KG
11365
294
N 11

1867phae.proj..294S

Observations with E. Equatoreal.

1867 Oct 25 to 1868 Jan 16

(Original.)

Vol. II

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49 42
38 18
28 11

+15h 3m
+1 18

84° 46'
14
85 35

KG 11365.294.

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0 46.6 +2 27
0 51 +3 41

84° 46'
12 16
104 2

KG 11365.294.

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Friday 1867 Oct 25

C. A. Peirce observing

Double star near Oeltz. 22773

3½" Power

Position of axis of stars

248°.2 (154.8)
248.0
248.1
248.4
248.18

Double distance
49.558

Dist. haze

160 Ceti = Σ 91. Power no 4. Seeing good.

205.0
204.8
205.6
206.5
204.0
205.18

Microm 48.46 Double dist.

Clouds prevented further work.

9

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1867 Oct 27

Neb h 4775 Nothing to add to catalogue description

4779 " " " "

4799 is identical with 4801

Ross's description Exp to sf corresponds
Appeared resolvable to C & P who saw at any
rate 3 bright points in it.

4802 Does not appear "faint" to W or P
W considers it quite bright
P " " rather "
Description otherwise correct.

C & P { 4807 A little elongated, principally p to f a little s to n.
One bright point
in the direction of a long line of stars
at the end of which is the nebula. JW.

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1967phao.proj.294S

1867 Oct 27

G. M. Searle Observing.

Daphne & W I 417

0 of Position 2.60 N

Planet North 100.32 (microm) 2h 2m
100.40
100.19
100.45
100.43

Coincidence 74.11
74.06
74.08
74.06
74.07

Transit over three wires planet precedes. 2h 7m

Aglaia. & W I 354

2h 11m Chr. R A 4h 44m

−1° 16′ Small stars. Components 10 & 11.

Distance about 6″

Planet on wire e North ~~19.77~~ 23.80
23.75
23.77
23.53
23.57
23.63

Coincidence same as before
Transit over three wires. Planet precedes

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Leto and W II 57 Transit over 3 wires. Planet precedes

Planet S on wire 3

86.05
86.01
85.92
85.83
85.99

Coincidence

48.99
48.94
48.96
48.95
48.96

Daphne

Approx Read 98.78 $8^h\ 4^m$
98.64

Nemausa & W II 1076

A. S On wire 3

82.89
82.94
83.00
83.08
83.13
83.10
83.31
83.19

Coincidences same as before.

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1867 Oct 30 Wednesday

Telescope reversed. to E. of pier.

Zero 80.0

W I 273 and Aglaia
Δ 8 Planet south
37.68

Clouds prevented further measures.

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Thursday Oct 31st 1867

C. I. P. 06

24h 10m Telescopic meteor - going nearly due south.

Double Stars 3008

Position Axis 87°.8 Stars dancing
86.0
89.1
87.8 (A good reading)
89.2
89.5
87.8
88.17

822

Double dist. 48.33
49.58 1.25

48.28
49.49 (Sic) 1.21

48.32
49.58 1.26

48.28
49.59 1.31

1.25
1.26
1.31
2)1.27
.64

24
56

7188 54.66
935 55
6253 165
1100
935

Double star 2995 Southern Star a little largest
Both white. Stars dancing somewhat

Position of axis 320°.9
319.8
321.0
319.9
319.8
320 28

Distance 48.37
48.40
48.36
49.38
49.39
49.38

Perpendic to line of 48.38 yes.

49.37

320 other side
90
410
360
50

Dist

Coincidence of wires 48.84
48.86
48.87
48.84
48.84
48.862

37
86
51
48
.50

48.38
86
.48

48.38
49.37
48.87

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Double star N°23 Maedler Both quite white

Aris 355°.5
356.9
355.7
357.5 Bad
357.2
356.2

48.94
48.93
48.97
48.95

49.88
49.89
49.84
49.88

48.88 48.88
49.88 47.95
1.00 .93
.93
.96

95
×88
2.83
1.4
186
183

3100
1204
9.684

.93
46

48.89
48.84
48.88
49.42

Satellite of Neptune not visible 4 G. M. S. after long watching, lights excluded.
or C. A. P. 2h

Nebula or rose d.

Reading micr on comparison ✳ 91.03 Nebula S
Comp Star N°1 390
89.60
89.83

Transits of both objects taken Nebula – Asteroid – Star, Daphne

Nebula v Faint 14m5 mags 1½' diam. Round. Well marked nucleus

nearly on the same parallel
preceding
Nebula 345 found, not the same as the above.

Dif. Decl. Daphne S
70.66
70.90
71.18
71.33

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Thursday Oct 31.

Axis of Nebula & Star 151°
152

Pen made no mark

Diff. Decl. Asteroid & comp. sta (Daffne) 71.99
71.88
72.16

Nebula 90.84
90.31 Best. 2 wt.

Coincidence nine ± 48.92
.90
.91

Weis 1/12 57 – Aglaja Planet 8

40.27
40.23
40.09
40.39
40.25

0° of position 80.0 which has been used.

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Friday Nov. 1st 1867

~~G. clk.~~ $22^h\ 30^m$
C. S. P. Diameter of Jupiter Polar 69.77 / 69.74) 69.755

Equatorial ——— 69.44
69.51
69.45
69.39
4)179
450

Coincidence of wires 74.00
74.01
74.03
74.02
74.015
69.755
4.260
69.450
4.565
.305

0.6294 | 0.6594
9.4843 | 9.4843
1.1451 | 1.1751
13.97 | 14.97

Clouds prevented further obsns.

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1867 Nov 2 Saturday

35 Piscium = Σ 12.1

~~38 Piscium~~

0h 10m	19.5	Large faint, unsteady	
	20.1	Comp. soelta	
C S P	21.4	2 dist	
	20.9		coinc
	22.2	72.95	74.01
mean	20.82	.84	.02
		.91	.00
		~~.78~~ Reject	
		.92	
		mean ~~72.880~~	72.915

75.19
.17

G. W. S. Neptune's Satellite Satellite N following

Angle of Position	137.°0	0h 42m
	318.1	45
Distance	50.46	57.m3 5s
	50.54	59m 30 1/2s
	50.57 (½ mt)	1 1 9
90° + (49.°7) nine	47.25	3 30
49.8	47.24	6 20

Coincidence of Wires 48.87
48.87
~~48.87~~

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Nebula follows companion ✳ (Arg Z -1°. 190)

45ˢ

α south of star 7' elongated, small (2 nuclei?)

3 New Nebulae — Precede same star 1½ᵐ

h 322, 323. = Two 9' S of it Stellar
The other 11' S of it — Bright in mid.

another Nebula 9' or of these two extremely faint & small.

1ʰ 41ᵐ 310°.7 Daphne & Arg Z -1°, 190.

	1ʰ 50ᵐ	Diff Decl.	
CSP.		93.37	Planet
		93.48	south
	55.0	93.51	
	56.5	93.08	
	58.5	92.87	
2	~~2.8~~	~~84 39~~	Planet foll.
	~~4.7~~	95.74	
	6.6	84.94	
	9.0	84.63	
	13.5	84.78	

G.W.S Double Nebula & Neb. s. prec. Diff R 2ʰ 17ᵐ 7ˢ.3

22ˢ.2 14ˢ.9

38ˢ.1

52ˢ.9 14ˢ.8

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Diff R.A

Double Neb a Preceding star a Following Neb 20m 30.2s 28.0
58.2 41.7
39.9

~~Follow. & S~~

23 12.0 27.9
24 39.9 41.3
25 23.2 ?

Diff Double Neb a Following Neb. in Decl.
34.65
34.48

Star 19.8 41.3
Following Neb. 1.1

Neb. Due N of Double. (perhaps 2s following it)

Double Neb comp with that 6.65
6.16

A bran new nebula. S preceding Double. brighter than that fainter than that immediately f. p.

Diff dec with double neb. 24.18
24.53

all above coincidences with wire d.

Double neb. & comparison star (Arg −1° 190)

Diff Dec. 19.70 wire e.
19.62

Following one. 8.69 wire d.
8.78

Transits

Neb. Last found 2h 53m 51.7s 13.3 3h 7m 3.1 14.1
Neb. S preceding double neb 54 5.0 15.8 17.2 15.8
Double Neb. 54 20.8 2 10.5 33.0 2m 10.9
Neb. 1st found. 56 31.3 9 43.9

Neb. due N of double omitted.

neb last found 36.0 13.8
Neb S pre. double 49.8

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Saturday Nov. 2. 1867

~~⊙ of Position~~

⊙ of Position 80°.1
80.2

Aquila α Weiss ($1^h.-2.57$)

2 "

Asteroid S	Diff Decl.	
$3^h\ 17^m$	26.33	comb + on wire e
18	26.36	
19	26.35	
19	26.31	
20	26.23	

Asteroid precedes	Diff RA	
$3^h\ 22^m$	66.56	Wire e
23	66.43	
23	66.39	
24	66.51	
24	66.37	

Coincidence of wires 74.08
.07
.04
.05
.03

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Monday 1867 Nov 4.

Region of Europa . . .

W 266

75°

54°

Arg 566

Region of Thisbe

2

1

W 717

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W 717 & 1 1 & 2

5	26·3	26·51					
	27·5	72				Comc d	
	28·4	57					
	29·0	54					
	29·8	61					
	31·0	14·05	43·5	29·81			48·91
	32·9	13·77	44·3	29·86			92
	33·5	13·77	45·4	29·80		"	87
	34·2	13·95	46·8	29·85			89
	35·0	13·67	48·5	30·82			88
	35·7	13·86					
	36·5	13·90					
	37·5	13·83					
	52·8	26·54					
	53·5	26·62				"	
			56·8	27·80		comc e	74·01
			58·1	28·01			98
			59·0	27·83			99
			6 0·3	24·78			97
							74·00

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Nov.
1867 ~~Oct~~ 25 Tuesday

hr. 23b Two satellites of Jupiter as a double star.

JW

	20?	80.6	
		79.5	
		79.8	
		79.6	
0	22.9	80.6	
0	24.0	74.60	
	.3	.601	
	25.0	585	
	3	59	
	25.6	609	
	26.0	73.34	
	.2	.34	
	5	.39	
	8	.39	
	26.9	.33	blazing considerably
	27.7	38	

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1867 Nov. 5

G.M.S Observation on a Double Star

Zero of position 79°.8
79.7

Comparison * W xxi 1312. Double * follows it & the north.

Diff. Decl 61.12 Double Star N
61.13

Coincidence 48.86
48.86

Transits

	0	41	35.9	1h40.9
Double			47.8 (?C.1,8)	41.6
			55.3	41.1
Comp. Star		43	19.8	
			29.4	
			36.4	

Another Double Star.

~~Comparison *~~ Proves to be identical with ~~22,773~~

Another Double identical with Ölt zen 531

Another Double * identical with Ölt zen 751

Weiss IV 6H2 is double. = 4 Aurigae Σ 572.

Star 2 of last night was Thisbe.

Thisbe		Diff RA		Diff Dδ
1h	31m 30s	57.24	~~Diff RA.~~ 1h 36m 40s	71.28 Planet S
	32 20	.46		71.18
	33 00	28	38 00	71.17
	33 50	45	38 45	71.04
	34 15	40		71.20

Wire e Planet following Coincidence 73.99 Wire e
73.98
74.00

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Nov. 5. 1867. Tuesday.

Europome and Weisse III 908 C.S.P.

Δδ
37.92
37.42
37.66
37.48
37.70
37.685

Transits over three wires.

Europa and Weisse IV 266. G.M.S. 2h 3-3m

Three transits over three wires. Planet precedes.

Δδ
68.27
68.27
68.34
68.38
} Europa

Planet South on ♁.

82.96
83.06
82.95
82.84
82.97
} Arg Z. 562 (δ wrong)

Two transits of both Stars over three wires.

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Eurynome again chronograph not having worked.

Transits over 3 w. Star precedes Asteroid.

no rattle	35·27	corne. e	74·01
	·13		73·99
	·08		99
	·03		97

Nov 6 1867 / chron 236

Imm. 82 Aquarii 2 5 8·0 ± 0·5 observed with portable equatorial from W. balcony

Zero.	Thisbe & comp. star of last night
259·6	65·10
5	·13
·0	·03
·3	·39
·8	·16
3	

2 Tr over 3 w. Pl. prec.

1 Tr over 2 w 4 Aurigae & Thisbe

Planet about 10·5 south

Imm. of ☿ XXII 1203 on chronograph

Em. of 82 Aquarii lost. Star faint moons limb blazing violently.

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111

W_2 D 842 & Eurynome. 2 Jr. over 3 w.

46.44	Planet south	48.89
46.47		90
46.59		90
46.29		

Europa & W IV 255

42.98 Planet north on d

41.21	35.33	
37	35.44	Mic. wire placed successively
30	35.56	on the two objects.

43.08 Last rattle no count.

2 Jr. over 3 w.

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Nov 9 Saturday

Prisms of spectroscope adjusted to min dev. 9 MS

F	b^3	b^2	b^1	E^2	E^1
1677.0	1393.2	1387.7	1378.0	1314.2	1310.4
6.8	2.0	7.8	8.5	3.0	11.0
4.5	1.7	7.2	8.0	4.5	10.3
6.2	3.0	6.8	8.5	4.0	10.0
3.0	5.0	8.1	8.3	4.7	10.0

D	C
923.8	640.5
5.0	639.8
2.5	640.0
2.0	40.0
2.1	39.3

Prisms readjusted

D	C	E	b_1	b_{23}
923.5	638.0	1315.7	1382.1	1395.5
1.9	38.2	14.8	0.9	5.1
3.0	40.0	16.1	1.1	5.0
4.0	37.1	14.0	1.1	5.0
4.1	37.6	12.5	2.0	4.0

F		Other lines			
1678.0	1643.8	16.120	15.032	13.420	12.700
9.0	3.0	120	048	418	715
9.5			B		
80.5	1236.3	8.963	5.349		
80.5	38.2	963	342		
			343		
		E	344		$B b_1$
900.0	1243.0	12.732	13.175	346	13.461	13.878
1.2	427	743	182		481	875
			172			868
			198			872
						865

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b_{23}						F
13.970	15.080	15.610	15.870	16.210	16523	16.835
971	075	605	880	220	533	832
967						831
980						828
980						830

D	C	B
9.305	6.421	
303	420	
300	410	
300	408	
299	417	

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1867 Nov 11 Monday

Star found Aug 17 follows ~~2 Cet~~ Oeltz 19188-9 about 3m, 14' north of it. The s.p. of two as previously described. Region too low for more accurate measures, or to observe the duplicity though the larger star n.f. had that appearance.

C. S. P. obs. 3rd power ~ Mayo. 9 & 9. 9 MS.
A double star Oeltz. 22454 (line of stars parallel to line of eyes)

Position	Distance		
72°.8		49.34	48.70
72.6		49.31	48.69
74.3		49.33	48.71
72.8	Means	49.32⅔	48.70
74.4		2)×62⅔	
73.38	Dist	31⅓	

49.01⅓

W XXII 465

Mr. Clarke's New Double Star ~~One much larger than the other~~ small precedes

JW. obs. only seen well occasionally

Position	Distances	
20°	49.20	48.81
18.9	49.18	48.95
15	49.24	48.94
15	49.21	48.90
20		
18 (best)		
17.8		

.31
.15½

49.65½

20 Pegasi C. S. P obs. Equal mags.

Position	Dist		
36.6		49.12	48.83
33.7		49.14	48.83
34.0		49.16	48.83
34.8		14	83
35.8	Zero of position	80°.5	
34.58		80.6	
34.96		80.6	

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1867 Nov 11 Mon

Cass. Zero of position changed

Zero of position 80°.1
80.2
79.7 bat
79.7
79.7

Stars hazy but sometimes showing fine sp.

Σ 2847 Double star

Position 53.2
49.5
51.0
53.0 5.0
48.3
~~51,00~~

Dist 49.10 48.83
49.12 48.83
49.13 48.83
49.11⅔ 48.83

·28⅔
14⅓

37 Pegasi cannot be resolved

Double star 280 (card catalogue) Stars hazy

Position 1°.4
3.3
4.5
4.6
3.8
3.0
3.7

Dist 49.37½
49.43
49.37 57 5
49.46
49.40
49.40
~~44 396~~

Coincidence of wires 48.99
48.99
48.98
49.00
49.00
48.98
48.99
Mean 48.99

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Nov 13 Wednesday

Double $0^h\ 10^m - 13$ 22



Double. $\Delta\delta = 25'$ 8 & 12. Comp. due north.
Dist est 6" = W 0 113.

Imm 111 Tauri moons limb blazing very much obsn ± 3s on chronograph
Em. lost attention turned to wrong place
first seen about 2s before tap.

Imm 115 Tauri mean of two taps, very uncertain
Em. well observed 0s.5 too late.

Nov 15 Friday

Neptune; satellite not visible to S. or P. Air clear & seeing fair.

Set on W 0 113 but clouds prevented measures.

Nov 13 Wednesday

5 meteors seen by E. Goodfellow from 11^h to $13\frac{1}{2}^h$
6 " " " C S Peirce " 11 to $13\frac{1}{4}$
33 " " " " " " $13\frac{3}{4}$ to $14\frac{1}{4}$
3 " " " " " " $14\frac{1}{4}$ to 15

Clouds then came on.

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7) 4970 / 710 224 245

Nov 16 Saturday

Satellite of Neptune s.p. GMS 5 78 164 41 193 482

~~Nov 15~~

Watch time

9	9.7	90 + 224.8	47.54		
	13.7	228.7	.39	good measure 2 wt	
	17.5	225.6	.61		
			47.482	1.558	coincid ?
	20.5	227.6	50.90		49.06
	23.5	225.0	74		05
	25.7	222.8	49	½ wt	01
	27.8	226.9	60		04
			50.710	1.670	04
					49 040

Satellite v. faint. Measures made with extreme difficulty.

Watch fast of sid time $8^h\ 17^m.2$

W 0 113

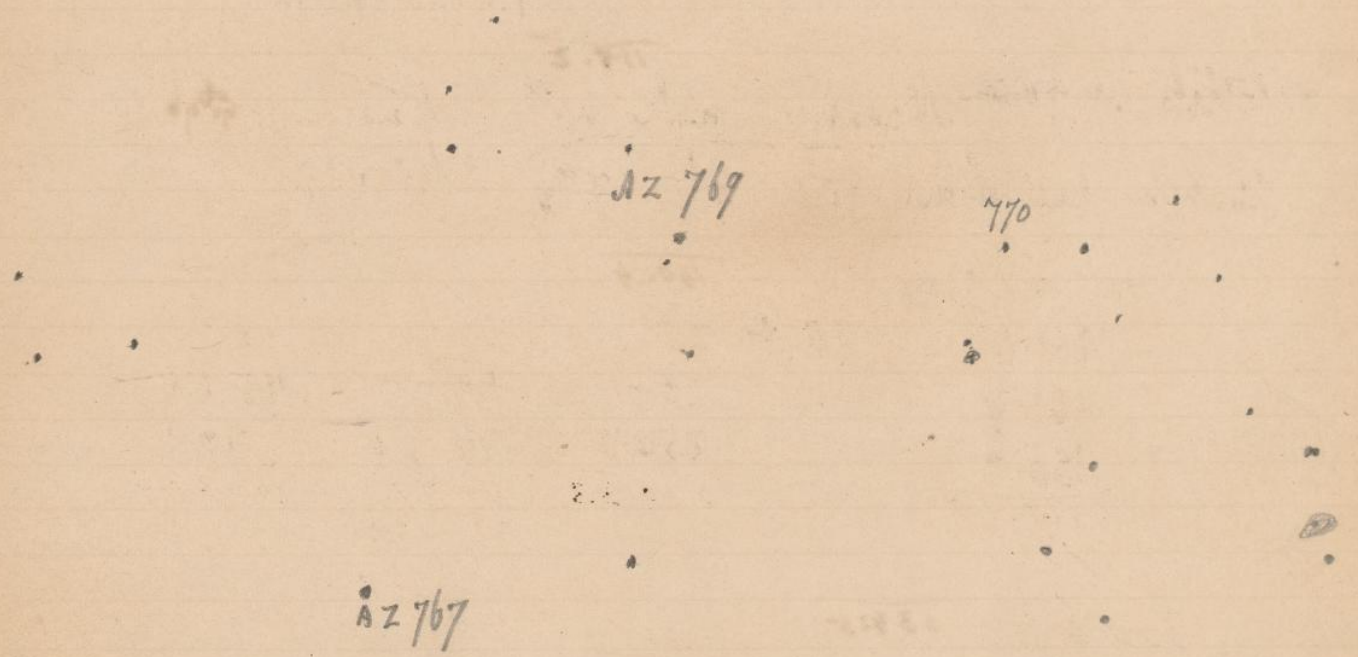
161.6	90 + 252.2	49.72	48.28	
161.4	250.0	49.75	48.26	
160.3	250.3	49.74	48.31	
161.10	250.83	49.737	48 283	
		48 283		
		1.454		
		7.27		

Zero of pos 259.3
259.3

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Region of Galaten.



Clouds.

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November 18 Monday

C. S. Peirce

A double star near Σ 2995 very faint indeed



Field of finder
* on wires

Position 195.8
199.5
191.8
196.5
195.8
195.5
195.7

Two fh to measure distance
4.1 But very wide

Another brighter Position 157.8
157.6
159.1
158.4
157.2
158.9
158.2

Double dist
45.71 52.57
45.30 52.94
45.57 52.39
45.53 52.64
7.11
3.55

Another brighter Position 188.6
140.0
141.2
140.6
140.0
141.8
140.4

Dist ~~49.46~~
49.54
49.55
49.64
49.67
49.58

Note July 15 1881.
This star has been assumed to be Σ 2995.



Field of finder

W.O. 802 Position 134.3
135.5
133.8
134.5
134.3
134.5

Dist
49.84
49.74
49.81
49.76
49.80
49.78
49.79

Note July 15, 1881. Apparently not W. O 802, which has for 325°, 5 1"; perhaps some other star in that region; certainly not Σ 2995 as given in C. S. P.'s reduction.

Zero of Position 258°7 258°8

Coincidence of wires 49.11 49.06 .03 Mean 49.04
49.09 .05 .07
49.03 .04 .05
48.99 .05 .02
48.98 .02 .99
49.07 .09

Observer thinks something must be the matter with his eye tonight.

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1867phae.proj..294S

6 12
1224
1141

385
748

Nov 18

G.M.S.

Double * $8^h\ 43^m$ R.A. $2°\ 26'$ S Dec
0 41 48 W 0 715.
-2 29 28

8th Mag.

Mags. 8 and 11 Companion N following Position about 40°

Distance about 6"

Satellite of Neptune not visible after long attention. Seeing poor. parallel

P. O. 251. 219.0 Companion p.s. Stars to eyes.
219.7
220.0
219.1
90+ 131.1 51.08
90+ 129.8 51.15 Mean 51.12 1/3
51.14
other side 228.05
224.03 47.06.
224.10

Mean 49.09
Dif- 4.06
2 0.3

84 Octi Comp. extremely faint n p

203.7
202.6

Dist. 49.51 a mere estimate.

Turned on P. III 98. but found the seeing too bad for measures.

Region of Galatea examined but ~~no trace of the asteroid~~ without result. found.

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Nov. 19. Tuesday.

C.S.P

P. XXII. 33.

Seeing not very good.

Position	Microns.	
~~2.8~~ 2.1		
~~4.0~~ 3.0	49.99	
~~4.9~~ 2.9	49.98	Stars par. to eyes.
0.9	49.97	
4.1	49.55	
4.3	49.52	
2.8	49.52	
3.35	49.735	

Two stars both about 11 mag. n.f. the above double, in same field.

Position of line joining brightest * in each double.	Dist. of two couples, across one of fixed wires.
101.8	78.99
101.9	78.90

principal * in P. XXII. 33. and star nearest to it.

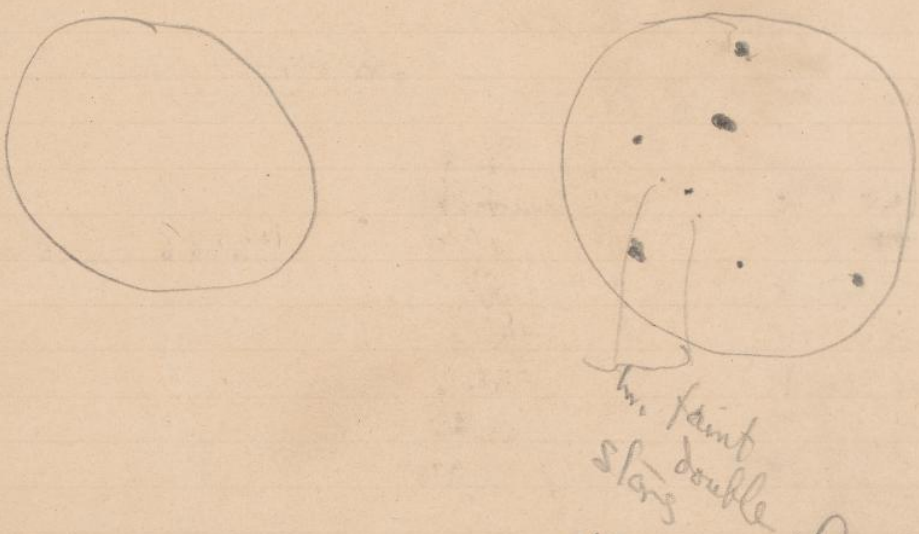
Position of new double *.		Dist.	
288.2		74.94	
288.8	better	74.95	Stars perp to eyes.
289.7	Reject	74.93	
288.2		~~75.05~~ Reject	
288.2		74.95	
~~288.24~~		74.964	
288.35		74.94½	

Note July 15, 1881. In measurement of distance of P XXII 33, C.S.P. assumed the last 3 readings, in the reduction as 48.05, 48.02, 48.02; for the Coincidence Nov. 18 being 49.04 and Nov. 21 48.98 it is likely to have been 49.0 approximately on Nov. 19. Allowing this, the distance of the 2 pairs is 78.94 − 49.00 (= 29.94 revolutions), 293".4; and the zero being 349°.24, the position angle is 67°.39; hence $\Delta\alpha$ 18^s.84, $\Delta\delta$ 112".8.

log sin 67°.39	9.9653	2.4328	270.9	log $\sin\delta$	0.0185
log 293.4	2.4675			m.co.log 15	8.8239
log cos 67°.39	9.5849	2.0524	112.8		2.4328 1.2752

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Satellite of Neptune visible but too ft. to be measured.

Obsns. interrupted by clouds.

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Nov 21 Thursday

C.S.S. I xxm 69.

Star parallel to eyes 2nd Power

Position		Star unsteady	
	266.6		49.58
~~269.4~~			49.58
	266.2		49.62 best
	267.0		49.59
	267.2		49.60
	266.8		
Mean	266.28		49.597

Meise 802 Star perpen to eyes 4th Power

Position		Dist (par. to eyes)	
~~290.7~~			49.11 ??
	292.1		49.15
	292.7		49.14
	291.2		49.14 ½
	291.8		49.14
		Mean	49.14 ½

[Coincidences according to previous measures 49.04)

Suspected another double star the first of a Trapezoid RA 0h 41m Dec 4° 6' N.

Liquid veins moved at this point. veins changed

Satellite Ψ invis to G M S		Satellite Ψ invis. to C S P	
G. M. S.			
Polar Diam.	Width of Neptune 49.162		48.857
	49.142		48.865
	49.146		48.860
~~48~~		Mean	48.860
Little confidence felt in measures.		Coincidence	49.000 48.995
			48.998
			48.990
			48.994
			48.994
			48.949

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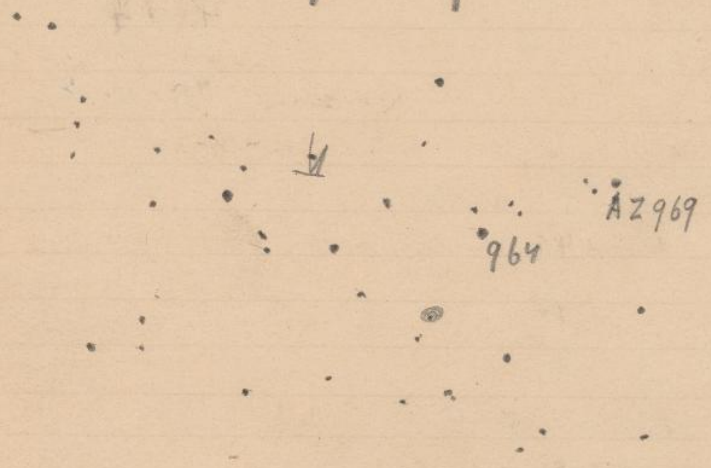
1867phae.proj..294S

					conc
W 0 715	131·3	CSP	49·70		48 986
comp. n. f.	131·8		·72		973
	132·5		·69		49·008
			·72		48·973
					992
					986
					982
					983
					978
					983
					[Lake 48·983]
					48·9844

Pers of Position 259°·1
259·1
259·2)

{ A very careful determination.

Region of Antiope.



						49·04
						03
						00
						03
						·04
						·01
4	10·2	69·33	Europa & W III 1182		16·9	61·58 fell.
	11·0	26	north.		17·8	·61
	11·5	36			19·4	63
	12·0	·16			19·9	57
	12·7	·44			20·5	60
	13·8	·36				
	14·4	·27				

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Nov 21 1867 Thursday

Europome & Lal. 6551

Δδ Planet south 74.15
64.50 coinc e. 17
16

Telescope had to be reversed

58.99
59.09 coinc d
18

A 13 mag star 58s.5 foll. 76.23 – d south of 6551
app = Arg 2. 577

Antiope & a star 9.5 mag s.p. on d.

5	49.7	57.84	f
	51.4	.71	
	52.4	.85	
	53.4	.78	

Chron. fast of sid. clock
2m 38s.3
by eye & ear.

5	55.5	62.51	n
	56.6	.42	
	57.0	.40	
	57.7	.41	

49.03 coinc.
02
99
01 49.014
02

Star & A Z 964.
57.47 Star south on d. precedes 40s.5
59

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Tuesday Nov 26

De

38 Piscium C.S.P. Stars ⊥ to eyes

Pos. Pair 19.7 Dist. ~~50.22 (bad)~~
19.7 50.193
19.8 50.197
19.5 50.194
19.7 50.194
50.200 ?

Searched for suspected double * of 2m! Cirl a small cloud or something prevented its being found. Afterwards thought I saw it double.

Stars growing nebulous

Σ 82 → 6" = Power Sta = Eye

Pos 44.5 Dist 49.365
44.1 49.449
46.7 49.338 tolerably good
46.8 49.342 good
49.1 49.408
48.5 49.380

480
49.380
48.577

42 ~~38~~ Ceti 3" = Power Sta ⊥ eye

Pos. 1.7 49.106
3.7 104
4.6 140
4.1 Stars very large dancing madly 126
4.2 139 very bad seeing indeed.
7.0

135
24

P.I. 123. 3" = Power Sta ⊥ eyes

Pos 130.0 St Chorg
136.8 142.1
137.5 141.0
141.1 140.5
142.2

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Nov 26 1867

GMS

Satellite of Neptune

C. S. P. thought he saw something close to the planet on the left, but did not see the known satellite; whence he doubts his observation.

Pos.	Dist	
90° + 53.3	50.23	2h 43m 10s Chron. time Sat n.f.
51.8	50.02	48 20
50.3	50.09	50 5
Good		
Coincidence	49.00	
	49.00	
	48.99	
49.0	50.03	53m 40s

C. S. P is positive that there is an appearance of something 180° less position than satellite and at the distance of 1½" or 2" from edge of planet

Drawing of W

51.0 50.19 58 00

Zero of Position 79.2 C. S. P.

Europa & W 1119

55.97 Planet south on d
56.01
56.20
56.13
56.08

2 Tr. over 3 w. also of W 1182 on last

A fixed star comp. with W 1119 Nov 21. Region mistaken

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4 ~~37~~ 4 30

Eurynome & W III 474

2 Jr. ocd 3w. Pl. fr.

50.59		49.01
55	Planet south on d.	48.99
70		49.00
61		

A fixed star was observed Nov 21 for Antiope.

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Wed 27 Nov.

Observed Neb. 5079. Small. pB. bM stars 9-10 mg. f.

Σ 23 1st Power

Pos.	
356°.0	49.888
6.8	49.948
5.2	49.960
5.6	.954
~~7.6~~	50.044
6.6	.962
356.04	

4868
2730

Searched for double * of 21st cloud region
Looked for Neptune's Satellite without success.

Ceti 160 2nd Power

Pos.	
27.7	Bad
27.1	Star next to invisible haze.
26.7	
25.1	
22.9	Too faint to observe

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Saturd aft Nov 30.

~~Piscium~~ } Target which
~~51~~ TI 123

Position — Stars par. to eyes.

105.2		51.81
106.5		51.82
105.0		51.77
106.7	Samp bad. Stars large. moving.	51.85
104.4		51.70 Wind blows tele.
105.2		51.88
105.7		
106.6		

047 5°
793

BAC 1244.

W III 8050 & Europa

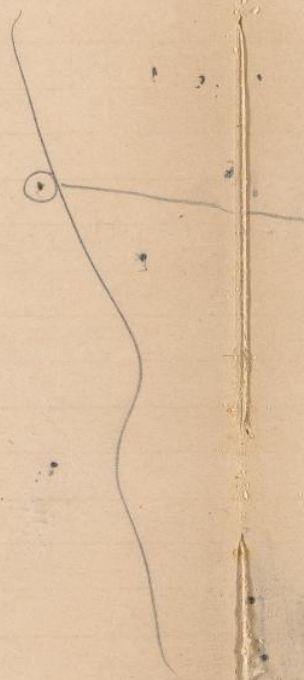
3 9.8	Planet fr. on d.	96.26	
10.8		60	
12.4		.15	conc
13.2		.49	49.02
14.4		.50	97
			02
			00
			01
17.2	" south on d	65.13	
18.3		.18	
19.3		.03	Zero of pos
20.0		.16	259.1
21.0		.19	.1

Faint comp. of ~~W III 1050~~ BAC 1244 14 mag. s. p.

302	50.39	
304	22	

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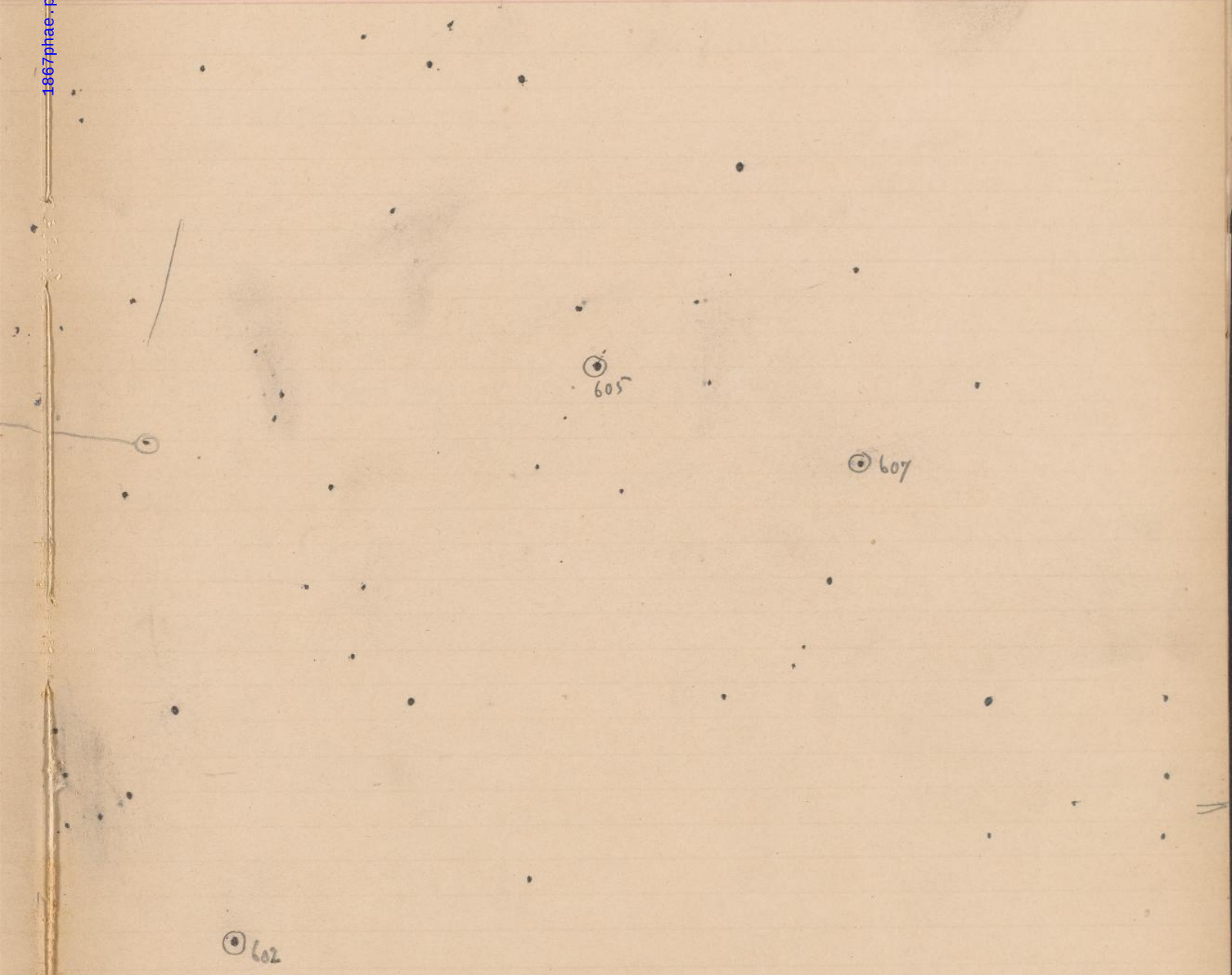
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Region of Galatea.



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Dec 1st 1867 Sunday. Q^n = Power

P XXIII 69

Pos.	Distance
154.°2	52.36
155.°4	52. 69
155.°7	52. 40
154.°3	
154.°8	

Σ 23

Position	Diff.
176.°4	50.08
174.°2	50.03
176.9	49.98
175.2	49.98
177.3	49.91
176.3	49.98
	49.99
	49.97 Bad
	50.01
	49.981
	0.086

Slow range & rotary; occasionally disappearing

893
49.992
49.004
0.988

P.O. 251 84° N.P. Setting

Pos	
219.6	51.06 Very careful.
219.6	51.03 good
218.3 Seeing bad	51.10
217.8 Dome too warm	51.07
219.0	51.19
218.4	51.072
	49.033
	0.39
	4.68
	1.635

Σ 86. 56.49 / 90°56' Setting Star ⊥ to eye

5.°0	50.30 to date
5.8	50.35
187.5	50.36
186.9	50.33 best
186.8 Seeing better. Dome in some respects quite cool enough	50.38
	50.334
	49.033
	1.301
	2.60
	1.041

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22
84 46 /
85° 8

42 Ceti $\frac{1/84\ 46}{85°58'}$ setting $\frac{11}{4}$ Power Stars ⊥ to eyes

187.3 Appearance exceedingly wretched
184.0
182.4
180.7
182.0
185.2
182.3

No use trying to measure the distance
Ther. in dome 27° F

∝ Piscium $\frac{8/4\ 48}{82°30'}$ setting $\frac{11}{2}$ Power Stars ⊥ to eyes
202.3
200.2
201.9
203.7
202.2

Cannot measure dist.
Ther 26° Feel cold

84 Ceti $\frac{8/4\ 15}{86°\ 1'}$ setting $\frac{11}{4}$ Power

Seeing better
202°.9
201.7
203.1
201.4 poor
202.3
201.3
201.8

49.61
49.60 Poor?
49.59
49.58
~~49.59~~ Seeing very much better
49.64
49.60
49.55
49.583
.083
.500

$\frac{560}{112}$
448

P III 98 $\frac{8°\ 4\ 48}{84\ 37}$ setting
288°.0
290.3
285.2
284.9
288.8

Dist. not worth observing.

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Galatea & BAC 1377

3	43	10.0
		20.5
		28.0
3	46	0.5
		10.5
		17.5

Chrono 236 eye & ear.

Planet fr. about 3' north.

3	59	24.5
		34.5
		41.5
4	2	14.5
		24.5
		31.5

Faint through clouds.

Obscured entirely.

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1867 Monday Dec 2

P.O. 251

Clouds prevented seeing.

Ceti 160 $\frac{-2}{84}\ \frac{26}{46}$ $87°\ 12'$ setting 2nd Power Star ⊥ to eyes

P.o 205.5	49.56	Illumination bad
206.4	49.55	better
205.0	49.47	
206.6	49.54	brighter star S.f.
205.6	49.57	
	49.5550	

P.I. 123 $\frac{6\ 58}{84\ 46}$ $77°\ 48'$ Ellipse $\frac{1.72}{.032}$ $\frac{1.68}{4.8}$ 8th Power Star ⊥ to eyes

Seeing hardly good enough for so close a star. Stars jumping

319.5	49.15	Hardly to be called a measure
318.6	49.18	If pass, wordle still
318.3	49.18	Better better
319.1	49.18	
318.2	49.17	Best.
	49.1733	

α Piscium $\frac{139}{26}$ $\frac{1}{1}$ Cannot be observed.

GC Ceti $\frac{3\ 46}{84\ 46}$ $87°\ 44'$ 1st Power Star ∥ eye

~~296.8~~	50.70?
300.9	50.55
299.5	50.67
299.0	50.64
298.7	50.60
298.3	50.58
299.2	50.68
	with 8th P
	50.65
	.62
	.64
	.62
	.64
	50.634
	49.033
	1.601
	320
	1.281

To show the state of seeing & measure false disk of large star 49.48
49.38

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Dec 2 1867

84 Ceti $\frac{1\ 15}{84\ 46}$ $\frac{}{86\ 1}$ setting Position $\beta^{10} = P$

Star not fit to observe 057.0

Coincidence of Wires $\beta^{H} = P$

	49.032	6H P.
	030	49.033
	037	032
slight turned up	022	037
	022	039
	011	037
	028	036
	016	~~018~~ ?
Both wires cannot be brought to a focus at once	037	029
	026	028
	013	028
	013	033
		49.0329

$1^{st} = P$

Zero of Pos

258.9

258.9

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1867phae.proj..294S

W III 306 & Eurynome
2 Tr. over 3 w

76.16	259.1	
15	.0	Planet n. f.
10	.1	Comp. on d.

Galatea & B A C 1377

50.19 (½ wt) Planet south on d.
39

2 Tr. over 3 w. Plan. fpr.

50.47
44

Antiope & W T 610.

42.88 Comp. star on ◎
69
84
94

♓ Tr. over 3 w. Planet foll.
Planet extremely faint.

Region of Concordia.

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1867phae.proj..294S

Dec 3 Tuesday

A fixed star was obsd. last night for Antinoüs.

Arg Z +15 No 974 & a star (taken for b on cordiàs). n f.

1 Tr. over 3 w.

Δ δ star on d.	
95.98	coïnc
.93	49.03
96.00	
95.72	reject (clouds)
96.08	

C. S. P. observed a star at the Fremont Temple

1867 Dec 4th = Wednesday.

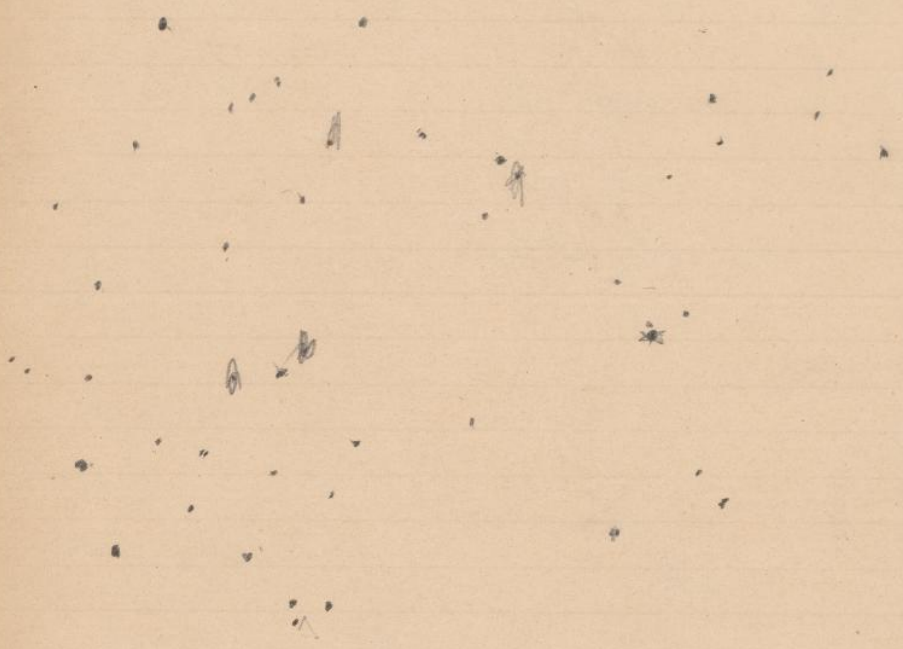
Clouds came up just as observing began. 23h 15m

Region of Antinoüs

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1867phae.proj.:294S

Region of Concordia



Turned on Uranus but found the seeing too bad for measures.

1 Jr. over

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1867phae.proj..294S

Thursday Dec 5 1867

C. L. P

Σ 23 $\frac{8\frac{1}{4}}{85^{\circ}}\ \frac{22\ 46}{8'}$ Setting

Too near the moon

51 Piscium $\frac{8\frac{1}{4}\ 6\ 14}{7\ 8^{\circ}\ 32'}$

Position	Distance
~~266.3~~	~~51.84~~
266.0	51.83
~~265.8~~	~~51.85~~
266.1	~~51.85~~
~~266.8~~	~~51.84~~
264.4	~~51.79~~
Mean	51.836
	49.033
	2.803

Star parallel to eyes

Dist C. N. Tau Obs. 51.85

Thin Clouds covering sky.

$\frac{2803}{561}$

$22''.42$

Ceti 160 observed with ~~6th~~ 5th power.

Position	Distance
~~206.7~~	
205.1	49.48
204.7	49.51
204.4	49.511
204.7	~~49.41~~
204.0	49.48
	49.51
	49.496
	49.033
	463
	$3''.71$

42 Ceti $\frac{1\ 12}{8\frac{1}{4}\ 42'}$ $85^{\circ}\ 58'$ 5th Power

Position	Distance
182.8	49.16
183.7	49.19
183.0	49.18
183.2	49.18
184.3	49.16
184.8	49.170
184.6	49.033
	137

$\frac{258.9}{54\ 4.1}$ 225.1

$\frac{184}{258}$ $\frac{}{45}$

$\frac{137}{24}$ $1''.10$

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1867phae.proj..294S

α Piscium $\frac{2°\ 7'}{8\ 4\ 46}$ / $8\ 2°\ 39'$ setting

6 Lt Power

Position	Distance	
198°.9	49.37	Star moving
199.4	49.38	exciting disk ed in cloud.
199.5	49.37	visible at intervals
201.7	49.39	
200.9	49.38	
201.3	49.372	
201.3	49.033	
	.339	clouds.

3 3 9
c 8
2 7 1

Antiope & W₂ T 610 G M S

1 Jr. over 2 w Planet prec.

93.02 ½ wt
26
30 Planet S and
34 ½ wt

49.05
06
06
08
08

2 Jr over 3 w

1st 2 w. of comp. ~~had~~ two late

~~2d 3 w. of planet back comp. lost.~~

Obsn. caught between ~~through~~ clouds.

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1867phae.proj..294S

Saturday Dec 7

Ponds just cleaned 11/6

Σ 23 85° 0′ 0h 16m True Sid T Stars ⊥ to eyes
large white lower a little greyish 3" = Power

P.o. 355°.2	50.04
~~357.2~~	50.00
355.3	49.97
355.4	50.01
355.9	49.99 Too close
355.11	50.03
355.38	49.98

50.003
49.033
1.970
19
17.76

large slightly bluish. Lower purple

Time 0h 32m (Four m subtracted in all cases from Chr Time)

~~84° 41′ Sidt~~
P.O. 251

Zero of Pos 78°.9 Stars morning
79.1
79.3
79.0

Time 0h 47

P.O. 251 Stars ⊥ to eyes 3" = P.

39°.2	51.14
~~39.7 Uncomfortable position~~	51.09 ?
39.3	51.10
39.4	51.04
39.8	51.18 good
39.2	51.14
39.38	51.07

7)71
51.101
49.083
2.068
414
1.654

Stars v large & dim

Time 0h 49m

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Dec 7 1867

42 Ceti. Stars too close for to-night
Time 1h 22m

Σ 125 1st ☩ N.B There is another double n.f. this one)

Star ⊥ eyes

358.7	2nd ☩	52.80 ?
350.2		52.75 Careful
358.4		52.83 ?
351.5		~~52.63 Star v. dim~~
352.0		52.74 Pretty good
353.7		52.85
352.6		52.82
2nd ☩ 351.2		52.77
350.8		52.81
352.9		
352.		
352.8		
352.5		

Conc. of wires without illumination by light of ☾
5th ☩ lower

49.028	
030	
025	
~~014~~	001 062
023	
026	
030	
026	

66 Ceti Time 1:59 Rather too near moon

Time 2:28 2nd ☩ Star ⊥ eyes

84 Ceti ~~2° 28' Dec~~

26°4	49.58	Appr. disk of large
22.2	49.47 Good	☉ is 49.44
24.1	49.51	Hence the badness
23.0	49.61	of the measures
24.3	49.61 Good	
	49.12½	

Time 2:46 Cloudy

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Sunday Dec 8

Became definitely fair at $0^h 45^m$ Then in done be
fore opening 30°F

Ceti 160 ~~Aur~~ quite too hazy for any observing.
$1^h 30^m$ looked again found it still too hazy for work

Calliope & ~~Iris~~ Arg Z + 30 No 1098.

	236	Δα	GMS
4	31.5	43.60	
	32.9	59	
	34.0	45	
	34.7	30	
	35.7	.18	Planet s p.
		Δδ	
	38.2	47.34	
	38.8	20	
	39.4	41	
	40.4	39	
	41.2	44	
		49.02	
		.03	
		.01	

Egeria & W VI 282-3.

	38.11	7423	
Plan. s.	05	24	3 Fr over 3 w. Plan. foll.
	38	23	Wires set at 179.2 ~~Apparently~~
	35		at least found so next night.
	.53		

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1867 Dec 9 Monday

Egeria & ♈ ♈ 1 282 – 3

hr	23 6		
2	57.3	59.80	Plan. fpr.
	59.1	.62	
3	0.0	.70	
	0.8	.72	
	1.5	.57	
	3.1	62.30	Planet n. on e.
	4.0	25	
	4.7	30	
	5.3	25	
	6.2	26	

74.24
26
18
19
21
24
23
22

♍ Calliope & Arg Z + 30 no 1098
5 Jr. over 3 w.
9n 1st two wires set at 170.1

43.23	Planet n. on e.	
14		
42.88		74.19
43.10		20
42.96		

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8h 46 / 84, 42

Tues Dec 10

Ther. before opening dome 20° F

Σ 23 Star ⊥ eyes 1st P. have never observed with seeing so bad.
Time 0h 10m Blue stellar nebula precedes star.
v a little n of it

174°.4
175.5
174.9 seeing much improved
174.9
~~173.0~~
174.4

259°.5 52".65 } neb + star
169.7 58".78

50.06
50.10 too wide
49.98
50.23
50.12
49.98 Good
50.00 Careful
50.09
49.98 Careful
49.99
49.99

Suspect dome is too warm.
20° F
Time 0h 50m

The observer without referring to previous measures has no doubt that the split is 49.99 or between 49.98 & 50.00

Ceti 160 $\frac{28}{87}\frac{26}{12}$

Ther 16°

205.2
~~204.4~~
205.1 Stars moving much
205.8
~~207.2~~ poor
205.9
205.4

49.87 too close
49.54 too wide
2nd P 49.88 Poor
49.65
49.51
49.49

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Near. α Ceti Ther 15° F

~~P.O. 2 51~~
M

α W.T.D. June 2h 0m

190.6	49.57
191.8	49.68
191.0	49.69
193.0	158
190.4	58



2h 56m R.A.

2h 15m

C. S. P. observed occultation of

Hunted for ☉ but could not identify it

Can't resolve it

Σ 787

21 24	2 42
84 46	5 37
63 22	2 55

21 55	5 28
84 46	3 00
62°51'	2 28

Jauri 380

277.0	74.60
276.4	.59
274.0	.58
275.7	.58
274.3	.61
274.2	.61

Position of at time of emersion 3.26

359°

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12 Lyncis $4^h\ 40^m$ 9 M S

A B Power no 4

34.0
33.4
34.5
35.1
34.3

Stars parallel to eyes.

		coinc
49.21	48.92	49.08
19	97	06
17	92	07
21	94	
19	92	

$\frac{A+B}{2} \cdot C$

48.12	90 + 132.6
12	132.5
14	133.0

Parallel to eyes

42.1
41.7
42.4

14 Lyncis

	est dist
102.4	49.14
103.0	14
102.6	

Seeing four stars distinctly seen only by glimpses.

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P VI 174 40·0 comp south
39·1
41·1
42·4 Parallel to eyes

90 + 131·0 48·70
129·0 49·61
133·1 59
132·1 ·67

Σ 1037 209·9
206·2
206·0 Perf to eyes Seeing too poor for distance.
207·0

nero 259·3
3
3
8·8
9·3

Σ 1119 9 The foll. of two on the same parallel.
183·0 49·42
0·2 38 Perf. to eyes.
2·0
comp. north.

49·02
02
04
04

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Wed Dec 11

Look out for your comet near Σ 23

Σ 23 What precedes is a star. 4h = Power

Δδ	51.84	In a cloud	Lost in clouds.
	51.94	" " "	From memory should say about 40.00
	51.81	" " "	
	51.79	" " "	Δα Glimpse 38.37 9h 8m Watch
	51.86	" " "	V. Vague Glimpse 38.43
Time 0h 10m Chron	51.95	" " "	" " " 38.49
			38.6 9h 13m
			Best I have had (read) 38.71 9h 16
			Tol. good 38.46

9h 20m Star has come out & I now see distinctly that it is a star of the 12 mag. Δα 38.50
38.89 do v. ft in moonlight
39.00 In clouds again

38.50 58.78
48.03 48.03
9.53 10.75

Watch 8m fast

It appears to have moved since last night but I do not in the least think it has

Clouding up for a storm.

2h 35m Glass Sid T.

84 Ceti. 1st P.

209°.8	Middle before finished
206.5	
205.0	
204.5	
203.8	a quarter wt to this series
202.4	

49.63	
49.70	
49.66	
49.77	Very very bad Too cloud
49.48	
49.44	
49.66	
49.65	

one tenth weight to this series

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Tried Long for the star near Σ23 but caught only momentary glances of it.

Clouds.

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Monday Dec 16, 1867

~~P.O.25T~~ +4'

Neptune's Satellite

G. S. P. can barely see it.

G. M. S. Measures it. obs

1	h chron m 23 6 s		
	24 20	90° + 53°.6	50.80
	27 10	50.4	47.38 other side

Coincidence 49.04
49.01
1.66
1.96

Sat S.P. V. doubtful Sat. excessively ft.

Σ23 Little Star Δδ 51.35 Best seeing on it by
51.67 far that I have had
51.58
51.78 Bertsch
51.78
51.49

Δα 59.64

Plainly then a fixed star
Double star it self.

357.0	50.02
357.3	50.02
~~359.3~~	50.00
356.8	50.00
356.9	50.03
356.6	Mean 50.014

Mean 356°.92

A fine measurement.
Double weight

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Triple ~~Double~~ star found by SMS. Oct 2.

Pos A B	Dist A C
52.4	47.60
51.9	55
51.1	
52.4	
49.49	317.7
48	315.7
	313.3
	316.5

A = 9
B = 10.5 foll.
C = 12 ~~north~~ south

Same 12 mag. star in place of Arg Z. +14 no 577

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Tuesday Dec 17 1867

Zero of pos. 79.2 Galatea & W IV 33

17.10	Comp on e	74.25
19		22
24		23
		22

3 Jr. over 3 w.

Planet n. f.

Thisbe & W_2 III 1183

3 Jr. over 3 w. Planet s. p.

54.57 ½ wt.
40
38

W_2 IV 1406

~~Aug 7~~ & Antiope

1 Jr. over 3 w.

46.96	Planet south foll
94	
47.04	Comp on e.

1 Jr. over 3 w. mean of two taps on 2d wire for planet.

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C. S. Observing Wed Dec 18

51 Piscium 1' St P. Nat'l eye $t_0 = 0^h\ 0^m$

85°.6	52'.80
86.0	.80
85.5	.81
85.8	.92
86.1	.93
85.80	.89
	.74
	.72
	.96
	.84

P. S. 251 $t_0 = 0^h\ 0^m$ Nat'l eye 3' = P.

37.5	~~57.02~~
37.9	57.10 Better
38.1	57.10
38.4	57.08
37.7	57.08
39.0	57.07
38.8	

42 Ceti 3' = P $t\ 0^h\ 10^m$ seeing hardly good enough Nat'l eye

Not good enough for 3rd

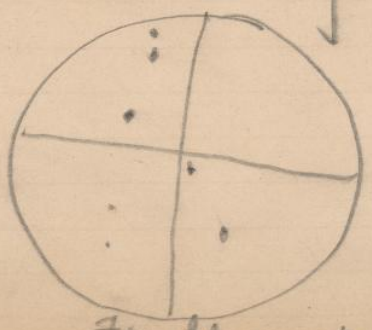
8°.7
5.9
4.6
2.9
3.6

Σ 125 Important Binary $0^h\ 15^m$ 2nd = P Nat'l eyes It not one of these 3 stars

352°.1		51'.81	Little star to left
352.1		77	
352.7		71	
351.6		68	
351.3	?	68	too close
351.3		61	
351.35		66	Best $0^h\ 30^m$
		69	

Mean 51'.6825

2nd P
51.6 9
75
67
65
90
51.674



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Dec 18 1867 Wed

G MS Hunted for Satell of Ψ¹ Without success C. S. C

Nebulae 551 & 594 looked for but nothing in particular could be made out.

Double Star P III 98 +0° 10′ — 0h 10m 1st p

Rather too warm in dome 81° F Opened windows Stars moving rapidly & largely

106.7	
110.7	
111.0	
109.2	good
112.1	" good

49.65 Star flowing into a dozen pieces

68	
62	
64	Close agreement of stars perhaps was a run of luck
63	
59	
62	

32 Eridani Star I eyes

1°.1	
2.1	
3.4	
4.1	
6.1	
5.0	
5.1	
6.7	
6.3	
6.7	
4.66	

49.71

75	
73	
73	
79	Seeing growing bad. Windows have been closed
80	
71	good

Clock run down

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1867phae.proj..294S

Dec 18 1867

Galatea & W IV 33
Reject 1st set wires almost invis poor illum.
3 Tr. over 3 w. comp. on d.

[96.46]	ill. bad	79°.4	49.03
96.13			03
95 93			05
96 14			05
96.00			03

W_2 IV 1406 & Antiope. 2 Tr over 3 w.

43.58	comp on e.
21	
57	

Chron 236	6	58	8.7	M T
Sid. Clock	6	54	0	$13^h\ 5^m$

Imm. of k Virginis lost. (circuit broken)
Em. " " well obsd. (probably 0.s3 late.)

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1867 Dec 19 Thursday

Clock out of order

Neptune sat. inv. to P. Measured by S

1	6h 24m 25s	90° + 47°.0	50.63		
1	59 40	46.5	50.57	Mean	50.57
2	0 43	46.0	50.57		
2	1 30	47.0	47.53		
2	2 22	47.0	47.40		47.47
3	1 5	46.7	47.51		

18.64
9.02

4m 40s	134°.1	
4 45	134.3	
7 10	137.0	
8 7	137.1	

2	13m 00s	90+47°.0	47.38	
	14 00	46.8	50.55	

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CSP ≡ 125 $t = 1^h\,0^m$ Nan ⊥ eyes δ N P

~~350.9~~	51.67
350.2	51.70
349.8	51.69
349.8	~~51.79~~
350.0	51.67
~~350.0~~	51.68½ best
~~350.1~~	
349.98	Mean 51.6830

fine observing double wt.

P III 98 $-0^h\,2^m$ stan ‖ eyes

107.9
106.5 seeing fine
104.3
104.7
106.0
106.7
~~104.8~~
105.8
106.1
106.0
102.9
104.7

clock out of order again
After much bother cut off the green string. It appeared immediately that the difficulty was not there

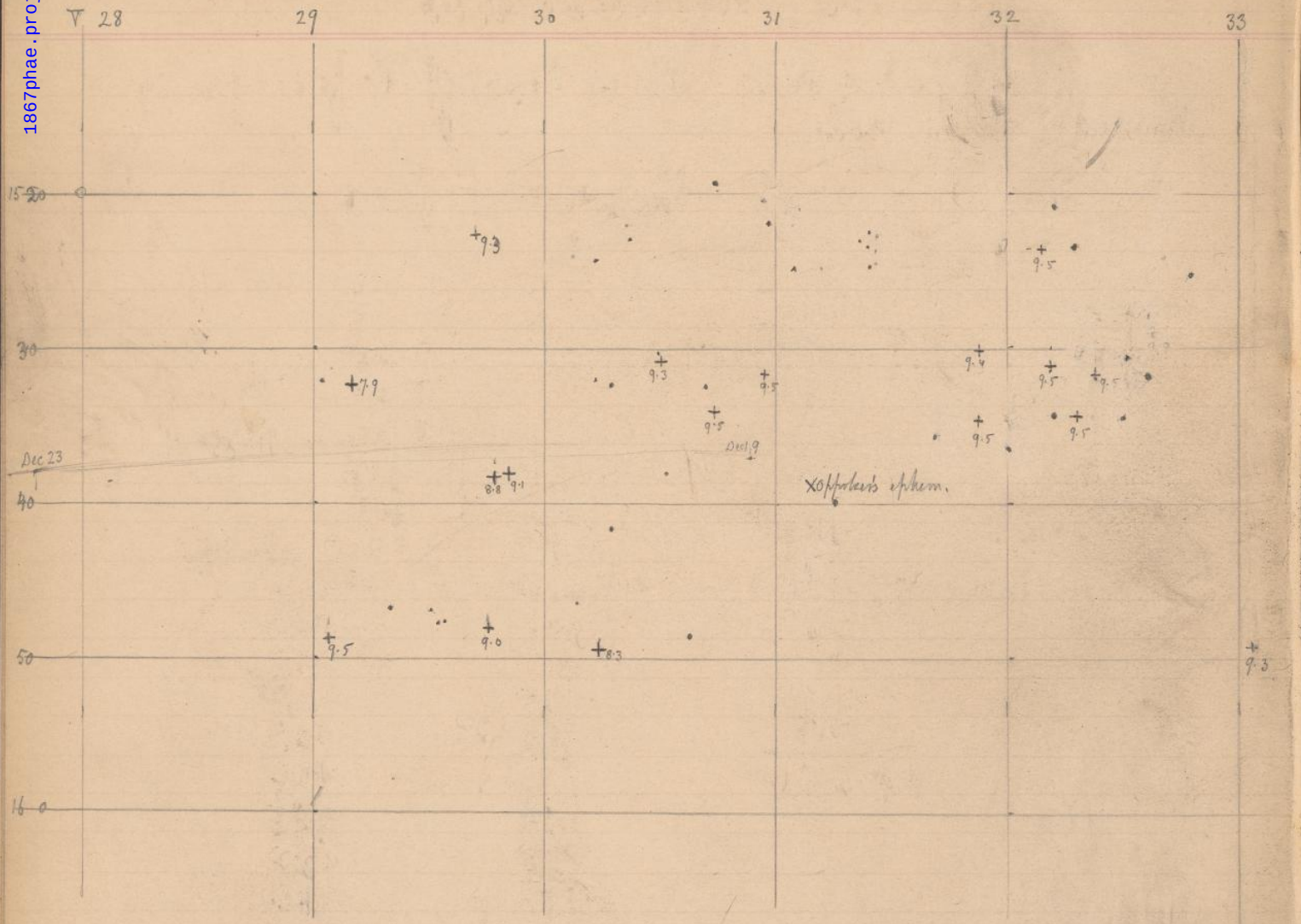
Galatea & W TV 33.

Plan. foll.
87.03
86.86 Plan. north component.
97
92
87.07

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Region of Concordia



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1867 Dec 23 Monday

$0^h 30^m$ Ther out of doors 21° in some 30ft Before opening Blowing a heavy gale.

ϕ Piscium $1^h 5^m$ Star 1 eyes 1" Power

121°.0		49.865 first approx.
119.8		49.713
119.8	N.B. Fear moved the fixed wire	49.928
118.9	Read	49.861 V. difficult
124.6		.840 too close
122.0		.867
119.8		.832

	Y" = P	G" = P	G" = P better light
Coincidence	49.022	49.002	49.019
	003	008	024
	015	997	002
	009	006	012
	011	982	024
		999	019
		004	987
		987	023
		996	014
		009	024
	49.0120	49.0002	49.0151

10 drifts. Cannot resolve it after long trial.

Σ 254 β" = P Star 1 eyes

7°.3	Gearing skips so frequently that I cannot
4.2	work.
5.1	
4.9	
7.3	
7.6	Best
7.4	
0.7	

Nebula n.p.

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1867 Dec 26 Thursday

$1^h\,0^m$ Satellite of Neptune not seen after long watching.

C.S.P.

Σ 125 Stars tolerably steady Leges.

170.8	I = P.
172.1	II = P.
171.2	
171.2	
170.3	
171.02	

51.70
51.68 too close
~~51.69~~ reject
51.66
51.68
~~51.668~~
51.680

Planet (93) & B.A.C 8281. 21 Piscium

R.M.S. Zero of Pos. 79°.4 Comparison star or b

79.3

65.75
65.90
65.86

Planet ~~II~~ S

Wrong Planet

Planet (S)

45.21
45.30
45.32

Comparison Star or (e)

Coincidences 74.17
74.14
15
20
16
16

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1867. Dec. 26. Thursday.



Measures of Sixth Star in θ Orionis. C. S. P.

very distinct

Position of first and Sixth.	microm
222.8	49.30 approx.
224.1	49.29
227.0	49.30
224.3	49.28
225.4	49.28
224.72	49.290

Seeing fine

Position of second and fifth	microm
178.4 - good.	49.502
177.4	49.526
179.3	~~49.440~~
179.6	49.520
181.1	49.542
179.16	~~49.532~~
	49.5244

4h 0m

Mr. Davis observes the following :—

6th = of θ Orionis

231.8	49.42
230.7	.41
230.3	.39
232.3	.38
229.6	.40
230.84	

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1867 Dec 26 Thursday

Satellites of Uranus. C.S.P.

Time	90° + position.	dist.
4h 37m 40s	263.3	~~53~~ 57
5h 0 25	~~269.5~~	53 ~~53~~. 39
1 45	268.9	~~53~~. 49

G.M.S. Satellite north. (no. 3)

	90+	
5h 10 8	264.5	53.40
11 45	265.2	53.85
14 15	263.0	53.21
16 25	263.2	53.43
	~~3.5~~	~~54.24~~

no. 4.

5h 20 30	3.5	54.24
" 22 15	2.3	54.31

C.S.P. Another satellite ~~or star~~ preceding.
after long looking, neither could see any other.

$\overline{W_2}$ VI 1870-1. & Parthenope

3 Tr over 3 w. Planet foll.

	42.54	zero 258.8
Planet south	51	258.8
	55	

Comc	comc d.
74.96	49.83
93	80
98	82
98	85
97	79
	84
	88
	83
	84
	82

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Comparison of Sines

2737
2737

80 51.02 Seeing not good enough for more.

Dec 28 Saturday

$W_2 T$ 709 & Beatrix G M S.

chron 236

6	35.0	53.06	
	36.1	52.95	
	37.0	52.72	Planet foll.
	38.1	52 69	
	38.9	52.76	
	41.7	30.79	
	42.5	79	Planet south
	43.3	71	
	44.0	71	
	45.0	.88	
	50.3	52.19	
	51.8	52.11	
	53.0	51.86	
	55.3	51.51	
	58.5	51.64	

comc
49.90
87
88
88
87

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W₂ VI 1870-1 & Parthenope

79.°1	57.68	Planet north.	49.88
.2	.62		88
	.72		84
	.51		85
	.56		87

3 Jr. over 3 w. Planet fol.

Satellites of Uranus barely visible if at all.

Julia & W₂ VII 1618-9.

3 Jr. over 3 w. Pl. [preceded] another star [immediately] foll. the planet also obsd.

40.69	Planet north.
[40.11]	
40.82	49.85
40.61	85
40.29	87
40.46	86
	87

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C. S. Robb. Sunday Dec 29

~~Σ~~ Σ 86 8" ℜ Tages

7.6	51.13 Star v. dim
8.2	51.14
8.5	17
7.9	14
7.8	14
7.70	

42 Ceti. Quite irresolvable

Nebula 351 Not there, many small stars but positively no nebula visible

2h 30m shall look for 589

α Piscium

Snow storm

Shut up dome and left but as it shortly cleared off, came back and began again

36 Andromedae Barely elongated cannot be measured.

Nebula 589 Nothing seen.

Sky completely overclouded. I don't think I shall be taken in again this way!

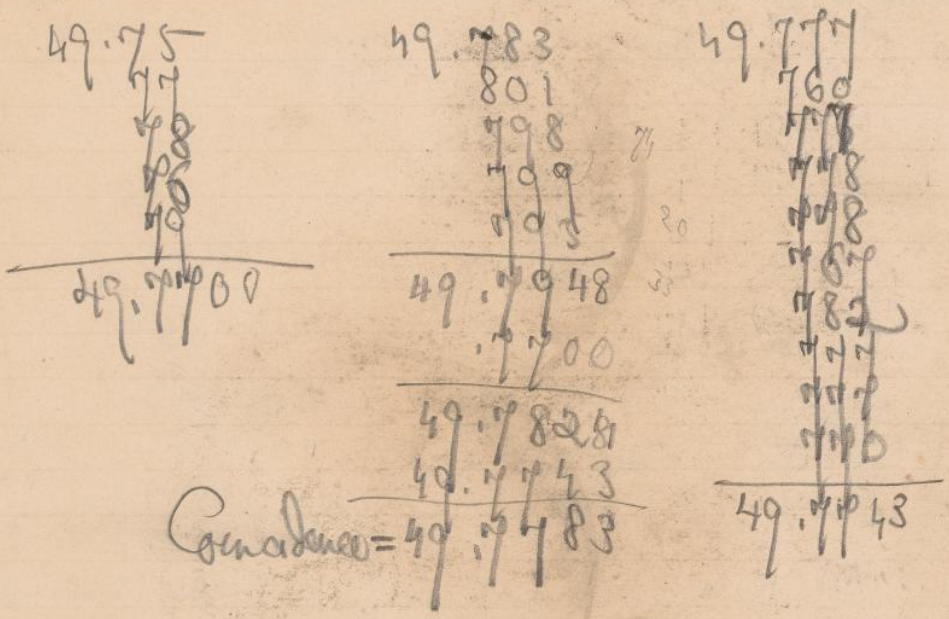
N.B. Clouds of weather drunk

After waiting a quarter of an hour concluded that there was not the least prospect of any useful observations in my hours & after eight a snowstorm coming up. Shut up.

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Conc



Dec 30 Monday

Satellite of Neptune n. f. G. M. S.

Chron	236				
2	25.5	90 +	39.7	clouds.	
	30.0		40.6	51.04	
	31.7		43.5	51.23	
	34.5		43.2	51.12	
				51.130	1.310
	36.7		44.0	48.40	
	39.5		40.8	48.26	
	42.5		39.8	48.37	
				48.343	1.477
	45.0		127.5		

49.82
81
83
82
82

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1967phae.proj..294S

Planet (94) & W. O 431

3.	8.7	52.88	foll.
	12.5	53.12	
	13.5	53.28	
	14.3	53.22	
	16.0	53.09	

Clouds.

			comc d	
4	14.0	55.97	49.87	
	15.5	56.08.	87	Planet f.
	17.0	56.13	83	
	18.3	56.10	86	
			86	
	20.5	15.11	comc e	
	22.0	15.32	75.01	
	23.3	15.17	00	
	24.3	15.42	00	Planet s.
	25.5	15.09	02	
			00	

Search for Antiope — Comp. star supposed to be W 2 TT 1279 but mistaken.

79°.0	47.51
	42
	61
	51
	47
	42.93
	77
	98
	78
	43.27

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46·21
26
45
[82]
20
41

W_2 IV 1279 & Antiope.
4 Tr over 3w. Pl. foll.

Pl. south.	conn.
38·44	75·02
31	00
55	99
38	01
39	00

• Runk

Regina & Pamphrae.

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(Not for CSP) W II 1007 to be looked up with Equatoreal

Thursday 1868 Jan 2.

C. S. P

36 Andromedae Star + eyes 4th = S. Seeing bad. * tremulous

	Double Rul.	
356·3	50.00	49·70
357·7	49.95	49.68
357·4	58.00	49.69
358·4		
356·6		

Coincidences warned on moon

	Beginning	End
49.823	49.853	49.793
832	860	788
822	860	788
820	859	788
827	867	780
	859	790
49.8288		

859·7
7888
1·647 5
.823 7

47
×26
167
5
165

48

Call

Call coinc. 49.824
or 49.823 5

860
788
1.648
825

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Friday 1868 Jan 3

C.S.P. 36 Andromedae 5m = P Star Eyes

0°.0	Observing very difficult owing to movements of ~~*~~
359.2	
0.0	
359.4	
359.8	
359.68	

50.005	These will be better than last night
49.997	
50.008	
49.999	
~~50.004~~	~~A mere guess~~
~~49.999~~	~~Also poor~~
~~49.996~~	~~Seeing has become too bad~~

66 Oct. On Micrometer 9th = P Star Eyes

118.9	
~~118.6~~	
118.9	
119.3	
119.1	
119.2	

~~51.50~~	~~poor~~
51.44	
51.45	
~~51.40~~	~~too close~~
~~51.41~~	
51.44	
51.43	
51.42	

Zero of position 78°.8
~~79.3~~ ?
78.9

Piazzi III 98

C.S.P. 4th power. Stars parallel to eyes

109.3	50.465
107.8	50.470
107.7	50.500
110.2	50.450
108.7	50.500
109.2	
108.3	

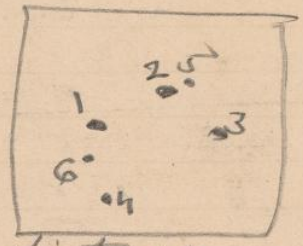
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Friday Jan 3. 1868.

32 Eridani? C.S.P.
4.8
5.1

Star ⊥ Eyes



A Orionis

	Position.	distance		P	D
* 1,2.	218,6	51,14	2,3.	289,6	50,96
	218,6	51,00		287,0	51,06
	219,4	51,12		286,4	51,02
	218,5	51,15		290,7	50,98
	218,8	51,09		289,8	50,00
		51,16			50,00
		51,17			
		51,71			

	P
3,4.	230,3
	229,9
	229,4
	230,1
	229,9

84 98
23 23
61 23

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Sunday Jan 5

Star γ $1^h 30^m$ $-24° 24'$ looks double. Power no 3.
Seeing poor.

Bright yellow 5 may 7 45 -24 34

Monday Jan 6 1868

Imm. of γ Tauri 0^h 5^m $0^s.5$ by beat of sounder.
1.5 on chronograph thought
to be $0^s.7$ late.
mean 0 5 $0^s.7$ G M S.

C. S. P. Last emersion

Σ 375 Sky too bright

Σ 323 Hazy cannot see it

α Piscium Clouds irresolvable

66 Ceti Cannot find it.

Σ 323 Again $\begin{array}{r} 0^h\ 46 \\ 5\ 58 \\ \hline 780\ 50 \end{array}$ Cannot do anything with it.

Improves a little. Will wait.

$\alpha^m - P$ Star Eyes

24	51·10	Rough measure	
8.0	·02	Mere guess	
7.8	·05	"	"
9.3	·03	"	"
9.0	·02	"	"

} Very poor indeed all guess-work

This branch of astronomy cannot be advanced here tonight.

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γ Eti cannot be resolved

Chronograph started at $3^h\ 1^m\ 30^s$. Immersion of 70 Tauri

P Π Arietis No 90
P III 98 " "
Σ 545 " "

} cloudy.

Coincidence of wires observed on mov. C.S.P.

49.85	49.78	~~49.805~~
49.85	49.77	~~.81~~
49.862	49.778	.8200
49.863	49.782	.8225
49.882	49.775	.8285
49.872	49.785	.8285
49.853	49.792	.8225
49.852	49.781	~~.8165~~
.863	.785	.8260
.862	.784	.8250
.854	.793	.8235
.862	.787	.8245
.853	.789	.8210
		49.824 90

Emersion of 70 Tauri
80 Tauri too near moon
Reading lamp out of order

Immersion of Rumk 1203 ~~Tauri~~
" of 73 "
" of 21 "
" of Rumk 1210 "
Zero of Position 79°.3
79.3

lost from doubt which of two was coming.

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Observed	Emersion of	D	
"	Imm	1391	
Lost	Emer	R 203	Too small
Obs.	Emers.	75	
Lost	Imm	1394	Connection broken
Obs	Emersion	1210	

Emersion BAC 1391 Two taps precedes 1st tap as much as second tap follows it.

" 1394 lost. too faint.

Imm. 1406 0s.5 late

Em. not tried for.

Imm. Alleb. 8 47 14.7 by sounder

14.7 on chron. 0s.5 late

mean 14.4

Em. Alleb. 0s.5 late

1868 Jan 7 Tuesday

Imm. & Em. of 111 Tauri obs'd. on chronograph. CSP.

Clouds prevented obsn. of 115 Tauri.

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1868 Jan 9 Thursday

Lmm. f. Germinorum ± 5^s Furious wind & seeing atrocious. G.M.S.

Setting ~~Angle~~ 48° (computed 49°)

Emersion, ~~three taps~~

1st when star first seen
2^d & 3^d when it had doubled & tripled its dist. from moon's limb.

W VII 180 & Hebe.

zero of pos 259°.2

77.12
10
39 Pl. north
16
50

3 Tr. over 3 w. Pl. fdl.

W$_2$ VII 1227 & Julia

4 Tr. Pl. prec.

		conic. (same for Hebe)
74.55		49.82
57	Pl. south	81
60		80
50		80
58		79

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Jan 10

Dome warm. Moon nearly full

66 Cati 3½ P Star Heyes

299.3
299.9
298.4
299.0
299.2 Good.

~~48.11 too wide~~
48.18 " close
156
20 Stars moving too much
.18
.14
48.17 1/2 Suspect it is too close

Ther external 9½ F
in the dome 14 F Too warm & Stars move badly.

8 H Cati Star + eyes 2½ P

294.3
297.6
293.8
292.6
291.0
} Stars moving very irregularly
} Worth less

P VI 98 2½ P Star Heyes

285.3
284.7
286.8 Careless
287.3 Careful
288.7
288.5
287.3
286.3

50.450
485
340
370
384 too close
417

} Bad!

1867phae.proj.,294S

59 Eridani D.ed. P

198.9	50.45
198.0	50.53
199.0	55
197.4	51
197.4	51
197.78	

Plan ⊥ eyes

50.52	50.89
83	80
115	119
.575	.595
50.81	50.87
34	86
115	122
.575	.610
50.67	
28	
95	
.475	

Seeing truly execrable

These measures taken by putting movable wire first on one side & then on the other of the large star, P

570 Star Heyes 1:1 P

266.8	51.065
267.1	072
268.1	087
268.2	037
267.9	50.984
268.3	

Parthenope 8
Dry Z + 20 m 1638.
3 Jr.
Plan Jr.

Plan. S.

65.47
41
38
49
57

Gas froze up, thawed out to observe Parthenope.
Froze up again.

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~~Would look for comets before moonrise~~

~~if not too cold.~~

1868 Jan 11 Saturday.

Gas frozen up in tube below floor so that no measures could be made.

W II 1007 not visible.
1008 brilliant.

Obs. Setting
Imm. 18 Leonis ± 2^s GMS. ~~Sings~~ 340°.1

Comc measured on moon

49. 81
80
80
79
79
78
77
78
79
80

mean 49.791.

Em 18 Leonis 6^h ^{m} 41^s.7 by sounder. Pen did not mark.

to observe imm.

Turned to B A C 3345. (R Leonis) but did not see it. Star ~~probably~~ not at its maximum.

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Search for doubles. Seeing poor

Faint ~~but~~ one about 20′ s/p 28ˢ Oeltz. 7254

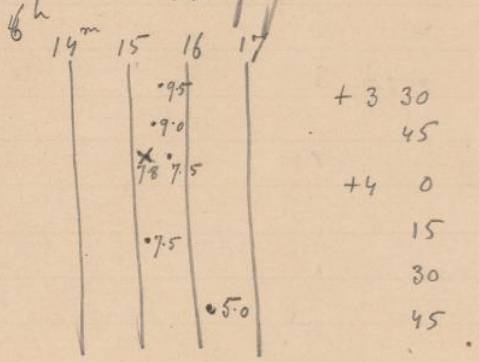
Hence for 1868.0 $7^h\ 35^m.4$ $-22°\ 22'$ Dia ⋆. about 3″

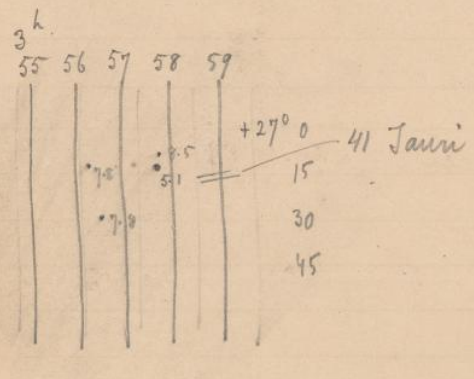
Mags 11.

1868 Jan 12 Sunday

BAC 2057 = P VI 82 supposed variable by Piazzi has about the same mag. as in Arg Z. (7.8) by comp. with W VI 456 immediately following (7.5)

Configuration





41 Tauri appears 0 ½ or ¾ mag. < φ

According to Argelander 41 is 5.1

φ is 5.5

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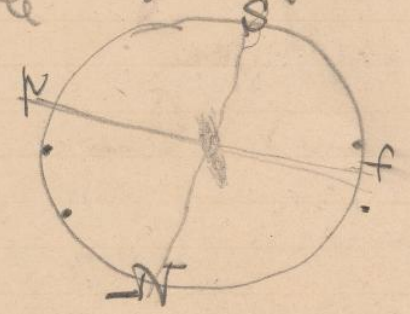
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1867 Jan 13 = Monday

C. S. P.

Looked for Nebula 604 $\frac{13.3}{8}$ $\frac{98°8'}{12.2.4}$

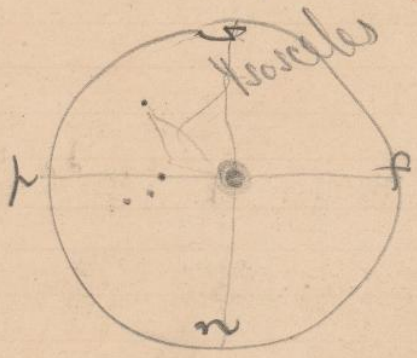
found it. Somewhat elongated. Just half way between two stars p. & f. so that they are just at the edges of the field when this is in the middle



At $8^h\ 24^m$
$12\ 44$ Past
$2^h 40^m$ R.A. by Chron.
$-8°\ 05'$ Dec.
Has it not changed in dec? I usually come nearer.

Satellite of Neptune Invis to GMS & CSP

Neb. 826 Not resolvable follows, upper of three little stars



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Remarks on Nebula in Orion

Night ~~poor~~ not good for stars. Good for Nebula

1 The great branch Sf on Gi. P. B's drawing is handsomely ~~well~~ sharp enough in outlines more like Herschel's. ~~The great~~

2° The grand triangle leaves off sharply at f side like B's not like H's.

3 Down the middle of triangle is black line like H's not B's.

4. The curl Np Triangle is doubtful though something like it is certainly there.

5 The spot nf is hardly as three fold as B makes it.

6 The general tendency of the Np lines is to a convexity towards Nf side

7 The curve on the Np side with convexity facing f. is well represented.

8. the dark spot close to triangle Sp is well represented. 9. So is Gulf Nf with bar across it

10 the spokes at apex pointing Sf are hardly as marked as represented

11 I cannot see a trace of the line running from * Sf

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of apex of triangle nearly continuous with Sf side

The spot Nf I should represent thus



B has something of this also. But I cannot believe that this has not become more decided since he drew it.

I might make many other obs. but give the most certain

NB the 6th * of Trapezium not vis. to us/H

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1868 Jan 15 Wednesday

Search for doubles. G M S.

1. Oeltz. 3392.

1868.0 4 42 3 −21 2.7 Mags. 8 & 11.
Dist 8″
Pos. 345° N to E.

2. Anonyma follows Oeltz. 4145 1ᵐ 30ˢ just one field of power no 1. north of it. Mags 7.5 & 8.5
Dist 8″
pos 115 N to E.

5 34 6 −20 31 for 1868.0

Companion of Sirius 97°.1
not seen well enough for more measures.

1mm. 1² Virginis (two taps; thought to be about 1ˢ after 1st one, certainly before last.)

Em. 1² Virginis (probably 0ˢ.5 late.)

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1867phae.proj..2945

1868 Jan 16 Thursday

The nebulosity is well marked in no. 1362 GMS.
not in 1359 1373 or 1375.
would hardly have been noticed in these last 3.

neb 1565 perhaps 4ˢ diam. several stars indistinctly visible in or through it; one plainly about 1/3 of radius from centre to n.p. limb in which direction the neb. seems a little ~~elongated or~~ elliptical; ratio of axes say 5 to 6.

	Δ α cos δ	Δ δ
neb 1567	31·78	49·56
& a 9.5 mag.	67	·46
following.	neb. prec. 93	·55
	52	
	72	conc.
	95	49·88
	80	90
	92	87
	83	88
	84	

neb. 1567 has a wisp of light apparently on s.p & n.f sides.

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