KG
11365
493

1882phae.proj..494w

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June 20. 1882.

Comet Wells. W. obs.

7 44 +14.9
14 10
+6 26

14 17
+6 33
27
+6 43

Sky very bright up to time of comet's setting — Comet not seen with some examination. — Had it been, it would have been impossible to obtain a comparison star with so bright a sky W.

Neb. G. C. 4029.

14 √6 +√4.4
15 0
+0 4

16 4
14 √6
+1 12

15 46
14 √6
+√0

15 7
14 √6
11

15 37
14 √6
+4 1

15 19
14 √6
+23

9 36 Venus = α Bootis S. obs. see next page
9 38 Venus = α Virginis Venus set at 9 39

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1882phae.proj...494w

June 20, 1882

9 45 by watch = 15 41 10 by B. 236

On last page

Neb. G. C. 2413.

11 20 +44.4

1855

14 54 20 35° 32.3

55 15 54° 27.7

55'

Spectrum Contin. N. ds.

Object much fainter than supposed to be. Hardly noticeable in 4 in aperture. It checks in position, however, with a 7 mag. star. Being also rather close to two of the mag. stars it would hardly be noticed as nebulous without close scrutiny, from its proximity, aside from its faintness. N. ds.

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1882phae.proj. . 494w

June 21, 1882,

Wells. Comet.

7 ∨7 +14.6 W. obs.
14 0
+6 3

.02
8.7∨
8.8 24

99
12
.71 39

14 ∨7
7 ∨7
+6 1 ∨

36
7 ∨7
14 20
6 23

14 27
7 ∨7
+6 3 0

Comet not seen. Sky very bright. W.

Two 7th" mag. star near nebula. 4029.
14 ∨6
14 ∨3
−13

South fol. star brighter than other by 0.4 mag. W. obs.
South fol. star is R.A. +∨4°

N.
Set at 337

2920
∨∨
337

1882phae.proj..494W

4

June 21 1882.

15 4m 26.7 2.6 W. obs
29.3

46.6 40.0
38.1 36.7 3.3
8.5

7.4
13.3 = W. obs.

V:

37.3 0118 3.8
39.8 58.0 W. obs.

Order = Southern star, Northern star, Northern star Southern star, Both in Northern half of square.

Diff RA = 1.9s. {1.65 / 1.90
Dec. = 1'16" {74" / 77"

6m 18".2 47.2 W. obs.
38.4
8.8

24, V W. obs.

of other two Tempel stars. Dll. +54° 1724, 1725.

9 15 Comper. A light by Pkt. H. S. obs

Gal. 15018 8.9
15019 7

139.4
20.6 71.2° A
32.7 68.5° A
31.4
139.7° A 0.8 2.4 V

54
27
1m 8.7 58
696
69.6
76.56
69.6
7.6
7.60

9 20 317.8
30.6 72.8° A
140.2
210.4 70.2° A
143.0° A 0.7 2.7 V

S. obs

1882 0.82 S39" 8.9, 7
1855 41 290" 7.5, 7.5
1882 1.8 S75" 7.8, 7.0

Southern eastern Tempel brightest.

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1882phae.proj..494w

June 21 1882.

10 0 Examination of Sawyer's Var
Var 0.3 by the eye mark.

S Ophiuchi.

16 25

16 27 −16.3

16 25 57 16 17
16 22 50
3 7

16 13 37
16 25 57
16 18 37
7 18

S Ophiuchi

10 50 Spec. not peculiar. Color 1. S. obs.
" " " Color 2. W. obs.

R Ophiuchi.

11 1 Spec. peculiar Color 3. W obs.
Type III distinct - rather faint Color 2.

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1882phae.proj..494w

June 21, 1882

α Scorpii

−26.1'

16 22
17 16

R Scorpii

17.4 ν

3.ν 2
7 1 4
7 1.4
7 4.ν 4

9.2 7
2
1 4 ν 4
1 4 ν 4
2 0 3.9 4

19.4 ν
7 4.ν
9 6.3 ν

46.7 ν
2 0 3.2 4
2 4 0.2 9

16 4 4 1.9
1 1 6.ν
16 10 0.4

11 2 37 24.1
7 2 3 9
11 2 40 4 4.0
2

16 9 1
1 3 ν
16 10 3 6 ν

− 2 2 ν
+ 4
− 2 2 19 ν

52

11 45 G.C. 4173 found near supposed place of R Scorpii.; spectrum Continuous (S. & W.) But no stars answering to R and S Scorpii, which should follow the neb 36ˢ.

Spectrum of a star near neb nf neb (Δα 12ˢ Δδ 3' 8 magn.) color 1 banded W. : not peculiar S.

A star of about 12 magn. near

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1882phae.proj..494w

June 21, 1882.
what might be the place of
S Scorpii; but nothing ~~south~~
of that for R Scorpii!

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1882phae.proj..494W

June 22 1882

Comet Wells 1882. W. obs.

219°.6
45°.
264°.6

B 236 14h 57 23.8 } Comet = northern
14 57 53.6 } half of square

1 35 3.0 } Star in southern
3 46.6 } half of square.

Comp. star D M. +14° 1949 (6.4)

+3.344
27
23404
6684
90.284

−10.44
27
7336
2096
2742.96

4 4 51
−7 30
4 7 21 (14 51)

14 24 27
+4 43
14 29 10

14 57 20
4 21
4 3 11
27.50

14 57 23.5
27 50
14 84 73
60
15 25 13

4 7 21
4 38 7
30 44

14 57 23.8
30 44
15 25 1.8

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1882phae.proj...494w

June 22, 1882.

8 7 21
8 4v 4v
38 24

38 2x
14 v7 20
9 v 47
60
1v h 3 8 m 47 s

t = 1v h 3v m 3.0 (1.)
3v 4v.9
.7
3v 46.6 (2.)

[Star in southern half of square.]

Meas. of relativ light of Double Star with Phot. 44.

Σ 946

6 3 4 44 +v 9.6
1v v6
+9 27
16 9
+9 3v

10 17 333.0 < Brighter dis. W. obs.
24.9 51.9^
161.1
198.8 37.7^
89.6^ 4.9 3.9 ✓

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1882phae.proj,.494w

June 22. 1882.

Other images.

10 22 64.8 < Brighter dis. N. obs.
114.5 49.7
247.2 400
287.2 89.7 +9 3.9

Same object. S. obs.

10 36 24 5.0 < Southern + Ctr. dis.
291.0 46.0
66.7 45.7
112.4 91.7 +9 3.9

10 44 132.7 < Southern dis. S. obs.
204.0 71.3
335.0 43.5 Images dim. star low.
18.5 114.8 +9 3.3

Double Star with Phot. H.

7 29 +6 5.6 N. obs.
16 53
+9 24

Not seen before Mer. Phot. Zone.

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1882phae.proj...494w

June 26. 1882.

+ 2 +13.7 M. obs.

14 0

+ +

+ 2

14

14 2

8 2

+6 7

15 7
6 19

+ + K K

1 4
+ 2

+6 12

Comet found.

15 6 13.°2

6 12

+ K = R. A. by circles.

Zelo 257.7
45

Sol ad 296.°7

Comet, Star, Comet Star
Comet in Southern inside square
Star in Northern outside square

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1882phae.proj...494w

June 26, 1882,

~~6 53.3~~
~~7 16.4~~

16	8	6.8	23	13.3	15	6.5
		28.6		30.1		1.5
	10	17.8	25	21.5		3.7
	11	53.2		~~16 15.7~~		
	12	11.8	26	59.0		5.8
	13	6.2	27	18.0		6.2
	13	47.3		11.8		5.6

½ 8

303.2 Calc.
348.2 Salty

Transits of D2n 10° 2432 and 2434

hr. ft. hr. ft.
hr = 8 ft = North

16	26	12.2	27.4		~~51.8~~	61.5
	2	39.6				
		49.3	14.1		52.7	43.0
	27	3.4				41.5
		33.8	27.8		35.4	45.0
		1.6				
		11.2	13.5		35.9	26.3
		24.7				
						41.3

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1882phae.proj...494W

Jan 26. 1882

16 23	45.4	28.0	58.8	7.7
	13.4			
	22.3	14.0		49.7
	36.3			42.0
				41.5
				41.3
				124.8

Elongation suspected W. obs. 20.8 s = obs interval
168 = Dr interval

Pos. Ang. est at 22½°
Faint comps. ½ ftr than bright comps. } Hr. obs.

Elongation not confirmed by P.

This star is E 16 mg.

Conclusion. This star appears to have closed up since 1830. The star following it is either 4 s. east in R.A. & D.N. too or has a proper motion of about 2" annually.

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1882phae.proj..494w

June 27. 1882.
Comet Wells.

9 2 +13.1 W. obs.
14 27
+5 25

14 41
9 2
+5 39

14 50
9 2
+6 48

14 55
9 2
+5 53

8 30 Mars and Regulus near each other and about equally bright.
Regulus a little brighter P. obs.
Mars " " " S. obs.

Comet Wells.

Pos. 0: 36.0
45
81.0

Comet seen but clouded before observation could be taken. W.

15 54
9 2
6 52

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1882phae.proj..494W

June 27. 1882.

Double Star.

14 / 11 +~~7~~.4

16 / 1

+1 7 0

Σ 1873. Phot. M.

14 23 +6.9

16 2

+1 39

Divided, but too close to measure.

16 14

14 23

1 7

Double Star ~~0 20~~ Σ 1830.

14 11 +7.4

16 31

+2 20

Fainter of two pairs in same field.

10 30 — 124.8

10 32 +4.9 < fol dis~~t~~. 71.9

126.8

239.5 64.4 2.4"

303.9 136.3 ~~0.6~~

S. obs. Indistinctly seen.

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1882phae.proj..494W

June 27, 1882.

Same star – the other images.

10 37 323.v 68.5. S. obs.
32.0
1v2.v 50.5.
203.0 119.0. +1. 3.2v

10 44 144.v < btr. dis. W. obs.
210.0 65.5
319.v 75.0.
34.v 140.5. 0.4 2.4v

Same again – the other images.

10 48 48.9 69.9. W. obs
118.8
224.v 84.5.
309.0 154.4. 0.5 2.5v

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1882phae.proj..494W

June 28. 1882.

Comet Wells. W. obs.

9 11 +12.8

14 46

√ 3√

14 √7
9 11
+√ 46

Pos. Zero. 20,3
Set at 4√,
6√,3

15 4√.
9 11
+6 31

One ~~set~~ set taken – observation rather difficult on account of clouds and low altitudes.

Order = = * *

Both in southern half of square.

Comp. star probably D M. +12° 2014 (7.7)

~~Added 5.6 6~~

D M. + 30° 2685 – 9.

15 37 +30,1
16 39
+1 2

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1882phae.proj...494W

June. 28, 1882

16 ν 9
1ν 36 +30.4
1 2 3

17 7
1 38 +27.0
1ν 29

17 9
1ν 34 +30.2
1 3 3

1ν 17 +30.6
17 18

Mars

Gr. m.t. 12h 1882	log Δ / log r / log rΔ	Mag. at dist. 1 / less mag. at dist r	Δ / r / R	Δ+r / Δ+r+R / Δ+r−R	log(Δ+r+R) / log(Δ+r−R) / ar.co. log rΔ	log 2(1−cos v) / 1−cos v / ½(1−cos v)	v	log ½(1−cos v) / 10/4 log ½(1−cos v)	10/4 log ½π(sin v − v cos v)
June 27	0.3150 0.2179 0.5329	−2.664	2.065 1.652 1.016	3.717 4.833 2.701	0.6752 0.4316 9.4671	0.5739 1.874 0.937	150°.9	9.9717 9.929	9.870
June 29	0.3178 0.2476 0.5354	−2.678	2.079 1.650 1.016	3.729 4.745 2.713	0.6762 0.4335 9.4646	0.5743 1.876 0.938	151°.2	9.9722 9.930	9.873

a = 1.5237

log a 0.18290
log(a−1) 9.71908
9.90198
0.09802
0.49

Total diff. magn. June 27 −2.735 or 2.794
29 −2.748 " 2.805

Magn. of Regulus at zenith by mer. photo. 1.42
− 2.74

Magn. of Mars at zenith, dist. 1 − 1.32
" " " " " , mean opposition − .49
By direct measure with mer. phot. − 1.81
− 1.3

See also p. 22

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June 29. 1882.
Comet Wells. W. obs.

9	20	+12.5
14	36	
+5	16	

15	4	
9	20	
+5	44	

15	7	
9	20	
+5	47	

15	14	
9	20	
+5	5	4

15	22	
9	20	
+6	2	

9 U Mars 2 Regulus S. obs.
Regulus 1 Mars. P. obs.
Regulus > Mars. A. W. C. obs.

β Urs. Min. 3 α Urs. Min. S. obs.
α " 2 β " P. obs.
β " > α " A. W. C. obs.

16h 7m 05s B. 236 Venus = α Bootis S. obs.
16 8 30 " Venus set; brighter than α Virginis, fainter than α Bootis, at the horizon.

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1882phae.proj..494W

June 29. 1882.

~~18 49 +4.1~~

(44 Böötis) Double Star Σ 1909. Phot. M.

16 2A

14 V9 4A.2

+1 29

10 9 136.0 ∠ Fol. + btr. dis. S. obs.

218.0 82.0 1

316.7 80.5 1

37.2 ~~162.5~~ 1 ~~0.5~~ 2.3 ✓

Other images

10 13 41.4 S. obs.

126.3 84.9 1

233.6 69.3 1

302.9 ~~154.2~~ 1 ~~0.5~~ 2.1 ✓

10 20 233.1 brighter dis W. obs.

302.3 69.2 1

42.4 83.7 1

126.1 ~~152.9~~ 1 ~~0.5~~ 2.1 ✓

10 23 306.9 W. obs.

34.3 87.4 1

140.0 76.5 1

216.5 ~~163.9~~ 1 ~~0.5~~ 2.3 ✓

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1882phae.proj..494W

June 29. 1882,

Double Star Σ 1932.

1ʰ	1ᵐ	+27.4
16	5ᵐ	
+1	46	

Not separated with Photometer H.
W. obs.
With achromatic eyepiece separated
nf and s/e W. obs.
somewhat elongated l. & f. S. obs.

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1882phae.proj..494W

July 2, 1882.

9 10 Mars 3 Regulus S. obs.

Objects now rather distant for comparison. Observed in various positions of head with regard to the stars but Mars looked decidedly brighter in all.

Note July 7, 1882. (See also p. 18).

Mr. Chandler made an observation some days ago (about July 2) according to which Regulus was fainter than Mars (0.3 of the interval from Mars to ε Urs. Maj.)

Mr. Wendell, about the same date, thought Regulus brighter than Mars by about 0.1 magn.

Major Herschel, early in July, thought Regulus much brighter than Mars.

For observations by E. C. P., A. L., A. W. C., see pp. 14, 19, and 22 (above).

By mer. phot. (E 2066) the magn of ε Urs. Maj. is 1.85; that of Regulus is 1.42 (as on p. 18). The corrections for absorption would probably be at least 0.3 magn. greater for Regulus than for ε Urs. Maj. at the time of observation. Hence by Mr. Chandler's observation, the difference between Mars and Regulus would probably be under 0.1 magn.; but to determine the point, his estimates of magnitude for the two stars should be taken.

The general result is that all the observers except Major Herschel make Mars approximately equal to Regulus, and hence at least 0.4 magn. brighter than as measured with the mer. phot.

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1882phae.proj..494W

July 6, 1882

I Lupus

8 00 305.2 82.8 Pr dis.
38.0

211.8 82.5
139.3

165.3 0.3
165.3 2.1

Drops not recorded
and letting accounts right

8 06 127.2 100.5
227.7
309.6 95.4
45.0

195.5
164.5 0.3
195.9 1.7 2.3
16K.1

45.8 80.5
126.3
8 10 227.2 78.5
305.7

159.0 0.4
2.4

139.0 77.2
216.2
8 13 319.3 73.1
32.4

150.3 2.6

Est. diff = Magn 0.5 p. day

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1882phae.proj..494W

July 6. 1882.

Comet Wells. W. obs.

10	8	+ 10.2
15	30	
+5	22	

15 36	15 42
10 1	10 8
+5 2 8	+5 34

15	49	
5	38	+ 10.2 Circles.
10	11	+ 10.2 = Po. Comet.

8.58
45

Subtr 1.30.8

Order Comet, Comet, Star, Star.
Transits by Bond 236.

16h 2m 5 46 = Comet
3 17.0 = "
5 7.7 = Star
5 29.4 = Star

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July 6, 1882:

16^h	6^m	$20^s.0$	= Comet
	6	40.4	= "
	8	32.5	= Star
		51.7	= "

16^h	9^m	$23^s.3$	= Comet
	9	41.6	= "
	11	35.2	= Star
	11	52.4	= Star

16^h	12^m	$25^s.4$	= Comet
	12	41.4	= "
	14	36.8	= Star
	14	51.2	= "

16^h	15^m	$39^s.0$	= Comet
	16	10.7	= "
	17	49.7	= Star
	18	19.4	= "

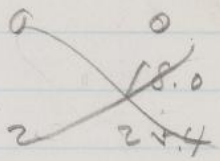
Both Comet and Star in northern half of Square

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July 6, 1882.

a	0	0	= 1st transits
b	0	15.0	
c		√1.0	
d	1	6.2	



(8.√)	0"	0"
(E)	0	18.0
(Comp. star a)	2	2√.4

Comp. star a dec. 10 Mag. 8.√
b dec. −2 Mag 9.√
a dec. ~~6.4~~ +3.5 Mag 9.√
(d " −3 " 9.√)
(d or) e " +2 " 9.2

Comet same decl. as "a" (comp. star)
f dec. +12 Mag 8.√

∴ Comp. Star must be 2 M. +10° 2139 (8.0 K)

θ Serpentis.

15	49	+4.0
16	30	
−2	19	

136.7 ← f 77.6°
214.3
319.4
36.7

77.3°
154.9°

9 39

· P. obs.

· 0.5 · 2.5 ·

Preceding and both dis

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1002phae.proj..494w

July 6. 1902.

	other images,		P. obs.
	222.0	85.9	
9 41	307.9		
	49.3	75.4	
	124.7	161.3	~~0.1~~ 2.4 ✓

			W. obs.
	46.0	80.2	fol. & fainter dis.
10 0	126.2		(but the readings are as in the previous set).
	~~42~~		
	226.4	75.8	
	302.2	156.0	~~0.6~~ 2.5 ✓

~~This set~~ The preceding and following sets were checked as to "fol. & fainter dis." by taking clock off and letting stars run.

			W. obs.
	39.1		fol. & fainter dis.
10 8	135.9	82.3	(If this is correct by set on p. 26).
	218.2		
	316.2	82.9	
		165.2	~~0.2~~ 2.3 ✓

Double Star Vol. XI $\quad 2 = \Sigma 2220 =$

17	41	+27.6	μ Herculis.
17	1		
0	27		

			W. obs.
	357.5	5.5	blighter dis.
10 25	0.0		
	171.1	7.4	
	178.5	12.9	~~0.9~~ 2.2 ✓

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1882phae.proj..494w

July 6, 1882.

W. obs.

Other images

83.5 5.5'^

10 30 89.0

260.8

267.5 6.7'^

12.2'^ ~~6.4~~ 4.4'v

10 41 263.0 Fol. & Ctr. dis. N. obs.

269.6 6.6'^ Dome somewhat interfering in first two settings.

273.9

279.4 5.5'^

12.1'^ ~~6.4~~ 4.4

Other images. N. obs.

173.9 6.4'^

10 48 180.3

352.0

357.3 5.3'^

11.7'^ ~~6.4~~ 4.3'v

Bond 236. Bond 394.

17 59 39.8 = 10 59 0.0

18 0 39.8 = 11 0 0.0

∴ Bond 236 is 2.5'v fast.

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1882phae.proj...494w

July 7, 1882.

Comet Wells. W. obs.

10	16	+10.3
15	22	
+5	6	

15	34	4 3
10	16	
+5	18	

Pos 0 = 37.6
4v
Set at 82.0

Comet in southern star in northern half of square.

~~16h 2m 28.4 = Comet~~
~~3 0.2 = Eye.~~

16h	4m	19.6	= Comet
		v3.0	= "
	8	44.7	= Star
		16.0	= "

16	11	42.4	= Comet
	12	19.7	= "
	16	9.8	= Star
		36.2′	= "

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1882phae.proj..494W

July 7, 1882.

16^h	17^m	$34^s.3$	= Comet
	18	16.0	= "
	22	7.2	= Star
		26.2	= "
	23	3.4	= Comet
		38.4	= "
	27	26.7	= Star
		37.1	= "
	28	31.3	= Comet
	29	14.3	= "
	33	8.0	= Star
		20.3	= "

Comps. star a 6 to 8.5 mag.
b fol. a $3^s.1$ and is 7' north of it
mag. of b 8.5
c foll. b $12^s.5$ and is 2'.3 north of it. Mag. 9.5
Comp. star D M. + 10° 2152 (Mag. 9.0)

	Trans.		Star	Dec.	Mag.
Stop watch.	0^m	0^s	= d	dec. +7'	Mag 8.3
		44.0	= e	" +2'	" 9.4
	2	40.0	= b	dec = 0	" 8.5

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1882phae.proj..494w

July 7. 1882.

	Bond 236.			Bond 394.	
16	52	28.6	9	48	0.0
	53	28.6		49	0.0

∴ Bond 236 is ~~6.4~~ fast.

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1882phae.proj,494W

July 8, 1882.

IV type star found P. obs.

Dec. −15.7 H. a. 1h 24m east

t = 16h 50m
1 24
17 74 = 18h 14m

Star followed by a 6th mag.
13' north ? South.

t = 16h 52m 50.2 } diff. = 4m 35.5
t = 17 38.7 }

18 14 54
4 35
18 20 14

Also 6th mag. at 14.9 and
1h 23m east.

t = 16h 55
1 23
17 78
18 18

Prob. γ Centaurus #6. U.A.
P. obs.

7th mag. 1h 28 and 8°.4 South

t = 17, 00
28
18 28

Prob. α Centaurus #14 U.A.
P. obs.

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1882phae.proj...494w

July 8, 1882.

Plan. Neb. found

at −28.1 P. obs.

√ 4m east

$t = 17^h\ 10$

$\text{Pos} = \overset{\sqrt{4}}{18^h\ 4^m} - 28.1$

Neb. identified and found to ~~be~~ of been previously discovered — viz. July 14, 1880 (See page 86 R. Book 33)

10 20 Stopped by clouds

	Obs.		From R.G. '75-29.			
R.A.		Dec.	R.A.	Dec.		
18 28		−8.4	18 28	8.3	14 α Scutum	3.6 mag?
18 18		−14.9	18 22	14.6	6 √ "	4.8
					7 Obs. on Sol. 33970	
18 14		−15.7	18 19	−15.7		

∴ Tuttle 18 20.3 −15° 55′

Est mag of star 9.0 forming equilat. triangle with 2 11 mag. 3′ dist.

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1882phae.proj..494W

July 10. 18h 2.

Comet Wells. M. obs.

10	3K	+9.°V
15	33	
+4	V9	
	16	
+V	1V	

θ Serpentis.

18	49	+4.0
16	2	
−2	47	

18	49
16	9
−2	40

Preceding star brightest. P. obs.

	132.2	δ1.1°	
9 0	213.3		
	314.9		
	37.9	δ3.0°	
		164.N°	~~0.3~~ 2.3V

	4V.0		
		δ0.4°	
9 3	12V.4		
	224.7	δ0.6°	
	30V.3		
		161.0°	~~0.1~~ 2.4V

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1882phae.proj...494w

July 10, 1882.

9 5	226.5	79.8°	W. obs.
	306.3		
	43.2	80.0°	
	123.2		
		159.8°	~~0.1°~~ 2.4 ✓
9 10	35.1	100.7°	
	135.8		
	217.0	106.1°	
	323.1		
		206.8°	153.2°, ~~1.0°~~ 2.✓

Clouded up. Closed dome.

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1882phae.proj..494W

July 11, 1882.

2 7 25 2 α Scutii
18 38
20 45
16 31

HAS 13
18 41
18 54 25.5 α Sagt

Comrtal index
Sky clear at 10m W.
Sirrah −12.5 & −17.5
Began at 18 58
19 23 −16.1 IV 7 exp
26 16.2 5 exp

Ended at 19 32

26 −16.2
19 38
19 12 RA −16.2 Diam of IV
two double
a : b IV c : d 6 exp full
a Prob. U.Eq. 159½ Sagittarii
c " U.Eq. 163 very red
d " U.Eq. 176

Interrupted by clouds without certainly closing

12 35 Closed

See R98, 205-6 for observations
of this IV type star.

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1882phae.proj..494W

July 12, 1882

δ Leporis

δ 06	319.6	75.1°	P. obs.
	34.7		
	133.1	80.6°	
	213.7		
		155.7°	~~0.5°~~ 2.5
δ 09	41.8	83.5°	P. obs.
	125.3		
	231.3	69.9°	
	301.2		
		153.4°	~~0.5~~ 2.5
δ 10	44.5	79.1°	P. obs.
	123.6		
	225.7	80.5°	
	306.2		
		159.6°	~~0.4~~ 2.6
δ 13	133.5	79.7°	P. obs.
	213.2		
	320.8	74.0°	
	34.6		
		~~153~~.7°	~~0.5~~ 3.5

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1882phae.proj..494w

July 12, 1882.

Σ 2590.

a.R. = 19h 45m Dec. = +9° 57'} P. obs.

DM. ~~+10° 4036~~ +10° 4036 has a companion at Pos. Ang = 280° dis 3.1" 9.0 mag
This is Σ 2570; in 1827, p 276°, s 4", magn. 7.3, 9.5.
Σ 2590 observed with Phot. H.

8 48 74.6
98.7 24.1 ^
v0 77.2 17.8 ^
9v.0 41.9 ^ ~~3.7~~ v.7 ✓

P. obs.

Companion faint and measured with difficulty.

346.2
8 v3 v.3 19.1 ^
24v.6 21.1 ^
6.7 40.2 ^ ~~3.4~~ v.4 ✓

P. obs.

344.6
8 v8 3.v 18.9 ^
166.8 180 ^
184.8 369 ^ ~~2.9~~ v.9 ✓

P. obs.
~~19.7~~
9 v9.1
6 v3
v33

This ~~dble~~ star ~~follows~~ precedes β Aquilae 3m 49s ~~+~~ and is 3° v3'.3 north of it.

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1882phae.proj..494W

July 12, 1882.

Same as on preceding page

Σ 2590

163.7
9 13 184.2 20.^ S. obs.
345.0
8.4 23.4.^
43.9.^ ~~3.6~~ .6 v

251.0
9 19 278.6 27.6.^ S. obs.
77.2 20.0.^
97.2 47.6.^ ~~3.4~~ .4 v

Position angles est. 310°

130.8 35.7.^
166.5 270.
305.7 position angle measured.

5 Δα by stop watch 3.8
Δα 0.76
Distance 13".9

log sec 36° 0.0920
log 0.76 9.8808
log cos 10° 9.9934
log 15 1.1761
log 13".9 1.1423

Distance estimated by square = 12"

= Dbl. 9 2v +10.0
17 14
7 49

9 34 +10.1
17.16.
7 42 = γ Aquilae

Stop Watch
0m 0s = γ
4 40.6 = 6th Mag. 13's of γ
v .6 = X double star

Dbl is 17m South of γ

Double star follows γ Aquilae 5m 55.6, 17' south

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1882phae.proj..494W

July 12, 1882.

Setting on β Aquilae

t = 17 28 +6.9

9 36

~~7~~ 52

γ Aquilae 1830.0 α $19^h\ 38^m\ 11^s$ δ $+10°\ 12'\ 17''$

$5^m\ 56^s$ 17

Double star 1830.0 $19^h\ 44^m\ 7^s$ $+9°\ 55'$

β Aquilae 1830.0 19 46 58 +5 59 6

The double star is DM. +9° 4295

The 6 magn. star preceding the double star is DM. +10° 4073.

The double star is also Σ 2590, and

DM. +10° 4036, mentioned on p. 38, is Σ 2570.

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1882phae.proj..494W

July 13. 1882.

Cloudy.

Wells Comet. W. ds.

10	⊽4	+0.6
16	16	
+⊽	22	

21

⊽ 27

16	40
10	⊽4
+⊽	46

Position zero 317.1
Set at 2.1

17	1	10.6	Star } northern half
	1	57.2	"
	3	20.0	Comet } southern "
	4	0.0	"

Rather cloudy.

5 0.8 } star
38.8 }

} comet not seen; cloudy.

Star 8 magn.
Two stars 9 magn. 3' to 4' and 9' South of comet, same right ascension with comet

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1882phae.proj..494W

July 13, 1882

14 38
17 17
2 39

12 9
17 18
5 9

Dh 80° 80, 80° 81. = Σ 162 v.

W. obs.

46.7 83.3 ^
10 05 130.0
231.8 67.4 ^
~~68.4~~
299.2
150.7 ^ ~~0.5~~ 2.6

139.2 73.4 ^
213.1
10 10 323.2
17.2 64.0 "
137.9 ^ ~~0.5~~ 2.4

nonetheless so bright

Same objects.

10 10 136.6 71.0 ^ P. obs.
217.6
324.4
29.7 6 v.3 ^
146.3 ^ ~~0.6~~ 2.6 v

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1882phae.proj..494w

July 13. 1882.

other images. P. obs.

10 15 218.9 +3.1
302.0
46.6
123.7 77.1
160.2 2.4

Search for Klein Neb. &c

Telescope 1 30 W Search -12°.5 to -17°.5
Began at 18 50
16 30
16 40
Moved telescope and began again.
Telescope 1 40 W -12.5 to -17.5
Began at 18 20

18 45 15°.8 2d Magn. 17h3m 15.6=4 Cet
49 12.9 Klein Neb.
58 18.0 Neb not plain
19 01 Enlarged.

19 11
1 53 -17°.9
17 18
17 13 18.4 = mag ? poor object

Generally cloudiness prevented the identification of the Klein Neb. Approximate 17h7m -12°.9
Probably Dreyer 5851.

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1882phae.proj..494W

July 15, 1882.

Serpentis

7	ν6	211.7	~~816~~		P. obs.
		133.3	78.4		
		316.0	77.6		
		33.6	156.0	2.ν	
			~~0.ν~~		
7	ν8	229.7			P. obs.
		300.8	71.1		
		42.6	82.7		
		125.3	153.8	2.ν	
			~~0.ν~~		
8	0	225.1			P. obs.
		303.6	78.ν		
		46.6	78.4		
		125.0	156.9	2.4	
			~~0.4~~		
8	2	316.8			P. obs.
		3ν.9	79.1		
		132.0	81.2		
		213.2	160.3	2.4	
			~~0.4~~		

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1882phae.proj..494w

July 15, 1882.

H.a. $14^h\ 22^m$ +6.9 dec.
1v 44
+1 22

Object found but too close to make satisfactory measurement in twilight. P. obs.

H.a. = $12^h\ 10^m$
1v 1v8 +8.9 dec.
3 48

		43.6		
8	29	124.4	80.8	P. obs.
		224.2	77.8	
		302.0	158.6	
			0.4 2.4v	
		130.6		
8	32	214.0	83.4	P. obs.
		315.9	74.1	
		30.0	157.5 2.4v	
			~~0.4~~	
8	34	136.1		
		209.8	73.7	P. obs.
		314.0	77.8	
		31.8	151.5 2.5v	
			~~0.5~~	

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1882phae.proj..494w

July 15, 1882.

8 224.4 78.0″ P. obs.
8 36 302.4
47.6 74.7″
122.3
197.7″ 2s
0.5

Nebula found July 13 (p. 43)
Dreyer 5851?

17 7 −12° 9′
16 21
−46

S obs. Nebula small, rather bright, somewhat oblong, elongation north and south; one small star 0′.25 north of nebula. Spectrum of nebula gaseous, of star continuous.

Two stars, magn. 9.5, distance 0′.5, sf and sp, precede the nebula 4m.5, the northern in about the same declination as the nebula. Color of sp star 2, of nf star 3. Spectra faint, perhaps banded, the nf star probably banded.

P. obs. Spectrum of nebula gaseous. ~~Spectra~~ & Color of stars preceding nebula: sp star 0 nf star 2.

A bright star follows the nebula several fields.

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1882phae.proj..494W

July 15, 1882.

Interval between nebula and the bright star following by stopwatch.

B. 236

Nebula	17h	18m	14s	5	I. obs.
Star	17	24	59.5	2	

Star 3' n of nebula, 6m 45s.5
1875. 17h 18m 48s -12° 43'
ν Serpentis

Northern of two stars pr. neb.	17h	26m	39s	5	
Nebula		27	25.5	5	46s.0
Star (ν Serpentis)		34	10.3	2	6m 44s.8

The bright star is about 5.8 magn. and has a faint red star near it. nf. Spectrum too faint to observe. The bright star is ν Serpentis.

U. A. Oph. 91	17h	51m	57s	−1	4m 20s.5
Nebula		55	17.5	+13	probably 3m 20s.5
U. A. Oph. 91		56	32.3	−1	3 20.5
Northern of 2 stars pr. neb.		59	7.5	+13	45.3
Nebula		59	52.8	+13	
U. A. Oph. 91	18h	1m	40.8	−1	3 20.2
Northern of 2 stars pr. neb.		4	16.2	+13	44.8
Nebula		5	1	+13	

In A. N. 2439, Temple gives a better place of Dreyer 5851.

U. A. Oph. 91 identified by η Ophiuchi (U. A. Oph. 90).

Position of nebula for 1875 17h 7m 3s −12° 46'

For 1860 17h 6m 13s −12° 45'. Probably same as Dreyer 5851. Region following nebula examined without finding another.

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1882phae.proj..494W

July 15, 1882

Sweeping for Planetary Nebulae.

7P. obs.

	20	30
t =	19	9
	1	21

Clamped 1h 20m East

Plan Neb found at 11h 55m

H.9, 1h37m W −19°.9 at 19h35m

R.A. 17h 58m

	1 49	−19°.9
	19 48	
	17 59	−19.9 = Approx place of Neb

Neb prec. 22.3 21.0 5' south of 17 Sagitt: ⊙ Neb

? Cd. 17691 for

μ Sagitt	1 45	−21°.2
	19 53	
Ra	18 08	
	18 06	21°.1

∴ Approx position of Neb. is 17h59m −19°.9

See p. 76 for more exact place.

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1882phae.proj..494W

July 16, 1882

Search. Weak. 30s E. +12.5 to +17.5

10 21 Began at 18h 10m

18 33 13.6 3d magn.

Closed at 18 52 nothing found.

19 8

9 +1.4

19 17 +1.4

19 18

+2

19 20 +2.9 4 magn

19 18 2° 50' 3.2

This nebula is Dm +1° 3979

RA 1855 19h 15s 35.1 +1° 14.3

Time object will exhibit for parallax. Bright and minute attorney not distinguishable from a star with power of 450

Precession (approximate) by B.A.C. 3.0 6.5

Place, 1880, 19h 16m 50s, +1° 17.0

Place, 1875, of Dreyer 5831, RA from 1.47, 17h 7m 3s, −12° 46'

Precession (approximate) by B.A.C., 3.4 4.5

Place, 1880 — — — — — — — — — — 17h 7m 20s, −12° 46'

Tempel's place, in A.N. 2439, agrees with this.

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1882phae.proj..494W

July 17. 1882.

Σ 26 v v.

20 f + 21.8
16 10

−3 v f.

16 20
−3 K f

Dome opened and turned on region but too cloudy for work and growing worse. W.

Cleared overhead. Opened dome again.
20 f Components equal.
17 f Same as above.

−3 0 +21.8

9 36 8 v. 8 < m. dia. W. obs.
17 v. 2 89.4 ^
2 v v. 2 106.8 ^
2.0 ---
196.2 ^ ~~0.3~~ 1.7 v

9 40 2.8 < m. dia. W. obs.
8 v. 0 82.2 ^
167.0 106.8 ^
273.8 ---
189.0 ^ ~~0.4~~ 1.8 v

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1882phae.proj...494w

July 17, 1882.

The components are about equal

q 49

843
177.7 < S. dis.
271 ∨ 93.7 ^
370.0 8 ∨ ∨ ^
178.9 " ~~0.0~~ 2.0 ∨

8 obs.

q ∨∨

3 ∨ 8.∨ < S. dis.
179.8 81.3 ^
~~167.0~~
171.∨ 98.∨ ^
270.0 179.8 " ~~1.0~~ 2.0 ∨

8 obs.

Σ 2718.

20 36 +12.2
17 4∨
2 ∨1

2 4∨
17 ∨7
20 39

20 39
17 ∨7
2 4

Found; have increasing too much for

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1882phae.proj..494W

July 19. 1882.

☆ 2718.

20 36 +12.°3
16 20
-4 16

16 3
-4 4

Dm. +12° 4437 color 2. spectrum not peculiar. W. obs.

W. obs.

9 0

78.0
176.2 2 fol. dis.
264.7 98.2
354.0 89.3
187.5 1.9

Other images

9 8

350.8 2 fol. dis.
86.4
179.0 92.6
268.3 79.3
174.9 2.1

W. obs.

Rame ~~objects~~ object.

11

350.0 2 fol. dis.
80.9 90.9
169.3 99.5
268.8 190.4 1.4

W. obs.

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1882phae.proj..494W

July 19, 1882.

Other images
94.1 < fol. dis.
9 15 184.2 90.1 "1
2 ✓ 4.2
3 ✓ 7.4 103.2 "1
193.3 "1 ~~0.7~~ 1.7 ✓

W. obs.

Σ 2 6 ✓ ✓.

A.R. = 20h 8m Dec = +21° 8

17 13
2 ✓ ✓

87.2 < n. dis.
9 24 183.9 96.7 "1
2 ✓ 7.7
3 ✓ 5.6 97.3 "1
194.0 "1 ~~0.7~~ 1.7 ✓

W. obs.

Other images } Reject - Photometer removed to find images - Images lost.
329.2
9 30 79.9 < n. dis. } W. obs.

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1882phae.proj..494W

July 19, 1882.

Other images

86.6 < n. dis.
9 39 174.1 87.5 ^
261,5 98.7 ^
0.2 ~~0.1~~ 1.9 ✓
186.2 ^

W. obs.

Same images

72.6
9 42 183.2 < n. dis. 110.6 ^
276.8 74.9 ^
3✓1.7 ~~0.1~~ 1.9 ✓
185.5 ^

W. obs.

Other images

91.0
9 44 185.2 < n. dis.

Reject. Uncertain as to which image W. obs. disappeared

Other images

356.2
9 46 82.9 n. dis
164.9 86.5 ^
269.2 104.3 ^
~~0.2~~ 1.8 ✓
190.8

W. obs.

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1882phae.proj..494W

July 19. 1882.

19 15
14 21 −1.°7
+4 −6

19 −1
14 17
−7
−34

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1882phae.proj..494W

July 20. 1882.

Σ 2220, μ Herculis.

17	47	+27.8
16	27	
−1	14	
	1″	

Too high.

19	45	+10.0
16	31	
−3	14	

The ~~fol.~~ red star mentioned below is 2 M. +9° 4264. (8.5)
a prec. b 1m 37s.8 and is 9' south of it.
c fol. b 2 41.7 " " 9.5 north " ".

'a' is red. Color 2. Possibly banded. W. obs.
'c' " doubled — to be measured below —

Σ 2370 Phot. H. α 19h 45m δ +10°
Companion barely visible. S. obs.

q 15

111.9	
141.0	29.1″
294.4	23.6″
318.0	
	52.7″ ~~37.~~ 5.2″

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1882phae.proj..494W

July 20, 1882

9 25 — 30.9 / 50.8 — 19.9″ — S. obs.

210.2 / 227.6 — 17.4″ — 37.3″ ~~3.9~~ ✓.9 ✓

9 30 — 28.8 / 45.9 — 17.1″ — S. obs.

208.1 / 232.2 — 24.1″ — 41.2″ ~~37~~ ✓.7 ✓

9 37 — 299.0 / 317.5 — 18.5″ — S. obs.

120.1 / 139.8 — 19.7″ — 38.2″ ~~3.9~~ ✓.9 ✓

Clouds

Σ 2718 — α 20h 36m δ +12°

86.1 / 170.6 — 84.5″ — following and fainter disappears — S. obs.

10 45 — 256.1 / 359.9 — 103.8″ — 188.3″ ~~0.8~~ 1.8 ✓ — Clouds passing

81.8 / 177.3 — 95.5″ — fol. dis. — S. obs.

10 50 — 268.8 / 354.5 — ✓5.7″ — ~~86.7~~ — ~~182.7~~ ~~0.0~~ — 181.2″ — 2.0 — Other images intended but apparently there are the same. ✓

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1882phae.proj..494W

July 20 1882

	2550	– fol. dis.		S. obs.
11 0	358.2	103.2		Other images than
	80.1	101.0		those last observed
	181.1	204.2	0.5	1.5 ✓

	170.8	– fol. dis.		S. obs.
	272.2	101.4		Images again
11 15	353.5	86.9		exchanged.
	80.4	188.3	~~0.2~~	1.8 ✓

Clouds less troublesome in last two sets. Reject first two.

Bond 236.			Bond 394		
10	25	13.1	2	26	0.0
	26	13.2		27	0.0

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1882phae.proj..494W

July 21. 10d 2h.

Σ 2v90. Phot. H.
19 45v +10.0
16 20°
−3 25v

8 25 Somewhat cloudy.

DM. +10° 4073 Mag 5.5 = Color 2. Spec. W. ols.
banded.

Σ. 2v90

Red. Color 1 Possibly banded. W. ols

29.0 < btw. dis.
8 41 48.2 19.2°^ . W. ols
207.8 22.1°^ :
229.9 41.3°^ . ~~3.7~~ 4.7 ✓

Other images –
Images bad – Seeing poor. W. ols
1131
8 43 1422 29.1°^
2918 35.4°^
3272 64.5°^ ~~3.7~~ 4.7 ✓

Stopped for Meridean Photometry.

16h 30m to 17h Cloudy; disappearance of Jupiter H could not be observed.

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1882phae.proj..494W

July 22. 1882.

Comet Walls. W. obs.

11 23 +6.9 Cloudy.

16 3 ✓
+ ✓ 1 2

16 ✓ 6
+ ✓ 3 3

17 3 1
+ 6 4

Comet seen but clouds and bad seeing prevented obs. Clouds increasing.

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1882phae.proj..494w

July 24. 1882.

Σ 26 ν ν.

20 8 +21.8

16 2ν

−3 43

16 30

−J J8

8 29 79.7 < Northern dis. W. obs.
182.ν 102.8° ^
268.2 84.6° ^
3ν2.8 187.4° ^ ~~0.1~~ 1.9 ν

Other images.

8 34 168.8 W. obs.
271.8 < Northern dis.
3ν7.8 103.0° ^
81.2 83.4° ^
186.4° ^ ~~0.1~~ 1.9 ν

Same images. W. obs.

8 34 17ν.8 < Northern dis.
263.2 87.4° ^
349.ν 95.5° ^
8ν.0 182.9° ^ ~~0.1~~ 1.9 ν

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1882phae.proj..494W

July 24. 1882.

Other images. W. obs.

8 43 7 8.5 2 southern dis.
17 5.0 96.5 1
~~11.5~~ 99.9 1
2 7.5 196.4 1 ~~0.2~~ 1.7 ✓
3 7.5

Stopped for Meridian Photometry. H.

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1882phae.proj..494W

July 27. 1882.

A.R= 20 3v Decl +12.2 = ☄ 27/f.

16 3v

-4 0

8v.6

8 26 173.2 < fol. dis. W. obs.

259.1 87.6'

1.2 102.1'

189.7' ~~0.2~~ 1.4v

Other images.

175.9 < fol. dis. W. obs.

8 28 267.7 91.8'

350.2 94.0'

84.2 ~~0.1~~ 1.9v

185.8'

Same images.

348.8 < fol. dis

8 31 88.2 99.4' W. obs

176.4 87.4'

263.8 ~~0.1~~ 1.9v

186.8'

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1882phae.proj..494W

July 2 v. 1882.
Other images.

8 40 3 4 9.6 W. obs.
8 v. 8 fol. 96.2 dio.
17 v. 8
26 v. 6 89.8 / 186.0 ~~0.~~ 1.9 v

Stopped for work with large Mer. Phot. (W.)

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1882phae.proj..494W

July 26. 1882.

Σ 16 ✓.

12 10 +0.9

16 40

+4 30

8 31 358.1 ∠ brighter dis. W. obs.

82.1 84.0° ↑

186.9 68.3° ↑

2✓✓.2 152.3° ↑ ~~0.✓~~ 2.✓ ✓

other images.

8 3✓ 86.3 ∠ brighter dis. W. obs.

171.0 84.7° ↑

277.2 64.5° ↑

341.7 149.2° ↑ ~~0.6~~ 2.6 ✓

8 40 Same images.

98.8 61.2° ↑ W. obs.

160.0

271.2 80.3° ↑

3✓1.✓ 141.5° ↑ ~~0.7~~ 2.7 ✓

8 44 other images. W. obs.

6.1 67.8° ↑

73.9 81.7° ↑

174.4 149.5° ↑ ~~0.6~~ 2.6 ✓

260.1

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1882phae.proj,.494W

July 26. 1882.

Identification of 4th type star mentioned on page 243 of this book. This is Dreyer 3851, located p. 47.

17 7 −12.9

17 24

+0 17

17 37 42

+0 30

Cloudy.

Fourth type star preceding U. A. Sag. 176. See R98,205, and this book p. 36.

19 15 −16.2

17 57

−1.18 169.2 pos. zero. Set 214.2

W. Obs.

a 1st double star brighter & southern component

b 2d " " " southern component (equal)

c IV type star

d ν Sagittarii (U.A.176) 1880; 19h 14m 51s, −16° 10'.7

a, b, c, d in southern half of square.

						1880 α		1880 δ	
9.9824	a	16.6	2.3786	239	120	19h	10m 47s	−16°	10'.7
1.1761	b	21.8	2.4970	314	157	19	11 12	−16	10.1
1.1585	c	43.4	2.7960	625	312	19	12 17	−16	7.5 this agrees with place in A.N. 2405.
	d	16.8	2.3838	242	121	19	14 51	−16	10.7

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1882phae.proj..494W

July 26 1882

Transits of these four stars. W. obs.

a	18	13	32.3	13 40.6 4 4.7 16.7		18	34.9	18 43.2 4 4.3 16.5		
a			49.0				51.4			
b			55.3				58.0			
b		14	17.2	14 6.2 3 39.1 21.9		19	19.7	19 8.8 3 38.7 21.7		
c			49.2				51.3			
c		15	32.3	15 10.8 2 34.5 43.1		20	35.0	20 13.2 2 34.3 43.7		
d		17	37.0			22	39.0			
d			53.6	17 45.3 16.6			56.0	22 47.5 17.0		

U. A. Sagittarius 176

(ν Sagittarii)

Color 1. Narrow bands in spectrum.

W. obs.

Σ 2590

RA 19h 45m +9° 59'

18 02

1 13

10 20 122.0 < btw. dir W. obs

140.1 ~~166.1~~ 18.1 ^

306.2

319.8 ~~6~~ 13.6 ^

31.7 ^ ~~4.3~~ 6.3 ✓

2405.

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1882phae.proj..494W

July 26, 1882.

Other images

10 26

34.0 < brtr dis.
46.2 12.2"
213.0
229.8 16.8"
29.0"

W. obs.

~~4.5~~ 6.1

Same object

10 4

35.0 1.9"
0.9 < brtr dis.
213.7
231.8 18.1"
34.0"

W. obs

~~4.4~~ 6.8

Other images.

10 10

304.2 < brtr. dis.
318.7 14.5"
120.1
143.3 23.2"
37.7"

W. obs.

~~3.9~~ 5.9

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1882phae.proj..494w

July 27. 1882.

Σ 2220. Wr. obs.

17 41 +27.8
16 40
−1 1

16 46
−0 ✓ ✓

δ 34 126.0 Wr. obs.
137.8

Stopped for Mer. Phot. Wr.

h 4 17 +48.2
t 18 11 Σ 1909.
13 44

44 Bootis ~~(80)~~
+48.2

18 8
a.R. 14 59
+3 9

9 49 93.9 < fol. + bet. dis S. obs.
173.7 79.8°
273.6 82.7°
356.3 162.5° 0.3° 2.3°

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1882phae.proj..494W

July 27, 1882.

Estimated difference of Mag = .8 S. ds.

Other images

3.1 < fol & last dis

9 54 83.0 79.9 ^ S. ds.

181.7 79.6 ^

261.3 79.7 ^ 2.4 V

9 56 Thin clouds passing.

Same object

267.9 < prec. dis.

10 0 353.2 85.3 ^ (Foggy in setting this) W. ds.

Fog came on

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1882phae.proj..494W

July 29. 1882.

Comet Trells. W. obs.

11	4 ✓	+ ✓ .7
16	✓ 0	
+ ✓	✓	

17	39
11	4 ✓
✓	✓ 4

11	45
17	7
5	22

11	4 ✓
17	31
✓	46

Nebula discovered July 15. P. obs.

17	✓ 9	-19.9
17	✓ 7	
	2	

Cloudy; not seen - moon bright.

~~Nebula~~.

14	✓ ✓	+ ✓ 4.4
18	✓	
+ 3	10	

Pair of 7 magn. stars in above position, observed on p. 72.

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1882phae.proj..494W

July 29, 1882.

9 49

175.2
265.0 89.8 ·^ southern & brighter disappears W. obs.
10.5
67.6 57.1 ·^
146.9 ·^ ~~0.6~~ · 2.6 ✓

other images.

9 59

260.2
357.8 97.6 ·^ E. and br. disappears.
102.1
158.5 56.4 ·^
154.0 ·^ ~~0.5~~ · 2.5 ✓

10 8

92.6
161.4 68.8 ·^ P. obs.
276.4
345.8 67.4 ·^
136.2 ·^ ~~0.9~~ · 2.9 ✓

10 10

144.9
258.0 73.1 ·^ P. obs.
~~5.1~~
73.4 68.3 ·^
141.4 ·^ ~~0.7~~ · 2.7 ✓

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1882phae.proj..494W

July 29. 1882.
Σ 1830.

14 11 +√7.4
18 41
+4 30

Fol. star abt 0.7 mag. brtr. S. obs.

10 23 89.0
166.0 77.0 ^ < Fol. and brtr dis.
274.9
3√0.0 7√.1 ^
1√2.1 ^ 0.√ 2.√ ✓

~~10 29~~ other images.
10 29 73.1 72.8 ^ S. obs.
7√.9 ~~102.4~~
178.3
263.3 8√.0 ^
1√7.8 ^ ~~0.4~~ 2.4 ✓

W obs

186.6
257.4 70.8 ^ f brt dis.
10 36 8.5
77.0 68.5 ^
139.3 ^ ~~0.8~~ 2.4 ✓

95.0 76.8 ^ f brt dis.
171.8
10 40 275.9
344.9 69.0 ^
145.8 ^ ~~1.7~~ 2.7 ✓

Observation difficult on acct of clouds & comets and moonlight.

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1882phae.proj..494W

July 30, 1882

Experiments with direct vision spectroscope to detect characteristic spectra of bunched stars.

A line easily visible = α Ophiuchi
and = 3d mag at 18h +9°

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1882phae.proj..494w

Aug. 2, 1882.

Transits to identify DM. +1° 3979. P. obs.

B 236

DM. +1	3976	18h	2m	21.3	10
	3977			24.0	0
	3979			44.1	2
	3982		3	4.4	6

DM. +1 3979 has a gaseous spectrum; see p. 49.

Search for nebula found July 15; P. obs.
See p. 48.

Nebula found and compared with a star 5' north of nebula

B. 236

				Δα
Nebula	18h	18m	35s.6	20s.7
Star			56.3	
Nebula		19	11.4	20.8
Star			32.2	
Nebula		19	45.0	20.6
Star		20	5.6	

t	18	24	30	19.9
h +		24	30	
α	18	0	0	

μ Sagittarii

t	18	25	10			21.1	
h		17	0	2	18	8	10

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1882phae.proj..494W

Aug. 2

t 18 29 10 S 20.9
h 20
18 9

U. A. Sag. 43
44 also seen.

Bl. A. Sag. 39 found.

~~Nebula~~ Star 18 h 34 m 22.0 s — 9 δ — mag 8

		h m s	δ	Mag.
	B. 236			
Nebula		18 38 57.5	4	neb
		35 43.0		
Dl 33111	Star of 11.75	35 18.2	9	7
		36 25.6		
Star		35 43.0	11	8
		lost		
Star		38 11.5	12	8
		lost		
Star		38 49.0	2	8
		39 33		c
Star		38 52.0	3	9
		39 36		
Star		38 53.0	0	9
		39 38		
U. A. Sag. 39		40 59.3	3	6
		41 44.0		

U. A. Sag. 39 = Dl. 33327

1875.0	18h 3m 50s	−19°	51'.8
1800	17 59 24	−19	51.9

5m 41s 6.4

Dl 33111 1800 17 53 43 −19 45.1

Dl. 33111 = Oe. 17593-4. 1880, 17h 58m 27s, −19° 46'

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1882phae.proj...494W

Aug. 3. 1882.

Σ 162ν.

12 10 ±0,9

17 17

+ν 7

98,5 < n. & brtr. dis. W. obs.

8 ~~3+8~~ ~~45~~ 163.5 65.0 ^

266.3 91.1 ^

357.4 156.1 ^ ~~0.1~~ ~~0.ν~~ · 2.ν

Other images

189.0 < n. & brtr. dis. W. obs.

8 ~~41~~ 251.ν 62.ν ^

0.1 84.8 ^

84.9 147.3 ^ ~~0.6~~ 2,6

Same object.

8 42 4.6 P. obs.

±0.3 75.7 ^

146.4 76.8 ^

263.2 152.ν ^ ~~0.5~~ · 2.ν

8 ν1 94.1 P. obs.

169.3 75.2 ^

271.7 72.ν ^

344.2 147.7 ^ ~~0.6~~ 2.6

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1882phae.proj..494W

Aug. 3. 1882.

~~Pair of D. m. 7 mag. stars.~~ Σ 1830.

14 11 +√7.4

17 44

+3 37

Meas. ~~difficult~~ quite difficult on account of closeness of components.

W. obs.

188.9 < fol. + lstr dis.

9 10 2√.7 66.8"

3.1

77.1 74.0"

140.8" ~~0.8~~ 2.8 ✓

other images

W. obs.

~~178 < fol. + lstr. dis.~~

~~278.0~~ 10√.2

9√.8 < fol. + lstr. dis.

9 19 184.9 69.1"

27√.√ 76.6"

3√2.1 146.7" ~~0.6~~ 2.6 ✓

Pair of 7 mag. D m. stars.

14 √5 +√4.4

t = 18 27

+2 3 2

W. obs.

28√.3 < S. + lstr. dis.

9 41 338.2 √29"

91.6 79.6"

171.2 132.√" ~~0.9~~ 2.9 ✓

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1882phae.proj..494w

August 3, 1882.

Other images
9.8 < S+ htr. dis. 61.8° ^
9 47 21.6
181.3 80.9° ^
262.2 142.7° ^ 2.7 ✓
~~0.7~~

Same object
183.6 < right hand + htr. dis
9 √2 254.4 70.8° ^ W. obs.
√.2
76.1 70.9° ^
141.7° ^ 2.7 ✓
~~0.7~~

Other images
278.7
345.6 66.9° ^ P. obs.
9 √6 97.3
169.2 71.9° ^
138.8° ^
~~0.8~~ 2.4 ✓

Looked at ϵ Serpentis with Comet Seeker on West Balcony at 9 P.M. Components of normal brightness. P. obs.

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1882phae.proj.494w

August 3, 1882

13 Bootis

14 4 + v0

t = 18 v3

+4 49

Star found -

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1882phae.proj..494w

August 5, 1882.

605 Disappearance of nuclear lightness

Comet Wells. W. obs.

17	18	
12	2	+4.5
+5	16	

Cloudy. in above region.

ζ Herculis. W. obs.

17	9	+14.5
17	44	
+0	39	

Record of position of lines in spectrum by scale in focus of eyepiece.

Bands taken in order of refrangibility.
An indistinct dusky band in extreme red −4.0 divisions of scale from ~~to~~ more distinct band in red assumed as the zero band.

Means

−4.0	dusky band in extreme red,
0.0	sharp " " red.
2.9	band in yellow,
4.0 5.9	" " yellowish green.
8.1	" " green.
12.8	" " "
16.9	" " greenish purple.
20±	" violet (faint)

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1882phae.proj..494W

Aug. 5. 1882.

In all the previous ~~cases of measures~~ measures the more refrangible and sharply defined edge of band was taken. The fourth band on previous page was first measured as 7.0 but the zero band must have been out of position and the a careful adjustment gave 5.9 as above. W. obs.

Nova Cygni.

21 37 +42.3
18 36

-3 1

21 35.5 42.7
18 50

-2 45.5

D M. +42° 4177 (Aug. 5.2) is color 3 and banded. W. obs.

Nova Cygni found. Spectrum faint but mainly monochromatic. W. obs.

Nova Cygni at 13.5 by l. 13.8 by W and Dun Echt obs.

I Sagittæ at usual brightness about 10.5

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1882phae.proj..494w

Aug 6. 1882.

4 10 The result of a careful examination of the spectrum of Vega Cygni by P. last night was "Vastly certainly continuous." ~~The mistake~~ This remark was intended for entry in record but was omitted by mistake. The adjacent 15 a noted in Cygnus 2 was seen, but its spectrum was too faint to be observed. The appearance of P. is the same as in 1880, only fainter. If monochromatic now, it probably was then. Observations of P. and W. wholly independent and irreconcilable on further examination.

See page 86 for continuation of record for Aug. 6.

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1882phae.proj..494W

August 9, 1882.

18 1 −21 3
17 24
−37

Barnard's nebula.

~~Nebulae~~

14 22 ν
14 17
17 41
+3 24

−1° 38
+1 40
+0 2

17 √6
3 ⌐2
14 24

t = 17h 47m 47.7
47 √2.4

17 √7
14 17
3 ⌐4
17 √7
14 17
⌐40

17 22
17 √6
17 √38
14 22
⌐⌐2

Nebula found.

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1882phae.proj...494w

August 9, 1882

					Mag
$t =$	17^h	$\sqrt{8}^m$	$27^s.0$	Dec 0.0	
		$\sqrt{9}$	41.4	" 6.0	9.5
	18	0	22.0	" 0.5	9.4
		2	$\sqrt{3}.2$		
		5	3.4		
		7	48.2		
		8	8.8		
		10	18.2		
			3 0.6		
		11	16.3		
			$\sqrt{0}.2$		
		12	22.2		
			30.7		
$t =$		18	15 44.0		
			16 3.4		
			16.4		

Identification of stars,

Pos. 0 = 212.3
4 5
Set at 2 $\sqrt{}$ 7.3

~~Order Neb, Neb, Star Star~~

~~18^h 26 17.5~~
18^h 26^m 46.8^s
$\sqrt{}$8.4
11.0
2 5.4

See page 87 for continuation of this record.

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1882phae.proj..494W

Aug 8, 1882

Search for plan nebs. $-20°$ to $-25°$
$17^h 20^m$ to $18^h 0^m$

Telescope 45^m W hour at $18^h 5^m$

30 20.0 large plan neb.
44 20.7 Enlarged neb.
47 21.4 Del 17681 Elliptical

20.1 1 18 at $19^h 3^m$

RA = $17^h 45^m$ Dec $-20°1$ = GC 4333

21.0 ∴ 8m Star foll. neb 21^s ; Comes
42.1 due. visible 0's
6.3.2

Del. 17247-8 for 1850	17^h	40^m	$42^s.0$	$-19°$	$57'$	$5''$
Prec. 10 yrs.			35.6			15
1880	17	41	17.6	-19	57	20
			21.			
Mean of Neb.	17	40	56.6	-19	57	20
G.C. 4333	17	40	54.7	-19	58	3
Errors, proper motion, &c			1.9			43"

Neb. has diam of 2 or 3^s
G. C. description; pB; pd; R; gbM; 2; ×15 mf.

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1882phae.proj..494w

Aug 9, 1882

Continued from page 86.

~~18 27 46.2 ν7.3~~ Barnard's Neb. Con.

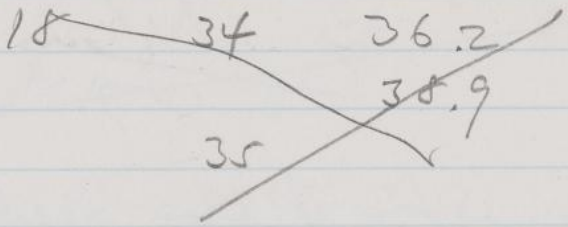
Order Star, Neb., Neb., Star. both in southern half of square -

18	29	ν0.4
	30	ν2.8
		17.0
		39.4
	30	ννν.2
		ν7.2
	31	2ν.0
		44.0
		~~4.6~~
		~~7 2~~
	32	2ν.0
		27.7
	~~33~~	ν3.4
	33	14.4
	33	29.ν
		31.3
		ν8.8
	34	19.4

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1882phae.proj..494W

Aug. 9 1882



18 35 22.4
24.2
$\sqrt{}$0.6
36 12.4

36 30.0
32.0
$\sqrt{}$9.2
37 20.0

~~Order~~

Comp. Star = Dm. +0° 3170 Mag. 9.3

$t = 18^h\ 39\ \sqrt{}0.0 = 13^s$
$\quad\ 40\quad\ 30$

Nebula faint with no decided condensation but gradually a little brighter in the middle. W. obs.

18 49 $\sqrt{}$0 7.2
4 34 11.2

17 $\sqrt{}$

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1882phae.proj..494w

August 9, '82.

Dm +0° 3165 [Mag 7.0]

Color 2

Star too low - uncertain as to whether it is banded - W. obs.

Dm +9° 3705 [Mag 8.4]

~~+9 +10.0~~

+9.9

18 20

18 58

38

Thought to be 9.5 by Merid. Phot. (Series 32.)

19	8	21.5	17	18
		41.0	17	03
18 48	11	32	16	30
	12	3	16	46
	12	41		16
	13	16		

Seems, on examination with equatorial, to be fully as bright as nominal Dm. magnitude. W. & P.

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1882phae.proj..494W

Aug. 9. 1882.

Sweeps for Plan. heb. – Telescope being clamped at 3h west. Sweeps from +12.5° to +17.5° P. obs.

Began 1937

19	54	98	2 nyn.	
	59	141	III Typ 4 nyn	B.A.C. 5749?
20	13	109	Typ Opt ??	
20	22		~~Ce~~ Ended	

~~Nothing else~~ no object of interest found

Ce.

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1882phae.proj...494w

August 11, 1882

7 vo Examined δ Serpentis and companions found to be of normal brightness - observation taken with the Comet Seeker on West Balcony. P. obs.

Comp. Star 2 (Book 27, p. 216) which was used (see p 10 v this book) is Dm. +10° 3411 (6.8) and is presumably the same as 12 of this page.

Sawyers Variable compared with Star #19

Phot ⊥. R prob. Pols.

147.4
262.4 115.0 < >
330.1 62.7 < >
δ 32.8 177.7 < > 227.7 < . 132.3 < 66.15 ^ .93 < ✓

Probably should be 22.2 δ

δ 20.2
20.1 < 7
8 +6.2

P. obs.

151.7
261.5 109.8 < >
330.2 64.7 < >
δ 34.9 174.5 < > 224.5 < 135.5 < 67.75 ^ .87 < ✓

22.2
22.1 < 7
8 +8.2

P. obs.

145.9
264.5 118.6 < >
331.2 62.2 < >
δ 33.4 180.8 < > 230.8 < 129.2 < 64.60 ^ 100 < ✓

24.5 >
24.4 <
8 [illegible]

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1882phae.proj..494w

Aug. 11. 1882.

	152.2			
84	257.5	105.3 + < >		W. obs.
34.5	326.8	1183 + < >		
34.4 < >	85.1			
8		223.6 + < >	136.4 + <	.85 + < >
		360.0	68.20 ^	
	149.0			
38.6 >	264.1	115.1 + < >		W. obs.
38.5 <	334.2	106.7 + < >		
8	80.9			
		221.8 + < >	128.2 + <	.81 + < >
		360.0	69.10 ^	
	152.0			
42.1	261.8	109.8 + < >		W. obs.
42.0 < >	327.7	117.3 + < >		
8	85.0			
		227.1 + < >	132.9 + <	.92 ✓ >
		360.0	66.45 ^	
	152.1			
44.3	260.0	107.9 + < >		P. obs.
44.2 < >	332.6	111.4 + < >		
8	84.0			
		219.3 + < >	140.7 + <	.76 ✓ >
		360.0	70.35 ^	
	150.4			
46.8	263.9	113.5 + < >		P. obs.
46.7 < >	334.1	106.1 + < >		
8	80.2			
		219.6 + < >	140.4 + <	.77 ✓ >
		360.0	70.20 ^	
	155.4			
48.4	259.8	104.4 + < >		P. obs.
48.3 < >	333.4	106.9 + < >		
8	80.3			
		211.3 + < >	148.7 + <	.60 >
		360.0	74.35 ^	

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1882phae.proj...494w

August 11, 1882.

151.5
8 53.3 258.0 106.5 W. obs.
8 53.2 ~~49.7~~ ~~260.0~~ 332.2 106.8
79.0 213.3 146.7 .64
360.0 73.35

150.2
57.2 259.5 109.3 W. obs.
8 57.1 ~~53.2~~ 332.4 107.7
80.1 217.0 143.0 .71
360.0 71.50

156.0
58.9 260.3 104.3 W. obs.
8 58.8 ~~54.9~~ 329.1 117.3
86.4 221.6 138.4 .81
360.0 69.20

159.4
9h 1.m1 258.4 99.0 P. obs.
89 1.0 ~~87.1~~ 331.6 109.7
81.3 208.7 151.3 .55
360.0 75.65

148.6
2.9 264.8 116.2 P. obs.
89 2.8 ~~88.9~~ 336.0 106.8
82.8 223.0 137.0 .83
360.0 68.50

154.3
4.7 257.5 103.2 P. obs.
9 4.6 ~~0.7~~ 332.0 111.1
83.1 214.3 145.7 .66
360.0 72.85

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1882phae.proj.494w

August 11, 1882.

		152.8				
9h	6m.8	254.0	101.2+< >			W. obs.
9	6.7 < > 2.8	334.0				
		84.7	110.7+< >			
			211.9+< >	148.1+<	.61+< >	
			360.0	74.05		
		153.0				
	8.8	257.6	104.6+< >			W. obs.
9	8.7 < > 4.4	329.5	108.3+< >			
		77.8	212.9+< >	147.1+<	.63+< >	
			360.0	73.55		
		151.5				
	10.7	260.0	108.5+< >			W. obs.
9	10.6 < > 6.7	334.9				
		83.2	108.3+< >			
			216.8+< >	143.2+<	.71+< >	
			360.0	71.60		
		157.8				
	13.0	260.1	102.3+< >			P. obs.
9	12.9 < > 9.1	334.7	111.1+< >			
		85.8	213.4+< >	146.6+<	.64+< >	
			360.0	73.30		
		153.2				
	14.8	260.0	106.8+< >			P. obs.
9	14.7 < > 10.8	337.6	102.2+< >			
		79.8	209.0+< >	151.0+<	.56+< >	
			360.0	75.50		
		158.8				
	17.3	260.4	101.6+< >			P. obs.
9	17.2 < > 13.3	334.5	105.9+< >			
		80.4	207.5+< >	152.5+<	0.53+< >	
			360.0	76.25		

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1882phae.proj...494w

August 11, 1882.

		152.0			
9h	20m.5	260.0	108.0+ < >		W. obs.
9	20.4 < >	333.0			
	76.6	82.1	109.1+ < >		
			217.1+ < >	142.9+ <	.72+ < >
			360.0	71.45 ^	

Circle began moving hard so as to move entire photometer — remedied by oil — Re-focused —

		154.5			
	28.9	256.8	102.3+ < >		W. obs.
9	28.8 < >	333.9	105.3+ < >		
	74.9	79.2	207.6+ < >	152.4+ <	.53+ < >
			360.0	76.20 ^	
		154.3			
	30.8	260.5	106.2+ < >		W. obs
9	30.7 < >	336.1	102.2+ < >		
	26.8	78.3	208.4+ < >	151.6+ <	.54+ < >
			360.0	75.80 ^	
		151.9			
	33.5	258.4	106.5+ < >		P. obs.
9	33.4 < >	335.2	102.6+ < >		
	29.5	78.8	210.1+ < >	149.9+ <	.58+ < >
			360.0	74.95 ^	
		156.2			
	35.4	259.0	102.8+ < >		P. obs.
9	35.3 < >	329.5	110.3+ < >		
	31.7	79.8	213.1+ < >	146.9+ <	.64+ < >
			360.0	73.45 ^	
		150.2			
	38.0	260.1	109.9+ < >		P. obs.
9	37.9 < >	330.6	105.2+ < >		
	34.0	75.5	215.1+ < >	144.9+	.68+ < >

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1882phae.proj..494W

August 11, 1882

		155.7				
9^h	$40^m.3$	259.0	103.3			W. obs.
9	40.2 / 36.7	335.8	100.4			
		76.2	203.7 / 360.0	156.3 / 78.15	0.45	
		157.1				
	42.9	255.8	98.7			W. obs.
9	42.8 / 38.9	334.2	104.6			
		78.8	203.3 / 360.0	156.7 / 78.35	0.45	
		153.0				
	45.9	259.5	106.5			W. obs.
9	45.8 / 44.6	336.9	100.0			
		76.9	206.5 / 360.0	153.5 / 76.7	0.51	
		153.8				
	48.7	259.6	105.8			P. obs.
9	48.6 / 44.7	337.8	98.8			
		76.6	204.6 / 360.0	155.4 / 77.79	0.47	
		158.3				
	51.0	258.2	99.9			P. obs.
9	50.9 / 47.2	331.8	108.1			
		79.9	208.0 / 360.0	152.0 / 76.00	0.54	
		154.9	104.1			
	52.7	259.0				P. obs.
9	52.6 / 48.7	336.8	100.0			
P.		76.8	204.1 / 360.0	155.9 / 77.95	0.46	

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1882phae.proj..494W

August 11, 1882.

		155.0				W. obs.
		258.5	103.5			
		335.3				
9	55.0 ?	75.6	100.3			
			203.8	156.2	.45	
			360.0	78.10		
		157.1				
	57.2	253.9	96.8			W. obs
9	57.1	336.5				
		79.0	102.5			
			199.3	160.7	.37	
			360.0	80.35		
		155.9				
9	59.2	255.8	99.9			W. obs.
9	59.1	337.9				
		77.9	100.0			
			199.9	160.1	.38	
			360.0	80.05		
		153.3				
10h	1m.0	260.4	107.1			P. obs.
9 10	0.9	340.0				
		77.0	97.0			
			204.1	155.9	.46	
			360.0	77.95		
		162.9				
	2.8	255.4	92.5			P. obs.
9 10	2.7	335.3	103.3			
		78.6	195.8	164.2	.30	
			360.0	82.10		
		153.6	104.3			
	4.4	257.9				P. obs.
10	4.3	339.8	96.4			
		76.2	200.7	157.3	.39	
			360.0	79.65		

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1882phae.proj...494W

August 11, 1882.

		155.0					
10^h	6.7	258.5	103.5 < >			W. obs.	
10	6.6 < > 4.7	338.0	99.2 < >				
		77.2	202.7 < >	360.0	157.3 <	78.65 ^	.43 >
		157.7					
	8.7	257.0	102.3 < >			W. obs.	
10	8.6 < > 4.7	334.0	99.9 < >				
		73.9	202.2 < >	360.0	157.8 <	78.90 ^	.42 < >
		156.0					
	10.2	253.9	97.9 < >			W obs.	
10	10.1 < > 6.2	334.8	104.0 < >				
		78.8	201.9 < >	360.0	158.1 <	79.05 ^	.42 < >

Reading heretofore taken by Asst. Cutler ~~P. obs.~~

~~as~~ after record reading — here after midway of set.

nearly same — probably no correction need be applied P. obs.

		156.6	100.9 < >				
	12.7	257.5					
X 10	~~8.8~~ 12.7 < >	306.7	98.5 < >				
		74.2	199.4 < >	360.0	160.6 <	80.30 ^	.37 < >
		161.6	92.6 < >			P. obs.	
	14.6	254.2					
X 10	~~10.6~~ 14.5 < >	334.6	103.5 < >				
		75.3	196.1 < >	360.0	163.9 <	81.95 ^	.3 < >

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1882phae.proj...494w

August 11. 1882.

		154.4			
		260.1	101.3 +< >		P. obs.
10h	16.6 m	336.4	103.5 +< >		
10	16.5 +2.6 < >	40.3	204.8 +< >	155.2 +< >	.47 +< >
			3600	77.60 ^	
		158.1			W obs
	18.8	257.1	99.0 +< >		
10	18.7 +4.4 < >	339.5	98.8 +< >		
		78.3	197.8 +< >	162.2 +< >	.34 +< >
			3600	81.1 ^	
		155.2			
	20.7	256.9	101.7 +< >		W. obs.
10	20.6 +6.7 < >	336.2	101.3 +< >		
		77.5	203.0 < >	157.0 +< >	.44 +< >
			3600	78.50 ^	
		159.0			
	22.6	252.9	93.9 +< >	169.1 +<	0.20 >
	22.5 +8.6 < >	334.9	97.0 +< >	84.55 ^	W. obs
10		71.9	190.9 < >	clouds interfere = whole set.	
			3600	almost invisible = last reading	
10	28	Passing clouds.			
10	27.7 +4 <				
		164.2	94.5 +< >		
	33.7	258.7			P. obs.
10.	33.6 +2.7 < >	332.6	109.7 +< >	through clouds	
		82.3	204.2 +>	155.8 +<	.46 +< >
			3600	77.90 ^	

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1882phae.proj..494w

August 11, 1882

		162.8				
10^h	36.3^m	261.8	99.0			P. obs.
10	36.2	337.8	106.9			through clouds
		84.7	205.9 / 360.0	154.1 / 77.05	.50	
		147.4				
10	40.8	254.2	106.8			P. obs.
10	40.7	339.3	105.5			through clouds
		84.8	212.3 / 360.0	147.7 / 73.85	.62	
		154.8				
11^h	5.8^m	260.0	105.2			W. obs.
11	5.7	333.2	105.7			
		78.9	210.9 / 360.0	149.1 / 74.55	.59	
		151.1				
	7.9	261.5	110.4			W. obs.
11	7.8	333.3	105.9			
		79.2	216.3 / 360.0	143.7 / 71.85	.70	
		156.2	103.3			
	10.0	259.5				W. obs.
11	9.9	334.5	107.0			
		81.5	210.3 / 360.0	149.7 / 74.85	.58	
		150.8				
	13.5	262.2	111.4			P. obs.
11	13.4	333.8	104.9			
		78.7	216.3 / 360.0	143.7 / 71.85	.70	

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1882phae.proj...494w

August 11, 1882.

		156.3				
11h	14m.8	254.7	98.4			P. obs.
11	14.7 < >	331.2	108.8			
		80.0	207.2 < >	152.8 <	.52 < >	
			360.0	76.40 ^		
		157.2				
	16.3	258.4	101.2			P. obs.
11	16.2 < >	336.1	103.7			
		79.8	204.9 < >	155.1 <	.48 < >	
			360.0	77.55 ^		
		155.5				
	20.2	257.5	102.0 < >			W. obs.
11	20.1 < >	332.2	110.3 < >			
		82.5	212.3 < >	147.7 <	.62 >	
			360.0	73.85 ^		
		154.4				W. obs
	21.6	260.3	105.9 < >			
11	21.5 < >	334.0	103.0 < >			
		77.0	208.9 < >	151.1 <	.55 < >	
			360.0	75.55 ^		
		153.5				
	23.2	261.8	108.3 < >			W. obs.
11	23.1 < >	331.7	110.0 < >			
		81.7	218.3 < >	141.7 <	.74 >	
			360.0	70.85 ^		
		150.2				
	25.3	260.8	110.6 < >			P. obs.
11	25.2 < >	336.3	102.0 < >			
		78.3	212.6 < >	147.4 <	.63 < >	
			360.0	73.70		

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1882phae.proj..494W

August 11, 1882.

		157.2					
11h	26m.7	259.7	102.5+< >				P. obs.
11	26.6< >	334.4	108.8+< >				
		83.2	211.3+< >	148.7+<	.60+< >		
			360.0	74.35^			
		153.2					
	28.4	263.8	110.6+< >				P. obs.
11	28.3< >	336.7	106.3+< >				
		83.0	216.9+< >	143.1+<	.71+< >		
			360.0	71.55^			
		153.1					
	31.1	259.5	106.4+< >				W. obs.
11	31.0< >	328.0	115.3+< >				
		83.3	221.7+< >	138.3+<	.81+< >		
			360 0	69.15^			
		149.7					
	32.4	261.9	112.2+< >				W. obs.
11	33.3< >	333.8	107.1+< >				
		80.9	219.3+< >	140.7+<	.76+< >		
			360 0	70.35^			
		152.2					
	34.8	259.8	107.6+< >				W. obs.
11	34.7< >	329.2	113.7+< >				
		82.9	221.3+< >	138.7+<	.80+< >		
				69.35^			
		151.7					
	369	261.6	109.9+< >				P. obs.
11	36.8< >	331.5	104.2+< >				
		75.7	214.1+< >	145.9+<	.66+<	0.66 >	
				72.95^			

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1882phae.proj...494w

August 11, 1882.

	156.0				
$11^h\ 38.^m4$	254.3	98.3 < >			P. obs.
11 38.3 < >	333.8	111.4 < >			
	52.2	209.7 < >	150.3 < >	.57 < >	
			7.5, 15 ^		
	150.9	110.4 < >			
40.4	261.3				P. obs
		105.5 < >			
11 40.3 < >	335.7	215.9 < >	144.1 < >	.69 < >	
	51.2		72.05 ^		
	153.5				
43.9	262.8	109.3 < >			W. obs.
11 43.8 < >	330.0	110.9 < >			
	80.9	220.2 < >	139.8 < >	.78 < >	
			69.90 ^		
	152.0				
	262.0	110.0 < >			W. obs
45.0	337.0	106.0 < >			
11 44.9 < >	83.0	216.8 < >	144.0 < >	.69 < >	
			72.0 ^		
	161.0				
46.4	260.3	99.3 < >			W. obs
	330.8	112.1 < >			
11 46.3 < >			Clouds interfere		
	82.9	211.4 < >	148.6 < >	.60 < >	
			74.30 ^		
	161.6				
~~48.7~~	259.2	97.6	Reject		P. obs
~~11 48.6 < >~~			Clouds interfere too faint to		
			Continue.		

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1882phae.proj..494w

August 11. 1882.

B. + C. 1182.

12	25	49.5
	26	49.5

Bond 394.

12	~~25~~ 25	~~49.5~~ ~~0.0~~
	27	0.0

∴ B d C ~~+~~ fast of C. m. t.

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1882phae.proj..494w

Aug. 13 1882

P. Obs. Eq. Red.

9 40 δ Serpentis at usual brightness.

Comparisons of Sawyer's Var. and g.
B 236.

19	19.55	151.4	112.4+<<<		
9h	47.2	263.8			
		330.5			
		85.4	114.9+<<<		
			227.3+<<<	132.7+<<<	.92+<<<
				66.35	
		146.8			
19	22.44	269.6	122.8+<<<		
~~19~~		331.8			
9	0.0	84.5-	113.2+<<<		
			236.0+<<<	124.0+<<<	1.11+<<<
				62.0	
		149.8	110.4+<<<		
19	24.24	260.2			
9	1.7	327.8	118.2+<<<		
		86.0			
			228.6+<<<	131.4+<<<	.95+<<<
				65.70	

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1882phae.proj...494w

August 13. 1842

Telescope 1h 5m east. P. obs.

Sweep for planetary nebulae.

Sweep from −12.5° to −17.5°

20 40 & 21 20

Began at 19h 32m 50s

19h	33m	25s	down
	34m	0s	up
	34m	89s	down
	35m	15s	up
	35m	52s	down
	36m	44s	up
	37m	47s	down
	40m	54s	down
	42m	24s	down
	42m	53s	up
	43m	32s	down
	45m	7s	up
	46m	18s	up
	47m	12s	down

19h 47m 50s 5th mag. Decl. 14°.9

	48m	14s	down
	49m	45s	up
	50m	40s	down
	53m	4s	up
	54m	10s	up
	55m	15s	down
	55m	44s	up
	56m	27s	down
	57m	3s	up

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1882phae.proj..494w

August 13, 1882

57m	34s	down	O. Obs.
58m	15s	up	
59m	4s	down	

19 59 55 4th mag. Decl. 11°9

20h 0m	8s	up	
1m	58s	down	
2m	31s	up	
3m	16s	down	
4m	5m 5s	up	
5m	0s	down	

20h 5m 59s 5th mag 15°6 3rd type, fine {U. A. Cafr. 81 see R 98, 203

6m	3s	up
6m	50s	down
7m	2 5m 5s	up
8m	24s	down
8m	5m 3s	up
10m	49s	down
11m	26s	up
12m	31s	down
13m	9s	up
13m	40s	down
14m	9s	up
14m	48s	down
15m	22s	up
15m	59s	down

ended; no object of interest found.

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1882phae.proj..494w

Aug 13, 1882.

Sanborn's Nov. P. obs.

148.2
120.6 <<<

20h 22m 5s 268.8

~~11h 20m~~

331.8

10h 50.0m < 88.2

116.4+ <<<

237.0+ <<< 123.0+ <<< 113+ <<<

6 11.50^

149.8

110.2+ <<<

24m 22s 260.0

10h 51.5m < 327.6

118.2+ <<<

85.8

228.4+ <<< 131.6+ <<< .95+ <<<

65.80^

146.9

122?+ <<<

25m 5s35 ~~209~~.1

10h 53.0m < 329.8

113.5+ <<<

83.3

~~285~~.7+ <<< 1~~8~~4.3+ <<< ~~.89~~ 1.10+ <<<

3 2

62.15^

B 236

20 58.2

BQC

11 25.2

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1882phae.proj..494w

Aug. 15. 1882.

Σ 2590.

19 4 +10.0

18 4

-1. 41

18h 15m 48s

18h 17 3s

W. obs.

The above double has a bright star preceding by 1m 15s 4.5' north. This bright star is color 1. cV6 but the seen.

≡2590

W. obs.

X		119.8	
9h	8m 0s	144.3	24.5 ° ^
9	0 <	302.0	
		319.2	17.2 ° ^
			41.7 ° ^ ~~37'~~ 5.7 ✓

W. obs.

		31.2	other images
	6m 55s	50.0	18.8 ° ^
9	6.9 <	214.0	
		230.1	16.1 ° ^
			34.9 ° ^ ~~44'~~ 6.1 ✓

Sawyer obs.

P. obs.

blurr. right		14 ~~7.1 X 2~~	
		264.7	117.5 − + ^ <
	23m 24s	326.3	
9	23.4 <	86.7	120.4 + < ^
			237.9 + < ^ ~~1.1 + 0.9~~ ✓
			~~59.48~~
			122.1
			61.05 ^

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1882phae.proj..494W

Aug 15. 1882

151.2 Sam. var. P. obs.

$9^h\ 25^m\ 12^s$ 262.6 111.4 +ℓ

9 25.2 ℓ 226.9 115.8 +ℓ

82.7 227.2 +ℓ .92 +ℓ

132.8

66.40 ^

146.2 Sanyes var. P obs.

$9^h\ 27^m\ 8^s$ 264.2 118.0 +ℓ

9 27.0 ℓ 327.8

85.3 117.5 +ℓ

235.5 +ℓ 1.10 +ℓ

124.5

62.25 ^

213.1 Σ 2590 P obs

$9^h\ 33^m\ 58^s$ 232.9 19.8° ℓ

9 34.0 ℓ 32.7

51.4 18.7°

38.5° 3.9°

147.3 Sanyes var.

$9^h\ 34^m\ 20^s$ 262.8 115.5 +ℓ W. obs.

9 34.3 ℓ 328.0

85.0 117.0 +ℓ

232.5 +ℓ 1.03 +ℓ

127.5

63.75 ^

122.8 Σ 2590

$9^h\ 9^m$ m.s.

$19^h\ 18^m\ 30^s$ 142.6 19.8°

122.1 P. obs.

144.6 22.5°

42.3° 3.6°

147.0 Sanyes var.

$9^h\ 38^m\ 32^s$ 265.0 118.0 +ℓ W. obs.

9 38.5 ℓ ~~144.6~~ 127.9

63.95 ^

329.8 114.1 +ℓ 28.21 + 1.02 f

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1882phae.proj...494W

Aug. 15, 1882.

Sawyer var. W.H.

~~Seeing bad.~~

147.9
$9^h 44^m 25^s$ 264.5 116.6+
9 44.4 3827.8
85.8 118.0+
234.6+ 1.00+
125.4
62.70

153.7
$10^h 39^m 34^s$ 261.8 102.1
325.9
78.0 112.1
220.2

$10^h 43^m 40^s$ 165.2 abandoned on account of haze.

B. + C. 1182.

10	√1	4√.1
	√2	4√.1

Bond 394.

10	√2	0.0
	√3	0.0

Eclipse of Jupiter I. P. obs.

13 h 19
23 41
13 32 0 Approx. time eclipse

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1882phae.proj..494W

Aug. 15. 1882.

	Dis. of Sat.	I.	Phot. M.	P. obs.
13	26	17.5	13 24	
	29	4.5	239.6	

Double image previn $2\frac{3}{6}$ inches from end of tube when set for observing Sawyer's Variable.
Prism not disturbed.

	Dis. of Sat II.	Phot. R.	P. obs.

Sat. II compared with Sat. III. - first sat. fol. Jupiter.

13	41	16	
	23	41	
14	4	57	approx. time eclipse.

13	49	55.5	251.0
	50	44.0	344.8
	51	3.5	249.5
		16.0	344.5
		32.5	255.4
		47.0	349.2
	52	1.0	253.8
		14.5	349.7

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1882phae.proj...494w

Aug. 15. 14h 2m.

13	55	4.5	256.7
		17.5	342.6
	56	10.0	252.4
		30.5	339.9
		54.5	253.3
	57	19.5	335.4
		37.0	254.7
		54.5	337.2
	58	5.5	253.8
		20.5	330.0
		35.5	252.8
		51.0	335.3

Clouds troublesome.

	59	14.5	253.4
		31.5	337.9
14	0	14.5	329.0
		43.5	251.2
	1	4.0	337.2

Sat. invisible in increasing clouds.

~~Sat~~ At. 14h 7m photometer replaced by ordinary eyepiece, and Sat. gone.

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1882phae.proj..494w

Aug 17 1882

Swept for plan nebs. +12.5 & -17.5
14 40 & 15 20
Telescope 4h 15m N.
Began at 19 55
Ended at 20 36
Nothing of interest seen.

Sky omitted in former zones
-25 & -30° 19 40 & 19 50
Telescope 1 10 W.
Began at 20 48
Ended at 21 02

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1882phae.proj...494w

Aug 18, 1882

~~8 0~~
7 58 I Sulpeis round brightness Cent Seeker.

Tel. on meridian decl = -20.4
at $18^h 70^m$

Planetary nebula found ~~south~~ north preceding
N. G. 44 Sagittarii. ~~east~~ pleas. nb,

Nebula 6' north of star and precedes it
$19^s, 38, 57.5$ (mean $19^s.2$).

Nebula minute 13 magn. difficult on account of proximity of 12^{th} magn. star. Position angle of star about 240°, distance, 10". Hour angle $2^h 22^m$; declination 20.5

44 Sagitt.	18	7	47 19	20	25.4
Plan Neb 1875	18^h	7^m	26^s	$-20°$	19'
1880	18^h	7^m	44^s	$-20°$	19'

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1882phae.proj..494W

Aug. 18, 1882

Telescope 8h west. P. obs.
Sweep from −15 to −20

20h 39m 30s		up
	40m 0s	down
	40m 20s	up
	41m 5s	down
	42m 14s	planetary nebula at 16.6
	45m 50s	up
	48m 10s	up
	50m 49s	up
	51m 55s	up
	54m 28s	up
	55m 12s	down
	56m 29s	down
	57m 6s	up
	57m 38s	down
	59m 16s	down

17h 42m −16.6
see p. 117

21h 1m 34s		down
	3m 26s	down
	4m 12s	up
	4m 47s	down
	5m 29s	up
	6m 14s	down
	7m 11s	up
	7m 22s	bright nebula 19.1

18h 7m −19.1
Place determined p. 118.

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1882phae.proj...494w

Aug. 18, 1882

21h

11m	55s	down	P. obs.
12m	58s	up	
14m	25s	down	nebula; shows decli. 16.1
15m	3s	up	
15m	41s	down	
17m	52s	up	
19m	7s	up	
19m	53s	down	
20m	32s	up	
21m	12s	down	
21m	58s	up	
22m	34s	down	

21h 30m 20s nebula 3h 47m west and decli. 16.3

17h 43m −16.3

nebula is 1m south of 11th magn star.

Place determined R 103, 16.

21h

33m	30s	decl.	7	magn	9	mire	a
33m	52s	"	8	"	8	"	a
34m	12s	"	7			"	b
34m	32s	"	8	"	8	"	b
35m	2s	"	18	"	9	"	a
35m	46s		18	"	8	"	b

nebula follows last star about 2m

36m	43s	decl.	12	magn.	8	mire	8
37m	25s	"	12	"	8	"	b
~~38m~~	12s	"	6	"	11	"	a
38m	51s	nebula,	" 18			"	a

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1882phae.proj...494W

Aug. 18, 1882 P. Obs.

21h 39m 20s nebula decln 18 wire b

21h 40m 12s decln 12. magn 8 wire a
40m 55s 43 " 12 " 8 " b
42m 21s " 18 nebula " a
43m 45s 44 " 18 nebula " b

21h 50m 25s Bright nebula in midst of cluster 3h 42m next decln 19.1;
Nebula equals 10 magn. star is in midst of cluster and can only be detected by spectroscope.
Estimate of magn. changed to 11 at time of sending notice to Astr. Nachr.

21h 6h 3m 48s magn. 8 decl. 16
5h 3m 58s " 8 " 15
5h 5m 47s nebula " 11 " 14 ~~4~~

	5h 5m	53s				
Col. 17880-1 ~~17881-2~~	5h 6m	35s 48	magn. 10		5	" 19
17892-5	5h 7m	2s 1 15	" 8		8	" 22
	5h 7m	18s 1 31	" 8		4	" 18
	5h 7m	30s 1 43	" 8	color 2	9	" 23 red
	5h 7m	48s 2 1	" 9		7	" 21

Col ~~17881-2~~ 17880-1	18h	5m	44 - 48	19	5 + 5	18h 4m	56s	19° 10'
17892-5	6	10	1 15	18	59 + 8		55s	19° 7'
17905-8	6	27	1 31	19	2 + 4		56	19 6
17916-9	6	38	1 43	18	59 + 9		55	19 7
17928-31	6	55	2 1	19	6 7		54	19 7
				1850	~~1860~~	18h 4m	55s	- 19° 7'
					~~1880~~	~~18h 5m~~ 14	13s	~~- 19° 7'~~
				Red. to	1880	4 1	46	
					1880	18 6	41	- 19 7

See p. 123 for new reduction with Gould's star places.

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1882phae.proj...494w

Aug. 19. 1882.

Experiments with new direct vision spectroscope.

ζ Herculis. W. obs.

17	9
18	ζ
+0	√6

+14.√

Means of position of bands in spectrum by means of scale in focus.
Were refrangible edge of band taken.

−4.0	Edge of band in extreme red.
0.0	band in red.
3.2	band in yellow.
6.2	" " light green.
8.1	" " green.
12.4	" " "
16.3	" " bluish violet.

~~ζ~~

9 46 ζ Sept is at mean brightness C. S 14

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1882phae.proj..494W

Aug. 19. 1882.

Nova Cygni.

21 37 +42°.3
19 0
-2 37.

Sanguis Var.

	1464			
9 55	2667	120.3 ⁺ < <		
	330.2			
	85.6	115.4 ⁺ < <		
		235.7 ⁺ < <	124.3 ⁺ < <	1.10 ⁺ < <
			6 2.15 ⁻ ^	
	157.0			
9 57	262.4	111.8 ⁺ < <		
	327.9			
	87.4	119.5 ⁺ < <		
		231.3 ⁺ < <	128.7 ⁺ < <	1.00 ⁺ < <
			6 4.35 ⁻ ^	
	147.3			
10 0	265.8	118.5 ⁺ < <		
	329.3			
	84.3	115.0 ⁺ < <		1.05 <
		233.5 ⁺ < <	126.5 ⁺ < <	~~1.05~~ < <
			6 3.25 ^	

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1882phae.proj..494W

August 19, 1882.

Sweeping for Planetary Nebulae
Tel. $1^h\ 35^m$ West P. ols.
Began at $20^h\ 34^m$
a $20^h\ 34^m.1$ Plan Neb at 0.6
b 34.5 " " 1.8 Ha. = $1^h 30^m$

Ended at $21^h\ 5^m$ Swept $0° \pm -5°$

Appears Plan a $19^h\ 0^s \pm 06$
b 19 14 ± 1.8

2 19 0°.7 at $21^h\ 17^s$

Sky punched with 8.5 cm Ramsden RG. 13' mch.

53	18	a	29	58^s	1 52	8^m	Dec. 141	55 10	-0° 39'
		B	30	40	1 52			55 10	
		a	31	50		mch.	14'	55 95	40
		B	32	32	1 52			55 10	38
56	47.	a	33	27.5	± 37.5	9.9	9' 22'	2' ± 35	
		B	34	9	1 37.				

Double fold chi mch 5^s 15's

3632
3631 :

.7 3638

-0° 3626 : 8m ⊙ mch

.9 3639

3625 : 8s

1855 RG $18^h\ 55\ 10$ $-0°\ 39'$
72

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1882phae.proj.494w

Aug 19, 1882

Int b pmudas $0^h - 1^\circ 3706, 195$ and is 1' E of b

19.2 38.0 58.6

Int. b. large 30" diam. diffuse.

∴ Int b 1855 Ra. $19^h\ 10^m\ 54^s$ $-1^\circ\ 51'$

+6 3

~~11 06~~ −1 48

1860 11 10 91 51

GC 4490 This object is not very distant ($\frac{1}{2}^\circ$), it looks to me like a double star, rather than a nebula. P.

* = GC 4490

Barnard Int. diam. Aug 18–19.

Aug 18	Mag 13. edges 12 m stars.		18^h	7^m 44^s	-20° 19'
"			17		−16
"	Mag 11 in midst of cluster		18	5 13	−19 7
Aug. 19			18	56 27	−0 37
"	Diam 30"	GC. 5942	19	12 ~~20~~ 20	−1 48

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1882phae.proj..494W

Aug. 20, 1882

C. Ohs.

7 45 Fhd θ Serpentis at its normal brightness.

Reduction of observations on p. 118

Stars from Cordoba Obs. XIV. 643 etc. (cluster in Sagittarius).

No.	Mag.	α 1880	δ 1880	Δα	Δδ	Δα Obs.	Δδ Obs.
67	8½	18 4 42.0	−19 4.1	3 59	−5	4 0	−5
71	8¾	4 49.5	−19 4.9	3 52	−6	3 50	−6
117	8½	6 47.2	−19 1.2	1 54	−2	1 55	....
132	8½	7 30.1	−19 5.3	1 11	−6	1 13	−2 doubtful
144	8¼	7 56.3	−18 58.6	0 45	+1	0 46	+1
150	7½	8 12.6	−19 1.6	0 29	−2	0 30	−3
156	8	8 24.0	−18 57.6	0 17	+2	0 18	+2
166	8¼	8 41.3	−18 59.4				

Identification sufficient except for No. 132. Observed differences of the others from the nebula as follows:

No.	Δα	Δδ	Nebula α 1880	Nebula δ 1880
67	+1 59	+2	18 6 41	−19 6
71	+1 49	+1	6 39	−19 6
117	−0 6	...	6 41	....
144	−1 15	+8	6 41	−19 7
150	−1 31	+4	6 42	−19 6
156	−1 43	+9	6 41	−19 7
166	−2 1	+7	6 40	−19 6
	Mean		18 6 41	−19 6
	Red. to 1890		35	0
	1890		18 7 16	−19 6

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1882phae.proj..494W

Aug. 21 d. 1882

P. obs.

Sawyer's Variable.

7h 38m ~~31s~~ 36s	161.2	
38.6<	274.8	113.6+<<
7 38.8< C.m.1.	342.2	
	93.<	115.0+<<
		228 6+<< 131.4+<< .95+<
		65.70 ^
	164.2	
44m ~~5s~~ 10s	276.2	112.0+<<
44.2<	338.6	
7 44.4<	95.6	117.0+<<
		229.0+<< 131.0+<< .96+<
		65.50 ^
	160.5	
45m ~~50s~~ 55s	270.8	116.3+<<
45.9<	342.0	
7 ~~3~~ 46.1< (1 2 3)	95.7	113.7+<<
7 43.1<		230.0+<< 130.0+<< .98+<
~~50~~		65.00 ^
	162.4	
50 18<	276.6	114.2+<<
~~7~~ 50.3<	340.0	
7 7 50.4 (50.5<)	100.2	120.2+<<
		234 4+<< 125.6+<< .107+<
		62.80 ^
	162.3	
52 30	274.7	112.4+<<
52.5<	98.4	119.3<
7 7 52.6 (52.7<)	339.1	~~120.7~~
		~~233.1+~~ 231.7<
		64.15 ^
		1.01<
		128.3< ~~126.9+~~ ~~.105+<~~
	~~96.6~~	
54 57	163.4	109.2+<< 0.84<
54.9<	272.6	114.2+<< 136.6+<< .84+<
7 ~~3~~ 55.0< (80<)	340.1	223.4+< 68.30 ^

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1882phae.proj..494w

Aug. 21, 1882

Re-focus

3 P. Mx.

159.6

7h 59m 27 — 278.9 — 119.3 +<<

59.4<

7 59.6< — 338.9 — 97.8 — 118.9 +<<

238.2 +<< 121.8 +<< 1.15 +<

60.90^

161.0

8 1 27 — 272.2 — 111.2 +<<

1.54<

8 1.6< — 341.5 — 95.0 — 113.5 +<<

224.7 +<< 135.3 +<< .87 +<

67.65^

2 47 — 160.8

277.9 — 117.1 +<<

2 17 — 340.6

2.3<

8 2.5<

8 2.4< — 99.9 — 119.3 +<<

3)3.4 — 238.4 +<< 123.6 << 1.11 +<

8 1.1< 61.80^

165.2 — 4 P. Mx.

275.1 — 109.9 +<

5 47 — 342.3

5.8<

8 6.0< — 97.2 — 114.9 +<

8 5.9< — 224.8 +< 135.2 +< .87 +<

67.60^

162.6

275.0 — 112.4 +< — This should probably be 7 12

6 12 — 338.6

6.2<

8 6.4< — 98.1 — 119.5 +<<

231.9 +<< 128.1 +<< 1.02 +<

64.05^

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1882phae.proj..494w

Aug 21. 1882

~~8h 8m 2~~ 166.2

8h 8m 255 275.8 109.6+

8.4 343.3

8 8.6 95.6 112.3+ / 221.9+ 138.1+ .81+

3 20.9 69.05

8 7.0

162.2 5 P. Mr

9 20 273.7 111.5+

9.3 339.8

8 9.5 96.6 116.8+ / 228.3 131.7+ 0.94

65.85

163.8

12 16 276.2 112.4+

12.3 338.8

8 12.4 97.2 118.9+ / 231.3+ 138.7+ 1.00

64.35

163.9

275.4 111.5+

13 15 342.9

13.2 94.9 112.0+ / 223.5+ 136.5+ .85+

8 13.4 68.25

3 39.3

8 11.8

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1882phae.proj...494w

Aug. 21, 1882

8h 157.1 6 Wisconsin

17m 15s 276.8 117.7+<

17.3< 340.9

8 17.4< 95.5 114.6+<

232.3+< 127.7+< 1.03+<

63.85^

162.8

274.8 112.0+<

19 44 089.0

19.7< 100.1 121.1+<

233.1+< 126.9+< 1.04<

8 19.9< 63.45^

159.2

21 20 5 must be 21 5

~~20~~ 5 275.9 116.7+< a unit of time of previous obs

~~21~~ 30 343.8

~~20.8~~ 95.4 112.6+<

21.3< 228.7+< 131.3+< .95+<

8 21.5< 65.65^

3 58.8 <

8 19.6<

166.1 7 P. Obs.

23 10 277.1 111.0+<

23 25 341.9

23.3< 96.8 114.9+< 0.89<

225.9+< 134.1+<

8 23.5< 67.05^

165.2

24 21 271.3 106.1+<

25 10 238.6 120.5- < 133.4< 0.91<

24.8< 99.1 ~~120.5+<~~ +

~~226.6+~~ ~~133.4+~~ ~~.91+<~~

8 25.0<

226.6< 71.70

66.70^

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1882phae.proj..494W

Aug. 21, 1882

P. Ho

1621

$8^h\ 25^m\ 50^s$ 274.8 112.7+<

$26^m\ 9^s$ 344.6

26.0< 94.7 110.1+< 0.83

222.8+< 137.2+< ~~.83+<~~

68.60^

8 26.2<

3(147<

8 24.9<

& W. Ho

1617

$27^m\ 40^s$ 275.7 114.0+<

$28^m\ 12^s$ 343.5

27.9< 94.6 111.1+<

225.1+< 134.9+< .88+<

67.45^

8 28.1<

1660

109.0+<

$30^m\ 30^s$ 275.0 ~~111.0~~

$30^m\ 58^s$ 339.0

30.7< 96.8 117.8+< 133.2+< 0.91+<

~~228.8~~ ~~131.2*~~ ~~.96*~~

8 30.9< 226.8+<

66.60^

1628

$31^m\ 30^s$ 276.5 113.7+<

31 59 343.2

31.7< 95.8 112.6+<

226.3+< 133.7+< .90+<

66.85^

8 31.9<

3(90.9<

8 30.3<

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1882phae.proj...494w

Aug 21, 1882

9 P. obs.

	166.7				
8h 33m 13s	275.9	109.2+ <			
33m 45s	343.0				
36.4s	92.3	109.3+ <	141.5+	0.7 <	
8 33.7 <		218.5+ <	~~141.5+~~	~~.74+ <~~	
			70.75 ^		
	162.8				
34m 35s	275.0	112.7+ <			
35m 8s	340.9				
34.8 <	98.7	117.8+ <			
8 35.0 <		230.5+ <	129.5+ <	.99+ <	
			64.75 ^		
	162.4				
36m 10s	275.2	112.8+ <			
36m 48s	342.8				
36.4 <	96.9	114.1+ <		0.91	
8 36.6 <		226.9+ <	133.1+ <	~~.97+ <~~	
36.5 <			66.55 ^		
8 35.1 <					
	161.8				10 W. obs.
38m 45s	276.2	114.4+ <			
39m 45s	340.8				
39.2 <	95.5	114.7+ <			
8 39.4 <		229.1+ <	130.9+ <	.96+ <	
			65.45 ^		
	161.6				
40m 3s	273.0	111.4+ <			
40m 58s	337.5				
40.7 <	96.8	121.3+ <			
8 40.9 <		232.7+ <	127.3+ <	1.04+ <	
			63.65 ^		

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1882phae.proj..494W

Aug 21, 1882

Mrk

8h

161.4

40m 58s 276.0 114.6+<

41m 20s 341.8

41.2< 94.2 112.4+< / 227.0+< 133.0+< .92+<

66.50^

8 41.4<

3 (121.7 <

8 40.6<

43m 45s 162.8

11 P. obs.

43m 45s 277.8 115.5+<

43m 59s 342.2

43.9< 97.2 115.6+< / 230.5+< 129.5+< .99+<

64.75^

8 44.1<

164.1

45m 24s 272.1 108.0+<

45m 40s 343.1

45.5< 98.4 115.3+< / 223.3+< 136.7+< .84+<

68.35^

8 45.7<

161.1

46m 42s 275.6 114.5+<

47m 2s 341.5

46.9< 96.8 115.3+< / 229.8< 130.2+< 0.97+< .98

65.10^

8 47.1<

3 (169 <

8 45.6<

161.8

1 yr. obs.

48m 4s 274.1 112.3+<

49m 5s 339.2

48.9< 95.9 116.7+< / 229.0+< 131.0+< .96+<

65.50^

8 49.1<

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1882phae.proj...494w

Aug. 21, 1882.

W. obs.

161.8

8h 6-0m 40s 275.0 113.2+ <

5-1m 5s 341.4

50.9 < 95.5 114.1+ <

227.3+ < 132.7+ < .92+ <

8 51.1 < 66.35 ^

160.8

5-2m 2s 275.7 114.9+ <

5-2m 30s 341.8

8 95.2 113.4+ <

52.3 < 228.3+ < 131.7+ < 0.94

65.85 ^

8 52.5 <

3 (152.7 <

8 50.9 < 163.0 13 Rutherfurd & P.

5-3m 55s 276.2 113.2+ <

5-4m 20s 341.8

94.3 112.5+ <

54.1 < 225.7+ < 134.3+ < 0.89

8 54.3 < 67.15 ^

163.2 P obs.

5-5m 5s 272.2 109.0+ <

5-5 4s 339.4

55.4 < 97.2 117.8+ <

8 55.6 < 226.8+ < 133.2+ < 0.91+ <

66.60 ^

163.0 P. obs.

5-6m 20s 277.8 114.8+ <

5-6m 4s 342.2

56.5 < 96.1 113.9+ <

8 56.7 < 228.7+ < 131.3+ < .95 <

3 (116.6 <

8 65.65 ^

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1882phae.proj,.494W

Aug. 24, 1882.

161.8 — 14 P. Obs.

8h 57m 27s — 275.6 — 113.8+<

57.5< — 339.1

8 57.7< — 97.4 — 118.3+< / 232.1+< — 127.9+< — 1.02+<

63.95^

160.9 — P. Obs.

9h 0m 58s — 276.1 — 115.2+<

1m 10s — 3432

133.7<

0.1< — 94.3 — 111.1+< / ~~226.3+~~ — ~~132.7+~~ — .90+<

9 0.3< — 2263< — 66.85^

164.5 — P Obs

2m 5s — 272.6 — 108.1+<

2m 28s — 341.8

2.5< — 97.3 — 115.5+< / 223.6+< — 136.4+< — .85+<

9 2.5<

3 (0.5)<

9 0.2<

68.20^

163.6 — 15 Tr. Obs.

3m 44s — 274.9 — 111.6+<

4m 15s — 339.7

4.0< — 96.8 — 117.1+< / 228.7+< — 131.3+< — .95<

9 4.2<

65.65^

160.6 — Tr. Obs.

6m 15s — 275.2 — 114.6+<

6m 43s — 340.0

6.5< — 95.2 — 115.2+< / 229.8+< — 130.2+< — 0.97+< / ~~.98~~

9 6.7<

65.16^

9

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1882phae.proj...494w

Aug 21, 1882

	163.02				M. obs.
7h 6m 45s	278.8	110.6+			
7m 25s	339.9				
7.1	98.8	118.9+			
		229.5+	130.5+	0.97+	
			65.25		
9 7.3					
3 18.2					
9 6.1					
	161.2				16 P. obs.
8m 45s	273.8	112.6+			clouds begin to interfere
9m 17s	339.6				
9.0	96.4	1168+			
		229.4+	130.6+	.97+	
9 9.2			65.30		
	161.3				P. obs
10m 30s	275.4	114.1+			
11m 25	343.3				
10.8	101.6	118.3+			
		232.4+	127.6+	1.03+	
9 11.0			63.80		
	168.4				P. obs.
12m 35s	272.2	103.8+			
13m 5s	339.1				
12.8	96.9	117.8+			
		221.6+	138.4+	.81+	
			69.20		
9 13.0					
3 33.2					
9 11.1					
	162.7				17 M. obs.
14m 8s	275.0	112.3+			
14m 40s	342.0				
14.4	97.8	115.8+			
		228.1+	131.9+	.94+	
9 14.6			65.95		

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1882phae.proj..494W

9 14.6

Aug. 21, 1882.

9h 15m 57s — 159.9 — 114.8+ <
16m 38s — 274.7
16.2 < — 342.7 — 114.8+ <
9 16.4 < — 94.5
2266+ < — 133,4+ < .91+ <
66.70 ^

W. obs.

17m 28s — 162.8 — 113.1+ <
18m 10s — 275.9 — 114.5- <
17.8 < — 96.7 — accidentally taken before following one (retain)
342.2 — ~~227.6+~~ (retained)
9 18.0 <
3 (19.0 <)
9 16.3 < — 227.6 — 132.4+ < — .93+ <
66.20 ^

W. obs.

20m 10s — 165.8 — 108.4+ <
20m ~~48~~s — 272.2
20m 48s — 340.4 — 120.4+ <
20.5 < — 100.8 — ~~229.0+~~ 228.8 — 131,2 — 0.95
9 20.7 < — 65.60 ^

18 P. obs.

20m 25s — 162.6 — 112.0+ <
20m 58s — 274.6
343.8 — 112.9+ <
20.67 — 96.7 — 224.9+ < — 135.1+ < .87+ <
9 20.9 < — 67.50 ^

P. obs.

21 45s — 166.3 — 110.2+ <
22 15 — 276.5
22.0 < — 342.8 — 117.5+ <
9 22.2 < — 100.3
3 (3.5 <) (9 21.3) — 227.7+ < — 132.3+ < .93+ <
66.65 ^

P obs.

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1882phae.proj...494w

Aug 21, 1882.

166.0 106.7+< 19 W. obs.

9h 24m 32s 272.7

25m 10s 342.9 112.9+< 140.4

24.9s 95.8 219.76 140.8 .77+<

9 25.0< 2196 70.20^

162.8 W. obs

26m 59s 272.5 109.7+<

27m 16s 340.9 113.5+<

27.1< 94.4 223.2+< 136.8+< .84+<

9 27.8< 68.40^

164.8 108.1+< U obs

28 48 272.9

343.3

28.8< 96.2 112.9+< .79+<

9 29.0< 221.0+< 139.0+< .80

3 (21.3< 69.50^

9 27.1<

164.1 110.9+< 20 P. obs.

27[illegible].0

30 3[illegible] 342.7

30.6< 101.0 118.3+<

9 30.8< 229.2+< 130.8+< .96+<

65.40^

164.8 108.7+< P. obs.

32 10 273.0

342.0 0.75

32.2 92.3 110.3+< 141.0

9 32.4< 219.0+< 111.0 6+< .75

70.50^

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1882phae.proj..494w

Aug. 21. 1882.

9h

33 32

33.5<

9 33.7<

3 (6.9<)

9 32.3<

164.2 111.4+<

27 5.6

340.0 114.9+<

94.9 226.3+< 133.7+< .90+<

66.85^

P. obs.

166.0 109.0+<

2750

345.9 110.6+<

96.5 219.6+< 140.4+< .77+<

70.20^

21 Wolc

35 30

35.5<

9 35.7<

1639 110.3+<

2742

342.0 115.1+<

97.1 225.4+< 134.6+< .88+<

67.30^

Wolc

37 37

37.6<

9 37.8<

162.8 111.6+<

2744

340.7 114.1+<

94.8 225.7+< 134.3+< .89+<

67.15^

Wolc

39 10

39.2<

9 39.4<

3 (22.9<)

9 37.6<

160.8 109.4+<

2702

344.3 110.9+<

95.2 220.3+< 139.7+< .78+<

69.85^

22 P. obs.

41 42

41.7<

9 41.9<

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1882phae.proj...494w

Aug. 21. 1882.

9h

43 38

43.8

9 43.8

162.2 111.6+
273.8
345.1
97.6 112.5+
224.1+ 135.9+ .86+
67.95

P. obs.

167.6 104.7+
272.3
340.8
95.4 114.6+
219.3+ 140.7+ .76+
70.35

P. obs.

45 10

45 52

9 45.4
3 (111.1
9 43.7

1667 105.8+
272.5
338.5
94.0 115.5+
221.3+ 138.7+ .80+
69.35

23 Wash

47 52

47.9

9 48.1

1620 111.0+
273.0
345.0
94.8 109.8+
220.8+ 139.2+ .79+
69.60

Wash

50 05

50.1

9 50.3

1630 111.4+
274.4
344.8
96.2 111.4+
222.6+ 137.2+ .83+
68.60

Wash

51 52

51.9

9 52.1
3 (150.5
9 50.2

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1882phae.proj..494W

Aug. 21. 1882.

164.8 107.8 24 P. obs.
270.6
341.8
54.1 113.9 140.3 .77
9 54.3 70.15

164.3 110.9 P. obs.
274.2
347.3
55.8 102.6 143.5 .70
9 56.0 71.75

169.2 103.4 P. obs.
272.6
342.8
57.2 110.6
9 57.4 214.0 146.0 .65
3 17.4
9 55.9 73.00

162.5 25 W. obs.
269.9 107.4
343.7
59.9 110.9
10 0.1 218.3 141.7 .74
70.85

10 165.3 107.2 W. obs.
1 44 272.5
1.7 342.0 114.3 138.5 0.80
10 1.9 96.3 3
221.5 148.5 .81
69.25

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1882phae.proj...494w

Aug 21, 1882.

Weber

10h 3 27

163.0 1129+ℓ

275.9

345.0 106.6+ℓ

91.6 219.5+ℓ 140.5+ℓ .76

0.76

70.25°

3.4ℓ

9 3.6ℓ

3 10.6

9 1.9ℓ

164.9

10h 5m 25s 276.8 111.9+ℓ 26 R. Abe.

6m 15s 342.4

5.8ℓ 93.3 110.9+ℓ

10 6.0ℓ 222.8+ℓ 137.2+ℓ .83+ℓ

68.60°

163.2 R. Abe.

7m 23s 272.6 109.4+ℓ

8m 3s 343.8

7.7 93.2 109.4+ℓ

10 7.9ℓ 218.8+ℓ 141.2+ℓ .75+ℓ

70.60°

165.2 R. Abe.

9m 16s 270.4 105.2+ℓ

9m 50s 348.2

9.6ℓ 92.7 108.5+ℓ

10 9.8ℓ 213.7+ℓ 146.3+ℓ .65+ℓ

3 23.7ℓ

73.15°

10 7.9ℓ

164.9 27 W. Abe.

11m 27s 272.0 107.1+ℓ

12m 3s 341.5

11.8ℓ 96.5 115.0+ℓ 0.82ℓ

10 12.0ℓ 222.1ℓ 137.9ℓ .82+ℓ

68.95°

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1882phae.proj..494w

12.0 ×

Aug. 21, 1882

163.9 W. obs.

10h 13m 25s 272.5 108.6+ℓ

13m 57s 344.8

13.6ℓ 93.0 108.2+ℓ 143.2

2268 4

216.8+ℓ 143.2+ℓ .71+ℓ

71.60

10 13.8ℓ

167.8 W. obs.

15m 16s 275.0 107.2+ℓ

15m 45s 339.2

15.5ℓ 99.9 120.7+ℓ

227.9+ℓ 132.1+ℓ .94+ℓ

66.05

10 15.7ℓ

3 11.5+ℓ

10 13.8ℓ

161.7 W. P. obs.

17m 40s 277.5 115.8+ℓ

18m 15s 343.8

18.0ℓ 91.6 107.8+ℓ Thin clouds passing

223.6+ℓ 136.4+ℓ .85+ℓ

68.20

10 18.2ℓ

164.6 W. obs

19m 34s 289.3 104.7+ℓ

20m 8s 342.2

19.8ℓ 94.6 112.4+ℓ

217.1+ℓ 142.9+ℓ .72+ℓ

71.45

10 20.0ℓ

165.2 W. obs.

21m 25s 272.3 107.1+ℓ

22m 10s 349.2

22m 10s 92 103.5+ℓ 149.4

220.6 4 149.4 0.59

210.6+ℓ 149.4 99+ℓ

74.70

21.8ℓ

10 22.0ℓ

3 160.2ℓ

10

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Aug. 21, 1882.

162.8 29 W. obs.

10h 24.m 2s 273.0 110.2 +

25m 4s 341.9

247 95.1 113.2 + 136.6 + .84 +

10 24.9 223.4 + 68.30

164.1 W. obs.

26m 8.5s 275.5 111.4 +

27m 1.8s 350.0

26.8 91.8 101.8 + 146.8 + .64 +

10 27.0 213.2 + 73.40

166.0 W. obs.

28m 12s 269.3 103.3 +

28m 52s 343.7

28.5 97.0 113.3 + 143.4 + .71 +

10 28.7 216.6 + 71.70

3 (20.6

10 26.9

166.6 30 P. obs.

29 20 273.6 107.0 +

31 5 347.8

30.2 93.2 105.4 + 147.6 + .62 +

10 30.4 212.4 + 73.80

169.2 P obs.

33 5.5 268.2 99.0 +

04 4.0 349.9

34.3 95.8 105.1 + 155.9 + .46 +

10 34.5 204.1 + 77.85

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1882phae.proj..494W

Aug. 21, 1882

165.5 P. obs.

10h 35m 30s
35 52 5
35.7 <

272.2 106.7 <
339.8

~~40 25.9 <~~

164.0

38m 16s
~~39m 0s~~
38.6 <

275.0 111.0+ < 31 M. obs.
345.0
92.2 107.2+ <
218.2+ < 141.8+ < .74+ <
70.90 ^

10 38.4 <

166.0 M. obs.

40m 17s
41m 25s
40.8 <

271.0 105.0+ <
344.5
95.2 110.7+ <
215.7+ < 144.3+ < .69+ <
72.15 ^

10 41.0 <

166.3 M. obs.

42m 40s
43m 0s
42.8 <

275.5 109.2+ <
345.3
92.1 106.8+ <
216.0+ < 144.0+ < .69+ <
72.00 ^

10 43.0 <
3(122.8 <
10 40.9 <

168.2 32 P. obs.

44m 23m
44m 45m
44.6 <

270.3 102.1+ <
340.1
95.6 111.5+ <
213.6 < 146.4+ < .65+ <
73.20 ^

10 44.8 <

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1882phae.proj..494w

Aug. 1882.

P. obs.

166.2
10h 45m 10s 273.4 107.2+
46m 38s 347.3
46.4 95.1 107.8+
10 46.6 215.0+ 145.0+ .67+
72.50

P. obs.

166.7
48m 2s 269.2 102.5+
48m 30s 341.8
48.3 92.7 110.9+
10 48.5 213.4+ 146.6+ .64+
73.30
3(19.9
10 46.6

33 W. obs.

164.3
51m 17s 271.0 106.7+
51m 46s 346.8
51.5 89.0 102.2+
10 51.7 208.9+ 141.1+ .55+
75.55

W. obs.

172.0
52m 55s 265.4 93.4+
53m 25s 346.5
53.2 94.7 108.2+
10 53.4 201.6+ 138.4+ .41+
79.20

W. obs.

166.0
54m 50s 271.7 105.7+
55m 5s 349.2
54.9 90.5 101.3+
10 55.2 207.0+ 143.0+ .52+
76.50
3(10.5+
(10 53.6)

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1882phae.proj..494W

Aug 21, 1882.

171.6 34 P. obs.

10h 57m 15s 277.3 10.7+

58m 25s 347.2

57.8 87.7 100.5+

206.2+ 153.8+ .50+

10 58.0 76.90

162.8 P. obs.

11h 0m 50s 271.2 108.4+

1m 24s 342.2

1.1 87.9 10.7+ 0.66

214.1+ 145.9+ .66+

11 1.2 72.95

167.7 P. obs.

~~1m~~ 2m 52s 271.2 103.5+

3m 50s 345.6

3.3 88.6 103.0+

206.5+ 153.5+ .51+

11 3.6 76.75

3 2.9

11 1.0

165.7 35 W. obs.

5m 5s 272.5 106.8+

5m 40s 348.3

5.4 87.8 99.5+ 0.50

206.3+ 153.7+ .58+

11 5.6 76.85

166.4 W. obs

6m 6s 268.0 101.6+

7 30s 344.0

7.3 92.2 108.2+

209.8+ 150.2+ .57+

11 7.0 75.10

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1882phae.proj..494w

Aug. 21, 1882

168.0 W. obs.

11h 9m 2s 268.5 100.5 +ℓ

9m 35s 348.7

9.3ℓ 89.9 101.2 +ℓ

11 9.5ℓ 201.7 +ℓ 158.3 +ℓ .41 +ℓ

3 22.1ℓ 79.15 ^

11 7.4ℓ

170.4 86 P. obs.

11m 25s 272.2 101.8 +ℓ

11m 45s 347.3

11.6ℓ 92.0 104.7 +ℓ

11 11.8ℓ 206.5 +ℓ 153.5 ℓ .51 +ℓ

76.75 ^

163.3 P. obs.

13m 35s 271.2 107.9 +ℓ

14m 5s 347.9

13.8ℓ 88.0 100.1 +ℓ

10 14.0ℓ 208.0 +ℓ 153.0 +ℓ .54 +ℓ

76.00 ^

175.4 P. obs

15m 11s 262.7 87.3 +ℓ

15m 42s 344.7

15.4ℓ 89.9 105.2 +ℓ

11 16.6ℓ 192.5 +ℓ 167.5 ℓ .24 +ℓ

3 11.4ℓ 83.75 ^

11 13.8ℓ

162.9 87 W. obs.

16m 52s 275.2 112.3 +ℓ

17m 30s 349.9

17.2ℓ 92.2 102.3 +ℓ

11 17.4ℓ 214.6 +ℓ 145.4 +ℓ .67 +ℓ

72.70 ^

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1882phae.proj:494W

11 17.4

Aug. 21, 1882

11h 168.8 W. obs.

18m 50s 265.6 96.8+<

19m 24s 344.0

19.1< 93.0 109.0+< / 205.8< 154.2< .49+<

11 19.3< 77.10^

166.5 W. obs

20m 35s 269.0 102.5+<

21m 16s 349.3

20.9< 89.2 99.9+< / 202.4+< 157.6+< .43+<

11 21.1< 78.80^

3 578<

11 19.3<

170.8 34 P. obs

22m 5s 268.2 97.4+<

28m 20s 345.2

23.1< 92.2 107.0+< / 204.4+< 155.6+< .47+<

11 20.3< 77.80^

166.6 101.1+< P. obs.

25m 10s 267.7

25m 35s 347.6 102.7+<

25.4< 90.3 203.8+< 156.2+< .45+<

11 25.6< 78.10^

~~169.8~~ interrupted by clouds. P. obs.

179.8

30m 29s 257.8 Continually varying in clouds

30.5< rejected on account of clouds.

~~11 30.7s~~

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1882phae.proj...494w

Aug. 26, 1882

40m
~~40m~~
11h 24m 45s
42m
~~24m 45s~~

41.8 <

11 42.0 <
3 (90 9 <
11 30.3 <

170.2
260.8
340.6
94.6

90.6 +<
108.0 +<
198.6 +< 161.4 +< .35 +<
80.70 ^

P. obs.
images appreciably varying throughout

166.0
267.0
349.2
89.5

101.0 +<
100.3 +<
201.3 +< 158.7 +< ~~.41~~ 0.41
79.35 ^

37 W. obs.
Rutherfurd 43 50

44m 50s
44m 25s

44.1 <
11 ~~44.3~~ <

173.6
263.5
347.1
92.7

89.9 +<
105.6 +<
195.5 +< 164.5 +< ~~.30~~ 0.29
82.25 ^

W. obs.

45m 40s
46m 15s

46.0 <
11 46.2 <

166.8
270.5
352.0
88.2

103.7 +<
96.2 +<
199.9 +< 160.1 +< .38 +<
80.05 ^

W. obs.

47m 45s
48m 27s

48.1 <
11 ~~48.3~~ <

3 (18.8 <
11 46.3 <

Stars too low and images too unsteady for satisfactory measurement.

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1882phae.proj..494W

Aug. 21. 1882.

B. + C. 1182.

11	59	34.4
12	0	34.5
	0	44.5
		+9.0s

Bond 394.

+2 11	59 0	44.5 0.0
	1	0.0

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1882phae.proj...494w

August 22. 1882

7 30 d Sextantis at normal brightness.

Samples Camera

~~446~~

~~239.7~~

~~446.8~~ P. obs.

7h ~~57m~~ 58m 15s 228.0 81.2

132.9 P. obs

7h 54m 20s 235.6 102.7 +L

54m 57s 314.9

54.7 L 53.6 98.7 +L / 201.4 ± L 158.6 ± L .41 +L

7 54.9 L changed Less. 79.30

70.2 P. obs.

57m 48s 160.6 90.4 +L

58m 32s 244.1

58.2 L 341.4 97.3 +L / 187.7 ± L 172.3 ± L .14 L .15 +L

7 58.4 L 86.15

69.8

59m 27s 161.6 91.8 +L P. obs.

5 245.0

59.5 L 344.2 99.2 +L / 191.0 +L 169.0 L .21 +L

7 57.6 L 84.50

3 | 22.9 L

7 57.6 L

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1882phae.proj..494W

Aug. 22, 1882

62.0 W. obs.

8h 1m 50s 162.0 100.0+<

2m 25s 247.4

2.1< 338.6 91.2+<

.8 2.3< 191.2+< 168.8+< .21+<

84.40^

65.1 W. obs.

3m 35s 157.0 91.9+<

4m 5s 241.2

3.8< 336.7 95.5+<

8 4.0< 187.4+< 172.6+< .14+<

86.30^

64.2 W. obs.

5m 15s 159.3 95.1+<

6m 2s 241.0

5.6< 337.8 96.8+< 0.22<

8 5.8< 191.9< 168.1+< .23+

3(12.1< 84.05^

8 4.0<

68.6 P. obs.

7m 11s 155.3 86.7+<

7m 42s 244.7

7.4< 341.6 96.9+<

8 7.6< 183.6+< 176.4+< .07+<

88.20^

67.9 P. obs.

8m 57s 161.8 93.9+<

9m 40s 244.8

9.3< 343.6 98.8+<

8 9.5< 192.7+< 167.3+< .24+<

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1882phae.proj..494w

Aug. 22, 1882

P. Obs.

66.3

8h 10m 48s 162.2 95.9+

11m 26s 242.1

342.1 100.0+

11.1 195.9+ 164.1+ .30+

8 11.3 82.05

3 (28 4

8 9.5

W. Obs.

13m 62.9

19m 0s 161.3 98.4+

13 30s 242.6

339.6 96.0+

13.2 194.4+ 165.6+ .27+

8 13.4 82.80

W. Obs.

67.5

14m 35s 162.9 95.4+

15m 3s 243.5

341.5 98.0+

14.8 193.4+ 166.6+ 0.25+ .26

8 15.0 83.30

W. Obs.

59.8

16m 14s 160.0 100.2+

16m 43s 244.8

337.9 93.1+

16.5 193.3+ 166.7 .25+

8 16.7 83.35

3 (14.1

8 15.0

P. Obs.

67.1

17m 58s 162.6 95.5+

18m 30s 242.0

18.2 343.2 101.2+

8 18.4 196.7+ 163.3+ .32+

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1882phae.proj..494w

18.4

Aug. 22, 1882

62.5 O. obs.

8h 19m 22s 160.3 97.7+

19m 57s 243.3

344.2 100.9+

19.6 198.6+ 161.4+ .35+

8 19.8 80.70

63.4 P. obs.

21m 5s 158.4 95.0+

21m 32s 246.3

340.8 94.5+

21.3 189.5+ 170.5+ .18+

8 21.5 85.25

3 59.7

8 19.9

60.7 6 yr. obs.

22m 37s 168.6 102.9+

23m 5s 242.0

22.8 341.3 99.3+ 0.42

8 23.0 202.2+ 157.8+ ~~.42~~

78.90

62.7 Yr. obs

24m 4s 159.9 97.2+

24m 22s 240.5

24.2 347.4 106.9+

8 24.4 204.1+ 155.9+ .46+

77.95

59.6 Yr. obs.

25m 20s 161.9 102.3+

25m 54s 245.2

25.6 339.2 94.0+

8 24.8 196.3+ 163.7+ .31+

3 13.2

8 24.4 81.85

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1882phae.proj...494w

Aug. 22, 1882

66.7 — 7 P. obs.

8h 27m 5s — 159.6 — 92.9+

27m 35s — 148.2

243.3 — 100.1+

27.3 — 193.0+ — 167.0+ .25

8 27.5 — 8 3.50 ^

63.8 — P. obs.

28m 44s — 163.7 — 99.9+

29m 2s — 240.0

28.9 — 343.7 — 103.7+

8 29.1 — 203.6+ — 156.4+ .45+

7 8.20 ^

64.6 — P. obs.

30m 23s — 165.8 — 100.7+

30m 55s — 244.3

30.6 — 339.8 — 95.5+

8 30.8 — 196.2+ — 163.8+ .31+

3 87.4 — 8 1.90 ^

29.1

59.5 — 8 W. obs.

32m 17s — 162.2 — 102.7+

32m 38s — 240.0

32.5 — 340.8 — 100.8+

8 32.7 — 203.5+ — 156.5+ .45+

7 8.25 ^

63.0 — W. obs.

33 34m 52s — 159.2 — 96.2+ — probably 33 52

34m 17s — 237.0

34.1 — 341.7 — 104.7+

8 34.2 — 200.9+ — 159.1+ .40+

7 9.55 ^

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1882phae.proj..494W

Aug. 22, 1882

8h 7 62.2 W. obs.

8h 35m 19s 163.0 100.8+<

35m 42s 245.0

35.5< 342.2 97.2+<

198.0+< 162.0+< .34+<

8 35.7<

3 12.7<

8 34.2< 81.00^

65.0 9 P. obs.

36m 58m 161.83 96.3+<

37m 7s 244.4 99.3+<

37.0< 343.6 ~~98.9~~ 0.29<

8 37.2< 195.5-< 164.5+< ~~.30+~~

82.25-^

65.2 10. obs

38m 12s 162.9 97.7+<

38m 45s 238.3

38.5< 344.5- 106.2+<

8 38.7< 205.9+< 156.1+< .46+<

78.05-^

8

61.6 P. obs.

39m 50s 161.3 99.7+<

40m 12s 242.7

40.0< 344.5 101.8+<

8 40.2< 201.5+< 158.5+< .41+<

3 116.1< 79.25-^

8 38.7<

61.0 10 W. obs

41m 38s 168.7 102.7+<

42m 7s 244.5-

41.9< 341.0 96.5+< 0.37

~~.36+~~

199.2+< 160.8+< ~~.37~~

8 42.1< 80.40^

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1882phae.proj..494w

Aug. 22, 1882.

	63.8		W. obs.
8h 43m 14s	160.4	96.6+	
43m 42	238.2		
43.5	345.3	107.1+	
8 43.7		203.7+	156.3+ .45
			78.15
	62.0		W. obs.
44m 45s	165.8	103.8+	
45m 17s	244.1		
45.0	343.9	99.8+	
8 45.2		203.6+	156.4+ .45
3 11.0			78.20
8 43.7			
	62.6		11 P. obs.
46m 32s	161.0	98.4+	
46m 55s	241.3		
46.7	341.9	100.6+	
8 46.9		199.0+	161.0+ .36+
			80.50
	63.5		P. obs.
~~48m 2s~~	163.6	100.1+	
48m 25s	238.5		
48.2	345.4	10 ~~96~~ .9+	
8 48.4		207.0+	153.0+ .52+
			76.50
	60.2		P. obs.
49m 21s	168.3	108.1+	
50m 11s	241.6		
49.8	342.8	101.2+	
8 50.0		209.3+	150.7+ .56+
3 14 5.3			75.35
8 48.4			

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1882phae.proj..494w

aug. 22, 1882

59.0 — 12 W. obs

8h 57m 25s 161.5 102.5+<

57m 57s 241.2

340.8 99.6+<

51.7< 202.1+< 157.9+< .42+<

8 51.9< 7.8.95^

61.8 W. obs.

53m 12s 161.0 99.2+<

58m 38s 238.4

346.7 108.3+<

53.4< 207.5+< 152.5< .53+<

8 53.6< 7 6.25^

61.0 W. obs.

53m 2s 164.0 103.0+<

55m 25s 242.3

55.2< 341.2 98.9+< 0.42<

201.9+< 158.1+< ~~.42+<~~

8 55.4<

3 10.9<

8 53.6< 7 9.05^

64.4 13 P. obs.

50m 50s 163.8 99.4+<

57m 15s 243.9

57.0< 345.6 101.7+<

201.1+< 158.9+< .40+<

8 57.2< 7 9.45^

~~61.2~~

164.6 103.4+<

58m 20s 239.6

59m 5s 347.5 107.9+<

58.7< ~~61.2~~ 211.3+< 148.7+< .60+<

8 58.9< 7 4.35^

61.2
164.6
239.6
347.5

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1882phae.proj..494w

Aug. 22, 1882

60.8 P. obs.

9h 0 25s 162.5 101.7+ <

0 40s 242.2

0.5 < 347.3 105.1+ <

0 30 <

206.8+ < 153.2+ < .51+ <

7 6.60 ^

9 0.7 <

3 (176.8 <

8 58.9 <

55.2 14 W. obs.

1m 53s 164.9 109.7+ <

2m 26s 237.8

341.5 103.7+ <

2.2 <

9 2.4 <

213.4+ < 146.6+ < .64+ <

7 3.3 ^

59.2 W. obs.

3m 20s 164.8 105.6+ <

3m 44 238.7

3.5 < 346.7 108.0+ < 065 <

9 3.7 <

213.6+ < 146.4+ < .66+

7 3.20 ^

60.9 W. obs.

4m 42s 166.9 106.0+ <

5m 0s 242.8

4.8 < 345.0 102.2+ <

9 5.0 <

208.2+ < 151.8+ < .54+ <

7 5.90 ^

3 (11.1 <

9 3.7 <

57.8 15 P. obs.

8m 12s 167.3 109.5+ <

8m 47s 239.3

8.5 < 344.2 104.9+ <

9 8.7 <

214.4+ < 145.6+ < .66+ <

7 2.80 ^

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1882phae.proj..494w

9 87

Aug. 22, 1882.

69.6 P. obs.

9h 10m 5s 160.6 91.0+

10m 21s 237.8

350.2 112.4+

10.2 203.4+ 156.6+ .45+

9 10.4 78.3^

57.3 P. obs

11m 51s 166.4 109.1+

12m 18s 240.2

12.1 347.9 107.7+

9 12.3 216.8+ 143.2+ .71+

3 31.4 71.60^

9 10.5

58.0

13m 45s 163.0 105.0+ 16 Pr. obs.

14m 15s 238.2

14.0 347.9 109.7+

9 14.2 214.7+ 145.3+ .67+

72.65^

59.0 Pr. obs

15m 20s 164.0 105.0+

15m 40s 238.8

15.3 345.4 106.6+

9 15.7 211.6+ 148.4+ .61+

74.20^

64.4 Pr. obs

16m 26s 167.2 102.8+

16m 56s 236.0

16.7 346.9 110.9+

9 16.9 213.7+ 146.3+ .65+

3 16.8 73.15^

9

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1882phae.proj...494w

Aug. 22, 1882

60.9 17 P. obs

9h 18m 10s 165.2 104.3+ ∠

18m 38s 239.2

348.3 109.1+ ∠

213.4+ ∠ 146.6+ ∠ .64+ ∠

18.4 ∠ 73.30 ^

9 18.6 ∠

54.1 P. obs.

19m 49s 166.8 112.7+ ∠

20m 8s 242.3

344.7 102.4+ ∠

215.1+ ∠ 144.9+ ∠ .68+ ∠

20.0 ∠ 72.45 ^

9 20.2 ∠

61.9 P. obs

21m 50s 164.6 102.7+ ∠

22m 8s 235.8

348.8 113.0+ ∠

215.7+ ∠ 144.3+ ∠ .69+ ∠

22.2 ∠ 72.15 ^

9 22.4 ∠

3 (61.2 ∠

9 20.4 ∠

63.2 18 W. obs

24m 11s 166.4 103.2+ ∠

24m 46s 240.0

345.7 105.7+ ∠

208.9+ ∠ 151.1+ ∠ .55 ∠

24.4 ∠ 75.55 ^

9 24.6 ∠

59.1 W. obs.

25m 40s 162.9 103.8+ ∠

26m 17s 239.8

341.8 102.6+ ∠

205.8+ ∠ 154.2+ ∠ .49 ∠

26.0 77.10 ^

9 26.2 ∠

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1882phae.proj...494w

Aug. 22, 1882

9h

60.2 — W. obs.

27m 12s — 165.1 — 104.9+ ∠

27m 38s — 241.0

346.9 — 105.9+ ∠

27.4 ∠ — 210.8+ ∠ — 149.2+ ∠ .59+ ∠

9 — 27.6 ∠ — 71.60 ^

3 (18.4 ∠)

9 — 26.1 ∠

60.0 — 19 P. obs.

28m 49s — 163.8 — 103.8+ ∠

29m 25s — 234.0

346.3 — 112.3+ ∠ — 0.70 ∠

29.1 ∠ — 216.1+ ∠ — 143.9+ ∠ ~~.70~~

9 — 27.3 ∠ — 71.95 ^

58.0 — P. obs.

31m 12s — 166.4 — 108.4+ ∠

31m 46s — 238.6

31.6 — 349.4 — 110.8+ ∠

9 — 31.7 ∠ — 219.2+ ∠ — 140.8+ ∠ .76+ ∠

70.40 ^

57.4 — P. obs.

38m 15s — 164.0 — 106.6+ ∠

33m 48s — 233.8

33.5 ∠ — 347.2 — 113.4+ ∠

9 — 33.7 ∠ — 220.0+ ∠ — 140.0+ ∠ .77+ ∠

3 (94.7 ∠) — 70.0 ^

9 — 31.6 ∠

56.5 — 20 W. obs.

35m 38s — 163.8 — 107.3+ ∠

36m 11s — 237.0

35.9 ∠ — 347.1 — 110.1+ ∠

9 — 36.1 ∠ — 217.4+ ∠ — 142.6+ ∠ .72+ ∠

71.30 ^

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1882phae.proj...494w

Aug. 22, 1882.

57.3 W. obs.

9h 37m 8s 165.0 107.7+

37m 43s 238.2

37.4 344.1 105.9+

218.6+ 146.4+ .65

9 37.6 73.20

59.4 W. obs.

39m 10s 163.8 104.4+

39m 36s 236.8

39.4 348.9 112.1+

216.5+ 143.5 .70+

9 39.6 71.75

3 23.3

9 37.8

58.2 21 P. obs.

40m 55s 164.8 106.6+

41m 33s 236.2

41.7 349.4 113.2+

9 41.4 219.8+ 140.2+ .77+

70.10

57.2 P. obs.

43m 2s 166.9 109.7+

44m 3s 237.0

43.8 348.3 111.3+ 0.79

9 44.0 221.0+ 139.0+ .80

69.50

60.4 P. obs.

45m 38s 167.0 106.6+

46m 10s 237.6 0.75

45.9 350.0 112.4+ .76+

9 46.1 219.0+ 141.0+ .78

3 111.5

9 [illegible]

70.50

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1882phae.proj...494w

Aug. 22, 1882

58.5 22 W. obs.

9h 47m 25s 165.2 106.7+

47m 50 237.2

344.5 107.3+

47.6 214.0+ 146.0+ .65

9 47.8 73.00

59.3 W. obs.

49m 12s 167.2 107.9+

49m 47s 237.8

347.1 109.3+

49.5 217.2+ 142.8+ .72+

9 49.7 71.40

58.5 W. obs.

50m 35s 165.2 106.7+

51m 14s 237.3

348.4 111.1+

50.9 217.8+ 142.2+ .73+

9 51.1 71.10

3 1486

9 49.5

59.6 23 P. obs.

16 34 103.4+

3 3

238.4

53.0 110.0+

344.4 213.8+ 146.2+ .65

9 53.2 73.10

57.4 P. obs.

16 7.9 110.1+

4 3

237.0

54.6 114.3+

351.3 224.4+ 135.6+ .86+

9 54.8 67.80

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1882phae.proj...494w

Aug. 22. 1882.

9

P. obs.

(1) 62.0 111.2+ ∠

−6 0 (2) 173.2

(4) 349.4 113.6+ ∠

56.0 (3) 235.2 225.4+ ∠ 134.6+ ∠ .88+ ∠

9 56.2 ∠ 67.30 ^

3 (14.2 ∠

9 54.7 ∠

24 Wolbs

59.7 106.5+ ∠

166.2

58 10

237.0 112.8+ ∠

58.2 349.8

219.3+ ∠ 140.7+ ∠ .76+ ∠

9 58.4 ∠ 70.33 ^

W. obs.

* 55.0

59m 25s 168.6 108.6+ ∠

59m 50s 238.3

59.6 348.2 109.9+ ∠

9 59.8 ∠ 218.5+ ∠ 141.5+ ∠ .74+ ∠

70.75 ^

W. obs.

55.0

10h 0m 55s 167.0 112.0+ ∠

1m 30s 237.9

1.2 346.2 108.3+ ∠

10 1.4 ∠ 220.3+ ∠ 139.7+ ∠ .78+ ∠

3 (179.6 ∠ 69.85 ^

9 59.9 ∠

25− P. obs.

60.8

2m 50s 167.3 106.5− + ∠

3m 20s 235.8

3.1 349.7 112.9+ ∠

10 3.3 ∠ 219.4+ ∠ 140.6+ ∠ .76+ ∠

70.30 ^

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1882phae.proj...494W

2.3

Aug. 22, 1882.

P. obs.

60.6
165.4
235.9
347.0

104.8 +∠

111.1 +∠

215.9 ∠ 144.1 +∠ .69 +∠

72.05 ^

10h 4m 8s
4m 42s

4.4 ∠
10 4.6 ∠

P. obs.

61.2
167.3
236.2
349.6

106.1 +∠

113.4 +∠

219.5 ∠ 140.5 ∠ ~~.76 +~~ 0.76 ∠

70.25 ^

5m 35s
6m 10s

5.8
10 6.1 ∠
3 (14.0) ∠
10 4.7 ∠

26 W. obs.

59.2
165.0
237.0
346.0

105.8 +∠

109.0 +∠

214.8 +∠ 145.2 +∠ .67 +∠

72.60 ^

7m 36s
8m 5s

7.8 ∠
10 8.0 ∠

W. obs

59.3
165.7
237.7
349.0

106.4 +∠

111.3 +∠

217.7 +∠ 142.3 +∠ .73 +∠

71.15 ^

9m 0s
9m 35s

9.3 ∠
10 9.5 ∠

W. obs.

58.8
165.9
238.9
344.9

107.1 +∠

106.0 +∠

213.1 +∠ 146.9 +∠ .64 +∠

73.45 ^

10m 34s
10m 55s

10.7
10 10.9 ∠
3 (28.4) ∠
10

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1882phae.proj..494W

Aug. 22, 1882.

58.9

$10^h 12^m 27^s$ 166.2 107.3+ ∠ 27 P. obs.

$12^m 51^s$ 233.7

12.6 354.4 120.7+ ∠

228.0+ ∠ 132.0+ ∠ .94+ ∠

10 12.8 ∠ 66.00 ^

55.6 P. obs.

$13^m 55^s$ 169.4 112.8+ ∠

$14^m 20^s$ 286.0

348.9 112.9+ ∠

14.1 ∠ 226.7+ ∠ 133.3+ ∠ .91+ ∠

10 14.3 ∠ 66.6 s- ^

56.6 P. obs.

$15^m 33^s$ 167.4 110.8+ ∠

$16^m 3^s$ 235.9

15.8 ∠ 349.6 113.7+ ∠ 0.8)

10 16.0 ∠ 224.5+ ∠ 135.5+ ∠ .89+ ∠

3 13.1 ∠ 67.7 s- ^

10 14.4 ∠

55.8 28 N. obs.

$17^m 23^s$ 166.2 110.4+ ∠

$17^m 50^s$ 240.4

17.6 ∠ 347.9 107.5+ ∠ 142.1 ∠ 0.73 ∠

10 17.8 ∠ 217.9+ ∠ 148.1+ .61+

71.05- ^

57.8 W. obs.

$18^m 47^s$ 163.9 106.1+ ∠

$19^m 20^s$ 235.8

19.1 ∠ 348.4 112.6+ ∠

10 19.3 ∠ 218.7+ ∠ 141.3+ ∠ .75 ∠

70.65- ^

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1882phae.proj - 494W

Aug. 22, 1882.

56.0 W. obs.

10h 20m 29s 168.9 112.9+ ∠

21m 0s 238.5

20.7 ∠ 347.0 108.5+ ∠

221.4+ ∠ 138.6+ ∠ .80+ ∠

69.30 ^

10 20.9 ∠

3 (58.0 ∠

10 19.3 ∠

56.6 29 P. obs.

22m 15s 168.0 111.4+ ∠

22m 47s 233.3

22.5 ∠ 349.7 116.4+ ∠

227.8+ ∠ 132.2+ ∠ .93+ ∠

66.10 ^

10 22.7 ∠

59.8 P. obs

23m 40s 166.6 106.8+ ∠

24m 5s 238.7

23.9 ∠ 350.0 111.3+ ∠ 0.74

218.1+ ∠ 141.9+ ∠ .74+ ∠

70.95 ^

10 24.1 ∠

67.6 P. obs.

24m 57s 168.3 110.7+ ∠

25m 20s 235.0

25.1 ∠ 347.3 112.3+ ∠ 0.83 ∠

223.0+ ∠ 137.0+ ∠ .84

68.50 ^

10 25.3 ∠

3 (12.1 ∠

10 24.0 ∠

59.5

27m 1s 168.3 108.8+ ∠ 30 W. obs.

27m 30s 237.2

27.62 345.2 108.0+ ∠

216.8+ ∠ 143.2+ ∠ .71+ ∠

71.60 ^

10 27.4 ∠

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1882phae.proj..494w

Aug. 22, 1882.

59.8 W. obs.

$10^h\ 28^m\ 25^s$ 162.8 103.0+ ∠

$28^m\ 53^s$ 235.5

28.6 ∠ 348.7 113.2+ ∠

10 28.8 ∠ 216.2+ ∠ 143.8+ ∠ .70+ ∠

71.90 ^

57.4 W. obs.

$30^m\ 2^s$ 166.3 108.9+ ∠

$30^m\ 36^s$ 235.2

30.3 ∠ 346.4 111.2+ ∠ 0.78 ∠

10 30.3 ∠ 220.1+ ∠ 139.9+ ∠ .78

3(86.7 ∠ 69.95 ^

10 28.9 ∠

57.7 31 P. obs.

$32^m\ 24^s$ 165.8 108.1+ ∠

$33^m\ 3^s$ 232.6

350.8

32.7 ∠ 118.2+ ∠

10 32.9 ∠ 226.3+ ∠ 133.7+ ∠ .90+ ∠

66.85 ^

54.7 P. obs.

$34^m\ 5^s$ 168.2 113.5+ ∠

$34^m\ 32^s$ 235.8

34.6 ∠ 350.4 114.6+ ∠

10 34.8 ∠ 228.1+ ∠ 131.9+ ∠ .94+ ∠

65.95 ^

57.2 P. obs.

$35^m\ 29^s$ 166.7 109.5+ ∠

$36^m\ 8^s$ 230.3

35.8 ∠ 352.9 122.4+ ∠

10 36.0 ∠ 231.9+ ∠ 128.1+ ∠ 1.02+ ∠

3(13.7 ∠ 64.05 ^

10 34.6 ∠

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1882phae.proj...494W

Aug. 22, 1882

56.0 — 32 W. obs.

10h 37m 33s — 167.2 — 111.2+ ∠

38m 2s — 239.1

37.8 ∠ — 348.9 — 109.8+ ∠

10 — 38.0 ∠ — 221.0+ ∠ — 139.0+ ∠ .79 ∠

69.50 ^

60.8 — W. obs

39m 7s — 166.0 — 105.2+ ∠

39m 32s — 236.0

39.3 ∠ — 348.3 — 112.3+ ∠ — 0.72

10 — 39.5 ∠ — 217.6+ ∠ — 142.5+ ∠

71.25 ^

56.3 — W. obs.

40m 47s — 169.0 — 112.7+ ∠

41m 17s — 237.2

41.0 ∠ — 347.5 — 110.3+ ∠

10 — 41.2 ∠ — 223.0+ ∠ — 137.0+ ∠ .83+ ∠

3 | 118.7 ∠

10 — 39.6 ∠

68.50 ^

56.9 — 33 P. obs.

42m 50s — 169.8 — 112.9+ ∠

43m 21s — 232.1

43.7 ∠ — 347.3 — 115.2+ ∠

10 — 43.3 ∠ — 228.1+ ∠ — 131.9+ ∠ .94+ ∠

65.95 ^

54.8 — P. obs.

44m 35s — 170.4 — 115.6+ ∠

45m 2s — 237.4

44.8 ∠ — 347.8 — 110.4+ ∠

10 — 45.0 ∠ — 226.0+ ∠ — 134.0+ ∠ .90+ ∠

67.00 ^

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1882phae.proj...494w

Aug. 22, 1882.

	56.1			P. obs.
10h 46m 1s	167.7	111.6+		
48m 37s	235.2		0.9	
46.3	351.9	116.7+	.7	
10 46.5		228.3+	131.7+ .9+	
3)148			65.85	
10 44.9				
	58.2			34 W. obs.
48m 9s	167.3	114.1+		
48m 37s	235.9			
	348.9	113.0+		
48.4		227.1+	132.9+ .9+	
10 48.6			66.45	
	57.9			W. obs.
49m 45s	167.5	109.6+		
50m 12s	234.8			
50.0	349.2	114.4+		
10 50.2		224.0+	136.0+ .8+	
			68.00	
	55.0			
57m 10s	167.3	112.3+		W. obs.
57m 38s	235.2			
57.4	347.5	112.3+		
10 57.6		224.6+	135.4+ .8+	
3)150.4			67.70	
10 50.1				
	61.1			35 P. obs.
53m 19s	170.2	109.1+		
53m 59s	237.4			
53.6	348.6	111.2+		
10 53.8		220.3+	139.7+ .7+	
			69.85	

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1882phae.proj...494w

538

Aug. 22, 1882.

57.4 P. obs.

10h 55m 11s 167.6 110.2+ ∠

55m 43s 232.8

353.4 120.6+ ∠

55.4 ∠ 230.8+ ∠ 129.2+ ∠ 1.00+ ∠

10 55.6 ∠ 64.60 ^

57.3

56m 53s 167.8 111.5+ ∠ P. obs.

57m 21s 236.0

57.1 ∠ 349.6 113.6+ ∠

10 57.3 ∠ 225.1+ ∠ 134.9+ ∠ .88+ ∠

3 16.7 ∠ 67.45 ^

10 55.6 ∠

60.0 36 W. obs.

58m 50s 167.4 107.4+ ∠

59m 43s 233.2

59.3 ∠ 350.2 117.0+ ∠ 135.6 ∠ 0.86 ∠

10 59.5 ∠ 224.4+ ∠ ~~135.4+~~ ~~.87+~~

67.50 ^

55.4 W. obs.

11h 0m 47s 167.0 111.6+ ∠

1m 23s 237.5

1.1 ∠ 350.0 112.5+ ∠

11 1.3 ∠ 224.1+ ∠ 135.9+ ∠ .86+ ∠

67.95 ^

59.2

2m 25s 166.0 106.8+ ∠ W. obs.

2m 58s 233.0

2.7 ∠ 352.8 119.8+ ∠

11 2.9 ∠ 226.6+ ∠ 133.4+ ∠ .91+ ∠

3 3.7 66.70 ^

11 2.8

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1882phae.proj...494w

Aug. 22, 1882

	54.4		37	P. obs.
11h 4m 25s	173.2	118.8+ ∠		
5m 19s	237.9			
4.8 ∠	347.8	109.9+ ∠		
11 5.0 ∠		228.7+ ∠	131.3+ ∠	.95 ∠
			65.65 ^	
	57.2			P. obs
6m 10s	166.4	109.2+ ∠		
6m 55s	233.2			
6.5 ∠	352.8	119.6+ ∠		0.95 ∠
11 6.7 ∠		228.8+ ∠	131.2+ ∠	~~.76~~
			65.60 ^	
	57.7			P. obs.
8m 0s	171.4	113.7+ ∠		
8m 27s	235.7			
8.3 ∠	347.9	112.2+ ∠		0.89
11 8.5 ∠		225.9+ ∠	134.1+ ∠	~~.90~~
			67.05 ^	
3 (20.2 ∠				
11 6.7 ∠				
	56.0		38	W. obs.
10m 7s	167.9	111.9+ ∠		
10m 43s	234.5			
10.4 ∠	351.8	117.3+ ∠		
11 10.6 ∠		229.2+ ∠	130.8+ ∠	.96+ ∠
			65.40 ^	
	54.9			W. obs.
11m 42s	168.4	113.5+ ∠		
12m 9s	240.2			136.5 ∠ 0.84 ∠
12.0	351.2	110.0+ ∠		
11 12.1 ∠		223.5+ ∠	~~130.1+ ∠~~	~~.89~~ .83+ ∠
			68.25 ^	

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1882phae.proj.494W

Aug. 22, 1882.

11h

57.3 W. obs.

13m 17s 164.9 107.6+

13m 45s 233.0

13.5 351.0 118.0+

225.6+ 134.4+ .89+

67.20^

11 13.7

3 16.4

11 12.1

53.7 39 P. obs.

15m 0s 173.8 120.1+

15m 30s 236.9

15.2 348.8 111.9+

232.0+ 128.0+ 1.02+

64.00^

11 15.4

56.3 P. obs.

16m 50s 169.8 113.5+

17m 16s 235.2

17.0 350.8 115.6+

229.1+ 130.9+ .96+

65.45^

11 17.2

52.6 P. obs.

18m 10s 169.7 117.1+

18m 35s 234.7

18.4 349.3 114.6+ 1.01

231.7+ 128.3+ ~~1.02~~

64.15^

11 18.6

3 21.2

11 17.1

56.9 40 W. obs.

19m

20m 57s 165.3 108.4+

20m 30s 233.7

20.2 350.9 117.2+

225.6+ 134.4+ .89+

67.20^

11 20.4

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1882phae.proj..494w

Aug. 22, 1882.

11h 52.0 W. obs.

21m 40s 178.7 121.7+

22m 20s 237.5

22.0 345.9 108.4+

11 22.2 230.1+ 1299+ .98+

64,9 s-

s-6.0 W. obs.

23m 15s 165.9 109.9+

23m 44s 232.5-

23.5 352.2 119.7+

11 23.7 229.6+ 1304+ .97+

3 (6.3 65.20

11 22.1

54.6 41 P. obs.

25m 15s 169.3 114.7+

25m 45s 239.8

25.0 348.0 108.2+

11 25.7 222.9+ 1371+ .83+

68.5 s-

s-8.7

26m 52s 169.3 110.6+

27m 22s 232.1

27.1 350.6 118.5-+

11 27.3 229.1+ 1309 .96+

65.4 s-

s-2.2

28min 25s 172.5- 120.3+

28m 50s 239.3

28.6 352.4 111.1+

11 28.8 231.4+ 128.6+ 1.01+

3 (2.8 64.30

11 23.6

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1882phae.proj...494W

Aug. 22, 1882.

42 W. obs.

	60.4		
11h 30m 30s	167.4	107.0 +	
30m 55s	230.9		0.78
30.7	350.0	113.1 +	
11 30.9		220.1	139.9 + .78
			69.95

W obs

	54.2		
32m 25s	171.9	127.7 +	
32m 25s	238.1		0.99
	351.1	113.0 +	
32.2		230.7	129.3 + .99
11 32.4			64.65

W. obs.

	54.1		
33m 16s	165.0	110.9 +	
33m 38s	233.5		
33.4	350.6	117.1 +	
11 33.6		228.0 +	132.0 + .94 +
33 6.9			66.00
11 32.3			

Images growing more owing to low altitude and proximity of cloud.

B. + C. 1182.

11	40	32.5
	41	32.6

Bond 394

11	~~41~~ 40	44.5
		0.0
	42	0.0
		+12.0
		+11.9

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1882phae.proj..494w

~~Appx. 2~~ Aug. 22. 1882.

Dis. Jup. ~~II~~. I Phot. R. P. obs.
Sat. I. compared with sat. IV.

15	1	46	
	23	41	
15	25	27	approx. time eclipse.

15	15	46 ν	ν9.4
	16	2,ν	15 9.2
		16,ν	61,ν
		27,ν	161.1
		44,ν	ν9.4
		ν6,ν	159.2
	17	22,0	ν6,3
		39.0	15 4.2
		ν2,ν	6.2,2
	18	7,0	157.4
		29.0	ν4.1
		42,ν	164.7
		νν,0	ν4.4
	19	ν,0	157.2
		17,ν	63.4
		32,ν	157.2
		43,ν	61.0
		ν2,ν	159.7
	20	7,0	62.4

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1882phae.proj.4494w

Aug. 22, 1882.

19 20	20,5	159,2	
	37,0	159,1	101,5
	51,0	160,6	
21	14,0	157,0	
	31,5	159,4	102,4
	44,0	156,4	98,9
	56,0	157,3	
22	22,5	156,6	102,6
	35,0	161,2	
	46,0	60,3	98,0
	57,0	155,3	
23	8,0	156,2	100,6
	22,0	155,8	
	32,5	66,8	90,8
	43,0	157,6	
	52,0	66,6	82,1
24	1,0	146,7	
	10,0	68,7	78,6
	20,5	147,3	
	31,0	74,1	72,3
	40,0	146,4	
	47,0	70,2	75,4
	56,0	145,6	
25	6,5	74,4	58,6
	15,5	173,0	
	23,0	66,2	43,9

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1882phae.proj..494W

Aug. 22. 1882.

1	2	21,0	120,1	40.2
		24,5	90,0	

Dis. Sup. II.	Phot. R.	Prob.
16	18	14
	23	41
16	41	✓✓

16	31	4✓,✓	64,7
	32	3,0	1✓1,3
		32,✓	64,4

~~Intern~~ observed through passing clouds.

16	3✓	14,0	147,6
	40	31,✓	81,4

The above to be rejected as observations were ~~obser~~ interrupted by clouds.

B. & C. 1102.			Bond 394.		
16	49	31.8	16	✓+9 0	44.✓
	✓0	31.9		✓1	0.0
					0.0
					+12.7
					+12.6

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1882phae.proj..494W

Aug. 27, 1882
Sawyers Var.

3.0 — 1 W. obs.

113.8 — 110.8+ ∠

9h 51m.4 — 179.2

295.8 — 116.6+ ∠

227.4+ ∠ 132.6+ ∠ .93 .92+ ∠

66.30 ^

(1) 357.8 — 117.2 ∠ — W. obs

54m.0 (2) 115.0 — 8.2+ ∠

(4) 292.0

(3) 181.9 — 110.1+ ∠

227.3+ ∠ 132.7+ ∠ .92+ ∠

66.05 ^

359.3 — W. obs.

56.6 — 111.8 — 112.5+ ∠

181.2

293.1 — 111.9+ ∠ — 130.6 ∠ 0.86 ∠

224.4+ ∠ 135.6+ .87.86+ ∠

67.80 ^

3 42.6 ∠

9 54.2 ∠

359.8 — 2 P. obs.

58m.5 — 115.1 — 115.3+ ∠

179.2

292.1 — 112.9+ ∠

228.2+ ∠ 131.8+ ∠ .94+ ∠

65.90 ^

2.8 — P. obs

109.7 — 106.9+ ∠

10h 0m.2 — 177.3 — 0.85 ∠

294.3 — 117.0+ ∠

223.9+ ∠ 136.1+ ∠ .80+

68.05 ^

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1882phae.proj..494W

Aug. 24, 1882

P. Obs.

	356.8	
$10^h\ 2^m.0$	113.8	117.0+
	182.3	
	293.4	111.1+
		228.1+ 131.9+ .94+
		65.95−

3 W. Obs.

	358.5	
	113.0	114.5+
$4^m.5$	178.3	
	296.1	117.8+
		232.3+ 127.7+ 1.03+
		63.85−

W. Obs

	356.5	
$5^m.3$	115.0	118.5+ 1175
	179.0	
	294.5	115.5+
		234.0+ 126.0+ 1.06+
		63.00−

W. Obs

	358.7	
	114.1	115.4+
$8^m.4$	183.1	
	292.0	108.9+
		224.3+ 135.7+ .86+
		67.85−

4 P. Obs

	4.4	
	112.9	108.5+
$10^m.1$	177.0	
	298.2	121.2+
		229.7+ 130.3+ .97+
		65.15−

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1882phae.proj..494W

10.3

Aug. 27, 1882.

P. Obs.

356.4
116.3 119.9+
11m.6 180.8
290.6 109.8+
229.7+ 130.3+ .97+
6 5, 15

P. Obs

2.1
111.4 109.3+
13m.5 179.0
298.0 119.0+
131.7 0.94
228.3+ ~~131.3~~ .95+
6 5, 8 5

5 W. Obs

397.4 Assume 357.4
114.9 ~~77.5~~
15m.9 179.5 117.5+
293.5 114.0+
~~191.5~~
231.5+ 128.5+ 1.01+
64, 25

W. Obs.

357.2
112.9 115.7+
17m.7 179.0
298.3 119.3+
235.0+ 125.0+ 1.08+ ~~1.09~~
62, 50

W. Obs.

356.2
19m.7 115.9 119.7+
180.8
293.3 112.5+
232.2+ 127.8 1.03+
63.90

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1882phae.proj..494w

Aug. 24, 1882

P. Vbl.

θ Serpentis at normal brightness at $10^h 24^m$

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1882phae.proj..494W

Aug. 27. 1882.

~~18.7~~ Sawyer's Variable W. obs.

~~17.9~~ Wrong cmps.

~~88.8~~

8h 45.2 205.1 116.3+ℓ

270.0

24.5 114.5+ℓ

230.8+ℓ 129.2+ℓ 1.00+ℓ

64.60^

90.1 W. obs

207.0 116.9+ℓ

48.0 ~~58.0~~

272.5

24.3 111.8+ℓ

228.7+ℓ 131.3+ℓ .95+ℓ

65.65^

87.8 W. obs.

+1.0 206.1 118.3+ℓ

3 1474 ℓ 270.2

8h 48.2 ℓ 24.6 114.4+ℓ

232.7+ℓ 137.3+ℓ 1.04+ℓ

63.65^

88.8 W. obs.

+4.5 204.1 115.3+ℓ

266.1

22.5 116.4+ℓ 1.01

231.7+ℓ 128.3+ℓ ~~1.02~~

64.15^

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1882phae.proj...494w

Aug. 25. 1882.

8h

89.1 — Yr. obs.

203.8 114.7+<

269.6

22.8 113.2+<

227.9+< 132.1+< .94+<

66.05^

88.2 — W. obs.

9h 2m.5

204.9 116.7+<

271.2

24.0 112.8+<

229.5< 130.5+< .97+<

65.25^

87.1 — W. obs.

204.9 117.8+<

270.5

22.5 112.0+<

229.8< 130.2+< .97+<

65.10^

90.2 — W. obs.

202.1 111.9+<

269.0

22.2 113.2+<

225.1+< 134.9+< .88+<

67.45^

91.2 — W. obs.

201.0 109.8+<

271.7 138.8<

23.1 111.4+< 0.80<

221.2< 138.4+< 0.8+<

1882phae.proj..494w

Aug. 25, 1882. P. obs.

In preceding readings to night, index is above and to right and therefore reversed from preceding evenings; and subsequent readings index to left & below.

~~357.4~~
~~117.3~~
294.0

9h 14.9 Thro

357.4 P. obs.
114.6 117.2+
9h 17.1 181.3
292.6 111.3+
228.5+ 131.5+ .95+
65.75

356.6 P. obs.
112.7 116.1+
18.6 179.7
291.2 111.5+
227.6+ 132.4+ .93+
66.20

1.7 P. obs.
109.8 108.1+
20.0 185.6
3 (55.7)
9 18.6
8
295.8 110.2+
218.3+ 141.7+ .74+
70.85

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1882phae.proj..494w

Aug. 26. 1882.

Sawyer's Variable.

Fr. obs.

3 v 6.0 119.2 + ∠
11 v .2
179.0
292.7 113.7 + ∠
232.9 + ∠ 127.1 + ∠ 1.04 + ∠
63.55 ^

v 6.2

Fr. obs.

3 v 8.0 114.2 + ∠
11 2.2
179.6
294.4 114.8 + ∠
229.0 + ∠ 131.0 + ∠ .96 + ∠
65.50 ^

v 8.v

Fr. obs.

3 v 8.v 116.v + ∠
11 v.0
182.3
293.0 110.7 + ∠
227.2 + ∠ 132.8 + ∠ .92 + ∠
66.40 ^

8 ∠ 0.7
3 (17) 5.4 ∠
8 v 8.v ∠
7

Fr. obs.

1.7 108.0 + ∠
3.7 109.7
180.6
294.0 113.4 + ∠
221.4 + ∠ 138.6 + ∠ .80 + ∠
69.30 ^

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1882phae.proj..494W

37

Aug. 26. 1882.

Sawyer's Variable.

8h 6m.0

3 5 8.0
1 1 4.8
1 8 3.8
2 9 4.2

1 1 6.8 + ∠
1 1 0.4 + ∠
2 2 7.2 + ∠

1 3 2.8 ∠ .92 + ∠
66.40 ^

W. obs.

3 5 9.1
1 0 9.2
1 7 8.9
2 9 4.3

1 1 0.1 + ∠
1 1 5.4 + ∠
2 2 5.5 + ∠

1 3 4.5 ∠ .89 + ∠
67.25 ^

W. obs.

9.4
3 | 19.1 ∠
6.4 ∠
6

8

3 5 7.8
1 1 3.0
1 8 2.5
2 9 1.0

1 1 5.2 + ∠
1 0 8.5 + ∠
2 2 3.7 + ∠

1 3 6.3 + ∠ .85 + ∠
68.15 ^

W. obs.

11.9

1.4
1 1 2.0
1 7 9.2
2 9 5.0

1 1 0.6 ∠
1 1 5.8 ∠
2 2 6.4 ∠

1 3 3.6 + ∠ .95
66.80 ^

0.90 + ∠

W. obs.

14.7

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1882phae.proj..494w

Aug. 26. 1882.

Sawyer's Variable.

M. obs.

3 8.4 116.1+<

114.9

142.1

293.2 111.1+<

227.2+< 132.8+< .92+<

66.40^

8h 17.7

3 | 14.3 <

14.8 <

15.0

Clouded up. Closed down.

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1882phae.proj...494W

Aug 28, 1882

Sawyer's Ast.

R. Pike

	357.8.		
	111,2.	113.4+	
7.42.9	179.8.	116.3+	
	296.1.	229.7+	130.3+ .97+
			65.15
	2.0.		
	110.2.	108.2+	
51.2	181.7.	113.2+	
	294.9.	221.4+	138.6+ .80+
			69.30
	2.2.		
	109.9.	107.7+	
52.9	179.6.	115.6+	
3 | 115 3.0	295.2.	223.3+	136.7+ .84+
7 57.0			68.35
2			

	359.3	112.7+	
	112.0		
57.5	183.2	110.7+	
	293.9	223.4+	136.6+ .84+
			68.30
	338.0		
	110.2	112.2+	
8.0.2	180.0	114.5+	
	294.5	226.7+	133.3+ .91+
			66.65

	359.2	112.1+	
	111.3		
		112.2+	
1.6	181.8	224.3+	135.7+ .86+
3 | 179 3			67.85
7			

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1882phae.proj..494w

Aug. 22. 1882.

	355.8			
	112.6	116.8 + ∠		
4.4	180.3			
	293.6	113.3 + ∠		
		230.1 + ∠	129.9 + ∠	.98 + ∠
			64.95 ^	

	358.8			
	113.6	114.8 + ∠		
6.7	183.2	113.6 + ∠		
	296.8	228.4 + ∠	131.6 + ∠	.95 ∠
			65.80 ^	

	358.0			
	111.2	113.2 + ∠		
8.7	178.7	114.6 + ∠		
3 | 19.8 ∠	294.3	227.8 + ∠	132.2 + ∠	.93 + ∠
8 6.6 ∠			66.10 ^	
8				

	357.8			
50.5	116.2	118.4 + ∠		
	183.8			
	290.2	104 + ∠		
		224.8 + ∠	135.2 + ∠	.87 + ∠
			67.60 ^	

	359.8			
	111.6	111.8 + ∠		
51.8	182.8			
	295.2	112.4 + ∠		
		224.2 + ∠	135.8 + ∠	.86 + ∠
			67.90 ^	

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1882phae.proj.494w

August 28. 1882

358.2
118.1 119.9+
53.5 181.8
109.4+
291.2 229.3+ 130.7+ .9+
51.9

Observ of Phan mb. H.C. 1

h = a 4 b
Rebt wb.
a 7 b

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1882phae.proj..494W

Aug. 29. 1882

Sawyer's Car

R. obs.

357.2
110.1 112.9+
7h 34.1 184.3
111.9+
296.2 224.8+ 135.2+ .87+
67.60

1.3
111.1 109.8+
360 183.6
113.4+
297.0 223.2+ 136.8+ .84+
68.40

356.3
113.4 117.1+
358 183.2
108.3+
3 18.3 291.5 225.4+ 134.6+ .88+
7 36.1
67.30

Obsn Rec'd H.C. 1

7	a	0	0			0
3	b	19	18	a.	b.	19
12	c	30	30		d	30
6	nb	75	75		e	76
9	4m d	111	102	Rec'd H.C.		111
3	4m e	134	124	112 134		134

There are half second marks on the second
without [illegible] using eye for observations
here a is 36.5 s.p.m. 1 in of nb b is 28 s.p.m 3's
[illegible] 3's.

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1882phae.proj..494W

Aug 29 1882

0,6

8h ~ 8.9

114.5 114.2+<

184.8

295.4 110.6+< / 224.8+< 135.2+< .87+<
67.60^

359.8

111.6 111.8+<

10.7

178.1

295.2 117.1+< / 228.9+< 131.1+< .95< ~~.96+~~

65.55^

359.7

12.7

112.3 112.6+<

179.5

290.4 110.9+< / 223.5+< 136.5+< .85+<
68.25^

8 15 Int. = a 6h must include of obs. Aug 28. H.C. 1
bright moonlight both nights.

353.2

117.7 124.5+<

8 36.1

185.2

290.0 104.8+< / 229.3+< 130.7+< .96< ~~.97+~~<
65.35^

358.8 112.4+<

37.7

111.2

178.6 119.4+< / 231.8+< 128.2+ 1.02+<
64.10^

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1882phae.proj..494W

Aug 29. 1882

3584
113.1 114.7+<
[α 39.2] 178.7 117.2+<
295.9 231.9+< 128.1+< 1.02+<
64.05^

Rush H.C. 2 S.

α 44 mb = a g h

prez. a mb. fol.

N.

0 0 a a pm 11 s 0.5' n
10 10 b b pm 55 2' s
22 20 mb

17736 1^ 39 10'
17748 29 6'
17764 2 8 6'
17772 2 17 3'

9h 00 357.8 5
113.5 114.7+<
181.4 117.2+<
295.6 232.9< 129.1+< 1.04+<
63.55^

3582
117.3 119.1+<
182.9 108.7+<
291.6 227.8+< 132.2+< .93+<
66.10^

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1882phae.proj.494w

Aug 29. 1882

359.8
113.4 113.6+<
3.6
179.9
297.3 117.4+<
231.0+< 129.0+< 1.00+<
64.5-0^

Rec. obs. this evng by R.

Lawyer's Variable. W. obs.

~~94.8~~
~~194.8~~ Reject. wrong images.

W. obs.

9h 24.5m
357.0 116.0+<
113.0
181.9
298.3 116.4+<
232.4+< 127.6+< 1.03+<
63.80^

W. obs.

27.7
355.5 122.7+<
118.2
180.1
293.8 113.7+<
236.4+< 123.6+< ~~1.12~~ ~~111+<~~
1.11
61.80^

W. obs.

30.5
357.1 116.7+<
113.8
179.5
296.0 116.5+<
233.2+< 126.8+< 1.05+<
63.40^

3 (8 2 7)<
9 27.6<

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1882phae.proj..494W

Aug. 29. 1882.

Σ 3044.

23 47 +11.°2 W. obs.
20 8
— 3 39

20 1 v
— 3 32

234.5 ∠ fol. + bstr. dis. W. obs.
9 v2 308.9 74.4 "^
+4.4
132.4 78.0 "^ / 1v 2.4 · ^ ~~0.5"~~ 2.v v

Other images W. obs.
~~326.1~~ Reject, images moved out of position.

323.6 ∠ fol. + bstr. dis.
9 56 44.v 80.9 "^
143.0
219.7 76.7 · ^ / 1v 7.6 · ^ ~~0.4'~~ 2.4 v

Lawyer's Variable. W. obs.
3v6.0 119.1 v +
10h 10.9 11v.1
182.3 10 +.v +
290.8 227.6 +
+32.4 +
66.20

~~0.9~~
~~92~~ + ~~11~~ v

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1882phae.proj..494w

10.9

Aug. 29. 1882.

Sawyer's Variable. W. obs.

3 ⩕ 8.9 113.9 + ∠
10h 14m.4 112.8
178.8
294.1 115.3 + ∠ / 229.2 + ∠ 130.8 + ∠ .96 + ∠
65.40 ^

W. obs.

3 ⩕ 4.8 122.9 + ∠
117.7
17.9 178.8
3 | 132 ∠ 118.8 + ∠
10 14.4 ∠ 297.6 / 241.7 + ∠ 118.3 + ∠ 1.23 + ∠
59.15 ^

Σ 3044 con. from previous page. W. obs.
142.2 ∠ fol. + brtr. dis.
10 37 217.3 ⩕ 1.^
~~36.1~~ Rej. wrong image made to dis.
141.6 } + 180°, or other vernier.
222.0 } 0.4 ^
1 ⩕ ^ ~~0.5~~ 2 ⩕ ✓

other images.
W. obs.
235.0 ∠ fol. + brtr. dis.
10 44 309.3 74.8 ^
⩕ 1.2
129.4 78.2 ^ / 152. ⩕ ^ ~~0.5~~ 2 ⩕

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1882phae.proj..494W

Aug. 29. 1882.

Σ 3044 com. P. obs.

301.4 < fol. star in tr.
546 112.4^

10 5m

130.4
230.4 99.6^
212.4|^
147.6 ~~0.6~~ 2.6

other images. P. obs.

37.8 < preceding star dim.

10 4m

147.1 109.3^
~~18.0~~ Reject.
223.6 103.4^
327.0
213.1^
146.9 ~~.6~~ 2.6

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1882phae.proj..494w

August 30, 1882

Variable & h Aquarii added between
8.30 and 9 30

P. Obs.

8h 12

359.7
117.9 118.2+<
183.3 108.1+<
291.4 226.3+< 133.7+< .90+<
66°85'

358.1
112.6 114.5+<
27.7
177.9
293.7 115.4+< 130.1+< .98+<
229.9+< 65°05'

355.7
113.2 117.5+<
29.7
182.2 112.1+<
295.3 229.6+< 130.4+< .97+<
65°20'

9 o d Sagittarii nearly equal brightness

Ala 2nd at −19.1 18h 5m

9h 0m = a Aql

1882phae.proj..494w

Aug. 30, 1882.
Sawyer's Variable. W. obs.

9h 31m.7

3 v 7.1
11 2.6 115.5+ <
10 0.5
296.7 116.2+ < / 231.7+ < / 128.3+ < 1.01 <
64.1 v ^

W. obs.

34 v

3 v 6.4
11 6.3 119.9+ <
10 0.0
292.8 112.8+ < / 232.7+ < / 127.3+ < 1.04+ <
63.6 v ^

W. obs.

37.7
3 | 13.9 <
9 34.6 <

3 v 8.2
11 4.0 115.8+ <
10 1.0
294.2 113.5+ < / 229.3+ < / 130.7+ < 0.96 <
65.3 v ^

Σ 3044.
23 47 +11.2°
20 24
−3 19

Red. star, color 2 – No bands seen – bright nucleus – light
20 3 v +11.0 = Dec. W. obs.
−3 13
23 44 = R.A. 7 to 7.2 mag.

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1882phae.proj.494w

Aug. 30. 1882.

Sawyer's Variable.

W. obs.

3 ∨ 4.∨

10h 11.∨ 116.2 121.7 +<

181.9

292.7 110.8 +<

232.5 +< 127.5 +< 1.03 +<

63.75 ^

W. obs.

3 ∨ 8.8

16.0 113.7 114.9 +<

179.8 117.4 +<

293.2 232.3 +< 127.7 +< 1.03 +<

63.85 ^

W. obs.

3 ∨ 4.7

17.∨ 116.0 121.3 +<

3 (150 <

10 15.0 < 181.8 111.7 +<

293.∨ 233.0 +< 127.0 +< 1.04 +<

63.50 ^

Σ 3044.

23 47 +11.2

20 ∨4

−2 ∨3

W. obs.

322.1

10 30 40.6 < fol. + bots dis. 78.5

144.9 75.0

219.9 153.5 0.5

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1882phae.proj..494w

Aug. 30. 1882.

Same con.

	Other images.		W. obs.
	51.9	∠ fol. + brtr dis.	
10 33	133.4	81.5°	
	231.5		
	307.9	76.4°	
		157.9°	0.4°

	Same again.		W. obs.
	51.4	∠ fol. + brtr dis.	
10 36	132.3	80.9°	
	232.0		
	310.8	78.8°	
		159.7°	0.4°

a bit of
Eye piece removed as paper ~~of~~ or something of that nature seemed to obstruct the field in last setting.

	Other images.		W. obs.
	300.0	∠ fol. + brtr dis.	
10 44	23.3	83.3°	
	125.1	72.0°	
	197.1	155.3°	0.5°

	Same object.		P. obs.
	18.6	∠ Pr. + ftr. dis.	
10 54	127.2	108.6°	
	203.4		
	305.8	102.4°	
		211.0°	
		149.0°	0.6°

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1882phae.proj..494W

Aug. 30, 1882.

other images. P. obs.

285.7 108.5'

10 v-6 34.2

106.8 110.5'

217.3 219.0'

141.0' 0.8'

Sawyer variable

?

359.8 W. obs

110.5- 110.7+<

11 5.6 178.0

120.8+<

298.8 231.5+< 128.5+< 1.01+<

B 4.25^

352.0 W. obs.

116.3 123.3+<

8.8 184.2

108.3+<

292.5- 231.6+< 128.4 < 1.01+<

6 4.20^

9r ~~20~~ 2.8 W. obs.

9.9 111.0 108.2+<

178.9 120.0+<

298.9 228.2+< 131.8+< .94+<

6 5.90^

The above sets (of 12 readings) thought to be of not much value as variable was getting low and images were difficult to see. W.

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1882phae.proj...494w

Sept. 1, 1882

Sawyer's Variable.

7h 12m Twilight strong. 1 P. obs.

3.3
108.6 105.3+ <
16.7 179.2
7 17.0 < 291.8 112.6+ <
217.9+ < 142.1+ < .73+ <
71.05 ^

358.9 P. obs.
107.0 108.1+ <
19.7 183.1
7 20.0 < 293.2 110.1+ <
218.2+ < 141.8+ < .74+ <
70.90 ^

355.1 P. obs
107.2 112.1+ <
21.7 182.8
7 22.0 < 290.2 107.4+ <
3 59.0 < 0.76
7 ~~28~~ X19.5+ < 140.5+ < ~~.76+~~
~~19.6 <~~ 2 70.25 ^
19.7

358.1 2 P. obs.
111.3 111 3.2+ <
24.3 185.3
7 24.6 < 295.8 110.5+ <
223.7+ < 136.3+ < .85+ <
68.15 ^

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1882phae.proj..494w

24.6

Sept. 1, 1882

7h

2.2 P. obs.

113.4 111.2+

26.3

7 26.6 185.1

293.6 108.5+

219.7+ 140.3+ .77+

70.15^

2.9 P. obs.

111.4 108.5+

28.1

185.2

7 28.4 293.8 108.6+

3 (19.6 217.1+ 142.9+ .72+

7 26.5 71.45^

1.3 3 P. obs.

109.4 108.1+

29.4

184.1

7 29.7 295.2 111.1+

219.2+ 140.8+ .76+

70.40^

6.8 P. obs.

109.0 102.2+

182.4

30.6

293.8 111.4+

7 30.9 213.6+ 146.4+ .65+

73.20^

358.6 P. obs

11.7 113.1+

31.8

184.2

7 32.1 293.7 109.6+

3 (9.27 222.6+ 137.4+ .83+

7 30.9 68.70^

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1882phae.proj..494W

Sept. 1, 1882

7h

358.8 4 P. obs.
109.4 110.6+
33.3
7 33.6 181.4
292.7 111.3+
221.9+ 138.1+ .81+
69.05-

0.4 P. obs.
111.2 110.8+
35.0
7 35.3 181.3
296.7 115.4+
226.2+ 133.8+ .90+
66.90-

359.2 P. obs
111.4 112.2+
36.2
193.6
7 36.5 289.1 95.5+
3 15.4
7 35.1 207.7+ 157.3+ .53+
76.15-

359.7 5 P. obs.
109.2 109.5+
37.8
181.3
7 38.1 294.3 113.0+
222.5+ 137.5+ ~~.83+~~ 0.82
68.75-

359.5 P. obs.
110.7 111.2+
89.5
~~89~~ 183.2
7 39.8 291.9 108.7+
219.9+ 140.1+ .77+
70.05-

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1882phae.proj:494W

Sept. 1, 1882

γh

[40.7]
~~86.7~~

41.0
~~3[7.0]~~
3 (18.9 <
39.6 <

1.9
111.2 109.3 +<
179.4
291.6 112.2 +<
221.5 +< 138.5 +< .81 +<
69.25 ^

0.80

P. obs.

0.3
113.2 112.9 +<
183.9
291.0 107.1 +<
220.0 +< 140.0 +< .77 +<
220.0 < 70.00 ^

42.0
42.3 <

6 P. obs.

3.2
104.9 101.7 +<
179.1
295.7 116.6 +<
218.3 +< 141.7 +< .74 +<
70.85 ^

43.4
43.7 <

P. obs.

356.1
115.5 119.4 +<
184.2
291.3 107.1 +<
226.5 +< 133.5 +< .91 +<
66.75 ^

0.91 <

44.8
45.1 <
3 (11.1 <
43.7 <

#7 W. obs.

359.2
112.2 113.0 <
186.0
289.2 103.2 +<
216.2 +< 143.8 +< .70 +<
71.90 ^

48.0
48.3 <

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1882phae.proj...494w

Sept. 1, 1882.

7h

2.0 W. obs.

108.0 106.0+<

51.0 182.2

7 51.3 < 292.5 110.3+<

216.3+< 143.7+< .70+<

7 1.85-^

0.2 W. obs.

111.5 111.3+<

51.8 184.9

7 52.1 < 289.5 104.6+<

3 (151.7 < 215.9+< 144.1+< .69+<

7 50.6 < 7 2.05-^

2.5 8 P. obs.

111.2 108.7+<

53.8 182.3

7 54.1 < 288.9 116.6+<

215.3 144.7< .68+<

215.3+< 7 2.35-^

1.3 P. obs.

109.0 107.7+<

55.0 184.2

7 55.3 < 294.8 110.6+<

218.3+< 141.7+< .74+<

7 0.85-^

357.4 P. obs

114.2 116.8+<

56.5 187.1

7 56.8 < 294.8 107.7+<

3 (16.2 < 224.5< 135.5< + .87

7 55.4 < 67.75-^

0.87

.88

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1882phae.proj.494W

Sept. 1, 1882.

7h

3.5

#9 W. obs.

111.0 107.5 ±

58.5

183.5

7 5-8.8 <

289.9 106.4 +

213.9 ± 146.1 + .65 ±

7 3.65 -

2.8

W. obs.

109.0 106.2 +

8h 1.0

183.0

8 1.3 <

289.0 106.0 +

212.2 + 147.8 ± .62 ±

7 3.90

1.1

107.3 106.2 +

W. obs.

2.7

186.6

8 3.0 <

294.1 107.5 ±

3 (3.1 <

213.7 + 146.3 ± .65 +

8 1.0 <

7 3.15 -

#10 E. obs

0.3

111.9 111.6 +

4.5

183.6

8 4.8 <

291.0 107.4 +

0.75

219.0 + 141.0 + .75 +

7 3.50

4.8

E. obs.

109.7 104.9 +

5.7

183.3

8 6.0 <

293.2 109.9 +

214.8 ± 145.2 + .67 +

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1882phae.proj...494w

Sept. 1, 1882

8h

359.6
112.8 113.2+
184.2
290.6 106.4+
219.6+ 140.4+ .77+
70.20^

6.0
110.1 104.1+
8.1
180.8
293.4 102.6+
216.7+ 143.3+ .71+
71.65^

359.2
112.3 113.1+
9.3
187.7
290.0 102.3+
215.4+ 144.6+ .68+
72.30^

1.6
107.7 106.1+
10.3
182.4
293.7 111.3+
217.4+ 142.6+ .72+
71.30^

11.7
~~+2.0~~

359.3
113.7
287.4

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1882phae.proj.494w

Sept. 1, 1882

183.3 my reading

8h 4.1 18^12 W. obs

109.8 105.7 +<

157 188.8

8 16.0 < 291.2 102.4 +<

208.1 +< 151.9 +< .54 +<

75.95 ^

4.2

109.9 105.7 +< W. obs.

17.0 182.3

8 17.3 < 289.1 106.8 +<

~~201.1~~ .62 <

212.5 < 147.5 < ~~.83~~ +

73.75 ^

4.8

109.5 104.7 +< W. obs

18.5 187.8

8 18.8 < 289.2 101.4 +<

3(221 <

8 17.4 < 206.1 < 153.9 +< .50 +<

76.95 ^

3.3 13 P. obs.

112.0 108.7 +<

20.2 185.0

8 20.5 < 288.2 103.2 +<

211.9 +< 148.1 +< .61 +<

74.85 ^

5.5 P. obs

108.6 103.1 +<

21.6 184.2

8 21.9 < 293.8 109.6 +<

212.7 +< 147.3 +< .63 +<

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1882phae.proj...494w

Sept. 1, 1882.

8h

0.1 P. obs.

113.3 113.2+ ∠

22.8

189.4

8 23.1 ∠

288.3 98.9+ ∠ 0.62

3(8.5-) ∠ 212.1+ ∠ 147.9+ ∠ .62+

8 21.8 ∠ 73.95- ^

3.0 14 W. obs.

109.0 106.0+ ∠

25.0

185.0

8 25.3 ∠

288.9 103.9+ ∠ 0.57

209.9+ ∠ 150.1+ ∠ .57+

75.05 ^

4.1 W. obs.

109.8 105.7+ ∠

27.0

186.7 101.4+ ∠

8 27.3 ∠

288.1 ~~107.4~~

~~213.1~~

207.1 ∠ 152.9+ ∠ .52+ ∠

76.45 ^

5.1 W. obs.

105.7 100.6+ ∠

29.0

186.2

8 29.3 ∠

291.9 105.7+ ∠ 0.50

3(21.9 ∠ ~~.51~~

8 27.3 ∠ 206.3+ ∠ 153.7+ ∠ .50+

76.85 ^

3.1 15 Wolbach

108.5 105.4+ ∠

30.5

187.2

8 30.8 ∠

288.5 101.3+ ∠

206.7+ ∠ 153.3+ ∠ .51+ ∠

76.65 ^

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30.8

Sept. 4, 1882.

8h

6.0 W. obs.

109.7 104.7 +

32.0 186.9

8 32.3 < 291.9 105.0 +

209.7 + 150,3 + ,57 +

75.15 ^

5.8 W. obs

110.1 104.3 +

33.8 186.4

8 34.1 < 290.5 104.1 +

3 | 7.2 < 208.4 + 151,8 + ,54 +

8 32.4 < 75.80 ^

6.0 16 P. obs

107.5 101.5 +

35.8 184.8

8 35.9 < 288.3 103.5 +

205.0 + 155.0 + ,48 +

77.50 ^

4.1 P. obs

111.8 107.7 +

37.1 188.9

8 37.4 < 288.3 99.4 +

207.1 + 152.9 + ,52 +

76.45 ^

7.2 12 obs

106.7 99.5 +

38.4 181.2

8 38.7 < 290.9 109.7 +

3 | 22.0 < 209.2 + 150.8 + ,56 +

8 37.3 < 75.40 ^

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1882phae.proj..494w

Sept. 1, 1882.

gk

2.5 17 W. obs

108.5 106.0+ <

184.8

284.3 99.5+ <

205.5+ < 154,5+ <, 49+ <

77.20^

8.7

108.8 105.1+ < W. obs

42.1 185.7

8 42.4 < 288.0 102.3+ <

207 4+ < 152,6+ <, 53.52+ <

76.30^

Deduct for Planetary nebula in R102,217

Red. 1.48 W. at 19 30 Dec -16.3

2.8 W. obs

110.2 107.4+ <

44.0 185.8

8 44,3 < 289.1 103.3+ <

3(7.2 < 210.7+ < 149,3+ <, 59+ <

8 42.4 < 74.65^

8.2 18 P. obs

104.2 96.0+ <

46.2 184.0

8 46,5 < 289.4 105.4+ <

201.4+ < 158,6+ <, 41+ <

79.30^

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1882phae.proj.494w

Sept 6, 1882

46.5

8h

2.4 P. obs.

109.4 107.0 +

47.4 190.2

8 47.7 285.3 95.1 +

202.1 + 157.9 + .42 +

7 8.9 5 -

6.8 P. obs

106.9 100.1 +

49.2 187.1

8 49.5 296.4 109.3 +

3 23.7 209.4 + 150.6 + .56 +

8 47.9 7 5.30

3.8 19 W. obs

107.0 103.2 +

51.0 186.2

8 51.3 287.2 101.0 +

204.2 + 155.8 + .46 +

7 7.90

7.1 W. obs

106.5 99.4 +

53.0 187.0

8 53.3 288.8 101.8 +

201.2 + 158.8 + .40 +

7 9.40

3.0 W. obs

107.7 104.7 +

55.1 189.4

8 55.4 284.8 95.4 +

3 10.0 200.1 + 159.9 + .38 +

8 53.3 7 9.95

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1882phae.proj...494w

Sept. 1, 1882

8h 4.9 20 W. obs

105.1 100.2 +

57.8 185.8

8 58.1 < 290.0 104.2 +

204.4 + 155.6 + .47 +

77.80 ^

3.7 W. obs

108.7 105.0 +

57.8 189.2

9 0.1 < 284.2 95.0 +

200.0 + 160.0 + .38 +

80.00 ^

9h 6.9 W. obs

107.0 100.1 +

2.0 186.9

9 2.3 <

3 0.5 <

9 0.2 < 290.2 103.3 +

203.4 + 156.6 + .45 +

78.30 ^

5.9

112.1 106.2 + 21 P. obs.

5.4 190.7

9 5.7 < 287.2 96.5 + 0.43 <

202.7 + 157.3 + .43 +

78.65 ^

8.2 P. obs

104.4 96.2 +

7.0 186.8

9 7.3 < 288.3 101.5 +

197.7 + 164.3 + .34 +

82.15 ^

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Sept. 1, 1882

9h 1.1 P. obs.

107.3 106.2 +∠

8.4 191.8

9 8.7 < 285.7 93.9 +∠

3(21.7 < 200.1 +∠ 159.9 +∠ ,38 +∠

9 7.2 < 79.95 ^

8.3 22 W. obs

105.5 97.2 +∠

7.5 188.7

9 9.8 < 287.8 99.1 +∠

196.3 +∠ 163.7 +∠ ,31 +∠

81.85 ^

5.1

108.9 103.8 +∠ W. obs

12.1 191.0

9 12.4 < 282.8 91.8 +∠

195.6 +∠ 164.4 +∠ ,30 +∠

82.20 ^

9.8 W. obs

105.0 95.2 +∠

14.2 188.0

9 14.5 < 287.0 99.0 +∠

3(36.7 < 194.2 +∠ 165.8 +∠ ,27 +∠

9 12.2 < 82.90 ^

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1882phae.proj..494w

B. 236 Sept. 1, 1882

b	$20^h\ 10^m$	11.2	bar A	6.1
a		17.3		18.2
Neb		35.5		
b		54.9	bar B	6.1
a	11	1.0		17.9
Neb		18.9		

See p. 2 of R 103 for stars b and a, used to estimate light of planetary nebula

Approx. α $17^h\ 43^m$ ✓

" δ $-16°.3$

This Neb. is H. P. No. 2 of "Observatory" list. p. 29 r. Vol. V.

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1882phae.proj..494w

Sept. 19. 1882

Record of M. Equatorial. R. 103 beg — near mer. ☌ Eq.
Cemb quar Dillon
5h 32.2m — Hour Angle ☌ 6¼ Clarey

60° 13′ at 0h 52m

	Min	H.A.	Dec.	
☌	0h 52m	5 32.2	60° 13′	} Chandler read circles.
⊙	— 53.8	5 6.2	59° 12′	" " "
☌	1 1.9	5 41.9	60° 10	doubtful
☌	1 3.6	43.4	60° 9′	" "
☌	1, 4.3	44.2	60° 9′	" "
⊙	1 5.9	5 47.9	59° 3′	" "
⊙	1 7.2	5 19.3	59° 9′	Chandler read circles
⊙	1 18.4	5 30.5	59° 6′	
☌	1 23.3	6 3.2	60° 4′	Brown read; verified by Chandler
☌	1 24.2	6 4.1	60° 3′	Ch. read Decl. Brown read R.A.
☌	1 24.8	6 4.7	60° 3′	" "
⊙	1 25.0	5 38.2	59° 3′	" "
~~+~~	~~27.0~~			
⊙	1 28.1	5 40.2	59° 0′	" "
⊙	1 29.0	5 41.1	59° 59′	" "
				Brown left here
☌	1 31.5	6 11.6	60° 1′	Chandler read circles.
☌	1 32.7	6 12.7	60° 1′	
☌	1 35.0	6 14.1	60° 0′	

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1882phae.proj..494w

Sept. 19, 1882 Chandler round circles

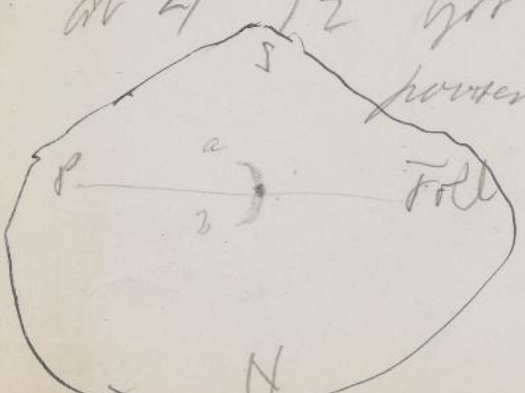
⊙	1h	39.3m	5h	51.6m	58°	59′
⊙	1	40.3	5	52.7	58°	59′
⊙	1	41.2	5	53.5	58°	58′
⋐	1	50.2	6	30.3	59°	59′
⋐	1	51.4	6	31.3	59°	58′
⋐	1	53.0	6	32.4	59°	59′

above times taken by Chandler Watch which is 12 sec. fast of C.M.T. and has no appreciable rate

Chandler reads. circles

⋐	3h	59.5m	8h	40.8m	59°	40′
⋐	4	1.1	8	42.3	59°	39′
⋐	4	2.8	8	43.9	59°	39′
⊙	4	4.0	8	16.3	58°	31′
⊙	4	5.7	8	18.1	58°	30′
⊙	4	7.2	8	19.6	58°	30′

At 4h 12 got following sketch made with powder 100 on 6½ inch.



less than one minute between the cusps (a and b)

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Sept. 19, 1882

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