0.094

22)69.17
3.144 ± 0.014

46) 0.057 (1
46
100

22) 134 (.064
126 0
80

.064
0045
error Mean 0.068
84
272
544
prer of 1 paſsage 0.05712

$\sqrt{22}$

18) 152 (.0844
144 0045
80
72 .089
8

83
90
0.0747
057
132
0.066

44
44
176
178
1936

45
45
225
180
202

46).066 (.014
46
200

44).066 (15
44
220

Paſsages of outer edge of middle or old inner bright ring = bright rim

②

0.78
3.45 2.67 M ∓ 0.063

0.73
3.50 .77 +0.034

0.80
3.70 .90 +0.164

0.95
3.55 .60 −0.132

0.85
3.60 .75 +0.014

0.85
3.52 .67 −0.066

0.65
3.30 .65 −0.086

0.58
3.34 .76 +0.074

0.80
3.50 70 ∓0.036

0.78
3.50 .72 −0.016
~~+0.037~~

0.45
3.38 .93 +0.194
~~+0.247~~

0.10 2.77	2.67	−0.066
0.95 3.75	.80	+0.064
0.00 2.90	.90	+0.164
0.10 2.70	.60	−0.136
0.20 2.88	.68	−0.056
0.18 3.00	.82	+0.084
0.55 3.50	.62	−0.116
0.73 3.50	.77	+0.034
0	19)52.98 2.736	$\pm 0.\overset{3}{0}15$

Dec 2nd Obs on Saturn & Satellites

(I) prec limb of ball = 0 24. 27.44 2.66 +0.030
Mimas = 30.10
43.70 3.60
46.30 2.60 −0.030

25 43.90
46.53 2.63 0.000

26 11.73
14.40 2.67 +0.040

26.. 29.07 2.63 0.000
31.70

26 46.07 2.73 +0.100
48.80

27.. 03.85 2.60 −0.030
6.45

27 15.55 2.46 −0.170
18.01

27 26.63
29.30 2.67 +0.040

27 39.05 2.65 +0.020
41.70 10)26.30
. 2.630

(II) Break
fol limb of ball 0.. 29.. 53.75 1.15 −0.151
Mimas 54.90

30 17.07 1.20 −0.101
18.27

30.73 1.45 +0.149
32.18

45.20 .20 −0.101
46.40

56.00 .20 −0.101
30.. 57.20

31 7.83 .35 +0.049
9.18

25.50 .35 +0.049
0 31 26.85

Dec 2nd Spring Governor Saturn
continued

0" 31" 36.54 1.31 +0.009 = fol limb
37.85 Mimas
47.10 1.33 +0.029
48.43
32 4.13 .47 +0.169
5.60 10) 13.01
1.301

(III) Passages outer edge of outer ring

0.08 3.22 +0.063
3.30
0.90 3.20 +0.043
4.10
0.25 3.25 +0.093
3.50
0.25 3.03 −0.127
3.28
0.63 3.25 +0.093
3.88
0.53 3.27 +0.113
3.80
0.45 3.13 −0.027
3.58
0.35 3.05 −0.107
3.40
0.65 3.25 +0.093
3.90
0.50 3.17 +0.013
3.67
0.45 3.13 −0.027
3.58
0.35 3.05 −0.107
3.40
0.83 3.17 +0.013
4.00

4

Paſsages of o e o r

0.63 3,22 +0.063
3.85
0.55 3.02 −0.137
3.57
0.33 07 −0.087
3.40
0.53 .14 −0.017
3.67
0.27 .23 +0.073
3.50
0.90 15 −0.007
4.05
0.75 .20 +0.043
3.95
0.15 .10 −0.057
3.25
0.90 .15 −0.007
4.05 22)69.45
3.157

IV

Paſsages o.e. mid. ring = outer edge of bright rim

0.65 2.74 +0.028
3.39
0.53 .62 −0.092
3.15
0.10 .75 +0.038
2.85
0.90 .60 −0.112
3.70
0.75 .75 +0.038
3.50
0.48 .87 +0.158
3.35
0.05 73 +0.018
2.78

Dec 2nd continued

o e m r cont

0.88 2.87 +0.158
3.75
0.25 2.55 -0.162
3.80
0.00 .65 -0.062
2.65
0.68 .70 -0.012
3.28
0. 11)29.83
BBB 2.712

ⓥ prec o e for α following limb of ball

0.55 2.23 -0.022
2.78
0.18 .32 +0.068
2.50
0.58 .47 +0.218
3.05
0.50 .23 -0.022
2.73
0.40 .28 +0.028
2.68
0.55 .15 -0.102
2.70
0.95 .25 -0.002
2.20
0.45 .23 -0.022
2.68
0.00 .35 +0.098
2.35
0.33 27 +0.018
2.60
0.85 40 +0.148
2.25
0.10 34 +0.088
2.44
0.70 2.15 -0.112
2.85

oe or foll limb η

0.94	2,34	+0,088
3,28		
0,58	,30	+0,048
2,88		

(VI)

long B - D.D. prec limb of Ball α oe or

0,15	2.15	-0,102
2,30		
0,60	,24	-0,012
2,84		
0,55	,25	-0,002
2,75		
0,72	,23	-0,022
2,95		
0,25	,15	-0,102
2,40		
0,25	30	+0,048
2,55		
0.80	20	-0,052
2,00		
0,00	,10	-0,152
2,10		
0,50	,28	+0,028
2,78		
0,95	,20	-0,052
2,15		
0,35	,30	+0,048
2,65		
0,25	,20	-0,052
2,45		
0,68	22	-0,032
2,90		
0,85	,16	-0,092
2,01		
0,35	,28	+0,028
2,63		

~~30) 67,57 (~~
~~2.252~~

1852 Dec 2nd Pk continued Obs on Hs rings & Satellites

(VII)

Enceladus & ball

	EC		
E	3.. 49.. 14.78	2.02	+0.083
1st limb	3 16.80		
2nd "	18.07		
	49.. 24.44	2.11	+0.173
	26.55		
	27.88		
	49.. 46.85	1.85	−0.087
	48.70		
	50.05		
	49 55.60	1.90	
	57.50		
	58.90		
	50.. 60.80	2.00	+0.063
	12.80		
	14.05		
	50.. 20.55	1.88	−0.057
	22.43		
	23.77		
	50 40.15	1.80	−0.137
	41.95		
	43.53		
	50 49.80	2.00	+0.063
	51.80		
	53.25		
	51.. 10.75	1.80	−0.137
	12.55		
	13.98	15.46 -	8
	51 .. 20.60	1.75	
	22.35		
	23.70		
	51.. 39.80	1.90	
	41.70		
	43.15		

Enceladus

3ʰ 51. 49.57 1.83 -0.106
51.40
52.75

52 8.00 1.95 +0.013
9.95
11.35

52 17.88 .86 -0.077
19.74
21.05

52 37.00 95 +0.013
38.95
40.35

52 46.88 82 -0.117
48.70
50.03

53 6.10 05 +0.113
8.15
9.50

53 15.85 2.02 +0.083
17.87
~~53~~ 19.30

53 28.55 2.00 +0.063
30.55
31.85

53 38.30 1.90-0.037
40.20
41.50

53 51.60 ~~2.05 05~~ +0.113
53.65
55.90
17.43

54.. 01.55 1.85 -0.087
3.40
4.75

54. 16.88 2.07 +0.133
18.90
20.40

54 26.75 1.95 +0.013
28.70
30.10

54 55.25 2.00 +0.063
57.25
58.65

55 5.00 2.00 + 0.063
7.00
8.38

55 21.07 1.98 +0.043
23.05
24.40

55 30.90 1.95 +0.013
32.85
34.10

55 49.95 2.13 +0.193
52.08
53.45

55 59.75 1.93 -0.007
~~56~~ 61.68
4 63.10

56 15.63 2.02 +0.083
17.65
19.05

56 25.50 1.80 -0.137
27.30
28.70

See over

Dec 2nd P.M.

Enceladus

E C

E	3.. 56.. 43.0	2.00	+0.063
♄ 1st	45.0		1.35
" 2nd	46.35		
57	6.68	1.92	−0.017
	8.60		
	10.00		
57	16.40	1.85	−0.087
	18.25		
	19.60		
57	38.50	1.88	−0.057
	40.38		
	41.70		
57	48.35	1.65	−0.287
	50.00		
	51.40		
58	8.38	1.97	+0.033
	10.35		
	11.60		
58	31.88	1.92	−0.017
	33.80		
	35.20		

35) 67.81

1.937

Discontinued

VIII

4.. 27..	56.75	2.00
	58.75	
~~28~~	60.00	
28	6.35	2.10
	8.45	
	9.80	
28	18.78	2.07
	20.85	
	22.15	

Dec 2nd

Enceladus continued

28.	28.50	2.08
	30.58	
	31.85	
28	40.25	2.05
	42.30	
	43.60	
28..	49.95	1.95
	51.90	
	53.45	
29	6.88	1.95
	8.83	
	10.35	
29	16.80	1.98
	18.78	
	20.10	
29	29.70	2.00
	31.70	
	33.14	
29	39.30	2.00
	41.30	
	42.70	
29	56.78	1.97
	58.75	
~~30~~	60.15	
30	6.55	2.00
	8.55	
	9.90	
30	18.25	2.00
	20.25	
	21.65	
30	28.00	1.85
	29.85	
	31.35	
30	41.80	2.15
	43.95	
	45.33	
30	51.85	1.95
	53.80	
	55.15	
31	6.58	2.05
	8.63	
	9.95	
31	16.35	2.01
	18.36	
	19.73	

9)18.03

Dec 2nd 1852 Continued — Saturn —

x

		EC				
Enceladus	4.. 34..	49.75	1.20			
o e o ring		50.95	1.20			
♄, 1st		51.80		0.85		
♄, 2nd		53.10			1.30	
o e o ring		53.95				0.85
	34..	59.43				
	~~35~~	60.70	1.27			
		61.50		0.80		
		62.80			1.30	
		63.75				0.95
	35..	15.10				
		16.10	1.00			
		17.15		1.05		
		18.45			1.30	
		19.35				0.90
	35..	24.75				
		25.88	1.13			
		26.85		0.97		
		28.15			1.30	
		29.05				0.90
	35	42.68				
		43.77	1.09			
		44.56		0.79		
		45.85			1.29	
		46.85				1.00
	35	58.00				
		59.13	1.13			
	~~35~~	59.95		0.82		
	36	61.40			1.45	
		62.35				0.95
	6		6.82	5.28	7.94	5.55

4 .. 37 .. 26.20
27.38
28.18
29.60

4 36 ..	7.75				
	8.80	1.05			
	9.75		0.95		
	11.05			1.30	
	12.05				1.00
	21				
36	21.35				
	22.40	1.05			
	23.30		0.90		
	24.70			1.40	
	25.60				0.90
	31.00				
	32.10	1.10			
	33.12		1.02		
	34.47			1.35	
	35.43				0.96
36	51.20				
	52.33	1.13			
~~36~~	53.30		0.97		
	54.50			1.20	
	55.50				1.00
37	0.95				
	2.00	1.05			
	2.90		0.90		
	4.30			1.40	
	5.28				0.98
	1				
37	16.45				
	17.55	1.10			
	18.45		0.90		
	19.85			1.40	
	20.75				0.90
		6.48	5.64	8.05	5.74
6 R.		13.30	10.92	15.99	11.29

4. 37 26.25
27.35 1.10
28.18 .83
29.60 1.42
30.48 .88

37. 37.60
38.80 1.20
39.60 .80
40.90 1.30
41.80 .90

37. 47.45 .95
48.40 .55
49.35 1.30
50.65 1.03
51.68

38. 2.28 1.16
3.44 1.01
4.45 1.20
5.65 .90
6.55

38. 12.14 1.00
13.14 1.00
14.14 1.28
15.42 0.93
16.35

38. 25.28 1.17
26.45 .83
27.28 1.40
28.68 .77
29.45

38

6	6.58	5.42	7.90	5.41
18	19.88	16.34	23.89	16.70

4. 38	34.80				
	35.90	1.10			
	36.93		1.03		
	38.30			1.37	
	39.28				.98
38.	51.70	1.20			
	52.90		90		
	53.80			1.34	
	55.14				.96
	56.10				
39.	1.43	1.22			
	2.65		.90		
	3.55			1.25	
	4.80				1.00
	5.80				
39.	14.38	1.12			
	15.50		.85		
	16.35			1.40	
	17.75				.90
	18.65				
39.	26.57	.97			
	27.54		.91		
	28.45			1.35	
	29.80				.80
	30.60				
39.	36.25	1.08			
	37.33		.85		
	38.18			1.32	
	39.50				.90
	40.40				
39	49.80	1.00			
	50.80		100		
	51.80			1.35	
	53.15				.85
	54.00	y 7.69	6.44	9.38	6.39
		25 27.57	22.78	33.27	23.[illegible]

4. 39. 59.45 1.10
~~40~~. 60.55 .85
61.40 1.35
62.75 .92.
63.67

40. 16.47 .93
17.50 93
18.33 1.27
19.70 1.00
20.70

40 26.10 1.00
27.10 98
28.08 1.27
29.35 88
30.23

40. 41.80 1.15
42.95 .95
43.90 1.25
45.25 .81
46.06

40. 51.58 1.19
52.77 83
53.60 1.30
54.90 .85
55.75

41. 7.78 1.10
8.88 7 .77
9.65 1.35
11.00 .90
11.90

41 17.25 1.15
18.60 83
19.43 1.37
20.80 .90
21.70

7 7.62 4.22 9.16 6.26
32 35.19 29.00 42.43 29.35

4. 41.	30.05	1.08			
	31.13		97		
	32.10			1.28	
	33.38				.97
	34.35				
41.	39.78	1.00			
	40.78		.95		
	41.73			1.47	
	43.20				.93
	44.13				
41.	58.62	1.18			
	59.80		77		
48	60.57			1.38	
	61.95				.95
	62.90				
42	8.35	1.15			
	9.50		.85		
	10.35			1.38	
	11.73				.97
	12.70				
42	21.53	1.12			
	22.65		98		
	23.63			1.32	
	24.55				78
	25.73				
42.	31.38	92			
	32.30		1.03		
	33.33			1.37	
	34.70				.80
	35.50				
42..	53.00	1.14			
	54.14		1.01		
	55.15			1.25	
	56.40				90
	57.30				

7 7.59 6.56 9.45 6.33

39 43.78 35.56 51.88 35.68

4.	43,	2.83	.82			
		3.65		1.19		
		4.84			1.36	
		6.20				.95
		7.15				

43	21.08	1.07			
	22.15		1.00		
	23.15			1.32	
	24.47				.90
	25.37				

43.	30.75	1.15			
	31.90		1.00		
	32.90			1.35	
	34.25				.88
	35.13				

43	50.90	1.10			
	52.00		1.00		
	53.00			1.35	
	54.35				.88
	55.23				

44	0.68	1.09			
	1.77		.93		
	2.70			1.30	
	4.00				.85
	4.85				

44	20.23	1.00			
	21.23		.94		
	22.17			1.27	
	23.44				.86
	24.30				

6	6.23	6.06	7.95	5.32
39	42.78	35.56	51.88	35.68
45	49.11	41.62	59.83	41.00

4 4 4.	29.70	1.10			
	30.80		.97		
*	31.77			1.43	
Bad	33.20				
	33.95				
44.	50.65	1.05			
	51.70		88		
	52.58			1.39	
	53.97				.93
	54.90				
45	0.38	1.00			
	1.38		.92		
	2.30			1.40	
	3.70				.87
	4.57				
	3	3.15	2.77	~~4.22~~	
	2			2.79	1.80
	48	52.26	44.39		
	47			62.62	42.80
		1.0887	0.9248	1.3323	0.9106

Passages of the outer Edge of the New ring.

	Interval		Int		Int
4. 57, 55.03 57.10	2 07	0.75 2.80	2.05	0.77 3.08	2.31
0.60 2.85	2.05	0.25 2.35	2.10	0.60 2.70	2.10
0.75 2.84	2.09	0.93 3.00	2.07	0.40 2.50	2.10
0.55 2.68	2.13	0.65 2.78	2.13	0.90 2.95	2.05
0.35 2.35	2.00	0.53 2.60	2.07	0.70 2.80	2.10
0.00 2.13	2.13	0.07 2.20	2.13	0.10 2.30	2.20
0.58 2.63	2.05	0.88 2.95	2.07	0.85 3.00	2.15
0.30 2.48	2.18	0.45 2.57	2.12	0.55 2.65	2.10
0.57 2.55	1.98	0.03 2.15	2.12	0.40 2.40	2.00
0.40 2.38	1.98	0.58 2.68	2.10	0.60 2.68	2.08
0.80 2.87	2.07	0.35 2.45	2.10	0.40 2.60	2.20
0.55 2.68	2.13	0.00 2.20	2.20	0.85 2.90	2.05
0.97 3.10	2.13		27.26		26.44
	13) 26.99 2.076		24.99 52.25	39	80.69

0.70 195 0.25 2.05
265 2.30

0.00 220 0.00 2.10
2.20 2.10

0.80 2.20 0.75 1.95
3.00 2.70

0.40 2.13 0.55 2.18
2.53 2.73

0.23 207 0.80 2.08
2.30 2.88

0.30 2.15 0.58 2.15
2.45 2.73

0.08 2.15 0.85 2.00
2.23 2.85

0.80 2.10 0.55 2.05
2.90 2.60

8 16.56

0.56 2.07 0. 52 107.88

2.63 60 124.44

.2.074

0.65 2.00
2.65

0.50 1.93
2.43

0.28 2.12
2.40

0.08 2.12
2.20

27.19
52 | 107.88

Outer edge of inner ring
(Bright rim)

X1

5/13.	15.14 17.88	274	0.40 3.20	280	0.85 3.60	2.75
	0.00 2.68	268	0.28 2.90	2.62	0.85 3.65	2.80
	0.24 2.75	251	0.13 270	257	0.80 3.38	258
	0.10 280	2.70	0.47 3.25	2.78	0.60 3.40	2.80
	0.90 3.60	2.70	0.30 293	263	~~0.[illegible]5~~ ~~3.35~~	
	0.25 2.85	260	0.00 2.75	275	0.00 2.73	273
	0.00 2.63	263	0.70 338	268	0.78 3.50	2.72
	0.00 2.70	270	0.70 3.35	2.65	0.75 3.35	260
	0.85 3.40	255	0.40 3.15	2.75	0.50 3.15	265
	0.10 280	270	0.23 280	257	0.	
	0.00 2.55	2.55	0.90 3.68	278		
	0.70 3.35	265	0.05 2.80	275		

32) 85.67
2.6772

XII

Enceladus - prec + fol sides of division of ring

5. 25	7.28	1.32	
	8.60		2.73
	11.33		
25.	14.00	1.35	
	15.35		2.87
	18.12		
25	30.00	1.23	
	31.23		2.65
	33.88		
25	36.58	1.42	
	38.00		2.75
	40.75		
25.	54.20	1.20	
	55.40		2.75
	58.15		
26.	11.57	1.20	
	12.77		2.76
	15.53		
26	18.37	1.26	
	19.63		2.72
	22.35		
26.	30.70	1.35	
	32.05		2.80
	34.85		
26.	37.65	1.23	
	38.88		2.72
	41.60		

5 26. 48.85 1.05
49.90 2.98
52.88

27. 1.75 1.30
3.05 2.70
5.75

27 8.30 1.38
9.68 2.72
12.40

27 22.65 1.35
24.00 2.60
26.60

27 29.40 1.28
30.68 2.72
33.40

27 42.45 1.20
43.65 2.65
46.30

27 49.10 1.25
50.35 2.65
53.00

16) 20.37 43.77
1.273 2.736

2.00
37

1.27
1.37
2.64

5, 29. 9.24 1.86
11.10 140
12.50

16.15 1.73
17.88 1.42
19.30

29 32.00 1.85
33.85 138
35.23

40.14 1.61
41.85 1.52
43.37

29 49.65 1.93
51.58 1.37
52.95

30 6.95 1.80
8.75 1.30
10.05

14.60 1.95
16.75 137
18.12

30 32.30 1.73
34.03 152
35.55

40.15 1.75
41.90 155
43.45

54.33 1.85
56.18 1.37
57.55 10) 18.06 14.20

5. 31	2.30	1.65	
	3.95		1.52
	5.47		
31.	15.60	1.90	
	17.50		1.40
	18.90		
	23.53	1.77	
	25.30		1.55
	26.85		
31	34.90	2.00	
	36.90		1.40
	38.30		
	42.95	1.95	
	44.90		1.40
	46.30		

5	9.27	7.27
15	27.33	21.47
	1.822	1.431

1852. Decr. 14th. R. F. B. State 4 ft Telescope - W. C. B - Christophe.

Im. 28 Capricorni
obs by W C B   6
E. C - 0 .. 8 .. 35.0 - 3.7
                    - 3.7

E. C - 0 .. 08 .. 31.3

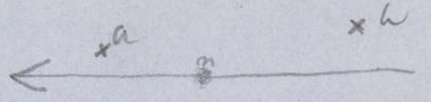
The nebula observed on the following page is H II 254

Star a is Weisse H II 773
b " " 808

Nebula	north following	a	$\Delta\alpha$	$0^m\ 44^s.95$	$\Delta\delta$	$2'\ 37''.2$
"	north preceding	b	"	0 55.75	"	4 13.2

Dec, 8 Pm

A faint nebula



Nebula north fol * of 9.10 mag

Dif. D a & b

h m
1,,38 29^r 89
1,,41 3017
30.03
46.07
16 04
32
Δδ a and n 157.2 = 2′ 37″.2

n & b
20^r 23
46.07
25 84 Δδ b and n
52
253.2 = 4′ 13″.2

Dif R

a 1,, 50,,16.5 45.0
n 51,,01.5
b

a 1,, 50,,28.5 44.5
n ,, 51,, 13.0
b 1,, 52,,09.0 56.0

a 1,, 52,,28.2 45.3
~~m~~ 53,,33.5
b 29.0 55.5

a 53,, 00.0 45.0
n 53,,45.0
b 1,, 54.40.8 55.8

n prec b	n fol. a
	45.0
56.0	45.3
55.5	44.5
55.8	45.0
2.3	19 8
0,, 55.77	44.95

Nebula n.f. * a Δδ 2′ 37″.2
Δα 0^m 44^s.95

3^s.28 +14″.0
82.0 350
1^m 22.0
2 44 30
2 45 52.0
0 45.0
2 45 7

5′ 50″
12 17
12 22 50
Δδ 2 37
12 ~~20 13~~
+12 25 27

H II 254 in 1830.0
1855.0

Is in Auwers Cat. H's no II .254
p.13

a is Weisse H II 773
b " 808

Star a
Chron. 1615 2,,00,,30 East H 11,,15,,10 N.P.D 77°,,35′,,45
1615 fast 22
2 00 8
H 11 15 10
2 44 58
Star a R – cor.

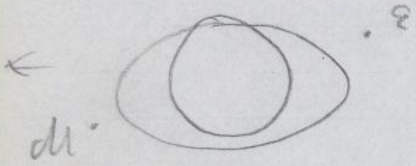
+12 24 15
cor
Star a Dec.

Dec 8th 1852

in dir of minor axis of ring

		Mimas N of ♄'s S pole		M. S of ♄'s N pole	Zero
MST	10h..11m..20	47".24	10..16..30	45".21	46.087
	14..12	41	10..19..00	45.27	46.083
					46 093

At 10..5 Enceladus is 1" following o.c.o.r
At 10..26..30 Enceladus is 1" S of S pole



Double dist from o c o r

10..43..40	44".50	10..53..20	47.85
45..50	44.22	55..20	47.98
47..00	44.31	56..45	47 86
48..30	44.37	59..20	47 96
	44.350		47.912
	46.087		46.087
	1.737		1825
	8.69		9.12

Dec 8th

11h..04..15 Encel fol - o e o r

Double dist 11h..06..30

44.90 47.36

Zero 46.09 46.09

1.19 1.27

1.27

2)1.23

6.15 = dist

The vision is quite inferior

The E C signals were
1st passages of Minutes, o e o r. Ball 1st & 2d
& o e o r not worth reading off

Dots Dots Break
Minutes & 1st & 2nd of ball - tolerable

1853 Mimas Dec 10th

January 7

Westphal's Comet

Pos 89°.48'

Comet south fol. star of 11.12 mag

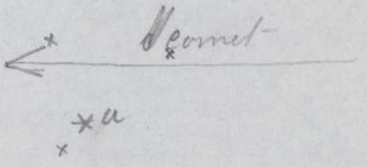
Chron. 236	Dif. Dec
4h 26m 00s	76r.85
31	76 68
34	77 04
4 56	76 35
4 58	76 29
5 / 205m 0s	5 / 333.21
4h 41m 0s	76.64
S.T.C.N. = 19 8 38.18	46.07
9 32 21.82	30.57
Sid. Equiv. -1 33.77	9.8
9 30 48.05	24456
Ca. m. S.T. obs. Dec.	27513
	299.586
	-4' 59".59

Dif. AR

				da
* a	4 41 25.4	☄	4 42 24.0	+ 58.6
* a	41 48.0	☄	4 42 47.0	+ 59.0
*	4 43 52.5	☄	4 44 50	+ 57.5
*	44 14.0	☄	4 45 11.5	+ 57.5
×				
×	46 14.5	☄	4 47 11.5	+ 57.0
×	46 36.5	☄	4 47 32.5	+ 56.0
×	50 00.0	☄	4 50 57.0	+ 57.0
	4 50 22.5	☄	4 51 19.0	+ 56.5
		8	372 12.5	8 / 59.1
			4h 46m 31s.56	+ 57s.39

S.T. Camb. m. N. = 19 8 38.18
9 37 53.38
-1 34.67
9 36 18.71 =
= Camb. m. S.T. obs. in R.A.

No correction to Chron. 236 to be found.
Probably small and assumed to be zero.



236 6h 05m 27s

The above reductions in ink by O. C. W.

Zero $46^{r}05$
46 08
46 07

$46.\overset{20}{07}$ (O. C. W.)

Dec 10th 1852 Saturn Friday
Observations difficult from haze - Clouded up
Mimas in axis of ring

Mimas prec. O.E.O.R. Double dist

Fast 7h.46 { right 44r.34 8.00 48.02 left
46 Zero 46.124
26 faint 1896 Zero
44.353 9.48 46.132
46.124 113
2)11771 127
8.86 46.124

7.58 Enceladus has passed inferior conjunction by 1".0 ± 0".5

These & preceding days measures have been taken in direction of axis of ring using angle of position of axis given in the Naut. Almanac.

266 For Jan 8th see p 268

March 8 see p 276 New Comet

Star b is 10.11 mag. Approximate place from Weisse Hora IV No 1031
AR $4^h\,46^m\,37^s$
Dec. $-10°\,59'$

March 8th Cambridge M.S. Time $8^h\,28^m\,04^s.54$ ☄ − * $\Delta\alpha + 15^s.18$ $\Delta\delta + 0''.76$

More accurate place of the star of comparison of the comet on the 8th of March Differences found March the 10th from Weisse Hora IV No. 1031 (See fol. pages)

star of comp. with the comet = b
Weisse H.IV No. 1031 ? = a Is this the right star.

* Weisse app. α $4^h\,46^m\,50^s.96$ δ − ~~10..53..14.0~~ −10°..53'..30''.1
star b prec. 15.87 6..17.5 6..17.5
4..46..35.09 ~~11..01..34.5~~ −10..59..47.6 see p 278
+15.18 −0.8 wrong
☄ α 4..46..50.27 ☄ δ −10..59..48.4

7..59..10
6
7..59..04
3..11..10
4..47..54
15
4..48.09
46.56
1..19

10..55
6
10..49

Clouds prevented seeing the star well in the field

Chron. 296 7..59..10 star b δ −10..55 ☄ −10..53 8h..40m
H 3..11..10
4..48.00

1853

March 8 New Comet

b × ☄

× a

Neb. south fol. star of 10.11 mag

Dif. Dec

b is comp star

7.. 23.. 30	36ʳ00	35.13	×	27.2		
25.. 00	35 20 Zen	30.19	☄ 7	31.. 43.0	15.8	Pos 89ʳ06
26	3419	4.94				
14 30	1539					
7.. 24.. 50	35.13		+	2.. 15.5		

Comet - north fol star

☄ 7.. 32.. 37.3 16.0

by Laws of

of Principal

theory alone

7.. 45.. 30	25 81			56.0		
47.. 00	2431		☄	33 17.0	15.0	35.13
47.. 30	2300					24.37
20 20	13 12		×	30.8		10.76
	24.. 37	24.37				9.8
7.. 46.. 49	35.. 13	30.19	☄ 7	34.. 45.4	14.6	8608
24.. 30	59.. 50	5.82				9684
71.. 37	29.75		×	~~45~~.5		
7.. 35.. 48	30.19		☄	36.. 0.5	15.0	105.448
	0.44					= 1ʹ 45ʺ.45
	9.8		×	27.0	15.0	4ʺ.8
	~~352~~		☄	7.. 36.. 42.0		
	~~396~~					
	~~4ʺ312 = dδ~~		×	20.5	14.9	
			☄	38.. 35.4		
				33.24 8	36 3	

Laplace Bur

en between P

Principal a

far as p

resemble

Théorie du

vol. 4 to

tron-

nt-

Wrong

☄ north of star

cor. for mot: 1ᵐ.. 04ˢ - 5.07

☄ south of × 0.76

da 15.18

7ʰ.. 24.. 50	☄ S	4ʺ.94	
7.. 46.. 47	☄ N	5.82	
21.. 57		10.76	7.. 34.. 46.97
		2.2	- 2 = 4
22 / 105.4 (4.79		1054	7.. 34.. 44.97
88		1ʹ.. 45ʺ.4	
174			
154			
200			
198			

Comet moves N 4ʺ.79 ~~hourly~~ in one minute

7.. 34.. 44.97

- 6 error of chron.

7.. 34.. 38.97 23.. 04.. 24.24

23.. 05.. 10.98 46.74

8.. 29.. 27.99 23.. 05.. 10.98

1.. 23.45

8.. 28.. 04.54 M. S. Time

1853

March 8 New Comet

b x δ

x a

Neb. south fol. star of 10.11 mag

Dif. Dec

7,, 23,, 30 36ʳ 00 35.13
25,, 00 35 20 Zen 30.19
26 34 19 4.94
14 30 15 39
7,, 24,, 50 35.13

Comet – north fol star

7,, 45,, 30 25 81
47,, 00 24 31
47,, 30 23 00
20 20 13 12
7,, 46,, 49 24,, 37 24.37
24,, 50 35,, 13 30.19
71,, 37 59,, 50 5.82
7,, 35,, 48 29.75
30.19
0.44
~~9.8~~
~~35 2~~
~~39 6~~
~~4.3 1 2 = dδ~~

Wrong

α north of star
cor. for mot: 1ᵐ,, 04ˢ – 5.07
α south of x 0.76

7ʰ,, 24,, 50 α S 4ʳ.94
7,, 46,, 49 α N 5.82
21,, 57 10.76
2.2
22 / 105,4 (4.79 10 54
88 1',, 45",4
174
154
200
198

b is comp star

x 27.2
α 7 31,, 43.0 15.8 Pos 89°06

+ 2,, 15,5
α 7,, 32,, 37,5 16.0

56.0
δ 33 17,0 15.0

x 30.8
α 7 34,, 45,4 14.6

x ~~45~~ 45.5
δ 36,, 0,5 15 0

x 27.0
δ 7,, 36,, 42,0 15 0

x 20.5
δ 38,, 35,4 14.9
33.26 8 36 3
~~33~~
da 15.18

7,, 34,, 46.97
– 2 = 4.65
7,, 34,, 44.97

35.13
24.37
10.76
9.8
86.08
9684
05.448
1' 45".46
4".8

Comet moves N 4".79 ~~hourly~~ in one minute

7,, 34,, 44.97
– 6 error of chron.
7,, 34,, 38.97 23,, 04,, 24.24
23,, 05',, 10.98 46.74
8,, 29,, 27.99 23,, 05,, 10.98
1,, 23.45
8,, 28,, 04.54 M. S. Time

1853

March 8 New Comet

b x d

x a

Neb. south fol. star of 10.11 mag.
Dif. Dec

7,,23,,30
25,,00
26
14 30
7,,24,,50

36'00
35'20 Zm
34'19
1539
35.13

35.13
30.19
4.94

Comet – north fol star

7,, 45,,30
47,,00
47,,50
20 20
7,,46,,49
24,,50
71,,37
7,, 35,,48

25'81
24 31
23 00
13 12
24,,37
35,,13
59,,50
29.75
30.19
0.44
~~9,8~~
~~35.2~~
~~39.6~~
~~4.3 1 2 = dδ~~

Wrong

24.37
30.19
5,82

d north of star
cor. for mot. 1.04 – 5.07
d south of x 0.76

7h,, 24,, 50 ß S 4.94
7,, 46,, 49 ß N 5.82
21,,57
10.76
2.2
10 54
1',,45,4

22 | 105,4 (4.79
88
174
154
200
198

b is comp star

x 27.2
ß 7 31,, 43.0 15.8 Pos 89°06

+ 2,, 15,5
ß 7,, 32,,37,5 16.0

56,0
δ 33 17,0 15.0

x 30.8
ß 7 34,,45,4 14.6

x ~~45~~.5
δ 36,, 0,5 15.0

x 27.0 15.0
δ 7,, 36,,42,0

x 20.5 14.9
δ 38,, 35,4
33.24 8
33
36 3
da 15.18

35.13
24.37
10.76
9.8
8608
9684
105.448
mot in 22m in 8 = 1'45".46
mot in 1 min. 4".8

7,, 34,,46.97
– 2 = 4.65
7,, 34,,44.97

Comet moves N 4".79 ~~hourly~~ in one minute

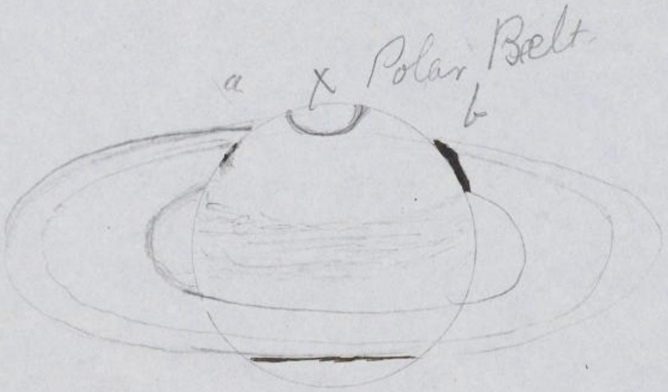
7,,34,,44.97
– 6 error of chron.
7,,34,,38.97
23,, 05',,10.98
8,,29,,27.99
1,,23.45
8,,28,,04.54 M. S. Time

23,,04,,24.24
46.74
23,,05,,10.98

Jan 8th 1853 Saturn

Saw Saturn under fine definition

6 P.M.



Remarked the singular dusky spot adhering to ♄'s limb at a seen often before & supposed to be the shadow refracted — the shadow at b has an appearance of extending out almost so as almost to make a corner at b which is just where the division of the ring intersects it

This is just in the zone of ♄ centric latitude with a — & though the above was drawn without thought or reference to to Obs of Nov 29th it is a strong confirmation of the drawing —

Qu? May it not be a proof of an extraordinary atmospheric refraction at that zone

would not the sun's light be also equally refracted

equal angles but not an equal space seen from earth

how so?

The Polar Belt at x is remarkable & seen with distinctneſs at lucid intervals its diameter was about that of the width of outer ring

I thought the width of outer ring greatest on following side -

The new ring is scarcely more than its breadth distant from the ball (nearest edges)

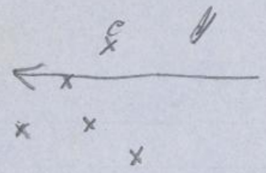
N B the division of the ring seen on the ball is much leſs black than the v. narrow shadow of ring on ball seen below & also narrower scarcely 1/2 as broad to appearance

272

1853 Jan. 28

236 5..41..00
E6 5..41 31.5

comp. star = $\frac{11}{12}$ mag.



e is comp. star
comet south fol.

Comet is quite faint — light slightly concentrated on the following side

Dif. Dec

236	4..50..00	44r88
	53	4460
	54..0	4468
	5..10	43.75
	11..00	4340
	5..12	4360

Dif. AR

c 4..58 53.5
☄ 4..59 29.0

c 5 00 23.4
☄ 5 00 56.5

c 5..1 50.0
☄ 5-02 22.4

c 5.03..31.5
☄ 4..4.0

c 5..04..38.5
☄ 5 11.5

c 5..05..45.5
☄ 5..6..17.6

Zero
46r08
4610
4610

236 — 4..02..07.0

New Comet

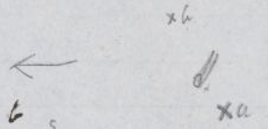
Discovered by C W Tuttle see next page

Zero
3016
3021
3022
59
30.19

March 8 Comet south prec. star of 9 mag.

h m s
8,, 19,, 50
21 20
23 20
24,, 20
88,, 50
8,, 22,, 25
6
8,, 22,, 19

Dif Dec
14r 57
15 55
15 61
16 37
22.10
15r.52
30.19
14.57
9.8
11736
13203
143.766
2'',, 23.77 = dδ
cor. for mot. in 8m.3 39.84
1,, 43.93



b^a follows a^b 14s.5

star a is Weisse Hora IV No. 1031

Comet is round and quite bright – condensed toward the center but no definite nucleus – Great deal of haze

Dif. AR

Pos. ~~89~~ 89.15

☄ 29 9.5 4s.5
× 8,, 29 14

8 31,, ~~30~~ 12 bb s = 6.0
31 50 11 = 5.5
22 20 10 = ~~5~~ 5.0
34 30 11 = 5.5
35 00 12 = 6.0
184,, 19. 32s.5
8,, 30,, 43.1 5.42 = dα
−6
8,, 30,, 37.1
23,, 5,, 10.98
9,, 25,, 26.12
1,, 32.63
9,, 23,, 53.49 M.S.T.

very difficult

Clouds

" Clouds

23,, 04,, 24.24
46.74
23,, 05,, 10.98

6,, 48
4 47
2,, 1

bb
29 fol

h
8,, 30,, 37
8,, 22 19
8, 18

Clouds prevented finishing the observation

8.6 9,, 15,, 00
23.6 9,, 13 57.7

9,, 15,, 00
1,, 08.3
9,, 13,, 51.7
9,, 13,, 57.7
6.0

Comet appears round with a considerable condensation in the center

I has an apparent diameter of about –

three minutes of arc

New Comet

March 8

Star a is Weisse Hora IV No. 1031

AR	4..45..32·41	δ − 10..56..16·2	1825.0	2.825		6.40
	1..19.1	+ 2..57.5		28	sec. var. ~~+~~	.06
	4..46..51.57	− 10..53..18.7	1853.0	22600		6.34
	5.42	dδ ~~dex~~ 1..43.9		5650		28
☄ AR	4..46..46.09	☄ δ 10..55..02.6 = Mean place		79.100		5072
				1..19.10		1268
						17752
						~~3..00.9~~
						2..57.2

9..23..53.5 M. S. T. Camb.

Mean place ☄ AR 4..46..46.09

☄ δ − 10..55..02.6

Hourly mot in AR − 6.4

" " δ + 4..47

I detected this comet after a few sweeps with the comet-seeker. It was faintly visible to the naked eye

1853

March 8

f	g	G	h	H	i
−6.88″	+3.33″	205°.5′8	+18.81	282°.38′	−7.96

⋆ AR 4ʰ.46ᵐ.51ˢ
⋆ D − 10°.53′.15

60″
11.30
12.45
71.42.45

H 282.38
a 71.42
H+a 354−20
sin H+a 8ⁿ.99450
sec. δ 0.00788
h 1.27439
0.27677 + 1.89

cos H+a 9.99787
sin δⁿ 9.27602
h 1.27439
0ⁿ.54828 −3.53

⋆ Mean AR	4.46.51.51	δ −10.53.18.3
cor. to app	−.55	−11.88
App. α	4.46.50.96	δ −10.53.30.1
☄ − ⋆ Δα	−5.42	+1.43.9
☄ app α	4.46.45.54	−10.55.14.0

G 205.5′8
a 71 41
G+a 277−39
sin 9ⁿ.99612
tang. δ 9ⁿ.28391
g 0.52244
9ⁿ.70247 +0.50
−1.39
+~~2.39~~
f − 6.88
− ~~4.49~~
~~1.49~~
− .~~300~~
8.27
276
− .551

cos. G+a 9ⁿ.12425
g 0.52244
9ⁿ.64669 +0.44
iⁿ 0.90091
cos. δ 9.99212
0.89303 −7.82
~~+4.73~~
−11.79″

Star of comp Weisse Hora IV No. 1031 2

N.B
This place of the
Comet is too small in
AR by 14′.35″ & in Dec 2′.10″ (too far South)
Vide Astr. Nach. No 888

March 8th 9ʰ.23ᵐ.53ˢ.49 M.S. Time
☄ − ⋆
Δα −5ˢ.42 Δδ + 1′.43″.9
☄ App α 4ʰ.46ᵐ.45ˢ.54 δ −10°.55′.14″.0

See p 266

⋆ˢ App. α 4.46.50.96 δ −10°.53′.27″.1

March 10 Determination of place of comp. star b of March 8

Star b of March 8 - also star a b south prec. a

b 0,,56 53,,46.1

6,,17 16.1 16.1

a 7,,13 6 54,,02.2

=

47.4

b 1,,14 54,,43.6

6,,19 15.8 15.8

a 7,,33 54,,59.4

=

b 2,,20 55,,25.8

6,,17 15.9 15.9

a 8,,37 41.7

=

b 0,,21 52,,39.8

6,,17 15.7 15.7

235

6,,38 6,,56,,55.5 15.875 = da

30

6,,17.5 ds

App. dif. in R and Dec. *s a & b

*b - *a

Δa - 15.87 Δδ - 6,,17.5

~~Another star of 9m prec by about a field & was [illegible] Vega~~

h m s h m s

296 6,,58,,55.2 +12,,10,,16 Dec -10,,50 star a

+11.3 10,,53

6,,58 43.9 03

2,,10,,16

4,,48,,27.9

46,,30.4

1,,37.0

March 10 New Comet

The comet appears to me to show no trace of a tail. But rather a disposition of the nebulosity in a direction perpendicular to the Sun's direction. This is not very certain.

Star of 11 mag north prec. comet. star of 11 mag. = a

*a 8′.06″ 6.23.12.0 ~~.04~~
16.0
6′.34 34.9
34.8

☄ 1.32 23.46.9
3.50.8

=

* 8.05 33.6
24 37.5
6.30
35.2

☄ 1.35 5 8.8 35.1
25 12.6

=

* 9.21 52.9
25.56.9 34.9
34.9
29 8

6.21
85
Δδ 6.28.3

☄ 3.00 6.27.8
6.26.31.8
30 158.7

Δδ 6′.28″.3
scale correc. −1.0
6.27.3
cor for ref. +.1
6.27.4

Δα = 34.97 comp. star of 11 mag. and comet

h m s ° ′ ″
*α app. 4.43.54.93 δ − 7.21.26.5
Δα + 34.97 Δδ −6.27.4
4.44.29.90 −7.27.53.9

6.25.09.78 Mean
error of chron. 12.4
6.24.57.38
23.13.04.09
7.11.53.29
1.10.74
7.10.42.55 M.S. Time

23.12.17.35
46.74
23.13.04.09

March 10th 7h.10m.42s.55 M.S. Time
☄ − *
Δα = +34s.97 Δδ = −6′.27″.4
☄α 4h.44m.29s.90
☄ δ − 7°.27′.53″.9

March 10

comp. of star of 11 mag. with star of 9 mag
b is south prec. star of com.

b = 9 mag
a = comp. star same as a on prec. (Page

9 mag star b 4„41 6„30„27.2
31.2

b is Lalande No. 9068

2„06.8
′ ″
1„07
2„06.8

*a 5„48 32,0
6 32„38.0

=

*b 3„30 7.2
33„11.3

1„06
2„06.8
2„06.7

*a 4„36 14.0
6 35„18.0

=

*b 5„13 51.9
6„36„55.9

1„06
19
2„06.9
2„06.9

*a 6„19 Δδ 1„06.3 58.8
6„39„02.8
49
2„06.82 = da

Dif. of Æ and Dec. of stars a & b – a is the star compared with the comet – *a – *b

$\Delta\alpha + 2^m06^s.82 \quad \Delta\delta + 1'06''.3$

Another Star 9th prec by a field & was 6′00″ N. of b
236 54.5 H 1„58„20 Dec – 7„22 Star b = 9th

6„41„08.0
62.5
6„41„01.2
1„58 20
4„42„41

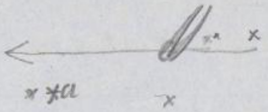
Star b over side of Scale 236 feet
$6^h41^m08^s$
+11
6„40 57
w H 1„58 20
4„42„37

March 10

Star a and comet comet south fol star *a 11 mag

Comet has an irregular but ill defined nucleus

The coma appears elongated in the direction of north preceeding side - slightly however -



*a is the same one with that on pre. page

Pos. 89..01

Dif. Dec. *a & ☄

7..24..30 $15^{r}73$
26..30 16 40
28..00 17 03
~~44~~..00 19 16
7..26..20 16 39
43..30 23 94
45..00 23 80
7..46..30 24 88
15 80 12 62
7..45..00 24.21
26..20 16.39
71..20 2) 40 60
Mean 7..35..40 Mn. 20.30
Chr. error 13 30.33
7..35..27 10.08
1829.8
18024
5.927 = Δδ
98.294
1..38.29 = Δδ
7.82
9.8
6256
7038
96636
1..16.64 mot. in $18^{m}..40^{s}$
cor for mot. $1^{m}..21$ 5.33
1..32.96 = Δδ at $7^{h}..36^{m}..48^{s}$ sid. Time

18.7) 76.64 ($4.1''$ = mot in 1^{m}
748
184

Dif. AR

~~*a 7.. 5..6.0~~ ☄ ~~57..~~
~~*a 33 14.5~~

*a	18.5 ☄	4 49.0	30.5		Mero
*a	7..34 27.0 ☄	7..34..58.4	31.4		$30^{r}33$
					30 35
*a	48.0	6 19.0	31.0		30 33
*a	7..35..56.5 ☄	7..36..28.0	31.5		30 32
					13
*a	58.0	7 28.5	30.5		30.33
*a	7..37..06.9 ☄	7 37..37.4	30.5		
*a	45.0 ☄	9 16.0	31.0		
*a	38..54.0 ☄	7..39..25.0	31.0		
		56 ~~22~~1.3	7.4		
		7..37..02.67	30.925 = Δα		

2 = 4 66
7..37..00.67
Chron. error 12.6
7..36..48.07
23..13..04.09
8..23..43.98
1..22.52
1853 March 10^{th} $8^{h}..22^{m}..21^{s}.46$ M.S. Time

☄ - *

Δα + $30^{s}.925$ Δδ - $1'..32''.96$

☄ app. α $4^{h}..44^{m}..25^{s}.85$
δ - $7^{\circ}..22'..59''.5$

a is star of comp.

*a's Position derived from Lalande No. 9068

*a app. α $4^{h}..43^{m}..54^{s}.93$ δ - $7^{\circ}..21'..26''.5$
30.92 1..32.96

☄ app. α 4..44..25.85 δ - 7..22..59.46

H

52..46.5
54..3.2

March 10

Star b of these observations is Lalande No. 9068

Lalande 9068	α 4ʰ..39ᵐ..14ˢ·71	N.P.D. 97°..28′..18″·6	An. pre. +2·905	An. p −6″·923
	2..34.02	−5..55.7	sec var + ·001	sec. var + 212
Mean	α 4..41..48·73	δ −7..22..22·9	1853·0 2·906	6·711
correc. to app.	−·62	−9·9	5·3	5·3
*b^s *^s app.	α 4..41..48·11	*b^s δ − 7..22..32·8	8718	20133
	2..06·82	1..06·3	14530	33555
*a^s app.	α 4..43..54·93	*a^s app. δ −7..21..26·5	154018	355683
			2ᵐ..34ˢ.02	5..55″·680

March 10 f = −6″·72 g + 3″·28 G 207°..02′ h = + 18″·78 H 280°..29′ i − 8″·00 α = 4..41..48 = 70°..27′
δ − 7°..22′..22″·9

H 280..29
α 70..27
H+α 350..56
sin. H+α 9.19751 n
sec. δ 0·00360
h 1·27320
0·47481 n −2·98

i 0·90309 n
cos δ 9·99640
0·89949 n −7·93
cos. H+α 9·99454
sin δ 9·10795 n
h 1·27370
0·38619 n −2·43

G 207°..02′
G+α 277..29
sin G+α 9·99629 n
tang δ 9·11155 n
g 0·51587
9·62371 + 0·42
f −6·72
−9·70
−9·28
3 09
−·619

cos. G+α 9·11474
g 0·51587
9·63055 + 0·43
−10·36
−9″·93

Weisse H.IV No. 842 AR $4^{h}.37^{m}.29^{s}.88$ Dec. $-7^{\circ}.18'.38''.3$ (1825) An. p. + $2^{s}.910$ δ + $7''.07$
$1.21.48$ + 3.16.3 sec. var − .06
α 4.38.51.36 δ −7.15.22.0 (1853.0)

Lalande No. 9068 AR $4^{h}.39^{m}.14^{s}.71$ N.P.D. 97.28.18.6 (1800.0) An. p + $2^{s}.905$ An. p. δ − $6''.923$
2.33.96 − 6.6.9
α 4.41.48.67 δ −7.22.12.7 (1853.0)

Weisse H.IV No. 999 AR 4.44.18.62 Dec. −10.47.20.5 (1825.0) An. p. + $2^{s}.829$ δ + 6.50
1.19.21 + 3.0.6 sec. var − .05
α 4.45.37.83 δ = −10.44.19.9 (1853.0) − 6.45

Weisse H.IV No. 1031 AR 4.45.32.41 Dec. −10.56.16.2 (1825.0) An. p. + 2.825 δ + $6''.40$
1.19.10 + 2.27.5 sec. var − .06
α 4.46.51.51 δ −10.53.48.7 (1850.0)

Weisse H.IV No. 1047 AR 4.46.16.33 Dec. −11.00.38.2 (1825.0) An. p. + 2.823 An. p. + 6.34
1.19.04 + 2.56.1
α 4.47.35.37 δ −10.57.42.1 (1853.0)

Weisse H.IV No. 1069 AR 4.47.20.00 Dec. −11.10.14.3 (1825.0) An. p. + 2.819 δ + $6''.25$
1.18.93 + 2.53.9 sec. var. − .05
α 4.48.38.93 δ −11.07.20.4 (1853.0)

288

March 12 Pm

Rigel

236 5..00..26.0 H East h m s 0..07..52 Dec − 8..21..22
18.7
00 07.9
7 52
5..07..59.9

5 00 26
5..00 58

5..05..52.3 H East 0..02..47 − 8..21..20
18.7
5..05..34.2
2 47
5..08..21.2

5..05..52
5 08.09

5..12..11 H West 0..03..52 8..21..20
18.7
5..11 52.9
3 52
5..08 00.9

5..16..05.5 H 0..07..42 8..21..20
N.A. 8..22..30
1..10
18.7
5..15..47.4
7..42
5..08..05.4

7..59.9
8..21.2
8..00.9
32..27.4
5..08..06.8

5..08..06.2
7..28.4
37.8

E.C. 5..21..00
236 5..20 4.2

5..21..00
1..13.9
5..19..46.1
5..20..04.2
18.1

1852phae.proj

March 12 Pm

Rigel

236 5..00..26.0 H East h m s 0..07..52 Dec – 8..21..22
18.7
00 07.3
7 52
5..07..59.9

5 00 26
5..00 58

5..05..52.3 H East 0..02..47 – 8..21..20
18.7
5..05..34.2
2 47
5..08..21.2

5..05..52
5 08.09

5..12..11 H West 0..03..52 8..21..20
18.7
5..11 52.9
3 52
5..08 00.9

5..16.05.5 H 0..07..42 8..21..20
18.7
5..15..47.4
7..42
5..08..05.4

N.A. 8..22..30
1..10

7..59.9
8..21.2
8..00.9
32..27.4
5..08..06.8

5..08..06.2
7..27.4
37.8

E.C. 5..21..00
236 5..20 4.2

5..21..00
1..13.9
5..19..46.1
5..20..04.2
18.1

4..55
5 07
12

II Comet 1852.

		Æ	Δ1			Dec			
	Dec 20	13.. 33..36			67.. 26.3				
			s -31.. 06			+76.5			
1852	Dec 30	13h.. 2m.. 30		m s -15..22	+68°..42'.8		-19.2		
			-46..28			+57.3		-52.9	
	Jan 9	12.. 16.. 2		-11..53	69.. 40.1		-72.1		+18.2
			-58..21			-14.8		-34.7	
	19	11.. 17. 41		+ 1.. 01	69.. 25.3		-106.8		
			-57.. 20			-121.6			+18.2
	29	10.. 20.. 21		+10	67.. 23.7				
							-123.3	-16.5	
	Feb 8	9.. 33	-47		63.. 19	-244.9			+18.2
			-30	+18				+1.7	
	18	9.. 03			58.. 53	-266.9	-121.6		+18.2
			-16	+24				19.9	
	28	8.. 47					-102		
					53.. 45	-308.			
			+14	+30					
	Mar 10	9.. 01							

March 10	89 01
8	89 15
8	89 06
Wires	89 7
Scale	90 3
Dif.	0 56

Dec 2	
Wires	89 16
Scale	90 00
Dif.	0.40