1855phae.proj... 2/8

KG
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21

A.21

Harvard.

Transit Circle

Aug. 1, 1855 — Sept. 25 1855

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Transits for Chron. Eq
Aug 8th to Aug 14/15 inclusive

N.B. To omit imperfect Transits
unless it is expressly stated to be
contrary.
Omit those Marked (S)

Transits for Chron Eq Voyage X
Sept 11th to Sept 26th inclusive
~~Copy all those~~

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1855phae.proj...21B

Aug. 1 1855 W.S.B. Ill. West.

B

Polaris	Spica	η Urs. Maj.	η Bootis	α Bootis
D. D.	13.. 17.. 30.8	13.. 41.. 24.6	13.. 47.. 42.3	14.. 8.. 58.3
Microm. 100d	46.6	45.4	56.8	9.. 13.0
before mid wire	59.0	42.. 8.0	48.. 12.1	28.1
13.. 5.. 48.4	18.. 12.7	28.8	26.0	42.2
53.6	26.7	49.8	40.7	56.8
58.9	40.5	43.. 11.1	55.0	10.. 11.3
16 0.9	53.8	31.8	49.. 9.1	25.6
13.. 5.. 53.63	268.1	199.8	242.0	235.3
	~~13.. 18.. 58.1~~		182.0	295.3
Mid-wire	13.. 18.. 12.59	13.. 42.. 28.54	13.. 48.. 26.0	14.. 9.. 42.19
13.. 7.. 9.3			+ 4	+ 4
12.4			+ 31	+ 31
15.6			- 23	- 23
37.3			13.. 48.. 26.12	14.. 9.. 42.31
13.. 7.. 12.43			13.. 47.. 47.86	14.. 9.. 4.01
			+ 38.26	+ 38.30

Microm.
100d after mid.
wire
13.. 8.. 45.5
57.8
57.4
15 4.7
13.. 8.. 51.57

39.. 21.. 57.63
13.. 7.. 19.21

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1855phae.proj...218

Aug 2

Ill. West

W. C. B.	W. C. B.	W. C. B.	P. S. C.	P. S. C.
α Leonis	δ Leonis	γ Urs Maj.	β Urs. Min.	β Librae
	11 .. 6 .. 18.1	11 .. 45 .. 38.9	14 .. 49 .. 14.5	15 .. 9 .. 11.1
	32.4	46 .. 2.3	50 .. 6.3	24.8
	48.1	27.1	51 .. 0.9	39.4
	γ 2.1	49.9	50.8	52.8
	17.1	47 .. 13.6	52 .. 43.0	10 .. 6.9
	31.9	36.9	53 .. 35.0	20.6
10 .. 1 .. 59.0	45.9	59.8	54 .. 25.1	33.9
	195.6	228.5	175.6	189.5
	16.6	348.5	355.6	369.5
	11 .. 7 .. 2.23	11 .. 46 .. 49.79	14 .. 51 .. 50.8	15 .. 9 .. 52.79
	+ 4			+ 8
	+ 32			+ 20
	− 24			− 22
	11 .. 7 .. 2.35			15 .. 9 .. 52.85
	11 .. 6 .. 23.44			15 .. 9 .. 13.96
	+ 38.51			+ 38.89

Approx error of C. C. M. 18.30 — + 38.72

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1855phae.proj...21B

Aug. 2 — Ill. West →

E B

P.S.C. α Cor. Bor.		P.S.C. α Serpentis		W-C.B Antares		R.F.B. α Herculis		R.F.B. α Ophiuchi	
15h 28m 26.9	15.0	15h 37m 6.6	13.6	16h 20m 26.1	15.3	17h 8m 0.5	13.8	17h 28m 10.8	13.9
41.9	16.3	20.2	14.6	41.4	16.0	14.3	14.9	24.7	14.3
58.2	14.6	34.8	13.2	57.4	14.7	29.2	13.4	39.4	13.6
29m 13.0	15.4	48.0	13.7	21m 12.1	15.2	42.9	14.2	53.0	14.1
28.4	15.6	38m 1.7	14.0	27.3	15.5	57.1	14.0	29m 7.1	14.1
44.0	14.9	16.1	13.2	42.6	14.6	7m 11.1	13.8	21.2	13.6
58.9		28.9		57.4		24.9		34.8	
271.3		155.9		264.3		180.0		191.0	
91.3		335.9		284.3		300.0		371.0	
15h 29m 13.04		15h 37m 47.99		16h 21m 12.04		17h 8m 42.86		17h 28m 53.0	
+ 3		+ 6							
+ 35		+ 27							
− 25		− 22							
15h 29m 13.17		15h 37m 46.10							
15h 28m 34.47		15h 37m 9.26							
+38.70		+36.84							

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1855phae.proj..4.218

E

Aug. 2

Ill. West.

R. A. N.

γ Draconis

17.. 52.. 48.9 21.8

53.. 10.7 23.1

33.8 21.3

55.1 22.0

54.. 17.1 22.3

39.4 21.0

55 0.4

205.4

~~17.. 53.. 29.31~~

385.4

17.. 53.. 55.06

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1855phae.proj...218

Aug 2/3 — Ill. West

B. E.

D. S. C. α Aurigæ	D. S. C. β Orionis	D. S. C. β Tauri	D. S. C. ε Orionis	W. C. B. α Orionis
5 h 5 m 39.4		5 h 17 m 0.2	5 h 28 m 49.8	6 h 47 m 17.0
59.0		15.5	29 3.2	30.4
6 h 19.5		32.2	17.7	45.3
38.5	5 h 8 m 13.8	47.2	30.8	58.6
58.1	27.6	18 h 2.8	44.6	48 m 12.4
17.8	41.3	18.4	58.2	26.2
37.0	54.7	33.3	30 m 11.4	39.7
269.3		149.6	215.6	230.0
		329.6		410.0
5 h 6 m 38.47		5 h 17 m 47.09	5 h 29 m 30.8	6 h 47 m 58.57

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1855phae.proj...218

Aug. 3/4 20.6.88 Ill. West

a + 0.09
b + 0.33
c − 0.23

13.

Capella	β Orionis	β Tauri	δ Orionis	ε Orionis
5 h 5 m 39.8		5 h 17 m 1.0	5 h 24 m 34.90	5 h 28 m 50.2
59.8		16.4	48.80	29 m 3.7
6 h 20.1		32.75	25 m 2.80	18.0
39.0	5 h 8 m 14.2	47.65	15.90	31.3
58.8	28.0	18 m 3.30	29.70	45.0
7 h 18.5	41.8	18.80	43.3	58.8
37.3	55.2	34.00	56.7	30 m 11.9
272.8	139.2	159.9	231.6	218.9
		333.9	111.6	
5 h 6 m 38.97		5 h 17 m 47.70	5 h 25 m 15.94	5 h 29 m 31.27
		+ 2	+ 6	+ 6
		+ 36	+ 24	+ 24
		− 26	− 23	− 23
		5 h 17 m 47.82	5 h 25 m 16.01	5 h 29 m 31.34
		5 h 17 m 8.27	5 h 24 m 36.41	5 h 28 m 57.76
		+ 39.55	+ 39.60	+ 39.58
		+ 39.56		
		W 0.7	W 1.0	W 1.0

W.C.B + 39.58 W 2.7
J.F.F. + 39.43 W 0.8
+ .15 W 2.5

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Aug. 3/4 I. F. F. Ill. West.

I. F. F. E

Series

6 .. 38 m	41.9	1.3
	56.2	
39 m	11.2	15.0
	25.0	13.8
	39.3	14.3
	53.6	14.3
	7.3	13.7
	234.5	
	174.5	

6 .. 39 .. 24.93

+ 9

+ 17

− 22

6. 39. 24.97

B. 38. 45.50

+ 39.47

+ 39.43

W 0.6

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Aug. 5/6 W. C. B. H. West.

a +.07
b +.34
c -.23

α Tauri		α Aurigæ		β Tauri	
4h 27m 35.5	13.8	5h 5m 41.6	19.6	4h 17m 2.7	15.4
49.3	15.2	6m 1.2	20.7	18.1	16.3
28 4.5	13.7	21.9	18.9	34.4	14.9
18.2	14.2	40.8	19.5	49.3	15.3
32.4	14.4	7m 0.3	19.7	18m 5.0	15.7
46.8	13.5	20.0	19.0	20.7	14.9
29m 0.3		39.0		35.6	
187.0		164.8		165.8	
127.0		284.8		345.8	
4h 28m 18.14		5h 6m 40.69		5h 17m 49.40	
+3				+.2	
+32				+37	
-24				-26	
4h 28m 18.25				5h 17m 49.53	
4h 27m 37.06				5h 17m 8.33	
41.19				41.20	

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Aug. 6

~~W. C. B.~~
P. S. C

Ill. West

B

E

β Librae	α Cor. Bor.	α Serpentis	β Serpentis
15 h 9 m 14.0	15 h 28 m 29.9	15 h 37 m 9.6	15 h 57 m 0.8
27.9	45.1	23.2	15.0
42.4	29 m 1.2	37.3	30.3
55.8	16.1	51.0	44.3
10 h 9.7	30.3	38 m 4.8	58.9
23.4	46.9	18.5	58 m 13.4
36.9	30 m 1.9	31.9	27.4
210.1	172.4	176.7	190.1
390.0	112.4	356.4	310.1
15 h 9 m 55.71	15 h 29 m 16.06	15 h 37 m 50.96	15 h 57 m 44.9

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1855phae.proj...218

Aug. 6/7

a + 0.06
b + 0.34
c − 0.24

Ill. West

B

E

W.C.B. Capella	W.C.B. β Tauri	W.C.B. δ Orionis	W.S.W. ε Orionis	C.F.F. Sirius
5h 5m 42.6	5h 17m 3.3	5h 24m 37.3	5h 28m 52.9	6h 38m 44.5
19.3	15.6	13.6	13.4	14.3
6m 1.9	18.9	50.9	29m 6.3	58.8
20.9	16.9	14.4	14.5	15.1
22.8	35.2	25m 5.3	20.8	39m 13.9
18.8	15.1	13.4	13.1	13.5
41.6	50.3	18.7	33.9	27.4
19.7	15.6	13.5	13.8	14.5
7m 1.3	18m 5.9	32.2	47.7	41.9
19.7	15.5	13.8		14.1
21.0	21.4	46.0		56.0
18.9	15.2	13.2		13.9
39.9	36.6	59.2	30m 14.7	6h 40m 9.9
171.1	171.6	249.6		252.3
291.1	351.6	129.6		192.4
5h 6m 41.59	5h 17m 50.23	5h 25m 18.51		6h 39m 27.49
0	+ 2	+ 4		+ 5
+44	+37	+25		+18
−34	− 27	− 24		− 25
5h 6m 41.73	5h 17m 50.35	5h 25m 18.56		6h 39 27.47
5 5m 59.72	5h 17m 8.37	5h 24m 36.50		6h 38 25.56
+ 42.01	+ 41.98	+ 42.06		+ 41.91
+ 42.02				+ 41.47
W 0.5	W. 0.7	W 1.0		W. 0.4

W.C.B + 42.02 W. 2.2
J.F.F + 41.47 W. 0.8
+ .15 W 2.1

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1855phae.proj... 218

Aug. 3/8

a +.05
b +.34
c −.24

9 Ll. West.

B E

W. C. B. α Ceti		P. S. C. ε Orionis	
2h 54m 45s.0		5h 28m 53s.9	
58.9	13.9	29m 7s.2	13.3
55m 13s.0	14.1	21s.5	14.3
26.6	13.8	34.8	13.3
39.9	13.3	48s.1	13.9
53.8	13.9	30m 2s.3	13.6
56m 7s.0	13.2	15s.3	13.0
244s.2		183s.7	
184s.2		243s.7	
2h 55m 26s.31		5h 29m 34s.81	
+ 3		+ 4	
+ 26		+ 25	
− 24		− 22	
2h 55m 26s.36		5h 29m 34s.86	
2h 54m 43s.44		5h 28m 51s.87	
42.92		42.99	

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Aug. 9 (2) D. S. C. Ill. West

α Bootis		ε Bootis	
14 h 9 m 3.9	14.4	14 h 38 m 37.5	15.5
18.3		53.0	
33.7	15.4	39 m 9.1	16.1
47.6	13.9	24.1	15.0
10 h 2.1	14.5	39.7	15.6
16.7	14.6	55.1	15.4
30.8	14.1	40 h 9.5	14.8
153.1		228.4	
333.1		168.4	
14 h 9 m 47.59		14 h 39 m 24.06	

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August 9/10 1855

Clock Stars
P. S. C obs.

Ill. West

B

	+ 45° 51′	+ 28° 29′	− 0° 24	− 1° 18
	α Aurigæ	β Tauri	δ Orionis	ε Orionis
	5h 5m 45 0	5h 17m 5.9	6h 24 39 5	28 55,0
	6 4.3	" 21. 2	" 53. 2	29 8,7
	" 25. 1	" 37. 5	25 7,5	" 23,0
	" 44. 0	" 52.6	" 20,9	" 36,2
	7 3. 8	18 8.2	" 34,4	" 50.0
	" 23 4	" 23.9	" 48. 1	30 3.5
	" 42. 2	" 38.9	26 1.4	" 16.7
	187, 8	188,2	205.0	193,1
	307. 8	368.2	145.0	253.1
	5h 5m 43ˢ.97	5h 17m 52ˢ.60	5h 25m 20ˢ.71	5h 29m 36ˢ.16
a	+ 01	+ 05	+ 11	+ 11
b	+ 35	+ 28	+ 18	+ 18
c	− 34	− 26	− 02	− 5
	5h 5m 43ˢ.99	5h 17m 52ˢ.67	5h 25m 20ˢ.98	5h 29m 36ˢ.39
	5h 5m 59ˢ.73	6h 17m 8ˢ.38	6h 24m 36ˢ 55	6h 28m 51ˢ 88
	+ 44ˢ.26	+ 44ˢ.29	+ 44ˢ.43	+ 44ˢ.51

Ill west

a = + 0.166
b = + 0.24
c = − 226

a = + 0.07
b = + 0.34
c = − 0.21

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Aug. 19/11 D.S.C. Ill. West

B. E

α Aurigæ	β Orionis	β Tauri	δ Orionis	ε Orionis
5 5 45.9	———	5 17 6.9	5 24 40.9	5 28 56.0
6 5.4	———	22.2	54.2	29 9.8
26.2	———	38.7	25 8.8	24.1
45.1	5 8 20.2	53.8	21.9	37.3
7 4.8	34.0	18 9.3	35.1	50.9
24.6	47.9	25.0	49.3	30 4.9
43.4	9 1.4	40.0	26 2.6	18.0
195.4		195.9	213.4	201.0
315.2		375.9	153.4	261.0
5 6 45.06		5 17 39.9	5 25 21.91	~~5 29 45.86~~
				5 29 37.29

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Aug. 1911 ~~P. S. C.~~ C. W. T. Ill. West

B E E

α Orionis	Sirius	α Can. min	β Geminor
5 h 47 m 23.7	6 h 38 m 48.0	7 h 31 m 46.9	7 h 36 m 25.0
37.3	39 m 2.0	32 m 0.0	40.8
52.0	17.2	15.0	57.0
48 m 5.1	30.9	28.2	37 m 12.0
19.0	45.2	42.1	27.1
32.8	59.7	55.7	43.1
46.1	13.3	33 m 9.0	58.2
216.0	216.3	196.9	263.8
36.0			83.8
5 h 48 m 5.14	6 h 39 m 30.9	7 h 32 m 28.18	7 h 37 m 11.97

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Aug. 12/13 — Ill. West

a +.04
b +.35
c_2 −.19

+5.57	+28°.29	−0.24	−1".18	+7".23
W. C. B.	O. S. C.	D. S. C.	W. C. B.	C. W. T.
α Aurigæ	β Tauri	δ Orionis	ε Orionis	α Orionis
5h 5m 27.8	5h 17m 8.8	5h 24m 42.7	5h 28m 57.8	5h 47m 25.8
6m 7.1	24.1	56.1	29m 11.4	39.1
27.9	40.7	25m 10.6	25.8	53.8
46.8	55.7	23.8	39.0	48m 7.0
7m 6.5	18m 11.0	37.5	52.8	20.8
26.0	26.8	51.1	30m 6.3	34.7
45.1	44.8	26m 4.3	19.7	47.9
207.2	208.9	226.1	212.8	229.1
327.2	385.9	166.1	272.8	49.1
5h 6m 46.74	5h 17m 55.56	5h 25m 23.33	5h 29m 39.93	5h 48m 7.01
+.57	+.38	b +.27	+6	+5
+.01	+.03	a +.07	+26	+29
−.27	−.22	c −.19	−19	−19
5h 06m 46.99	5h 17m 55.75	5h 25m 23.88	5h 29m 39.10	5h 48m 7.16
5h 59.92	8.53	36.63	5h 25m 52.01	5h 47 19.95
+47.07	+47.22	+47.25	+47.09	+47.21

pr 6 last wires doubtful — cloudy

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Aug 12/13

D. L. C.
Sirius

6h 39m 4.0

cloudy,

Ill. West

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Aug. 13

Ill. West

W.C.B. α Serpentis		W.C.B. β Scorpii		W.C.B. δ Ophiuchi		S α Scorpii		D.S.L. δ Aquilae	
15.. 37.. 18.9	13.4	15.. 57.. 6.2	14.6			16.. 20.. 35.2	15.1		
28.8	14.4	20.8	15.1			50.3	15.9		
43.2	13.6	35.9	14.1			21.. 6.2	14.8	19.. 18.. 48.2	13.1
56.8	13.6	50.0	14.3	16.. 7.. 34.1	13.4	21.0	15.2	19.. 1.3	13.4
38.. 10.4	13.8	58.. 4.3	14.3	47.9	13.7	36.2	15.2	15.1	13.4
24.2	13.2	19.0	14.0	8.. 1.6	13.3	51.4	14.9	28.9	13.1
37.4		33.0		14.9		22.. 6.3		42.0	
215.8		169.2				206.6			
395.8		849 2				146.6			
15.. 37.. 56.54		15.. 57.. 49.89				16.. 21.. 20.94			

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Aug. 13 — Ill. West

D. S. C. β Cygni & Companion		D. S. C. γ Aquilae clouds		D. S. C. α Aquilae		D. S. C. β Cygni	
19h 24m 55.9	15.5	19h 24m 57.9	15.4	19h 39m 44.0	14.8	19h 43m 51.0	13.8
11.2	16.3	13.3	16.3	58.8	13.2	44m 4.8	14.4
27.5	14.8	29.6	14.8	40 12.0	14.0	19.2	13.4
42.3	15.5	44.4	15.6	26.0	13.9	32.6	14.0
57.8	15.5	25m 0.0	15.4	39.9	13.4	46.6	13.9
25m 13.3	14.8	15.4	14.6	53.3		45m 0.5	13.3
28.1		30.2				13.8	
236.1		190.8				188.5	
226.1		310.8				228.5	
19h 24m 42.3		19h 24m 44.4				19h 44m 32.64	

D. S. C.	
19h 48m 20.2	13.7
83.9	14.4
48.3	13.4
49m 1.7	13.6
15.5	13.6
29.1	13.3
42.4	
191.1	
11.1	
19h 49m 1.59	

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1855phae.proj...218

Aug. 13 D.S.C. Ill. West

E B

α Cygni	32 Vulpec.	61 Cygni	α companion	ζ Cygni
20h 36m 21.3	20h 48m 26.3	21h 00m 22.0	21h 00m 23.3	21h 6m 48.7
40.4	41.8	39.2	40.7	7m 4.3
37m 0.8	58.1	57.6	58.9	20.9
19.3	49m 12.9	1m 14.3	1m 15.8	36.0
38.7	28.5	31.8	33.2	51.9
58.0	43.8	49.0	50.6	8m 7.6
38m 16.7	58.8	2m 5.8	2m 7.3	22.9
195.2	270.2	219.7	229.8	192.3
135.2	90.2	99.7	109.8	252.3
20m 37m 19.31	20m 49m 12.89	21m 1m 14.24	21m 1m 15.69	21m 7m 36.64

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1855phae.proj...218

Aug. 13 P. S. C. Ill. West

E.

α Cephei

21.. 14.. 29.6 29.0
58.6 30.5
15.. 29.1 27.9
57.0 29.4
16.. 26.4 29.3
55.7 28.1
17.. 23.8

280.2
400.2
21.. 15.. 57.17

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1855phae.proj...218

Aug. 13/14 — Ill. West

B — E — B

W.C.B. α Persei	W.C.B. δ Persei	W.C.B. η Tauri	C.W.T α Tauri	C.W.T α Aurigæ
3h 13m 45s.9	3h 32m 25s.4	———	4h 27m 42s.4	5h 5m 48s.9
14m 6s.2	45s.6	———	56s.7	6m 8s.2
28s.4	33 [illegible]	———	28m 11s.6	28s.9
48s.9	26s.1	3h 39m 41s.3	25s.3	47s.7
15m 9s.9	46s.7	56s.4	———	7m 9s.3
30s.9	34m 6s.9	40m 11s.3	pen gave	27s.1
51s.3	26s.4	25s.8	out.	46s.0
221s.5	184s.1			214s.1
341s.5				334s.1
3h 14m 48s.79	3h 33m 26s.3			5h 6m 47s.73

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1855phae.proj...218

a +.05
b +.35
c −.19

Aug. 13/14 — Ill. West

C.W.T. β Orionis	C.W.T. β Tauri	C.W.T. δ Orionis	D.S.C. ε Orionis	D.S.C. α Orionis
	5h 17m 9.8	5h 24m 43.7	5h 28m 58.9	5h 4m 26.6
	25.2	57.2	29m 12.7	40.1
	41.8	25m 11.7	27.0	54.8
5h 6m 22.9	56.7	24.8	40.1	48m 8.1
36.9	18m 12.1	38.5	53.9	21.9
50.8	27.8	52.2	30m 7.5	35.8
9m 4.0	43.0	26m 5.3	20.8	49.0
	216.4	233.4	220.9	236.3
	396.4	173.4	280.9	563
	5h 17m 56.63	5h 25m 24.77	5h 29m 40.13	5h 48m 8.04
		+ 5	+ 6	+ 5
		+ 26	+ 26	+ 29
		− 19	− 19	− 19
		5h 25m 24.89	5h 29m 40.26	5h 48m 8.19
		5h 24m 36.69	5h 28m 52.04	5h 47m 19.98
		+ 48.20	+ 48.22	+ 48.21

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1855phae.proj...218

Aug. 13/14 D. S. C. Ill. West

D. S. C.

μ Geminor	α Can. Min	β Geminor	
6ʰ 14ᵐ 45.8	7ʰ 31ᵐ 49.8	7ʰ 36ᵐ 27.8	
15ᵐ 0.0	14.2	43.4	15.6
14.9	32ᵐ 3.2	59.8	16.4
29.8	14.9	37ᵐ 12.8	15.0
43.9	14.5	30.2	15.4
first 2 w. lost	31ᵐ 17.7	45.9	15.7
	14.1		15.1
	44.9		
	13.8		
	58.6		
	13.7		
	33ᵐ 11.8	38ᵐ 1.0	
	13.2		
	217.1	222.9	
		102.9	
	7ʰ 32ᵐ 31.01	7ʰ 37ᵐ 14.7	

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1855phae.proj... 218

Aug. 14

Ill. West

B

E

P. S. C.	P. S. C.	W. C. B.	W. C. B.	W. C. B.
Spica	η Urs. Maj.	ε Bootis	α Libræ	β Urs. Min.
13h 17m 40.8	13h 41m 34.4	14h 38m 42.1	14h 42m 58.6	14h 49m 23.00
54.5	55.6	57.5	43h 12.8	50m 14.5
18m 9.2	42m 17.9	39m 13.4	27.4	51m 9.3
22.6	38.3	26.6	41.4	59.3
36.5	59.8	44.0	55.4	52m 51.7
50.5	43h 21.0	59.6	44h 9.8	53m 43.6
19m 3.9	41.6	40m 14.4	23.6	54m 33.9
218.0	268.6	259.9	229.6	235.3
158.0		199.9	289.6	415.3
13h 18m 24.87	13h 42m 38.37	14h 39m 28.56	14h 43m 41.37	14h 51m 59.33

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Aug. ~~14~~ 15 14 S. 2ll. West

Antares

16.	20.	35. 8
		57. 0
21.	0.	0
		21. 5
		37. 0
		52. 2
22.	0.	0
		211. 5
		151. 5
16.	21.	21. 64

13.2
16.0
14.5
15.5
15.2
14.8

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Aug. 14/15

a +0.06
b +0.39
c −0.19

Ill. West

13

E

W.C.B. α Aurigae	W.C.B. β Tauri	J.F.F. δ Orionis	J.F.F. ε Orionis
5h 5m 49.5	5h 17m 10.4	5h 24m 44.2	5h 28m 59.6
6m 9.0	25.9	57.9	29m 13.3
29.8	42.3	25m 12.3	27.1
48.8	57.1	25.6	40.9
7m 8.3	18m 12.9	39.0	54.7
28.1	28.4	53.0	30 8.3
47.0	43.5	26m 6.0	21.7
220.5	220.5	238.0	226.2
340.0	400.5	178.0	286.2
5h 6m 48.57	5h 17m 57.21	5h 25m 25.43	5h 29m 40.89
0	+ 2	+ 4	+ 4
+55	+ 23	+29	+ 28
−27	− 22	− 19	− 19
5h 6m 48.85	5h 17m 57.44	5h 25m 25.57	5h 29m 41.02
5h 6 0.05	5h 17 8.63	5h 24 36.72	5h 28 52.07
+ 48.80	+ 48.81	+ 48.85	+ 48.95
+48.81			48.94
W 0.5	W 0.7	W 1.0	W 1.0

W.C.B	+48.81	W 1.2
J.F.F.	+48.90	W 2.0
	−.09	W 3.2

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1855phae.proj...218

Aug. 15 S. Ill. West

β¹ Scorpii		δ Ophiuchi		α Scorpii	
16h 57m 8.0		16h 7m 8.3		16h 20m 36.8	
7m 22.7	14.7	22.7	14.4	51.9	15.1
7m 37.8	15.1	35.9	13.2	8.1	16.2
7m 51.7	13.9	49.8	13.9	22.5	14.4
8h 6.2	14.5	8h 3.2	13.4	38.1	15.6
8h 20.8	14.6	16.4	13.2	53.1	15.0
58m 34.8	14.0	first wire lost			
182.0					
362.0					
15h 57m 51.71					
+ 7					
+ 14					
− 20					
15h 57m 51.76					
15h 57m 2.32					
+ 49.44					

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1855phae.proj...218

Aug. 17/18 S. Ill. West

β Ophiuchi

17..36..30.6 13.5
44.1 14.6
58.7 13.1
37. 11.8 14.0
25.8 13.5
39.3 13.4
52.7

26 3.0
8 3.0
17..37.. 11.86

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1855phae.proj...218

Aug. 17/18 Ill. West

S Aldebaran	S Capella	S β Tauri	S δ Orionis	I. F. F. α Orionis
	5h 5m 52.5 19.7	5h 17m 13.3	5h 24m 47.1 13.8	5h 47m 30.1 13.8
	6m 12.2 20.5	28.8 15.5	25m 0.9 14.3	43.9 15.4
	32.8 16.2	45.0	15.2 13.1	58.3 13.4
	51.5 18.7	18m 0.1 15.1	28.3 13.8	48m 11.7 13.9
~~5h 5m 52.5~~	7m 11.2 19.3	15.7 15.6	42.1 13.8	25.6
~~6m 12.2~~	31.0 19.8	31.4 15.7	55.9 13.0	39.3 13.7
4h 28m 43.3 14.3	49.9 18.9	46.3 14.9	26m 8.9	52.8 13.5
57.6	241.1	180.6	198.4	261.7
29m 11.2 13.6	s 361.1	0.6		81.7
	5h 6m 51.59	5h 18m 0.09	5h 25m 28.34	5h 48m 11.67
		+ 2	+ 5	+ 5
		+ 39	+ 26	+ 29
		− 22	− 19	− 19
		5h 18m 0.28	5h 25m 28.46	5h 48m 11.82
		5h 17m 8.13	5h 24m 36.80	5h 47m 20.09
		51.55	51.66	51.73
			51.55	51.75
			51.60	51.75
				51.92
				51.81
				.46
				51.79

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1855phae.proj... 218

Aug 17/18 +6 +25 −19 J. F. F. Ill. 20cm

μ Geminor	Sirius	α' Geminor	α² Geminor	α Can. min
6h 14m 18.9 14.9	6h 38m 54.2	7h 25m 23.7 15.9	7h 25m 24.0 16.0	7h 31m 53.1 13.8
33.8 15.6	clouds	39.6 16.9	40.0 17.0	32m 6.9 12.6
49.4 14.3	39m 23.6 13.9	56.5 15.8	57.0 15.6	21.5 13.2
15 3.7 14.8	37.5 14.3	26m 12.3 16.2	26m 12.6 16.3	34.7 13.9
clouds 18.5 14.7	51.8 14.2	28.5 16.2	28.9 16.1	48.6 13.6
clouds 33.2 14.5	40m 6.0 13.9	44.7 15.7	45.0 15.7	33m 2.2 13.4
42.7	19.9	clouds 27m 0.4	clouds 27m 0.7	15.6
205.2		205.7	208.2	162.6
25.2		85.7	88.7	242.6
~~265.2~~				
6h 15m ~~37.89~~ 3.60		7h 26m 12.24	7h 26m 12.67	7h 32m 34.66
+ 3		+ 3	+ 2	+ 5
+ 36		+ 41	+ 41	+ 28
− 21		− 23	− 23	− 19
6h 15m 3.78			7h 26m 12.67	7h 32m 34.60
6h 14m 12.01			7h 25m 21.06	7h 31m 42.82
51.77			+51.81	+51.98

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1855phae.proj...218

Aug. 17/18 J. F. F. Ill. West.

β Geminor

7h 36m 31.6
47.0 15.4
37h 3.5 16.5
18.3 14.8
34.0 15.7
49.6 15.6
38h 4.7 15.1

188.7

~~7h 37m 26.5~~

128.7

7h 37m 18.39
+ 2
+ 39
- 22

7h 37m 18.58
7h 36m 26.71

+ 51.87.

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1855phae.proj...218

Aug. 18

Ill. 20 est

S. ζ Aquilae	S. δ Aquilae	S. β Cygni	S. γ Aquilae	W. C. B. α Aquilae
18h 58m 56.8	19h 18m 24.7	19h 25m 0.2	19h 39m 34.4	19h 43m 55.3
59m 10.7	38.2	15.4	48.3	44m 9.0
25.6	52.6	32.0	40m 3.2	23.5
39.1	19h 5.9	46.8	16.3	~~38.6~~ 37.0
53.2		26m 2.2	30.2	~~44m 50.8~~
19h 00 7.3	33.3	17.8	44.3	~~47.6~~ 4.7
20.9	46.4	32.8	57.5	17.9
213.6		147.3	234.2	~~197.9~~
273.6		327.3	114.2	257.9
18h 59m 39.09		19h 25m 46.76	19h 40m 16.31	19h 44m 36.84

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1855phae.proj...218

Aug. 18 W. C. B Ill. West

β Aquilae

19h 48m 24.2	13.9
34.1	14.5
52.6	13.3
49h 5.9	14.0
19.9	13.8
33.7	13.2
46.9	
221.3	
41.3	
19h 49m 5.9	

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1855phae.proj...218

Aug. 19 W. C. N. Ill. West

1st limb

Venus		β Corvi	
12..23 36.9	13.7		
50.6	14.3		
24.. 4.9	13.4		
18.3	13.9		
32.2	13.8	12.. 28..0.4	14.7
46.0	13.2	15.1	14.7
59.2		29.8	
248.1			
124.1			
12.. 24.. 18.3			

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1855phae.proj...218

Aug 19/20

+ 0.03
+ 0.140
− 0.21

Ill. West

W. G. B.	very faint J. F. F.	~~very faint~~ J. F. F.	J. F. F.	~~very faint~~ J. F. F.
α Tauri	~~α Orionis~~ μ Geminor	μ Geminor.	Sirius	α Orionis
4h 27m 47.6 14.3	6h 14m 20.5 14.8	6h 38m 56.0 14.3	6h 38m 56.0 14.3	5h 47m 31.9 13.8
28m 1.9 15.1	35.3 15.8	10.3 15.2	39m 10.3 15.2	45.7 14.5
17.0 19.9	51.1 14.0	25.5 13.8	25.5 13.8	48m 0.2 13.2
30.9 14.2	15m 5.1 15.0	39.3 14.2	39.3 14.2	13.4 13.6
45.1 14.2	20.1 14.8	53.5 14.3	53.5 14.3	27.2 13.9
59.3 13.7	34.9 14.4	7.8 13.8	40m 7.8 13.8	41.1 13.2
29m 13.0	49.3	21.6	21.6	54.3
214.8	216.3		214.0	213.8
	36.3		274.0	93.8
4h 28m 30.69	6h 15m 5.19		6h 39m 39.14	5h 48m 13.40
+ 01	+ 01		+ 08	+ 02
+ 37	+ 41		+ 21	+ 33
− 22	− 23		− 22	− 21
4h 28m 30.85	6h 15m 5.38		6h 39m 39.16	5h 48m 13.54
4h 27m 37.50	6h 14m 12.07		6h 38m 45.86	5h 47m 20.15
+ 53.35	+ 53.31		+ 53.30	+ 53.39
+ 53.40	53.29		53.26	
W 0.8	W 0.7		W 0.8	W 0.9

W. G. B. + 53.40 W 0.4
J. F. F. + 53.32 W 2.4
+ .08 W 2.2

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1855phae.proj...218

Aug. 21 20-6.33 Ill. West

δ	−25.14	−26.7	−25.0	−24.51
ε Scorpii		α Scorpii	Moon's 1st limb	A Messier	# Ophiuchi
16h 12m 33.9	15.0	16h 20m 42.1	15.1	16h 39m 3.4	15.6	16h 39m 16.8	15.6	17h 13m 18.0	15.0
48.9	15.9	57.2	16.1	19.0	16.4	32.4	16.4	31.0	15.9
13m 4.8	14.6	21m 13.3	14.6	35.4	15.2	48.8	15.0	48.9	14.5
19.4	15.2	27.9	15.2	50.6	15.5	40m 3.8	15.4	14m 3.4	15.3
34.6	15.1	43.1	15.5	20m 6.1	15.8	19.5	15.6	18.7	15.1
49.7	14.6	−58.6	14.5	21.9	15.0	35.1	15.1	33.8	14.6
14m 4.3		22m 13.1		36.9		50.2		48.4	
195.6		255.9		173.3		206.6		204.2	
135.6		195.3		358.3		26.6		24.2	
16h 13m 19.37		16h 21m 27.90		16h 39m 50.47		16h 40m 3.80		17h 14m 3.46	

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1855phae.proj...218

Aug. 21 W.C.B. Ill. West

−29.44

d ophiuchi

17.. 18.. 18.7) 5.6
31.3 16.6
47.9 13.2
19.. 3.1 15.8
18.9) 15.9
34.8 15.2
~~500~~
201.4
~~17.. 19.. 18.81~~
~~18~~ 21.7
17.. 19.. 3.10

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1855phae.proj...218

Aug. 23/24

Ill. West

☿ Capella	☿ α Orionis	☿ J. F. F. Sirius	☿ J. F. F. α¹ Geminor	☿ J. F. F. α² Geminor
5h 5m 58.8		6h 39m 0.2		
6h 18.2	5h 47m 50.0	14.6		
38.8	48h 4.2	29.5	7h 26m 2.7	7h 26m 3.0
58.0	17.)	43.4	18.2	18.6
7h 17.4	31.4	57.8	34.8	35.0
37.1	45.4	11.9	50.8	51.2
56.0	48.58.7	25.8	6.4	6.8
284.3		183.1		
404.3		303.1		
5h 6m 57.76		6h 39m 43.30		
.0				
+.58				
−.32				
5h 6m 58.02				
5h 5m 60.42				
57.60				

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Aug. 23/24 J. F. F. Ill. West

α Can. elin		β Geminor.	
7h 31m 59.1	13.9	7h 36m 37.7	15.3
32m 13.0	14.4	53.0	16.9
27.4	13.1	37m 9.3	15.2
40.5	13.6	24.5	15.4
54.3	13.9	39.9	16.0
33m 8.2	13.4	55.9	14.9
21.6		38m 10.8	
224.1		231.1	
284.1		171.1	
7h 32m 40.59		7h 37m 24.44	
+ 1		+ 1	
+ 33		+ 45	
− 22		− 25	
7h 32m 40.71		7h 37m 24.65	
7h 31m 42.95		7h 36m 26.66	
57.76		57.79	
57.79			
57.70			
15			
57.75			

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Aug. 24

Ill. West

W.C.B.	S	S	S	S
α Cor. Bor.	μ' Sagittarii	α Lyrae	β Lyrae	γ Aquilae
15 h 28 m 45.8 15.1	18 h 5 m 21.3 14.9	18 h 32 m 9.3 16.9	18 h 44 m 54.4 16.5	18 h 59 m 2.6 13.9
29 m 0.9 16.2	36.2 15.6	26.2 16.8	45 m 10.9 16.8	16.5 14.9
17.1 14.9	51.8 13.9	45.0 16.7	27.7 13.9	31.4 13.5
32.0 15.3	6 m 05.7 14.7	33 m 1.7 17.5	43.6 16.2	44.9 14.1
47.3 15.5	20.4 14.6	19.2 17.4	59.8 16.9	59.0 14.2
30 m 2.8 14.9	35.0 14.2	36.6 17.0	46 m 16.7 15.3	19 m 00 m 13.2 13.7
17.7	49.2	53.6	32.0	26.9
163.6	219.6	191.6	245.1	194.5
223.6	39.6	11.6	305.1	314.5
15 m 29 m 31.94	1 m 6 m 5.66	18 m 33 m 1.68	18 m 45 m 43.59	18 m 59 m 44.93

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1855phae.proj...218

Aug. 27/25 ?

a −0.03
b +0.37
c −0.19

Ill. West

W.C.B. α Tauri	W.C.B. β Tauri	J.F.F. α Can. Min.	J.F.F. β Geminor
4h 27m 56.3 14.0	5h 17m 24.7 15.5	7h 32m 3.1 13.9	7h 36m 41.7 15.4
28m 10.3 15.3	40.2 16.4	17.0 14.7	57.1 16.4
25.6 13.4	56.6 15.1	31.7 13.2	37m 13.5 15.1
39.0 14.3	18m 11.7 15.4	44.9 13.8	28.6 15.6
53.3 14.3	27.1 15.8	58.7 13.8	44.2 15.6
29m 8.0 13.7	42.9 14.9	33m 12.5 13.1	59.8 14.9
21.7	57.8	25.6	38m 14.7
214.2	261.0	193.5	259.6
274.2	81.0	313.5	199.6
4h 28m 39.17	5h 18m 11.57	7h 32m 44.79	7h 37m 28.51
− 1	− 1	− 2	− 1
+35	+41	+30	+41
−20	−22	−19	−22
4h 28m 39.31	5h 18m 11.75	7h 32m 44.88	7h 37m 28.69
4h 27m 37.76	5h 17m 9.07	7h 31m 43.05	7h 36m 26.96
+1m 1.55	2 1m 2.68	+1m 1.83	+1m 1.73
+1m 1.70		+1 1.76	
W 0.6	W 0.7	+W 0.9 10	W 0.7
		+1 1.97	
		W.C.B. +1m 1.70	W 1.6
		J.F.F. +1m 1.79	W 0.8
		−0.09	W 1.9

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1855phae.proj...218

Aug 28 W. C. B. Ill. West

	η Ursæ Maj.	η Boötis		Arcturus	
		14 48 5.8	14.5	14 9 21.7	14.5
		20.3	15.2	36.2	15.3
		35.5	13.8	51.5	14.1
		49.3	14.7	10 5.6	14.5
		49 4.0	14.4	20.1	14.7
		18.4	13.9	34.8	14.0
	14 43 54.9	82.3		48.8	
		165.6		218.7	
		345.6		98.7	
		14 48 49.37		14 10 5.53	

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1855phae.proj...218

Aug. 28/29 J. F. F. Ill. West

α^1 Geminor.	α^2 Geminor	α Can. min.	β Geminor.
7h 25m 35s.0	7h 25m 35s.4	7h 32m 4s.7	7h 36m 43s.3
16.0	16.0	13.6	15.1
26m 51s.0	26m 51s.4	18.3	58.4
17.2	17.2	14.6	16.4
26m 8s.2	26m 8s.6	32.9	37m 14s.8
15.5	15.4	13.1	15.1
23.7	24.0	46.0	29.9
16.3	16.4	14.0	15.3
40.0	40.4	33 0.0	45.2
16.2	16.2	13.7	15.7
56.2	56.6	13.7	38m 0.9
15.1	15.5	13.1	15.1
27m 16s.8	27m 12s.1	26.8	16.0
225.9	224.5	142.4	204.6
165.9	168.5	322.4	
7h 26m 23s.70	7h 26m 24s.07	7h 32m 46s.06	7h 37m 29s.80
	0	+1	+1
	+48	+33	+45
	−26	−22	−25
	7h 26m 24s.29	7h 32m 46s.18	7h 37m 30s.01
	25m 21s.37	7h 31m 43s.07	7h 36m 26s.99
	1m 2s.92	1m 3s.11	1m 3s.02
			1m 3s.11
			1m 2s.93
			+ 1m 3s.02

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1855phae.proj...218

1855

Aug 29/30

Ill. West

α orionis		β Tauri		β Geminor	
5h 7m 57.7	14.0	5h 17m 26.2	15.5	Clouds	
8m 11.7	14.4	41.7	16.3	7h 36m 59.9	16.2
26.1	13.3	58.0	15.0	37m 16.1	14.9
39.4	13.9	18h 13.0	15.7	31.0	15.4
53.3	13.6	28.7	15.6	46.7	15.7
9m 7.1	13.4	44.3	15.0	38m 2.4	14.9
20.5		58.3		17.3	
215.8		271.2			
275.8		91.2			
5h 8m 39.40		5h 18m 13.03			

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1855phae.proj...21a

Aug. 30/31 W. C. B. Ill. West

	+26.29	−0.24
	β Tauri	δ Orionis
5h	17m 27.8	5h 25m 1.4
	43.0 15.2	15.0 13.6
	59.5 16.5	29.5 14.5
18m	14.4 14.9	42.9 13.4
	30.1 15.7	56.3 13.4
	45.8 15.7	26m 10.0 13.7
19m	0.8 15.0	23.3 13.3
	221.4	184.4
	101.4	298.4
5h	18m 14.49	5h 25m 42.69
	00	+ 01
	+ 45	+ .30
	− .26	− .22
	18m 14.68	25m 42.72
	17 9.17	24 37.18
fast	1 05.51	+ 1m 05.54

	−1.18
	ε Orionis
5h	29m 16.8
	30.4 13.6
	44.8 14.4
	58.0 13.2
30m	11.9 13.9
	25.5 13.6
	38.8 13.3
	226.2
	406.2
5h	29m 58.03
	+ .01
	+ 30
	− 22
	29m 58.12
	28 52.53
	+ 1m 05.59

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1855phae.proj... 218

Sept. 23 W. C. B. 22. West

β Orionis		β Tauri	
5h. 8m. 2.4	14.0	5h. 17m. 31.3	15.3
16.4	14.9	46.6	16.5
31.3	13.1	3.1	15.1
46.4	14.0	18.2	15.5
58.4	13.8	33.7	15.6
9 12.2	13.6	49.3	15.0
25.8		4.3	
190.9		186.5	
310.9		126.5	
5h. 8m. 44.41		5m. 17m. 18.07	

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1855phae.proj...218

1855

Sept. 3/4

σ −0.07
l +0.35
c −0.16

J. W. West

W. C. B. δ Orionis	W. C. B. ε Orionis	W. C. B. D. 2d limb	W. C. B. ζ Orionis	J. F. F. α Can. Min
5h 25m 6.2 13.8			5h 47m 49.2 13.7	7h 32m 12.3 13.6
20.0 14.4		5h 36m 57.9 16.5	48m 2.9 14.5	25.9 14.4
04.4 13.2	5h 29m 49.8 13.1	37m 14.4 15.5	17.4 13.4	40.3 13.4
47.6 13.6	2.9	29.9 15.8	30.8 13.7	53.7 13.6
26m 1.2 13.7		45.7 15.6	44.5 13.8	33m 7.5 13.7
14.9 13.3	30.7 13.1	38m 1.3 15.5	58.3 13.6	21.2 13.8
28.2	43.8	16.8	49m 11.9	34.5
152.5			215.0	195.4
332.5				375.4
5h 25m 47.50			5h 48m 30.71	7h 32m 53.69
− 5			−4	− 4
+26			+29	+28
−16			−16	−16
5h 25m 47.55			5h 48m 30.80	7h 32m 53.71
5h 24m 37.30			5h 47m 20.58	7h 31m 43.22
+ 1m 10.25			+ 1m 10.22	1m 10.49
+ 1m 10.36			+ 1m 10.31	
W 1.0			W 0.9	W. 0.9

W. C. B + 1m 10.34 W 1.9
J. F. F + 1m 10.49 W 1.6
− .15 W 3.5

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1855phae.proj...218

Sept 3/4 1855 Dlt. West

J. F. F.
β Geminor

7h 36m 50.7 15.4
37m 6.1 16.3
22.4 15.1
37.5 15.6
53.1 15.6
38m 8.7 15.0
23.7

202.2
262.2

7h 37m 37.46
− 2
+39
−18

7h 37m 37.65
7h 36m 27.16

1m 10.49

W 0.7

Date	Pers. Eqn.	W
July 16/17	+ 0.08	1.6
Aug. 3/4	+ 0.15	2.5
" 6/7	+ 0.15	2.1
" 14/15	− 0.09	3.2
" 19/20	+ 0.08	2.2
" d/n	− 0.09	1.9
Sept 3/4	− 0.15	3.5
Pers. Equation	+ 0.002	

Wcb - J. F. Flagg -

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1855phae.proj...218

1855

Dept. 4 J Ill. West

β Draconis	α Lyræ	β Lyræ	ζ Aquilæ
~~α Lyræ~~		18h 45m 7.0 16.1	18h 59m 15.0 14.3
17h 27m 13.8 22.2		23.1 17.3	29.3 14.8
36.0 23.8		40.4 15.8	44.1 13.8
59.8 21.3	16h 32m 57.9 16.3	56.2 16.3	57.9 13.9
28m 21.1 22.7	14.2 17.5	46m 12.5 16.5	19h 00m 11.8 14.2
43.8 22.4	81.7 17.4	29.0 15.7	26.0 13.7
29m 6.2 21.3	49.1 17.2	44.7	39.7
~~27.5~~	~~6.8~~		
208.2		212.9	223.8
14.8.2		392.9	408.8
17h 28m 21.17		18h 46m 66.13	18h 59m 57.69

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1855phae.proj...218

Sept. 4/5 — 1855 — All. West

W. C. B.	W. C. B.	W. C. B.	W. C. B.	μ Geminor.
β Tauri	ε Orionis	β Orionis	η Geminum	Sol. C. B.
5 17 33.7 15.7	5 29 23.1 13.7	5 47 50.5 13.65	6 6 35.7 14.8	6 14 39.4 14.7
49.4 16.1	36.8 14.2	48 4.25 13.55	50.5 15.4	54.1 15.1
18 8.5 15.1	51.0 13.2	18.7 13.45	7 5.9 14.1	15 9.8 14.2
20.6 15.6	30 4.2 13.4	32.25 13.75	20.0 15.0	24.0 15.0
36.2 15.7	18.0 13.7	45.9 13.78	35.0 15.0	39.0 14.9
51.9 15.0	31.7 13.3	59.7 13.4	50.0 14.5	53.9 14.3
19 6.9	45.0	49 13.1	8 4.5	16 8.2
204.2	209.4	224.2	201.6	228.4
144.2	29.4		141.6	168.4
5 18 20.6	5 30 4.26	5 48 32.03	6 7 20.23	6 15 24.06

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1855phae.proj...21B

Sept 4/5 1855 Ill. West

W. C. H. Moon - Spot	W. C. H. Moon 2d limb	W. C. H. μ Geminor.	J. F. F. ζ² Geminor	J. F. F. ζ Cam. elem.
6 33 42.9 15.5	6 34 15.3 15.0		7 25 44.3 16.1	7 32 12.7
8 8.4 16.3	30.3 16.7		26 0.4 17.2	weight of
34 14.7	47.0 15.2		17.6 15.4	Spring. Got
	35 2.2 16.0		33.0 16.3	gave away.
	18.2 15.7		49.3 16.2	
	33.9 15.3		27 5.5 15.5	
	49.2	7 13 24.0	21.0	
	196.1		171.1	
	16.1		231.1	
	6 35 2.3		7 26 33.01	

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1855phae.proj...218

Sept 5/6 S. Ill. West

δ Orionis		α Orionis	
5h 25m 9.0		5h 47m 52.0	13.7
23.0	14.0	48m 5.7	14.1
37.2	14.2	20.4	13.1
50.2	13.0	33.5	13.8
26m 4.2	14.0	47.3	13.3
17.8	13.6	49m 1.0	13.3
30.6	12.8	14.3	
172.0		174.2	
352.0		234.2	
5m 25m 50.29		5m 48m 33.46	

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1855phae.proj...218

Sept 6/9 W.C.B. Ill. West

β Tauri		δ Orionis		ε Orionis	
5h 17m 36.5	15.3	5h 25m 10.1	13.7	5h 29m 25.2	13.9
57.8		23.8	14.4	39.1	14.5
18h 8.2	16.4	38.2	13.2	53.6	13.1
23.2	15.0	51.4	13.7	30h 6.7	13.7
38.7	15.5	26h 5.1	13.9	20.4	13.9
54.6	15.9	18.8	13.2	34.1	13.2
19h 8.7	15.1	32.0		47.3	
222.7		179.4		226.4	
162.7		359.4		46.4	
5h 18m 23.24		5h 25m 51.34		5h 30m 6.63	

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1855phae.proj...218

Sept 7/8 — a −07 b +35 c 16 — J. F. F. — Ill. Wes

δ Geminor		α Geminor		χ Cancelli		β Geminor	
		7h 25m 48.0	1.6	7h 32m 17.1	13.9	7h 36m 55.7	15.4
		26m 4.0	17.1	31.0	14.5	37m 11.1	16.2
7h 12m 29.7	14.1	21.1	13.6	45.5	13.2	27.3	15.2
43.8	14.9	36.7	16.3	58.7	14.0	42.5	15.6
58.7	14.7	53.0	16.8	33m 12.7	13.6	58.1	15.7
13m 13.4	14.3	27m 9.3	13.4	26.3	13.3	38m 13.8	14.9
27.7		26.7		39.6		28.7	
		196.8		230.9		237.2	
		256.8		410.9		297.2	
		7h 26m 36.69		7h 32m 58.70		7h 37m 42.46	
		−1		−4		−2	
		+41		+28		+39	
		−19		−16		−18	
		26m 36.90		32m 58.78		37m 42.65	
		25m 21.67		31m 43.32		36m 27.27	
		1m 15.23		1m 15.46		1m 15.38	
						46	
						.23	
						107	
						+ 1m 15m 36	

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1855phae.proj...218

1855 Sept. 9/10

a = +0.10
b = +0.30
c = −0.20

Ill. 20 cm

W-C. 88 ε Orionis		S α Orionis		J.F.F. δ Geminorum		α² Geminorum W-C. 88		α Can. min. J.F.F.	
5.. 29.. 29.0		5.. 48.. 56.8		7.. 12.. 1.7	14.7	7.. 25.. 50.4	16.0	7.. 32.. 19.55	13.7
42.7	13.7	48.. 10.4	13.6	16.4	15.5	26.. 6.4	17.0	33.25	13.55
56.9	14.2	24.8	14.4	31.9	14.3	23.4	15.6	47.80	13.2
30.. 10.2	13.3	38.1	13.3	46.2	14.9	39.0	16.2	1.0	13.9
24.0	13.8	52.0	13.9	13.. 1.1	14.9	55.2	15.1	16.9	13.7
37.7	13.7	49.. 6.0	14.0	16.0	14.1	27.. 11.3	15.8	28.6	13.8
50.9	13.2	19.1	13.1	30.1		27.1		41.9	
251.4		207.2		143.4		212.8		187.0	
+87.4		267.2		323.4		272.8		7.0	
5.. 30.. 10.20		5.. 48.. 38.17		7.. 12.. 46.20		7.. 26.. 38.97		7.. 32.. 1.00	
+7		+6		+4		+2		+6	
+22		+25		+30		+35		+22	
−20		−20		−22		−24		−20	
30.. 10.29		48.. 38.24		12.. 46.32		26.. 39.10		32.. 1.10	
28.. 52.82		47.. 20.76		11.. 26.79		25.. 21.73		31.. 43.37	
+1.. 17.47		+1.. 17.52		+1.. 17.53		+1.. 17.37		+1.. 17.73	

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1855phae.proj...218

Sept. 9/10

Ill. West

β Geminor

20-6.38.

7..36..57.9 15.4

37 13.3 16.5

29.8 14.9

46.7 15.7

38.. 0.4 15.5

15.9 15.0

~~30.9~~

192.9

312.9

7..38..44.70

+ 3

+ 33

- 23

38.. 44.63

36.. 27.93

+ 1.. 17.50

+ 1.. 17.73

+ 1.. 17.38

+ 1.. 17.55

+ 1.. 17.62

1.. 17.57

335

+ 1.. 17.56

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1855phae.proj...218

Sept. 10/11 1855 W. West ~~East~~

w. c. W.	w. c. W.	w. c. W.	S.
β Tauri	δ Orionis	ε Orionis	α Orionis
5h 17m 40.8 15.9	5h 25m 14.6 13.7	5h 29m 30.0 13.4	5h 47m 57.6 13.6
56.1 16.6	28.3 14.4	43.4 14.9	48m 11.2 14.6
18m 12.7 15.0	42.7 14.1	58.3 12.8	25.8 13.2
27.7 15.5	56.8 13.0	30m 11.1 14.0	39.0 14.0
43.2 15.8	26m 9.8 13.9	25.1 13.6	~~49m~~ 53.9 13.9
59.0 14.9	23.1 13.3	38.7 12.6	49m 6.9 13.1
19m 13.9	36.4	51.9	20.0
253.4		258.5	213.5
193.4		78.5	273.5
5h 18m 27.63		5h 30m 11.21	5h 48m 39.07

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1855phae.proj...218

+10
+30
−20

Sept. 10/11 1855 Ill. West

J. F. F.		W. C. B.		J. F. F.	
α² Geminorum		α Can. Min.		β Geminor.	
7h 25m 51.2	14.4	7h 32m 20.4	13.7	7h 36m 58.75	15.65
26m 7.6	16.6	34.1	14.5	37m 14.4	16.45
24.2	15.7	48.6	13.3	30.85	14.95
39.9	16.2	33m 1.9	13.8	45.80	15.5
56.1	16.2	15.7	13.8	38m 1.30	15.4
27m 12.3	15.7	29.5	13.2	16.70	15.1
28.0		42.7		31.80	
219.3		192.9		199.6	
279.3		42.9		319.6	
7h 26m 39.90		7h 33m 1.84		7h 37m 45.66	
+ 2		+ 6		+ 3	
+ 35		+ 24		+ 33	
− 24		− 20		− 23	
7h 26m 40.03		7h 33m 1.94		7h 37m 45.99	
25m 21.76		7h 31m 43.40		36m 27.36	
+ 1m 18.27		+ 1m 18.54		+ 1m 18.63	

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1855phae.proj...218

1855

Sept. 11 W. C. B Ill. West

α Ursæ Min. L.C.
3 middle wires
12 59 17.4
21.5
27.3
66.2

12 59 22.07

13 8 12.9
19.2
24.2
56.3

13 8 1.8.77

13 16 52.0
58.1
57.1
14.2

13 16 54.73
24 35.57

13 8 11.86

ε Bootis
14 39 12.0
27.5
43.6
58.5
40 14.0
29.6
44.3
229.5
409.5
14 39 58.50

β Ursæ. Min.
14 49 51.0 52.0
50 43.0 54.9
51 37.9 50.0
52 27.9 52.0
53 19.9 52.9
54 12.8 49.4
55 2.6
195.1

14 52 27.87

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1855phae.proj...218

Sept. 11/12

Ill. West

W.C.B. β Tauri		S. δ Orionis		W.C.V. α Leporis		W.C.V. ε Orionis		W.C.V. α Orionis	
5h 17m 41.9	5.5	5h 25m 15.6	13.9	———		5h 29m 31.0	13.7	5h 4m 58.7	13.5
57.4	16.5	29.3	14.5	———		44.7	14.3	49m 12.3	14.5
18m 13.9	14.9	43.8	13.1	———		59.0	13.2	26.8	13.4
28.8	15.6	~~56.9~~	13.7	———		30m 12.2	13.7	40.2	13.7
44.4	15.6	~~27.3~~		~~5h 28. 9.8~~		25.9	13.6	53.9	13.7
19m 0.0	14.9	26m 10.6	13.5	~~23.4~~		39.5	13.4	5U 7.8	13.3
14.9		24.3	13.2	5h 27m 55.0		52.9		~~21.1~~	
201.3		218.0		28 9.8		265.2		220.8	
		398.0		23.4		~~28~~ 5.2		280.8	
5h 18m 28.76		5h 25m 56.86				5h 30m ~~29.31~~ 12.17		5h 49m 40.11	

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1855phae.proj...218

+0.13
+0.30
−0,26

Sept. 11/12

J. F. T. α Cam. Min.		V. C. B. β Geminor	
γ 32 21.7	13.5	γ 37 0.0	15.5
35.2	14.1	15.5	16.4
49.9	13.1	31.9	14.9
33 3.0	13.7	46.8	15.5
16.7	14.0	38 2.3	15.7
30.7	13.2	18.0	15.0
43.9		33.0	
201.1		147.5	
21.1		327.5	
γ 33 3.01		γ 37 46.79	
+8		+3	
+24		133	
−24		−27	
γ 33 3.09		γ 37 46,88	
γ 31 43.42		γ 36 27.39	
+ 1 19.67		+ 1 19.49	

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1855phae.proj...218

Sept. 12

+0.14
+0.30
−0.25

Ill. West.

	−26		+14	+52
− 3				
D. S. C.	D. S. C.	D. S. C.	D. S. C.	D. S. C.
δ Ophiuchi	α Scorpii	γ Draconis	α Herculis	β Draconis
16h 7m 25.0	16h 21m 6.9	~~16h 23m 51.0~~	17h 8m 41.0	17h 27m 22.8
38.7	22.2		55.0	45.0
52.9	38.1		9m 19.9	28m 8.1
8m 6.0	52.9		23.7	30.0
19.9	22m 8.1	16h 23m 51.0	37.8	52.9
33.5	23.2	20.4	51.9	29m 15.0
46.8	37.9	48.2	10m 5.6	36.9
222.8	189.3		224.9	211.3
42.8	369.3		164.9	
16h 6m 6.11	16h 21m 52.76		17h 9m 23.56	17h 26m 30.19
+10	+15		−7	−4
+21	+12		+27	+48
−25	−28		−26	−41
16h 8m 6.17	16h 21m 52.75		17h 9m 23.50	17h 26m 30.22
16h 6m 46.18	16h 20m 32.80		17h 8m 3.55	17h 27m 10.35
+1m 19.99	+1m 19.95		+1m 19.95	+1m 19.87

19.92
19.67
19.84
19.75
19.67
40 5

+1m 19.81 at 12h 40m

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1855phae.proj...218

Sept. 12

D. M. West

+51
W. C. M.
γ Draconis
17.. 53.. 29.0
51.0
54.. 14.1
35.2
57.4
55.. 19.3
40.)
246.7

17.. 54.. 35.24
- 4
+48
- 40
17.. 54.. 35.28
17.. 53.. 15.4)
+1.. 19.81

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1855phae.proj...218

Sept 12/13

Ill. Wet

+7

W.6.B.
α Orionis
5..47..59.6
48.. 13.3 13.7
27.8 14.5
41.0 13.2
55.0 14.0
49.. 8.6 13.8
22.0 13.2

W.6.B
Series
6..39..23.7
37.9 14.2
52.9 15.0
40.. 7.2 14.3
21.2 14.0
85.2 13.8
49.0 13.6

W.6.B
δ Geminor

γ..13..18.7
33.0

+32

J.F.F.
α² Geminor
γ..25..53.3 16.1
26.. 9.4 17.2
26.6 13.4
42.0 16.3
58.3 16.0
27. 14.3 15.7
30.0

+5

W.6.D.
α Can. Min.
γ..32..22.6 13.5
36.1 14.5
50.6 13.9
33.. 3.9 13.8
17.7 13.3
31.4 13.4
44.8

22 γ.5
28 γ.5
6..48..41.07

233.9
293.9
γ..26..41.99
+3
+35
-30
γ.27. 42.09
γ.25.. 21.83
+1..20.24

20.30

20 γ.1
27 γ.1
γ..33..3.87
+9
+24
-25
γ..33..3.95
γ.31.. 43.45
+1..20.50

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1855phae.proj...218

Sept 12/13

Ill. West.

+28

1. F. G.

β geminor.

7.. 37.. 0.9
16.3 15.4
32.7 16.4
47.8 15.1
38.. 3.1 15.3
19.0 15.9
34.0 15.0

153.8
333.8

7.. 37.. 47.69
+ 4
+33
−28

7.. 37.. 47.78
7.. 36.. 27.42

+ 1.. 20.36

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1855phae.proj...218

Sept 13/14 — Ill. West

	$-16^{\circ}.31$	$+32..12$	$+5..35$	$+28..22$
	W. C. B. Sirius	J. F. F. δ Geminor	W. C. B. α² Geminor	J. F. F. ζ Can. min.	J. F. F. β Geminor.
	6..39..24.7	γ	γ..25..54.2	γ..32.. 23.6	γ..37..0.9
	39.1		26.. 10.6	37.1	17.2
	54.0		27.3	51.75	33.7
	40.. 7.8		43.1	33.. 5.05	48.70
	22.0		59.2	18.9	38.. 4.30
	36.3	γ..13..19.9	27.. 15.3	32.8	19.7
	56.0	34.0	31.0	45.9	35.0
	233.9		240.7	215.1	169.70
	53.9		300.7	35.1	39.7
	6..40.. 7.70		γ..26.. 42.96	γ..33.. 5.01	γ..37..48.53
	+.13		+.03	+.09	+.04
	+.17		+.35	+.24	+.33
	−.26		−.30	−.25	−.28
	6..40..07.74		γ..26..43.04	γ..33..5.09	γ..37..48.62
	38.46.57		..25..21.86	γ..31..43.48	γ..36..27.45
	1..21.23		1..21.18	1..21.61	1..21.17

3..56.55

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1855phae.proj...218

Sept. 14/15 — D. S. C. — J. A. West

+12

α Leonis

10	1	19.7 13.7
		33.4 14.8
		48.2 13.6
2	1	1.8 14.1
		15.9 14.0
		29.9 13.4
		43.3
		192.2
		12.2
10	2	1.74
		+ 8
		+27
		−26
10	2	1.83
10	00	39.28
		+1 22.55

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1855phae.proj...218

Sept 15 W.B.C. Ill Wet

+20.

α Bootis

14..	9.. 42.4	14.5
	56.9	15.15
10..	12.05	14.0
	26.05	14.85
	40.9	14.3
	55.2	14.1
11..	9.3	
	242.8	
	162.8	
14..	10.. 26.11	

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1855phae.proj...218

+.01
+.30
−21

Sept. 16/17

Ill. West

+32.12

very faint
& doubtful
J. F. F.
α² Geminor.

7.. 25.. 56.1		
32.63		
26.. 31.0	15.9	
46.9	16.3	
27.. 3.2	16.0	
19.2	15.7	
34.9		
193.3		
32.63		
160.67		
280.67		
7.. 26.. 46.78		
+ 0		
+35		
−25		
7.. 26.. 46.88		
7.. 25.. 21.93		
+ 1.. 24.95		

+5

very faint
W. C. B.
α Can. ctin.

7.. 32.. 27.4	13.6	
41.0	14.4	
55.4	13.4	
33.. 8.8	13.7	
22.5	13.7	
36.2	13.3	
49.5		
240.8		
60.8		
7.. 33.. 8.69		
+ 1		
+24		
−21		
7.. 33.. 8.73		
7.. 31.. 43.53		
+ 1.. 25.20		

+28

faint
J. F. F.
β Geminor.

7.. 37.5.7	15.3	
21.0	16.5	
37.5	15.1	
52.6	15.4	
36.. 8.0	15.3	
23.7	15.0	
38.9		
187.2		
367.2		
7.. 37.. 52.46		
+ 0		
+33		
−24		
7.. 37.. 52 55		
36.. 27.51		
+ 1.. 25.04		

1.44115
0.07253
1.51368

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1855phae.proj:...218

Sept. 17/18 J. F. H. Obl. West.

uncertain especially the 4th.

J. F. H.
Oregon
clouds
clouds

7.. 32.. 56.8 13.6
33.. 10.2 13.7
23.9 13.5
37.4 13.3
50.7

2

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1855phae.proj...218

-.06
+.30
-.19

Sept. 18/9 J. F. F. Ill. West

faint & dbtful

		−8	+52	+24
β Geminor.	ι Urs. Maj.	α Hydræ	♯ Urs. Maj.	ε Leonis
clouds	——→	9ᵘ 21ᵐ 14.0 13.9	9ᵘ 23ᵐ 28.7 21.8	9ᵘ 36ᵐ 19.7 15.0
7ᵘ 37ᵐ 23.6	←——	27.9 14.6	50.5 24.0	34.7 15.4
clouds	——→	42.5 13.2	24ᵐ 14.5 21.6	50.5 14.5
55.0	8ᵘ 50ᵐ 43.8 20.5	55.7 13.9	86.1 22.4	37ᵘ 5.0 15.1
38ᵐ 10.8	31ᵐ 4.3 20.9	22ᵘ 9.6 13.7	58.5 22.3	20.1 15.0
clouds	25.2 20.0	23.3 13.6	25ᵐ 20.8 21.7	35.1 14.7
41.0	45.2	36.7	42.5	49.8
		209.9	251.6	214.9
		389.9		34.9
		9ᵘ 21ᵐ 55.70	9ᵘ 24ᵐ 35.94	9ᵘ 39ᵐ 4.99
		−5	+2	−2
		+19	+48	+31
		−19	−31	−20
		9ᵘ 21ᵐ 55.65	9ᵘ 24ᵐ 36.13	9ᵘ 39ᵐ 5.08
		9ᵘ 20ᵐ 28.10		9ᵘ 37ᵐ 32.59
		+1ᵐ 27.55		+1ᵐ 27.49
		27.49		
		27.55		
		155		
		+1ᵐ 27.52		

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1955phae.proj:...218

Sept. 18/19 J. F. F. Ill. West

+13

α Leonis

10 h 1 m 24.84 16.3
38.7 14.5
53.2 13.7
2 m 6.9 14.1
21.0 14.0
35.0 13.7
48.7

224.9
47.9

10 h 2 m 6.84
−3
+27
−19

10 h 2 m 6.89
10 h 0 m 39.24
+1 27.55

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1855phae.proj...218

Sept. 19

All West

−21		+39	P.S.C.	−13
W.C.D.	W.C.B.	W.C.B.	~~P.S.C.~~	P.S.C.
μ¹ Sagittarii	ε¹ limb	α Lyræ	Unknown	α² Capricorni
18 5 51.5	18 21 51.4	18 32 38.0	20 10 25.2	20 10 49.0
6 6.0	22 7.4	55.4	38.9	11 2.9
21.5	24.2	33 13.9	53.9	17.8
35.8	39.8	30.8	11 7.3	31.0
50.2	55.9	48.15	21.6	45.2
7 5.0	23 12.0	34 6.05	35.5	59.3
19.0	27.8	22.9	49.0	12 12.9
189.0	218.5	1215.20	231.4	218.1
249.0	278.5		51.4	
14 6 35.57	18 22 39.79	18 33 30.74	20 11 7.34	20 11 31.16
		+1.07		
		18 33 30.81		
		18 32 03.04		
		+1 27.77		

~~18 22 32.9~~
~~44.3~~

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1955phae.proj...218

Sept. 19

Ill. Wisp

D. R. C. +45°

α Cygni

20h 37m	1.0	19.3
	20.3	20.6
	40.9	18.1
	59.0	19.4
38m	18.4	19.6
	38.0	18.4
	56.4	
	234.0	
	414.0	

20h 37m 59.14

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1855phae.proj...218

Sept 19 D. S. C. Ill West

+38 61′ Cygni	+38 61² Cygni	+29..38 +30 ζ Cygni	+62 α Cephei	−6 β Aquarii
21.. 1.. 2.0	21.. 1.. 3.4	21.. 7.. 28.9	21.. 15.. 9.2	21.. 24.. 44.9
19.6	20.8	44.1	38.0	58.6
37.7	39.2	8.. 1.2	16.. 8.9	25.. 13.2
54.0	56.0	16.6	37.0	26.3
2.. 11.9	2.. 13.3	32.0	17.. 6.0	40.2
29.2	30.7	48.0	35.2	52.0
46.1	47.5	9.. 3.4	18.. 8.6	26.. 7.3
198.5	211.1	174.8	137.9	244.5
378.5	391.1	114.8	289.9	184.5
21.. 1.. 54.07	21.. 1.. 55.87	21.. 8.. 16.40	21.. 16.. 36.84	21.. 25.. 26.36

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1955phae.proj...218

Sept. 19 P. S. C. Ill. West

ε Pegasi	Jupiter's Satellites	1st limb Jupiter	2nd limb Jupiter	− 1 α Aquarii
21h 37m 52.9 13.8	21h 47m 45.4	21h 48m 14.2 14.6	21h 48m 18.2 14.2	21h 59m 9.9 13.6
38m 6.7 14.5	21h 47m 59.4	29.0 14.9	32.4 14.8	23.5 14.4
21.2 13.5		43.9 13.7	47.2 13.6	37.9 13.1
34.7 14.0		57.6 14.3	0.8 14.4	51.0 13.9
48.7 13.8		49m 11.9 14.0	49m 15.2 14.0	22m 00m 4.9 13.6
89m 2.5 13.3		25.7 13.6	29.2 13.5	18.5 13.3
16.8		39.3	42.7	31.8
182.5		222.2	165.7	177.5
242.5		402.2	5.7	359.5
21h 38m 34.64		21h 48m 57.46	21h 44m 0.41	21h 59m 51.07

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1855phae.proj...218

Sept 17/20

Ill. West

+.09
+.30
−.18

	−17	+32	+5	+28
W-6.33	W.6.33	O.S.6	O.S.6.	O.S.6
μ Geminor	Sirius	Castor	Procyon	Pollux
~~6 " 15 " 41.5~~	6 " 39 " 32.1	} " 26 " 1.8	} " 32 " 31.1	} " 37 " 9.3
	46.1	17.9	44.8	24.9
	40 " 1.3	34.8	59.2	41.0
6 " 15 " 41.5	15.1	50.6	33 " 12.4	56.0
56.5	29.8	27 " 6.6	26.1	38 " 11.9
16 " 11.1	43.9	22.8	40.0	27.2
25.5	57.5	38.6	53.3	42.2
	225.6	173.1	266.9	212.5
	105.6	353.1	286.9	392.5
	6 " 40 " 15.09	} " 26 " 50.44	} " 33 " 12.41	} " 37 " 56.09
		−2	−6	−2
		+35	+24	+33
		−21	−18	−21
		} " 26 " 50.56	} " 33 " 12.41	} " 37 " 56.17
		} " 25 " 22.02	} " 38 " 43.61	} " 36 " 27.60
		+ 1 " 28.54	+ 1 " 28.80	+ 1 " 28.57
		28.80		
		28.57		
		28.62		
		253		
		+ 1 " 28.69		

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1956phae.proj...218

Sept. 19/20

Ill. West

J. F. F.	J. F. F.	J. F. F.	J. F. F.
~~ζ Urs. Maj.~~	ζ Urs. Maj.	α Hydra	+ Urs. Maj.
~~Lots~~			
~~clouds~~	8..49..42.6	9..21..15.8	
	50..2.9 20.3	28.7 13.6	
	Clouds	48.8 14.9	9..23..51.9 23.6
	42.9 20.8	56.9 13.1	15.5 21.7
	51..57.5 20.9	22..10.7 13.8	37.2 22.8
	26.65 19.4	26.8 14.1	59.8 22.1
	46.1	37.9 13.1	21.7
	168.9	214.3	1863
		396.3	
		9..21..56.90	
		− 7	
		+19	
		−18	
		9..21..56.84	
		~~9..20..28.12~~	
		+1..28.72	

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1855phae.proj...218

Sept. 20/21

Ill. West

	−16		+5		+28	
	W. 6. 23		J. G. F.		G. F. F.	
	Sirius		α Can. Min.		β Geminor	
6	39	33.1	7 32	32.0	7 37	10.4
		47.8		45.8		25.9
	40	2.7	33	0.1		42.2
		16.1		13.3		57.1
		30.7		27.2	38	12.9
		44.8		41.0		28.5
		58.8		54.2		43.4
		234.0		213.6		220.4
		114.0		93.6		100.4
6	40	16.29	7 33	13.37	7 37	57.20

Instrument Reversed.

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1855phae.proj... 218

Sept. 23/24

Ill East

+23 W. 6. B. μ Geminor.	−16 W. 6. B Sirius	+32 W. 6. B α² Geminor.	+6 J. F. F. χ Can. Min.	+28 J. F. F. β Geminar.
6 „ 15 „ 1.1	6. 39 „ 36.8	} „ 26 „ 6.2	} „ 32 „ 35.5	} „ 37 „ 13.7
15.6	50.4	21.9	48.8	28.8
30.2	40 „ 4.6	38.0	33 „ 2.5	44.4
45.3	19.0	54.2	16.2	59.9
59.8	33.0	27 „ 9.9	29.6	38 „ 15.0
16 „ 15.1	47.9	27.0	44.0	31.2
30.2	41 2.0	43.0	57.7	46.9
197.3	193.7	200.2	234.3	239.9
317.3	133.7	380.2	114.3	419.9
6 „ 15 „ 45.33	6 „ 40 „ 19.1	} „ 26 „ 54.31	} „ 33 „ 16.33	} 38 „ 59.99
		−.02	−.06	−.02
		+.35	+.24	+.33
		+.21	+.18	+.21
		} „ 26 „ 54.85	} „ 33 „ 16.69	} „ 38 „ 00.51
		} „ 25 „ 22.16	} „ 31 „ 43.72	} „ 36 „ 27.73
		1 „ 32.69	1 „ 32.97	1 „ 32.78

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1855phae.proj...218

Sept. 23/24

Ill. East

+49		+52		+63	
9. F. F.		9. F. F.		N. S. C.	
1 Urs. Maj.		# Urs. Maj.		α Urs. Maj.	
8 49 47.1		9 23 34.5	21.6	10 54 48.7	
50 7.2	20.1	56.1	22.5	55 17.0	
27.9	20.7	24 18.6	22.4	46.95	
48.9	20.4	41.0	21.7	56 16.85	
51 9.0	20.3	25 2.7	23.7	44.9	
30.5	21.5	26.4	21.9	57 16.20	
51.0	20.5	48.3		45.90	
221.6		227.6		236.00	
341.6		287.6		116.00	
8 50 48.80		9 24 41.9		10 56 16.57	

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Sept 24. D.S.C. Ill East

	−21	+79	+33	−30.5	+14
	μ Sagittarii	α Lyræ	β Lyræ	ξ Sagittarii	ζ Aquilæ
	18ʰ 5ᵐ 56.9	18ʰ 32ᵐ 43.4		18ʰ 54ᵐ 11.65	18ʰ 59ᵐ 37.7
	6ᵐ 11.15	33ᵐ 0.5	18ʰ 45ᵐ 44.8	26.75	51.1 (34)
	25.8	17.9	46ᵐ 1.15 (16.7)	42.6	19ʰ 0ᵐ 0 5.2 (14.1)
	40.5	35.5	17.7 (16.5)	58.55	19. 3 (13.6)
	54.75	52.35	33.3 (16.6)	55 13.8	32.9 (14.8)
	7ᵐ 9.9	34 10.9	50.5 (17.2)	30.4	47.75 (14.2)
	24.7	28.8	47 6.9 (16.4)	46.2	19. 1. 1.9
	223.70	188.85		229.95	195.85
	283.70	248.85		409.99	135.85
	18ʰ 6ᵐ 40.53	18ʰ 33ᵐ 35.55		18ʰ 54ᵐ 58.57	19ʰ 00ᵐ 19.41

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Sept 24 O. S. C. Ill. Last

	+3. δ Aquilae	+27.39 Clock star β' Cygni	+27.39 β² Cygni	+10 γ Aquilae	α+δ ♯ Aquilae
	19.. 19.. 5.5	19.. 25.. 41.0	19.. 25.. 43.2	19.. 40.. 15.7	19.. 44.. 36.1
	18.75	55.9	58.0	28.9	49.6
	32.45	26.. 11.4	26.. 13.5	42.95	45.. 3.6
	46.2	27.0	29.00	56.9	17.3
	59.4	41.8	43.90	41.. 10.25	30.8
	20.. 13.75	56.05	27.. 0.25	24.85	45.3
	27.55	27.. 13.45	15.55	38.80	59.0
	203.60	244.60	203.40	218.35	241.7
	323.60	168.60		338.35	121.7
	19.. 19.. 46.28	19.. 26.. ~~29.04~~ 26.94	19.. 26.. 29.06	19.. 40.. 56.91	19.. 45.. 17.39

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1855phae.proj... 218

Sept. 24 P. S. C. Ill East

	+6	−7m15	−13	+29m47
	ρ Aquilæ	ϕ Aquilæ	unknown	α² Capricorni	γ Cygni
	19h 49m 5.75	20h 4m 44.0	20h 10m 30.3	20h 10m 54.35	20h 17m 43.1
	19.0	57.2 (13.2)	44.0	11h 7.8	18h 0.0
	32.8	6h 10.9 (13.7)	58.0	21.8	18.0
	46.5	24.5 (13.6)	11h 12.0	35.95	36.0
	59.95	37.8 (13.3)	25.5	49.4	53.1
	50h 14.2	52.25 (14.25)	40.3	18h 4.2	19h 11.75
	27.65	6h 5.8 (13.6)	54.3	18.25	29.6
	205.85	232.45	214.4	191.75	191.55
	325.85	172.45	84.4	251.75	251.55
	19h 49m 46.55	20h 5m 24.64	20h 11m 12.10	20h 11m 35.96	20h 18m 35.94

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Sept. 24 P. S. C. Ill. Last

	α Delphini	α Cygni	61′ Cygni	61² Cygni	ε Cygni
	+15.24	+45	+38	+36	29.34 +36
	20.. 33.. 14.4	20.. 37.. 6.55	21.. 1.. 7.6	21.. 1.. 9.0	21.. 7.. 34.3
	28.0	28.1	24.25	25.65	49.85
	42.2	44.45	41.8	43.15	8.. 5.15
	56.45	38.. 3.8	59.2	2.. 0.6	20.9
	34.. 10.25	22.25	2.. 15.9	17.2	36.1
	25.0	42.65	33.9	35.6	52.4
	39.15	39.. 1.9	51.45	52.9	7.. 8.3
	215.45	146.70	234.10	184.10	206.60
	395.45	26.30	414.10	4.10	146.80
	20.33.56.49	20.38.3.81	21.. 1.. 59.16	21.. 2.. 0.59	21.. 8.. 20.97

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Sept. 24 P. S. C. Ill. Last

4th doubtful −16.47

+62	−6			
α Cephei	β Aquarii	β Cephei	ε Pegasi	δ Capricorni
21h 15m 14.9	21h 24m 50.3		21h 37m 58.25	21h 39m 55.6
42.4	25m 3.4		38m 11.6	40m 9.35
16m 11.8	17.3	21h 27m 40.0	25.5	23.4
41.0	31.1	28m 20.1	39.4	38.0
17m 8.95	44.4	54.85		51.8
39.6	58.95	29m 40.45		41m 6.85
16m 8.85	26m 12.85	30m 20.75	39m 21.25	21.05
167.60	214.10			206 145
287.60				266.45
21h 16m 41.09	21h 25m 31.16			21h 40m 38.06

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Sept. 24 P. S. C. Ill. East

Jupiters 2d Satel.	Jupiters 2th Satel.	Jupiters 1st Limb	Jupiters 2nd Limb.	α Aquarii
21.. 46.. 22.4	21.. 46.. 29.95	21.. 46.. 41.4	21.. 46.. 44.8	21.. 59.. 15.3
35.9	43.3 13.4	55.25	58.5	28.4
50.1	57.5 14.2			42.1
47.. 4.4	47.. 11.75 13.7	47.. 23.5	47.. 26.8	55.95
18.0	25.3 12.9	37.1	40.5	22.. 00 9.2
32.95	38.25	52.25	55.2	23.45
		48.. 6.1	48.. 9.25	31.1
				21 1.50
				391.50
				21.. 59.. 55.93

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1855phae.proj... 218

Sept. 24 D. S. C. Illust

	+10"	−16.35		
−2.7	3 Pegasi	δ Aquarii	−30	−14
γ Aquarii	~~ε Aquarii~~	~~α Psc. Aus.~~	α Psc. Aus.	α Pegasi
22.. 15.. 5.2	22.. 35.. 8.4	22.. 47.. 51.0	22.. 50.. 27.4	22.. 58.. 26.2
18.6	21.7	48.. 4.8	12.15	39.9
32.2	35.9	18.95	56.15	53.95
45.8	49.4	33.45	51.. 14.6	59 8.15
59.0	36.. 2.95	46.95	29.9	21.8
16.. 13.5	17.5	49.. 2.1	46.5	36.7
27.15	31.4	16.3	52.. 2.2	50.75
201.45	167.45	173.55	222.10	237.45
321.45	347.45	233.55	182.10	160
22.. 15.. 45.92	22.. 35.. 49.64	22.. 48.. 33.96	22.. 51.. 14.59	7) 57.45
	.64			22.. 59.. 08.21
				Col 0.00
				ax. − 0.07
				lev. + 0.38
				22.. 59.. 08.51
				22.. 57.. 35.09
				1.. 33.42

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Sept 24 P. S. C. Ill. Last

bad seeing

−9.53

ψ' Aquarii	Moons 1st limb.	Mercier	A	Spot
23.. 9.. 12.3	23.. 33.. 23.1	23.. 33.. 48.40	23.. 33.. 49.00	23.. 35.. 36.7
25.75	36.7	34.. 2.15	34.. 2.80	52.3
39.70	51.0	16.4	17.0	36.. 6.35
53.75	34.. 5.15	30.5	31.25	20.65
10.. 7.1	18.95	44.25	44.8	34.80
21.85	33.9	58.55	59.8	49.35
35.5	47.95	35.. 13.2	35.. 13.8	37 3.25
195.65	36.75	31.. 33.85	8.45	44.. 24 90
375.65	23.. 34.. 5.25	23.. 34.. 30.55	23.. 34.. 31.21	23.. 36.. 20.70

23.. 9.. 53.66

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		− 6.49	− 6.31		
Moon's 2	limb	30 Piscium	33 Piscium	α Andromeda	γ Pegasi
23 35	42.5	23 55 26.6	23 58 49.95	lost	00 06 40.3
5	55.8	39.9	59 3.25	"	54.0
36	10.05	53.6	17.05	"	
6	24.35	56 7.5	31.00	00 02 29.8	
6	38.00	20.8	44.20	44.95	35.8
6	52.90	35.25	58.70	1.10	0 07 50.6
37	6.95	23 56 48.95	00 00 12.4	00 03 16.55	
	230.45	232.60	216.55		
	60	52.60			
	170.45	23 56 7.51	23 59 30.94		
	24.35				

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Sept 25 P.M. Ill. East

+27 P.S.C. α Coronæ Borealis	S.G.+7 α Serpentis	~~S.C. β Scorpii~~	S.C. β' Scorpii lost
15 .. 29 .. 21.4	15 .. 38 .. 01.3	~~16 .. 07 .. 38.5~~	"
36.2	" 14.6	~~17.3~~ lost	
51.7	28.5	38.6	15 " 54 .. 21.0
30 . 7.0	42.2	~~38.8~~	35.5
21.9	55.6	~~46.1~~	49.6
38.1	39 .. 10.0	~~17.8~~	59 .. 4.8
15 .. 30 .. 53.4	15 .. 39 .. 23.8	16 . 07 .. 38.0	15 .. 59 .. 19.2
229.7	176.0		
49.7	296.0		
15 " 30 " 7.10	15 " 38 .. 42.29		
−7	−14		
+47	+36		
+16	+14		
15 " 30 " 7.66	15 .. 38 .. 42.65		
15 " 28 " 33.56	15 " 37 . 4 ~~51~~		
+ 1 " 34.10	+ 1 34.14		
34.14			
~~33.97~~			
.21			
+ 1 .. 34.07			

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1855phao_proj_218

Sept. 25

Ill. East

J. F. F. δ Ophiuchi	J. F. F. α Scorpii	S. C. #38 61 Cygni	S. C. +38 61² Cygni	S. C. +29 3 Cygni
16. 07. 38.5	16. 21. 35. 9	21. 01. 08. 0	21. 01. 09. 4	21. 07. 35. 0
52.3	51.2	25.2	26.6	50.2
8. 6.1	22. 6.6	42.6	43.9	8. 6.1
19.8	21.2	2. 0.0	2. 1.4	22.0
33.0	37.0	16.8	18.3	37.1
47.3	52.3	35.0	36.5	53.5
16. 09. 0.9		21. 02. 52.4	21. 02. 53.8	21. 9. 9.3
197.9		180.0	189.9	213.2
137.9		0.0	9.9	153.2
16. 8. 19.70		21. 2. 0.0	21. 2. 1.41	21. 8. 21.89
−16				
+30				
+14				
16. 8. 19.98				
16. 6. 45.99				
+1. 33.99				

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1855phae.proj...218

Sept. 25

+69..55

S.C.+62 α Cephei	S.C.−6 β Aquarii	S.C.+6 β Cephei	S.C.+9 ε Pegasi	S.C. δ Capricorn
21.. 15..15.2	21..24..51.0	21.27. [illegible]	3 21..37..59.0	21.. 40 ..10.1
43.7	25.. 4.4	[illegible]	38.. 12.4 34	24.4
12.6	18.2	40.7	26.4 14.0	39.0
41.9	32.0	28 21.0	40.0 13.6	52.6
16.. 9.9	45.8	59.0	53.6 13.5	41.. 7.7
40.7	59.8	29..41.3	39.. 8.2 14.7	21.9
21.. 18 9.6	21..26..13.3	21..30..21.1	21..39..22.0 13.8	
173.6	224.0		221.5	
293.6			281.5	
21.. 15..41.94	21.. 25.. 32.0		21.. 38..40.21	

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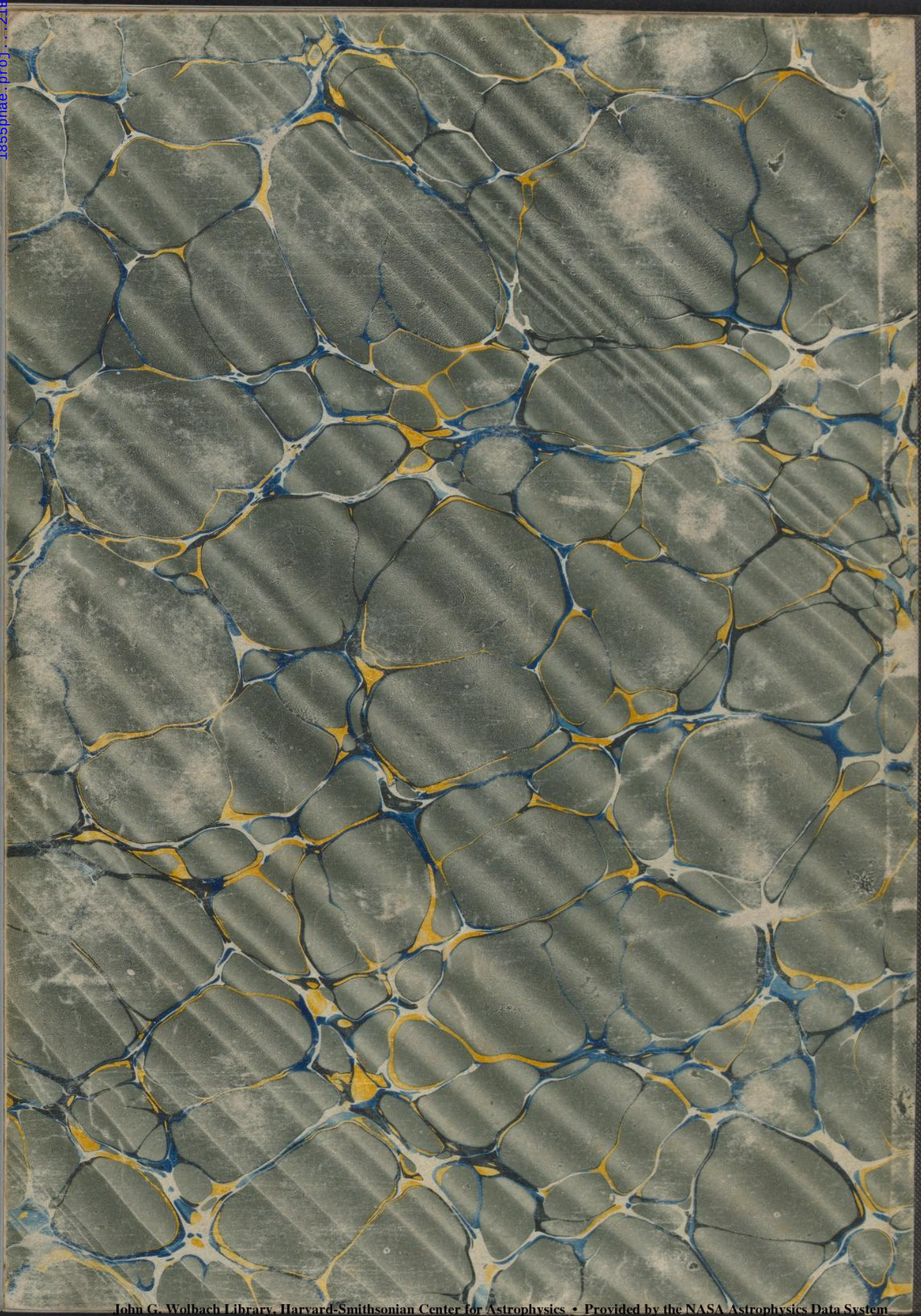
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