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Transit Circle
From April 3d 1851
To July 13, 1851

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1851 April 4th Sm. (1)

202 Hutton		202		202		202	
		β Orionis		ε Orionis		α Orionis		α Leonis
± 00°	23 41.5	−1°	7 57.0	+7°	6 23.5	+13°	9 43.5
	3 55.5		6 11.0		6 37.5		9 57.5
	4 09.0		8 24.6		6 51.5		0 11.4
	4 22.5		8 38.8		7 05.4		0 25.4
	4 36.5		8 52.0		7 19.4		0 39.5
	4 50.3		9 05.6		7 33.5		0 54.2
	5 25 03.6		5 29 19.6		5 47 47.2		10 01 08.0
	216.9		208.6		228.0		239.5
	60		60		180		60
7	158.9	7	2688.6	7	3840	7	1795
	22.70		38.37		05.49		25.64
	−2		−2		−2		−2
	5 24 20.70		5 28 36.37		5 47 03.43		10 00 23.64
	5 24 23.14		5 28 38.57		5 47 05.78		10 00 26.38
	2.44		2.20		2.35		2.74
cal.	+.04	cal.	+.04	cal.	+.05	cal.	+.05
az.	−.04	az.	−.04	az.	−.03	az.	−.02
lev.	−.09	lev.	−.09	lev.	−.09	lev.	−.11
	2.59		2.29		2.42		3.02

cal + .045
az − .052
lev − .130

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April 5 Pm

202 α Gansi		202 α Aurigæ	
	6„ 33.6		4„ 37.5
+16°	6„ 49.5	+46°	4„ 57.5
	7„ 04.0		5„ 17.2
	7„ 18.0		5„ 37.0
	7„ 32.3		5„ 56.7
	7„ 46.5		6„ 16.0
4„ 28„ 00.8		5„ 06„ 35.8	
	166.7		257.7
	60		60
	7)1267		7)2577
	18.10		36.81
	−2		−2
4„ 27„ 16.10		5„ 05„ 34.81	
4„ 27„ 21,54		5„ 05„ 240.27	
	5,44		5,46
	cal. +.04		cal. +.05
	az. −.02		az. −.00
	lev. −.11		lev. −.17
	5,53		5,58

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1851phae.proj . . . 91

April 6/7 Am.

202 δ Aquilæ		202 γ Aquilæ		202 α Aquilæ		202 β Aquilæ	
	7" 10.6		8 21.0		2" 41.5		7" 10.5
+3°	7" 24.5	+10°	8 34.9	+8°	2" 55.4	+6°	7" 24.6
	7" 38.0		8 49.0		3" 09.5		7" 38.5
	7" 52.0		9" 03.0		3" 23.6		7" 52.8
	8" 05.5		9" 17.0		3" 37.0		8" 06.0
	8" 19.4		9" 31.1		3 57.1		8" 19.6
19"	18" 33.0	19"	39" 45.0	19"	44" 03.0	19"	48" 33.5
	183.0		209.0		223.1		185.0
	180		180		60		180
7)	963.0	7)	21.0	7)	163.1	7)	365.0
	51.85	19"	39" 03.0		23.30		52.14
	−2		2		−2		−2
19"	17" 49.85	19"	39" 01.0	19"	43" 21.30	19"	47" 50.14
19"	17" 58.87	19"	39" 10.24	19"	43" 30.45	19"	47" 59.26
	9.02		9.24		9.15		9.12
cal.	+.03	cal.	+.03	cal.	+.03	cal.	+.03
az.	−.02	az.	−.02	az.	−.02	az.	−.02
lev.	−.10	lev.	−.12	lev.	−.11	lev.	−.11
	9.11		9.35		9.25		9.22

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Meridian Marks

April 6/7 Sm Ill. West

North	South	Zero
0r960	0r938	1.085
355	930	080
960	935	035
955	930	1.080
1430	3733	4.130
.3575	.9332	1.032
.032	.032	
.3257	.90128	
23	32.3	
9765	27036	
6510	18024	
.74865m	2.07276s	
0	.74865m	
	1.32411s−m	
	2.82141s+m	
	.66205 $\frac{s-m}{2}$	
	1.41070 $\frac{s+m}{2}$	

Level

East	West
69	73+
+78	65
+78	64.5
+78	65
69	74+
66	74+
441	415
73.5	69.2
69.2	
4.3	
2.15	
−.14	

cal = +.027
az. = −.038
lev. = −.140

cal = −1.384 + 1.410 = +.027
az = −0.700 + 0.662 = −.038

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1851phae.proj . . . 91

April 6/7 Am

202
α Pegasi
6.. 29. 2
+14° 6.. 43. 5-
6.. 57. 6
7.. 12. 0
7.. 26. 2
7.. 40. 0
22.. 57.. 54. 0
26 3. 5
180
7) 83. 5
11. 93
-2
22.. 57.. 09.. 93
22.. 57.. 19.. 32
9.. 39

7h Pm

α Orionis

202
α Orionis
6.. 15. 5
6 29. 4
+7° 6.. 43. 5-
6.. 57. 5-
7.. 11. 0
7.. 25. 0
5.. 47.. 39. 2
221. 1
180
7) 401. 1
57. 30
-2
5.. 46.. 55. 30
cal. +. 02
ar. -. 02
lev. -. 02
5.. 46.. 55. 28
5.. 47.. 05. 74
10. 54
10. 35
5.. 47. 05. 58

202
Sirius
7.. 43. 0
7.. 57. 5-
8.. 12. 8
-16° 8.. 26. 0
8.. 40. 5-
8.. 55. 3
6.. 39.. 09. 0
2436
60
7) 183. 6
26. 23
2
6.. 38.. 24. 23
cal +. 02
ar -. 03
lev -. 04
6.. 38.. 24. 18
6.. 38.. 34. 65-
1047
10. 25-
10. 51
23
10. 41

1h m
6 15
5.. 47
6.. 33
18h 95
6. 13 - 10. 41

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1851phae.proj... 91

1851 (6)

April 7 Sm

202 α Leonis		202 ζ Tauri		202 Moon's 1st limb		202 μ Gem.		202 ε Gem.	
	9 35.7		7.. 37.0		7.. 34.0		3.. 03.0		3.. 51.7
	9 49.5		8.. 06.0		7.. 49.0		3.. 18.0		4.. 06.5
+13°	0 03.5		8.. 20.8	+21°	8.. 04.0	+23°	3.. 33.1	+25°	4.. 21.5
	0 17.5	+21°	8.. 35.8		8.. 18.9		3.. 48.2		4.. 37.0
	0 31.5		8.. 50.0		8.. 34.0		4.. 03.4		4.. 52.0
	0 45.5		9.. 05.1		8.. 48.9		4 17.7		5.. 07.4
10.. 00.. 59.5		5.. 29.. 19.6		5.. 59.. 04.5		6.. 14.. 32.7		6.. 35.. 22.5	
	242.7		168.3		194.3		156.1		194.0
	120		180		60		180		60
7)122.7		7)1483		7)134.3		7)336.1		7)254.0	
	17.53		35.47		19.18		48.01		37.00
	−2		2		−2		−2		−2
10.. 00.. 15.53		5.. 28.. 33.47		5.. 58.. 17.18		6.. 13.. 46.01		6.. 34.. 35.00	
cal.	+.02	cal.	+.02	cal.	+.02	cal.	+.02	cal.	+.02
αz.	−.01	αz.	−.01	αz.	+.01	αz.	−.01	αz.	−.01
lev.	−.07	lev.	−.08	lev.	−.08	lev.	−.08	lev.	−.08
10.. 00.. 15.47		5.. 28.. 33.40		5.. 58.. 17.11		6.. 13.. 45.94		6.. 34.. 34.93	
10.. 00.. 26.55			10.31		10.39		10.41		10.47
		5.. 28.. 43.71		5.. 58 27 50		6.. 13.. 56.35		6.. 34.45.40	
		5.. 28.. 43.80				6.. 13 56.20		6.. 34.45.40	
			+.09				−.15		−.00

April 7th

Sid. Time

α Leonis	5.. 4~~6.. 55.27~~. 5.. 47.. 05.58
ζ Tauri	~~5.. 28.. 43.71~~
☾ 1st limb	5.. ~~48~~.. 27.50 − 5.. 58.. 27.50
μ Gem.	6.. 13.. 56.35
ε Gem.	6.. 34.. 45.40

lev. − 0.140
cal + .027
αz. − .038

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April 7/8 Ann

202 a Aquila		202 a Cygni	
	2 „ 38.4		3 „ 12.6
+8°	2 52.5	+45°	3 „ 32.0
	3 „ 06.4		5 „ 51.7
	3 „ 20.3		6 „ 11.0
	3 „ 34.2		6 „ 30.2
	3 „ 48.1		6 „ 49.2
	19 „ 44 „ 02.0		20 „ 37 „ 08.1
	201.9		194.8
	60		12
	7)141.9		7)174.8
	20.27		10.69
	−2		−2
	19 „ 43 „ 18.27		20 „ 36 „ 08.69
	19 „ 43 „ 30.46		20 „ 36 „ 20.60
	12.19		11.91
cal.	+ .03	cal.	+ .04
az.	− .02	az.	+ .00
lev.	− .11	lev.	− .20
	12.29		12.07

April 8/9 Ann.

202 δ Aquila		202 γ Aquila	
	7 „ 05.7		8 „ 16.2
+3°	7 „ 19.1	+10°	8 „ 30.0
	7 „ 33.2		8 „ 44.1
	7 „ 46.7		8 „ 58.2
	8 „ 00.7		9 „ 12.2
	8 „ 14.2		9 „ 25.5
	19 „ 18 „ 28.0		19 „ 39 „ 39.7
	147.6		2263
	180		180
	7)327.6		7)406.3
	46.80		58.04
	−2		−2
	19 „ 17 „ 44.80		19 „ 38 „ 56.04
	19 „ 17 „ 58.93		19 „ 39 „ 10.90
	14.13		14 26
cal.	+ .10	cal.	+ .10
az.	− .03	az.	− .02
lev.	− .10	lev.	− .12
	14.14		14.30

20 „ 00 „ 00
21 „ 02 45.6

cal. + .027
az. − .038
lev. − .140

M.T.C 19 „ 43 „ 00
ζ02 ζ0 45 „ 43.2
12.18
20 „ 45 „ 55.38
1 „ 01 „ 25.75
19 „ 44 „ 29.63
19 43 „ 14 06
19 „ 41 „ 15.55
19 „ 43 „ 00.
1 „ 44.45

1 „ 00 „ 59.01
46.74
1 „ 01 „ 25.75

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April 8/9 Am.

202 α Aquila		202 β Aquila	
	2 36.6		7" 05.5
+8°	2 50.2	+6°	7" 19.6
	3 04.0		7" 33.1
	3" 18.1		7" 47.0
	3" 32.2		8" 01.2
	3" 46.1		8" 14.5
19"	43" 59.7	19"	48" 28.4
	246.9		149.3
	120		180
7	126.9	7	329.3
	18.13		47.04
	−2		−2
19"	43" 16.13	19"	47" 45.04
19"	43" 30.50	19"	47" 59.32
	14.37		14.28
cal.	+.10	cal.	+.10
az.	−.03	az.	−.03
lev.	−.11	lev.	−.11
	14,41		14,31

$\frac{1}{2}$ Ak = 9.41
9 Am. 14.35
2)49.4 | 2.47

April 8/9 Am.

M.S.T.	17" 57" 00		
202	19" 03 17.2		
	14.25	1" 04" 35.57	cal. +.10
	19" 03" 31.45	46.74	az. −.05
	1" 05" 22.30	1" 05" 22.30	lev. −.14
	17" 58" 09.15		
	2" 56.63		
	17" 55" 12.52		
	17" 57" 00.00		
	1" 47.48		

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April 9th

	Marks	fine steady
South		North
0.955		0.108 = 392
0.954		.108
0.960		.108 B'
0.952		.106
0.950		.108
121		0.3976
0.9540		

0.950	0.385
0.955	0.383
0.950	0.385
0.950	0.380
0.953	0.382
268	115
0.9516	0.3830
020	020
0.9316	0.3630
2.3	2.3
27948	10890
18632	2260
2.142681	0.83490
0.83490 n	
2.97758 = 1+n	
1.30778 = 1−n	
1.48879 = $\frac{1+n}{2}$	
.65389 = $\frac{1-n}{2}$	

col = −1.384 + 1.488 = +0.104
a2 = −0.700 + 0.654 = −0.046

col = + 0.10
a2 = − 0.05
b2 = − 0.44

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April 9th Pm. Ill. Mist

	ζ Gem.		δ Gem.		Moon's L limb		θ Caneri		δ Caneri
	4 30.4		0 27.2		9 56.8		2 21.0		5 28.5
	4 45.4	2	0 42.4		0 11.4		2 35.8		5 43.5
1	5 00.1	2.00	0 57.0	5	0 26.5	6	2 50.0	7	5 57.2
+21°	5 15.1	+22°	1 12.1	+20°	0 41.6	+19°	3 04.8	+19°	6 12.0
	5 29.7		1 26.9		0 56.8		3 19.0		6 26.2
	5 44.4		1 41.8		1 11.5		3 33.4		6 40.9
	6 55 59.1		7 11 56.6		8 01 26.7		8 23 48.0		8 36 53.0
	284.2		264.0		231.3		212.0		263.3
	180		180		60		180		180
	7)104.2		7)84.0		7)291.3		7)32.0		7)83.3
	14.88		12.00		41.61		04.57		11.9
	16		1.6		2.6		1.6		1.6
	6 55 13.28		7 11 10.40		8 00 40.61		8 23 02.97		8 36 10.30
	cal +.11		cal +.11		cal +.11		cal +.11		cal +.11
	az −.02		az −.02		az −.02		az −.02		az −.02
	lev. −.08		lev. −.08		lev. −.08		lev. −.08		lev. −.08
	6 55 13.29		7 11 10.41		8 00 40.02		8 23 02.98		8 36 10.31
	2.70		2.69		2.67		2.66		2.65
	6 55 15.99		7 11 13.10		8 00 42.69		8 23 05.64		8 36 12.96
	6 55 15.81		7 11 12.99				8 23 05.75		8 36 12.81
	−.18		−.11				+.11		−.15

224.2
180
104.2

April 9th

	Sid. Time	Tab. K	
ζ Geminorum	6h 55m 15.99	15.81	−.18
δ Geminorum	7 11 13.10	12.99	−.11
☾ 1st limb	8 00 42.69		
θ Caneri	8 23 05.64	05.75	+.11
δ Caneri	8 36 12.96	12.81	−.15

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April 9th P.M.

J Cg Procyon	J Cg β Gem	J Cg ε Hydrae	J Cg Below pole α Cephei
0 47.5	5,,23.0	8,,10.2	3,,32.2 X
3 1,,01.2	4 5,,38.2	8,,24.5	4 01.0
1,,15.0	5,,53.5	8 8,,38.2	9 4 30.2
+6° 1,,28.9	+28° 6,,09.4	+7° 8,,52.1	4 59.8
1,,43.0	6,,25.7	9,,06.2	5 28.7
1,,56.7	6,,41.5	9,,19.7	5,,58.0
7,,32,,09.5	7,,36,,57.2	8,,39,,33.7	9,,16,,27.2
200.8	248.5	184.6	237.1
00	180	180	180
7)200.8	7)68.5	7)364.6	7)417.1
28.68	09.78	52.08	59.58
16	−16	16	1.6
7,,31,,27.08	7,,36,,08.18	8,,38,,50.48	9,,14,,57.98
col +.10	col +.11	col +.10	col
az −.03	az −.01	az −.03	az
lev −.08	lev −.11	lev −.08	lev
7,,31,,27.07	7,,36,,08.17	8,,38,,50.47	
7,,31,,29.76	7,,36,,11.31	8,,38,,53.21	
2.69	3.14	2.74	
	2.69 Procyon	2.69 Procyon	
	2.58 β Gem	2.58 β Gem	
	8.41	8.01	
	h 7,,26 − 2.78	h 8,,00 − 2.67	

7,,31
7,,36
7,,11
78
7 26

7,,31
7,,11
8,,38
22,80
7.60

lev − .140
coll + .104
az − .046

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April 9th Bm. Ill. West

β Cephei

Beta Pole J. G. +	J. G. ε Leonis	J. G. α Leonis
9h 41.0		
5" 21.0	+24° 6h 36.9	+13 9h 43.1
6h 01.3	6" 52.5	9" 57.3
6h 41.2	7" 07.5	0" 11.1
10 7" 21.3	7" 22.5	12 0" 25.2
6" 01.2	7" 38.1	0" 39.5
9h 28" 41.0	7" 53.0	0" 53.8
168.0	9h 38" 08.0	10" 01" 07.5
120	248.5	237.5
2)288.0	60	60
41.14	2)158.5	2)177.5
-16	22.64	25.36
9h 26 39.54	-2?	1.6
	9h 37" 20.64	10h 00" 23.76
	9h 37" 23.61	10h 00" 26.53
	2.97	2.77
	al. +.11	al. +.10
	az. -.00	az. -.01
	lev. -.15	lev. -.13
	3.01	2.81

40
04
46

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(13)

April 9/10 Am

Ill. West

South	North	Zero mid wire
0.970	0.410	0.020
980	390	022
970	400	000
980	392	020
0.970	0.390	.028
4870	1982	0.090
.974	.396	0.018
.018	.018	
.956	.378	
2.3	2.3	
2866	1134	
1912	756	
2.1988	.8694	

Formula

$\text{col.} = -1.384 + \frac{n+s}{2}$

$\text{az} = -0.700 + \frac{s-n}{2} 2.3$

0.18

2.1988 s

.8694 n

3.0682 s+n

1.3294 s−n

1.5341 $\frac{s+n}{2}$

0.6647 $\frac{s-n}{2}$

col = −1.384 + 1.534 = +.150

az = −0.700 + 0.665 = −.036

9/10th Instrument Reversed · Ill. East

South		North		Zero
1.125	= .875	0.740	= 0.260	0.025
1.120	.880	780	22.0	.020
1.120	.880	760	24.0	.020
1.140	.860	775	22.5	.022
1.125	.875	0.760	24.0	.025
5.630	4370	3815	118.5	0.112
1.126	874	.763	.237	0.022
1.022	.022	1.022	022	
0.896	896	.259	259	
956	957	378		
z^e = .056		z^e = .119		

.072
2.3
216
144
.1656

896 (2.3) 2688 1792 2.0608s 5957m 2.6565 s+m 1.4691 s−m 1.3288 .7321

.259 (2.3) 777 518 .5957 m

Level Ill East.

E	W	Th 57
+ 80	− 69.5	
+ 99.3	− 69	
+ 80.0	− 68.5	
71	− 75 +	
71	− 75 +	
70	73 +	
451.3	429.5	
75.21	71.58	
71.58		
3.63		
1.81		
−.12	East too high	

$\text{lev.} = -\frac{3}{2} 0.13$

col = −1.414 + 1.3328 = −.081

az = −.700 + .7871 = +.037

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1854phae.proj...91

(14)

April 9/10 Sm. Ill West

Level

				E	W
J.G.	J.G.			74 –	80 +
ζ Cygni	β Aquarii	β Cephei		74 –	81 +
5" 46.5	2" 59.7	—	+ 80	77 –	77
6" 02.5	3" 13.3	—	+ 80	–	72
6" 18.5	3" 27.0	—	+ 81	–	71
6" 34.5	3" 41.3	40.3		–	70
6" 50.0	3" 55.1	22.0	466		450
7" 06.0	4" 08.7	01.0	77.66		75.0
21" 07" 22.0	21 24" 22.9	21" 28" 40.3	75.00		
180.0	227.4	103.6	2.66		
160	60	167.6			
2) 240	2) 287.4	40.20	1.33		
34.28	41.06	cor 39.97			
126	−966	21 26 40.93	— .08		
21" 06" 32.62	21" 23" 49.40				
21" 06 35.14	21" 23" 41.88				
2.52	2.48				

Level = −0.10 s

East too high

W ε – ε read too high 1".81

W ε " " 1.33

2) 6.48

6.24

Illumination East

Sept 9/10th

J.G. Below pole
ε Ursae Majoris

2" 58.0
3" 27.5
3" 58.4
4" 28.0 —
4" 57.5
5" 27.8
22" 55" 57.5
394.7
120
1" 12" 28.67
46.74
1" 13" 15.41
2) 194.7
27.81
−126
22" 54" 26.21

April 10 Sm

M.J.C. 6" 44" 00
J.G. 7" 56" 27.3
2.4
7" 56" 29.7
1" 13" 15.41
6" 43" 14.29
1" 06.66
6" 42" 08.23
6" 44" ca.
1" 56 87

M.J.C. 21" 51" 00
J.G. 23" 02" 00.6
2.46
23" 02" 03.06
1" 09" 18.85
21" 52" 44.21
21" 53" 85.06
21" 49" 09.15
21" 51" ca.
1" 50.85

1" 08" 32.11
46.74
1" 09" 18.85

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April 10 P.m.

Ill East
cal. −.081
az. +.037
lev. −.170

Ill West

J.G.
−8° β Orionis
6h 39.9
6h 54.0
7h 07.7
7h 21.4
7h 33.5
7h 49.2
5h 08m 03.2
210.9
60
7)150.9
21.56
1.66
5h 07m 19.90
5h 07m 21.83
1.93
cal +.08
az +.03
lev −.61
2.03

J.G.
+28° β Tauri
6h 04.0
6h 19.5
6h 35.4
6h 51.0
7h 06.8
7h 22.2
5h 17m 37.9
176.8
180
7)356.8
50.97
−1.66
5h 16m 49.31
5h 14m 51.65
2.34
cal −.08
az +.01
lev −.19
2.60

J.G.
−1° ε Orionis
7h 56.7
8h 10.3
8h 24.8
8h 38.1
8h 51.7
9h 05.4
5h 29m 19.4
205.9
60
7)265.9
37.98
−1.66
5h 28m 36.32
5h 28m 38.47
2.15
cal −.08
az +.03
lev −.12
2.32

Ill West
α Orionis
+7° 6h 23.2
6h 37.1
6h 51.0
7h 05.1
7h 18.8
7h 32.4
5h 47m 46.3
213.9
180
7)33.9
04.84
−1.66
5h 47m 03.18
5h 47m 05.72
2.54
cal +.08
az −.02
lev −.13
2.61

high wind steady.
Marks

C N	S	S	N	S . N C		E	W
0.367	0.960	0.955	0.390	0.390	0.375	67 −	68 +
.372	.960	.957	.387	.952	.365	67 −	68.5 +
.365	.956	.960	.385	.960	.370	67 −	68
.370	.960	.955	.384	.963	.365	67 +	70 − 63
.373	.955	.960	.383	.955	.370	67 +	70 − 63
1847	4791	4787	1924	4790	1845	67 +	71 − .62
.369	.958	.957	.385	.958	369	412	592
.022	.022		.022	.022	022	68.7	65.9
.347	.936			.936	.347	65.4	
				2,3	2,3	3.3	
				2808	1041	1.65	
				1872	694	−.17	lev. = −0.12
				2.15281	.7981 m		

Ill East

Ill West
Zenith 62°

cal = −1.384 + 1.475 = +.091
az = −0.700 + 0.676 = −.022

.7981 m
2.9509 1+m
1.3547 1−m
1.4754 1+n
.6778 1−n

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April 10 Sm

J.G.
−17° Sirius
7 50.5
8 05.0
8 19.1
8 33.8
8 48.0
9 02.5
E 39 16.5
1753
60
7)2355.3
33.61
1.66
6 38 37.95
6 38 34.64
0 02.69
cal +.08
az −.02
lev −.09
2.66

April 11 Pm.

cal. +.091
az −.022
lev −.170

J.G.
+46° α Aurigæ
4 40.3
5 00.1
5 20.0
5 39.8
5 59.3
6 18.8
5 06 38.2
216.5
60
7)2761.5
394.50
1.56
5 05 39.84
5 05 40.16
2.32
cal +.11
az +.00
lev −.24
2.45

J.G.
+29° β Tauri
6 04.4
6 20.0
6 35.3
6 51.2
7 07.0
7 22.6
5 17 38.2
178.7
60
7)9587
51.24
1.66
5 16 49.58
5 16 51.63
2.05
cal +.08
az −.00
lev −.19
2.16

J.G.
δ Orionis
∓0° 3 42.2
3 55.7
4 09.0
4 22.4
4 36.2
4 50.0
5 25 03.4
218.9
60
7)1589
22.70
1.66
5 24 21.04
5 24 23.01
1.97
cal +.08
az −.02
lev −.12
2.03

April 10/11 Am.

M.T.C. 19 30 00
J.G. 20 44 31.2
2.5
20 44 33.7
1 13 15.41
19 31 18.29
3.11.9
19 28 06.39
19 30 00.00
1 53 61

April 11 Pm

M.T.C. 4 22 00
J.G. 5 37 58.2
2
1 16 25.22
46.74
1 17 11.96
5 38 00.2
1 17 11.96
4 20 48.24
42.73
4 20 05.51
4 22 00.00
1 54.49

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April 11 Poss.

J. G. ε Orionis		J. G. ζ Orionis	
7	56.8	6	23.7
8	10.3	6	37.5
8	24.2	6	51.2
8	38.2	7	05.0
8	51.8	7	19.2
9	05.4	7	33.0
5 29	19.1	5 47	46.9
	205.8		216.5
	66		180
7)	265.8	8)	36.5
	37.97		05.21
	16		−16
5 28	36.37	5 47	03.61
5 28	38.46	5 49	05.67
	2.09		2.06
	cal. + .10		cal. + .10
	ann. − .01		ann. − .01
	lun. − .12		lun. − .13
	2.06		2.10

April 11/12 Sun

☉ ☽ 6. 21	14.00
J. G. 22	32 42.5
	1.5
22	32 44.0
1 16	25.22
	46.74
1 17	11.96
1 17	71.96
21 15	92.04
3	29.00
21 12	03.04
21 14	00
1	56.96

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1851.

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April 11 Pm. Ill. West

J. G. ζ Leonis		J. G. ε Leonis		J. G. α Leonis		Moons I limb	
	9 13.0		6 38.2		9 44.3		2 32.2
blond	3 27.2		6 53.4		9 58.5		2 46.9
	3 41.3		7 08.4		0 12.2		3 01.2
+12°	3 55.3	+24°	7 23.5	+13°	0 26.2	+15°	3 15.6
	4 09.0		7 38.6		0 40.7		3 30.1
	4 23.2		7 54.0		0 54.8		3 44.8
9 24 37.2		9 38 09.0		10 01 08.6		10 03 59.3	
206.2		225.1		245 3		230.1	
180		60		60		120	
7)386.2		7)165.1		7)185.3		7)110.1	
55.17		23.58		24.47		15.73	
1.6		16		16		16	
9 23 53.57		9 37 21.98		10 00 24.87		10 03 14.13	
col. +.10		col. +.10		col +.10		col. +10	
az. −.01		az. −.01		az. −.01		az. −.01	
lev. −14		lev. −.17		lev. −.15		lev. −.15	
9 23 53.52		9 37 21.90		10 00 24.81		10 03 14.07	
1.72		1.70		1.68		1.68	
9 23 55.24		9 37 23.60		10 00 26.49		10 03 15.75	
9 23 55.05		9 37 23.59		10 00 26.50			
−.19		−.01		+.01			

April 11/12 Im

MYC

April 11th	Sid. Time	Tab. R
ζ Leonis	9h 23m 55.24	55.05 −.19
ε Leonis	9 37 23.60	23.59 −.01
α Leonis	10 00 26.49	26.50 +.01
☾ I^st limb	10 03 15.75	
ρ Leonis	10 24 58.56	58.44 −.12

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April 11 Pm.

J. G.
ρ Leonis

4 „ 16.5
4 „ 30.8
+10° 4 „ 44.9
4 „ 58.4
5 „ 12.5
5 „ 26.1
10 „ 25 „ 40.0
229.2
180
7) 409.2
58.45
1.6
10 „ 24 „ 56.85
col +.10
oz −.01
lev −.14
10 „ 24 „ 56.90
1.66
10 „ 24 „ 58.56
10 „ 24 „ 58.44
−.12

April 12 Pm. Ill. West

col. +.091
oz. −.022
lev. −.169

J. G.
α Aurigæ

+46° 4 „ 41.2 X
4 „ 01.4
3 „ 21.1
5 „ 40.9
6 „ 60.4
6 „ 20.1
5 „ 06 „ 39.8
724.9
60
7) 284.9
40.70
−1.66
5 „ 05 „ 39.04
5 „ 05 „ 40.14
1.10
col. +.14
oz +.00
lev. −.23
1.19

J. G.
β Tauri

+28° 6 „ 05.2 X
6 „ 21.0
6 „ 36.4
6 „ 52.1
7 „ 07.6
7 „ 23.3
5 „ 17 „ 39.2
184.8
180
7) 364.8
52.11
1.66
5 „ 46 „ 30.45
5 „ 16 „ 51.62
1.17
col. +.09
oz. −.00
lev. −.19
1.27

J. G.
δ Orionis

± 0° 3 „ 42.3 X
3 „ 56.3
4 „ 10.1
4 „ 23.8
4 „ 37.2
4 „ 51.0
5 „ 25 „ 04.8
225.5
60
7) 165.5
23.64
1.66
5 „ 24 „ 21.98
5 „ 24 „ 23.64
0.96
col. +.09
oz. −.02
lev. −.11
1.00

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April 12 Bn

J.G.

ε Orionis

−1° 7″	58.0
6″	11.6 13.6
8″	25.7 14.1
8″	39.4 13.7
8″	53.1 13.7
9	06.7 13.6
5″ 29″	20.2 13.5

294.7
60
7)294.7
39.24
1.66
5″ 28″ 37.58
cal. +.09
az. −.02
lev. −.12
5″ 28″ 37.53
5. 28. 30. 45
0.92

MJG. 4″ 41″.0
JG − 6″ 00″.55.7

J.G.

Procyon

0″	48.9
1″	02.8
1″	16.4
1″	30.4
1″	44.2
1″	58.9
7″ 32″	11.9

212.9
00.0
7)212.9
30.41

β Geminorum

	25.1
	40.7
	56.4
	11.8
	27.5
	43.0
7″ 36″	58.5

263.0
18.0
7)245.0
7″ 36 11.86

April 12 8h 50m sid. Time

While sitting at the table reducing some observations — I accidentally looked up to the north window which was directly before me — saw a very brilliant meteor moving downwards with a slow motion making a small angle with the vertical — visible 5 seconds — disappeared instantly — twilight — quite alone —

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April 12 Pm.

J. G.	J. G.	J. G.	J. G.	J. G.
a Hydræ	ε Leonis	α Leonis	ρ Leonis	Moon's 1st limb
35.2	38.9	44.7	17.0	03,1
49.1	54.0	58.9	30.8	17.0
03.0	09.0	13.0	45.0	31.1
−8° 16.7	+24 24.1	+13 27.0	+10 58.7	+10° 45.6
30.6	38.8	41.2	12.8	54.5
44.1	54.3	53.0	26.5	14.0
9 20 58.2	9 38 09.4	10 01 09.4	10 25 41.0	11 03 28.2
236.9	228.5	249.2	230.8	198.5
120	60	60	180	120
7) 1169	7) 168.5	7) 189.2	7) 410.8	7) 318.5
16.70	24.07	27.03	58.68	45.50
1.6	1.6	1.6	1.6	1.6
9 20 15.10	9 37 22.47	10 00 25.43	10 24 57.08	11 02 43.90
col. +.10	col. +.11	col. +.10	col. +.10	col. +.10
az. −.02	az. −.01	az. −.01	az. −.01	az. −.01
lev. −.11	lev. −.17	lev. −.15	lev. −.14	lev. −.14
9 20 15.07	9 37 22.40	10 00 25.37	10 24 57.03	11 02 43.85
9 20 16,31	9 37 23.57	1.21	1.15	1.17
1.24	1.17	10 00 26.58	10 24 58,22	11 02 45.02
1,21		10 00 26.57	10 24 58.43	
17		− .07	+.21	
62				
1.21				

h m
9 20
9 37
11 06
90 05
10 01 = −1,21

rate of J. G. − 1ˢ

lev − ,169
coll + ,091
az − ,022

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April 12 Pm.

J. G.

δ Leonis

	5" 28.0
	5" 42.3
+21°	5" 57.3
	6" 12.0
	6" 26.4
	6" 41.0
	11h 06m 56.2
	263.2
	18w
	7) 83.2
	11.88
	1.6
	11h 06m 10.28
	cal. +.11
	az. −.01
	lev. −.17
	11h 06m 10.21
	11h 06m 11.48
	1.21

J. G.

σ Leonis

	2 47.0
	3 01.0
+7°	3" 14.7
	3" 28.4
	3" 42.5
	3" 56.5
	11h 14m 10.2
	200.1
	000.
	7) 200.1
	28.58
	1.6
	11h 13m 26.98
	cal. +.10
	az. −.01
	lev. −.13
	11h 13m 26.94
	1.16
	11h 13m 28.10
	11h 13m 27.94
	−.16

J. G.

τ Leonis

	9" 36.5
	9" 50.2
+4°	0" 04.2
	0" 17.9
	0 31.5
	0" 45.4
	11h 20m 59.2
	244.9
	120
	7) 124.9
	17.84
	1.6
	11h 20 16.24
	cal. +.10
	az. −.01
	lev. −.13
	11h 20m 16.20
	11h 2r 1.15
	11h 20m 17.35
	11h 20m 17.32
	−.03

April 12th

	Sid. Time	Tab. K
α Leonis	10h 00m 26.58	26.51 − .07
ρ Leonis	10h 24m 58.22	58.43 + .21
☾ I limb	11h 02m 45.02	
σ Leonis	11h 13m 28.10	27.94 − .16
τ Leonis	11h 20m 17.35	17.32 − .03

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(23)(

1851

April 13/14th Ann.

γ Aquila

	R.A.	beats
8	29.2	−4
8	43-8	−6
8	58.0	−6
9	11.9	−6
9	25.6	−6
9	40.	−6
19 .. 39	.. 53.5	−6

2620.

180

7) 82

16.6

7) 65.4

19 .. 39 .. 09.34

19 .. 39 .. 10.42

1,08

Ill. west.

α Aquilæ

		Corl
3	18.0	−6
3	32.0	
3	46.1	
3	59.9	
19 . 44 .	13.5	

169.5

60.0

229.5

45.90

corr −13.88

19 43 32.01

β Aquilæ

7	18.9
7	32.3
7	46.2
7	00.4
8	14.2
8	28.3
19 .. 48 ..	42.1

182.2

180

7) 2.2

00.32

19 .. 47 .. 58.71

19 .. 47 .. 59.46

0.75

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April 13/14 Am.

JG

a^2 Capricorni

9" 05.0
9" 19.1
9" 33.2
9" 47.4
0" 01.6
0" 15.8
20.. 10" 29.7
151.8
180
7)331.8
47.40
1.6
20.. 09.. 45.80
20" 09" 46.63
0,83

mE - 19..03..0
JG - 20.. 29" 8.7

20.. 29.. 8.7
.80
20" 29"09.50
1" 25"05.07
19" 04"04.43
3.. 07.43
19.. 00..57.00
19.. 03..
2.. 09 00
16
1.47.0

1..24..18.33
46.74
1..25..05.07

J.G"

α Cygni

5" 23.3
5' " 43.0
6" 02.4
6" 22.2
6" 41.2
7" 00.9
20" 37" 19.8
152.8
000
7)152.8
21.83
1.6
20" 36" 20.23
20..36..20.67
.44

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April 14 Sun.

	J. Gibson		J. G.
	α Aquilæ		β Tauri
	4" 41.2		6" 05.0
Instantly	5" 01.1		6" 21.1
	5" 21.0		6" 36.6
	5" 40.9		6" 52.4
	6" 00.8		7" 08.0
	6" 20.0		7" 29.8
	5" 06" 39.8		5" 17" 39.1
	164.8		186.0
	120.		180
	7)284.8		7)366.0
	40.68		52.28
	1.6		1.6
	5" 05" 39.08		5" 16" 50.68
	5" 05" 40.07		5" 16" 51.59
	.99		.91

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(2693)

April 19 Pm

JG.

a Aurigae	β Tauri	δ Orionis	ε Orionis
4" 43.5	6" 06.8	3" 44.0	7" 59.2
5" 09.0	6" 22.4	3 57.5	8" 13.0
5" 22.5	6" 37.8	4" 11.1	8" 26.8
5" 42.1	6" 53.7	4 25.0	8" 40.4
6" 02.0	7" 09.2	4 39.0	8" 54.2
6" 21.8	7" 24.8	4 52.6	9" 08.0
5" 06" 41.4	5" 17" 40.4	5" 25 06.2	5" 29" 21.6
17 5.8	19 5.1	23 5.4	22 3.2
120	180	60	60
7)295.8	7)375.1	7)175.4	7)283.2
42.25	53.58	25.05	40.45
1.6	1.6	1.6	-1.6
5" 05" 40.65	5" 16" 51.98	5" 24" 23.45	5" 28" 38.85
5" 05" 40.02	5" 16" 51.53	5" 24" 22.91	5" 28" 38.36
.63	.45	.54	.49

M.J.C. 3" 24" 00

JG. 5" 10" 57.7

.50

5" 10" 57.20

1" 48" 44.39

3" 22" 12.81

33.12

3" 21" 39.69

3" 24" 00.00

2" 20.31

J.H. 4" 47" 01

JG 6" 36" 00.00

00.50

6" 35" 59.50

1" 48" 44.39

4" 47" 15.61

47.64

4" 46" 28.07

4" 47" 01.00

Flutter post 32.53

1" 47" 57.65

46.74

1" 48" 44.39

Apl 19 + Pole

2" 1" 19.2

26.4

2" 0" 52.8

2" 1" 00

K +7.2

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April 21/22 Am.

J.G.
α Pegasi

clouds —
—
mistaken
7" 08
7" 22.4
7" 36.5
7" 51.0
22" 58" 05.1
66.4
40,2
3) 66.6
22.3
1,6
22" 57" 20,70
22" 57" 19.62
1,08

J.G.
α Andromedæ

9 56.6
0 12.2
0 28.0
0 43.8
0 59.3
1 14.7
00" 01" 30.3
244.9
60
4) 304.9
43.56
1.6
00" 00" 41.96
00" 00" 40.52
1.44

April 22 Pm.

J.G.
Procyon

0 51.6
1" 05.5
1" 19.3
1" 33.4
1" 47.3
2" 01.0
7" 32" 14.6
172.7
60
3) 232.7
33,24
1.6
7" 31" 31.64
7" 31" 29.54
2,10

J.G.
β Geminorum

3" 27.5
5" 43.4
5" 58.5
6" 14.8
6" 30.0
6" 45.4
7" 37" 01.2
221.2
120.
7) 101.2
14.45
1.6
7" 36" 12.85
7" 36" 11.08
1,77

April 20/21 Am.

J.G. 21" 1[illegible]
Hilton 19" 17" 36.1

21" 13" 00.00
.65
21" 12" 59.35
1" 52" 40.94
19" 20" 18.41
3" 10.1
19" 17" 08,31
19" 17" 36.1
27.79

1" 51" 54.20
46.74
1" 52" 40.94

M.J.C 19" 47" 00
J.G 21" 43" 22.2

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(28½)

April 22/23 Am

	J.G. ε Pegasi	J.G. Fomalhaut	J.G. ℓ Pegasi
	15.1	40.4	42.0
	28.8	56.5	56.1
	42.6	12.3	10.4
	56.5	28.2	24.5
	10.4	44.2	38.9
	24.4	00.1	53.0
21..	37.. 38.3	22.. 50.. 15.6	22.. 54.. 07.1
	216.1	197.3	232.0
	1		60
	7)356.1	7)197.3	7)172.0
	56.58	26.18	24.57
	1.6	1.6	1 6
	21..36..54.98	22..49..26.58	22..57..22.97
	21.. 36..51.63	22..49..23.20	22..57..19.65
	3.35	3.38	3.32

April 21/22 Am

U.T.C.	7..22..00	
J.G.	21.. 22..16.3	
	1.06	
	21..22..15.24	1..55..50.75
	1..36..37.49	46.74
	19..25..37.75	1..56..3749
	3.10.95	
	19..22..26.80	
	19.. 22..00.00	
	−2 6.80	
	16	
Row of 13	−42.8	

Hutton 1..42..40

J.G. 3..43..00

1.50

3..42..58.50

2..00..34.05

1.. 42..24.45

16.8

1 ..42..07.65

1 ..42..40

+32 35

16

365. ±16.35

42.80

59.15

Log Comp −60.65

April 22/23 Am.

U.T.C	7..38.00
J.G	21.. 42..19.5
	3.3
1..59..47.31	21..42..16.2
46.74	2..00..34.05
2..00 34.05	19..41..42.15
	3..13.6
	19..38..28.55
	19..38..00.00
	28.55

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April 23 Pm.

J.G.
α Aurigæ
4 46.7
5 06.2
5 25.9
5 46.0
6 05.5
6 25.4
5 06 45.0
200.7
120
7)320.7
45.81
1.6
5 05 44.21
5 05 39.97
4.24

J.G.
β Tauri
6 10.4
6 26.0
6 41.4
6 57.1
7 13.0
7 28.7
5 17 44.2
209.8
180
7)400.8
57.25
1.6
5 16 55.65
5 16 51.48
4.17

J.G.
ε Orionis
8 03.0
8 16.7
8 30.6
8 44.3
8 58.0
9 11.3
5 29 25.0
148.9
120
7)308.9
44.13
1.6
5 28 42.53
5 28 38.31
4.22

April 23/24 Am

J.G.
3 Cygni
5 54.2
6 10.2
6 26.0
6 42.2
6 57.4
7 13.4
21 07 29.0
2324
60
7)2924
41.77
1.6
21 06 40.17
21 06 35.56
4.61

Hutton 2 57 28.4
J.G. 5 02 00

2 57 24.2
5 01 55.8
2 04 35.60
2 57 20.20
29.07
2 56 50.13
2 57 28.4
Hutton + 37.27
16
28.3

2 03 48.86
46.74
2 04 30.60
2 03 43.86
46.74
2 04 30.60
5 01 55.8
2 57 25.3
24.1
2 56 56.2
365 2 57 28.4
+32.2
16
16.2

0 48 30.6
28.8
0 48 09.3

Hutton 19 27 44.1
J.G. 21 40 00
19 47 44.6
21 29 55.4
2 04 30.60
19 25 24.80
10.92
19 25 13.88
19 27 44.1

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1851

(30)

April 23/24 Am.

J G.
ε Pegasi
6 " 16.4
6 " 30.1
6 " 44.0
6 " 57.8
7 " 11.7
7 " 25.4
21 " 37 " 39.6
225.0
180.
7) 405.0
57.85
1.6
21 " 36 " 56.25
21 " 36 " 51.66
4.59

April 24/25 Am.

J G.
α Capricorni
9 " 25.0
9 " 38.9
9 " 53.4
0 " 07.1
0 " 21.2
20 " 10 " 35.3
145.6
120
5) 265.6
53.12
1.6
20 " 09 " 51.52
20 " 09 " 46.96
4.56

J G.
α Cygni
5 " 29.1
5 " 48.5
6 " 08.0
6 " 27.1
6 " 46.5
7 " 05.6
20 " 37 " 25.1
189.9
000
2) 189.9
27.13
1.6
20 " 36 " 25.53
20 " 36 " 21.20
4.33

J G
Fomalhaut
8 " 53.6
9 " 13.8
9 " 29.5
9 " 45.4
0 " 01.3
22 " 50 " 17.5
147.6
000
5) 147.6
29.52
1.6
22 " 49 " 27.92

April 23/24 Am

Pluto 19 " 32 " 42.3
J G 21 " 40 " 00
4.6
21 " 39 " 55.4
2 " 04 " 30.60
19 " 35 " 24.80
3 " 12 " 56
19 " 32 " 12.24
19 " 32 " 42.3
+ 30.06

April 24/25 Am

Pluto 18 " 11 " 55.5
J G 20 " 23 " 00
4.40
20 " 22 " 55.60
2 " 08 " 27.15
18 " 14 " 28.45
2 " 59.30
18 " 11 " 29.15
18 " 11 " 55.5
+ 26.35

2 " 07 " 40.41
46.74
2 " 08 " 27.15

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April 24/25 25h Pm.

J. G. α Regeni	J. G. Sirius	J. G. ε Canis	J. G. α Hydræ
6h 43.4	7h 55.4 — obs	2h 04.8	9h 41.0
6h 58.0	8h 09.9	2h 20.4	9 54.8
7h 12.0	8h 24.2	2h 36.4	0 08.6
7h 25.9	8h 38.9	2h 52.0	0 22.5 —
7h 40.0	8h 53.0	3h 07.5 —	0h 36.1
7h 54.2	9h 07.1	3h 23.0	0h 50.4
2h 58h 08.5 —	6h 39h 21.4	6h 53h 38.9	9h 21h 04.2
24 2.0	209.9	183.0	217.6
60	60	180	60
7) 182.6	9) 269.9	7) 363.0	7) 157.6
26.0	38.55 —	51.85 —	22.51
1.6	00	1.6	1.66
22h 57m 24.4	6h 38h 38.5 —	6h 52h 50.25 —	9h 20h 20.85 —
22h 57h 19.70	6h 38h 34.74	6h 52h 45.63	9h 20h 16.13
4.70	4.21	4.62	4.72

April 25/26 Am.

Mutton	18h 06h 54.4
J. G.	20h 22h 00
	5.64
2h 11h 36.97	20h 21h 54.96
46.74	2h 12h 29.71
2h 12h 23.71	18h 09h 31.25 —
	18h 02h 58.5 —
	18h 06h 32.75
	18h 06h 54.4
	21.65

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April 25/26 Am.

J.G. ♑ Capricorni	J.G. α Cygni	J.G. β Aquarii
0	5 29.6	3 07.4
9 25.4	5 49.1	3 21.1
9 39.9	6 08.6	3 35.0
9 54.0	6 28.2	3 49.0
0 07.5	6 47.4	4 02.5
0 21.6	7 06.8	4 16.5
20 10 36.0	20 37 25.4	21 24 30.5
148.4	195.1	162.0
120	0	180
5) 268.4	7) 195.1	7) 342.0
53.68	27.87	48.85
1.6	1.6	1.6
20 09 52.08	20 36 26.27	21 23 47.25
20 09 47.02	20 36 21.24	
5.06	5.03	

duplicate

April 25/26 Am.

Hutton 18 37 49

J.G. 20 53 00

5.04

20 52 54.96

2 12 29.71

18 40 31.25

3 03.51

18 37 27.70

18 37 49.00

21.30

April 27/28 Am.

Hutton 19 16 50.2

J.G. 21 39 00

6.0

21 38 54.0

2 20 16.81

19 18 37.19

3 09.81

19 15 27.37

19 16 50.2

1 22.83

2 19 30.07

46.74

2 20 16.81

1851phae.proj...91

April 28/29 Am.

J.G. ξ Cygni		α Cephei	
5	56.0		
6	11.8		10.0
6	27.5		39.5
6	43.3		09.0
6	59.0		38.0
7	14.9		07.1
21 07	30.6	21 16	36.3
	243.1		139.9
	60		23.32
		cor	−14.62
7)	303.1		08.70
	43.3	21 15	08.70
	1.6		
21 06	41.7		
21 06	35.71		
	5.99		

29 Sm ζ Hydra		J.G. α Leonis	
8	18.8	9	51.0
8	32.5	0	05.4
8	46.2	0	19.5
9	00.4	0	33.9
9	14.1	0	48.0
9	27.6	1	02.1
8 39	41.7	10 01	15.9
	161.3		175.8
	100		60
7)	01.3	7)	235.8
	1.66		33.68
8 38	59.64		1.66
8 38	52.90	10 00	32.02
	6.74	10 00	26.26
			5.76

April 28/29 Am

J.G.	21 30 00		
Hutton	19 02 32.2		
	21 30 00	2 23 26.69	
	6	46.24	
	21 29 54	2 24 13.37	
	2 24 13.37		
	19 05 40.69		
1	3 07.7		
	19 02 32.93		
	19 02 52.2		
	19.27		

Hutton

J.G.	21 40 00
	19 12 50.8

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29/30 Am.

J.G.

α Cygni

5" 30.5
5" 50.0
6" 09.5
6" 28.9
6" 48.1
7" 07.5
20" 37" 27.2

201.7
000
7)201.7
28.81
1.6
20" 36" 27.21
20" 36" 21.38
5.83

J.G.

β Aquarii

3" 08.4
8" 22.1
3" 35.8
3" 50.1
4" 04.0
4" 17.8
21" 24" 21.3

169.5
10
7)349.5
49.93
1.6
21" 23" 48.33
21" 23" 42.46
5.87

Nov 1st, Pm.

J.G.

34.5
04.5
19.1
33.6
48.7
11" 07" 03.1

143.5
23.92
cor − 4.91
11 06 19.01

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1851phae.proj...91

(35)

May the 1/2 Am.

J. G. α Cygni	J. G. ζ Cygni	2nd Pm J. G. ζ Leonis
5 30.5	5 56.0	34.0
5 50.0	6 12.0	49.1
6 09.5	6 27.6	03.9
6 28.9	6 43.2	18.8
6 48.1	6 58.3	33.2
7 07.5	7 15.0	48.0
20 37 27.2	21 07 30.5	11 07 03.0
201.7	243.6	190.0
000.	60	130.0
7)201.7	7)303.6	18.57
28.81	43.37	11 06 18.57
1.6	1.6	
20 36 27.21	21 06 41.77	
20 36 21.46	21 06 35.81	
5.75	5.96	

My 1/2 Am.

Hutton 18 08 14.3
J. G. 20 47 00
18 08 15.70
20 46 54.30
2 36 03.03
18 10 51.27
2 58.71
18 07 52.56
18 08 14.3
Hutton +21.74

2 35 16.29
46.74
2 36 03.03

J.G. - 21 33 0
365 - 18 54 6.9
21 33 0
5.9
18 32 54.30
2 36 03.03
18 56 51.27
-3 06 25
18 53 45.02
365 - 18 54 6.9
+21.88
16
5.88

2 35 16.26
46.74
2 36 03.00

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1851phae.proj.....91

May 2/3 tm.

J. Cl.	J. Cl.	J. Cl.	J. Cl.
ζ Aquilæ	γ Aquilæ	α Aquilæ	β Aquilæ
7" 59.0	8" 36.9	2" 57.1	> 26.3
6" 13.5	8" 51.0	3" 11.0	> 40.0
5" 27.6	9" 04.8	3" 24.9	> 53.8
8" 42.0	9" 18.5	3" 39.0	8 07.5
8" 56.0	9" 32.5	3" 52.7	8 21.3
9" 10.0	9" 46.4	4" 06.8	8 35.0
18" 59" 24.3	19" 40" 00.0	19" 44" 20.6	19" 48" 48.9
232.4	190.1	212.1	232.8
160	60	60	160
7) 2924	7) 1301	7) 2721	7) 528
41.77	18.58	38.87	07.54
1.6	1.6	1.6	1.6
18" 56" 40.17	19" 39" 16.98	19" 43" 37.27	19" 48" 05.94
18" 56" 34.34	19" 39" 10.98	19" 43" 31.19	19" 48" 00.01
5.83	6.00	6.08	5.93

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1851phae.proj....91

May 5/6 Am.

I.G. – 22 .. 18. 2
365 – 19 . 22 . 57.8

May 6/7 Am.

Hutton 18 .. 46 .. 05.1
I. G. 21 .. 50 .. 00
5.40

21 .. 49 .. 54.60
2 .. 55 .. 45.81
18 .. 54 .. 08.79
3 .. 05.8
18 .. 51 .. 02.99
18 .. 46 .. 05.1
Hutton slow 4 .. 57.89

2 .. 54 .. 59.07
46.74
2 .. 55 .. 45.81

I.G – 22 .. 36 . 0
365 – 19 . . 36 .. 57.4
22 .. 36 . 0.0
5.4
22 . . 35 . 54 . 60
2 . 55 . 45 . 61
19 . 40 . 08 . 79
3 .. 13.35
19 . 35 . 55 . 44
365 – 19 .. 36 . 57.4
C + 1.96
16
Scan 13 – 14.04

May 6 P.m.
I. G.
12 Can Ven.
8 .. 18.1
8 35.8
8" 53.8
9 11.8
9 29.0
9 46.7
12 .. 5 .. 0 .. 04.2
198.9
120
7) 798.9
114.27
1.6
12 .. 49 .. 09.67
12 .. 49 .. 04.10
5.57

May 6/7 Am.
I. G.
ε Pegasi
6 .. 17.1
6 .. 31.2
6 .. 45.0
6 .. 59.0
7 .. 13.3
7 . 27.4
21 .. 37 .. 40.5
233.5
160
7) 413.5
59.07
1.6
21 .. 36 .. 57.47
21 .. 36 .. 52.06
5.41

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May 7 Pm.

J.G.
β Leonis

06.3
20.8
35.0
49.5
03.6
11 42 16.0

13 3.2
12 6.2
25 3.2
4 2.20
corr − 7.13
35.07
11 41 35.07

J.G.
12 Can. Ven.

8 18.0
8 35.5
8 53.4
9 11.1
9 28.8
9 46.7
12 50 04.2
197.7
120
7) 77.7
11.10
1.6
12 49 09.50
12 44 04.04
+ 5.41

7/8 Am

J.G.
ε Pegasi

6 17.2
6 30.4
6 45.0
6 59.0
7 12.6
7 26.7
21 37 40.4
239.8
180.
7) 411.8
58.83
1.6
21 36 57.28
21 36 52.09
5.19

J.G.
αα Aquarii

7 33.2
7 47.0
8 00.4
8 14.1
8 28.0
8 42.0
21 58 55.6
220.3
120
7) 1003.3
143 3
1.6
21 58 12.73
21 58 07.54
5.19

8h Am

M.S.T. 19 5 0
19 − 22 8 54.8

22 8 54.8
2 59 42.37
9 04 12.43
−5.3
19 04 07.1
3 8.27
19 05 58.83

M.S.T. − 19 05 0
fast Comb + 1.2
16
Hour ∠ − 14.8

2 58 55.62
46.75
2 59 42.37

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1851

May 9/10 Am.

J.G.

α Aquarii

7 „ 33.0
7 „ 46.8
8 „ 00.6
8 „ 14.2
8 „ 28.0
8 „ 41.8
21 „ 58 „ 65.5
219.9
120
7) 99.9
14.27
1.6
21 „ 58 „ 12.67
21 „ 58 „ 07.57
+ 5.10

J.G. – 6 „ 21 „ 0
333 – 6 „ 21 „ 33.2

Am 12th J.G. – 1 „ 52 „ 0
333 – 1 „ 52 „ 33.6

May 12/13th Am.

Capella ≡ last

45.5 – 6
42.6
24.0 – 6
5 „ 06 „ 43.8 – 6 last wires

4 46.2
5 05.7
5 25.4
5 „ 45.5
6 4.2
6 24.0
5 „ 06 „ 43.8
7) 40 „ 14.8
5 „ 05 „ 45.0
– 2.5
5 „ 05 „ 42.5
5 „ 05 „ 39.8
+ 2.7

3 „ 22 „ 34.95
46.74
3 „ 23 „ 21.69

J.G. – 5 „ 23 „ 0
365 – 1 „ 59 „ 14.3
5 „ 23 „ 0
2.7
5 „ 22 „ 57.3
3 „ 23 „ 21.69
1 „ 59 „ 35.61
19.6
1 „ 59 „ 16.0
1 „ 59 „ 14.3
– 1.7
16
17.7 B

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1851

May 13^{d} $\frac{1}{2}$.

α Orionis

JG.

6.. 28.0 −6^{s}
6.. 42.2
6 55.8
7.. 10.0
7.. 23.8
7 37.0
5 .47 .. 57.2
.. 680
09.71
2.5
5 .47 .07 .21
5 .47 .. 05.35
+1 .86

JG − 5.. 56.0
365 − 2.. 32, 9.0
5.. 56..0
1.9
5.. 55.58.1
3.. 23.. 21.7
2 .32 .36 .4
−25
2 .32 .11 .4
32 9
−2.4
16
18.4

3.. 22. 34.95
46.79
3 .23 .21 .69

JG − 6.. 2..0
333 − 6 .. 2 .41.8

JG 6. 3.. 00
333 − 6.. 3 .41.7

6.. 3.. 00.0
−2
6.. 2.. 58.0
6. 3. 41.7
333 + 43.7

May 14^{d} JG fals. 1.86

JG − 5.. 36..0
333 5. 36.. 46.2

5. 36. 00
1.9
5 35. 58.1
333 . 5 . 36. 46.2
Camb +48.1

15^{d} Am

JG − 21.. 24.. 00
2.2
21 .24.02 .2
333.21.. 24.57.0
+ 48 .8

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May 14 Pm.

B Corri

cloudy

05.2
20.0
34.5
49.6
04.0
12 27 18.8
13 1.6
12 0
25 1.6
4 1.93
corr 7.45
3 4.48
12 26 34.48

May 14/15 Am.

J. G.
Fomalhaut

8 35.6
8 51.8
5 07.7
5 23.4
5 39.0
5 55.1
22 50 11.2
223.8
60
7) 163.8
23.40
1.66
22 49 21.84
22 49 23.86
— 2.12

J. G.
α Pegasi

6 37.0
6 51.3
7 05.4
7 19.5
7 33.7
7 48.0
22 58 02.1
197.0
60
7) 137.0
19.57
1.62
22 57 17.91
22 57 20.29
— 2.38

14/15 Am

M.T.G. 19 39 00
J.G. 23 09 42.4
3 27 18.25
19 42 24.15
2.16
19 42 26.31
3 13.71
19 39 12.60
19 39 00
M.T. 6 — 12.60
15
24

3 26 31.51
46.74
3 27 18.25

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May 15. P.m.

	J. Eq.		J. G.
	Regulus		γ Virgin
	9" 43.4		6" 39.2
	9" 57.0		6" 53.2
	0 11.2		7" 07.0
	0 25.4		7" 21.2
	0" 39.6		7" 35.0
	0 53.5		7" 49.2
10"	01" 07.5	13"	18" 03.0
	237.6		207.8
	60		60
	2)177.6		2)147.8
	25.37		21.11
	1.66		1.66
10"	00" 23.71	13"	17" 19.45
10"	00" 26.05	13"	17" 22.14
	2.34		2.69

May 15/16 Am.

	J. G. a Androm
9"	54.0
	09.6
	25.0
0	40.8
0	56.9
1	11.9
00"	01" 27.0
	274.6
	60
	2)284.6
	40.65
	1.66
00"	00" 38.99
00"	00" 41.09
	2.10

May 15/16 Am

M.S.6	19" 52" 00	
J. G.	23" 26" 42.5	3" 30" 28.06
	2.10	46.74
	23" 26" 44.60	3" 31" 14.80
	3" 31" 14.80	
	19" 55" 29.80	
	3" 15.86	
	19" 52" 13.94	
	19" 52" 00	
M.S.6	— 13.94	

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1851phae.proj...91

May 16 Pm.

~~β Pegasi~~

Spica

6" 39.0
6" 53.2
7" 07.0
7" 21.1
7" 35.0
7" 49.0
13" 18" 03.1
207.4
60
9) 147.4
21.05
1.66
13" 17" 19.39
13" 17" 22.13
2.74

May 16/17 Am

J. G.

α Pegasi

6" 37.0
6" 51.2
7" 05.3
7" 19.5
7" 33.7
7" 48.2
22" 58" 01.0
195.9
60
2) 135.9
19.41
1.66
22" 57" 17.75
22" 57" 20.29
2.54

May 16/17 1 nm

11 J. G. 19" 27" 00
J. G. 23" 05" 35.9
23" 05" 38.4
3" 35" 11.96
19" 30" 27.04
3" 61.74
19" 27" 25.30
19" 27" 00
— 15.30
16
21.30

3" 34" 24.62
46.74
3" 35 11.96

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(44)

May 20 Pm.

J. G.
α Hydra

9 " 31.0
9 " 54.8
9 " 58.5
0 " 12.4
0 " 26.2
0 " 40.0
9 " 20 " 53.9
266.8
6 8
7) 66.8
12.40
166
9 " 20 " 10.74
9 " 20 " 15.77
5.03

J. G.
Regulus
41.0
9 " 54.6
0 08.5
0 22.5
0 36.7
0 50.8
10 " 00 clouds
172.1
60
5) 112.1
22.42
1.66
10 " 0 " 20.76
10 " 00 " 25.99
5.23

May 20/21 Am.

J. G.
β Aquarii
2 " 56.0
3 " 09.7
3 " 23.3
3 " 37.0
3 " 51.0
4 " 05.0
21 " 24 " 18.7
200.8
60
2) 260.8
37.25
1.66
21 " 23 " 35.59
21 " 23 " 43.67
7.46

May 18/19 Am.

M.T.G. 17 " 22 " 00
J.G. 21 " 08 " 08.4

May 20 Pm

M.T.G. 5 " 35 " 00
J.G. 9 " 27 " 05.9

May 20/21 Am.

M.T.G. 17 " 34 " 00
J.G. 21 " 28 " 02.3
7.5
21 " 28 " 09.8
3 " 50 " 57.58
17 " 37 " 12.22
2 " 53.2
17 " 34 " 19.02
17 " 34 " 00.0
M.T.G. = — 19.02
16
B 35

3 " 50 " 10.84
46.74
3 " 50 " 57.58

M.T.G. 18 " 01 " 00
J.G. 21 " 55 " 06.7

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May 20/21 Am.

J.G.
ε Pegasi

6" 05.1
6" 18.9
6" 32.6
6" 46.6
7" 00.5
7" 14.2
21" 37" 28.1
146.0
160
7) 326.0
46.57
1.66
21" 36" 44.91
21" 36" 52.46
7.55

J.G.
α Lyncis

7" 20.9
7" 34.5
7" 48.2
8" 02.1
8" 15.9
8" 29.6
21" 58" 43.3
192.5
180
7) 12.5
01.78
1.66
21" 58" 00.12
21" 58" 07.90
7.78

May 21 Pm

J.G.
β Leonis

0" 37.5
0" 51.9
1" 06.1
1" 20.4
1" 34.5
1" 48.8
11" 42" 08.2
202.4
60
7) 142.4
20.34
1.66
11" 41" 18.68
11" 41" 27.95
9.27

May 21/22 Am

M.J. 6.18" 49" 00
J.G. 22" 47" 10.2
9.29
22" 47" 19.49
3" 54" 33.14
18" 52" 26.35
3" 09.84
18" 49" 22.51
18" 49" 00
22.51
16
38.51

3" 54" 0>.40
46.>4
3" 54" 59.14

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1954phae.proj....91

(46)

May 21/22 Am.

J. G.		J. G.	
α Aquarii		α Pegasi	
7	18.7	6	30.3
7	32.5	6	44.4
7	46.5	6	58.5
8	00.0	7	12.6
8	13.8	7	26.7
8	27.4	7	41.0
21 h 58 m	41.4	22 h 57 m	55.0
	180.3		268.5
	180.0		180
	5800.30		7)88.5
	1.66		12.64
21 h 57 m	58.64		1.66
21 h 58 m	07.93	22 h 57 m	10.98
	9.29	22 h 57 m	20.43
			9.45

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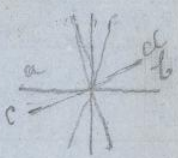
May 25th

Polaris S.P.

12	47	04.0 F
12	55	56.3 E
13	04	45.0 D
13	13	33.3 C
13	22	20.5 B

Spica

6	29.2	
6	43.0	
6	57.1	
7	11.0	
7	25.0	
7	39.0	
13	17	52.9
		77.2
		11.03
		−2.5
13	17	09.53
13	17	22.10
		−12.57



4.09.53.62
46.74
4.10.40.36

25th P.M.

$\odot$ R.A. 9.42.0

D.G. − 13.54.26.7

13.54.26.70
12.57
13.54.39.27
4.10.40.36
9.43.58.91
1.35.65
9.42.23.26
9.42.00
−23.26
16
25 P.M. 39.26

26th P.M.?

Ill west

South Star

0.97		
0.98		
1.01		
0.98		
3.94		
.985		
.027		
.958		
2.3		
2874		
1916		
2.20341		
5829 n		
1.5205 = 1 − n		
2.7863 = 1 + n		
1.3931	$\frac{1+n}{2}$	
.8102	$\frac{1-n}{2}$	

North

0.29		
.25		
.28		
.27		
1.12		
.280		
.027		
.253		
2.3		
769		
506		
.5829		

Zero

1.030		
024		
030		
1.025		
4.109		
1.027		

28.15
312.22
284.07

26th A.M.

D.G. 19.01.0

D.G. − 23.14.59.3

23.14.59.30
12.97
23.15.12.27
4.10.40.36
19.04.31.91
3.07.5
19.01.24.4
m R.A. 19.01.00
−24.4
16
40.4

26 A.M. −

col. = −1.384 + 1.393 = +0.009

az. = −0.700 + 0.810 = +0.110

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1851phae.proj - ... 91

May 26th

MC – 0 .. 29 .. 0
167 – 0 .. 31 .. 32.3

MC – 0 .. 30 .. 0
126 – 0 .. 32 .. 32.3

JG – 4 .. 47 .. 0
167 – 0 .. 34 .. 38.7

JC 4 – 48 .. 0
167 – 0 .. 35 .. 38.6

JG – 4 .. 49 .. 0
126 – 0 .. 36 .. 38.4

Ill West

Temp. 74°

May 26 Pm.
Level

East	West
+61	53
+61	52
+60	52
53	57 +
53	57 +
53	56 +
341	327
56.8	54.5
54.5	
2.3	
1.15	
– .07	lev. = –0.07

In Y C Slow of Boston.

Jm May 25th – 39.06	α Andromedæ
22 – 38.51	hazy
21 – 35.00	1.3
17 – 31.30	last wire, very faint
15 – 28.60	0 – 01 .. 17.3

May 26 Pm.
126 3 .. 49 .. 00
J.G. 8 .. 01 .. 55.6

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May 26 P.M.

J. G.
Sirius

7" 39.1
7" 53.4
6" 07.6
6" 22.0
6" 36.3
6" 50.8
6" 39" 03.0
204.2
60
7)1542
22,28
1.66
6" 38" 20.62
6" 38" 34.02
-13,40

J. G.
Procyon

0" 36.0
0" 49.8
1" 03.4
1" 17.2
1" 31.2
1" 45.0
7" 31" 58.9
2211.5
120
7)1215
17,35
1.66
7" 31" 15.69
7" 31" 29.22
13,53

J. G.
δ Leonis

5" 14.6
5" 29.5
5" 44.2
5" 59.1
6" 13.8
6" 28.6
11" 06 43.2
233.0
60
2)413.0
59.0
1.66
11" 05" 57.34
11" 06" 11.00
13.66

J. G.
12 Can. Ven.

7" 58.9
8" 16.5
8" 34.1
8" 51.5
9" 09.4
9" 27.5
12" 49" 45.0
242.9
120.0
2)362.9
51.84
1.66
12" 48" 50.18
12" 49" 03.91
13,73

Made dots commencing at 3h 50m
another from Boston
circuit at the end of every second, and continued until 4h 01m 00s
Heard nothing from Boston
Battled again at 4h 50m
5h 00m 00s made circuit at the end of every second as before
for one minute. All still

Battery very strong — Got no
At 4h 00m 00s began to make
Battery appears to be off. All still

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1851phae.proj . . . 91

(50)

May 26 Pm. Ill. West?

J. G.
Spica
27.9
41.5
56.1
10.3
24.0
38.0
13 17 52.0
249.8
180
7) 69.8
9.97
1.66
13 17 08.31

Polaris
12 55 37.0
13 04 36.5
13 28.5
13 22 20.0
94 136.0
180
274
69 4.00
- 4 25.16
13 04 38.84

May 26/27 Am.

J. G.
α Pegasi
26.3
40.4
54.7
08.9
23.2
37.4
2 2 57 51.5
242.4
180
7) 62.4
8.91
1.66
22 57 07.25
22 57 20.58
13.33

May 26/27

M. 26. 18 54 00
J. G. 23 16 55,9
13.33
23 17 09.23
4 14 36.92
19 02 32.31
3 07 18
18 59 25.13
18 59 00.00
25.13

4 13 50.18
46.74
4 14 36.92

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1851phae.proj....91

May 27/28

J.G.

α Cassiopea

0	38.0
1	02.5
1	27.1
1	51.2
2	16.0
2	40.3
00 33	05.0
	180.1
	180
7	360.1
	51.44
	1.66
00 31	49.78
00 32	04.46
	14.68

(first wretched)

J.G.

β Ceti

5	09.2
5	23.8
5	38.3
5	53.0
6	07.0
6	21.5
00 36	36.1
	188.9
	180
7	368.9
	52.70
	1.66
00 35	51.04
00 36	05.70
	14.66

(very faint)

J.G.

Polaris

~~00.47~~ unsteady

00 47 13.0

1	04 51.0
1	13 36.5
1	22 27.0
1	35 13.5

May 27/28 Sm.

M.J.G. 20 22.00 M.J.G. 20 23.00

J.G. 00 44 05.4 J.G. 00 45 05.5

14.68

00 44 20.08

4 17 46.74 (46.74)

4 18 33.48

4 18 33.48

20 25 46.60

3 20.81

20 22 25.79

20 22 00.00

25.79

Level All West

East	West
56	58+
55	57+
54	56+
+57	51
+56	49
+55	48
393	319
55.5	53.2
53.2	
2.3	
1.15	
−.07	

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1954phae.proj....91

May 28 Pm.

J. G. ε Hydrae	J. G. α Hydrae	J. G. Regulus
7 „ 56.8	9 „ 19.5	9 „ 28.8
8 „ 10.4	9 33.2	9 „ 43.0
8 „ 24.1	9 47.2	9 „ 57.0
8 „ 37.9	0 „ 01,3	0 „ 11.1
8 „ 51.8	0 „ 15.0	0 „ 25.4
9 „ 05.5	0 „ 28.8	0 „ 39.2
8 „ 39 „ 19.4	9 „ 20 „ 42.5	10 „ 00 „ 53.1
204.9	187.5	257.6
60	180	180
2)264.9	7.5	2)77.6
37.84	1.07	11.08
1.66	1.66	1.66
8 „ 38.36.18	9 „ 19 „ 59.41	10 „ 00 „ 09.42
8 „ 38.32.54	9 „ 20 „ 15.68	10 „ 00 „ 25.90
16.36	16.27	16.48

May 28/29 Gm.
N.J.C. 19 „ 29 „ 00
J. G. 23 „ 54 „ 52.1
17.28
23 „ 55 „ 09.38
4 „ 22 „ 30.03
19 „ 32 „ 39.35
3.12.11
19 „ 29 27,24
19 „ 29 „ 00
27.24

4 „ 21 „ 43.29
46.74
4 „ 22 30.03

May 29/30 Gm.
N.J.C. 21 „ 15 „ 00
J. G. 1 „ 45 „ 07.4

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May 30/31 Am

J.G. α Andromedae	J.G. γ Pegasi
40.8	
56.6	4.. 51.8
0 12.2	5' 05.8
0 27.9	5.. 20.0
0 43.4	5.. 34.0
0 59.0	5.. 48.9
00.. 01.. 14.8	00.. 06.. 02.5
254.7	160.0
66	66
7)194.7	5)100
27.81	20.0
1.66	1.66
00.00.26.15	00.05.18.34
00.00.41.56	00.05.33.92
15.41	15.58

May 30/31 Am.

M.J.G.	19.. 13.. 00	
J.G.	23.. 46 45.5	
	15.41	
	23.. 47.. 00.91	4.. 29.. 36.41
	4.. 30.. 23.15	46.74
	19.. 16.. 37.76	4 30 23.15
	3.. 09.49	
	19.. 13.. 28.27	
	19.. 13.. 00.00	
	28.27	

May 1/2 Am

M.J.G.	19.. 28.. 00
J.G.	60.. 09.. 48.2

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June 2nd

J.G.		J.G.		J.G.
α Hydra		ε Leonis		α Leonis
9„ 20.9		6„ 24.1		9„ 30.4
9„ 35.0		6„ 39.4		9„ 44.7
−8° 9„ 49.0	+24°	6 54.8	+13°	9„ 58.7
0„ 02.8		7 09.8		0„ 12.5
0„ 16.5		7 24.8		0„ 26.7
0„ 30.0		7 40.0		0„ 41.0
9„ 20„ 44.0	9„ 37„ 55.0		10„ 00„ 55.0	
198.2	247.9		269.0	
180	180		180	
7) 18.2	9) 67.9		2) 89.0	
02.6	07.7		12.71	
1.66	01.66		1.66	
9„ 20„ 00.94	9„ 37„ 06.04		10„ 00„ 11.05	
9„ 20„ 15.62	9„ 37„ 22.85		10„ 00„ 25.84	
14.68	14.81		14.79	
cal. +.07	cal +.07		cal. +.07	
az. +.09	az + 04		az. +.06	
lev. −.04	lev. −.06		lev. −.05	
14.56	14.76		14 81	

14.56
76
71
3) 203
14.68

June 2nd

5 foot Equatoreal

Im 79 Gem.

13h 23„ 29.5 − 4th good observation — Observer C.W.J.
1.67 disappeared instantly
13„ 23„ 27.83
4„ 42„ 02.82
8„ 41„ 25.01
14.79
8„ 41„ 39.80
1„ 25.46
8„ 40„ 14.34

4„ 41„ 26.08
46.74
4„ 42„ 02.82

June 2nd

Im. 79 Gem. 8h 40m 14s.34

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June 2/3 Am.

J.G.
α Andromeda

	41.)
	57.2
	12.4
	28.4
	43.8
	59.4
00 01	15.0
	257.4
	60
7	197.4
	28.2
	1 66
00 00	26.54
	41.65
	15.19

J.G.
α Cassiopea

0	38.5
1	02.5
1	26.6
1	51.5
2	15.8
2	40.0
00 33	043
	178.2
	180
2	358.2
	51.17
	1.66
00 31	49.51
00 32	04.76
	15.25

β Ceti (markedly)

6	09.2
6	23.8
6	38.2
6	53.0
7	07.5
7	21.7
00 37	36.1
	189.5
	180
7	369.5
	52.78
	1.66
00 36	51.12
00 36	05.97
	14,85

June 2/3 Am.

M.J.G.	19.07.00
J.G.	23.52.36.5
	15.19
	23.52.51.69
	4.42.12.82
19	10.38.87
	3.08.53
19 07	30.34
19.07	00
	30.34

M.J.G.	19.27.00
J.G.	12.40
	4.41.26.08
	46.74
	4.42.12.82

45 40

M.J.G.	19.27.00
J.G.	00.12.40
	15.11
00	12.55.11
	4.42.12.82
19	30.42.29
	3.11.43
19.27	30.46
19.27	00 00
	30.46

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June 2/3 Am. Ill. West.

J G

Polaris

00 ‹. 38 „ 16.5
47 „ 12.0
56 „ 00.0

1 ‹. 13 „ 41.0

clouds

1 „ 31 „ 13.0

185 82.5
120
305
61 16.50
cor + 3 31.75
13 4 48.25

Zero
0.015
.020
.022
.010
.018
40
016

Ill. west

June 3d

Mer Marks distinct & steady

	South	North	Ext Thes 63° South	North
	1.000	0.310	0 5 — 100.002	0.278 —
	1.000	.292	.006	.270
	1.005	.275	.010	.262
	1.008	.300	.008	.278
	1.012	.290	.002	.280
	1.0040	.293	1.0056	.274
	.016	.016		
	0.9880	.277		
	2.3	2.3		
	2964	831		
	1976			
	2,2724 s			
	.6371 m			
	1.6353 s−m			
	2.9095 s+m			
	.8176 $\frac{s-m}{2}$			
	1.4547 $\frac{s+m}{2}$			

Wells

	E	W
	63 −	60 +
+	59.5	63.5 +
	64.5	58 +
+	59.5	62

Level Ill west

+ 63 − 60 + East
59.5 − 64.5 + west
+ 63.5 − 59.5 East
58 62 + West
+ 64.5 − 58 East
59 − 62.5 + West

367.5 366.5
61.22 61.07
61.07
.15
.075
.006 Lev. = 0.00

Col. = −1.384 + 1.455 = +0.071
Col. = − .700 + .818 = +0.118

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1851phae.proj...91

June 3d Pm.

	J. G. β Leonis	J. G. Arcturus	J. G. η Bootis	J. G. ε Bootis
	0 " 31.7	7 55.5	6 39.2	7 " 30.0
	−15° 0 " 46.0	+20° 4 10.0	+19° 6 54.0	+28° 7 " 45.4
	1 " 00.2	4 24.8	7 08.2	8 " 01.0
	1 " 14.6	4 39.6	7 23.0	8 " 16.6
	1 " 28.6	4 54.3	7 37.3	8 " 32.0
	1 " 43.0	5 09.0	7 52.0	8 " 47.4
	11 " 41 " 56.9	14 " 04 " 23.6	13 " 48 " 06.8	14 " 39 " 03.0
	221.0	217.0	220.5	175.4
	120 "	60	60	60
	7)101.0	7)277.0	7)160.5	7)115.4
	14.43	39.57	22.93	16.48
	1.66	1.66	1.66	1.66
	11 " 41 " 12.77	14 " 08 " 37.91	13 " 47 " 21.27	14 " 38 " 14.82
	11 " 41 col. +.07	14 " 08 col. +.07	13 " 47 col. +.07	14 " 38 col. +.07
	az. +.06	az. +.05	az. +.05	az. +.03
	lev. −.00	lev. −.00	lev. −.00	lev. −.00
	11 " 41 " 12.80	14 " 08 " 38.03	13 " 47 " 21.39	14 " 38 " 14.86
	11 " 41 " 27.80	14 " 08 " 53.16	13 " 47 " 36.52	14 " 38 " 30.14
	15.00	15.13	15.13	15.28
				13
				13
				54
				14 h 11 m − 15.28

rate of J. G. = ∓ 0.00

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1851phae.proj ... 91

1851

June 3d Pm

5 foot Equatoreal Observer C.W.J

Im. 44 Caneri J. Gibson
12h 52m 17.0 ± 4 bts. good

h m s
Im. 47 Caneri 13h 21m 53.0 – 4 beats good

h m s
Em 47 Caneri 14h 16m 02 – 4 beats doubtful – cloudy – ☾'s limb unsteady

12h 52m 17.0		h m s 13h 21m 53.0	14h 16m 02
1.67	4h 45m 22.63	1.67	1.67
12h 52m 15.33	46.74	13h 21m 51.33	14h 16m 00.33
4h 46m 09.37	4h 46m 09.37	15.22	15.22
8h 06m 05.96		13h 22m 06.55	14h 16m 15.55
15.22		4h 46m 09.37	4h 46m 09.37
8h 06m 21.18		8h 35m 57.18	9h 30m 06.18
1h 14.68		1h 24.50	1h 31m 33.4
8h 05m 01.50 Im 44 Caneri		8h 34m 32.68	9h 28m 32.78

June 3d.

Im. 44 Caneri 8h 05m 01.50 M.S.T. very good

Im. 47 Caneri 8h 34m 32.68 good

Em. 47 Caneri 9h 28m 32.78 doubtful

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June 4 Pm.

J. G. ε Hydra	J. G. β Corvi
7„ 57.1	5„ 36.8
8„ 11.2	5„ 51.8
8„ 25.1	6„ 06.3
8„ 39.0	6„ 21.2
8„ 52.7	6„ 36.1
9„ 06.3	6„ 51.0
8„ 39„ 20.0	12„ 27„ 05.8
211.4	209.0
60	60
7)271.4	7)149.0
38.77	21.2
1.66	1.66
8„ 38„ 37.11	12„ 26„ 19.54
8„ 38„ 52.48	12„ 26„ 55.00
15 37	15.46

June 4/5 Am.

J. G. α Cassiopea

0„ 38.6
1„ 02.5
1„ 26.6
1„ 51.3
2„ 15.9
2„ 40.0
00„ 33„ 04.3
178.6
180
7)358.6
51,23
1,66
00„ 31„ 49.57
00„ 32„ 04.80
15,23

cl +.07
az +.12
lev. −.01

June 3/4 Am.

M. J. G 19„ 21„ 00
J. G. 00„ 10„ 35.5
15.20
00„ 10„ 50.70
4„ 46„ 09.37
19„ 24„ 41.33
3„ 10„ 81
19„ 21„ 30.52
19„ 21„ 00
30.52

4„ 45„ 22.63
46.74
4„ 96 09.37

cal = −1.384 + 1.448 = +0.064
az = − .700 + .851 + .151

June 4 Pm. Ill. West
Meridian Marks Ext Therm. 69°

South	North	
1ᵛ 015	6.272	north index error
020	280	
012	280	
014	270	s 2.8990
1.017	0.278	m 0.5980
5.078	1380	s+n 2.8970
1,0156	.276	s−n 1.7010
.016	.016	s+n 1.4485
0.9996	.260	s−n .8505
23	23	
99988	780	
19992	520	
s 2.29908	m .5980	

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June 5 Pm.

J. G. α Hydra		× J. G. π Leonis		J. G. × α Leonis		J. G. C I limb	
9	20.4	1	24.9 A	9	30.2	3	57.1
−8° 9	34.1	(+0°1	39.0 B	9	44.3	4	11.3
9	48.0	1	52.6 C	+13° 9	58.5	+13° 4	26.0
0	02.1	2	06.5 D	0	12.3	4	40.3
0	15.9	2	20.4 E	0	26.4	4	54.7
0	29.5	2	34.4 F	0	40.5	5	09.2
9 20	43.5	9 52	48.5 G	10 00	54.3	10 25	23.9
	13.5		226.3		266.5		222.5
	180		1 ←		180		60
7	13.5	7	46.3	7	86.5	7	282.5
	01.94		06.61		12.35		40.35
	1.67		1.67		1.67		1.67
9 20	00.27	9 52	04.94	10 00	10.68	10 24	38.68
	col. +.07		col +.07		col. +.07		col +.07
	az. +.09		az +.07		az. +.06		az +.06
	lev. −.00		lev −.01		lev. −.01		lev −.01
9 20	00.43	9 52	05.07	10 00	10.80	10 24	38.80
9 20	15.58		15.08		15.08		15.08
	15.15	9 52	20.15	10 00	25.88	10 24	53.88
		9 52	20.07	10 00	25.81		
			−.08		−.07		

rate of J G = ∓0.0

June 4/5 Gm.

M. T. G. 19 20 00

J G 00 13 32.4

15.20

00 13 47.60

4 50 03.93

19 23 41.67

3 10.64

19 20 31.03

19 20 00

31.03

4 49 19.19

46.74

4 50 05.93

June 5/6 Gm.

M. T. G. 18 54 00

J. G. 23 51 25.3

15.03

23 51 40.33

4 54 02.49

18 57 37.84

3.06.37

18 54 31.47

18 54 60.00

− 31.47

4 53 15.75

46.74

4 54 02.49

June 5th

	Sid. Time h m s	Tab. R
π Leonis	9 52 20.15	20.07 −.08
α Leonis	10 00 25.88	25.81 −.07
C I limb	10 24 53.88	
δ Leonis	11 06 10.94	10.88 −.06

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June 5 Pm.
J G
δ Leonis

5 13.4
5 28.0
+21° 5 42.5⁻
5 57.4
6 12.1
6 27.1
11 06 41.8
222.3
18v
7)4022.3
57.47
1.67
11 05 55.80
col +.07
az +.05⁻
lev −.06
11 05 55.86
11 06 15.08
11 06 10.94
11 06 10.86
−06

J.G.
β Librae

X 8 06.0
8 20.0
−9° 8 33.9
8 47.5⁻
9 01.3
9 15.3
15 09 29.5⁻
153.5
18v
7)3335
47.64
1.67
15 08 45.97
col +.07
az +.09
lev −.04
15 08 46.09
15 09 01.18
15.09

5/6 Am
J G
α Andromeda

9 41.5⁻
9 57.5⁻
0 12.9
0 28.4
0 44.1
0 59.8
00 01 15.4
2986
60
7)1986
28.37
1.66
00 00 26.71
00 00 41.74
15.03

6 Pm.
J.G.
η Bootis

6 39.8
6 54.2
7 08.5⁻
7 23.0
7 37.5⁻
7 52.0
13 48 06.8
220.8

5 pt. Equa

rate of J.G. +0.0

Im. 3662 B.A.C.
J.G. 14 43 47.5⁻ − 5 pt
2.06
14 43 45.44
15.06
14 44 00.50
4 54 02.49
9 49 58.01
1 36.63
9 48 21.38

4 53 15.75⁻
46.74
4 54 02.49

lev −.006
col +.064
az +.157

Im. 3662 B.A.C. 9h 48m 21.38

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June 6 Pm

J. Cg.
α Bootis

7" 56.0
8" 10.4
8" 25.5
8" 39.8
8" 54.2
9" 08.6
14 09" 23.3

207.8
60
)2787.8
39.68
1.67

14" 08" 38 01
14.08.53.14
−15.13

June 7th J. Bowditch' Sid. Chro. No 333.

IG − 1.. 13.. 00.0
333 − 1.. 15.. 18.2
1.. 13.. 00.0
IG Slow 15.13
1.. 13.. 15.13
333 1.. 15.. 18.2
Cambridge +2.03.07

In 6th P.M. IG − 12.36.0
333 − 12.38.17.2
12.36.15.1
12.38.17.2
+2.02.1

No 333
May 14th P.M. − fast of Camb − 48.1
15 A.M. − " − " 48.8
June 6 P.M. − " − " 2.02.1
7 A.M. − " − " 2.03.1

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June 9/10 Am.

α Andromeda J.G.	J.G. α Cassiopea
9„ 38.7	
9 54.2	
0„ 10.1	1„ 23.5
0„ 25.4	1„ 48.2
0„ 40.8	2„ 12.5
0 56.5	2„ 37.0
00„ 01„ 12.0	00 38. 01.4
237.7	7)84.2
60	60
7)177.7	3)144
25.38	48.0
1.66	00.32. 1.67
00„ 00„ 23.71	00„ 31„ 46.33
00„ 00„ 41.89	00„ 32„ 03.76
18.18	17.43

June 9/10 Am.

11 G.	19„ 43„ 60
J G.	00„ 56„ 16.9
	18.1
	00„ 56„ 34.4
	5„ 09„ 48.72
	19„ 46„ 45.68
	3„ 14„ 42
	19„ 43„ 31.26
	19„ 43„ 60.
	31.26

5„ 09„ 01.58
46.74
5„ 09 48.72

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Dome 10+6 P.M. Eqt. N. 68.5 Ill West

Micrometer measures of meridian marks

	North mark	South mark		North mark	South mark
N.	0.290	0.993	1813	0.300	1.018
	.275	0.994		285	1.000
	.288	1.006		275	1.006
	.284	1.000		300	1.013
	.272	1.008		0.290	1.010
	1409	5 001		1450	047
	.2818	1.0002		.2900	1.0094
	.008	008			
	.2738	.9922			
	2.3	2.3			
	8214	29766			
	5476	19844			
	.62974	2.282061			
		.62974 m			
		2.911801 7m			
		1.652321-m			
		1,455901+m/2			
		0,82666 1-m/2			

cal. = − 1.384 + 1.456 = + 072

az = − 700 + .827 = + 127

Zero

1,003
,010
,008
008
1,004
5,033
1.008

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June 10 Pm

	J. G.	
	γ Bootis	
	6.. 33.6	
	6.. 48.2 −0 hb	
+19°	7.. 02.6 b	
	7.. 17.1 D	
	7.. 31.5 E	
	7.. 46.0 F	
13.. 48.. 00.5	G	
	179.5	
	60	
7)	119.5	
	17.07	
	~~+1.67~~	
13.. 47.. 17.07		
	cl. +.07	
	az. +.05	
	lev. −.02	
13.. 47.. 17.17		
13.. 47.. 36.48		
	19.31	

	J. G.	
	κ Virginis	
	8.. ~~57.2~~	
	4.. 11.0 −0 hb	
−10°	4.. 24.8	
	4 39.0	
	4 53.2	
	5 07.0	
14.. 05..	21.0	
	213.2	
	60	
	273.2	
	39.03	
	~~+1.67~~	
14.. 04..	39.03	
	cal +.07	
	az +10	
	lev −01	
14.. 04..	39.19	
	19.15	
14.. 04..	58.35	
14.. 04..	58.35	
	+.20	

	J. G.	
	Arcturus	
	7.. 57.6	
	8.. 05.9	
+20	8.. 20.7	
	8.. 35.5	
	8.. 50.0	
	9.. 04.6	
14.. 09..	19.3	
	197.8	
	60	
	257	
7)	257.8	
	35.83	
	1.67	
14.. 08..	34.16	
	cl. +.07	
	az. +05	
	lev −.02	
14.. 08..	34.26	
14.. 08..	53.12	
	18.86	
	19.63	
	19.31	
	57.80	
	19.27	

reduced J Gilpin
−2.0

cal	+.07
az	+.13
lev	−.02

	15.08
	14.08
	13.47
	43.03
	14.31

June 10th

	Sid. Time	Tab. R	
κ Virginis	14h 04m 58.35	58.55	+.20
☌ I limb	14.. 59.. 23.91	☌	
β Libræ	15.. 09.. 00.95	01.20	+.25
ι Libræ	15.. 19.. 53.34	53.34	.00
γ Libra	15.. 27.. 13.65	13.51	−.14

lev +.016
cal +.074
az +.130

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1851phae_proj...91

1851.

June 10

	M. J. G. Moon's L limb	δ Librae	β Librae	γ Librae
	8 22.5	8 01.8	8 52.5	6 13.0
	8 39.6	8 15.3	9 07.0	6 27.2
−11°	8 51.7	−9 8 25.1	−16° 9 21.2	−14° 6 41.7
	9 06.2	8 43.1	9 35.4	6 56.0
	9 21.0	8 57.0	9 49.8	7 10.0
	9 35.0	9 10.5	0 04.0	7 24.1
14	59 49.0	15 09 24.8	15 20 18.3	15 27 38.0
	222.4	181.6	188.2	280.0
	180	120	60	180
	7) 42.4	7) 301.6	7) 248.2	7) 390.0
	06.06	43.09	35.46	55.71
	1.67	1.67	1.67	1.67
	14 59 04.39 *4	15 08 41.42	15 19 33.79	15 26 54.04
	cal +.07	cal +.07	cal +.07	cal +.07
	az +.10	az +.10	az +.11	az +.11
	lev −.01	lev −.01	lev −.01	lev −.01
	14 59 04.55	15 08 41.57	15 19 33.96	15 26 54.24
	19.36	19.36	19.36	19.41
	14 59 23.91	15 09 00.93	15 19 53.32	15 27 13.65
		15 09 01.20	15 19 53.34	15 27 13.73
		.25	.02	.14

June 11d Ast.

δ Cygni − 23 34.0

239 − 18 20 6.8

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1851phae.proj . . . 91

June 10/11 Am.

J.G. a Andromeda	G.G. γ Pegasi
36.8	
52.4	4„ 48.0
0 08.2	5„ 02.1
0 23.8	5„ 16.2
0 39.6	5„ 30.4
0 55.0	5„ 44.7
00„ 01„ 10.4	00„ 05„ 58.9
226.2	141.4
60	60
7)166.2	5)81.4
23.74	16.28
1.67	1.67
00„ 00„ 22.07	00„ 05„ 14.61
00„ 00„ 41.92	00„ 05„ 34.24
19.85	19.63

June 11/12 Am.

J.G. a Aschomeel	J.G. γ Pegasi
9.34.7	4„ 31.3
9„ 50.4	4„ 45.4
0„ 06.0	4„ 59.6
0„ 21.6	5„ 13.8
0„ 37.0	5„ 28.0
0„ 52.5	5„ 42.1
0 0„ 01„ 08.2	00„ 05„ 56.4
210.4	276.6
60	180
7)150.4	1)96.6
21.48	13.80
1.67	1.67
00„ 00„ 19.81	00„ 05„ 12.13
00„ 00„ 41.96	05„ 34.27
22.15	22 14

200.3
60.
140.3

23,38
cor − 7.08
0 5 16.30

June 10/11 Am.
M.T.G. 14„ 12„ 00
J.G. 00„ 29„ 06,8
19.20
00„ 29„ 26.50 5„ 12„ 58.53
5„ 13„ 45.27 46.74
5„ 13„ 45.27
19„ 15„ 41.23
3„ 09„ 33
19„ 12„ 31.90
19„ 12„ 00
31.90

June 11/12 Am.
M.T.G. 18„ 54„ 00
J.G. 00„ 14 58
22.15
00„ 15„ 20.15 5„ 16„ 55.45
5„ 17„ 41.63 46.74
18„ 57„ 38.32 5„ 17„ 41.83
3„ 06.38
18„ 54„ 31.96
18„ 54 00 00
31.96

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June 11/12 Am. Ill. West Ext. Therm. 61° EC — 23. 21. 0
DG — 23. 24. 2.2

rather unsteady

North	South	Zero	Level East	Level West
0.286	1.008	1.010	59.	63.+
284	1.004	.005	59	63+
271	1.010	.010	+63	58
0,286	1003	.010	+63	58
1127	025	4 035	244	242
.2817	1.0032	1.008	60.0	60.5
008	008		60.5	
0.273	0.995		.50	
2.3	2.3		.25	
819	2985		− .016	ter. = − 0.02
546	1990			
.6279n	2.2885 s			
	.6279 n			
	2.9164 s+n			
	1.6606 s−n			
	1.4582 $\frac{s+n}{2}$			
	.8303 $\frac{s-n}{2}$			

cal = − 1.384 + 1.458 = +.074
az = − .700 + 0.830 = +.130

cal +.074
az +.130
ter. −.016

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June 11/12 Sm.

J.G.

Polaris W.C.

00 " 38 " 20.0 −46

00 " 47 " 14.2 −

00 " 56 " 01.8 −

1 " 04 " 54.5

1 " 13 " 39.6

1 " 22 " 30.8

A 1 " 31 " 19.5

180,15
180
360.15

1 04 51.45

J. G.

o' Ceti

0 32.0

0 46.0

6 00.0

6 13.8

6 27.5

6 41.5

1 " 16 " 55.6

216.4

120

7) 96.4

13.77

1.67

1 " 16 " 12.10

June 12. Pm.

J. G. Arcturus

48.2

02.5

16.8

31.5 −

46.9

01.0

14 " 09 " 15.4

161.7
60
221.7

31.67

14 8 31.67

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June 12th

L.G. – 5.. 50.. 0
167 – 12.. 31 .07.5

12.. 31.. 07.5

5.. 50.. 00
22.6
5.. 50.. 22.6
5.. 21.. 38.39
.. 28.. 44.21
04.71
12.. 28.. 39 50
12 31.. 07.5
+2.. 28 .06
16
2.12

5.. 20.. 51.65
46.74
5.. 21.. 38.39

9.55.03.7
2.12
9.52.51.7
4.53
+8.3

by 167 00.52..12 = 12.50
0..56..12 = 12.54
0..57..12 12.55
1..01..12 12.59
1.. 02.. 00 1.00

by 167
left off at 1.. 03.. 12
" " 1.. 6. 12

left off at 12 each time

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June 12/13 Am.

J.G. α Andromeda	J.G. α Cassiopeia	J.G. β Ceti	J.G. Polaris
9..33	0 30.0	5 01.2	
9 48.5	0 54.5	5 15.5	Φ 00 47 13.5
0 04.2	1 18.9	5 29.7	ε 56 04.0
0 20.0	1 43.2	5 44.4	δ 1 04 54.5
0 33.4	2 07.5	5 58.8	c 1 13 41.0
0 51.2	2 32.0	6 13.3	B 1 20.5?
0 0 01 06.8	00 32 56.4	00 36 27.5	A 1 31 10.5
197.1	243.5	190.4	
60	60	120	
7)137.1	7)303.5	7)310.4	
19.58	43.36	44.34	
1.67	1.67	1.67	
00 00 17.91	00 31 41.69	00 35 42.67	
00 00 41.99	00 32 05.18	00 36 06.26	
24.08	23.49	23.59	

M.J.C. 19 26 00
J.G. 00 50 58.4
24.6
00 51 22.4
5 21 38.99
19 29 44.61
3 11.64
19 26 32.37
19 26 00 00
32.37

5 20 53 1.6 s
46.74
5 21 38.99

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(72) ×3/14 Am.

June 13/14

J.G. α Andromedæ	J.G. γ Pegasi	J G Polaris
9.34.1	4.29.7	00..38..19.5 − 4 Obs.
9.49.4	4.43.8	
0..04.0	4..57.5	/ 36..03.4
0..19.6	5..11.6	/ 04..34.8
0..35.5	5..26.0	
0..51.0	5..40.4	/
00..01..06.3	00..05..54.8	/ 31..15.0
1999	263.8	129 90.7
6	1	62 37.68
7)1994	7)83.8	2 12.72
19.96	11.97	/ 4 50.40
1.67	1.67	
00..00..18.91	00..05..10.30	
00..00..42.03	00..05..34.37	
23.72	24.03	

13/14 Am

11.7.G 19..12..00

J.G. 00..40..57.6	5..24..48.21	11.7.G 19..18..00
24.a	46.74	J.G. 00..46..53.8
00..41..21.6	5..25..34.95	24.0
5..25..34.95		47..17.8
19..15..46.65		25..34.95
3..09.34		21..42.85
19..12..37.31		3..09.34
12..00.0		18..33.51
~~37.91~~		18..00.00
		33.51

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11.36

June	2nd	slow	30.34 −0,18
"	3	"	30.52 −0.51
"	4	"	31.03 −0.44
"	5	"	31.47 +0.25
"	9	"	31.26 −0.64
"	16	"	31.90 −0.06
"	11	"	31.96 −0.41
"	12	"	32.37 −1.14
"	13	"	33.51 +0.03
	16	"	33.31 −0.25
"	17	"	33.57 −0.27
"	18	"	33.84 +0.01
"	20	"	33.82 −0.04
"	24	"	33.97 −0.02
"	25	"	33.99 −0.18
"	26	"	34.17 −0.18
	27	"	34.35 −0.28
"	29	"	34.64 −0.14
July	2nd		35.42 + 0.01
"	4		35.42 + 0.01
	7		35.62 − 0.07
	9		35.55 + 0,09
"	11		36.22 − 0.33
	13		36.52 − 0,15
"	14		36.66 − 0.14
"	16		36.51 + 0.07
	17		37.07 − 0.56
"	20		38.16 − 0.36
	21		38.52 − 0.66
"	22		39.90 − 0.48
"	25		42.05 − 0.39
Aug.	1		41.41 + 0.22
	7		44.11 − 0.49
"	15		45.56 − 0.20
"	18		45.55 − 0.00
	19		45.72 − 0,17
"	21		45.67 − 0.02

11.36.

Aug. 24 slow 46.47

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June 16 Pm

J.G. 12 Can. Ven.	Arcturus
7 43.4	7 41.8
8 01.0	7 56.5
8 18.8	8 11.0
8 36.6	8 25.8
8 54.4	8 40.3
9 11.9	8 55.0
12 49 29.7	14 09 09.7
14 4.8	240.1
60	60
7)254.8	7)180.1
36.40	25.73
1.67	1.67
12 48 34.73	14 08 24.06

June 16/17 Am

J.G. ad Andron	J.G. r Pegasi	J.G. B Ceti
9 27.5	4 24.0	4 55.8
9 43.8	4 38.3	5 10.3
9 59.0	4 52.5	5 24.4
0 14.5	5 06.8	5 39.0
0 30.0	5 21.0	5 53.5
0 45.5	5 35.0	6 08.0
00 01 61.2	00 05 49.4	00 36 22.0
291.0	227.0	213.0
120	180	60
7)1091.0	7)47.0	7)273.0
14,14	06.71	39.0
1.67	1.67	1.67
00 00 12.47	00 05 05.04	00 35 37.33
00 00 42,13	00 05 34.43	00 36 06.49
29,66	29.34	29,16

7)273
39

17h Am

M.J.C 19 10 00

J.G. 00 50 37.6

29.46

00 51 07.06

5 37 24.62

19 13 42.44

5 36 37.88

46.74

5 37 24.62

Sid clock 1 30 00

J.G 1 35 16.2

h m s

18 56 53.2384

12 57.87

41.88

.43

19 10 33.31

19 10 00

33.31

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(75)

June 16/17 Am.

J.G.
Polaris W.C.

00.. 38.. 14.5 -4 bb
00.. 47.. 10.5
00.. 55.. 57.0
1.. 04.. 47.5
1.. 13.. 35.5
1.. 22.. 25.0
1.. 31.. 10.5

2 0 198.5
1 8 0
3 0

1 4 45,50

17 Pm
J.G.
Spica

6.. 11.4
6.. 25.8
6.. 39.4
6.. 53.2
7.. 07.4
7.. 21.2
13.. 17.. 35.4

193.3
1 m
7) 3793
5533
1,67

13.. 16.. 51.66
13.. 17.. 21.96
30,30
col. + .07
al. + .10
lev. − .01
30,14

Ill West
J.G.
Polaris L.C.

B/2 47 09.5 -4 bb
C 55.. 59.0
D 04 47.0
13.. 37.5
13.. 22.. 24.5
13.. 31.. 21.0

17/14 Am.

M.G.C 19.. 40.. 00
J.G. 1.. 24.. 38.4
30.90
1.. 25.. 08.70
5.. 41.. 21.18
19.. 43.. 47.52

5.. 40.. 34.44
46.74
5.. 41.. 21.18

18.. 56.. 53.24
42.. 52.. 44
D. 46.87
.51
19.. 40.. 33.57
19.. 40..

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June 17/18 Am

unsteady

	J.G.	
	Polaris	U.C.
0	0 47 08.0	-4 bb
	0 55 39.0	
∅	1 04 50.5	
	1 13 36.5	
	1 22 20.8	?
A	1 31 10.5	

	J.C.	
	a trietis	
	7 33.2	
	7 48.4	
fair	8 03.5	
	8 18.0	
	8 33.1	
	8 48.0	
1	59 02.7	
	186.9	
	60	
7)	126.9	
	18.13	
	1.67	
1	58 16.46	
1	58 46.76	
	30.30	

18 Pm

	J.G.	
	Arcturus	
	7 39.3	
	7 54.2	
+20°	8 08.8	
	8 23.2	
	8 38.0	
	8 52.4	
14	09 07.0	
	222.4	
	60	
7)	162.9	
	23.27	
	1.67	
14	08 21.60	
	col. +.07	
	Dec. +.05	
	Inv. -.01	
14	08 21.71	
14	08 53.07	
	31.36	

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June 18/19 Am

J.G. α Cassiopeæ	
0	22.0
0	46.6
1	11.0
1	35.0
1	59.4
2	24.0
60 32	48.2
	246.2
	000
7)246.2	
	35.17
	1.67
00 31	33.50
00 32	05.44
	31.94

19 Pm.

J.G. Ypsilon	
6	08.3
6	22.4
6	36.3
6	50.4
7	04.2
7	18.3
13 17	32.0
	171.9
	18m
2)3351.9	
	50.27
	1.67
13 16	48.60
13 17	21.94
	33.34

18/19 Am.

M.T.C. 18 49 00
J.G. 00 37 25.2
31.94
00 37 57.14
5 45 17.73
18 52 39.41

5 44 30.99
46.84
5 45 17.73

17 57 03.07
51 51.48
38.89
.40
18 49 33.84
18 49 00

19/20

M.T.C. 20 07 00
J.G. 1 55 32.7

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June 20/21 Sm

J.G. a Andromedae	J.G. γ Pegasi
9 20	4 16.6
9 35.7	4 30.9
9 51.2	4 45.0
0 07.4	4 59.3
0 23.0	5 13.3
0 38.0	5 27.5
00 00 53.5	00 05 41.7
298.8	234.3
1 sw	1 sw
7) 488	7) 414.3
06.97	59.18
1.67	1.67
00 00 05.30	00 04 57.51
00 00 42.26	00 05 39.55
36.96	37.04

20/21 Sm

M.J.C 18 22.00

J.G 00 18 08.8 5 52 24.11

37.00 46.74

00 18 45.80 5 53 10.85

5 53 10.85

18 25 34.95

17 57 03.07

24 55.90

33.91

44

18 22 33.82 M.J.C. slow 33.82

18 22 00 00

Sid. clock 1 5 1.00

J.G 1 58 03.2

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June 24/25 Am.
J.G.

	α Pegasi	α Andromeda
	3" 59.8	9" 03.5
	4" 14.0	9" 18.8
	4" 28.0	9" 34.5
	4" 42.0	9" 50.0
	4" 56.3	0" 05.5
	5" 10.5	0" 21.0
	00" 05" 24.7	00" 00" 36.5
	236.3	169.8
	60	180.0
7	296.3	7 | 349.8
	42.33	49.97
	1.62	1.67
	00" 04" 40.66	23" 59" 48.30
	00" 05" 34.67	00" 00" 42.35
	5401	"5408

June 25/26 Am.
J.G.

	δ Ceti
	4" 55.3
	5" 09.7
	5" 23.6
	5" 37.4
	5" 51.3
	6" 05.5
	1" 16" 19.2
	202.0
	60
7	262
	37.43
	1.67
	1" 15" 35.76
	1" 16. 34.67
	58.91

Jun 24/25 Am.

M.T.G. 17" 30" 00
J.G. 23" 41" 29.6
54.04
23" 42" 23.64
6" 08" 57.08
17" 33" 26.56
16" 59" 12.40
32" 54" 59
25.93
.55
17 30" 33.97
17" 30" 00 00
33.97

24/25 Am

Sid. clock 23" 43" 00
J.G. 23" 51" 33.4

6" 08" 10.34
46.74
6" 08" 57.08

M.T.G slow of Camb. 33.97

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(80)

June 26/27 Am

J.G.
α Arietis

6.. 54.5
7 14.1
7 29.0
7 44.2
7 59.4
8 14.0
1.. 58.. 29.0
249.2
6 16
7)309.2
44.17
1.67
1.. 57.. 42.50
1.. 58.. 47.65
1.. 04.15

J.G.
α Persei

1.. 36.0
1.. 56.8
2.. 18.0
2.. 39.1
3.. 00.0
3.. 21.2
3.. 13.. 42.2
213.5
6 c
7)273.3
39.04
1.69
3.. 12.. 37.37
3.. 13.. 42.09
1.04.72

June 28 Pm

J.G.
β Libra

7.. 09.8
7.. 23.6
7.. 37.5
7.. 51.2
8 05.5
8 19.2
15.. 08.. 33.0
189.8
12
7)359.8
51.40
1.67
15.. 07.. 49.73
15.. 09.. 01.15
1.11.42

13
3
3.9

24/70 C.B
45
27.4

June 25/26 Am

M.J.G. 19.. 56.. 00
J.G. 14 .. 11.. 45.2
55
01 12.. 44.2
6.. 12.. 53.64
19.. 59.. 50.56

6.. 12.. 06.90
46.54
6.. 12 59 64

16.. 56.. 53.24
56.. 50.33
49.76
55
19.. 56.. 33.99
19.. 56.. 00.00
33.99

June 26/27 Am

M.J.G 19.. 33.. 00
1.. 52.. 32.6
1.. 04.55
1.. 58.. 37.15
6.. 16.. 50.19
19.. 36.. 46.96

6.. 16.. 08.45
46.54
6.. 12 50 19

16.. 56.. 53.24
35.. 54.10
45.87
.96
16.. 33.. 34.17
16.. 33.. 00.00
34.17

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(81) (82)

June 29/30 Atm

J.G.
α Aurigae
6 40.0
6 54.8
7 09.8
7 24.5
7 39.6
7 54.5
1 58 69.2
23 1.4
60
7) 121.4
24.48
1.67
1 57 22.81
1 56 47.14
1 24.33

30 Pm.
J.G.
η Bootis
5 40.4
5 54.6
6 09.0
6 23.7
6 38.2
13 46 52.3
166.1
120
5) 46.1
09.22
1.67
13 46 07.55
13 47 36.29
1 28.74

June 27/28

M.J.G. 19 41 00
J.G. 2 04 25.9
1.09.80
2 05 34.70
6 20 46.75
19 44 48.45
9 14 1
18 56 53.24
43 52.75
47.85
45
19 41 34.87

6.20 00.01
4674
6 20 46.75

29/30 Atm.

M.J.G. 18 20 00
J.G. 00 50 51.6
1 24.00
00 52 15.60
6 28 35.87
18 23 35.73
9 0 8
17 57 03.08
22 36.29
34.90
.78
18 20 34.24
18 20 00.00
34.24

6 27 59.12
46.24
6 28 35.87

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July 1st Pm.

J G.
β Libra
6 " 40.8
6 " 55.0
7 " 09.0
7 " 23.0
7 " 36.7
7 " 50.3
15 " 08 " 04.2
219.0
60
7) 559.0
22.71
1.67
15 " 07 " 21.04
15 " 09 " 01.13
1 " 40.09

July 1/2 Am

J G.
α Aietis
8 " 20.4
8 " 35.2
8 " 49.8
7 " 04.7
7 " 19.5
7 " 34.2
1 " 57 " 49.1
212.9
180
7) 32.9
04.7
1.67
1 " 57 " 03.03
1 " 58 " 47.20
1 " 44.17

July 2nd Pm.

J G.
β Leonis
5 " 8.4
13.0
27.0
41.2
55.4
09.5
11 " 40 " 24.3
228.8
60
288.8
11 39 41.26

July 1st Am

M.T.G. 20 " 05 " 00
J.G. 2 " 39 " 56.0

July 2 Am

M.T.G. 18 " 22 " 00
J.G. 1 " 00 " 25.7
1 " 43.88
1 " 02 " 09.58
h m s
6 " 35 " 46.24
46.74
6 " 36 " 32.98
6 " 36 " 32.98
18 " 25 " 36.60

17 " 57 " 03.03
24 " 55.40
35.40
.60
18 " 22 " 35.47
18 " 22 " 35.47 Mean

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July 2nd Pm

J.G.

β Librae

6 30.3 – obs

6 44.2

6 58.4

7 12.1

7 26.0

7 40.0

15 07 54.1

25.1

100

7) 85.1

12.16

– 0.00

15 07 12.16

15 09 01.12

1 48.96

July 2/3 Am.

J.G.

α Virginis

49.2

5 03.2

5 17.4

5 32.0

5 46.2

4 26 00.6 cloud

99.4

60

57) 1359.4

31.88

– 1.67

4 25 30.21

4 27 22.05

1 51.84

148.6

24.73

cor + 7.14

5 17.87

4 25 31.91

July 2/3 Am

M.T. 6, 20 15 00

J.G. 2 57 53.2

1 50 8

2 59 24.0

6 40 24.54

20 18 54.46

19 56 43.41

17 57 05

53.65

.42

20 15 34.77

6 39 42.70

4674

6 40 29.54

July 4/5 Am.

M.T. 19 36 00

J.G. 2 26 13.3

1 58.00

2 28 11.30

6 48 22.65

19 39 48.65

3

18 56 33.24

38.61

47.82

90

19 36 35.42

19 36 00.00

6.47.35.91

4674

6 48 22.65

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July 4/5 Aur

	α Cet		α Persei
1	52.4	0	42.3
2	05.7	1	03.8
2	19.6	1	25.0
2	33.2	1	46.3
2	46.8	2	07.2
3	00.6	2	28.0
2 h 55 m	14.1	3 h 12 m	49.0
	172.4		201.6
	60		120
2)	2932.4	2)	321.6
	33.20		45.94
	1.67		1.62
	2 h 52 m 53 s		3 h 11 m 44.27 s
	2 h 54 m 29.68 s		3 h 13 m 42.40 s
	1 m 58.15 s		1 m 58.13 s

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July 5 PM. Ext Thes +75°

(2n dec mark)

Meridian Marks

North	South
0.240	1.061
235	055
230	050
224	060
235	1,058
1164	1284
0.231	1.057

bad seeing

.5 Zero

1 010
018
021
012
056
1.014

Level

East	West
+54	50
+55	49
+54.5	49
46.4	+56.5
46.	+56.0
46.	+56
301.9	316.5
50.32	52.75
	50.32
West too high	2.43
	1.215
	+.061

B

North	South
0.235	1.050
0.230	1.048
0.240	1.040
0.220	1.040
0.235	1.047
0.232	5
.014	1.043
0.218	.014
2.3	1.029
654	2.3
496	3087
5014	2058
	2.3667 s
	.5014 n
	2.8681 s+n
	1.8659 s−n
	1.4340 $\frac{s+n}{2}$
	.4326 $\frac{s-n}{2}$

rate of 1.4 − 6.4

cal = +0.05
az = +0.23
lev = +0.08

cal = −1.384 + 1.434 = +0.050
az = −.700 + .933 = +0.233

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July 5 Bon.

J.G. × η Virginis	J.G. β Corvi	J.G. × γ Virginis	J.G. 12 Can Ven ×	J.G. Moon's I limb
9 38.4	3 52.5	1 28.2	6 12.5	2 11.1
9 52.4	4 07.4	1 42.1	6 30.3	2 25.3
00 10 06.2	−29° 4 22.1	− 1° 1 56.0	+39 6 48.0	∓ ou 2 39.1
0 20.0	4 37.0	2 09.7	7 06.0	2 53.2
0 33.8	4 52.2	2 23.4	7 25.2	3 07.3
0 47.5	5 07.1	2 37.0	7 41.2	3 21.4
12 11 01.0	12 25 21.8	12 32 51.0	12 47 59.0	12 53 35.4
1998	200.2	247.4	220.2	192.8
60	60	180	180	180
7)1398	7)2602	7)67.4	7)40.2	7)372.8
19.97	37.17	09.63	05.74	53.26
1.67	1.67	1.67	1.67	1.67
12 00 18.30	12 24 35 50	12 32 07.96	12 47 04.07	12 52 51.59
col +.05	col. +.05	col. +.05	12 49 col +.06	col. +.05
az +.15	az +.25	az. +.15	1 az +.02	az. +.15 .06
lev +.06	lev +.04	lev. +.06	lev. +.10	lev. +
12 00 18.56	12 24 35.82	12 32 08.22	12 47 04.25	12 52 51.75
1 58.79	12 26 34.66	1 59.18	12 49 03.30	1 59.26
12 12 17.35	1 59.34	12 34 07.40	1 59.05	12 54 51.01
12 12 17.35	.05	12 34 07.33		
.00	.19	.07		

July 5

	Sid. Time	Tab. Alt	
η Virginis	12h 12m 17.35	17.35	.00
γ Virginis	12 34 07.40	07.33	−.07
Moon's I limb	12 54 51.01		
ζ Virginis	13 27 07.47	07.15	−.32

lev +.081
coll +.050
az +.233

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July 5 Sm.

J. G.

3 Virginis x

4,, 28.3
F 00 4,, 42.0
4,, 56.0
5,, 09.8
5,, 23.2
5,, 37.0
13, 25,, 50.5
246.8
180
7) 66.8
09.54
1.67
13,, 25,, 07.87
cal. +.05
az +.15
lev. +.06
13 25,, 08.13
1,, 59.34
13,, 27,, 07.47
13,, 27,, 07.15
.32

July 7 Sm.

J. G.

b Leonis

x 8,, 41.2
8,, 55.3
9,, 09.4
9,, 23.4
9,, 37.5
9,, 51.8
11,, 40,, 06.0
224.6
60
7) 164.6
23.51
1.67
11,, 39,, 21.84
11,, 41,, 27.44
2,, 05.60

J. G.

Spica

4,, 35.6
4,, 49.1
5,, 03.3
5,, 17.0
5,, 31.2
5,, 45.0
13, 15, 59.2
240.4
120
7) 120.4
17.20
1.67
13,, 15,, 15.53
13,, 17,, 21.75
2,, 06.22

J. G.

η Bootis

4,, 46.0
5,, 02.5
5,, 17.0
5,, 31.5
5,, 46.3
6,, 01.2
13,, 46,, 15.0
161.5
60
7) 221.5
31.64
1.67
13,, 45,, 29.97

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July 7 P.m.

	J.G. Virginis	J.G. Arcturus	λ Virginis	ε Bootis
6 W.ob. 9 H. Sade.	2 10.0 — obs	6 02.5 — obs	— obs.	5 36.8 — obs
	2,23.8	6 17.0		5 52.1
	2,37.8	6 31.8		6 08.0
	2,51.8	6 46.5	58,1	6 23.2
	3.05.7	7 01.0	11,8	6 38.9
	3.19.6	7 15.6	25,9	6 54.4
	14 03 33.5	14 07 30.2	14 09 40.0	14 37 09.8
	182.2	144.6		223.2
	180	180		60
	7)362.2	7)324.6		7)163.2
	14 02 51.74	14 06 46.37		14 36 23.31
	1.67			
	14 02 50.07			

ε = 55.8
cor = − 84.59
4)51.21
12,80
14 08 57.80

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Moon's July 7 Sm.

D. G.

Moon's I limb

50.8 - obs
05.0
19.7
40 " 33.8
14 " 40 " 48.2
19.40
1.64 cor.
14 40 4.76

J G

β Librae

6. 12.9 - obs
6 " 27.2
6 " 40.8
6 " 54.4
7 " 08.4
7 " 22.3
15 07 " 36.3
202.1
180
7) 382.1
15 " 06 " 54.58

J G

α Serpentis

A
3 " 23.1 - obs B
4 " 36.9 b
4 50.8 D
5 " 04.7 E
5 " 18.4 7
15 " 35 " 32.0 9.
Σ = 165.9
cor = - 41.57
4) 124.33
20.72
30
15 " 34 " 50.72
1.67

B' Scorpii

3 " 58.1 - obs
4 " 12.5
4 " 27.2
4 " 41.6
4 " 56.5
5 " 11.0
15 " 55 " 25.3
232.2
60
7) 292.2
41.74
1.67
15 " 54 " 41.74
15 " 56 " 48.57
2 " 06.83

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(90)

July 8[t]

Capella

194 4 .. 46.0
5 .. 7.4
5 . 27.4
5 . 47.3
6 .. 07.1
6 . 26.5
5 .. 06 .. 46.2
7 40 .. 29.9
5 .. 05 .. 47.13
$\frac{1}{2}$
5 . 05 .. 45.13
5 .. 05 .. 40.69
4.44

194 — 5 .. 9 .. 0
S.G — 5 .. 6 .. 48 - 47.8

194 — 5 .. 52 .. 0
SC — 5 .. 11 .. 54.8

194 5 . 10 .. 0
167 — 10 .. 9 .. 25.2

194 — 5 .. 14 .. 0
MJC — 22 .. 9 .. 28.7

194 fast Canal. hid. time — 4.44 gain 1.1

6 .. 17 . 25.5[t]
46.34
7 00 . 12 . 32

194 — 5 . 14 . 0
— 4.41
29 . 13 .. 55.56
7 .. 00 .. 12.32
22 . 13 . 43 . 24
21 . 56 .. 23.75
12 . 57 . 87
42.86
.24
22 .. 10 .. 04.74
MJC — 22 . 9 . 28.7
Cam. — 36.0
16
Bos. — 52.0

July 7/8 Am.

M.J.C. 18 .. 38 .. 00
194 1 .. 41 .. 56.5
08.0
1 .. 41.48.5
7 .. 00 .. 12.32
18 .. 41 .. 36.18

17 .. 57 .. 03.07
40 .. 53.28
36.40
.18
1838.92.39
249

6 .. 59 .. 25.58
46.74
7 .. 00 .. 12.32

July 7/8 Am.

1 .. 41.56.5
3.8
1 .. 41 .. 52.7
7 .. 00 .. 12.32
14 .. 41 .. 40.38

17 .. 57 .. 03.07
40 .. 53.28
36.62
18 .. 38 .. 00
36.62 MJC slow

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July 9/10 atm

J.G.
a Tauri
very faint
4.21.3
4.35.5
4.49.7
5.04.2
5.18.3
5.32.5
4. 25.46.9
208.4
160
7)28.4
4.25.04.06
4.27.22.29
2.18.16
1.67
2.19.83

04.06
1.67
4.25.02.39
4.27.22.29
2.19.83 J.G. clear

July 11 Pm.

J.G.
× a Leonis
08.5
— clouds
36.5
50.4
04.5
18.6
9.58.32.5
Σ = 157.0
corr = −28.15
6)122.85
20.47
30.1
50.47
1.67
9.57.48.50

J.G.
× Arcturus
5.33.2
5.47.5
6.02.0
6.16.5
6.31.2
6 45.9
14.07 00.5
176.8
60
7)116.8
16.68
1.67
14.06.15.01

July 9/10

M.J.G. 21.21.00
J.G. 4.30.57.7
2.19.88
4.33.11.58
7.68.05.44
21.25.06.09
3.20.54
20.56.33.55
24.55.90
5.98
.09
21 21 35.55
21 21 00.00 M.J.G. slow 35.55

7.7.18.70
46.74
7.08.05.44

July 11 Sm

M.J.G. 4.13.00
J.G. 11.27.38.8

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July 11 P.m.

	J.G. × α Coronæ Borealis	J.G. α Herculis	J.G. α Ophiuchi	J.G. × 4 Sagittarii	J.G. μ' Sagittarii
	5h 01.0	33.4	44.0	7m 22.0	32.5
	5h 17.0	48.0	58.3	7m 37.2	47.0
	5h 32.5	05h 02.2	12.5	7m 52.5	02.0
	5h 48.1	16.3	26.5	8h 07.6	02 16.7
	6h 03.5	30.4	40.4	8h 22.4	31.3
	6h 19.2	45.0	54.7	8h 37.5	46.2
	15h 26m 34.6	17h 05m 59.3	17h 26m 08.9	17h 48m 52.3	18h 03m 01.0
	15 5.9	2346	2453	2315	1767
	1 8	120	120	180	60
	7)333.9	7)1146	7)1853	7)515	7)577
	47.98	7.80 16.37	17h 25m 26.47	7.36	7)16.7 8.10
	1.67	1.67 1.67	1.67	1.67	16.67
	15h 23m 46.31	17h 05m 31 16.13 14.70	17h 25m 24.80	17h 48m 5.69	1.67
					18h 2m 15.00

Coll +0.05
Nz .22
Lo +.09

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July 11 Pm.

J.G. Moon's L Limb	J.G. α Lyræ
11.6	26.1
26.5	43.8
42.4	29 01.0
21.57.4	18.2
13.0	36.0
28.1	54.7
18, 22, 43.5	18, 30, 11.9
2225	1911
180	66
7)4025	7)1311
57.50	18, 29, 18.73
1.67	1.67
18, 21, 55.83	18, 29, 17.06

July 11/12 Am

J.G. 2 Ceti	J.G. α Ceti
2, 16.6	1 11.5
2, 30.4	1 25.0
2, 44.2	1 39.0
2, 58.0	1 52.8
3, 11.6	2 06.2
3, 25.4	2 19.8
2, 33, 39.1	2, 52, 33.4
225.3	187.5
180	180
7)405.3	7)367.5
57.90	52.50
1.67	1.67
2, 32, 56.23	2, 51, 50.83
2, 35, 35.28	2, 54, 29.83
2, 39.05	2, 39 02

J.G. Lösung. $\overset{s}{4}.63$

July 11/12 Am

11. J.G. 19, 25.00
J.G. 2, 42, 07.2
2, 39.05
2, 44, 46.25
7, 15, 58.55
19, 28, 47.70
18, 56, 53.24
27, 55, 41
46.87
19, 25 36.22
19, 25, 00.00
36.22

7, 15, 11.01
46.74
7, 15, 58.55

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July 12 Pm

J. G. α Lyræ	J. G. β Lyræ
24.1	08,3
42.0	25.0
59.6	41.2
16.7	57.6
34.6	14.0
52.0	30.8
18,, 30,, 08,1	18,, 42,, 47.0
238.1	223.9
180	180
58.1	43.9
16,87	03.9
18 29 16.87	18 41 57.70

Noon culmination lost on account of clouds

July 13/14 Am

J. G. ε Arietis
5,, 21.3
5,, 36.1
5,, 51.2
6,, 06.2
6 21.0
6 35.8
1,, 56,, 50.5
222.1
1 hr
7) 42.1
06.01
1,67
1,, 56,, 04.34
1,, 58,, 47,, 59
2,, 43,, 25

July 13/14 Am.

M.T.C. 18,, 10,, 00
J.G. 1,, 34,, 44.1
2,, 43.25
1,, 37,, 27.35
7,, 23,, 51.67
18,, 13,, 35.68

7,, 23,, 04.93
46.74
7,, 23 51 67

17,, 57,, 03,07
12,, 57,47
34.90
.68
18,, 10,, 36,52
18,, 10,, 00 00
36,52 M.T.C. slow

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July 13/14 Am.

J.G.
2 Ceti

2.. 12.3
2.. 26.1
2.. 40.0
2.. 53.8
3.. 07.4
3.. 21,2
2.. 33.. 35.0
195,8
180
7)375,8
53.68
1,67
2.. 32.52.01
2.. 35.. 35.31
2,, 43.30

J.G.
a Ceti

1.. 20.5
1.. 34.5
1.. 48.3
2.. 02.0
2.. 15.5
2.. 52.. 28.8
120.8
120
5)240,8
48.16
1,67
2.. 51.. 46.49
2.. 54.. 29.91
2,, 43,42

July 14 Pm.

J.G.
Spica

3.. 56.2
4 10.3
4.. 24.1
4.. 38.2
4.. 52.0
5.. 06.3
13.. 15.. 20.0
207.1
60
7)267,1
38.15
1.67
13.. 14.. 36.48
13.. 17.. 21.67
2.. 45.19

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1851phae.proj...97

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1854phae.proj.... 91

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1954phae.proj. . . 91



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