KG
11366
v. 501

12
H1
879

Fundamental Stars.
Observations and Reductions

B6

From Sept. 11 to Oct. 13 1879

772

S

Sun C = 46.926

h m s
11 21 32
+4° 9′ 0.15854

1879 Sept 11–12

+20.69 18.89 21 58.30
18.61 19.11 96.14 0.50 2602
16.56 19.23 19.228 2.67 2.60
14.83 19.50 4.67
12.44 19.31 31301 6.87
1301
8.27 21.42 21.42 13.15
21.42 —
—
—
—
—
—
—
—
—
—
—
+18.62 19.88 39.13 38.50
20.75 19.26 19.565 40.00 22 19.59

20.071
19.586

Sec Min

187 α Boötis

h m s
14 10 8
+19° 49′

0.15854

11 44.28
46.40 48.648
48.56 48.65
51.00
24324 53.00
24324
57.48
59.62
1.80
4.05 6.220
6.27 6.22
8.47 6.17
10.67
12.72
59598 14.90
5598
19.30
21.55 23.690
23.66 23.69
25.78 13234
11845 28.16
1845 6.18

11 33.2
35.5
37.6
40.1
1885 42.1
1885
37.70
+ 28.48

37.70

14 10 10.50

R 39 54.07
R 39 53.95
R 39 54.10

39 54.03 4
19 48 39.6

		222					228		
		δ Ophiuchi				β Herculis			
		h m s				h m s			
		16 8 0				16 25 1			
		−3° 23′		0.15854			+21° 45′		0.15854
1879		Sept. 12							
	9 37.70		9 32.6		26 —				
	39.74	41.796	34.0		—				
	41.74	41.79	35.8		—				
	43.80		37.3		—				
20898	46.00		1787 39.0		—				
	20898		287						
	50.03		3574		—				
	52.18		+ 22.59		—				
	54.20				—				
	56.30	58.351			—				
	58.30	58.35			—		27 24.8		
	0.43	58.31			—		25.9	27.74	
	2.47				—		27.5	27.74	
	4.60				—		29.6		
52516	6.65				—		1387 30.9		
	52516				27		27 1387		
	10.75			−13.33 59.27	256.64 12.60		27.74		
	12.77	14832		15.55 59.30	59.328 14.85	17.110	− 14.54		
	14.79	14.83		17.78 59.34	17.12	17.11			
	16.85	11662		19.96 59.42	19.38				
7416	19.00		35.74	22.29 59.31	8555 21.60		27.74		
	2416	9 58.330	+ 22.59		3555				
				59.328					

R 52 4.02 R 44 34.40

R 52 4.00 R 44 34.27

30

β Arietis

h m s
1 47 37

° ′
+20 13

1.17609 0.15854
9.97238
1.14847

1879 Sept. 14

49 29.37
41.60
43.76
45.96
21886 48.17
1886
52.53
54.60
56.82
59.00
1.28
3.50
5.70
7.80
55123 10.00
1123
14.54
16.70
19.00
21.15
9469 23.30
9469

43.772
43.77
1248
1.25
1.36
18.938
18.94
12271
50 1.305

49 30.8
32.3
34.0
36.0
1706 37.5
206
49 3412
+ 27.18
50 31.5
32.8
34.4
36.3
1733 38.3
233
50 3466
− 33.36
49 34.12
50 34.66
+ 27.18
− 33.36
60.54
1.78204
1.14847
2.93051
1.91482
8.98431
5 30 33

~~2 0 26.68~~

M 15 13.60
M 16 35.50
R 16 36.00
R 16 35.78
M 16 35.87
16 35.76
82.49

~~22 53 45.2~~

33

α Arietis

h m s
2 0 21

° ′
+22 53

1.17609 0.15854
9.96440
1.14049

2 2.85
5.10
7.30
9.53
3660 11.82
3660
16.29
18.63
20.80
22.98
25.20
27.50
29.78
32.00
22737 34.19
22737
38.65
40.95
43.23
45.37
21585 47.65
1585

7.320
7.32
25.263
25.26
25.24
48.170
43.17
5049
2 25.250

1 53.2
55.0
56.4
58.0
2822 59.6
322
1 5644
+ 28.81
2 58.2
59.7
1.2
3.0
3070 4.9
70
3 140
− 36.15
1 56.44
3 1.40
+ 28.81
− 36.15
64.96
1.81265
1.14049
2.95314
1.93932
8.98618
5 31 58

20 25.68

M 34 50.90
M 36 17.82
R 36 17.87
R 36 17.90
M 36 17.85
36 17.86
86.96

22 53 45.2

198

β Urs. Maj. L. C.

h m s
14 57 4

° ′
+105 21

0.15854

51 37.30
45.00
53.10
0.60
26464 8.64
26464
23.63
31.70
39.40
47.65
55.30
3.18
10.80
18.72
49694 26.56
49694
41.83
49.60
57.67
4.78
28688 13.00
28688

52.928
52.93
55216
55.29
55.06
57.376
57.38
11031
52 55.225

0.15854

51 39.4
48.1
53.7
1412
47.1
53 20.8
25.5
32.2
38.0
1613 44.8
1613
53 3226
− 37.04
53 32.26
− 37.04

52 19.0
24.6
28.8
35.3
1495 41.8
1495
52 29.90
+ 25.32
54 22.0
28.8
33.7
39.4
1700 46.1
1700
54 3400
−1 38.78
52 29.90
54 34.00
+ 25.32
−1 38.78
124.10
2.09377

M 10 54.78
M 10 38.12
M 10 13.95
M 9 50.45

1879

Sept. 14

47

α Ceti

h m s
2 35 57
° ′
+3 37

1.17609 0.15854
9.99913
1.17522

57 39.67		57 39.0	
41.84	43858	40.3	
43.86	43.86	42.1	
45.88		43.3	
21929 48.04		2100 45.3	
21929		100	
52.75		57 4200	
54.70		+ 18.32	
56.12			
58.26	0299		
0.26	0.30	58 35.8	
2.40	0.35	37.2	
4.40		39.0	
6.50		40.2	
54269 8.50		1938 41.6	
269		1938	
12.75		58 38.76	
14.80	16840	− 3844	
16.90	16.84		
18.90	12070		
8420 20.85		57 42.00	
8.420	58 0.325	58 38.76	
		+ 18.32	
		− 38.44	
		56.76	
2 56 1.24		1.75404	
		1.17522	
		2.92926	
		1.90622	
		8.97696	
		5252	

M 51 7.05
M 52 27.80
R 52 27.75
R 52 27.45
M 52 27.52
52 27.63
80.58

37 142

56

ε Eridani

h m s
3 27 14
° ′
−9 52

1.17609 0.15854
9.99353
1.16962

29 55.21		29 47.3	
57.40	59450	49.3	
59.50	59.45	50.9	
1.50		52.6	
29725 3.64		2543 54.2	
29725		43	
7.90		29 5086	
10.08		+ 2535	
12.10			
14.19	16231		
16.27	16.23	30 43.5	
18.30	16.19	45.0	
20.37		46.3	
22.40		48.0	
14608 24.55		2323 49.5	
14608		323	
28.70		30 4646	
30.87	32938	− 3075	
32.90	32.94		
35.00	15239		
16469 37.22		29 50.86	
16469	30 16.210	30 46.46	
		+ 25.35	
		− 30.25	
		5560	
		1.74507	
		1.16962	
		2.91469	
		1.89713	
		8.98244	
		5299	

M 19 25.65
M 20 44.47
R 20 44.60
R 20 44.55
M 20 44.62
20.44.56
78.91

550

δ Eridani

h m s
3 37 30
° ′
−10 11

1.17609 0.11854
9.99310
1.16919

40 8.55		39 58.5	
10.68	12746	0.3	
12.75	1275	2.0	2.02
14.85		3.8	
6373 16.90		3101 5.5	
6373		101	
21.14		40 202	
23.20		+ 2756	
25.36			
27.47	29547		
29.50	29.66	40 58.3	
31.60	29.50	0.2	
33.75		2.0	2.02
35.85		3.9	
26592 38.05		3101 5.7	
26592		101	
42.00		51 202	
44.20	46250	− 3244	
46.20	46.25		
48.45	5900		
23125 50.40		40 2.02	
23125	40 29.580	41 2.02	
		+ 27.56	
		− 32.44	
		60.00	
		1.77815	
		1.16919	
		2.94734	
		1.92428	
		8.97694	
		5252	

M 37 42.10
M 39 6.15
R 39 6.22
R 39 5.97
M 39 6.07
39 6.10
84.00

63

ζ Persei

	h m s			
	2 46 32		1.17609	0.11854
	+31° 31'		9.93069	
			1.10678	
	49 11.78		49 0.5	
	14.20	16600	2.0	
	16.65	1660	3.2	
	19.02		5.0	
8300	21.35		178 7.1	
	8300		178	
	26.38		49 3.56	
	28.79		+ 32.42	
	31.11			
	33.67	35.959		
	35.90	35.96	50 5.7	
	38.28	36.01	8.2	
	40.70		10.0	
	43.20		12.4	
32363	45.70		504 14.1	
	32363		504	
	50.60		50 10.08	
	53.00	55.434	− 34.10	
	55.42	55.43		
	57.85	7203		
27717	0.30		49 3.56	
	27717	49 35.985	50 10.08	
			+ 32.42	
			− 34.10	
			66.52	
			1.82295	
			1.10678	
			2.92973	
			1.91334	
			8.98361	
			5 30 2	

M 57 10.12
M 58 32.00
R 58 32.02
R 58 32.00
M 58 32.12
58.32.03
81.91

226

η Draconis L. 6

		h m s			
		16 22 21		1.17609	0.11854
		+118° 13'		9.67468	
				0.85077	
	24 23.66		24 18.3		
	27.85	32138	21.2		
	32.00	32.14	24.7		
	36.40		27.3		
16069	40.78		1241 32.6		
	16069		1241		
	49.68		24 24.82		
	54.20		+ 42.56		
	58.66				
	3.00	7.441			
	7.25	7.44	25 18.2		
	11.90	7.32	21.7		
	16.28		26.4		
	20.78		29.3		
60697	25.22		1289 33.3		
	6697		1289		
	33.80		25 25.78		
	38.00	42490	− 18.46		
	42.50	42.49			
	46.87	13463			
21245	51.28		24 24.82		
	21245	25 7.380	25 25.78		
			+ 42.56		
			− 18.40		
			60.96		
			1.78604		

wrong star
M 32 16.47
M 32 34.37

73

α Tauri

				0.11854
		h m s		
		4 28 59	1.17609	
		+16° 16'	9.98226	
			1.15835	
	31 40.55		31 34.3	
	42.77	44.894	36.0	
	44.80	44.89	37.5	
	47.15		39.0	
22447	49.20		1878 41.0	
	2447		1878	
	53.48		31 37.56	
	55.53		+ 24.43	
	57.70			
	59.80	1.967		
	1.87	1.97	32 29.6	
	4.05	2.01	31.5	
	6.28		33.2	
	8.32		34.9	
55770	10.67		1661 36.9	
	1770		161	
	14.80		32 33.22	
	17.00	19.132	− 31.23	
	19.17	19.13		
	21.26	12402		
9566	23.43		31 37.56	
	9566	32 1.990	32 33.22	
			+ 24.43	
			− 31.23	
			55.66	
4 29 2.53			1.74554	
			1.15835	
			2.90389	
			1.88389	
			8.98000	
			5 27 19	

M 12 26.62
M 13 42.90
R 13 43.35
R 13 43.17
M 13 43.15
13 43.16
76.54

16 16 7.6

84 Lee Min.

1879 Sept. 14

β Eridani

h m s
5 1 54

° '
−5 15

1.17609
9.99817
1.17427

0.15854

	4 35.60		4 30.2
	37.66	39.698	32.3
	39.60	39.69	33.6
	41.83		35.0
19849	43.80		1683 37.2
	19849		183
	48.00		4 33.66
	49.95		+ 22.56
	52.10	56241	
	54.26	~~55130~~	
	56.26	56.24	5 23.7
	58.40	56.20	25.2
	0.38		26.3
	2.34		27.2
50617	4.48		1307 28.3
	50617		307
	8.58		5 26.14
	10.52	12712	− 29.92
	12.76	12.71	
	14.70	11240	
6356	17.00		4 33.66
	6356	4 56.220	5 26.14
			+ 22.56
			− 29.92
			52.48
			1.71999
			1.17427
			2.88726
			1.87349
			8.98623
			5 32.1

M 42 19.52
M 43 34.32
R 43 34.30
R 43 33.97
M 43 34.40
43 34.25
74.73

87

β Orionis

h m s
5 8 43

° '
−8 21

1.17609
9.99537
1.17146

0.15854

	11 24.50		11 26.3
	26.70	28.760	28.4
	28.90	28.76	30.1
	30.75		32.1
14380	32.95		1504 33.5
	14380		04
	37.00		11 30.08
	39.20		+ 15.32
	41.20		
	43.27	45411	
	45.40	45.41	12 12.2
	47.50	45.40	13.5
	49.63		14.7
	51.70		16.0
40870	53.80		736 17.2
	40870		736
	57.80		12 14.72
	59.90	2.040	− 29.32
	2.00	2.04	
	4.25	9080	
31020	6.25		11 30.08
	1020	11 45.405	12 14.72
			+ 15.32
			− 29.32
			44.64
5 8 46.56			1.64972
			1.17146
			2.82118
			1.79865
			8.97747
			5 25.25

M 48 16.42
M 49 19.32
R 49 19.22
R 49 19.45
M 49 19.30
49 19.32
62.90

8 20 15.4

90

β Tauri

h m s
5 18 39

° '
+28 30

1.17609
9.94390
1.11999

0.15854

	21 19.00		21 14.1
	21.36	23.690	15.4
	23.67	23.69	17.0
	26.04		18.6
11845	28.38		859 20.8
	1845		859
	33.00		21 17.18
	35.45		+ 25.22
	37.70		
	40.00	42.414	
	42.45	42.41	22 12.1
	44.75	42.40	13.6
	47.17		15.9
	49.44		17.4
38173	51.77		779 18.9
	38173		279
	56.60		22 15.58
	58.76	1114	− 33.18
	1.19	1.11	
	3.30	8480	
30557	5.72		21 17.18
	557	21 42.405	22 15.58
			+ 25.22
			− 33.18
			58.40
5 18 42.54			1.76641
			1.11999
			2.88640
			1.86747
			8.98107
			5 28.7

M 58 30.97
M 59 44.70
R 59 44.47
R 59 44.60
M 59 44.92
59 44.67
73.70

28 30 17.1

93

δ Orionis

h m s
5 25 50
° '
−0 23

0.15854

556

α Leporis

h m s
5 27 24
° '
−17 35

0.15854

96

ι Orionis 0.15854

h m s
5 29 31
° '
−5 59

1.17609
9.99763
1.17372

	28 31.28		28 22.4
	33.25	35.322	23.8
	35.35	35.32	25.0
	37.30		26.7
17661	39.43		1269 29.0
	2661		269
	43.60		28 2538
	45.60		+ 2644
	47.75		
	49.82	51.827	
	51.90	51.83	
	53.80	51.81	
	55.90		
	57.97		
46644	0.10		
	46644		
	4.28		
	6.25	8.298	
	8.22	8.30	
	10.30	10362	
4149	12.44		28 25.38
	4149	28 51.820	+26.44

	30 3.57		29 57.5
	5.60	7.884	58.9
	8.03	7.88	0.3
	10.00		1.6
3942	12.22		3023 4.0
	3942		23
	16.40		30 046
	18.75		+ 2471
	20.82		
	23.00	25.188	
	25.27	25.19	
	27.40	25.15	
	29.55		
	31.60		
22669	33.90		
	22669		
	38.13		
	40.25	42.422	
	42.40	42.42	
	44.60	5030	
21211	46.73		30 0.46
	21211	30 25.170	+ 24.71

	32 12.28		32 2.2
	14.36	16.384	4.6
	16.30	16.38	6.1
	18.43		7.7
8192	20.55		303 9.7
	3192		303
	24.60		32 606
	26.50		+ 2685
	28.70		
	30.85	32.860	
	32.80	32.86	33 2.0
	34.90	32.96	3.2
	37.00		4.5
	39.19		6.1
29574	41.20		243 8.5
	29574		243
	46.30		33 486
	47.50	49.554	− 3195
	49.64	49.55	
	51.61	6593	
24777	53.72		32 6.06
	24777	32 32.910	33 4.86
			+ 26.85
			− 31.95
			58.80
			1.76938
			1.17372
			2.94310
			1.92927
			8.98617
			5 31 58

M 51 13.12

M 21 35.12

M. 27 0.30
M 28 25.10
R 28 25.00
R 28 24.92
M 28 25.07
28 25.27
84.97

a

ζ Orionis

1879

5 34 39
$-2^{\circ}\ 0'$
Sept. 14

1.17609
9.99974
1.17583

37 20.75
22.82
24.79
27.80
12436 29.80
2436
33.18
35.27
37.29
39.29
41.40
43.40
45.50
47.65
37283 49.85
37283
53.92
55.80
57.97
59.87
28972 2.16
28972

24872
24.87
41.426
41.42
41.40
57.944
57.94
8281
37 41.410

37 12.2
13.8
15.5
17.3
777 18.9
277
37 15.54
+ 2587
38 9.3
11.2
12.7
14.2
633 15.9
633
38 1266
− 3125
37 15.54
38 12.66
+ 25.87
− 31.25
57.12
1.75679
1.17583
2.93262
1.91986
8.98724
5 32 47

1551

M 28 14.38
M 29 37.62
R 29 57.60
R 29 37.40
M 29 37.52
29 37.53
83.15

100

κ Orionis

0.15854

h m s
5 42 1
$-9^{\circ}\ 43'$

44 42.00 + 20.84 2.94
44.00 18.84 2.84
46.10 16.75 2.85
45 2.877

44 33.3
8.63 34.8
2.876 36.5
38.0
1824 39.8
324
44 3648
− 33.60
44 36.48

M 10 15.42
R 10 15.40
10 15.41

102

α Orionis

8.15854

0.15854

h m s
5 48 37
$+7^{\circ}\ 23'$

1.17609
9.99638
1.17247

50 19.00
21.00
23.17
25.33
11583 27.33
11583
31.55
33.70
35.77
37.80
39.90
42.00
44.03
46.18
35918 48.25
35918
52.38
54.45
56.63
58.70
28296 0.80
28296

23166
23.17
39.909
39.91
39.88
56592
56.59
7976
50 39.895

5 48 40.55

50 10.2
11.7
13.3
15.2
674 17.0
174
50 1348
+ 26.42
51 14.0
16.0
17.9
19.5
884 21.0
884
51 1768
− 3778
50 1348
51 17.68
+ 26.42
− 37.78
64.20
1.80754
1.17247
2.98001
1.96862
8.98861
5 33 49

M 5 5.02
M 6 37.97
R 6 38.07
R 6 38.25
M 6 37.92
6 38.05
93.03

7 23 8.6

106

μ Geminor

h	m	s		
6	15	38		
	°	'	1.17609	8.15854
	+22	34	9.96541	
			1.14150	

17	19.20		17 9.3
	21.55	23770	10.7
	23.78	23.77	12.3
	26.05		13.9
11885	28.27		615 15.3
	1885		615
	32.75		17 1230
	34.90		+ 29.30
	37.00		
	39.38	41.619	
	41.64	41.62	18 16.0
	43.85	41.59	17.8
	46.10		20.0
	48.40		21.8
37457	50.55		993 23.7
	37457		993
	54.90		18 1986
	57.23	59.426	− 38.26
	59.40	59.42	
	1.68	8319	
29713	3.92		17 12.30
	29713	17 41.605	18 19.86
			+ 29.30
			− 38.26
			67.56
			1.82969
			1.14150
			2.97119
			2.17710
			9.20591
			9 6738

107

χ Geminor

h	m	s	
6	30	43	
	°	'	1.17609
	+16	30	9.98174
			1.15783

32	24.54		32 17.4
	26.70	28.912	19.0
	28.90	28.91	20.6
	31.17		22.2
14456	33.25		1032 24.0
	14456		32
	37.57		32 2064
	39.68		+ 25.48
	41.87		
	43.92	46130	
	46.00	46.13	33 16.2
	48.20	46.10	18.3
	50.60		19.8
	52.60		21.5
41517	54.73		997 23.9
	41517		997
	58.97		33 1994
	1.15	3300	− 33.82
	3.28	3.30	
	5.45	9221	
31650	7.65		32 20.64
	1650	32 46.115	33 19.94
			+ 25.48
			− 33.82
			59.30
			1.77305
			1.15783
			2.93088
			1.91233
			8.98145
			5 28 24

118

β Can Main.

h	m	s	
7	20	85	
	°	'	0.15854
	+8	82	

22	16.70		
	18.80	20.836	
	20.80	20.84	
	22.90		
10418	24.98		
	418		
	29.27		
	31.27		
	33.33		
	35.40	37.510	
	37.55	37.51	23 5.9
	39.60	37.51	7.3
	41.65		8.8
	43.75		10.5
33759	45.77		445 12.0
	33759		445
	50.00		23 890
	52.10	54190	− 31.39
	54.20	54.19	
	56.25	7563	
27095	58.40		2
	2095	22 37.510	23 8.90
			− 31.39

M 54 5.45
M 56 36.02
R 56 36.02
R 56 35.40
M 56 35.78
56 35.80
150.35

M 58 24.67
M 59 46.47
M 59 46.32
59 46.39
81.72

R 57 44.42
R 57 44.20

57 44.31

	119				122		
	α Geminor				β Geminor		
	h m s 7 26 52		0.15854		h m s 7 37 55		0.15834
	+32° 9'				+28° 19'		
1879	Sept. 14						
	28 31.78		28 25.6		39 34.34		39 25.1
	34.10	36628	27.7		36.56	38.976	28.0
	36.66	36.63	29.7		39.00	38.98	29.5
	39.00		32.0		41.28		31.2
18314	41.60		1488 33.8	19488	43.70		1473 32.9
	18314		1488		19488		1473
	46.40		28 29.76		48.40		39 29.46
	48.90		+ 26.37		50.70		+ 28.26
	51.30				53.10		
	53.70	56.150			55.40	57.722	
	56.16	56.15			57.70	57.72	
	58.54	56.11			0.00	57.73	
	1.80				2.36		
	3.50				4.72		
50535	5.85			51950	7.12		
	50535				51950		
	10.75				11.82		
	13.15	15590			14.18	16490	
	15.60	15.59			16.45	16.49	
	18.00	11222			18.80	11547	
7795	20.45		28 29.76	8245	21.20		39 29.46
	7795	28 56.130 +	26.37		8245	39 57.725 +	28.26
7 26 55.64				7 37 57.71			

R 19 52.40
R 19 49.90

R 9 48.50
R 9 48.67

32 9 2.1

9 48.58
28 18 55.6

S Lee Min- 198 .

Sun C = 46.226 β Urs. Min

h m s
11 32 19 0.15854 h m s
14 51 4 0.15854

° '
+3 0 ° '
+74 39

1879 Sept. 14 – 15 Sept. 15

	49.30			59.7		56.85			22.7				—		54	20.3	54	57.0
	51.32	53410		1.0		58.90	1,058		24.4				—			22.9		59.6
	53.43	53.41		2.4		1.80	1,06		25.8				—			28.3		2.0
	55.40			3.8		3.27			27.5				—			33.0		7.2
26705	57.60		3131	6.2	30529	5.27		1296	29.2				—		1461	41.6	3208	15.0
	1705			131		529			296							1461		208
	1.70			2,62		9.47			25.92				—		54	29,22	55	4,16
	3.70					11.50							—					
	5.75					13.54							—					
	7.90	9,921				15.60	17,666						—					
	10.03	9.92				17.60	17.66						—		55	18.7		
	11.97	9.91				19.70	17.64						—			22.5		
	14.04					21.78							—			28.6		
	16.00					23.80							—			33.4		
8929	18.20				15899	26.00							—		1410	37.8		
	8929					15899										1410		
	22.28					30.00							—		55	28,20		
	24.47	26476				32.05	34,232			+54.56	7.21	54	1.77					
	26.50	26.48				34.28	34.23			62.37	7.38	28.70	9.75					
	28.48	13989				36.38	3529			70.16	6.79	7.10	16.95					
13238	30.65			2,62	17116	38.45			25.92	78.20	7.32		25.52	53° 7.10	54	29.22	55	4.16
	13238	9.915				211.6	17.650								55	28.20		

14 51 2,01

M 12 34.05. M 30 10.17.

M 51 43.95.
M 51 53.90.
M 52 4.60.
5

74 38 56.1

200 β Librae

	h	m	s		
	15	10	30		
		°	'	1.17609	0.15854
		−8	56	9.99470	
1879	Sept. 15			1.17079	

209 α Cor. Bor.

h	m	s		
15	29	34		
°	'		1.17609	0.15854
+27	7		9.94943	
			1.12552	

	12 11.50		12 8.7		31	13.40		31 1.6
	13.20	15244	10.6			15.45	17.866	2.8
	15.28	15.24	12.3			17.78	17.87	4.5
	17.36		14.1			20.20		6.3
7622	19.38		613 15.6		8933	22.50		226 7.4
	2622		113			8933		226
	23.52		12 1226			27.18		31 4.52
	25.61		+ 19.67			29.50		+ 31.93
	27.72					31.87		
	29.82	31909				34.18	36454	
	31.88	31.91	12 58.9			36.36	36.45	31 49.9
	34.03	31.95	0.1			38.70	36.45	51.8
	36.03		1.9			41.15		53.6
	38.27		3.3			43.45		55.6
28718	40.30		3092 5.0		32809	45.70		2684 57.5
	28718		92			32809		184
	44.50		13 1.84			50.40		31 53.68
	46.60	48.660	− 29.91			52.76	55.026	− 17.23
	48.65	48.66				55.00	55.03.	
	50.80	6390				57.29	7290	
24330	52.75		12 12.26		27513	59.68		31 4.52
	24330	12 31.930	13 ~~18.40~~ 1.84			2513	31 36.450	31 53.68
			+ 19.67					+ 31.93
			− ~~46.47~~	29.91				− 17.23
			~~66.14~~	49.58				49.16
			~~.82046~~	1.69531	15 29 86.95			1.69161
			~~1.17079~~	1.17079				1.12552
			~~2.99125~~	2.86610				2.81713
			~~1.85418~~	1.85418				1.79546
			~~8.86292~~	8.98808				8.97833
				53325				5264

M	24	13.90	M	21	17.27
M	25	25.35	M	22	19.85
R	25	25.30	M	22	19.75
R	25	25.35	M	22	19.52
M	25	25.52			
	25	25.38		22	19.71
		71.48			62.44

27 7 12.9

84

β Eridani

h m s
5 1 54

° '
−5 15

1879

Sept. 16

- 3 39.10
41.15
43.25
45.27
21614 47.37
21614
51.48
53.60
55.62
57.65
59.72
1.75
3.90
5.97
53779 8.10
53779
12.20
14.23
16.30
18.46
8169 20.50
8169

43228
43.23

59754
59.75
59.78

16338
16.34
19957

3 59.765

3 32.0
33.7
34.9
36.5
1751 38.0
251
3 35.02
+ 24.74

3 35.02
+ 24.74

0.15854

87

β Orionis

h m s
5 8 43

° '
−8 21

1.17609
9.99537
1.17146

0.15854

10 28.00
30.18
32.25
34.27
16098 36.28
1098
40.60
42.60
44.69
46.75
48.85
50.95
53.00
55.20
43989 57.25
43989
1.40
3.47
5.60
7.68
2785 9.70
2785

32196
32.19

48877
48.88
48.88

5.570
5.57
9776

10 48.880

5 8 46.52

10 23.0
24.7
26.0
27.5
1300 28.8
300
10 26.00
+ 22.88

11 15.6
17.3
18.8
20.0
931 21.4
931
11 18.62
− 29.74

10 26.00
11 18.62
+ 22.88
− 29.74
52.62
1.72115
1.17146
2.89261
1.87105
8.97844
5 26 9

−0.00	46.00	229.97	46.00
2.34	45.96	45.996	48.30
4.70	45.85		50.55
7.04	45.56		53.00
9.40	46.20		55.60
14.09	46.01	138.06	0.10
16.43	46.07	46.02	2.50
18.74	45.98		4.77

46.008
46.003

5 18 42.57

20

90

β Tauri

h m s
5 18 39

° '
+28 30

0.15854

20 54.5
56.6
58.5
0.4
2920 2.0
2920
20 58.40
− 12.40

20 58.40

M 42 17.10
R 42 17.22

42 17.16

M 48 7.17
M 49 21.62
R 49 21.52
R 49 21.50
M 49 21.27
49 21.48
74.31

8 20 15.4

M 59 17.72
R 59 18.62
R 59 18.00
M 59 17.90
59 17.97

28 30 17.2

93

δ Orionis

h m s
5 25 50
° ′
−0 23

1879 Sept. 16

0.15854

27 —
—
—
—
—

27 51.7
53.0
54.4
56.5
2736 57.0
236
27 54.72
+ 0.65

+8.25	55.25		47.00	
6.19	55.32	498.46	49.13	
4.11	55.41	55.353	51.30	
2.04	55.44		53.40	55.390
−0.00	55.48		55.48	55.39
2.06	55.44		57.50	
4.13	55.47		59.60	
6.19	55.31		1.50	
8.26	55.34	49851	3.60	
			49851	
12.38	55.31	276.71	7.79	
14.44	55.36	−55.342	9.80	11862
16.51	55.36		11.87	11.86
18.57	55.33		13.90	
20.70	55.25	5931	15.95	
			5931	

27 54.72

55.357
55.369

M 51 50.92

556

α Leporis

h m s
5 27 24
° ′
−17 55

0.15854

29	7.00	
	9.14	11258
	11.20	11.26
	13.37	
5629	15.58	
	5629	
	19.96	
	22.00	
	24.20	
	26.40	28.570
	28.57	28.57
	30.72	28.58
	33.00	
	35.00	
25713	37.28	
	25713	
	41.65	
	43.76	45.906
	45.82	45.91
	48.00	5717
22953	50.30	
	22953	29 28.575

0.15854

28 58.0
59.2
0.4
2.0
3030 3.4
30
29 0.60
+ 27.98

29 0.60
+ 27.98

M 21 33.00

96

ι Orionis

0.85854

h m s
5 29 31
° ′
−5 59

1.17609
9.99763
1.17372

31	15.65	
	17.65	19.784
	19.82	19.78
	21.80	
9892	24.00	
	9892	
	28.00	
	30.16	
	32.19	
	34.30	36.372
	36.40	36.37
	38.40	36.36
	40.60	
	42.60	
32735	44.70	
	32735	
	48.78	
	50.78	52.942
	53.00	52.94
	55.00	7272
26471	57.15	
	1471	31 36.365

31 6.4
7.8
9.4
11.0
472 12.6
472
31 9.44
+ 26.92

32 2.3
4.2
5.7
7.3
287 9.2
287
32 5.74
− 29.38

31 9.44
32 5.74
+ 26.92
− 29.38
5630
1.75051
1.17372
2.92423
1.90542
8.98119
5 28 12

M 27 1.52
M 28 21.97
R 28 21.92
R 28 21.78
M 28 22.12
28 21.95
80.43

a

ζ Orionis

h m s
5 34 39
° '
−2 0

1.17609 0.15854
9.99974
1.17583

36 24.25
26.27
28.30
30.42
14179 32.55
14179
36.70
38.70
40.77
42.80
45.00
46.90
49.00
51.19
40422 53.16
40422
57.27
59.40
1.43
3.50
30720 5.60
720

28.358
28.36
4 4.913
4491
44.90
1.440
0.44
8980
36 44.905

36 14.2
16.0
17.6
19.2
876 20.6
876
36 17.52
+ 27.38
37 10.9
12.5
13.8
15.6
698 17.0
198
37 13.96
− 29.06
36 17.52
37 13.96
+ 27.38
− 29.06
56.44
1.75159
1.17583
2.92742
1.90854
8.98112
5 28 9

M 28 13.22
M 29 34.25
R 29 34.42
R 29 34.10
M 29 34.15
29 34.23
81.01

100

κ Orionis

0.15854

h m s
5 42 1
° '
−9 43

0.15859

43 45.38
47.60
49.66
51.76
24820 53.80
24820
58.00
0.00
2.18
4.22
6.35
8.48
10.53
12.67
59713 14.70
5713
18.80
21.00
23.00
25.20
11527 27.27
1527

49.640
49.64
6.348
6.35
6.34
23.054
23.05
13269
44 6.345

43 40.2
41.6
43.3
44.9
2169 46.9
169
43 43.38
+ 22.96
44 44.2
45.9
47.3
48.5
2359 50.0
2359
44 47.18
− 40.84
43 43.38
44 47.18
+ 22.96
− 40.84
63.80
1.80482

M 10 — 3 [illegible] only read
M 11 53.00
R 11 53.15
R 11 53.12
M 11 53.12
11 53.10

102

α Orionis 0.15854

h m s
5 48 37
° '
+7 23

1.17609
9.99638
1.17247

50 22.55
24.63
26.63
28.75
13331 30.75
13331
35.00
37.00
39.22
41.30
43.37
45.45
47.60
49.64
39028 51.70
39028
55.80
57.85
59.57
2.10
29992 4.20
29992

26.662
26.66
43.364
43.36
43.32
59.984
59.98
8664
50 43.340

50 17.0
18.9
20.6
22.0
1015 23.0
15
50 20.30
+ 23.04
51 8.6
10.3
11.5
12.7
577 14.6
77
51 11.54
− 28.20
50 20.30
51 11.54
+ 23.04
− 28.20
51.24
1.70961
1.17247
2.88208
1.86576
8.98368
5 30 5

61
5 48 40 ~~58~~

M 5 12.05
M 6 25.62
R 6 25.32
R 6 25.50
M 6 25.40
6 25.46
73.41

7 28 8.6

1879 Sept. 16

106

μ Geminor

h m s
6 15 38
° '
+22 34

0.15854

	17 22.87		17 20.9
	25.60	27.284	23.1
	27.30	27.28	24.6
	29.60		26.4
13642	31.65		1232 28.2
	13642		232
	36.20		17 24.64
	38.30		
	40.60		
	42.90	45.088	
	44.97	45.09	18 22.8
	47.40		24.8
	49.60		26.5
	51.79		28.0
40579	54.03		1316 29.5
	40579		316
	58.58		18 26.32
	~~60.82~~		
	~~3.06~~		
	5.25		
	7.50		17 24.64
		17 44.759	18 26.32

107

γ Geminor

h m s
6 30 43
° '
+16 30

0.15854

	32 21.30		32 18.0
	30.30	32.484	19.7
	32.50	32.48	21.1
	34.57		22.7
16242	36.75		1059 24.4
	1242		59
	41.00		32 21.18
	43.20		+ 28.46
	45.37	49.644	
	47.53	~~46~~	
	49.67	49.64	33 18.9
	51.85	49.63	20.5
	53.86		22.4
	56.05		23.8
44680	58.28		1110 25.4
	44680		110
	2.50		33 22.20
	4.60	6.794	− 32.5[illegible]
	6.75	6.79	
	8.92	9927	
3397	11.20		32 21.18
	3397	32 49.635	33 22.20
			+ 28.46
			− 32.56
			61.02
			1.78547

7 33 0.65

120

α Can. Min

h m s
7 32 58
° '
+5 32

0.15854

	34 42.90		34 35.8
	44.82	47.004	37.3
	47.00	47.00	38.9
	49.10		40.8
23502	51.20		1951 42.3
	23502		1951
	55.20		34 39.02
	57.28		+ 24.54
	59.47		
	1.47	3.553	
	3.54	3.55	
	5.62	3.56	
	7.75		
	9.77		
57198	11.88		
	3198		
	16.00		
	18.16	20.132	
	20.08	20.13	
	22.20	12.713	
10066	24.30		34 39.02
	10066	35 3.555	+ 24.54

M 54 17.87
M 55 39.95
R 55 40.17
R 55 39.75
M 55 39.98
55 39.96
82.09

M 59 20.90
M 59 44.97
R 59 44.92
R 59 44.78
M 59 44.80
59 44.87

R 56 13.42
R 56 13.32

56 13.35

5 32 3.7

122

S

~~β Gem~~ β Geminor

h m s
7 37 35
° ′
+28 19

Sept. 16

Sun C = 46,926

h m s
11 39 30
° ′
+2 13

Sept. 16–17

0.15854

0.15854

+23.45 1.32 39 37.87
1.32 —
1.32 —
—
—

9.38 1.38 1.38 52.00
1.38 —
—
—
—
—
—
—
—
—
—

−18.75 1.25 3.81 20.00
21.10 1.30 1.27 22.40
23.51 1.26 24.77

1.323
1.302

7 37 57.75

39 28.4
30.1
32.1
33.6
1600 35.8
100
39 3200
+ 29.80

39 32.00

40 3.70
5.70 7.820
7.82 7.82
9.90
3910 11.98
3910
16.00
18.17
20.17
22.28 24336
24.28 24.33
26.40 24.32
28.48
30.60
21902 32.64
219 02
36.65
38.80 40826
40.80 4082
42.90 4864
20413 44.98
20413 40.24325 + 44.88

41 5.8
7.6
9.4
10.9
460 12.3
460
41 920
− 4488

41 9.20

42 11.30
13.50 15536
15.58 15.54
17.65
7768 19.65
2768
23.80
25.87
27.93
30.00 32.079
32.00 32.08
34.10 32.08
36.25
38.28
28871 40.48
28871
44.50
46.60 48626
48.65 48.62
50.68 6416
24313 52.70
24313 42 32.080 + 46.02

41 42.2
44.4
46.3
48.0
2303 49.4
303
41 4606
+ 46.02

41 46.06

R 9 47.32
R 9 47.35

9 47.33
28 18.555

M 58 43.50

M 31 37.02

	260				270				84			
	α Lyrae				δ Aquilae				β Eridani			
	h m s				h m s				h m s			
	18 32 50			0.15854	18 59 57			0.15854	5 1 54			0.15854
	° ′				° ′				° ′			
	+38 40				+13 41				−5 15			
1879	Sept. 17											
	34 31.13		34 44.4		1 —		1 53.8		1 41.00		1 33.7	
	33.92	36574	46.9		—		55.2		42.87	45114	35.3	
	36.65	36.57	48.6		—		56.8		45.20	45.11	36.8	
	39.30		50.8		—		58.6		47.20		38.6	
18287	41.87		2438 53.1		—		2846 0.2	22557	49.30		1846 40.2	
	18287		2438				2846		2557		1846	
	47.30		34 48.76	+8.48 58.30	524.90 49.82		1 5692		53.60		1 3692	
	49.90		+ 8.94	6.37 58.27	58.322 51.90		+ 1.37		55.55		+ 2479	
	52.55			4.24 58.50	54.26				57.50			
	55.00	57.723		2.10 58.25	56.15	58328			59.70	1.724		
	57.70	57.72	35 31.4	−0.00 58.30	58.30	58.33	2 35.2		1.76	1.72		
	0.30	57.68	33.7	2.11 58.49	0.60		36.5		4.00	1.70		
	3.00		35.4	4.25 58.22	2.47		38.1		5.80			
	5.60		37.5	6.37 58.21	4.58		39.6		7.75			
51951	8.16		1782 40.2	8.51 58.36	2495 6.87		1906 41.2	55552	9.87			
	51951		1782		52495		1906		55552			
	13.50		35 3564	12.74 58.26	291.16 11.00		2 3812		14.06			
	16.20	18800	− 37.94	14.86 58.39	58.23 13.19	15232	− 39.83		16.12	18306		
	18.80	18.80		16.99 58.28	15.27	15.23			18.38	18.30		
	21.50	11537		19.12 58.18	17.30				20.47	12341		
9400	24.00		34 48.76	21.30 58.10	7616 19.40		1 5692	9153	22.50		1 36.92	
	9400	34 57.700	35 35.64		2616		2 38.12		9153	2 1.710	+ 24.79	
			+ 8.94		15232							
			− 37.94	58.276								
		2 97	46.88	58.289								
18	32	5~~3.08~~	1.67099									

M	48	45.02	M	47	42.52	R	42	16.70
M	49	38.15	M	48	40.30	R	42	16.75
R	49	38.47	R	48	40.47			
R	49	38.20	R	48	40.47			
M	49	38.17	M	48	40.20			
	49	38.25		48	40.36		42	16.72

38 40 36.5

87

β Orionis

h m s
5 8 43
° '
−8 21

1.17609 0.15854
9.99537
1.17146

8 30.00
32.22 34192
34.27 34.19
36.20
17096 38.27
2096
42.50
44.75
46.70
48.70 50.881
50.80 50.88
53.00 50.84
55.00
57.10
45793 59.38
793
3.43
5.37 7.484
7.52 7.48
9.55 10167
3742 11.55
3742 8 50.860

8 21.1
22.8
24.2
25.7
1216 27.8
216
8 24.32
+ 26.54

9 19.0
20.7
22.2
23.6
1105 25.0
105
9 22.10
− 31.24

8 24.32
9 22.10
+ 26.54
− 31.24
57.78
1.76178
1.17146
2.93324
2.00017
9.06693
6 39 15

5 8 46.57

85
M 47 39.85
M 49 20.27
R 49 19.02
R 49 20.37
~~49~~
49 19.89
100.04

8 30 15.3

90

β Tauri

h m s
5 18 39
° '
+28 30

0.15854

18 24.30
26.65 29048
28.94 29.05
31.57
14528 33.82
14524
38.47
40.90
43.30
45.56 47.896
48.00 47.89
50.20 47.81
52.53
54.80
43106 57.30
43106
1.70
4.15 6582
6.70 6.58
8.96 6563
3291 11.40
3291 18 47.850

18 43.8
46.3
48.4
50.5
2412 52.2
2412
18 48.24
− 0.39

19 21.3
24.0
26.0
27.8
1289 29.8
289
19 25.78
− 37.93

18 48.24
19 25.78
− 0.39
− 37.93
38.32

5 18 42.64

M 59 3.17
M 59 49.42
R 59 49.50
R 59 49.35
M 59 49.50
59 49.42

28 30 17.3

93

δ Orionis

h m s
5 25 50
° '
−0 23

0.15854

25 36.67
38.80 40734
40.70 40.73
42.70
20367 44.80
367
49.12
51.21
53.25
54.95 55.38 57.306
57.22 57.37
59.20 57.23
1.32
3.40
51635 5.65
51 575
9.67
11.67 13.738
13.80 13.74
15.75 11447
6869 17.80
6869 25 57.300
−021
57.279

25 27.9
30.0
32.3
33.8
1595 35.5
1595
25 31.90
+ 25.38

25 31.90
+ 25.40

M 57 14.07

556

α Leporis

5 27 24
−17 53

0.15854

1879. Sept. 17

	27 9.00			27 2.5
	11.18	13364		4.6
	13.29	13.36		6.0
	15.60			7.6
6682	17.75		303	9.6
	6682			303
	22.00			27 606
	24.20			+ 24.58
	26.45			
	28.40	30679		
	30.50	30.68		
	32.66	30.60		
	35.20			
	37.30			
27611	39.40			
	27611			
	43.58			
	45.52	47850		
	47.80	47.85		
	50.05	6121		
23925	52.30			27 6.06
	23925	27 30.640		+ 24.58

M 21 35.05 ·

96

ι Orionis

h m s
5 29 31
° '
−5 59

1.17609 0.15854
9.99763
1.17372

	29 17.75			29 10.8
	19.65	21886		13.0
	22.03	21.89		14.7
	24.00			16.3
16943	26.00		728	18.0
	943			228
	30.20			29 14.56
	32.25			+ 23.70
	34.27			
	36.27	38349		
	38.20	38.35		30 8.5
	40.42	38.18		9.9
	42.38			11.3
	44.48			13.3
34514	46.67		585	15.5
	34514			585
	50.90			30 11.70
	53.00	55014		− 33.44
	54.90	55.01		
	57.00	7690		
27507	59.27			29 14.56
	2507	29 38.265		30 11.70

+ 23.70
− 33.44
57.14
1.75694
1.17372
2.93066
1.90396
8.97330
5 22 20

M 27 4.55 ·
M 28 24.67 ·
R 28 24.55 ·
R 28 24.52 ·
M 28 25.10 ·
28 24.71
80.16

a

ζ Orionis

h m s
5 34 39
° '
−2 0

1.17609 0.15854
9.99974
1.17583

	34 26.25			34 23.0
	28.30	30450		25.5
	30.60	30.45		27.2
	32.60			28.6
15225	34.60		1342	29.9
	225			342
	38.72			34 26.84
	40.70			+ 20.08
	42.78			
	44.78	46871		
	46.78	46.87		35 19.8
	48.80	46.97		22.4
	51.00			24.2
	53.10			26.3
42184	55.18		1205	27.8
	42184			205
	57.25			35 24.10
	1.60	3486		− 37.18
	3.55	3.49		
	5.43	9394		
31743	7.60			34 26.84
	1743	34 46.920		35 24.10

+ 20.08
− 37.18
57.26
~~1.88795~~ 1.75778
1.17583
~~3.06378~~ 2.93361
1.91355
~~8.84977~~ 8.97994
5 27 16

M 28 22.97 ·
M 29 45.00 ·
R 29 44.70 ·
R 29 44.95 ·
M 29 45.05 ·
29 44.92
81.95

100

κ Orionis

h m s
5 42 1
−9 43

1.17609 0.15854
9.99372
1.16981

41 47.43			41 53.2
49.43	51.630		54.8
51.62	51.63		56.7
53.87			58.2
25815 55.80			2826 59.7
815			326
0.05			41 5652
2.80			+ 1182
4.05	303		
6.00	8 ~~084~~		
8.30	8.30		42 45.0
10.48	8.37		46.3
12.55			47.9
14.60			49.5
7473 16.70			2397 51.0
7473			397
20.80			42 4794
23.00	25.114		− 3960
25.00	25.11		
27.47	13674		
12557 29.30			41 56.52
2557	42 8.335		42 47.94
~~25114~~			+ 17.82
			− 39.60
			51.42
			1.71113
			1.16981
			2.88094
			1.87408
			8.99314
			5 37 17

M 10 35.55
M 11 50.20
R 11 50.67
R 11 50.27
M 11 50.37
11 50.38
7483

102

α Orionis

h m s
5 48 37
+7 23

1.17609 0.15854
9.99638
1.17247

48 24.60			48 15.0
26.60	28.750		16.5
28.68	28.75		18.0
30.87			19.3
14375 33.00			898 21.0
14375			898
37.10			48 17.96
39.18			+ 2742
41.18			
43.40	45.413		
45.76	45.41		49 19.0
47.70	45.36		20.8
49.64			22.6
51.46			24.4
40872 53.30			1133 26.5
40872			133
57.72			49 2266
59.78	1.970		− 3728
2.05	1.97		
4.18	9072		
30985 6.30			48 17.96
985	48 45.385		49 22.66
			+ 27.42
			− 37.28
5 48 40.63			64.70
			1.81090
			1.17247
			2.98337
			2.18817
			9.20480
			~~5 36 27~~ 9 6 16

M 4 4.17
M 6 38.47
R 6 38.27
R 6 38.35
M 6 38.50
6 38.40
154.23

7 23 8.6

107

γ Geminorum 0.15854

h m s
6 30 43
+16 30

1.17609
9.98174
1.15783

30 30.25			30 24.1
32.28	34496		25.8
34.45	3449		27.3
36.70			29.0
17248 38.80			1372 31.0
2248			1372
42.90			30 2744
45.30			+ 2422
47.37			
49.55	51.650		
51.67	51.65		31 24.9
53.70	51.66		26.7
55.98			28.5
58.10			30.0
46485 0.36			1415 31.4
46485			1415
4.60			31 2830
6.64	8.834		− 3664
8.80	8.83		
10.93	10332		
4417 13.20			30 27.44
4417	30 51.655		31 28.30
			+ 24.22
			− 36.64
			60.86
			1.78433
			1.15783
			2.94216
			1.92038
			8.97822
			5 25 59

M 58 26.72
M 59 50.37
R 59 50.00
R 59 49.70
M 59 49.82
59 49.97
83.25

119 α Geminor

h m s
7 26 52
+32° 9′

0.15854

1879 Sept. 17

120 α Can. Min

h m s
7 32 58
+ 5° 32′

1.17609
9.99797
1.17406

0.15854

	28 37.40			28 25.0		34 44.83			34 38.2
	39.70	42.224		26.3		46.85	48936		39.6
	42.17	42.22		28.2		49.00	48.94		41.2
	44.68			29.9		51.00			42.8
21112	47.17		1420	32.6	24468	53.00		2063	44.5
	21112			1420		24468			63
	51.90		28	2840		57.20		34	4126
	54.30		+	33.26		59.26		+	2426
	56.80					1.38			
	59.39	1.660				3.55	5522		
	1.65	1.66				5.58	5.54	35	33.7
	4.00	1.67				7.64	5.50		35.6
	6.60					9.64			36.9
	9.00					11.70			38.6
55494	11.30				58970	13.75		1852	40.4
	1494					4970			1852
	16.26					17.85		35	3704
	18.65					20.00	22062	−	31.52
	21.14	21.12				22.00	22.06		
	23.50	12334				24.20	13100		
10560	26.05		28	28.40	11031	26.26		34	41.26
		29 1.665	+	33.26		1031	35 5.520	35	37.04
								+	24.26
								−	31.52
									55.78
	7	26 55 83			7	33 0 68			1.74648
									1.17406
									2.92054
									1.90730
									8.98676
									5 32 25

M	19	42.52.	M	56	12.82.
M	19	42.57.	M	57	33.62.
R	19	42.10.	R	57	33.65.
R	19	41.95.	R	57	33.47.
			M	57	33.67.
	19	42.28		57	33.60
					80.78

3 2 9 1.9 5 32 8.6

S

Sun c = 46,895 9.99974

h m s
11 43 5
+1° 50'

0.15854

1879 Sept. 17-18

44 —		45 5.20	46 48.60		46 9.4
44 —		53.4	50.70	52806	10.8
—		54.8	52.85	52.80	12.0
—		56.2	54.85		13.7
—		2744 58.0	26400 57.00		607 14.8
		244	1403		617
—		45 5488	1.05		46 1214
55.72	+6.19 1.91	T3.04 53.24	3.00		+ 57.24
57.68	4.13 1.81	1.636	5.29		
59.59	2.04 1.63		7.37	9.384	
1.60	-0.00 1.60		9.40	9.38	
3.67	-2.06 1.61		11.50	9.38	
5.60	4.13 1.47		13.58		
7.67	6.19 1.48		15.58		
9.85	8.27 1.58		8446 17.69		
			8446		
13.98	12.39 1.59	8.20	21.80		
16.12	14.46 14.70 1.67	1.64	23.90	25.952	
18.20	16.52 18.17 1.68		25.90	2595	
20.25	18.58 1.67		28.50	13875	
9085 22.30	20.71 1.59	45 54.88	12976 30.16		46 12.14
9085			12976	47 9.380	+ 57.24
	1.638				
	1.637				

M 22 9.12.

M 54 36.40.

S

Sun c = 46.895

h m s
11 46 41
+1° 27'

0.15854

Sept. 18-19

47 18.20		48 19.1	49 26.03		48 55.6
20.46	22356	21.0	28.20	30.272	57.3
22.42	223.6	22.8	30.25	30.27	59.1
24.30		25.1	32.38		1.0
11178 26.40		1150 27.0	5136 34.50		2955 2.5
1178		180	136		2955
30.60		48 2300	38.40		48 5910
32.60		− 44.17	40.60		+ 47.72
34.55			42.60		
36.80	38.786		44.70	46.749	
38.65	38.78		46.85	46.80	
40.77	38.88		48.93	46.85	
42.70			50.90		
45.20			53.00		
34907 47.20			42124 55.26		
34907			42 ~~34~~ 074		
51.43			59.26		
53.28	55.400		1.38	3.452	
55.50	55.40		3.47	3.44	
57.35	7776		5.47	9371	
27700 59.44		48 23.00	31718 7.60		48 59.10
27700	47 38.830	− 44.17	1726	49 46.825	+ 47.72

M 45 13.97.

M 18 7.32.

187 α Bootis
h m s
14 10 8.
° '
+19 49

1879 Sept-19

0.15854

d ε Bootis
h m s
14 39 42
° '
+27 35

0.15854

212 α Serpentis 0.15854
h m s
15 38 18
° '
+6 48

1.17609
9.99693
1.17302

	11 56.17			+23.29 52.09	41 28.80		41 25.3	40 7.59		40 3.3
	58.28	0.562			104.20 —		27.5	9.69	11.794	4.9
	0.60	0.56			52.10 —		29.2	11.69	11.79	6.8
	2.80				—		30.8	14.00		8.2
30281	4.96			13.96 52.11	38.15		1457 32.9	5897 16.00		325 9.3
	281						1457	5897		325
	9.45			9.31 51.91	467.20 42.60		41 29.14	19.88		40 6.50
	11.70			6.98 51.90	51.911 44.92		+ 22.81	22.05		+ 21.78
	13.85			4.65 51.91	47.26			24.05		
	16.00	18.189		2.30 51.87	49.57	51.916		26.20	28.210	
	18.13	18.19	12 47.0	-0.20 51.90	51.90	51.80		28.20	28.22	41 1.7
	20.34	18.12	49.2	2.32 51.90	54.22			30.28	28.33	3.0
	22.48		51.5	4.66 51.96	56.62			32.37		5.2
	24.75		53.2	6.98 51.93	58.91			34.46		6.9
16370	27.00		2562 55.3	9.32 51.92	46724 1.24			25399 36.50		256 8.8
	16370		2562		46724			25389		256
	31.21		12 51.24	13.97 51.89	255.74 5.86			40.78		41 5.12
	33.48	35.686	− 33.08	16.30 51.87	51.958 8.17	10.598		42.78	44.866	− 36.84
	35.60	35.69		18.63 52.03	10.66	10.58		44.87	44.87	
	37.94	36.25		20.45 52.05	13.00			46.90	5666	
17843	40.20			23.35 51.95	5299 15.30		41 29.14	22433 49.00		40 6.50
	17843	12 18.155	12 51.24		5299			2433	40 28.275	41 5.12
			− 33.08							+ 21.78
				51.989						− 36.84
				51.949						5862
14 10 16.41								15 38 20.96		1.76805
										1.17302
										2.94107
										1.93217
										8.99110
										5 3544

R 41 19.92·
R 41 19.95·

41 19.93
19 48 38.7

A R only

M 39 59.98·
M 41 25.30·
R 41 25.65·
R 41 25.57·
M 41 25.57·
41 25.52
85.54

6 48 22.5

228

β Herculis

h m s
16 25 1
° '
+21 45

1.17609
9.96793
1.14402

0.15854

26	48.93		26 40.5
	51.22	53414	41.8
	53.40	53.41	43.3
	55.67		45.2
26707	57.85		2181 47.3
	1707		181
	2.30		26 43.62
	4.55		+ 27.56
	6.75		
898	9.10	11210	
	11.28	11.21	27 42.4
	13.44	11.16	44.3
	15.67		45.7
	17.80		47.4
10089	20.00		2296 49.8
	10089		296
	24.37		27 45.92
	26.65	28916	− 34.74
	29.00	28.92	
	31.16	14233	
14458	33.40		26 43.62
	14458	27 11.185	27 45.92
		−.006	+ 27.56
		11.179	− 34.74
			62.30
			1.79449
			1.14402
			2.93851
			1.91677
			8.97826
			5 26 1

M 43 20.07
M 44 42.47
R 44 42.70
R 44 42.85
M 44 42.50
44 42.63
82.56

597

ζ Ophiuchi

h m s
16 30 30
° '
−10 19

1.17609
9.99292
1.16901

0.15854

32	18.58		32 11.7
	20.80	22916	13.8
	23.00	22.92	15.8
	25.00		17.2
N458	27.20		777 19.2
	1458		277
	31.46		32 15.54
	33.48		+ 24.19
	35.67		
	37.67	39.748	
	39.80	39.75	33 11.2
	41.83	39.71	12.6
	43.88		14.2
	46.04		15.8
35773	48.00		716 17.8
	35773		216
	52.27		33 14.32
	54.36	56.500	− 34.59
	56.57	56.50	
	58.57	7942	
28250	0.73		32 15.54
	28250	32 39.730	33 14.32
			+ 24.19
			− 34.59
			58.78
			1.76923
			1.16901
			2.93824
			1.92033
			8.98209
			5 28 53

15.54

M 47 6.90
M 48 30.27
R 48 30.05
R 48 30.10
M 48 30.15
48 30.14
83.24

598

η Ophiuchi

0.15854

h m s
17 3 27
° '
−15 34

1.17609
9.98377
1.15986

5	15.15		5 22.0
	17.30	19450	23.4
	19.40	19.45	25.4
	21.65		27.0
9725	23.75		1265 28.7
	9725		265
	28.18		5 25.30
	30.18		+ 11.28
	32.30		
	34.54	36609	
	36.64	36.61	6 7.5
	38.70	36.56	9.0
	40.82		10.3
	43.00		11.8
32948	45.12		524 13.8
	32948		524
	49.40		6 10.48
	51.58	53.672	− 33.90
	53.66	53.67	
	55.77	7312	
26836	57.95		5 25.30
	1836	5 36.585	6 10.48
			+ 11.28
			− 33.90
			45.18
			1.65495
			1.15986
			2.81481
			1.79782
			8.98301
			5 29 34

M 2 18.52
M 3 21.20
R 3 21.25
R 3 21.42
M 3 21.35
3 21.30
62.78

		237				241		
		α Herculis				α Ophiuchi		
		h m s				h m s		
		17 9 18				17 29 19		
		° '	1.17609	0.15854		° '	1.17609	0.15854
		+14 32	9.98588			+12 39	9.98933	
	1879	Sept 19	1.16197				1.16542	
	10 57.00		10 50.0		31 8.47		30 58.3	
	59.00	1.096	51.3		10.49	12.646	10.2	
	1.00	1.09	53.0		12.60	12.65	2.1	
	3.20		54.8		14.80		3.7	
30548	5.28		2664 57.3		6323 16.87		3095 5.2	
	548		1.64		6323		95	
	9.65		10 53.28		21.00		31 1.90	
	11.70		+ 24.83		23.18		+ 27.62	
	13.80				25.22			
	15.90	18.090			27.31	29.487		
	18.16	18.09	11 43.3		29.49	29.49	31 57.2	
	20.28	18.13	44.8		31.62	29.54	58.6	
	22.28		46.5		33.70		0.4	
	24.47		48.2		35.83		2.3	
16281	26.57		2330 50.2		26538 38.03		3028 4.3	
	16281		2.30		26538		28	
	30.90		11 46.60		42.20		32 0.56	
	33.00	35.182	− 28.49		44.28	46.436	− 31.04	
	35.14	35.18			46.54	46.44		
	37.30	36.27			48.54	59.09		
17591	39.57		10 53.28		23218 50.62		31 1.90	
	2591	11 18.110	11 46.60		3218	31 29.515	32 0.56	
			+ 24.83		4		+ 27.62	
			− 28.49				− 31.04	
			53.32				58.66	
17 9 10.64			1.72689	17 29 21.89			1.76834	
			1.16197				1.16542	
			2.88886				2.93376	
			1.87628				1.92148	
			8.98742				8.98772	
			5 32 55				5 33 9	

M 56 39.92.	M 49 20.02.
M 57 55.05.	M 50 43.50.
R 57 55.07.	R 50 43.47.
R 57 55.27.	R 50 43.52.
M 57 55.12.	M 50 43.42.
57 55.13	50 43.48
75.21	83.46
14 31 51.3	12 39 4.5

275

β Cygni

h m s
19 25 50
° '
+27 42

1879 Sept. 20

27 —
—
—
—
—
—

+6.94	3.79	56.80	25.56
4.66	3.06	58.40	3.194
2.30	2.70	0.40	
-0.00	3.00	3.00	
2.32	3.48	5.80	
4.66	3.54	8.20	
6.99	3.01	10.00	
9.33	3.07	12.40	
13.98	3.22	17.20	
16.31	3.16	19.47	21.704
18.65	3.05	21.70	21.70
20.98	3.17	24.15	14.15
24.45	10852	26.00	2.83
		852	

3.012
3.054

28 16.4
18.4
20.5
22.7
1025 24.5
1025
28 20.50
− 17.45

28.20.50

0.15854

277

γ Aquilae

h m s
19 40 30
° '
+10 19

1.17609
9.99292
1.16901

0.15854

42 22.18
24.10
26.30
28.39
13147 30.50
3147
34.72
36.74
38.70
41.13
43.28
45.25
47.23
49.40
38806 51.61
38806
55.63
57.80
59.80
2.00
29923 4.00
29923

26294
26.29

43.118
43.12
43.07

59.846
59.85
8614

42 43.095

19 40 34.00

42 14.5
16.1
17.9
19.7
899 21.7
899
42 17.98
+ 25.12

43 10.6
12.5
14.3
16.0
710 17.6
210
43 14.20
− 31.10

42 17.98
43 14.20
+ 25.12
− 31.10
56.22
1.74989
1.16901
2.91890
1.89708
8.97818
5 25 57

280

α Aquilae

h m s
19 44 53
° '
+8 33

0.15854

46 44.65
46.68
48.78
51.00
24411 53.00
24411
57.22
59.18
1.38
3.42
5.55
7.57
9.68
11.57
58927 13.70
4927
18.00
20.20
22.22
24.24
11124 26.58
1124

48.822
48.82

5.474
47
~~5.63~~
5.53

22248
2225
131 07

47 5.~~560~~ 500

19 44 56.46

46 34.7
37.3
39.0
40.9
1944 43.5
1944
46 38.88
+ 26.62

47 36.0
38.2
40.2
41.9
2000 43.6
1999
47 39.98
− 34.48

46 38.88
47 40.00
+ 26.80
− 34.32
61.12
1.78618

M 47 0.52.
M 47 0.70.

47 0.61

M 8 58.55.
M 10 17.40.
R 10 17.50.
R 10 17.45.

10 17.45
78.90

10 19 27.2

M 55 2.65.
M 55 28.95.
R 55 29.22.
R 55 29.07.
M 55 28.62.
55 28.96

8 33 16.8

1879

283

β Aquilae

h m s
19 49 22
° ′
+6 6

1.17609 0.15854
9.99753
1.17362

Sept. 20

51 14.15
16.20 18.288
18.22 18.29
20.37
9144 22.50
9144
26.70
28.70
30.77
32.87 34.920
34.96 34.92
37.00 34.91
39.00
41.00
31428 43.28
31428
47.32
49.47 51.532
51.45 51.53
53.65 6982
25766 55.77
25766 51 34.915

51 4.8
6.2
7.4
9.0
379 10.5
379
51 7.58
+ 27.34
52 1.2
3.0
4.8
6.5
238 8.3
238
52 4.76
− 29.84
51 7.58
52 4.76
+ 27.34
− 29.84
57.18
1.75724
1.17362
2.93086
1.91365
8.98279
5 29 24

19 49 25.90

287

θ Aquilae

h m s
20 5 4
° ′
−1 11

1.17609 0.15854
9.99991
1.17600

6 55.95
58.00 0.058
0.06 0.06
2.03
30029 4.25
029
8.22
10.36
12.53
14.47 16.506
16.50 16.51
18.50 16.53
20.55
22.65
14855 24.67
14855
28.83
31.00 33.000
33.00 33.00
35.00 33.06
16500 37.17
1500 7 16.520

6 46.0
47.1
48.8
50.4
2443 52.0
2443
6 48.86
+ 27.66
7 42.2
43.8
45.3
47.0
2268 48.5
268
7 45.36
− 28.84
6 48.86
7 45.36
+ 27.66
− 28.84
56.50
1.75205
1.17600
2.92805
1.91057
8.98252
5 29 12

+8.47 33.37
6.35 33.25
4.23 33.23
2.09 33.44
−0.00 33.28
2.11 33.29
4.23 33.37
6.35 33.35
8.46 33.32
12.70 33.20
14.82 33.18
16.44 33.26
19.05 33.30
−21.24 33.16
33.293
33.286

299.90
33.366
29987
166.10
33.22
25085

607

α² Capricorni

h m s
20 11 20
° ′
−12 55

0.15854

13 —
—
—
—
—
24.84
26.90
29.00
31.35 33.319
33.28 33.32
35.40
37.60
39.70
41.80
29987
45.90
48.00 50.170
50.20 50.17
52.35
54.40
085

20 11 24.66

13 25.1
26.4
27.9
29.6
1406 31.6
406
13 28.12
+ 5.17
14 2.5
3.7
5.6
7.2
279 8.9
279
14 5.58
− 32.29
13 28.12
14 5.58

M 21 38.20
M 23 0.27
R 23 0.20
R 23 0.10
M 23 0.10
23 0.17
81.97

6 6 36.1

M 38 30.07
M 39 57.65
R 39 51.67
R 39 51.30
M 39 51.20
39 51.46
81.39

M 22 58.52
M 23 57.45
R 23 57.50
R 23 57.38
M 23 57.37
23 57.42

12 54 54.0

87

β Orionis

h m s
5 8 43
° ′
−8 21

0.15854

10 35.20 | 10 25.2
37.30 39.316 | 27.0
39.38 39.31 | 28.3
41.30 | 29.7
19658 43.40 | 1417 31.5
19658 | 1417
47.42 | 10 28.34
49.65 | + 27.64
51.80
53.80 55.960
56.00 55.96
58.00 56.01
0.20
2.30
50364 4.47
50364
8.52
10.55 12.712
12.75 12.71
14.70 11202
6356 17.04 | 10 28.34
1356 10 55.985 + 27.64

5 8 46.66

R 47 55.42·
R 47 55.07·

47 55.24

8 20 15.3

90

β Tauri

h m s
5 18 39
° ′
+28 30

1.17609
9.94390
1.11999

0.15854

20 29.77 | 20 25.8
32.10 32.20 34.348 | 28.0
34.37 34.35 | 30.0
36.40 | 31.9
17174 39.00 | 1494 33.7
17174 | 1494
43.32 | 20 29.88
45.80 | + 23.21
48.15
50.50 53.043
52.90 53.04
55.65 55.84 53.16 | 21 25.5
58.00 | 27.6
0.30 | 29.5
47639 2.58 | 31.3
47739 | 1471 33.2
7.20 | 1471
9.27 11.978 | 21 29.42
11.90 11.98 | −36.33
14.36 10633
5989 16.66 | 20 29.88
5989 20 53.100 | 21 29.42
−010 | + 23.16
53.090 | − 36.38
59.54
1.77481
1.11999
2.89480
1.88064
8.98584
5 31 43

5 18 42.74

M 58 31.55·
M 59 47.32·
R 59 47.70·
R 59 47.60·
M 59 47.45·
59 47.52
75.97

28 30 17.4

93

δ Orionis

h m s
5 25 50
° ′
−0 23

0.15854

27 41.80 45.778 | 27 35.9
43.70 ~~47.778~~ | 37.5
45.73 45.78 | 38.7
47.73 | 40.3
22889 49.93 | 1939 41.5
28 ~~25~~89 | 1939
54.18 | 27 38.78
56.10 | + 23.48
58.18
0.13 2.253
2.19 2.25
4.12 2.26
6.28
8.50
56028 10.60
2028
14.69
16.70 18.752
18.70 18.75
20.70 12453
9376 22.97 | 27 38.78
9376 28 2.255 + 23.48

M 57 15.80·

556

α Leporis

h m s
5 27 24
° ′
−17 55

0.15874

1879 Sept. 20

29 13.75		29 3.4
16.18	18.240	4.8
18.30	18.24	6.4
20.40		7.8
9120 22.57		315 9.1
9120		315
27.00		29 6.30
29.10		+ 29.32
31.28		
33.42	35.630	
35.75	35.63	
37.85	35.60	
39.91		
42.10		
32067 44.26		
32067		
48.67		
50.80	52.954	
52.80	52.95	
55.10	7119	
26477 57.40		29 6.30
1477	29 35.615	+ 29.32

M 21 28.52.

96

ι Orionis

h m s
5 29 31
° ′
−5 59

1.17609
9.99763
1.17372

0.15854

31 22.60		31 14.5
24.55	26.752	16.2
26.76	26.63	18.2
28.87		20.0
13316 30.98		907 21.8
13376		907
35.10		31 18.14
37.20		+ 25.26
39.30		
41.35	43.450	
43.40	43.45	32 15.6
45.50	43.35	17.1
47.50		18.6
49.78		20.5
39105 51.92		942 22.4
39105		942
55.88		32 18.84
58.00	0.070	− 35.44
0.17	0.07	
2.10	8670	
30035 4.20		31 18.14
035	31 43.400	32 18.84

+ 25.26
− 35.44
60.70
1.78319
1.17372
2.95691
1.94240
8.98549
5 31 27

M 27 1.05.
M 28 28.55.
R 28 28.52.
R 28 28.50.
M 28 28.95.
28 28.63
87.58

a

ζ Orionis

h m s
5 34 39
° ′
−2 0

1.17609
9.99974
1.17583

0.15854

36 31.35		36 21.8
33.40	35.504	23.3
35.56	35.50	25.2
37.64		27.1
17752 39.57		1264 28.8
2752		264
43.60		36 25.28
46.00		+ 26.78
47.88		
50.05	52.069	
52.05	52.07	37 19.7
54.28	52.06	21.5
56.24		22.9
58.22		24.6
46862 0.30		1153 26.6
46862		153
4.50		37 23.06
6.45	8.626	− 31.00
8.68	8.62	
10.70	10412	
4313 12.80		36 25.28
4313	36 52.065	37 23.06

+ 26.78
− 31.00
57.78
1.76178
1.17583
2.93761
1.91455
8.97694
5 25 2

M 28 13.25.
M 29 35.62.
R 29 35.35.
R 29 35.15.
M 29 35.45.
29 35.39
82.14

100

κ Orionis

h m s
5 42 1

° ′	1.17609	0.15854
− 9 43	9.99372	
	1.16981	

43 52.60		43 44.0
54.62	56842	46.6
56.80	56.84	48.0
59.00		49.8
28421 1.19		2398 51.4
28421		43 2398
5.00		43 47.96
7.30		+ 25.58
9.87		
11.37	13.563	
13.60	1356	44 48.0
15.70	13.52	49.7
17.77		51.4
19.96		53.0
12207 22.00		2567 54.6
12207		2567
26.05		44 51.34
28.00	30.190	− 37.80
30.20	30.19	
32.30	14703	
15095 34.40		43 47.96
095	44 13.540	44 51.34
		+ 25.58
		− 37.80
		63.38
		1.80195
		1.16981
		2.97176
		1.95027
		8.97851
		5 26 12

102

α Orionis

h m s
5 48 37

° ′	1.17609	0.15854
+ 7 23	9.99638	
	1.17247	

50 29.50		50 21.0
31.54	33604	22.5
33.58	33.60	23.8
35.60		25.2
16802 37.80		1192 26.7
1802		192
42.18		50 23.84
44.18		+ 26.50
46.24		
48.32	50.381	
50.28	50.38	51 25.2
52.37	50.38	26.5
54.58		28.2
56.62		29.6
45343 58.66		1409 31.4
343		409
2.82		51 28.18
5.00	7.066	− 37.84
7.17	7.07	
9.17	10067	
3533 11.17		50 23.84
3533	50 50.335	51 28.18
		+ 26.50
		− 37.84
		6434
		1.80848
		1.17247
		2.98095
		1.96341
		8.98246
		5 29 10

5 48 40.72

106

μ Geminorum 0.15854

h m s
6 15 38

° ′	1.17609
+ 22 34	9.96541
	1.14150

17 29.88		17 24.0
32.17	34432	26.3
34.53	34.43	27.9
36.73		30.2
17216 38.85		1409 32.5
2216		1409
43.40		17 28.18
45.58		+ 24.13
47.85		
50.00	52.309	
52.38	52.31	18 26.7
54.42	52.31	28.8
56.75		30.5
59.00		32.2
47078 1.40		1522 34.0
47078		22
6.80		18 30.44
8.00	10.202	− 38.13
10.27	10.20	
12.38	10463	
5101 14.56		17 28.18
5101	17 52.310	18 30.44
		+ 24.13
		− 38.13
		6226
		1.79421
		1.14150
		2.93571
		1.91772
		8.98201
		5 28 49

M 10 15.97.
M 11 45.25.
R 11 45.10.
R 11 45.02.
M 11 45.22.
11 45.15
89.18

M 5 5.50.
M 6 37.40.
R 6 37.57.
R 6 37.35.
M 6 37.38.
6 37.42
91.92

7 23 8.6

M 54 13.25.
M 55 35.98.
R 55 36.02.
R 55 35.98.
M 55 35.98.
55 35.99
82.74

	107				S				
	γ Geminor				Sun	C = 46,895		9.99997	
	h m s 6 30 43 ° ′ +16 30		0.15854		h m s 11 53 52 ° ′ +0 40		0.15854		
1879	Sept. 20				Sept. 20-21				
32 33.30		32 29.0		54 32.28		55 41.0	56 —		56 17.5
37.45	39620	31.0		34.34	36518	42.3	42.26	+18.57 .83	3.37 19.1
39.57	39.62	34.0		36.60	36.52	44.0	44.28	16.62 .90	.842 21.3
41.88		36.1		38.70		46.0	46.47	14.34 .86	22.9
19810 43.90		—		18259 40.67		2214 48.1	48.40	12.38 .78	1056 24.8
19810				18259		21 4			56
48.28				44.85		55 44.28	52.50	8.25 .75	56 21.12
50.28				46.80		— 51.16	54.60	6.19 .79	7.51 20.28
52.47				48.90			56.55	4.12 .67	.823
54.67	56790			50.90	53052		58.63	2.04 0.823 .67	
56.82	56.79	33 34.7		53.15	53.27		0.90	−0.00 0.82 .90	
58.85	56.85	36.7		55.19	52.98		2.83	2.06 .77	
1.16		38.2		57.13			5.18	4.13 1.05	
3.18		40.0		59.35			7.18	6.19 .99	
51111 5.40		1910 41.4		47947 1.20			52741 9.04	8.26 .82	
51111		1910		47747			5 741		
9.70		33 38.20		5.40			13.40	12.38 1.02	1.02
11.87	14078	— 41.38		7.30	9.450		—		1.02
14.04	14.08			9.35	9.45		—		
16.28	11370			11.60	10597		—		
7039 18.50				4725 13.60		55 44.28	—		56 21.12
7039	32 56.820	33 38.20		4725	54 53.125	— 51.16			
		— 41.38							
								0.895	
								0.843	

M 58 26.85 .
M 59 54.58 .
R 59 54.65 .
R 59 54.70 .
M 59 54.72 .
59 54.66
87.81

M 32 4.50 .

M 4. 58.10.

S

Sun c = 46.861

h m s
12 1 3
° '
−0 7

0.15854

1879 Sept. 22-23

111

51 H. Cephei L. C

h m s
6 43 16
° '
+92 49

0.15854

Sept. 23

1	46.67		2	59.7	3	54.42		3	21.5	43	36.50	49	27.2
	48.75	50824		1.3		56.40	58.564		23.3		50.05		
	50.80	5082		3.0		58.60	58.56		24.9		4.55		
	52.90			4.7		0.60			26.5		19.15		
25412	55.00		3155	6.8	29282	2.80		1237	27.5		33.90		
	412			155		29282			237		48.00		
	59.05		3	310		7.00		3	24.74		2.05		
	1.00		~	55.90		9.20		+	50.52		15.00		
	3.00					11.12					30.60		
	5.25	7.268				13.22	15.303				45.35		
	7.28	7.27				15.22	15.30				59.35		
	9.38	7.14				17.35	15.22				11.70		
	11.45					19.37					27.00		
	13.40					21.67					41.72		
60541	15.60				13773	23.58					55.48		
	6541					13773					10.30		
	19.80					27.80					24.18		
	21.80	23872				29.80	31.874				38.24		
	23.88	23.47				31.90	31.87				53.00		
	25.88	13429				33.90	15043				6.50		
11736	28.00		3 2	3.10	15937	35.97		3	24.74		21.20		
	1936	2 7.205	+	4.10		937	4 15.260	+	50.52		34.70		
											49.28		
											3.90		
											17.80		

M 18 53.22.

M 51 29.02.

M 44 3.42.

275

277

λ Aquilae

h m s
18 59 50
−5 4

1879 Sept. 23

Chf.

0.15854

β Cygni

h m s
19 25 30
° ′
+27 42

1.17609
9.94714
1.12323

0.15854

γ Aquilae

0.15854

h m s
19 40 30
° ′
+10 19

1.17609
9.99292
1.16901

27 44.70
47.60
49.37
51.80
24692 54.05
24692
58.65
1.60
3.35
5.76
8.06
10.32
12.75
15.17
61249 17.43
7249
22.05
24.34
26.66
29.00
13335 31.30
13335

49.384
49.38
8.0~~277~~ 54
8.05
26670
2667
13665
28 8.025

27 38.8
40.6
42.0
43.8
2105 45.3
105
27 4210
+ 25.92
28 38.5
40.2
42.0
43.9
2100 45.4
100
28 4200
− 33.98
27 42.10
28 42.00
+ 25.92
− 33.98
59.90
1.77743
1.12323
2.90066
1.88116
8.98050
5 27 41

42 27.00
29.10
31.25
33.30
15605 35.40
605
37.64
41.70
43.73
45.92
48.00
50.05
52.20
54.30
43199 56.45
43199
0.60
2.70
4.75
6.85
2395 9.05
2395

31.210
31.21
47.999
48.00
48.00
4.790
4.79
9600
42 48.000

19 40 83.95

42 17.3
19.0
21.0
22.8
1044 24.3
44
42 20.88
+ 27.12
43 15.3
17.0
18.7
20.2
932 22.0
932
43 1864
− 2064
42 20.88
43 18.64
+ 27.12
− 30.64
57.76
1.76163
1.16901
2.93064
1.91861
8.98797
5 33 26

M ~~46~~ 4.60.
M 47 20.57.
R 47 20.78.
R 47 20.75.
M 47 20.52.
47 20.66
76.06

M 8 54.92.
M 10 17.70.
R 10 17.90.
R 10 17.90.
10 17.83
82.91

10 18 27.5

280

α Aquilae

h m s
19 44 53
° '
+8 33

1.17609 0.15854
9.99515
1.17124

46 49.60		46 44.0
51.64	53.758	45.6
53.75	53.76	47.3
55.88		49.0
26879 57.92		2367 50.8
1879		2367
2.00		46 47.34
4.18		+ 23.06
6.20		
8.28	10.397	
10.39	10.39	47 41.2
12.48	10.40	42.6
14.60		44.0
16.66		46.0
9357 18.78		2218 48.0
9357		218
22.87		47 44.36
25.00	27.048	− 33.96
27.00	27.05	
29.12	14081	
13524 31.25		46 47.34
3524	47 10.395	47 44.36
		+ 23.06
		− 33.96
		57.02
19 44 56.40		1.75603
		1.17124
		2.92727
		1.91397
		8.98670
		5 32 22

M 55 7.60
M 56 29.50
R 56 29.70
R 56 29.70

56 29.63
82.03

8 33 16.9

283

β Aquilae

h m s
19 49 22
° '
+6 6

1.17609 0.15854
9.99753
1.17362

51 19.02		51 10.6
21.02	23.188	12.1
23.23	23.19	13.7
25.30		15.4
11594 27.37		787 16.9
1594		187
31.50		51 13.74
33.55		+ 26.07
35.64		
37.71	39.813	
39.86	39.81	52 8.0
41.92	39.81	9.3
43.95		10.8
46.06		12.3
35832 48.13		546 14.2
35832		546
52.27		52 10.92
54.29	56.428	− 31.11
56.45	56.43	
58.53	7962	
28214 0.60		51 15.74
28214	51 39.810	52 10.92
		+ 24.07
		− 31.11
		55.18
19 49 25.86		1.74178
		1.17362
		2.91540
		1.91201
		8.99661
		5 40 00

M 21 40.80
M 23 2.60
R 23 2.50
R 23 2.32
M 23 2.42
23 2.46
81.66

6 6 36.2

287

θ Aquilae

h m s
20 5 4
° '
−1 11

1.17609 0.15854
9.99991
1.17600

7 0.82		6 54.3
2.82	4.910	56.3
4.90	4.91	58.5
6.97		0.0
2455 9.04		2909 1.8
2455		2909
13.11		6 58.18
15.26		+ 23.24
17.28		
19.38	21.417	
21.40	21.42	7 51.1
23.47	21.42	52.8
25.50		54.4
27.57		56.0
19275 29.70		2722 57.9
1275		222
33.80		7 54.44
35.92	37.944	− 33.02
38.00	37.94	
40.00	42.85	
18972 42.00		6 58.18
18972	7 21.420	7 54.44
		+ 23.24
		− 33.02
		56.26
		1.75020
		1.17600
		2.92620
		1.91009
		8.98389
		5 30 14

M 38 37.57
M 39 58.75
R 39 58.95
R 39 58.80
M 39 58.97
39 58.87
81.30

607 L² Capricorni
h m s
20 11 20
° '
−12 35
1.17609
9.98887
1.16496
0.15854

1879 Sept. 23

30 β Arietis
h m s
1 47 57
° '
+20 13
0.15854

33 α Arietis
h m s
2 0 21
° '
+22 53
1.17609
9.9~~6~~4040
1.14049
0.15854

13 17.05		13 10.5	49 ~~55.36~~		50 20.2	2 18.34		2 7.4
19.25	21.322	12.4	~~57.48~~		22.1	20.50	22.768	9.2
21.28	21.32	14.0	59.60		24.0	22.70	22.77	11.2
23.48		16.0	1.50		25.2	25.00		13.0
10661 25.55		706 17.7	3.70		1183 26.8	11384 27.30		557 14.9
661		206			183	1384		557
29.74		13 14.12	8.07		50 23.66	31.66		2 11.14
31.90		+ 24.10	10.05			33.86		
34.00			12.27			36.26		
36.00	38.211		14.40	16.711		38.42	40.674	
38.22	38.21	14 10.0	16.70	16.71	50 51.0	40.70	40.67	3 12.7
40.37	38.24	11.7	18.98		52.4	42.90	40.68	14.8
42.48		13.3	21.17		54.2	45.20		16.4
44.57		15.4	23.24		56.4	47.35		18.0
34390 46.62		670 16.6	15040 25.52		2717 57.7	36607 49.72		819 20.0
34390		170	15040		217	607		819
51.00		14 13.40	29.90		50 54.34	54.17		3 16.38
53.00	55.158	− 35.18	32.08	34.286		56.35	58.584	
55.13	55.16		34.30	34.29		58.55	58.58	
57.30	7648		36.50			0.80	8135	
27579 59.36		13 14.12	17143 38.65		50 23.66	29292 3.05		2 11.14
2579	13 38.225	14 13.40	2143	50 16.814	50 54.34	29292	2 40.675	3 16.18
		+ 24.10						+ 29.54
		− 35.18						− 35.50
		59.28						65.04
20 11 24.62		1.77291				2 0 25.89		1.81318
		1.16496						1.14049
		2.93787						2.95367
		1.91524						1.94022
		8.97737						8.98655
		5 25 21						5 32 15

M 22 34.12.
M 23 56.57.
R 23 56.35.
R 23 56.32.
M 23 56.32.
23 56.39
82.27

12 54 54.0

M 15 59.80.
M 16 41.52.
R 16 41.47.
R 16 41.35.
M 16 41.47.
16 41.45

M 34 50.07.
M 36 17.35.
R 36 17.12.
R 36 17.10.
M 36 17.27.
36 17.21
87.14

22 53 46.5

S

Sun @ = 46.861

h m s
12 4 39
° '
−0 30

0.15854

1879 Sept. 23-24

	5 23.88		6	31.0	7	31.87		6	53.4
	26.00	27.996		32.7		33.87	36.002		54.9
	28.08	27.99		34.4		36.06	36.00		56.2
	30.00			35.9		38.06			57.4
13998	32.10		1715	37.5	18001	40.15		2806	58.7
	13998			215		18001			306
	36.26		6	34.30		44.28		6	56.12
	38.30		−	49.80		46.30		+	56.41
	40.34					48.37			
	42.28	44.511				50.33	52.516		
	44.42	44.52				52.48	52.51		
	46.60	44.49				54.60	52.55		
	48.70					56.58			
	50.80					58.85			
40060	52.90				47264	0.85			
	40060					47264			
	56.90					4.95			
	59.00	0990				7.20	9.110		
	1.00	0.99				9.00	9.11		
	3.00	8898				11.22	10511		
30495	5.05		6	34.30	45.55	13.18		6	56.12
	495	5 44.505	−	49.80		4566	7 52.530	+	56.41

M 42 890·

M 14 4472·

β Tauri

h m s
5 18 39
° '
+28 30

0.15854

Sept. 24

Clf.

93

δ Orionis

h m s
5 25 50
−0° 23′

1879 Sept. 24

0.15854

27	48.28		27	44.1
	50.00	52.230		46.6
	52.20	52.23		48.5
	54.30			49.7
26115	56.37		2391	51.2
	1115			2401
	0.66		27	4802
	2.70		+	20.88
	4.80			
	6.75	8.912		
	9.00	8.91		
	11.00	8.91		
	13.00			
	15.30			
8021	17.00			
	8021			
	21.10			
	23.23	25.386		
	25.45	25.59.		
	27.55	13782		
12793	29.60		27	47.82
	2693	28 8.90	+	21.08

556

α Leporis

h m s
5 27 24
−17° 55′

0.15854

29	20.63		29	13.3
	22.80	24.900		16.4
	24.80	24.90		18.3
	27.00			20.1
12450	29.27		901	22.0
	2450			901
	33.60		29	1802
	35.68		+	24.28
	37.92			
	40.25	42.319		
	42.35	42.32		
	44.50	42.28		
	46.80			
	48.77			
38087	51.00			
	38087			
	53.37			
	57.40	59.660		
	59.80	59.66		
	1.78	8456		
29830	3.95		29	1802
	29830	29 42.300	+	24.28

96

ι Orionis

0.15854

h m s
5 29 31
−5° 59′

1.17609
9.99763
1.17372

31	29.40		31	23.1
	31.35	33.490		24.9
	33.60	33.49		26.7
	35.42			28.2
18745	37.68		1327	29.8
	1745			327
	41.78		31	26.54
	43.92		+	23.53
	46.05			
	48.05	50.078		
	50.02	50.08	32	19.3
	52.08	50.06		20.5
	54.20			22.1
	56.30			23.8
45070	58.30		1116	25.9
	070			116
	2.55		32	2232
	4.65	6.646	−	32.25
	6.58	6.64		
	8.70	10013		
33323	10.75		31	26.54
	3323	31 50.070	32	22.32
			+	23.53
			−	32.25
				55.78
				1.74648
				1.17372
				2.92020
				1.90390
				8.98370
				5 306

M 51 19.65.

M 21 33.15.

M 27 4.22.
M 28 24.52.
R 28 24.22.

28 24.37
80.15

		a				100				102		
	ζ Orionis					κ Orionis				α Orionis		0.15854
	h	m s				h m s				h m s		
	5	34 39				5 42 1				5 48 37		
		° ′	1.17609	0.15854		° ′		0.15854		° ′	1.17609	
		−2 0	9.99974			−9 43				+7 23	9.99638	
			1.17583								1.17247	
	36 38.00		36 32.3		44 —		44 16.8		50 36.10		50 26.1	
	40.00	42036	34.0		—		18.5		38.00	40200	27.9	
	42.00	42.04	35.9		—		20.2		40.10	40.20	30.0	
	44.18		37.5		—		21.7		42.45		31.8	
21018	46.00		1787 39.0		—		1006 23.4		20100 44.35		1493 33.5	
	1018		287				1006		20100		1493	
	50.25		36 35.74	+8.37 19.77	178.66 11.40		44 20.12		48.60		50 29.86	
	52.20		+ 22.74	6.27 19.77	19.851 13.50		− 0.32		50.70		+ 27.02	
	54.30			4.14 19.89	15.70				53.00			
	56.50	58472		2.07 19.77	17.70	19856			54.75	56933		
	58.38	58.47	37 26.9	−0.00 19.98	19.70	19.85	44 55.6		56.85	56.93	51 30.0	
	0.40	58.50	29.0	2.04 20.11	22.20		57.0		58.95	56.84	31.8	
	2.68		31.1	4.14 19.81	24.00		58.3		1.00		33.5	
	4.70		32.9	6.28 19.42	26.20		59.7		3.15		35.0	
52625	6.84		1543 34.4	8.28 19.72	17870 28.10		2919 1.3		51240 5.20		1671 36.8	
	52625		37 30.86		17870		2919		51240		171	
	10.77		− 32.38	12.56 20.04	98.50 32.60		44 58.38		9.32		51 33.42	
	12.81	14956		14.65 19.95	19.70 34.60	36620	− 38.58		11.32	13480	− 36.54	
	15.10	14.96		16.75 19.85	36.60	36.62			13.50	13.48		
	17.10	11700		18.89 19.76	38.60				15.61	15368		
7478	19.00		36 35.74	20.00 19.70	18310 40.70		44 20.12		6740 17.65		50 29.86	
	2478	36 58.485	37 30.86		18310		44 58.38		6740	50 56.885	51 33.42	
			+ 22.74								+ 27.02	
			− 32.38	19.776							− 36.54	
			55.12	19.797							63.56	
			1.74131						5 48 40.83		1.80318	
			1.17583								1.17247	
			2.91714								2.97565	
			1.89165								1.96061	
			8.97451								8.98496	
			5 23 13								5 31 3	

M 28 18.52 ·	~~M 10~~ —	4^{s} micros blank	M 5 3.22 ·
M 29 36.80 ·	M 11 45.30		M 6 34.52 ·
R 29 36.27 ·	R 11 45.10		R 6 34.75 ·
R 29 36.42 ·	R 11 45.05		R 6 34.42 ·
M 29 36.27 ·	M 11 45.17		M 6 34.50 ·
29 36.44	11 45.16		6 34.55
77.92			91.33
			7 23 18.6

256

S Urs. Min Lo. 6

h m s
18 11 21
° '
+ 93 24

0.15854

1879. Sept. 24

+2	19.50	10	33.30	12 52.90	7 24.3
+2	7.65		43.75	12 51.40	
+1	56.04		56.90	12 52.94	8 3.9
+1	44.34	11	7.08	51.42	
+1	32.77		20.00	52.77	9 15.7
+1	21.21		31.38	52.59	
+1	9.60		42.58	52.18	15 25.6
+0	57.99		54.97	52.96	
+0	46.30	12	5.92	52.22	
+0	34.82		17.55	52.37	
+0	23.19		28.23	51.42	
+0	11.57		41.90	53.47	
-0	0.02		51.76	51.74	
-0	11.53	13	3.15	51.62	
-0	23.15		16.92	53.77	
-0	34.73		28.18	53.45	
-0	46.38		39.40	53.02	
-0	58.02		50.60	52.58	
-1	9.52	14	3.22	53.70	
-1	21.21		14.57	53.36	
-1	32.86		26.00	53.14	
-1	44.46		37.70	53.24	
-1	56.03		48.47	52.44	
-2	7.71	15	0.87	53.16	
-2	19.35		11.80	52.55	

12 52.68

106

μ Geminorum

h m s
6 15 38
° '
+ 22 34

1.17609 0.15854
9.96541
1.14150

	17 36.66		17 27.9
	38.60	40.918	29.3
	40.80	40.92	30.9
	43.18		32.4
20459	45.35		1550 34.5
	459		1550
	50.03		17 31.00
	52.29		+ 27.86
	54.50		
	56.60	58867	
	58.90	58.87	18 36.9
	0.98	58.84	38.9
	3.30		40.9
	5.50		42.8
52980	7.70		2035 44.0
	52980		35
	12.38		18 40.70
	14.38	16.766	− 41.84
	16.90	16.77	
	19.07	11769	
8383	21.10		17 31.00
	3383	17 58.855	18 40.70

+ 27.86
− 41.84
69.70
1.84323
1.14150
2.98473
1.97859
8.99386
5 37 51

107

γ Geminorum

h m s
6 30 43
° '
+16 30

1.17609 0.15854
9.98174
1.15783

	32 41.80		32 36.0
	43.90	46080	37.8
	46.10	46.08	39.4
	48.25		41.4
23040	50.35		1974 42.8
	3040		1974
	54.73		32 39.48
	56.88		+ 23.82
	59.00		
	1.00	3.314	
	3.25	3.31	33 33.7
	5.50	3.29	35.5
	7.70		37.5
	9.80		39.0
56983	11.97		1870 41.3
	2983		1870
	16.13		33 37.40
	18.50	20506	− 34.10
	20.50	20.51	
	22.60	12659	
10253	24.80		32 39.48
	10253	33 3.300	33 37.40

+ 23.82
− 34.10
57.92
1.76283
1.15783
2.92066
1.89851
8.97785
5 25 42

M	8	9.97
M	8	6.02
M	7	59.17
M	7	25.62

~~7 50.27~~

M	54	5.72
M	55	40.72
R	55	40.92
R	55	41.12
M	55	40.87
	55	40.91

95.19

M	58	26.80
M	59	46.05
R	59	45.85
R	59	45.95
M	59	46.00
	59	45.96

79.16

118

β Can Min

h m s
7 20 35
° ′
+8 32

1.17609
9.99517
1.17126

0.15854

22 33.90		22 24.6
35.85	37.96	26.0
38.05	37.99	27.4
40.10		28.9
18998 42.08		1377 30.8
18998		1377
46.22		22 27.54
48.40		+ 27.11
50.55		
52.63	54648	
54.63	54.65	23 31.0
56.66	54.65	33.5
58.74		35.5
1.00		36.7
49183 3.00		1751 38.4
49183		251
7.23		23 3502
9.30	11.322	− 40.37
11.38	11.32	
13.30	10931	
5661 15.40		22 27.54
5661	22 54.650	23 35.02
		+ 27.11
		− 40.37
		67.48
		1.82918
		1.17126
		3.00044
		1.98019
		8.97975
		5 27 7

M	56 20.30
M	57 56.20
R	57 55.87
R	57 55.55
M	57 55.75
	57 55.84
	95.54

119

α Geminor

h m s
7 26 52
° ′
+32 9

1.17609 0.15854
9.92771
1.10380

28 49.00		28 40.5
51.30	53800	41.8
53.77	53.80	43.5
56.28		45.8
26900 58.65		2196 48.0
1900		196
3.50		28 4392
6.00		+ 29.36
8.30		
10.90	13.267	
13.40	13.27	29 47.2
15.80	13.29	49.4
18.00		51.2
20.60		53.0
11940 22.90		2558 55.0
11940		2558
27.80		29 5116
30.37	32780	− 37.88
32.80	32.78	
35.23	14658	
16390 37.70		28 4392
16390	29 13.280	29 51.16
		+ 29.36
		− 37.88
		6724
7 26 55.96		1.82763
		1.10380
		2.93143
		1.91850
		8.98707
		5 32 39

M	19 4695
M	21 9.82
R	21 9.78
R	21 9.90
M	21 9.85
	21 9.84
	82.89

32 9 1.4

120

α Can Min

0.15854

h m s
7 32 58
° ′
+5 32

1.17609
9.99797
1.17406

34 56.50		34 50.2
58.38	0.492	51.8
0.48	0.41	53.6
2.50		55.0
30206 4.60		2673 56.7
246		173
8.80		34 5346
10.85		+ 23.62
12.85		
14.90	17.091	
17.05	17.09	35 45.3
19.20	17.07	47.0
21.30		48.9
23.42		50.7
15382 25.45		2444 52.5
15382		444
29.64		35 4888
31.49	33728	− 31.80
33.69	33.73	
35.90	3414	
16864 37.92		34 5346
1864	35 17.080	35 48.88
		+ 23.62
		− 31.80
		55.42
7 38 0.88		1.74367
		1.17406
		2.91873
		1.90509
		8.98736
		5 32 52

M	56 13.00
M	57 33.42
R	57 33.42
R	57 33.40
M	57 33.25
	57 33.37
	80.37

5 32 3.8

1879

Sept. 24

122 β Geminorum

h m s
7 37 55
° '
+28 19

1.17609 0.15854
9.94465
1.12074

	39 51.30		39 41.8
	53.75	56066	43.9
	56.00	56.07	45.9
	58.38		47.7
28033	0.90		2287 49.4
	28033		287
	5.38		39 45.74
	7.70		+ 29.07
	10.00		
	12.50	14736	
	14.80	14.74	40 45.5
	17.20	14.88	46.8
	19.30		48.5
	21.75		50.7
13263	24.00		2445 53.0
	4263		445
	27.00		40 48.90
	31.30	33690	− 34.09
	33.60	33.69	
	36.00	14976	
16845	38.55		39 45.74
	1845	40 14.810	40 48.90
			+ 29.07
			− 34.09
			63.16
7	37 58.02		1.80044
			1.12074
			2.92118
			1.90693
			8.98575
			5 31 39

M 9 48.15
M 11 8.80
R 11 9.05
R 11 8.82
M 11 8.78
11 8.86
80.71

28 18 54.6

146 α Leonis

h m s
10 1 56
° '
+12 83

1.17609 0.15854
9.98950
1.16559

	3 53.00	53.55	3 46.0
	55.38	57.540	47.9
	57.62	57.54	50.1
	59.80		51.6
28770	1.90		2491 53.5
	28770		2491
	6.16		3 49.82
	8.20		+ 24.67
	10.25		
	12.28	14.494	
	14.53	14.49	4 43.0
	16.53	14.49	45.0
	18.68		46.9
	20.80		48.5
13045	23.00		2340 50.6
	13045		340
	27.34		4 46.80
	29.38	31.454	− 32.31
	31.40	31.45	
	33.50	14899	
15727	35.65		3 49.82
	727	4 14.490	4 46.80
			+ 24.67
			− 32.31
			56.98
10	157.93		1.75572
			1.16559
			2.92131
			1.90612
			8.98481
			5 30 56

M 55 9.65
M 56 30.37
R 56 30.27
R 56 30.05
M 56 30.15
56 30.21
80.56

12 38 18.5

148 ζ Leonis

h m s
10 9 57
° '
+24 /

0.15854

	11 54.25		11 51.5
	56.60	58874	53.3
	59.00	58.87	55.3
	1.17		57.1
29437	3.35		2766 59.4
	29437		266
	7.77		11 55.32
	10.03		− 21.52
	12.20		
	14.58	16.803	
	16.76	16.80	
	19.23	16.88	
	21.28		
	23.60		
15123	25.78		
	15123		
	30.30		
	32.70	34900	
	35.00	34.90	
	37.10	15377	
17450	39.40		11 55.32
	2450	12 16.840	+ 21.52

M 27 50.60

C.

γ Leonis

10 13 18
+ 20° 27′
1.17609
9.97173
1.14782

0.15854

1879 Sept. 24

S

Sem. C = 46,883

h m s
12 8 15
−0° 54′

0.15854

Sept. 24 – 25

	15 15.20		15 6.0		9 1.35		10 13.7	11 9.40		10 33.7
	17.48	19.650	7.5		3.50	5424	15.6	11.45	13.420	35.0
	19.62	19.65	9.6		5.40	5.42	17.7	13.42	13.42	37.0
	21.90		11.7		7.37		19.0	15.23		38.2
9825	24.05		483 13.5		2712 9.50		865 20.5	6710 17.60		1831 39.2
	9825		483		2712		865	6710		331
	28.47		15 9.66		13.40		10 17.30	21.72		10 36.62
	30.72		+ 27.62		15.60		− 55.44	23.83		+ 53.37
	32.88				17.75			25.95		
	35.14	37304			19.80	21784		28.00	30.004	
	37.30	37.30	16 5.9		21.90	21.78		29.97	3.000	
	39.50	37.25	7.8		23.70	21.95		32.00	29.98	
	41.73		9.8		26.05			34.10		
	43.90		11.4		27.90			36.25		
33574	46.10		481 13.2		19606 29.96			27002 38.20		
	33574		481		1606			002		
	50.54		16 9.62		34.40			42.38		
	52.60	54858	− 32.34		36.37	38.482		44.57	46.530	
	54.90	54.85			38.50	38.48		46.50	46.53	
	57.03	7450			40.50	4390		48.50	5995	
27429	59.22		15 9.66		19241 42.64		10 17.30	23265 50.70		10 36.62
	2429	15 37.275	16 9.62		19241	9 21.865	+ − 55.44	3265	11 29.990	+ 53.37
			+ 27.62							
			− 32.34							
			59.96							
10	13 20.85		1.77786							
			1.14782							
			2.92568							
			1.91376							
			8.98808							
			5 33 25							

M 1 37.32 · M 5 36.97 · M 38 11.27

M 2 59.52
R 2 59.37
R 2 59.10
M 2 59.25
2 59.31
8199

20 26 58.4

587

α Virginis

h m s
13 18 49
° ′
−10 32

0.15854

1879

Sept. 25

		20 —		20 38.3
+18.88	7.48	30.57 48.60		40.5
16.80	7.60	7.642 50.80		42.1
14.70	7.70	53.00		44.0
−12.54	7.79	55.20		2109 46.0
				109
8.39	7.74	53.30 59.35		20 4218
6.30	7.65	7.614 1.35		— 2543
4.19	7.47	3.28		
2.08	7.43	5.35		
−0.00	7.65	7.65		21 49.3
2.09	7.61	9.70		
4.20	7.75	11.85		
		—		
		—		
12.54	7.53	15.64 20.12		
14.64	7.56	7.545 22.25		
		—		
		—		
		—		20 42.18

7.600
7.611

13 18 51.24

M 59 46.35
M 1 22.42
R 1 22.05

1 22.24
95.89

10 31 59.2

209

α Cor. Bor.

h m s
15 29 34
° ′
+27 7

0.15854

	31 30.00		31 —		
	32.10	34486	—		
	34.50	34.49	26.0		
	36.75		27.4	27.86	
17243	39.08		836 30.2		
	2243				
	43.80				
	46.10				
	48.35				
	50.70	53,058			
	53.05	53.06			
	55.33	53.05			
	57.67				
	0.20				
47752	2.32				
	47752				
	7.00				
	9.30	11610			
	11.60	11.61			
	13.95	10610			
5805	16.20				
	5805	31 53.055			

15 29 35.79

M 21 26.27
R 21 26.32
R 21 26.57
M 21 26.35

21 26.~~41~~38

27 7 21.9

594

δ Scorpii

h m s
15 53 11
° ′
−22 17

0.15854

55	7.57		55 1.3	
	9.70	11.980	3.6	
	12.00	11.98	5.3	
	14.25		6.7	
5990	16.38		257 8.8	
	5990		257	
	20.95		55 51.4	
	23.03			
	25.30			
	27.60	29801		
	29.70	29.91	56 2.4	
	32.06		5.4	
	34.24		7.0	
	36.53		8.7	
26821	38.80		341 10.6	
	26821		341	
	~~43~~.18		56 6.82	
	45.40			
	47.70			
	49.90			
	52.15		55 51.4	
		55 29.812	56 6.82	

M 43 48.07
M 45 9.57
R 45 9.62
R 45 9.60
M 45 9.47
45 9.56
81.49

595		222		596	
β Scorpii	9.97444	δ Ophiuchi		α Scorpii	
h m s 15 58 24	0.15854	h m s 16 8 0	1.17609 0.15854	h m s 16 21 57	0.15854
° ' −19 28		° ' −3 23	9.99924 1.17533	° ' −26 10	

		0	—		0 32.3	9 57.00		9 49.1		23 55.60			23 46.2
			—		41.6	0.95	3066	51.1		57.80	0130		47.7
			—		43.8	3.05	3.07	53.1		0.20	0.13		50.4
			—		45.3	5.23		54.7		2.35			53.0
			—		2168 46.8	31533 7.10		2647 56.7		30065 4.70			2517 54.4
					168	1533		147		065			17
+ 8.75	43.20	390.97	34.45		0 4336	11.20		9 5294		9.37			23 5034
6.57	43.14	43.441	36.57		− 0.03	13.28		+ 26.56		11.70			+ 28.21
4.47	43.40		38.93			15.39				14.05			
+ 2.17	43.37		41.20	43323		17.40	19467			16.36	18580		
− 0.00	43.50		43.50	43.32	1 23.4	19.40	19.47	10 49.5		18.50	18.58		24 50.0
2.18	43.32		45.50			21.50	19.54	50.8		20.85	18.52		52.0
4.38	43.62		48.00			23.58		52.7		23.20			54.3
6.57	43.19		49.76			25.65		54.0		25.42			55.8
8.77	43.23	38991	52.00			17520 27.80		2627 55.7		16722 27.77			2696 57.5
			38991			17520		127		16722			196
13.13	43.15	215.69	56.28			31.80		10 5254		32.30			24 5392
15.32	43.18	43.138	58.50	0662		34.00	36.014	− 33.04		34.70	36920		− 35.37
17.52	43.16		0.68	0.66		35.95	36.01			36.80	36.92		
19.70	43.15		2.85			38.08	3908			39.25	3705		
−21.95	43.05	30331	5.00		0 43.36	18007 40.24		9 52.94		18460 41.55			23 50.34
			331			18007	1019.505	10 52.54		18460	24 18.550		24 53.92
								+ 26.56					+ 28.21
	43.284							− 33.04					− 35.37
	43.333							59.60					63.58
								1.77525		16 22 2 57			1.80332
								1.17533					
								2.95058					
								1.93359					
								8.98301					
								52934					

M 56 24.42	M 50 58.37	M 36 28.00
M 57 14.37	M 52 24.27	M 36 50.22
R 57 14.20	R 52 24.17	R 36 49.95
R 57 14.10	R 52 24.22	R 36 49.90
M 57 14.10	M 52 24.12	
57 14.19	52 24.19	36 50.02
49.77	85.82	

26 9 54.1

1879 Sept. 25.

597

ζ Ophiuchi

h m s
16 30 30
° '
−10 19

1.17609 0.15854
9.99292
1.16901

	32 28.10		32	19.4
	30.27	32322		20.9
	32.29	32.32		22.0
	34.45			24.0
16161	36.50		1120	25.7
	1161			120
	40.85		32	2240
	42.85		+	26.70
	44.90			
	47.10	49119		
	49.00	49.12	33	20.8
	51.28	49.07		22.0
	53.24			23.8
	55.40			25.2
44207	57.45		1186	26.8
	44207			186
	1.60		33	2372
	3.70	5820	−	34.62
	5.80	5.82		
	8.00	9814		
2910	10.00		32	22.40
	2910	32 49.095	33	23.72
			+	26.70
			−	34.62
				61.32
				1.78760
				1.16901
				2.95661
				1.93897
				8.98236
				5 29 5

598

η Ophiuchi

h m s
17 3 27
° '
−15 34

1.17609 0.15854
9.98377
1.15986

	5 24.50		5	15.2
	26.50	28.728		16.5
	28.88	28.73		18.2
	30.76			20.0
14364	33.80		918	21.9
	14364			918
	37.39		5	1836
	39.55		+	27.52
	41.55			
	43.75	45896		
	45.80	45.89	5	59.4
	48.05	45.88		1.5
	50.22			2.9
	52.35			4.5
41306	54.40		3149	6.6
	41306			149
	58.70		6	298
	0.93	3.022	−	17.10
	3.13	3.02		
	5.00	9175		
31511	7.35		5	18.36
	1511	5 45.885	6	2.98
			+	27.52
			−	17.10
				44.62
				1.64953
				1.15986
				2.80939
				1.79560
				8.98621
				5 32 0

237

α' Herculis

h m s
17 9 18
° '
+14 32

1.17609 0.15854
9.98588
1.16197

	11 6.00		10	59.3
	8.20	10310		0.6
	10.30	10.31		2.3
	12.50			3.7
5155	14.55		3123	6.4
	5155			123
	18.90		11	246
	21.60		+	24.94
	23.20			
	25.29	27.427		
	27.41	27.43	11	43.7
	29.56	27.36		45.5
	31.73			47.0
	33.75			48.4
24684	36.00		2346	50.0
	24684			2346
	40.05		11	4692
	42.17	44400	−	19.52
	44.50	44.40		
	46.60	5471		
22200	48.68		11	246
	2200	11 27.395	11	46.92
			+	24.94
			−	19.52
				44.46
17 9 10.41				1.64797
				1.16197
				2.80994
				1.79309
				8.98315
				5 29 41

M	47	3.50
M	48	30.52
R	48	30.25
R	48	30.35
M	48	30.45
	48	30.39
		86.89

M	1	55.40
M	2	57.97
R	2	57.72
R	2	57.90
	2	57.86
		62.46

M	56	40.82
M	57	43.15
R	57	42.78
R	57	42.92
M	57	42.82
	57	42.92
		62.10

14 31 57.2

277

γ Aquilae

h m s
19 40 30
° ′ 1.17609 0.15854
+10 19 9.99292
1.16901

42	29.90		42	21.0
	32.00	34150		22.8
	34.10	34.15		24.7
	36.40			26.2
17075	38.35		1225	27.8
	2075			225
	42.55		42	24.50
	44.70		+	26.44
	46.70			
	49.00	50914		
	51.00	5091	43	20.7
	53.00	50.96		21.9
	55.00			23.4
	57.00			25.2
45823	59.28		1184	27.2
	823			184
	3.50		43 2	3.68
	5.75	7.776	−	32.74
	7.78	7.77		
	10.05	101 92		
3888	11.80		42	24.50
	3888	42 50.935	43	23.68
			+	26.44
			−	32.74
				59.18
19 40	33.92			1.77217
				1.16901
				2.94118
				1.92727
				8.98609
				5 31 54

M 8 54.42.
M 10 18.75.
R 10 19.12.
R 10 19.12.

10 19.00
84.58

10 19 27.5

280

α Aquilae

h m s
19 44 53
° ′ 0.15854
+8 33

46	52.40		47	5.5
	54.50			7.4
	56.60			9.4
	58.60			10.8
	0.80		465	13.4
				466
	5.27		47	9.30
	7.15			
	9.10			
	11.33	13352		
	13.10	1335	47	44.0
	15.27			45.9
	17.55			47.8
	19.70			49.6
12017	21.70		2388	51.5
	12017			2388
	25.80		47	47.76
	28.05	30086		
	30.09	30.09		
	32.19			
15043	34.30		47	9.30
	043	47 13.342	47	47.76
19 44	56.87			

M 55 33.75.
M 56 27.58.
R 56 27.67.
R 56 27.67.

56 27.64

8 33 17.0

283

β Aquilae 0.15854

h m s
19 49 22
° ′ 1.17609
+6 6 9.99753
1.17362

57	21.90		51	14.5	
	24.05	26090		15.9	
	26.20	26.09		17.4	17.74
	28.00			19.2	
13045	30.30		887	21.7	
	13045			387	
	34.38		51	17.74	
	36.38		+	24.99	
	38.53				
	40.80	42702			
	42.77	4276	52	9.6	
	44.90	42.70		11.5	
	46.90			13.3	13.30
	49.00			14.9	
38486	51.20		665	17.2	
	38486			665	
	55.18		52	13.30	
	57.30	59.310	−	30.57	
	59.32	59.31			
	1.35	8540			
29655	3.40		51	17.74	
	29655	51 42.730	52	13.30	
			+	24.99	
			−	30.57	
				55.56	
19 49	25.82			1.74476	
				1.17362	
				2.91838	
				1.89724	
				8.97886	
				5 26 27	

M 21 40.65.
M 22 59.45.
R 22 59.70.
R 22 59.52 –
M 22 59.67.
22 59.58
78.93

6 6 86.3

1879phae.proj.1505.

287 θ Aquilae

h m s
20 5 4.
° '
-1 11

0.15854

1879 Sept. 25

7 ——
——
——
——
——

7 23.6
25.9
27.5
29.1
1370 30.9
370
7 24.40
− 3.03
8 3.8
5.0
6.4
7 2740

+8.26 24.41 219.42 16.15
6.19 24.19 24.38 18.00
4.13 24.33 20.20
2.04 24.31 22.27 24.382
−5.00 24.30 24.30 24.38
2.06 24.74 26.80
4.13 24.54 28.67
6.14 24.16 30.35
8.26 24.24 1944 32.70
21944
12.38 24.86 121.74 36.74
14.43 24.42 24.358 38.85 40878
16.51 24.39 40.90 40.88
18.58 24.42 43.00
20.70 24.20 0439 44.90
439

24.369
24.372

M 39 12.72.
M 40 8.52.
R 40 8.70.
R 40 8.57.
40 8.75.
40 8.63

607 α² Capricorni

h m s
20 11 20
° '
-12 55

1.17609
9.98887
1.18496
6

0.15854

13 20.15
22.15 24.332
24.38 24.33
26.60
12166 28.38
2166
32.82
34.68
36.85
39.30 41.200
41.30 41.20
43.30 41.22
45.40
47.55
37080 49.50
37080
53.86
56.00 58.112
58.00 58.11
0.20 8244
29056 2.50
29056 13 41.210

20 11 24.60

13 11.6
13.7
15.5 15.30
17.0
765 18.7
265
13 15.30
+ 25.91
14 13.9
16.1 17.94
17.6 17.94
20.1
897 22.0
897
14 17.94
− 36.73
13 15.30
14 17.94
+ 25.91
− 36.73
62.64
1.79685
1.18496
2.98181
1.94151
8.95970
~~5 42 27~~ 5 27 5

M 22 28.65.
M 23 56.05.
R 23 55.97.
R 23 55.95.
M 23 56.22.
23 56.05
87.40

12 54 541

107 γ Geminor

h m s
6 30 48
° '
+16 30

1.17609 0.15854
9.98174
1.15783

32 43.60
46.00 47.918
47.74 47.92
49.90
23959 52.35
3959
56.30
58.50
0.18
2.72 4918
4.98 492
7.18 5.09
9.30
11.55
58426 13.55
4426
17.90
20.05 22256
22.22 22.26
24.54 13018
11128 26.57
1128 33 5.005

32 38.3
40.5
42.2 4222
43.1
2111 46.2
111
32 4222
+ 22.78
33 38.7
42.0
44.2
46.7
2208 49.2
208
33 4416
− 39.16
32 42.22
33 44.16
+ ~~+ 7.80~~ 22.78
~~5.89~~ 39.16
61.94
1.79197
1.15783
2.94980
1.93131
8.98151
5 28 27

M 58 29.55.
M 59 55.20.
R 59 54.90.
R 59 54.90.
M 59 54.67.
59 54.92
85.37

120

α Can. Min.

h	m	s		
7	32	58		
	°	'	1.17609	0.15854
	+ 5	32	9.99797	
			1.17406	

34	57.78		34	53.3
	0.00	1.962		55.1
	1.93	1.96		56.9
	4.00			59.0
30981	6.10		2851	0.8
	9.81			2851
	10.30		34	57.02
	12.45		+	21.54
	14.38			
	16.40	18.556		
	18.65	18.56	35	48.9
	20.57	18.55		50.4
	22.60			52.3
	24.75			54.0
16700	26.90		2612	55.6
	16700			112
	30.90		35	52.24
	33.18	35.136	−	33.68
	35.20	35.14		
	37.20	37.10		
17568	39.20		34	57.02
	2568	35 18.555	35	52.24
			+	21.54
			−	33.68
				55.22
7 33 0.91				1.74210
				1.17406
				2.91616
				1.89553
				8.97937
				5 26 50

M 56 16.00

M 57 34.70

R 57 34.55

R 57 34.65

M 57 34.57

57 34.62

78.62

5 33 3.3

α Hydrae

h	m	s	
9	21	38	
	°	'	0.15854
	−8	8	

Chf.

142

ε Leonis

h	m	s	
9	38	59	
	°	'	0.15854
	+24	20	

40	57.25		40	49.5
	59.40	1.716		52.1
	1.65	1.71		53.4
	4.00			55.3
30858	6.28		2678	57.5
	8.58			178
	10.70		40	59.56
	13.00			
	15.15			
	17.42	19.746		
	19.75	19.74	41	50.2
	21.97			51.9
	24.24			53.9
	26.58			55.4
17771	28.90		2686	57.2
	17771			186
	33.20		41	53.72
	35.60			
	~~37.86~~			
	40.10			
	42.30	41 19.755	40	53.56
			41	53.72

M 9 4.67

M 10 24.20

R 10 23.95

R 10 23.95

M 10 23.72

10 23.96

79.29

146

C

1879

Sept. 25

α Leonis

h	m	s	
10	1	56	
°	'	1.17609	0.15854
+12	33	9.98950	
		1.16559	

	3 54.80		3	46.4
	57.00	59.040		47.7
	59.00	59.04		49.9
	1.10			51.6
29520	3.30		2489	53.3
	29520			2489
	7.50		3	49.78
	9.65		+	2620
	11.80			
	13.88	15.981		
	15.92	15.98	4	45.2
	18.15	15.98		46.5
	20.15			47.8
	22.35			49.4
14383	24.43		2399	51.0
	14383			2399
	28.60		4	47.98
	30.85	32.906	−	32.00
	32.88	32.91		
	35.00	15195		
16453	37.20		3	49.78
	1453	4 15.980	4	47.98
			+	26.20
			−	32.00
				58.20
10 1 57.94				1.76492
				1.16559
				2.93051
				1.91281
				8.98230
				5 29 2

y Leonis

h	m	s	
10	13	18	
°	'	1.17609	0.15854
+20	27	9.97173	
		1.14782	

	15 16.65		15	9.4
	18.75	20.996		11.2
	20.95	20.99		12.5
	23.23			14.3
10498	25.40		637	16.3
	10498			637
	29.90		15	12.74
	32.05		+	25.86
	34.20			
	36.38	38.612		
	38.60	38.61	16	8.2
	40.78	38.60		10.0
	43.00			11.7
	45.20			13.3
34751	47.40		582	15.0
	34751			582
	51.87		16	11.64
	54.08	56.212	−	33.04
	56.23	56.21		
	58.38	7720		
28106	0.50		15	12.74
	28106	15 38.605	16	11.64
			+	25.86
			−	33.04
				58.90
10 18 20.36				1.77012
				1.14782
				2.91794
				1.90266
				8.98472
				5 30 52

M	55	8.32
M	56	30.17
R	56	30.02
R	56	30.20
M	56	30.12
	56	30.13
		81.81

12 33 18.4

M	1	39.82
M	2	59.70
R	2	59.78
R	2	59.75
M	2	59.72
	2	59.74
		79.92

20 26 58.2

S

Sun C = 46.883

h m s
12 11 50
° '
−1 17

0.16.056

1879 Sept. 25–26

α Cor. Bor.

h m s
15 29 34
° '
+27 7

1.17609
9.94943
1.12552

0.16054

Sept. 26

	12 38.68			13 44.0		14 46.60			14 5.0
	40.80	42.826		46.0		48.70	50860		6.5
	42.75	42.83		47.6		51.00	50.86		8.0
	44.90			49.5		52.90			9.3
21413	47.00		2381	57.0	25430	55.10		393	10.5
	1413			381		430			393
	51.10		13	4762		59.20		14	7.86
	53.23		−	48.24		1.30		+	59.54
	55.27					3.38			
	57.35	59.378				5.38	7.429		
	59.40	59.38				7.30	7.43		
	1.50	59.39				9.50	7.37		
	3.50					11.50			
	5.50					13.55			
53440	7.55				60686	15.75			
	53440					6686			
	11.82					19.60			
	13.88	15.948				21.80	23.890		
	15.97	15.95				23.86	23.89		
	17.97	13878				26.05	13475		
7974	20.10		13	4762	11945	28.14		14	7.86
	7974	12 59.385	−	48.24		1945	15 7.400	+	59.54

	31 31.20			31 23.0
	33.30	35910		24.6
	35.90	35.91		26.2
	38.35			28.0
17955	40.60		1319	30.2
	17955			1319
	45.10		31	2638
	47.55		+	28.06
	49.77			
	52.20	54459		
	54.48	54.46	32	17.9
	56.90	54.42		20.1
	59.03			22.3
	1.36			24.2
49013	3.74		1108	26.3
	49013			108
	8.30		32	2216
	10.60	12918	−	27.72
	12.85	12.92		
	15.28	10883		
6459	17.56		31	26.38
	6459	31 54.440	32	22.16
			+	28.06
			−	27.72
				55.78

15 29 35.77

1.74648
1.12552
2.87200
1.86052
8.98852
53345

M 28 48.65 ·

M 1 25.70 ·

M 21 24.30 ·
M 22 36.92 ·
R 22 36.72 ·
R 22 36.85 ·
M 22 36.85 ·
22 36.83
72.53

27 7 21 8

212

α Serpentis

h m s
15 38 18
° ' 1.17609 0,16 056
+6 48 9.99693
1879 Sept. 26 1.17302

40 18.27
20.33 22440
22.50 2244
24.50
11220 26.60
1220
30.77
32.90
35.05
37.01 39.076
39.15 39.08
41.00 39.08
43.17
45.32
35168 47.32
35168
51.60
53.70 55730
55.75 5573
57.80 7817
27865 59.80
2865 40 39.080

40 8.5
9.8
11.4
13.0
577 15.0
577
40 11.54
+ 27.54
41 8.0
10.6
12.3
14.0
611 16.2
611
41 12.72
− 33.14
40 11.54
41 12.22
+ 27.54
− 33.14
60.68
1.78305
1.17302
2.95607
1.94250
8.98643
5 32 10

15 38 20.85

595

β' Scorpii

h m s
15 58 24
° ' 1.17609 0.16056
−19 28 9.97444
1.15053

0 22.87
25.00 27140
27.00 27.14
29.36
13570 31.47
3570
35.95
38.10
40.28
42.40 44.654
44.70 4465
46.88 44.62
48.98
51.20
40189 53.40
40189
57.70
59.95 2.110
2.10 2.11
4.30 8925
31055 6.50
1055 0 44.635

0 16.0
18.0 19.280
18.3 19.28
20.8
964 22.3
964
0 19.28
+ 25.36
1 12.3
14.8 1630
16.4 16.30
18.0
815 20.0
815
1 16.30
− 31.66
0 19.28
1 16.30
+ 25.36
− 31.66
57.02
1.75603
1.15053
2.90656
1.89437
8.98781
5 33 13

222

δ Ophiuchi

h m s
16 8 0
° ' 1.17609 0.16056
−3 23 9.99924
1.17533

10 0.50
2.32 4454
4.38 4454
6.55
2227 8.52
2227
12.73
14.82
16.85
18.85 20.982
21.00 20.98
23.20 20.94
25.06
27.09
18884 29.24
884
33.28
35.37 37.440
37.40 37.44
39.47 4189
18722 41.70
18722 10 20.960

9 50.8
52.2
54.3
56.0
2711 57.8
211
9 54.22
+ 26.74
10 55.4
56.9
58.4
0.0
2926 1.9
2926
10 58.52
− 37.56
9 54.22
10 58.52
+ 26.74
− 37.56
64.30
1.80621
1.17533
2.98354
1.96638
8.98284
52927

M 39 52.85
M 41 20.37
R 41 20.37
R 41 20.57
M 41 20.50
41 20.45
87.60

6 48 22.3

M 55 45.78
M 57 4.25
R 57 4.15
R 57 4.25
M 57 4.12
57 4.19
78.41

M 50 56.75
M 52 29.15
R 52 29.40
R 52 29.37
M 52 29.30
52 29.30
92.55

596

α Scorpii

h m s
16 21 59
° ′
−26 10

1.17609 0.16056
9.95304
1.12913

23 57.00
59.29 1.576
1.58 1.58
3.85
30788 6.16
788
10.77
13.10
15.30
17.73 19.937
19.97 19.94
22.16 19.94
24.48
26.80
17943 29.12
17943
33.73
36.05 38.288
38.25 38.29
40.53 39.87
19144 42.88
19144 24 19.940

16 22 2.55

23 46.6
48.4
50.4
52.2 +15.55 21.95 43.78
2518 54.2 13.33 21.83 21.84
18
23 50.36 8.89 21.82 196.39
+ 29.58 6.66 21.91 21.710
4.44 21.86
+ 2.25 21.85
24 50.0 −0.00 21.80
57.6 2.22 21.78
53.4 4.44 21.86
55.2 6.66 21.69
2671 56.9 8.89 21.82
171
24 53.42 13.33 21.67 108.74
− 33.48 15.56 21.78 21.748
17.78 21.82
19.96 21.80
23 50.36 −22.29 21.67
24 53.42
+ 29.58
− 33.48 21.782
63.06 21.806
1.79975
1.12913
2.92888
1.90666
8.97778
5 25 39

.228

β Herculis

h m s
16 25 1
° ′
+21 45

0.16056

27 —
—
—
6.40
8.50
12.93
15.25
17.42
19.60 21.818
21.80 21.82
24.00
26.30
28.35
19636 30.71
19636
35.10
37.34 39.532
39.60 39.53
41.76
19766 43.96
19766

27 14.4
16.0
17.8
19.1
883 21.0
383
27 17.66
+ 4.15
27 52.0
53.9
56.0
57.5
2787 59.3
287
27 55.74
− 33.93
27 17.66
27 55.74

597

ζ Ophiuchi

h m s
16 30 30
° ′
−10 19

1.17609 0.16056
9.99292
1.16901

32 29.75
31.62 35.762
33.73 33.76
35.76
16881 37.95
2881
42.12
44.28
46.24
48.40 50.486
50.50 50.48
52.50 50.49
54.71
56.77
45437 58.85
437
2.92
5.18 7.220
7.30 7.22
9.35 10098
3610 11.35
3610 32 50485

32 19.0
20.7
22.6
23.9
1118 25.6
118
32 22.36
+ 28.12
33 19.2
20.8
22.4
24.0
1124 26.0
124
33 22.48
− 32.00
32 22.36
33 22.48
+ 28.12
− 32.00
60.12
1.77902
1.16901
2.94803
1.92881
8.98078
5 27 54

M 36 25.62
M 37 46.20
R 37 46.37

37 46.28
80.66

2 6 9 54.0

M 43 50.78
M 44 41.37
R 44 41.30
R 44 41.35
M 44 41.05
44.41.27

M 46 59.95
M 48 25.02
R 48 24.98
R 48 24.82
M 48 24.52
48 24.83
84.88

598

η Ophiuchi

h m s
17 3 27 ′ 1.17609 0.16356
−15° 34 9.98377
1879 1.15986
Sept. 26

	5 26.00			5 17.7
	28.00	30120		19.5
	30.07	30.12		20.9
	32.18			22.4
15060	34.35		1045	24.0
	15060			45
	38.65			5 2090
	40.80			+ 26.34
	43.00			
	45.14	47.252.		
	47.20	47.25		6 12.4
	49.40	47.22		13.8
	51.60			15.3
	53.70			16.8
42527	53.78		770	18.7
	42527			270
	0.08			6 1540
	2.16	4.334		− 28.16
	4.28	4.33		
	6.50	94.45		
2167	8.65			5 2090
	2167	5 47.235		6 15.40
				+ 26.34
				− 28.16
				54.50
				1.73640
				1.15986
				2.89626
				1.87978
				8.98352
				5 29 57

M 1 55.75
M 3 11.60
R 3 11.65
R 3 11.62
M 3 11.42
3 11.57
75.82

237

ι Herculis

h m s
17 9 18 ′ 1.17609 0.16056
+14° 32 9.98588
1.16197

	11 7.61			10 59.0
	9.60	11.728		1.0
	11.68	11.73		2.4
	13.80			4.2
5864	15.95		3125	5.9
	5864			125
	20.14			11 250
	22.28			+ 26.22
	24.48			
	26.60	28.686		
	28.72	28.68		11 54.9
	30.80	28.76		56.1
	32.87			57.5
	35.00			59.0
25817	37.28		2889	1.4
	25817			2889
	41.55			11 5778
	43.65	45.792		− 29.06
	45.77	45.79		
	47.90	5752		
22896	50.09			11 2.50
	22896	11 28.720		11 57.78
				+ 26.22
				− 29.06
				55.28
	17 9 10.41			1.74257
				1.16197
				2.90454
				1.88762
				8.98308
				5 29 38

M 56 37.97
M 57 55.02
R 57 55.25
R 57 55.10
M 57 55.32
57 55.17
77.20

14 31 51.2

241

α Ophiuchi

h m s
17 29 19 ′ 1.17609 0.16056
+12° 39 9.98933
1.16542
Sept. 26

	31 19.05			31 9.8
	21.10	23.216		11.8
	23.25	23.21		13.5
	25.28			15.2
11608	27.40		670	16.7
	1608			670
	31.70			31 1340
	33.73			+ 2672
	35.93			
	38.04	40.133		
	40.10	40.13		32 5.3
	42.27	40.12		7.0
	44.30			8.5
	46.54			10.0
36120	48.60		428	12.0
	120			428
	52.80			32 8.56
	54.90	57.030		− 28.44
	57.05	57.03		
	59.18	8024		
28515	1.22			31 13.40
	28515	31 40.125		32 8.56
				+ 26.72
				− 28.44
				55.16
	17 29 21.77			1.74162
				1.16542
				2.90704
				1.89326
				8.98622
				5 32 00

M 49 21.70
M 50 39.75
R 50 39.75
R 50 40.22
~~M~~ 50
50 39.91
78.21

12 39 4.4

111

57 Cephei

0.16056

Sept. 27

46 17.15
30.57
47.00
47 1.70
16.45
31.20
44.88
59.24
48 12.75
26.80
51 18.20
59.73
52 45.65

48 40.4
51 31.1
53 17.8
54 9.4
55 5.5
56 4.3

46.91 8.01
4.60 8.19
2.28 8.26
-0.80 8.17
2.30 8.24
4.61 8.24
6.91 8.29
9.23 8.32

13.83 8.17
16.13 8.21
18.44 8.11
20.74 8.36
22.59 8.69

8.241
8.235

50 1.10
65.72 3.59
8.215 5.98
8.17
10.54
12.85
15.20
17.55

41.34 22.00
8.268 24.34
26.55
28.90
13307 31.28
3307

26.614
26.61

? 54 4.45

603

ν Sagittarii 9.95198

h m s
18 47 46
° ′
-26 27

0.16056

50 16.9
19.0
20.6
22.5
1037 24.7
37
50 20.74
- 12.50

50 20.74

269

λ Aquilae 0.16056

h m s
18 59 50
° ′
-5 4

1.17609
9.99830
1.17439

1 57.55
53.70
53.70
57.80
27853 59.80
2855
4.05
6.05
8.10
10.20
12.20
14.28
16.39
18.52
11031 20.52
11031
24.70
26.64
28.77
30.90
14391 32.90
14391

55.710
55.71

12.257
12.25
12.24

28.782
28.78
14449

2 12.245

1 41.3
43.0
44.5
45.9
2220 47.3
220
1 44.40
+ 27.84
2 40.0
41.4
42.7
44.5
2147 46.1
147
2 42.94
- 30.70

1 44.40
2 42.94
+ 27.84
- 30.70
58.54
1.76745
1.17439
2.94184
1.92572
8.98388
5 30 14

M 31 27.92
M 32 52.22
R 32 52.27
R 32 52.15
M 32 52.17
32 52.20
84.28

1879 Sept. 27

277

γ Aquilae

	h m s 19 40 30		1.17609	0.16056
	° ′ +10 19		9.99292 1.16901	

	42 32.22		42 22.6
	34.30	36434	24.0
	36.38	36.43	25.5
	38.57		27.2
18217	40.70		1282 28.9
	18217		282
	44.82		42 25.64
	46.92		+ 27.58
	49.03		
	51.18	53231	
	53.23	53.23	43 23.3
	55.40	53.21	24.9
	57.40		26.8
	59.50		28.4
47908	1.60		1337 30.3
	47908		337
	5.80		43 26.74
	7.90	10000	− 33.52
	10.0	10.00	
	12.10	10643	
5000	14.20		42 25.64
	5000	42 53.220	43 26.74
			+ 27.58
			− 33.52
			61.10
19 40 33.88			1.78604
			1.16901
			2.95505
			1.93932
			8.98427
			5 30 31

M 8 52.57
M 10 19.60
R 10 19.47
R 10 19.52

10 19.53
86.96

10 19 27.6

280

α Aquilae

0.16056	h m s 19 44 53		1.17609	
	° ′ +8 33		9.99515 1.17124	

	46 54.65		46 49.3
	56.80	58862	50.7
	58.86	58.86	52.9
	1.00		54.3
29431	3.08		2632 56.0
	29431		132
	7.19		46 52.64
	9.30		+ 22.94
	11.35		
	13.50	15604	
	15.60	1560	47 47.8
	17.72	15.56	49.5
	19.90		51.3
	21.90		53.1
14044	23.98		2566 54.9
	14044		66
	28.05		47 51.32
	30.20	32256	− 35.74
	32.35	32.26	
	34.30	15112	
16128	36.38		46 52.64
	1128	47 15.580	47 51.32
			+ 22.94
			− 35.74
			58.68
19 44 56.33			1.76849
			1.17124
			2.93973
			1.92335
			8.98362
			5 30 2

M 55 5.70
M 56 29.42
R 56 29.57
R 56 29.57

56 29.52
83.82

8 32 27.1

283

β Aquilae

0.16056

0.16056	h m s 19 49 22		1.17609	
	° ′ +6 6		9.99753 1.17362	

	51 24.27		51 17.5
	26.29	28388	18.9
	28.40	28.39	20.3
	30.48		22.0
14194	32.55		1023 23.6
	14194		23
	36.67		51 20.46
	38.76		+ 24.54
	40.95		
	43.10	44983	
	45.00	4498	52 11.7
	47.06	45.01	13.3
	49.10		15.1
	51.10		16.9
40485	53.23		755 18.5
	40485		255
	57.40		52 15.10
	59.60	1640	− 30.10
	1.70	1.64	
	3.65	9003	
30820	5.85		51 20.46
	820	51 44.995	52 15.10
			+ 24.54
			− 30.10
			54.64
19 49 25.78			1.73751
			1.17362
			2.91113
			1.88930
			8.97817
			5 25 56

M 21 40.82
M 22 58.15
R 22 58.57
R 22 58.25
M 22 58.32

22 58.32
77.50

6 6 36.4

		287				607				96	
		θ Aquilae				α² Capricorni				ι Orionis	
		h m	s			h m	s			h m	s
		20 5	4			20 11	20			5 29	31
		°	′ 1.17609	0.16056		°	′ 1.17609	0.16056		°	′ 0.16056
		-1	11 9.99991			-12	55 9.98887			-5	59
			1.17600				1.16496				
	7 6.08		6 56.1		13 22.36		13 16.4		31 32.60		31 24.0
	8.10	10.190	57.8		24.44	26.580	18.2		34.70	36.832	26.2
	10.20	10.19	59.9		26.56	26.58	20.2		36.86	36.83	28.3
	12.27		1.3		28.74		21.6		39.00		30.0
	5095 14.30		2985 3.4		13290 30.80		992 22.8		18416 41.00		1403 31.8
	5095		2985		13290		992		3416		1403
	18.40		6 59.70		35.00		13 19.84		45.00		31 28.06
	20.47		+ 26.98		37.05		+ 23.64		47.25		+ 25.33
	22.63				39.30				49.38		
	24.60	26.673			41.35	43.486			51.40	53.469	
	26.58	26.67	7 52.5		43.55	43.49	14 8.9		53.47	53.37	
	28.75	26.69	53.9		45.65	43.47	11.5		55.50	53.41	
	30.73		55.5		47.70		13.2		57.58		
	32.90		57.2		49.80		14.7		59.84		
	24006 35.00		2781 59.0		39137 51.97		658 16.5		48122 1.80		
	24006		281		39137		658		48122		
	39.00		7 55.62		56.10		14 13.16		6.00		
	41.24	43.194	- 28.94		58.23	0.360	- 29.68		7.93	10.004	
	43.21	43.19			0.38	0.36			9.97	10.00	
	45.27	5338			2.47	8694			11.92	14683	
	21597 47.25		6 59.70		30180 4.62		13 19.84		5002 14.20		31 28.06
	1597	7 26.680	7 55.62		180	13 43.480	14 13.16		5002	31 53.390	+ 25.33
			+ 26.98				+ 23.64				
			- 28.94				- 29.68				
			55.92				53.32				
			1.74757	20	11 24.57		1.72689				
			1.17600				1.16496				
			2.92357				2.89185				
			1.90536				1.86847				
			8.98179				8.97662				
			52839				52447				
M	38 29.70			M	22 31.42			R	28 3.25		
M	39 50.05			M	23 45.22			R	28 3.32		
R	39 50.12			R	23 45.35						
R	39 50.35			R	23 45.35						
M	39 49.95			M	23 45.25						
	39 50.12				23 45.29				28 3.28		
	80.42				73.87						
				12	54 54.1						

a

ζ Orionis

h m s
5 34 39
° ′
−2 0

1879
Sept. 27

	36 41.40		36 35.1
	42.60	45540	37.7
	45.50	45.54	39.9
	47.60		41.7
22770	49.60		1975 42.5
	2770		475
	53.60		36 39.50
	55.70		+ 22.49
	57.95		
	59.85	1.986	
	2.04	1.98	
	4.10	2.00	
	6.00		
	8.35		
55787	10.28		
	1787		
	14.50		
	16.40	18454	
	18.38	18.47	
	20.57	12401	
9233	22.48		36 39.50
	9227	37 1.990	+ 22.49

M 28 17.80
M 28 17.32
R 28 17.50

28 17.$\frac{54}{44}$

100

κ Orionis

0.16056

h m s
5 42 1
° ′
−9 43

1.17609
9.99372
1.16981

	44 2.38		44 11.3
	4.38	6710	12.7
	6.97	6.71	14.2
	8.92		16.3
3355	10.90		726 18.1
	3355		226
	15.00		44 14.52
	17.30		+ 8.96
	19.40		
	21.70	23544	
	23.70	23.54	44 59.8
	25.60	23.43	1.8
	27.60		3.4
	29.80		4.8
21190	31.80		3165 6.7
	21190		165
	35.90		45 3.30
	38.10	40156	− 39.82
	40.10	40.16	
	42.40	4687	
20078	44.28		44 14.52
	078	44 23.485	45 3.30
			+ 8.96
			− 39.82
			48.78
			1.68824
			1.16981
			2.85805
			1.85800
			8.99995
			5 42 36

M 10 40.17
M 11 49.97
R 11 50.15
R 11 59.04
M 11 49.97
11 52.28
72.11

102

α Orionis

0.16056

h m s
5 48 37
° ′
+7 23

1.17609
9.99638
1.17247

	50 39.50		50 31.7
	41.72	43910	33.2
	44.00	4391	35.0
	46.05		36.4
21955	48.28		1743 38.0
	1955		243
	52.21		50 3486
	54.35		+ 25.74
	56.55		
	58.50	0.607	
	0.80	0.60	51 33.0
	2.60	0.60	34.5
	4.77		36.0
	6.80		37.9
54546	8.88		1807 39.3
	546		307
	13.18		51 36.14
	15.18	17280	− 35.54
	17.24	17.28	
	19.48	12119	
8640	21.32		50 3486
	3640	51 0.600	51 36.14
			+ 25.74
			− 35.54
			61.28
5 48 40.94			1.78732
			1.17247
			2.95979
			1.94349
			8.98370
			5 30 6

M 5 6.67
M 6 34.30
R 6 34.67
R 6 34.47
M 6 34.45
6 34.47
87.80

7 23 86

256

δ Urs. Min. L. C.

h m s
18 11 21
+93° 24'

0.16056

10 38.65

12	58.15	10	(36.27)	+ 2	19.50	6	57.6
			38.75	+ 2	7.65		
			40.93	+ 1	56.04	7	55.0
12	54.92		47.27	+ 1	44.34		
12	56.04	11	0.50	+ 1	32.77	9	13.1
	55.24		10.90	+ 1	21.21		
	53.33		20.56	+ 1	9.60	10	2.0
	58.36		37.15	+	57.99		
	54.90		45.30	+	46.30		
	56.99		59.00	+	34.82		
	58.90	12	12.60	+	23.19		
	55.87		21.05	+	11.57		
	58.15		34.96	−	0.02		
	55.04		43.47	−	11.53		
	59.52		59.54	−	22.15		
	54.47	13	6.00	−	34.73		
	57.95		20.10	−	46.38		
	57.52		32.25	−	58.02		
	57.81		44.19	− 1	9.52		
	55.98		54.00	− 1	21.21		
	57.13	14	6.65	− 1	32.86		
	57.59		18.80	− 1	44.46		
	55.94		29.80	− 1	56.03		
	58.21		42.67				
	56.53		52.56				
	55.09	15	2.80	− 2	7.71		
	57.50		16.85	− 2	19.35		
	16323						
12	56.53						

106

μ Geminorum

h m s
6 15 38
+22° 34'
1.17609
9.96541
1.14150

0.16056

	17 39.90			17 34.7
	42.40	44480		36.2
	44.50	44.48		38.4
	46.70			39.6
22240	48.90		1903	41.4
	2240			1903
	53.50			17 3806
	55.60			+ 2420
	57.80			
	0.00	2.244		
	2.05	2.24		18 30.3
	4.47	2.27		32.5
	6.70			34.1
	8.98			36.2
56020	11.10		1710	37.9
	2020			210
	15.50			18 3420
	17.88	20.060		− 3194
	20.17	20.06		
	22.20	12454		
10030	24.55			17 38.06
	030	18 2.255		18 34.20
				+ 24.20
				− 31.94
				56.14
				1.74927
				1.14150
				2.89077
				1.87552
				8.98475
				5 30 53

107

γ Geminorum

0.16056

h m s
6 30 43
+16° 30'
1.17609
9.98174
1.15783

	32 45.37			32 35.8
	47.55	49.654		37.7
	49.60	49.65		39.4
	51.80			41.3
24827	53.95		1974	43.2
	24827			1974
	58.20			32 3948
	0.40			+ 27.38
	2.70			
	4.90	6.874		
	6.90	6.87		33 36.4
	8.95	6.86		38.6
	11.27			40.8
	13.25			42.5
60187	15.30		2025	44.2
	6187			25
	19.77			33 4050
	22.00			− 33.64
	24.00	24.07		
	26.18	13372		
12033	28.38			32 39.48
		33 6.865		33 40.50
				+ 27.38
				− 33.64
				61.02
				1.78547
				1.15783
				2.94330
				1.93186
				8.98856
				53347

M	8	17.02
M	8	8.97
M	8	0.00
M	7	57.90
	~~8~~	~~2.29~~

M	54	13.70
M	55	28.80
R	55	28.80
R	55	28.75
M	55	28.75
	55	28.78
		75.08

M	58	21.62
M	59	47.05
R	59	47.35
R	59	47.00
M	59	47.02
	59	47.10
		85.48

119 α Geminor

h m s
7 26 52
° '
+ 32 9

1.17609
9.92771
1.10380

0.16056

120 α Can. Min.

h m s
7 32 58
° '
+ 5 32

0.16056

1879 Sept. 27

28 52.60		28 41.3		35 59.61		35 15.0
54.75	57.230	43.4		1.73		17.3
57.15	57.23	44.8		3.92	3.852	18.9
59.60		47.0		6.00		20.0
28615 2.05		2263 49.8		319.26 8.00		930 21.8
28615		263				930
6.87		28 45.26		12.27		35 18.60
9.20		+ 31.40		14.20		
11.78				16.30		
14.20	16.647			18.40	20.486	
16.77	16.65	29 53.4		20.46	20.48	35 50.4
19.25	16.68	55.0		22.66		52.2
21.40		57.0		24.68		53.7
24.00		58.5		26.65		55.5
14982 26.35		2841 0.2		18437 28.75		2694 57.6
14982		2841		437		194
31.13		29 56.82		32.70		35 53.88
33.77	36.126	− 40.16		34.85	36.980	
36.17	36.13			37.00	36.98	
38.60	15336			39.10		
18063 40.96		28 45.26		18490 41.25		35 18.60
18063	29 16.665	29 56.82		3490	35 20.42	35 53.88
		+ 31.40				
		− 40.16				
		71.56				
		1.85467	7 26 56.08			
		1.10380				
		2.95847				
		1.94002				
		8.98155				
		52828				

M	19	45.80
M	21	13.22
R	21	13.22
R	21	12.92
M	21	12.25
	21	12.90
		87.10

M	56	45.27
M	57	35.42
R	57	35.47
R	57	35.30
M	57	35.55
	57	35.43

32 9 1.0

S

142

1879

Sun C = 46.841

h m s
12 19 4
-2° 4

0.16056

Sept. 27-28

ε Leonis

h m s
9 38 39
+24° 20

0.16056

Sept. 28

20 56.2	22 1.18		21 33.7	40 57.65		40 53.4
57.6	3.18	9.274	35.5	1.84	4.110	55.0
59.2	5.29	5.474	37.6	4.07	4.11	56.4
0.7	7.32		39.1	6.30		58.7
2963 2.6	2737 9.40		1866 40.7	32055 8.69		2837 0.2
2963	2637		366	2055		2837
20 59.26	13.60		21 37.32	13.28		40 56.74
	15.70		+ 44.57	15.60		+ 25.46
	17.70			17.70		
	19.75	21.873		20.02	22.283	
	21.80	21.87		22.20	22.17	
	23.97	21.91		24.52	22.22	
	26.09			26.83		
	28.00			29.00		
	19686 30.25			19955 31.40		
	19686			20055		
	34.10			35.90		
	36.37	38.358		38.07	40.344	
	38.39	38.36		40.30	40.34	
	40.41	43.83		42.60	44.45	
20 59.26	19179 42.52		21 37.32	20172 44.85		40 56.74
	19179	22 21.890	+ 44.57	172	41 22.195	+ 25.46
			57			

M 15 32.62

M 48 33.97

M 9 6.78

146 C

α Leonis γ' Geminor

	h m s 10 1 56		0.15056	h m s 10 13 18		0.16056		
	+12° 33'			+20° 27'				
1879	Sept. 28							

		3	—			15	19.70		15	13.7
+19.02	18.52	74.01	59.50				21.53	23,678		15.6
16.92	18.49	18.502	1.57				23.50	23.48		18.0
14.80	18.48		3.68				25.76			20.0
12.68	18.52		5.84			11739	27.90		893	22.0
							1839			893
8.46	18.63	110.64	10.17				32.39		15	17.86
		18.44	←				34.58		+	2332
4.22	18.22		14.00				36.75			
			—				38.83	41.116		
			—		4 50.5		41.20	41.267		
−2.11	18.39		20.50		52.8		43.28	41.09		
4.23	18.47		22.70		54.4		45.47			
6.34	18.41		24.75		56.0		47.66			
8.47	18.53		27.00		2713 57.6	371404	49.88			
					213		1004			
12.68	18.32	91.77	31.60		4 5426		54.38			
14.80	18.43	18.354	33.23	35.280	− 3583		56.42	58.706		
16.91	18.39		35.30	35.28			58.67	58.71		
19.03	18.27		37.30				0.90	8219		
+21.21	18.36	17640	39.57		4 54.26	29353	3.16		15	17.86
			2640				29353	15 41.175	+	2332

18.435
18.428
10 1 58.01

M 56 36.27 . M 1 43.02 .
R 56 36.12 .
R 56 36.30 .
M 56 36.02 .
56 36.1$\overset{8}{5}$

12 33 18.0

S

277

Sun. C = 46,869 9.99960

h m s
12 22 40
−2° 27′

0,16056

1879

Sept. 28 – 29

γ Aquilae

(19) 9h 40m 30s
+10° 19′

0.16056

Sept. 29 :

22 30.15
32.22 34,260
34.24 34.26
36.29
17130 38.40
2130
42.64
44.60
46.67
48.70 50.797
50.92 50.79
52.83 50.77
54.88
56.93
45717 59.00
717
3.20
5.20 7.278
7.27 728
9.40 10154
3639 11.32
3639 23 50.780

24 40.9
42.4
43.9
45.5
2201 47.4
201
24 4402
− 58.24
24 44.02
− 53.24

25 —
—
42.60 +16.52 58.92
44.60 14.46 59.06
46.72 12.39 59.11
50.80 8.26 59.06
52.77 6.20 58.97
54.88 4.13 59.01
56.90 2.04 58.94
58.98 −0.[illegible] 58.98
58999
58.99
1.12 2.06 58.06
3.17 4.13 59.14
5.17 6.20 58.97
53099 7.20 8.27 58.93
53099
11.40 12.39 59.01
13.53 14.[illegible] 59.08
15.57 16.[illegible] 59.04
55.58
55.59
17.74 18.59 59.15
7794 19.70 −20.72 58.98
2794

59.047
59.030

25 9.4
11.4
177.24 12.9
59.096 14.4
637 15.6
137
25 1274
530.96 4679
58.995
295.26
59.052
25 12.74

42 33.37
35.40 37,546
37.56 37.55
39.70
18773 41.70
3773
45.98
48.02
50.12
52.20 54,334
54.30 54.33
56.40 54.31
58.56
0.67
48901 2.76
48901
6.90
9.00 11,066
11.03 11.07
13.10 10862
55.33 15.30
5533 42 54,320

42 23.0
24.6
25.9
27.4
1296 28.7
296
42 25.92
+ 28.40
42 2592
+ 28.40

19 40 38.85

M 39 3.52 ·

M 11 52.90 ·

R 8 53.30 ·
R 8 53.20 ·

8 53.25
10 19 277

280

α Aquilae

h m s
19 44 53
° ′
+8 33

1879 Sept. 29

46 55.91
57.99 0.044
0.05 0.04
2.05
30022 4.22
*022
8.27
10.50
12.40
14.57 16667
16.75 16.67
18.75 16.70
20.90
22.86
15000 25.00
15000
29.12
31.20 33356
33.37 33.36
35.39 3340
16678 37.60
1678 47 16.685

46 48.2
49.5
51.2
52.7
2562 54.6
62
46 51.24
+ 2544

46 5124
+ 2544

19 44 56.80

R 55 5.12

7 32 27.2

0.16056

283

β Aquilae

h m s
19 49 22
° ′
+6 6

1.17609
9.99753
1.17362

57 25.30
27.55 29518
29.50 29.52
31.59
14759 33.65
14759
37.80
39.97
42.07
44.04 46146
46.10 46.14
48.25 46.12
50.28
52.34
41531 54.46
41531
58.50
0.68 2726
2.75 2.73
4.80 9225
31363 6.90
1363 51 46.130

57 17.2
19.0
20.8
22.2
1029 23.7
29
51 2058
+ 2555

52 11.8
13.2
14.8
16.6
739 18.5
239
52 1478
− 2865

51 20.58
52 14.78
+ 25.55
− 28.65
54.20
1.73400
1.17362
2.90762
1.89332
8.98570
5 31 36

19 49 25.75

M 21 41.30
M 22 59.60
R 22 59.60
R 22 59.35
M 22 59.55
22 59.52
78.22

6 6 36.4

0.16056

287

θ Aquilae

h m s
20 5 4
° ′
−1 11

1.17609 0.16056
9.99991
1.17900

7 7.05
9.10 11.184
11.20 11.18
13.20
5592 15.37
5592
19.40
21.56
23.60
25.70 27.731
27.75 27.73
29.75 27.69
31.88
33.94
24958 36.00
24958
40.05
42.15 44.206
44.27 44.21
46.27 5539
22103 48.29
2103 7 27.710

6 58.5
59.9
1.6 166
3.4
3083 4.9
83
7 1.66
+ 26.05

7 57.8
59.4
0.9 144
2.7
3052 4.4
52
8 1.04
− 3333

7 1.66
8 1.04
+ 26.05
− 33.33
59.38
1.77364
1.17600
2.94964
1.93399
8.98435
5 30 35

M 38 33.78
M 39 59.65
R 39 59.85
R 39 59.70
M 39 59.52
39 59.68
85.90

607

α² Capricorni

h m s
20 11 20
1.17609 0.16056
° '
−12 55 9.98887
1.16496

13	23.35		13 15.7
	25.37	27.580	17.1
	27.58	27.58	18.7
	29.80		20.4
13790	31.80		940 22.1
	13790		940
	36.98		13 1880
	38.10		+ 25.89
	40.28		
	42.28	44.464	
	44.46	44.90	14 16.4
	46.58	44.48	18.0
	48.68		19.4
	50.87		21.2
40318	52.95		977 22.7
	40 018		977
	57.00		14 1954
	59.20	1.380	− 3485
	1.50	1.38	
	3.50	8896	
30690	5.60		13 18.80
	690	13 44.690	14 19.54
			+ 25.89
			− 3485
			60.74
20 11 54.55			1.78347
			1.16496
			2.94843
			1.93379
			8.98536
			5 3121

M	22	32.02
M	23	58.02
R	23	57.97
R	23	57.87
M	23	57.65
	23	57.88
		85.86

12 54 54.2

30

β Arietis

h m s
1 47 57
1.17609 0.16056
° '
+20 13 9.97238
1.14847

50	1.10		49 52.6
	3.28	5496	54.3
	5.50	5.49	56.0
	7.72		57.9
2748	9.88		2804 59.6
	2748		304
	14.24		49 5608
	16.40		+ 26.93
	18.62		
	20.73	23.003	
	23.03	23.00	50 55.6
	25.10	23.02	57.7
	27.50		59.4
	29.65		1.1
20703	31.76		2966 2.8
	20703		2966
	36.05		50 5932
	38.38	40.556	− 3631
	40.60	40.56	
	42.80	4605	
20278	44.95		49 56.08
	278	50 23.010	50 59.32
			+ 26.93
			− 36.31
			63.24
			1.80099
			1.14847
			2.94946
			1.93115
			8.98169
			5 2835

M	15	12.90
M	16	38.17
R	16	38.22
R	16	38.17
M	16	38.40
	16	38.24
		85.34

33

α Arietis

0.16056

h m s
2 0 21
° '
1.17609
+22 53 9.96440
1.14049

2	24.54		2 15.6
	26.79	29.052	17.5
	29.02	29.05	19.6
	31.35		21.4
14526	33.56		974 23.3
	14526		474
	38.05		2 19.48
	40.25		+ 2750
	42.30		
	44.70	46988	
	47.04	4699	3 15.3
	49.30	46.96	16.7
	51.48		18.2
	53.77		20.2
42289	56.00		924 22.0
	42289		924
	0.40		3 1848
	2.60	4874	− 31.50
	4.90	4.88	
	7.17	9393	
2437	9.30		2 1948
	2437	2 46.975	3 18.48
			+ 27.50
			− 31.50
			59.00
2 0 26.0			1.77085
			1.14049
			2.91134
			1.89620
			8.98486
			5 30 58

M	34	52.35
M	36	11.17
R	36	11.10
R	36	11.15
M	36	10.95
	36	11.09
		78.74

22 53 47.5

Sheet not numbered

1879

Sept. 29

120 α Can Min

h m s
7 32 58
+5° 32′

	1.00		54.5
	2.95	5.102	55.9
	5.18	5.10	57.8
	7.18		59.2
2551	9.20	2887	1.3
	2551		288.7
	13.38		57.74
	15.50		
	17.50		
	19.60	21.712	
	21.70	21.71	
	23.85	21.67	
	25.88		
	28.00		
19541	30.00		
	19541		
	34.15		
	36.15	38252	
	38.27	38.25	
	40.29	4335	
19126	42.40		57.74
	19126	1 21.690	

7 38 0.3

R ~~55~~ 6 16.12

5 32 31

122 β Gem

0.16056

h m s
7 37 55
+28° 19′

	55.38			
	58.38	0556		
	0.70	0.56		
	3.00			
30278	5.32			
	278			
	10.17			
	12.37			
	14.78			
	17.04	19.420		
	19.42	19.42		48.7
	21.72	19.36		51.1
	24.08			52.9
	26.40			54.8
17478	28.80		2643	56.8
	17478			143
	33.55			5286
	35.75	38150		
	38.10	38.15		
	40.47	3871		
19075	42.88			
	19075	19.390		5286

7 37 58.18

R 11 9.78
R 11 10.00
R 11 9.87
11 9.~~93~~ 88

28 18 54.2

142 ε Leonis

h m s
9 38 59
+24° 20′

0.16056

41	0.27		40	50.4
	2.40	4730		52.2
	4.65	4.73		54.2
	7.05			56.1
2365	9.28		2705	57.6
	2365			205
	13.70		40	54.10
	16.05			
	18.30			
	20.55	22.838		
	22.77	22.61		
	25.00	22.86		
	27.37			
	29.76			
20354	32.04			
	20 554			
	36.38			
	38.75	40998		
	40.57	41.00		
	43.34	4573		
20499	45.55		40	54.10
	4.99	41 22.735	+	28.64

R 9 2.67
R 9 2.25
M 9 2.20

9 2.37

146

S

α Leonis

h m s
10 1 56
+12° 33′ 1.17609 0.16056
9.98950
1.16559

Sept. 29

Sun C = 46.869

h m s
12 26 17
−2° 57′

0.16056

Sept. 29–30

3 57.82		3 52.0		28 7.48
59.93	2056	53.5		9.48
2.03	2.09	55.0		11.60
4.20		56.8		13.75
31048 6.30		2755 58.2		5806 15.75
1028		255		5806
10.60		3 55.10		20.00
12.75		+ 23.98		22.07
14.77				24.05
17.05	19.117			26.12
19.25	19.12	4 48.5		28.27
21.30	19.04	49.6		30.30
23.38		51.4		32.33
25.40		52.6		34.34
17205 27.55		2568 54.7		25388 36.40
17205		68		25388
31.76		4 51.36		40.56
33.97	35.986	− 32.28		42.60
36.00	35.99			44.56
38.00	38 68			46.74
17993 40.20		3 55.10		22336 48.90
17993	4 19.080	4 51.36		2336

11.612	29 15.1	30 15.80		29 33.7
11.61	16.6	17.90	19.920	34.6
	17.9	19.95	19.92	35.8
	19.3	21.95		37.7
	901 21.2	9960 24.00		1812 39.4
	901	9960		312
	29 1802	28.12		29 36.24
	− 49.84	30.25		+1 0.20
		32.25		
28.209		34.38	36.486	
28.21		36.38	36.26	
28.14		38.68	36.53	
		40.70		
		42.76		
		32837 44.85		
		32837		
		49.10		
44.672		51.20	53.154	
44.67		53.17	53.15	
5628		55.10	7307	
	29 18.02	26577 57.20		29 36.24
28 28.175	− 4984	1577	30 36.443	+ 1 0.20

+ 23.98
− 32.28
56.26
1.75020
1.16559
2.91579
1.89900
8.98321
5 2943

10 1 58.03

M 55 11.72
M 56 31.15
R 56 31.00
R 56 31.00
M 56 30.72
56 30.97
79.25

M 2 20.05

M 34 55.07

12 83 179

222

δ Ophiuchi

h m s
16 8 0
° ′
−3 23
1.17609
9.99924
1.17533

1879

Sept. 30

10 3.00		9 56.5	
4.97	7.114	58.0	
7.10	7.10	59.3	
9.20		0.9	
3549 11.22		2971 2.4	
3557		2971	
15.34		9 59.42	
17.47		+ 24.18	
19.49			
21.50	23606		
23.60	23.60	10 54.9	
25.60	23.61	56.4	
27.70		58.1	
29.85		59.9	
21245 31.90		2909 1.6	
21245		2909	
36.03		10 58.18	
38.07	40130	− 34.58	
40.05	40.13		
42.20	4723		
20065 44.30		9 59.42	
20065	10 23.605	10 58.18	
		+ 24.18	
		− 34.58	
		58.76	
		1.76908	
		1.17533	
		2.94441	
		1.92562	
		8.98121	
		52813	

0.16056

596

α Scorpii

h m s
16 21 59
° ′
−26 10

0.16056

24 ~~59.28~~		24 18.6 19.7
~~1.64~~		21.3
4.10	4.164	23.5
6.50		88.9 25.5
20.82 9.25		1086
		24 22.22
13.30		+ 60.27
15.60		
18.00		
20.30	22.494	
22.50	22.49	24 53.4
24.85		54.9
27.00		56.3
29.20		58.0
20245 31.70		2826 0.0
20245		2826
36.23		24 56.52
38.50	40.824	+ 25.97
40.82	40.82	
43.17		
20412 45.40		24 21.72
20412	25 22.49	24 56.52
		+ 60.27
		+ 25.97
		86.24

6. 22 21.58

598

η Ophiuchi

h m s
17 3 27
° ′
−15 34

0.16056

5 28.62		5 19.5
30.60	32752	21.3
32.70	32.75	22.4
34.82		24.1
16376 37.02		1131 25.8
1376		131
41.36		5 22.62
43.48		+ 27.28
45.60		
47.80	49.909	
49.96	49.91	
52.00	49.88	
54.20		
56.30		
44918 58.48		
44918		
2.70		
4.87	7.010	
7.08	7.01	
9.10	9976	
3505 11.30		5 22.62
3505	5 49.895	+ 27.28

M	51	5.40
M	52	29.72
R	52	29.82
R	52	29.80
M	52	29.30
	52	29.66
		84.26

26 9 53.7

M	37	9.95
M	37	55.20

M	1	59.22
M	3	24.15
R	3	24.20
R	3	24.25
	3	24.20
		84.98

α Herculis

h m s
17 9 18
+14° 32′
0.16056

Chf.
7

α Ophiuchi

h m s
17 29 19
+12° 39′

Chf.
7

δ Urs. Min.

h m s
18 11 21
+86° 36′
0.16056

+ 1 32.77	13	10.20	14	~~4~~42.97	20	43.2
+ 1 21.21		22.80		43.21		
+ 1 9.60		32.60		42.20	21	31.8
+ 57.99		44.40		42.39		
+ 46.30		56.40		42.70	22	36.3
+ 34.82	14	8.40		43.22		
+ 23.19		18.95		42.14	23	39.6
+ 11.57		31.28		42.85		
− 0.02		43.28		43.26	24	43.6
− 11.53		54.00		42.47		
− 22.15	15	5.70		43.55		
− 34.73		17.60		42.87		
− 46.38		29.60		43.22		
− 58.02		41.90		43.88		
− 1 9.52		52.95		43.43		
− 1 21.21	16	4.10		43.87		
				687.25		
			14	42.33		

M 54 12.22
M 54 14.62
M 54 18.30
M 54 21.15
M 54 23.57

257 | 260 | 111

η Serpentis | α Lyrae | 51 H Cephei Le. C.

h m s
18 15 3
° '
− 2 56
1.17609
9.99943
1.17552
0.16056

h m s
18 32 50
° '
+ 38 40
1.17609
9.89254
1.06863
0.16056

h m s
6 43 16
° '
+ 92 49
0.16056

1879 Sept. 30

	17 6.20		16 57.4	34 48.20		34 36.5	+ 2	48.36	42 48.33	45 36.69	38 17.7
	8.30	10376	58.8	50.80	53454	38.2	+ 2	34.05	43 1.30	35.35	
	10.38	10.38	0.6	53.40	53.45	40.0	+ 2	20.05	15.64	35.69	39 2.4
	12.50		2.0	56.07		42.0	+ 2	5.92	29.55	35.47	
5188	14.50		3026 3.8	26727 58.80		2010 44.3	+ 1	51.96	44.60	36.56	40 17.5
	5188		26	1727		10	+ 1	38.06	58.20	36.26	
	18.60		17 052	4.05		34 40.20	+ 1	24.00	44 12.78	36.78	41 47.5
	20.70		+ 26.39	6.70		+ 34.38	+ 1	9.98	27.10	37.08	
	22.82			9.28			+ 0	55.88	40.65	36.53	
	24.85	26.910		11.90	14.611		+ 0	42.02	54.11	36.83	
	26.90	26.91	17 54.1	14.53	14.61	35 48.0	+ 0	27.98	45 8.65	36.63	
	28.97	26.91	55.4	17.29	14.54	49.8	+ 0	13.96	24.10	38.06	
	31.00		57.0	19.98		52.4	− 0	0.02	37.27	37.25	
	33.15		58.8	22.60		54.6	− 0	13.92	52.05	38.13	
24219	35.20		2857 0.4	13150 25.17		2613 56.6	− 0	27.94	46 5.63	37.69	
	24219		357	13150		113	− 0	41.92	19.57	37.65	
	39.30		17 5714	30.30		35 5226	− 0	55.98	34.40	38.42	
	41.30	43.440	− 30.23	33.00	35.636	− 37.68	− 1	10.02	48.58	38.56	
	43.40	43.44		35.60	35.64		− 1	23.90	47 3.05	39.15	
	45.60	5382		38.28	14909		− 1	38.00	17.27	39.27	
21720	47.60		17 0.52	17818 41.00		34 40.20	− 1	52.06	31.60	39.54	
	1720	17 26.910	17 57.14	17818	35 14.575	35 52.26	− 2	6.08	45.28	39.20	
			+ 26.39			+ 34.38	− 2	20.03	59.90	39.87	
			− 30.23			− 37.68	− 2	34.13	48 14.30	40.17	
			56.62			72.06	− 2	48.16	28.08	39.92	
			1.75297	18 32 52.66		1.85769					
			1.17552			1.06863				192.75	
			2.92849			2.92632				45 37.71	
			1.91577			1.90811					
			8.98728			8.98179					
			5 32 49			5 28 39					

M 23 41.02
M 25 3.10
R 25 3.45
R 25 3.62

25 3.39
82.37

M 48 17.65
M 49 38.40
R 49 38.75

49 38.58
80.93

38 40 36.9

M 44 51.55
M 44 46.67
M 44 39.82
M 44 32.30

603

o Sagittarii

h m s
18 47 46
−26° 27′ 1.17609 0.15056
9.95198
1.12807

49 46.85 49 46.2
49.10 51464 47.8
51.52 51.46 49.6
53.80 52.0
25732 56.05 2496 54.0
732 2496
0.66 49 4992
2.88 + 19.93
5.30
7.60 9.857
9.80 9.86 50 40.5
12.20 9.84 42.5
14.47 44.2
16.70 45.9
8871 19.10 2206 47.5
8871 206
23.65 50 4412
26.00 28230 − 3427
28.20 28.23
30.60 13969
14115 32.80 49 49.92
14115 50 9.850 50 44.12
+ 19.93
− 34.27
54.20
1.73400
1.12807
2.86207
1.84677
8.98470
5 30 51

M 53 29.45
M 54 39.82
R 54 39.90
R 54 39.75
M 54 39.42
54 39.72
70.27

119

α Geminor

h m s
7 26 52
+32° 9′ 1.17609 0.16056
9.92771
1.10380

28 54.30 28 46.5
56.65 59144 48.5
59.20 59.14 50.6
1.60 52.7
29572 3.97 2530 54.7
29572 30
8.97 28 5060
11.40 + 2804
13.76
16.20 18658
18.66 18.66 29 51.9
21.05 18.62 53.3
23.50 55.4
26.00 57.3
16792 28.38 2774 59.5
16792 274
33.27 29 5548
35.65 38114 − 3684
38.10 38.11
40.60 15725
19057 42.95 28 50.60
19057 29 18.637 29 55.48
+ 28.04
− 36.84
64.88
7 26 56.16 1.81211
1.10380
2.91591
1.89955
8.98364
5 30 3

M 19 51.32
M 21 10.67
R 21 10.60
R 21 10.70
M 21 10.70
21 10.67
79.35

32 9 0.8

122

β Geminor 0.16056

h m s
7 37 35
+28° 19′ 1.17609
9.94465
1.12074

39 56.82 40 2.8
59.18 1546 4.8
1.55 1.555 6.9
3.93 8.5
30773 6.25 335 10.5
773 335
10.85 40 670
13.20 + 1352
15.55
17.85 20.203
20.23 20.20 40 52.3
22.56 20.23 54.1
24.86 55.6
27.20 57.4
18183 29.54 2787 59.3
18183 287
34.22 40 5574
36.56 38906 − 3552
39.00 38.91
41.25 4046
19453 43.50 40 6.70
19453 40 20.215 40 55.74
+ 13.52
− 35.52
49.04
7 37 58.21 1.69055
1.12074
2.81129
1.79029
8.97900
5 26 34

M 10 10.70
M 11 12.40
R 11 12.55
R 11 12.47
M 11 12.20
11 12.40
61.70

28 19 541

142

ε Leonis 9.95960

h m s
9 38 59
+24° 20'

0.16056

1879

Sept. 30

41 —

					41
+15.86	23.56	47.03	7.70		23.0
13.59	23.47	23.515	9.88		24.3
					26.1
					27.6
				1302	29.2
					302
9.06	23.44	211.98	14.38	41	26.04
6.79	23.59	23.553	16.80	−	2.51
4.52	23.57		19.05		
2.24	23.54		21.35	23558	
−0.00	23.62		23.62	23.56	41 55.4
2.26	23.54		25.80		57.2
4.53	23.52		28.05		58.8
6.79	23.58		30.37		0.3
9.07	21202		32.60		2940 2.3
			21202		2940
13.59	23.58	117.59	37.17		41 58.80
15.85	23.55	23.518	39.40	41.79	− 35.27
18.12	23.56		41.68	41.79	
20.38	23.42		43.90		
22.72	895		46.20	2348	41 26.04
			895		41 58.80

23.529
23.531

146

α Leonis

h m s
10 1 56
+12° 33'

1.17609
9.98950
1.16559

0.16056

3	58.68		3	51.7
	0.65	2.846		53.0
	2.80	2.84		54.8
	5.00			56.3
31423	7.10		2738	58.0
	1423			238
	11.21		3	54.76
	13.37		+	24.93
	15.58			
	17.60	19.730		
	19.73	19.73	4	49.4
	21.79	19.65		50.8
	24.00			52.3
	26.05			53.8
17757	28.18		2618	55.5
	17757			118
	32.42		4	52.36
	34.50	36.656	−	32.67
	36.65	36.46		
	38.76	3930		
18228	40.95		3	54.76
	18328	4 19.690	4	52.36
			+	24.93
			−	32.67
				57.60

10 1 57.05

1.76042
1.16559
2.92601
1.91126
8.98525
5 31 16

C

γ Leonis

h m s
10 13 18
+20° 27'

1.17609
9.97173
1.14782

0.16056

15	20.40		15	23.1
	22.68	24.832		25.2
	24.80	24.83		26.6
	27.05			28.2
12416	29.23		1333	30.2
	2416			1333
	33.70		15	26.66
	35.76		+	15.76
	38.06			
	40.28	42.434		
	42.38	42.43	16	12.7
	44.59	42.42		14.3
	46.84			16.1
	49.00			18.1
38191	51.30		811	19.9
	38191			311
	55.60		16	16.22
	57.85	0.018	−	33.80
	0.06	0.02		
	2.20	8485		
30009	4.38		15	26.66
	009	15 42.425	16	16.22
			+	15.76
			−	33.80
				49.56

10 13 20.47

1.69513
1.14782
2.84295
1.83136
8.98841
5 33 40

M	9	43.82
M	10	27.50
R	10	27.70
R	10	27.55
M	10	27.72
	10	27.62
		43.80

M	55	11.40
M	56	32.78
R	56	32.97
R	56	33.15
M	56	32.78
	56	32.92
		87.52

M	1	54.62
M	3	2.50
R	3	2.52
R	3	2.50
M	3	2.25
	3	2.44
		67.82

12 33 17.8

20 26 57.4

56

S

209

Sun c = 46.869 9.99931

L Cor. Bor.

h m s
12 29 54
−3 14

0.16056

h m s
15 29 34
+27 7

0.16056

1879 Sept. 30–Oct. 1

Oct. 1

30 45.25
47.35 49320
49.30 49.32
51.47
24660 53.23
24660
57.60
59.77
1.77
3.90 5881
5.92 5.88
7.67 5.83
10.05
12.05
59293 14.20
5293
18.00
20.28 22346
22.50 22.35
24.45 13167
11173 26.50
11173 31 5.855 − 53.16

31 56.5
57.6
58.8
0.2
2951 2.0
2951
31 59.02
− 53.16
31 59.02 15430

32 —
—
57.80 +16.53 14.33 47.63
59.85 14.44 14.33 14.340
1.96 12.40 14.36 1604
6.05 8.27 14.32
8.17 6.20 14.37
10.19 4.13 14.32 129.14
12.30 2.06 14.348 14.38 14.349
14.40 −0.00 14.35 14.40
16.33 2.06 14.27
18.50 4.13 14.37
20.57 6.20 14.37
12913 22.62 8.28 14.34
12913
26.75 12.40 14.35 71.56
28.80 14.50 60 14.33 14.312
30.90 16.34 86 14.36
32.85 18.60 14.25
35.00 20.73 14.27
430
14.333
14.336

32 29.4
30.5
31.6
33.5
35.4
104
32 3 2.08
+ 42.26
32 32.08

31 34.80
37.00 39336
39.30 39.34
41.60
19668 43.98
19668
48.60
50.97
53.23
55.55 57883
57.90 57.88
0.25 57.86
2.50
4.80
52095 7.15
52095
11.70
14.05 16386
16.38 16.39
18.70 11573
8193 21.10
8193 31 57.870
15 29 85.70

31 27.5
29.1
31.2
33.0
1558 35.0
58
31 31.16
+ 26.71
32 29.7
31.3
33.0
35.4
1664 37.0
164
32 33.28
− 35.41
31 31.16
32 33.28
+ 26.71
− 35.41
62.12
1.79323

M 25 43.22

M 58 39.90

R 22 47.78
R 22 47.92
R 22 47.72

22 47.82

27 7 20.0

	212				222				596		
	α Serpentis				δ Ophiuchi				α Scorpii		0.16056
	h m	s			h m	s			h m	s	
	15 38	18			16 8	0			16 21	59	
	+6°	48'	0.16056		−3°	23'	0.16056		−26°	10'	1.17609 9.95304
1879	Oct. 1									1.12913	
40 21.65				10 ~~3.46~~		10 16.5		24 0.40		24 1.8	
23.68	25816			~~5.59~~		17.6		2.60	49.74	3.8	
25.80	25.82			7.72	7.744	19.0		5.00	4.974	6.2	
27.90				9.95		20.9		7.27		8.1	
12908 30.05				3872 12.00		968 22.8		2487 9.60		299 10.0	
12908						968		2487		299	
34.10				16.15		10 19.36		14.08		24 5.98	
36.20				18.18		+4.97		16.30		+ 17.30	
38.18				20.20				18.68			
40.38	42.434			22.38	24.356			20.95	23.251		
42.40	42.43	41 7.0		24.36	24.35	10 55.7		23.20	23.25	24 53.0	
44.55	42.42	8.6		26.43		57.4		25.57	23.31	54.1	
46.60		10.5		28.40		58.8		27.80		56.0	
48.70		12.3		30.50		0.3		30.20		57.7	
38191 50.80		526 14.2		21920 32.60		2945 2.3		20926 32.48		2803 59.5	
38191		526		21920		2945		20926		303	
54.92		41 10.52		36.75		10 58.90		37.10		24 56.06	
56.93	59.030	− 28.10		38.70	40.870	−34.57		39.30	41.650	− 32.78	
59.00	59.03			40.90	40.87			41.65	41.65.		
1.10	8485			43.00				44.00	4662		
29515 3.20				20435 45.00		10 19.36		20825 46.20		24 5.98	
29515	4042.425	41 10.52		20435	10 24.33	10 58.90		825	24 23.280	24 56.06	
		− 28.10								+ 17.30	
										− 32.78	
										50.08	
15 38 20.81							16	22	2.48	1.69966	
										1.12913	
										2.82879	
										1.81941	
										8.99062	
										5.3522	
R 41 16.75.				M 51 32.70.				M 36 50.12.			
R 41 16.67.				M 52 30.27.				M 37 56.05.			
				R 52 30.65.				R 37 56.15.			
				R 52 30.62.							
				M 52 30.30.							
6 48 21.9				52 30.46				37 56.10			
				57.76				65.98			
							26	9 53.6			

228

β Herculis

h m s
16 25 1
° '
+21 45

1.17609 0.16056
9.96793
1.14402

27	3.00			26 56.6
	5.20	7.444		58.2
	7.40	7.44		59.1
	9.70			1.2
3722	11.92		2990	3.3
	3722			2990
	16.38			26 59.80
	18.65			+ 25.44
	20.80			
	23.00	25.274		
	25.30	25.27		27 53.5
	27.53	25.22		55.0
	29.76			56.8
	32.00			59.0
22747	34.05		2851	0.8
	22747			2851
	38.50			27 57.02
	40.80	42990		− 31.78
	43.00	42.99		
	45.20	5043		
21495	47.45			26 59.80
	1495	27 25.245		27 57.02
				+ 25.44
				− 31.78
				57.22
				1.75755
				1.14402
				2.90157
				1.88547
				8.98390
				5 30 15

M 43 24.80
M 44 41.57
R 44 41.78
R 44 41.65
M 44 41.47
44 41.62
76.82

597

ζ Ophiuchi

h m s
16 30 30
° '
−10 19

1.17609 0.16056
9.99292
1.16901

32	33.00			32 22.5
	35.05	37.138		24.0
	37.05	37.14		25.5
	39.25			26.9
18569	41.34		1277	28.8
	18569			277
	45.50			32 25.54
	47.70			+ 28.34
	49.70			
	51.80	53.891		
	53.80	53.89		33 20.7
	56.00	53.88		22.3
	58.05			23.9
	0.17			25.5
48502	2.30		1196	27.2
	48502			196
	6.40			33 23.92
	8.50	10.630		− 30.04
	10.70	10.63		
	12.70	10.777		
5315	14.85			32 25.54
	5315	32 53.885		33 23.92
				+ 28.34
				− 30.04
				58.38
				1.76626
				1.16901
				2.93527
				1.91323
				8.97796
				5 25 47

M 47 5.55
M 48 27.47
R 48 27.40
R 48 27.70
M 48 27.20
48 27.44
81.89

598

η Ophiuchi 0.16056

h m s
17 8 27
° '
−15 34

1.17609
9.98377
1.15986

5	29.24			5 28.6
	31.48	33.552		30.3
	33.58	33.55		31.9
	35.66			33.9
16776	37.80		1601	35.4
	1776			101
	42.07			5 32.02
	44.13			+ 18.62
	46.35			
	48.45	50.618		
	50.65	50.62		6 18.3
	52.80	50.65		19.5
	54.90			21.3
	57.04			23.0
45556	59.17		1071	25.0
	45556			71
	3.40			6 21.42
	5.60	7.756		− 30.78
	7.80	7.76		
	9.90	10.131		
3878	12.08			5 32.02
	3878	5 50.635		6 21.42
				+ 18.62
				− 30.78
				49.40
				1.69373
				1.15986
				2.85359
				2.12156
				9.26797
				10 30 0

M 1 10.42
M 3 22.65
R 3 22.70
R 3 22.92
M 3 22.60
3 22.72
132.30

237

L' Herculis

h m s
17 9 18
+14° 32′

1.17609
9.98588
1.16197.

0.16056

1879 Oct. 1

11	11.00		11 13.4
	13.00	15166	15.4
	15.05	15.17	17.0
	17.28		18.6
7583	19.50		848 20.4
	2583		848
	23.76		11 1696
	25.88		+ 15.24
	28.03		
	30.05	32,213	
	32.20	32.21	12 2.6
	34.25	32.18	4.0
	36.40		6.0
	38.60		7.5
28992	40.75		298 9.7
	28992		298
	45.00		12 596
	47.10	49,182	− 3376
	49.23	49.18	
	51.30	6435	
24591	53.38		11 16.96
	24591	11 32.195	12 5.96

+ 15.24
− 33.76
49.00

17 9 10.83

1.69020
1.16197
2.85217
1.82302
8.97085
5 20 32

241

α Ophiuchi

h m s
17 29 19
+12° 39′

0.16056

31	22.50		31 15.5
	24.57	26680	17.2
	26.65	26.68	19.0
	28.80		20.6
13340	30.88		943 22.0
	3340		943
	35.16		31 18.86
	37.20		
	39.33		
	41.50	43,596	
	43.65	43.59	
	45.75		
	47.80		
	50.00		
39236	51.97		
	39236		
	56.27		
	58.34		
	0.47	0.458	
	2.56		
9.29	4.65		31 18.86
		31 4358	

17 29 21.67

106

μ Geminorum

h m s
6 15 38
+22° 34′

0.16056

17	42.71		17 33.1
	44.94	47.180	35.0
	47.10	47.18	36.5
	49.45		37.9
23590	51.70		1820 39.5
	3590		320
	56.04		17 3640
	58.30		+ 28.62
	0.60		
	2.85	5.047	
	5.03	5.05	
	7.30	4.98	
	9.55		
	11.77		
58542	13.98		
	4542		
	18.32		
	20.70	22.794	
	22.80	22.79	
	25.10	12997	
11397	27.15		17 36.40
	1397	18 5.015	+ 28.62

M 56 59.30 ·
M 58 5.60 ·
R 58 5.90 ·
R 58 6.02 ·
M 58 5.80 ·
58 5.83
66.53

14 31 51.1

M 49 28.75 ·
M 50 47.12 ·
R 50 47.12 ·
R 50 47.20 ·
M 50 47.25 ·
50 47.17
78.42

12 39 4.3

R 54 8.37 ·
R 54 8.07 ·
R 54 8.27 ·
24
54 8.~~17~~

107

γ Geminor

h m s
6 30 43
° '
+16 30

1.17609 0.16056
9.98174
1.15783

32 48.00
50.10 52284
52.27 52.28
54.45
26142 56.60
1142
0.93
3.02
5.25
7.30 9.504
9.50 9.50
11.64 9.49
13.85
15.97
8554 18.08
8554
22.38
24.56 26.704
26.70 26.70
28.90 13898
13352 30.98
13352 33 9.495

32 41.0
42.4
44.7
46.2
2225 48.2
225
32 44.50
+ 25.00
33 36.0
37.6
38.9
40.6
2055 42.4
1955
33 39.10
− 29.60
32 44.50
33 41.10
+ 25.00
− 31.60
56.60
1.75282
1.15783
2.91065
1.89287
8.98222
5 28 59

M 58 24.47
M 59 42.67
R 59 42.65
R 59 42.65
M 59 42.47
59 42.67
78.14

118

β Can. Min.

h m s
7 20 35
° '
+8 32

1.17609 0.16056
9.99517
1.17126

22 39.95
42.00 44102
44.10 44.10
46.18
22051 48.28
22051
52.47
54.60
56.70
58.75 0833
0.83 0.88
3.00 0.84
5.00
7.00
54730 9.15
750
13.57
16.50 17.594
17.60 17.59
19.65 12169
8797 21.85
3797 23 0.835

22 38.0
39.1
41.1
43.0
2057 44.5
57
22 41.14
+ 19.70
−
23 28.3
29.8
31.5
33.0
1577 35.1
77
23 31.54
− 30.70
22 41.14
23 31.54
+ ~~+ 19.70~~ 1969
+ 29.30 30.70
49.00 50 39
~~2.03743~~ ~~1.69020~~
1.70234
1.17126
2.87360
~~3.20869~~ ~~2.86146~~
1.85914 8554
~~.65045~~ 8.99~~768~~
5 31 29 ~~54049~~

M 56 33.27
M 57 45.30
R 57 45.67
R 57 45.65
M 57 45.67
57 45.57
72.30

119

α Geminor 016056

h m s
7 26 52
° '
+32 9

1.17609
9.92771
1.10380

28 55.30
57.68 0.128
0.10 0.13
2.56
30064 5.00
064
9.77
12.30
14.73
17.15 19.550
19.47 19.56
21.95 19.58
24.42
26.86
17595 29.30
17595
34.20
36.50 39.030
39.05 39.03
41.50 39.16
19515 43.90
19515 29 19.565

7 26 56.20

28 54.1
56.2
58.2
59.5
2891 1.1
2891
28 57.82
+ 21.74
29 57.9
59.7
1.4
3.9
3087 5.8
87
30 1.74
− 42.18
28 57.82
30 1.74
+ 21.74
− 42.18
63.92
1.80564
1.10380
2.90944
1.89343
8.98399
5 30 19

M 19 58.15
M 21 16.27
R 21 16.27
R 21 16.52
M 21 16.50
21 16.39
78.24

32 9 0.7

120

α Can. Min.

h m s
7 32 58
° '
+5 32

1.17609
9.99797
1.17406

0.16056

1879 Oct 1

35 2.55		34 53.2	
4.50	6700	54.4	
6.70	6.70	56.4	
8.85		57.5	
3350 10.90		2806 59.1	
3350		306	
15.04		34 5612	
17.16		+ 27.20	
19.22			
21.28	23336		
23.35	23.34	35 49.0	
25.35	23.31	51.3	
27.35		52.8	
29.57		54.3	
21002 31.70		2640 56.6	
21002		140	
35.80		35 5280	
37.85	39920	− 2948	
39.85	39.92		
42.05	4662		
19960 44.05		34 56.12	
19960	35 23,325	35 52.80	
		+ 27.20	
		− 29.48	
		56.68	
7 33 1.08		1.75343	
		1.17406	
		2.92749	
		1.91482	
		8.98733	
		5 32 51	

M 56 10.10 ·
M 57 32.32 ·
R 57 32.30 ·
R 57 32.32 ·
M 57 32.22 ·
57 32.29
82.19

5 32 2.9

122

β Geminor.

h m s
7 37 53
° '
+28 19

1.17609
9.94465
1.12074

0.16056

39 57.70		39 50.5	
59.97	2330	52.0	
2.30	2.33	53.3	
4.65		54.7	
31165 7.03		2678 57.3	
1165		178	
11.70		39 5356	
14.03		+ 27.58	
16.44			
18.80	21097		
21.10	21.20	40 55.9	
23.40	21.07	58.2	
25.77		0.0	
28.15		1.5	
18987 30.58		2996 4.0	
18987		2996	
35.10		40 5992	
37.55	39822	− 3878	
39.90	39.82		
42.18	4215		
19911 44.38		39 53.56	
19911	40 21.135	40 59.92	
		+ 27.58	
		− 38.78	
		66.36	
7 38 58.24		1.82191	
		1.12074	
		2.94265	
		1.91455	
		8.97190	
		5 21 18	

M 9 54.78 ·
M 11 16.95 ·
R 11 16.85 ·
R 11 16.95 ·
M 11 16.95 ·
11 16.92
82.14

28 18.541

142

ε Leonis

h m s
9 38 59
° '
+24 20

1.17609
9.95960
1.13569

0.16056

41 1.95		40 53.8	
4.03	6364	55.5	
6.30	6.36	57.5	
8.64		58.8	
3182 10.90		2868 1.2	
3182		2868	
15.35		40 5736	
17.70		+ 27.10	
20.00			
22.28	24492		
24.50	24.49	42 0.0	
26.70	24.44	1.2	
29.05		2.5	
31.25		4.2	
22043 33.60		142 6.8	
22043		142	
38.03		42 284	
40.29	42530	− 3838	
42.55	42.53		
44.78	4889		
21265 47.00		40 57.36	
21265	41 24.465	42 2.84	
		+ 27.10	
		− 38.38	
		65.48	
		1.81611	
		1.13569	
		2.95180	
		1.93616	
		8.98436	
		5 30 36	

M 9 5.87 ·
M 10 32.02 ·
R 10 32.80 ·
R 10 31.90 ·
M 10 32.10 ·
10 32.20
86.33

146

α Leonis

h m s
10 1 56
+12° 33′
1.17609 0.16056
9.98950
1.16559

3 59.50
1.60
3.70
5.87
31863 7.96
1863
12.02
14.23
16.40
18.50
20.70
22.70
24.80
26.95
18537 29.07
18537
33.30
35.40
37.55
39.70
18771 41.76
3771

3.726
~~3626~~
3.73
20.597
20.60
20.63
37542
37.54
41 27
4 20.615

3 52.1
53.9
55.5
57.0
2769 58.4
269
3 55.38
+ 25 24
4 50.8
52.0
53.9
55.4
2690 56.9
190
4 53 80
− 33 18
3 55.38
4 53.80
+ 25.24
− 33.18
58.42
1.76656
1.16559
2.93215
1.91482
8.98267
5 29 19

10 1 57 07

M 55 11.65
M 56 33.72
R 56 33.82
R 56 33.90
M 56 33.92
56 33.84
82.19

12 38 17.6

148

ζ Leonis

h m s
10 8 57
+24° 1′
0.16056

12 0.70
2.70
4.80
7.05
2467 9.42
2467
13.90
16.20
18.40
20.70
22.97
25.29
27.48
29.60
20667 32.13
20667
36.57
38.84
41.00
43.34
20525 45.50
20525

4.934
4.93
22.963
22.96
22.99
41.050
41.05
45 98
12 22.975

11 54.7
56.2
57.5
59.0
2877 0.3
2877
11 57.54
+ 25.44
11 57.54
+ 25.44

M 24 48.27

γ¹ Leonis

h m s
10 18 18
+20° 27′
0.16056

15 —
—
—
—
—
—
—

+4.40	43.38	303.56	38.98	
2.18	43.46	43.365	41.28	
−0.00	43.33		43.33	
2.20	43.33		45.55	
4.41	43.24		47.70	
6.61	43.47		50.08	
8.82	43.28		52.10	
13.21	43.24	216.49	56.45	
15.40	43.20	43.298	58.60	0.926
17.62	43.48		1.10	0.93
19.82	43.36		3.18	
22.04	43.21	30463	5.80	
			463	

43.331
43.337
10 18 40.81

M 1. 42.00

20 26 67.2

S

209

Sun C = 46.869

h m s
12 33 32
−3° 37′

0.16056

1879
Oct. 1 − 2

α Cor. Bor.

h m s
15 29 34
+27° 7′

1.17609
9.94943
1.12552

0.16056

Oct. 2

34	23.40		35	40.7	36	32.00		36	3.3
	25.55	27.640		42.2		34.05	36130		4.7
	27.70	27.64		44.2		36.18	36.13		6.0
	29.75			46.0		38.10			7.5
13820	31.80		2112	48.1	18065	40.32		308	9.3
	13820			212		18065			308
	36.00		35	4424		44.50		36	616
	38.00		−1	0.07		46.58		+	4660
	40.08					48.66			
	42.20	44.246				50.70	52.774		
	44.32	44.24				52.80	52.77		
	46.28	44.10				54.85	52.74		
	48.35					56.90			
	50.45					58.94			
39821	52.53				47497	1.04			
	39821					47497			
	56.33					5.30			
	58.47	0.558				7.30	9.360		
	0.59	0.56				9.30	9.36		
	2.50	8820				11.40	10549		
30279	4.90		35	4224	4680	13.50		36	6.16
	279	34 44.170	−	58.07		4680	36 52.755	+	46.60

31	35.70		31	26.8
	38.06	40.276		28.7
	40.17	4028		30.1
	42.55			31.9
20138	44.90		1514	33.9
	138			14
	49.60		31	3028
	52.06		+	2856
	54.10			
	56.57	58853		
	58.80	58.85	32	29.6
	1.15	58.82		31.3
	3.40			33.0
	5.92			35.3
52968	8.08		1667	37.5
	52968			167
	12.70		32	3334
	15.05	17.360	−	3450
	17.40	17.36		
	19.65	11764		
8680	22.00		31	30.28
	8680	31 58.835	32	33.34
			+	28.56
			−	34.50
				63.06

15 29 35.69

1.79975
1.12552
2.92527
1.91142
8.98615
5 31 57

M 50 8.10 .

M 21 49.55 .

M 21 24.60 .
M 22 46.15 .
R 22 46.17 .
R 22 46.15 .
M 22 46.12 .
22 46.15
81.55

27 7 20.8

228

β Herculis

h m s
16 25 1
° ′
+21 45

1.17609 0.16056
9.96793
1.14402

27 4.05		26 59.0
6.22	8.434	0.8
8.40	8.43	2.3
10.65		3.8
4217 12.85		3116 5.7
4217		116
17.25		27 232
19.50		+ 23.87
21.75		
24.08	26174	
26.10	2617	27 57.2
28.44	26.21	58.6
30.60		0.4
32.85		2.2
23557 35.10		3024 4.0
23557		24
37.58		28 048
41.85	43994	− 34.29
44.00	4399	
46.14	5242	
27997 48.40		27 232
1997	2726.190	28 0.48
		+ 23.87
		− 34.29
		58.16
		1.76462
		1.14402
		2.90864
		1.89182
		8.98318
		5 29 42

M	43	2547
M	44	43.27
R	44	43.42
R	44	43.70
M	44	43.30
	44	43.42
		7795

597

G Ophiuchi

h m s
16 30 30
° ′
−10 19

1.17609 0.16056
9.99292
1.16901

32 33.98		32 25.7
36.00	38102	27.5
38.06	38.10	29.1
40.17		31.2
19051 42.30		1468 33.3
19067		1468
46.43		32 29.36
48.62		+ 25.50
50.70		
52.77	54.856	
54.88	54.86	33 23.8
56.90	54.87	25.5
59.00		27.2
1.17		28.8
49370 3.23		1353 30.5
49370		358
7.47		33 2716
9.53	11.640	− 3230
11.65	11.64	
13.70	10974	
5820 15.85		32 2936
5820	32 54.865	33 27.06
		+ 25.50
		− 32.20
		57.70
		1.76118
		1.16901
		2.93019
		1.90940
		8.97921
		5 26 43

M	47	5.80
M	48	26.92
R	48	27.02
R	48	27.12
M	48	26.82
	48.	2697
		81.17

598

η Ophiuchi 0.16056

h m s
17 3 27
° ′
−15 34

1.17609 0.16056
9.98377
1.15986

5 30.32		5 20.8
32.30	34470	22.4
34.46	34.47	24.3
36.57		26.2
17235 38.70		1219 28.2
2235		219
43.10		5 2438
45.05		+ 2720
47.30		
49.46	51587	
51.60	51.59	6 19.0
53.80	51.57	20.4
55.90		22.0
58.07		23.8
46428 0.10		1107 25.5
46428		107
4.40		6 22,14
6.57	8.682	− 30.56
8.67	8.68	
10.77	10315	
4341 13.00		5 24.38
4341	551.580	6 22.14
		+ 27.20
		− 30.56
		57.76
		1.761165
		1.15986
		2.92151
		1.90617
		8.98466
		5 30 49

M	1.	5667
M	3	17.17
R	3	17.20
R	3	17.37
M	3	17.22
	3	17.24
		80.57

	237				241				256		
	α' Herculis				α Ophiuchi				δ Urs. Min.		
	h m 17 9	s 18	1.17609	0.16056	h m 17 29	s 19 1.17609		0.16056	h m 18 11	s 21	0,16056
	+14°	32′	9.98588		+12°	39′ 9.98933			+86°	36′	
1879	Oct. 2		1.16197			1.16542					
11 11.88		11 6.0		31 23.37		31 14.4	+ 2 19.50	11 26.35	13 4585	8 28.8	
14.00	16100	7.7		25.50	27.610	16.0	+ 2 7.65	38.29	45.94		
16.04	16.10	9.0		27.60	27.61	17.5	+ 1 56.04	50.34	46.38	9 30.2	
18.23		11.0		29.75		18.9	+ 1 44.34	12 3.05	47.39		
8050 20.35		461 12.4		13805 31.83		873 20.5	+ 1 32.77	12.90	4567	10 16.5	
3050		461		3805		873	+ 1 21.21	23.47	4468		
24.67		11 9.22		36.06		31 17.46	+ 1 9.60	37.60	47.20		
26.76		+ 23.90		38.17		+ 26.99	+ 57.99	48.75	45.74		
28.90				40.30			+ 46.30	58.90	45.20		
31.05	33118			42.40	44.493		+ 34.82	13 11.88	46.70		
33.10	33.12	12 3.1		44.50	44.38	32 14.4	+ 23.19	23.57	46.76		
35.20	33.13	4.8		46.55	44.52	16.1	+ 11.57	34.78	46.35		
37.30		6.5		48.72		17.6	− 0.02	45.10	4508		
39.50		8.0		50.80		19.2	− 11.53	57.00	47.47		
29806 41.68		324 10.0		39944 52.94		883 21.0	− 22.15	14 9.45	4730		
29806		324		40044		883	− 34.73	19.98	4525		
45.90		12 6.48		57.20		32 17.66	− 46.38	32.64	46.26		
48.05	50160	− 33.36		59.25	1430	− 33.21	− 58.02	44.93	46.91		
50.15	5016			1.40	1.43		− 1 9.52	56.66	47.14		
52.30	6626			3.60	8904		− 1 21.21	15 7.90	4569		
25080 54.40		11 9.22		30715 5.70		31 17.46	− 1 32.86	19.50	46.64		
25080	11 33.125	12 6.48		715	31 44.450	32 17.66	− 1 44.46	30.90	46.44		
		+ 23.90				+ 26.99	− 1 56.03	43.70	47.67		
		− 33.36				− 33.21	− 2 7.71	53.90	46.19		
		57.26				60.20	− 2 19.35	16 4.81	4525		
17 9 10.81		1.75785		17 29 21.65		1.77960	−				
		1.16197				1.16542	−		157.15		
		2.91982				2.94502	−		13 46.29		
		1.90580				1.93146	−				
		8.98598				8.98644	−				
		5 31 49				5 32 10	−				

M 56 41.10	M 49 22.22	M 53 14.07
M 58 2.10	M 50 47.52	M 53 20.20
R 58 2.32	R 50 47.67	M 53 25.17
R 58 2.37	R 50 47.65	
M 58 2.00	M 50 47.65	
58 2.20	50 47.62	
80.50	85.40	
14 31 51.0	12 39 4.2	

257

η Serpentii

h m s
18 15 3
−2° 56'

0.16056

17 8.00
10.05 12072
12.05 12.07
14.08
6036 16.18
6036
20.81
22.34
24.39 28591
26.57 ~~27480~~
28.17 28.58
30.67 28.56
32.77
34.70
25723 36.90
25732
41.00
43.00 45040
45.00 45.04
47.00 5711
22520 49.20
2520 1728.570

M 23 39.10 ·
M 24 5.92 ·
R 24 6.15 ·
R 24 6.30 ·
M 24 6.02 ·
24 6.10

17 0.2
1.4
2.8
4.3
146 5.9
146
17 292
+ 25.65
18 0.2
1.7
2.9
4.3
149 5.8
149
18 298
− 34.41
17 0.92
18 2.98
+ 27.65
− 34.41
62.06
1.79281

M 44 56.57
M 44 52.75
M 44 44.00
M 44 35.72

42 51.94
+ 2 48.36
43 4.49
+ 2 34.05
43 18.17
+ 2 20.05
43 32.71
+ 2 5.92
43 47.11
+ 1 51.96
44 1.29
+ 1 38.06
44 15.84
+ 1 24.00
44 29.60
+ 1 9.98
44 44.64
+ 0 55.88
44 58.12
+ 0 42.02
45 12.51
+ 0 27.98
45 26.23
+ 0 13.96
45 40.59
− 0 0.02
46 23.52
− 0 41.92
46 38.18
− 0 55.98
46 51.30
− 1 10.02
47 6.74
− 1 23.90
47 19.77
− 1 38.00

42 49.50
51.95
54.44
43 2.10
4.40
6.97
15.50
18.36
20.67
30.26
32.28
35.60
43.87
47.00
50.46
58.90
44 0.98
4.00
12.50
15.82
19.20
27.05
29.05
32.70
42.10
44.55
47.27
55.60
58.10
45 0.65
9.86
12.52
15.16
23.92
26.08
28.70
38.07
40.50
43.20
51.56
53.80
57.40
46 5.33
9.15
12.25
20.65
23.28
26.68
34.88
38.22
41.43
48.60
50.65
54.64
47 3.62
7.40
9.20
16.90
19.85
22.55

45 54.09
− 0 13.92
46 8.91
− 0 27.94
47

111

51 H. Cephei L.C

h m s
6 43 16
+92° 49'

0.16056

37 33.8
38 17.0
39 50.2
41 30.3

45 40.30
38.54
38.22
38.63
39.07
39.35
39.84
39.58
40.52
40.14
40.49
40.19
40.57
40.17
40.97
41.60
42.20
41.28
42.84
41.77
42.16
41.84
42.23
43.11
42.26

[illegible]

1017.87
45 40.71

47 31.80
33.70
37.17
45.56
47.56
50.65
59.60
48 2.20
4.57
14.30
17.35
20.08
28.17
30.20
32.88

47 34.22
− 1 52.06
47 47.92
− 2 6.08
48 2.26
− 2 20.03
48 17.24
− 2 34.13
48 30.42
− 2 48.16

603

σ Sagittarii 0.16056

h m s
18 47 46
−26° 27'

1.17609
9.95198
1.12807

49 48.82
50.90 53312
53.20 53.31
55.64
26657 58.00
1656
2.40
4.72
7.03
9.30 11519
11.55 11.61
13.87 11.67
16.20
18.60
10447 20.80
10367
25.40
27.70 30038
30.05 30.04
32.34 14335
15019 34.70
15019 5011.640

M 53 16.55 ·
M 54 40.92 ·
R 54 41.25 ·
R 54 41.15 ·
M 54 40.72 ·
54 41.01
84.46

49 40.0
41.0
42.7
44.5
2148 46.6
148
49 4296
+ 2868
50 47.0
48.4
49.9
51.4
2505 53.8
2505
50 5010
− 3846
49 42.96
50 50.10
+ 28.68
− 38.46
67.14
1.82698
1.12807
2.95505
1.92665
8.97160
5 21 5

~~270~~269

Ex hour on Sheet.

λ Aquilae 9.99880

h m s
18 59 50
° '
−5 4

0.16056

Sun S C = 46,869

h m s
13 37 10
° '
−4 0

0.16056

1879

Oct. 2

+20.72	15.72	1	55.00		
18.64	15.64	78.48	57.00	59.100	
16.58	15.63	15.696	59.05		
14.51	15.71		1.20		
12.43	15.68	29550	3.25		
			29550		

15.68

1 45.4
47.6
~~49.4~~ 49.1
50.8
245.7 52.5
49.14

Oct. 2−3

39 2.03
4.07 6214
6.25 6.21
8.28
3107 10.44
3107
14.45
16.88
18.88
20.92 22.931
22.92 22.93
25.00 22.85
27.00
29.16
20638 31.17
20638
35.42
37.42 39.494
39.53 39.49
41.50 4570
19747 43.60
19747 39 22.890 + − 50.99

40 10.5
12.3
13.9
15.5
694 17.2
194
40 13.88
− 50.99
40 13.88

41 —
—
—
16.87 +14.49 31.36
19.13 12.41 31.54
23.25 8.27 31.52
25.30 6.21 31.51
27.30 4.13 31.43
29.43 2.05 31.49 31.48
31.46 −0.03 31.49 31.46
33.55 2.06 31.49
35.60 4.14 31.46
37.70 6.21 31.49
28344 39.85 8.28 31.57
1344
44.05 12.41 31.64
46.05 14.48 208 31.57
48.28 16.55 28.21 31.73
50.28 18.62 31.66
24104 52.38 20.75 31.63
24104

40 31.4
62.90 32.8
31.45 35.0
36.9
1746 38.5
246
40 34.92
283.41 5661
31.49
158.23
31.646
40 3492

31.528
31.534

M 31 30.15
M 33 7.22
R 33 7.32
R 33 7.20
M 33 6.87
33 7.15
96.70

M 13 8.05

M 29 51.32

111

51 H. Cephei L. C.

h m s
6 43 16
+82° 49'
0.16056

Oct. 4

43	52.70	+ 2	48.16	35	58.4	46	40.86
44	7.05	+ 2	34.13				41.18
	21.50	+ 2	20.03	36	57.0		41.53
	35.40	+ 2	6.08				41.48
	49.70	+ 1	52.06	37	57.9		41.76
45	3.77	+ 1	38.00				41.77
	15.45	+ 1	23.90	40	2.8		39.25
	31.80	+ 1	10.02				41.82
	45.22	+	55.98	40	43.0		41.20
46	0.57	+	41.92				42.49
	15.20	+	27.94	41	58.9		43.14
	27.90	+	13.92				41.82
	42.37	−	.02				42.35
	57.37	−	13.96				43.41
47	11.20	−	27.98				43.22
	26.30	−	42.02				44.28
	39.38	−	55.88				43.50
	54.38	− 1	9.98				44.40
48	9.40	− 1	24.00				45.40
	21.45	− 1	38.06				43.39
	34.70	− 1	51.96				42.74
	50.80	− 2	5.92				44.88
49	4.80	− 2	20.05				44.75
	19.75	− 2	34.05				45.70
	33.65	− 2	48.36				45.29
			.33				8191
						46	43.276

M	45	14.12
M	45	7.40
M	45	1.62
M	45	48.45
M	45	45.07
M	45	38.12

603

σ Sagittarii

h m s
18 47 46
−26° 27'
0.16056

50	50.60		51	5.4
	52.80	55.154		7.6
	55.00	55.15		9.4
	57.50			10.7
27577	59.87		457	12.6
	2577			457
	4.48		51	9.14
	6.78		+	4.47
	9.00			
	11.27	13.626		
	13.65	13.63	51?	39.3
	15.97	13.59		40.7
	18.18			42.3
	20.50			44.3
12263	22.80		2127	46.1
	12263			127
	27.40		51	42.54
	29.79	32.038	−	28.93
	32.08	32.04		
	34.27	14719		
16019	36.65		51	9.14
	1019	51 13.610	51?	42.54
			+	4.47
			−	28.93
				33.40

M	53	47.27
M	54	30.70
R	54	30.60
R	54	30.32
M	54	30.27
	54	30.47

~~240~~ 269

λ Aquilae 0.16056

h m s
18 59 50
−5° 4'

1.17609
9.99830
1.17439

2	56.90		2	52.3
	59.10	1.154		54.0
	1.20	1.15		55.5
	3.30			57.4
30577	5.27		2777	58.5
	577			277
	7.35		2	55.54
	11.47		+	22.14
	13.57			
	15.55	17.669		
	17.60	17.69	3	47.1
	19.68	17.70		48.9
	21.80			50.5
	23.98			52.0
15901	26.10		2520	53.5
	15902			20
	30.05		3	50.40
	32.24	34.250	−	32.72
	34.29	34.25		
	36.30	3540		
17125	38.37		2	55.54
	2125	3 17.685	3	50.40
			+	22.14
			−	32.72
				54.86
				1.73941
				1.17439
				2.91380
				1.89856
				8.98476
				5 30 54

M	31	39.27
M	32	58.42
R	32	58.47
R		
	32	58.44
		79.17

280

α Aquilae

h m s
19 44 53
° ′
+8 33

0.16056

1878 Oct. 4

48 0.20
2.15
4.35
6.55
2177 8.52
2177
12.68
14.90
16.93
18.90
21.05
23.05
25.30
27.37
18978 29.60
18978
33.68
35.80
37.82
39.85
18907 41.92
18907

4.354
43.5
21.087
21.09
21.08
37.814
37.81
42.16

47 55.1
56.7
58.5
59.7
2910 1.0
2910
47 58.20
+ 22.88

47 58.20
48 21.085 + 22.88

19 44 56.22

R 55 8.40
R 55 8.50
55 8.45

8 33 7.3

283

β Aquilae

h m s
19 49 22
° ′
+6 6

1.17609
9.99753
1.17362

0.15056

52 29.70
31.80
33.90
36.06
16954 38.08
1954
42.08
44.25
46.30
48.47
50.53
52.53
54.65
56.87
45438 58.90
45438
2.90
5.00
6.95
9.20
3533 11.28
3533

33908
33.91
50.487
50.49
50.49
7.066
7.07
10098

52 50.490

52 22.5
24.0
25.3
27.1
1277 28.8
277
52 25.54
+ 24.95
53 18.5
20.5
21.9
23.4
1093 25.0
93
53 21.86
− 31.37

52 25.54
53 21.86
+ 24.95
− 31.37
56.32
1.75066
1.17362
2.92428
1.90784
8.98356
5 ~~29~~ 59
30 00

19 49 26.67

M 21 41.75
M 23 2.62
R 23 2.62
R 23 2.67
M 23 2.60
23 2.63
80.88

6 6 86.5

287

θ Aquilae

h m s
20 5 4
° ′
−1 11

1.17609
9.99991
1.17600

0.16056

8 11.55
13.70
15.65
17.65
7840 19.85
2840
23.90
25.88
28.00
30.05
32.08
34.20
36.26
38.28
28897 40.32
28897
44.57
46.50
48.67
50.70
24314 52.70
24314

15680
15.68
32.108
32.11
32.15
48628
48.63
6431

8 32.130

8 3.2
4.9
6.6
8.6
338 10.5
338
8 6.76
+ 25.37
8 58.7
0.3
2.3
4.0
3110 5.7
110
9 2.20
− 30.07

67

8 6.76
9 2.20
+ 25.37
− 30.07
55.44
1.74382
1.17600
2.91982
1.90385
8.98403
5 30 21

M 38 35.07
M 39 55.20
R 39 55.42
R 39 55.17
M 39 55.07
39 55.21
80.14

607

α² Capricorni

h m s
20 11 20
° '
−12 55

1.17609 016056
9.98887
1.16496

14	27.80		14	20.5
	29.95	32044		21.8
	32.07	32.04		23.3
	34.08			24.9
16022	36.32		1169	26.4
	1022			169
	40.40		14	2338
	42.49		+	2551
	44.65			
	46.72	48868		
	48.86	48.87	15	20.7
	51.00	48.91		22.5
	53.03			24.0
	55.26			25.6
43981	57.40		1198	27.0
	43981			198
	1.50		15	23.96
	3.70	5.784	−	35.07
	5.77	5.78		
	7.90	9782		
2892	10.05		14	23.38
	2892	14 48.890	15	23.96
			+	25.51
			−	35.07
				60.58
20 11 24.47				1.78233
				1.16496
				2.94729
				1.93420
				8.98691
				5 32 32

303

ξ Cygni

h m s
21 7 47
° '
+29 44

1.17609 0.16056
9.93869
1.11478

9	52.45		9	41.7
	54.85	57.230		43.3
	57.20	57.23		45.0
	59.62			46.7
28615	2.03		2254	48.7
	28615			254
	6.75		9	45.08
	9.05		+	31.10
	11.37			
	13.82	16.191		
	16.30	16.19	10	48.2
	18.58	16.18		50.0
	20.95			51.8
	23.25			53.6
14572	25.65		2590	55.4
	14572			90
	30.27		10	51.80
	32.60	35126	−	35.62
	35.19	35.13		
	37.64	15236		
17563	39.93		9	45.08
	2563	10 16.185	10	51.80
			+	31.10
			−	35.62
				66.72
				1.82426
				1.11478
				2.93904
				1.92423
				8.98519
				5 31 13

307

β Aquarii 016056

h m s
21 25 11
° '
−6 6

1.17609
9.99753
1.17362

27	19.30		27	12.0
	21.40	23516		13.7
	23.48	23.52		15.7
	25.65			17.4
11758	27.75		784	19.6
	1758			284
	31.96		27	15.68
	34.07		+	24.44
	36.12			
	38.08	40153		
	40.15	40.15	28	16.3
	42.04	40,10		18.0
	44.20			19.6
	46.38			21.3
36138	48.38		985	23.3
	138			985
	52.54		28	19.70
	54.54	56686	−	39.58
	56.70	56.69		
	58.85	8021		
28343	0.80		27	15.68
	28343	27 40.125	28	19.70
			+	24.44
			−	39.58
				64.02
				1.80632
				1.17362
				2.97994
				1.96294
				8.98300
				5 29 34

M	2 31.78	M	44 23.47	M	33 44.87
M	3 57.65	M	45 47.40	M	35 16.72
R	3 57.78	R	45 47.47	R	35 16.57
R	3 57.85	R	45 47.55	R	35 16.70
M	3 57.62	M	45 47.42	M	35 16.78
	3 57.72		45 47.46		35 16.69
	85.94		83.99		91.82

12 54 54.3

309
ε Pegasi
h m s
21 38 14 1.17609 0.16056
+9° 19' 9.99423
1879 Oct. 4 1.17032

40 22.60		40 17.5
24.72	26774	19.3
26.60	26.77	21.5
28.90		23.1
13387 31.05		1066 25.2
13387		66
35.10		40 21.32
37.20		+ 22.19
39.30		
41.47	43537	
43.52	43.54	41 19.5
45.70	43.48	21.1
47.70		23.2
49.87		24.7
39183 51.97		1147 26.2
39183		147
56.10		41 22.94
58.00	0.196	− 39.43
0.20	0.20	
2.28	8697	
30098 4.40		40 21.32
∴ 098	40 43.510	41 22.94
		+ 22.19
		− 39.43
		61.62
		1.78972
		1.17032
		2.96004
		1.94270
		8.98266
		5 29 19

M 8 46.62
M 10 14.02
R 10 14.37
R 10 14.35
M 10 14.30
10 14.26
87.64

311
α Aquarii
h m s
21 59 34 1.17609 0.16056
−0° 54' 9.99995
1.17604

1 42.50		1 33.9
44.50	46640	35.1
46.67	46.64	36.7
48.70		38.5
23320 50.83		1847 40.5
3320		347
54.75		1 36.94
56.90		+ 26.14
58.90		
1.00	3.071	
3.10	3.07	2 29.3
5.18	3.10	30.9
7.27		32.4
9.22		33.9
56764 11.32		1622 35.7
2764		222
15.40		2 32.44
17.50	19.564	− 29.36
19.60	19.56	
21.62	17620	
9782 23.70		1 36.94
9782	2 3.085	2 32.44
		+ 26.14
		− 29.36
		55.50
21 59 88.37		1.74429
		1.17604
		2.92033
		1.90325
		8.98292
		5 29 30

M 22 5.22
M 23 25.20
R 23 25.30
R 23 25.32
M 23 25.20
23 25.25
80.03

0 54 0.5

107
γ Geminorum 0.16056
h m s
6 30 43 1.17609
+16° 30' 9.98174
1.15783

32 51.32		32 44.4
53.40	55.632	45.7
55.64	55.63	48.1
57.80		49.7
27816 0.00		2396 51.7
27816		396
4.20		32 47.92
6.25		+ 24.84
8.30		
10.65	12727	
12.74	12.73	33 44.4
14.80	12.81	46.3
17.10		47.6
19.20		49.2
11454 21.30		2388 51.3
11454		2388
25.57		33 47.76
27.90	29.994	− 35.00
30.00 30.10	29.99	
32.10	14562	
14997 34.30		32 47.92
14997	33 12.770	33 47.76
	− 005	+ 24.85
	12.765	− 34.99
		59.84
		1.77699
		1.15783
		2.93482
		1.90763
		8.97281
		5 21 58

M 58 28.42
M 59 49.27
R 59 49.52
R 59 48.95
M 59 49.32
59 49.26
80.84

7 002
6 12.77 51
5 36.12 52
4 54.08 53
4 11.91 53

111

51 H. Cephei

h m s
6 43 16
+ 87 14

	51 1.38	58 1.40	50 26.9
51	44.25 (40.29 44.87 47.60)	58 2.02	52 3.2
	52 24.25		53 26.4
52	26.75 (26.70 29.30)	58 2.87	55 15.5
	53 6.10		
53	9.48 (9.80 12.55)	58 3.56	56 41.9
53	51.52 (47.70 57.30 55.55)	58 3.43	
		13.28	
		58 2.66	

M 17 19.12
M 17 23.20
M 17 27.42
M 17 29.60
M 17 33.35
M 17 36.02

118

β Can. Min.

0.16056

h m s
7 20 35
+8° 32 · 1.17609 0.16056
9.99517
1.17126

22 43.30		22 33.7
45.40	47.450	35.7
47.50	47.45	37.5
49.40		39.7
23725 51.65		1876 41.0
3725		376
55.80		22 3752
57.87		+ 2660
0.00		
2.05	4127	
4.05	412	23 35.6
6.20	4.11	37.8
8.27		39.2
10.45		40.5
57714 12.45		1952 42.1
3714		1952
16.70		23 3904
18.62	20784	− 3492
20.80	20.78	
22.80	12823	
10392 25.00		22 37.52
392	23 4.115	23 39.04
		+ 26.60
		− 34.92
		61.52
		1.78902
		1.17126
		2.96028
		1.94773
		8.98745
		5 32 56

M 56 23.35
M 57 52.22
R 57 52.12
R 57 51.87
M 57 51.85
57 52.01
88.66

119

δ Geminor. 0.16056

h m s
7 26 52
+32° 9 · 1.17609
9.92771
1.10380

28 58.40		29 0.2
1.80	3.372	1.9
3.33	3.57	3.9
5.83		6.2
1786 8.30		200 7.8
1686		200
13.17		29 4.00
15.53		+ 18.89
17.98		
20.32	22827	
22.76	22.83	29 51.3
25.30	22.95	52.9
27.60		54.4
30.18		56.7
20544 32.60		2742 58.9
20544		242
37.48		29 5484
39.88	42334	− 3195
42.29	42.33	
44.80	4590	
21167 47.22		29 4.00
1167	29 22.890	29 54.84
		+ 18.89
		− 31.95
		50.84
7. 26 56.30		1.70621
		1.10380
		2.81001
		1.79699
		8.98698
		5 32 35

M 20 2.80
M 21 5.45
R 21 5.50
R 21 5.48
M 21 5.42
21 5.46
62.66

32 9 0.4

		120				122			
		α Can. Min.				β Geminor			
		h m	s			h m	s		
		7 32	58	016056		7 37	55	1.17609	0.16056
		+5°	32'			+28°	19'	9.94465	
1878		Oct. 4						1.12074	
	35 5.50		34 59.1			40 1.60		39 57.2	
	7.77	9.686	0.8			3.40	5.686	58.9	
	9.93	9.68'	2.3			5.75	5.69	1.3	
	12.03		3.9			7.98		2.7	
4843	13.20		3120 5.9		2843	10.30		3041 4.0	
	4843		120			2843		41	
	18.27		35 240			15.03		40 082	
	20.43		+ 2410			17.30		+ 2354	
	22.50					19.60			
	24.55	2'6583				22.07	24.336		
	26.60	26.59	35 57.6			24.35	24.34	40 57.4	
	28.65	26.41	59.3			26.65	24.38	59.2	
	30.70		1.0			29.04		0.9	
	32.67		2.4			31.28		2.4	
23925	34.88		3043 4.0		21902	33.70		3043 4.4	
	23925		43			21902		43	
	38.90		36 086			38.30		41 086	
	41.03	43.142	− 3436			40.70	43.074	− 3650	
	43.18	43.14				43.27	43.07		
	45.30	5282				45.30	4876		
21571	47.30		35 2.40		21537	47.80		~~39~~ 40 0.82	
	1571	35 26.500	36 0.86			1537	40 24.360	41 0.86	
			+ 24.10					+ 23.54	
			− 34.36					− 36.50	
			58.46					60.04	
7 8 3 1.6			1.76684		7 8 7 58.34			1.77844	
								1.12074	
								2.89918	
								1.88615	
								8.98697	
								5 32 34	

M	56	15.10 ·	M	9	57.80 ·
M	56	39.15 .	M	11	14.78 .
R	56	39.30 .	R	11	14.65 .
R	56	39.20 ·	R	11	14.65 .
M	56	39.17 ·	M	11	14.87 .
	56	39.20		11	14.74
					76.94

5 32 2.9 — 28 18 52.7

S

Sun c = 46.869

h m s
12 44 26
−4° 47'

0.15056

Oct. 4–5

α Boötis

h m s
14 10 8
+19° 49'

Oct. 5

Chf

	45 20.85		46 37.5	47 29.57		46 57.6
	23.00	25020	38.9	31.67	.33842	59.0
	25.00	25.02	40.7	33.97	33.84	0.2
	27.00		42.1	36.00		1.7
12510	29.25		2032 44.0	16921 38.00		3018 3.3
	2 510		32	1921		18
	33.27		46 4064	42.10		47 036
	35.30		− 59.01	44.24		+ 50.08
	37.48			46.30		
	39.55	41592		48.30	50439	
	41.60	~~41566~~ 41.56		50.36	50.44	
	43.70			52.50	50.44	
	45.80			54.70		
	47.83			56.68		
37433	49.80			45395 58.77		
	1433			395		
	54.06			2.90		
	56.17	58238		4.90	7050	
	58.20	58.24		7.05	7.05	
	0.26	8326		9.00	10089	
29119	2.40		46 4064	3525 11.40		47.036
	29119	45 41.63	− 59.01	3525	47 50.440	+ 50.08

M 58 38.50.

M 31 17.62.

	237				241					256		
	α' Herculis				α Ophiuchi					δ Urs. Min.		
	h m s				h m s					h m s		
	17 9 18			0.16056	17 29 19		1.17609	0.16056		18 11 21		0.16056
	+14° 32′				+12° 39′		9.98933			+86° 36′		
1879	Oct. 5						1.16542					
	11 15.00		11 8.9		31 26.57		(31 21.5	+ 2	19.50	11 29.10	13 49.20	10 41.3
	17.25	19326	10.6		26.73	30800	23.0	+ 2	7.65	40.95	48.60	
	19.38	19.33	12.2		30.75	30.80	24.6	+ 1	56.04	52.10	48.74	
	21.40		14.0		32.90		26.1	+ 1	44.34	12 4.68	49.02	
9663	23.60		613 15.6		15400 35.65		1232 28.0	+ 1	32.77	15.36	48.33	
	9663		613		400		232	+ 1	21.21	27.90	49.11	
	27.90		11 1226		39.30		31 24.64	+ 1	9.60	38.90	48.50	
	30.00		+ 24.10		41.40		+ 23.08	+	57.99	50.60	48.59	
	32.08				43.53			+	46.30	13 2.45	48.75	
	34.28	36380			45.65	47758		+	34.82	13.60	48.42	
	36.38	3638	12 5.0		47.72	47.76	32 15.0	+	23.19	26.35	49.54	
	38.50	36.35	6.7		49.95	47.69	16.8	+	11.57	36.90	48.47	
	40.60		8.3		52.00		18.3	−	0.02	47.10	47.08	
	42.73		10.0		54.05		19.7	−	11.53	59.70	48.17	
32742	44.95		419 11.9		42982 56.22		915 21.1	−	22.15	14 11.70	49.55	
	32742		419		42982		915	−	34.73	23.60	48.87	
	49.04		12 838		0.30		32 1830	−	46.38	35.10	48.62	
	51.28	53374	− 32.02		2.50	4594	− 3058	−	58.02	46.10	48.08	
	53.30	53.37			4.64	459		− 1	9.52	59.25	49.73	
	55.55	7270			6.60	9539		− 1	21.21	15 9.15	48.54	
26687	57.70		11 1226		2297 8.93		31 24.64	− 1	32.86	22.18	49.32	
	1687	11 36.365	12 8.38		2297	31 47.725	32 18.30	− 1	44.46	33.27	48.81	
			+ 24.10				+ 23.08	− 1	56.03	44.55	48.52	
			− 3202				− 30.58	− 2	7.71	57.25	49.54	
			56.12				53.66	− 2	19.35	16 9.25	49.90	
17	9 10.25		1.74912		17 29 21.59		1.72965					
							1.16542				1220.00	
							2.89507					
							1.87973				13 48.800	
							8.98466					
							53049					

M 56 41.78 ·	M 49 30.85 ·	M 53 26.97 ·
M 5~~7~~8 2.72	M 50 46.52 ·	
R 5~~7~~8 3.05	R 50 46.67 ·	
R 5~~7~~8 2.82	R 50 46.57 ·	
M 5~~7~~8 2.60	M 50 46.90 ·	
57 2.80	50 46.66	
2.02	75.81	
14 31. 50.9	12 39 4.2	

	257				111				603	
	η Serpentis				51 H. Cephei L.C.				σ Sagittarii	0.16056
	h m s				h m s				h m s	
	18 15	3			6 43	16			18 47	46
		1.17609	0.16056				0.16056			1.17609
	−2°	56′ 9.99943			+92°	49′			−26°	27′ 9.95198
		1.17552								1.12807
17 11.20		17 1.7	+2 4836	42 54.08	45 42.44	36 47.7		49 51.87		49 40.6
13.28	15322	3.3	+2 3405	43 8.28	45 42.33			54.23	56448	42.6
15.32	15.32	4.9	+2 20.05	22.48	42.53	37 41.0		56.40	56.45	44.7
17.36		6.4	+2 6.92	36.28	42.20			58.74		46.5
7661 19.45		241 7.8	+1 51.96	50.60	42.56	39 17.6		28224 1.00		2234 49.0
2661		241	+1 39.06	44 5.27	44.33			28224		234
23.58		17 4.82	+1 24.00	18.20	42.20	40 30.2		5.69		49 44.68
25.60		+ 27.04	+1 9.98	33.60	43.58			7.90		+ 30.17
27.74			+ 55.88	47.00	42.88	41 48.5		10.23		
29.80	31.868		+ 42.02	45 1.60	43.62			12.57	14.848	
31.87	31.87	18 2.5	+ 27.98	15.00	42.98			14.78	14.85	50 45.2
33.97	31.85	4.7	+ 13.96	29.55	43.51			17.20	14.85	47.1
36.00		6.2	− 0.02	44.47	44.45			19.36		49.3
38.08		7.5	− 13.92	58.45	44.53			21.80		50.9
28681 40.17		311 9.2	− 27.94	46 12.64	44.70			13363 24.10		2452 52.7
28681		311	− 41.92	27.00	46.08			13363		2452
44.22		18 6.22	− 55.98	40.06	44.08			28.70		50 49.04
46.28	48.378	− 34.36	−1 10.02	54.40	44.38			31.00	33264	− 34.19
48.36	48.38		−1 23.90	47 10.20	46.30			33.22	33.26	
50.48	6370		−1 38.00	22.60	44.60			35.60	14971	
24189 52.55		17 4.82	−1 52.06	37.96	45.90			16632 37.80		49 44.68
24189	17 31.857	18 6.22	−2 6.08	51.10	45.02			16632	50 14.850	50 49.04
		+ 27.04	−2 20.03	48 6.10	46.07					+ 30.17
		− 34.36	−2 34.13	20.10	45.97					− 34.19
		61.40	−2 48.16	34.70	45 46.54					64.36
		1.78817			~~11 [illegible]0.78~~					1.80862
		1.17552			45 44.03					1.12807
		2.96369								2.93669
		1.94719								1.91991
		8.98350								8.98322
		5 29 56								5 29 44

M 23 40.90	M 45 1.17	M 53 17.25
M 25 9.55	M 44 53.75	M 54 40.27
R 25 9.62	M 44 47.10	R 54 40.57
R 25 9.35	M 44 39.95	R 54 40.42
M 25 9.27	M 44 33.17	M 54 40.37
25 9.45	~~44 43.99~~	54 40.41
88.55		83.16

269

λ Aquilae

h m s
18 59 50

−5° 4′

1.17609
9.99830
1.17439

1879 Oct. 5.

S

Sun C = 46.875

h m s
12 51 45

−5° 33′

0.16056

Oct. 6−7

1 58.10		1 48.5	52 41.00		53 48.7	54 50.05		54 24.3
0.23	2262	50.2	43.18	45178	50.8	52.08	54240	26.1
2.23	2.26	51.7	45.20	4518	52.2	54.30	54.24	27.9
4.35		53.4	47.23		53.7	56.35		29.6
36131 6.40		2589 55.1	22589 49.28		2610 55.6	27120 58.42		1387 30.8
1131		89	2589		110	2120		387
10.55		1 51.78	53.50		53 5220	2.58		54 2774
12.65		+ 27.06	55.70		− 50.36	4.64		+ 43.16
14.67			57.70			6.70		
16.80	18856		59.90	1856		8.80	10897	
18.84	18.86	2 48.9	1.95	1.86		10.90	10.90	
20.97	18.83	50.6	3.90	1.82		13.00	10.91	
23.00		52.2	6.00			15.00		
25.14		53.8	7.88			17.15		
16970 27.18		2609 55.5	55670 10.17			9807 19.30		
16970		109	1670			9807		
31.20		2 5218	14.24			23.40		
33.34	35408	− 3334	16.40	18472		25.45	27576	
35.38	35.41		18.50	18.47		27.56	27.58	
37.50	3767		20.55	12365		29.68	14182	
17704 39.62		1 51.78	9236 22.67		53 52.20	3788 31.80		54 27.74
2704	2 18.845	2 52.18	9236	53 1.840	+− 50.36	3788	55 10.905	+ 43.16
		+ 27.11						
		− 33.34						
		60.45						
		1.78140						
		1.17439						
		2.95579						
		1.94017						
		8.98438						
		53036						

M	31	34.20		M	44	25.58	M	32 32.78
M	33	1.00						
R	33	1.42						
R	33	1.12						
M	33	0.98						
	33	1.13						
		87.13						

187

α Bootis

h m s
14 10 8
° '
+19 49
Oct. 7

0.16056

12 17.00		12 11.1
19.05	21.244	12.4
21.20	21.24	12.9
23.35		15.6
10622 25.62		706 17.6
622		206
29.98		12 1412
32.20		+ 2467
34.40		
36.55	38.776	
38.80	38.78	13 16.1
41.00	38.80	17.6
43.20		19.1
45.35		20.5
34898 47.50		952 21.9
34898		952
52.06		13 1904
54.24	56370	− 4025
56.36	56.37	
58.50	7761	
28185 0.70		12 14.12
28185	12 38.790	13 19.04
		+ 24.67
		− 40.25
		64.92
19 10 10.81		1.81238

d

ε Bootis

h m s
14 39 42
° '
+27 35

0.16056

41 49.40		41 54.3
51.60	53.976	55.8
54.05	53.98	57.6
56.25		59.2
26988 58.58		226.9
1988		567
3.10		
5.45		
8.05		
10.22	12.476	
12.40	12.47	42 42.0
14.76	12.50	44.3
17.00		45.9
19.40		47.7
11228 21.90		2294 49.5
11228		294
26.35		42 45.88
28.65	31.030	− 33.40
31.00	31.03	
33.45	14501	
15515 35.70		
515	42 12.485	42 45.88
		− 33.40

596

α Scorpii

h m s
16 21 59
° '
−26 10

0.16056

24 6.83		23 56.0
9.15	11.418	57.6
11.38	11.42	59.5
13.68		1.1
5709 16.05		2972 3.0
5709		2972
20.60		23 5944
22.78		+ 3035
25.10		
27.50	29.777	
29.90	29.78	25 0.0
32.18	29.80	1.4
34.36		3.4
36.60		5.0
26799 38.97		169 7.1
26799		169
43.46		25 338
45.98	48.188	− 3359
48.30	48.19	
50.45	5961	
24094 52.75		23 59.44
24094	24 29.790	25 3.38
		+ 3035

16 22 2.39

M 40 5.90
M 40 33.50
R 40 33.65
R 40 33.47
M 40 33.42
40 33.51

19 48 36.2

M 54 3.52
M 54^{5} 5.98
R 54^{5} 6.22
R 54^{5} 6.02
M 54^{5} 6.20
54^{5} 6.10

M 36. 30.45
M 37 53.02

26 9 53.3

1879 Oct. 7

228

β Herculis

h	m	s
16	25	1
°	'	
+21	45	

0.16056

	27 9.45			27 21.6
	11.73	13936		23.7
	14.00	13.94		25.0
	16.12			26.5
6968	18.38		1244	27.6
	6968			244
	22.90			27 24.88
	25.30			+ 6.83
	27.30			
	29.50	31.728		
	31.70	31.73		28 2.6
	34.00	31.69		4.0
	36.05			6.0
	38.27			7.5
28555	40.53		297	9.6
	28555			297
	45.00			28 5.94
	47.23	49.438		− 34.23
	49.40	49.44		
	51.66	6338		
24719	53.90			27 24.88
	24719	27 31.71		28 5.94
				+ 6.83
				− 34.23
				41.06
				1.61342

597

G Ophiuchi

h	m	s
16	30	30
°	'	
−10	19	

0.16056

	32 39.37			32 57.5
	41.50	43624		59.2
	43.65	43.62		0.9
	45.75			2.0
21812	47.85		3029	3.3
	1812			29
	52.05			33 0.58
	54.10			
	56.20			
	58.32			
	039			33 33.5
	2.50			34.8
	4.70			36.5
	6.62			38.3
	8.68		1831	40.0
				331
	12.96			33 36.62
	15.04	17.154		
	17.20	17.15		
	19.20			
8577	21.37			33 0.58
	8577	33 0.392		33 36.62

598

η Ophiuchi

h	m	s
17	3	27
°	'	
−15	34	

1.17609 0.16056
9.98377
1.15986

	5 35.96			5 26.8	
	37.88	40034		27.9	
	40.00	40.03		29.4	
	42.05			31.0	
20017	44.28		1475	32.4	
	017			1475	
	48.50			5 29.50	
	50.68			+ 27.60	
	52.85				
	54.95	57.094			
	57.10	57.09		6 27.7	
	59.30	57.10		29.4	
	1.37			31.0	
	3.50			32.6	
51385	5.60		1551	34.4	
	51385			51	
	9.96			6 31.02	
	12.10	14.180		− 33.92	
	14.10	14.18			
	16.27	11421			
7090	18.47			5 29.50	
	7090	5 57.095		6 31.02	
				+ ~~28.45~~	27.60
				− ~~33.67~~	33.92
				61.52	61.52
				1.78547	
				1.15986	
				2.94533	
				2.16504	
				9.21971	
				9 25 00	

M 43 48.90 ·
M 44 45.15 ·
R 44 45.17 ·
R 44 45.25 ·
M 44 45.10 ·
44 45.17

M 47 43.80 ·
M 48 35.72 ,
R 48 35.67 ,
R 48 35.40 ·
M 48 35.52 ,
48 35.58

M 1 58.72 ·
M 43 25.90 -
R 43 25.82 ·
R 43 25.60 ·
M 43 25.50 ·
43 24.95 382
146.23 ~~24.45~~
25.70.

237

α' Herculis

h m s
17 9 18
° '
+14 32

1.17609 0.16056
9.98588
1.16197

11 17.30
19.57 21.596
21.53 21.59
23.80
10798 25.78
10798
30.09
32.20
34.30
36.49 38.576
38.62 38.57
40.70 38.63
42.80
44.88
34718 47.10
34718
51.38
53.57 55.676
55.60 55.67
57.83 7726
27838 0.00
27838 11 38.60

17 9 10.22

11 16.2
17.7
19.2
20.7
961 22.3
961
11 19.22
+ 19.38

12 8.5
10.1
11.5
13.2
582 14.9
582
12 11.64
− 33.04

11 19.22
12 11.64
+ 19.38
− 33.04
52.42
1.71950
1.16197
2.88147
1.86499
8.98352
5 29 57

M 56 51.02
M 58 4.50
R 58 4.20
R 58 4.22
M 58 4.30
58 4.30
73.28

14 31 50.8

241

α Ophiuchi

h m s
17 29 19
° '
+12 39

1.17609 0.16056
9.98933
1.16542

31 28.80
31.05 33070
33.00 33.07
35.20
16535 37.30
1535
41.57
43.63
45.75
47.95 49.994
50.04 4999
52.10 50.00
54.20
56.31
44995 58.40
44995
2.63
4.80 6936
6.85 694
9.20 10001
3468 11.20
3468 31 49.995

19 29 21.56

31 18.6
20.4
22.0
23.7
1101 25.4
101
31 22.02
+ 27.98
32 3.4
5.4
6.5
8.0
328 9.5
328
32 6.56
− 16.56

31 22.02
32 6.56
+ 27.98
− 16.56
44.54
1.64875
1.16542
2.81417
1.80079
8.98662
5 32 18

13 50.00
49.61
50.11
49.38
48.87
49.30
49.40
49.19
49.30
49.50
49.76
49.64
49.88
50.37
50.70
50.07
50.27
50.86
50.08
49.79
49.56
50.24
49.54
50.29
50.25
18 49.43

M 49 23.80
M 50 27.10
R 50 27.02
M 50 26.90
50 27.01
63.21

12 39 4.1

256

δ Urs. Min.

h m s
18 11 21
° '
+86 36

0.16056

9 44.09
46.25
48.38
10 9.26
11 ~~28.27~~
30.50 +2 19.50
~~32.73~~ ~~7.05~~
41.96 2 7.65
54.07 1 56.04
12 5.04 1 44.34
16.10 1 32.77
28.10 1 21.21
39.80 1 9.60
51.20 0 57.99
13 3.00 46.30
14.68 34.82
26.57 23.19
38.07 + 11.57
49.90 − 0.02
14 1.90 − 11.53
12.85 − 22.15
24.80 34.73
36.65 46.38
48.58 58.02
59.60 −1 9.52
15 11.00 21.27
22.42 32.86
34.70 44.46
45.57 56.03
58.00 −2 7.71
16 9.60 −2 19.35

0.16056

8 16.2
9 9.4
10 44.7

M 53 12.35
M 53 17.82
M 53 24.40
M 53 27.22

257 η Serpentis

h	m	s
18	15	3

°	′	
−2	56	1.17609 9.99943 1.17552

0.16056

1879 Oct. 7

111 51 H. Cephei L.C.

h	m	s
6	43	16

°	′
+92	49

0.16056

603 σ Sagittarii

h	m	s
18	47	46

°	′	
−26	27	1.17609 9.95198 1.12807

0.16056

17	13.60		17	7.6	+2	4836	42	57.90	45 4626	37	43.5	49	54.06		49	50.4
	15.54	17616		8.8	+2	3405	43	11.40	4545		′		56.50	58.716		52.2
	17.58	17.62		10.6	+2	2005		26.35	4640	48	36.0		58.72	58.72		54.4
	19.66			12.3	+2	5.92		40.38	4630				1.00			55.5
8808	21.70		534	14.1	+1	57.96		54.42	4688	39	26.4	29358	3.30		2698	57.3
	8808			534	+1	3906	44	8.58	4866				29358			198
	25.90		17	10.68	+1	2400		22.80	4680	40	21.9		8.00		49	5396
	27.90		+	23.42	+1	978	3864	(37.28	4862				10.20		+	23.16
	30.05				+			40.50)		41	21.9		12.40			
	32.00	34091			+	55.88		52.08	4796				14.75	17.116		
	34.08	34.09	18	2.2	+	42.02	45	6.27	4829	42	13.5		17.05	17.12	50	46.8
	36.10	34.12		3.5	+	27.98		20.07	4805				19.45	17.13		48.9
	38.17			4.7	+	13.96		34.20	48.16				21.75			50.5
	40.30			6.2	−	.02		48.30	48.28				24.07			52.0
30682	42.32		253	8.7	−	13.92	46	2.20	48.28			15404	26.37		2522	54.0
	30682			253	−	27.94		16.10	48.16				15404			22
	46.50		18	5.06	−	41.92		31.60	49.68				30.90		50	5044
	48.58	50626	−	3096	−	55.88		45.05	4907				33.20	35.544	−	3332
	50.67	50.63			−1	10.02		58.60	48.59				35.50	35.54		
	52.63	6825			−1	23.90	47	13.30	49.40				37.90	15426		
25313	54.75		17	10.68	−1	38.00		27.33	49.33			17772	40.22		49	5396
	313	17 34.105	18	5.06	−1	52.06		41.50	49.44				17772	50 17.125	50	50.44
			+	23.42	−2	6.08		55.57	49.49						+	23.16
			−	30.96	−2	20.03	48	10.18	50.15						−	33.32
				54.38	−2	34.13		24.06	49.93							56.48
				1.73544	−2	48.16		37.90	49.74							1.75189
				1.17552					120687							1.12807
				2.91096					45 48.27							2.87996
				1.89856												1.86201
				8.98760												8.98205
				5 33 3												5 28 51

M 23 44.98
M 25 3.92
R 25 4.02
R 25 4.17
M 25 4.10
25 4.05
79.17

M 44 56.47
M 44 57.60
M 44 46.42
M 44 40.78
M 44 35.65
M 44 ~~31.82~~

M 53 24.07
M 54 37.05
R 54 36.82
R 54 36.75
M 54 36.78
54 36.85
72.78

	269			287					607	
	λ Aquilae			θ ~~θ~~ Aquilae					α² Capricorni	
	h m s			h m s					h m s	
	18 59 50			20 5 4					20 11 20	
	° ′			° ′					° ′	
	−5 4		0.16056	−1 11			0.16056		−12 55	0.16056
2 0.38		1 52.5		7 —				13 31.28		
2.40	4.546	54.0		—				33.28	35.428	
4.55	4.55	55.6		—				35.38	35.43	
6.70		56.9	35.45 35.45	1445 ~~21.00~~				37.50		
2273 8.70		2774 58.5	35.45	~~1238 21.00~~				17714 39.70		
2273		274						2714		
12.75		1 55.48		—				43.92		
14.90		+ 25.63		—				46.03		
17.03				—				48.10		
19.05	21.117			—				50.22	52.342	
21.20	21.12	2 48.3		—		8 3.0		52.34	52.34	14 20.2
23.20	21.10	49.9		—		4.3		54.43	52.32	21.8
25.25		51.4	106.35 35.40	4.13 39.53		5.7		56.60		23.8
27.30		53.4	35.45 35.51	619 41.70		7.1		58.68		25.2
19005 29.37		2582 55.2	35.44	8.26 43.70		288 8.7		47108 0.76		1175 27.0
1005		82				288		47108		175
33.43		2 51.64	35.42	1238 47.80		8 5.76		4.90		14 23.50
35.50	37.646	− 30.53	77.21 35.47	1443 49.90	51.960	− 30.32		7.10	9.210	− 31.17
37.70	37.65		35.442 35.47	1651 51.98	51.96			9.25	9.21	
39.80	4220		35.49	1858 54.07				11.37	10464	
18823 41.80		1 55.48	35.35	25980 56.05	2070	8 5.76		4605 13.43		14 23.50
18823	2 21.110	2 51.64		980				4605	13 52.330	− 31.17
		+ 25.63		5						
		− 30.53	35.447							
		56.16	35.445							
		1.74943						20 11 24.42		
M 31 35.25				R 39 55.72				R 23 53.37		
M 32 55.60				R 39 55.72				R 23 53.45		
R 32 55.37										
R 32 55.28								23 53.41		
M 32 55.50				39 55.72				12 54 54.3		
32 55.44										

303

ζ Cygni

h m s
21 7 47
+29° 44'

0.16056

1879

Oct. 7

9	55.90		9	46.0
	58.27	0.670		48.0
	0.70	0.67		49.6
	3.05			51.8
30335	5.43		2490	53.6
	335			2490
	10.22		9	4980
	12.55		+	2982
	14.90			
	17.30	19.684		
	19.70	19.68	10	50.8
	22.08	19.56		52.8
	24.48			54.8
	26.75			56.7
17716	29.18		2743	59.2
	17716			243
	33.94		10	5486
	36.26	38640	−	3524
	38.57	3844		
	40.98	3911		
19220	43.45		9	4980
	19320	10 19.620	10	54.86
			+	29.82
			−	35.24
				65.06
				1.81331

307

β Aquarii

h m s
21 25 11
−6° 6'

1.17609 0.16056
9.99753
1.17362

27	22.87		27	13.3
	25.10	27.048		14.8
	27.00	27.05		16.2
	29.17			17.5
13524	31.20		814	19.6
	3524			314
	35.30		27	1628
	37.38		+	2736
	39.50			
	41.64	43640		
	43.68	4364	28	13.0
	45.70	43.63		14.6
	47.80			16.5
	49.80			18.0
39276	51.96		819	19.8
	39276			319
	56.03		28	1638
	58.17	0.206	−	3274
	0.27	0.21		
	2.27	8726		
30103	4.29		27	16.28
	103	27 43.635	28	16.38
			+	27.36
			−	32.74
				60.10
				1.77887
				1.17362
				2.95249
				1.93697
				8.98448
				5 30 41

309

ε Pegasi

h m s
21 38 14
+9° 19'

1.17609 0.16056
9.99423
1.17032

40	26.05		40	23.4
	28.18	30278		25.1
	30.28	30.28		26.9
	32.38			28.7
15139	34.50		1348	30.7
	139			348
	38.70		40	2696
	40.78		+	2004
	42.82			
	45.00	46998		
	47.03	47.00	41	15.2
	49.08	47.00		17.1
	51.10			18.8
	53.15			20.7
42298	55.32		938	22.0
	42298			938
	59.53		41	1876
	1.55	3.724	−	3176
	3.78	3.72		
	5.86	9400		
31862	7.90		40	2696
	1862	40 47.00	41	18.76
			+	20.04
			−	31.76
				51.80
				1.71433
				1.17032
				2.88465
				1.87040
				8.98575
				5 31 39

R 45 46.67
R 45 46.75

M 33 40.90
M 35 7.57
R 35 7.25
R 35 7.17
M 35 7.17
35 7.29
86.49

M 8 48.92
M 10 3.02
R 10 3.05
R 10 3.32
M 10 3.10
10 3.12
74.20

311

α Aquarii

h m s
21 59 34
° '
−0 54

1.17609
9.99995
1.17604

0.16056

1 46.00
48.06
50.80
52.15
25051 54.30
051
58.40
0.50
2.50
4.54
6.67
8.70
10.80
12.80
59979 14.88
5979
19.00
21.02
23.17
25.19
11568 27.30
1568

50102
50.10
6643
6.66
6.62
23136
23.14
13324
2 6.640

1 35.8
37.2
38.6
40.3
1936 41.7
1936
1 38.72
+ 27.92
2 32.5
34.7
36.1
38.3
1818 40.2
1818
2 36.36
− 29.72
1 38.72
2 36.36
+ 27.92
− 29.72
57.64
1.76072
1.17604
2.93676
1.91866
8.98190
5 2844

21 59 38.84

0 54 0.4

M 22 3.95
M 23 26.82
R 23 27.15
R 23 26.87
M 23 26.65
23 26.87
82.92

d

ζ Orionis

h m s
5 34 39
° '
−2 0

1.17609
9.99974
1.17583

0.16056

36 50.90
53.00
55.05
57.00
27520 59.25
2520
3.28
5.30
7.50
9.55
11.70
13.70
15.75
17.75
10433 19.80
10433
24.00
26.05
28.02
30.13
14031 32.11
14031

55040
55.04
11592
11.59
11.55
28062
28.06
14310
37 11.570

36 43.2
44.6
46.1
47.8
2312 49.5
312
36 4624
+ 25.33
37 41.0
42.9
44.6
45.9
2218 47.4
218
37 4436
− 32.79
36 46.24
37 44.36
+ 25.33
− 32.79
[illegible]
58.12
1.76433
1.17583
2.94016
1.91997
8.97981
5 2710

M 28 18.35
M 29 41.45
R 29 41.42
R 29 41.45
M 29 41.75
29.41.52
83.17

100

κ Orionis

0.16056

h m s
5 42 1
° '
−9 43

1.17609
9.99372
1.16981

44 12.20
14.20
16.26
18.40
8154 20.48
3154
24.67
26.70
28.86
30.94
33.10
35.25
37.20
39.29
29738 41.37
2738
45.67
47.70
49.75
51.95
24910 54.03
24910

16308
16.31
33042
33.04
33.06
49820
49.82
6613
44 33.050

44 4.4
5.9
7.5
9.3
382 11.1
382
44 7.64
+ 25.41
45 6.5
8.3
10.2
12.4
517 14.3
517
45 10.34
− 37.29
44 7.64
45 10.34
+ 25.41
− 37.29
6270
1.79727
1.16981
2.96708
1.95231
8.98523
5 3115

M 10 21.12
M 11 50.62
R 11 50.75
R 11 50.72
M 11 50.78
11 50.72
89.60

102

α Orionis

h m s
5 48 37
° ′ 1.17609 0.16056
+7 23 9.99638
1.17247

1879 Oct. 7

485

35 Draconis Lo.C.

h m s
17 57 52
° ′
+103 1

0.16056

256

δ Urs. Min Lo.C.

h m s
18 11 21
° ′ 0.16056
+93 24

	50 49.29		50 39.2			56	—	
	51.30	53414	40.6				—	
	53.38	53.41	41.9				—	
	55.50		43.0				—	
26707	57.60		2093 44.6				—	
	1707		93					
	1.73		50 41.86+	36.69	11.69	88.04	35.00	
	3.80		+ 28.18	27.44	9.59	9.788	42.10	
	6.00			18.33	9.48		57.15	
	8.00	10042		9.14	9.54		0.40	9.772
	10.00	10.04	51 38.8	0.02	9.29		9.29	9.77
	12.10	10.05	40.7	9.07	9.49		18.56	
	14.20		43.0	18.30	9.42		27.72	
	16.25		44.5	27.44	9.69		37.18	
9038	18.30		2132 46.2	36.65	9.90	62795	46.55	
	9038		132				8795	
	22.53		51 42.64	54.46	9.54	37.30	4.50	
	24.60	26696	− 32.60	64.16	9.04	9.32	13.20	
	26.70	26.69		73.33	9.27		22.60	
	28.75	14010		82.42	9.45		31.87	
13348	30.90		50 41.86				—	
	13348	51 10.045	51 42.64					
			+ 28.18					
			− 32.60	9.554				
			60.78	9.645				

1.78376
1.17247
2.95623
1.94275
8.98652
5 32 14

56 55.0	57 52.5	+2	19.50	10 40.20	12 59.50	6 54.3
8.0	59.0	2	7.65	51.90	59.56	
15.0	10.0	1	56.04	11 2.00	58.04	7 30.5
20.7	17.0	1	44.34	13.88	58.22	
3682 29.5	3441 25.6	1	32.77	23.60	56.37	8 18.2
682	441	1	21.21	36.32	57.53	
57 1364	58 882	1	9.60	48.28	57.88	
−1 4.00	−1 59.18		57.59	57.50	57.49	
			46.80	12 11.15	57.45	
			34.82	23.60	58.42	
58 47.0			23.19	35.10	58.29	
56.4			11.57	45.85	57.42	
2.0		−	0.02	57.78	57.71	
7.6		−	11.53	13 8.22	56.69	
3092 16.2			22.16	21.22	59.07	
592			34.73	31.22	56.49	
1.84			46.38	45.50	59.12	
−1 52.20			58.02	55.35	57.33	
		−1	9.52	14 7.60	58.08	
			21.21	18.97	57.76	
57 13.64			32.86	31.68	58.82	
59 1.84			44.46	42.65	58.19	
			56.03	53.80	57.77	
		−2	7.71	15 5.70	57.99	
		−2	19.35	17.10	57.75	
					12 57.94	

M ~~5~~ 5.97
M 6 33.50
R 6 33.72
R 6 33.55
M 6 33.72
6 33.62
8765

M 30 14.90
M ~~30~~ 56.10 prob 29
M ~~30~~ 39.47

M 8 7.92
M ~~9~~ 8 2.65
M ~~9~~ 50.92 = prob. 7

9 26.78
78.86

106

μ Geminor

h m s
6 15 38
+22 34

1.17609
9.96541
1.14150

0.16056

17 49.52		17 43.9	
51.80	54.020	45.7	
53.93	54.02	47.7	
56.25		49.1	
27010 58.60		2373 50.9	
2010		373	
8.10		17 4746	
6.27		+ 24.44	
7.40			
9.70	11.919		
11.90	11.92	18 39.6	
14.05	11.89	41.0	
16.37		42.2	
18.60		44.8	
10727 20.88		2140 46.4	
10727		140	
25.80		18 4280	
27.55	29.770	− 30.90	
29.75	29.77		
32.05	14379		
14885 34.20		17 47.46	
14885	18 11.905	18 42.80	
		+ 24.44	
		− 30.90	
		55.34	
		1.74304	
		1.14150	
		2.88454	
		~~1.80916~~	1.87181
		~~8.92462~~	8.98727
		~~4.4819~~	5.3248

259

χ Draconis Li. Ce.

h m s
18 23 14
° ′
+107 19

0.16056

24 26.70		23 31.9	24 31.8
32.50	40420	36.7	38.6
40.30	40.42	40.9	43.6
47.10		44.1	47.6
20210 54.50		2049 57.3	2146 53.0
20210		2049	2146
8.38		23 4098	24 4292
15.12		+1 54.86	+ 52.92
22.00			
28.85	35782		
35.78	35.78	25 54.5	26 58.1
42.60	35.90	59.6	6.4
49.96		5.2	11.4
56.65		9.4	15.7
32304 3.70		3267 18.0	3520 20.4
32304		267	520
17.39		26 534	27 1040
24.50	31.386	− 29.50	−1 34.56
31.39	31.39		
38.40	19181		
15693 45.25		23 40.99	24 42.92
15693	25 35.840	26 5.34	27 10.40
		+1 54.85	+ 52.92
		− 29.50	−1 34.56
		144.35	

107

γ Geminor

0.16556

h m s
6 30 43
° ′
+16 30

1.17609
9.98174
1.15783

32 54.80		32 44.5
57.00	59.158	46.6
59.17	59.16	48.1
1.32		49.7
29579 3.50		2396 50.8
29579		2396
7.75		32 4792
10.04		+ 28.44
12.10		
14.20	16.371	
16.30	1637	33 43.7
18.40	16.36	45.6
20.70		47.6
22.85		49.0
14734 25.00		2368 50.9
14734		2368
29.30		33 4736
31.45	33574	− 31.00
33.57	33.57	
35.70	15273	
17787 37.85		32 47.92
1787	33 16.365	33 47.36
		+ 28.44
		− 31.00
		59.44
		1.77408
		1.15783
		2.93191
		1.91603
		8.98412
		5.3025

M	54	14.57
M	55	29.22
R	55	29.07
R	55	28.72
M	55	29.05
	55	29.01
	[illegible]	

M	13	39.05
M	13	10.02
M	12	34.95
M	12	7.87
R	12	(7.92)
R	12	(8.00)
	12	7.93

M	58	23.42
M	59	45.52
R	59	46.10
R	59	45.90
	59	45.84
		82.42

111

57 H Cephei

h m s
6 43 16
° ′
+87 14

0.16056

1879

Oct. 7

+2 48.36	44	3.12	46	51.48	37	28.9
2 34.05		17.28	46	51.33		
2 20.05		30.75	46	50.80	38	40.0
5 5.92		45.27		51.19		
1 51.96		59.23		51.19	40	16.0
1 39.06	45	14.95		53.01		
1 24.00		28.77		52.77	41	28.0
1 9.98		42.67		52.05		
0 55.88		56.00		51.88	42	39.7
42.02	46	12.05		54.09		
27.98		25.80		53.28	50	9.1
13.96		39.88		53.84		
− 0.2		53.00		52.98		
− 13.92	47	8.00		54.08		
−27.94		21.86		53.92		
−41.92		35.27		53.35		
−55.98		50.27		54.29		
−1 10.02	48	5.25	46	55.23		
−1 23.90		17.70		53.80		
−1 38.00		32.50		54.50		
−1 52.06		46.55		54.49		
−2 6.08		59.80		53.72		
−2 20.03	49	14.90		54.87		
−2 34.13		28.70		54.57		
−2 48.16		43.40	46	55.24		
			46	53.30		

493

R Draconis Le. C

h m s
18 55 52
° ′
+108 52

0.16056

	57	12.00			56 25.2	57 5.3
		18.42	24774		29.9	12.9
		24.65	24.77		33.7	15.8
		31.30			37.6	22.8
12387		37.50		1704	44.0	824 25.6
		12387			1704	824
		50.40		56	34.08	57 16.48
		56.60		+1	41.71	+ 59.31
		3.00				
		9.50	15779			
		15.65	15.78	58	51.3	59 41.7
		22.18	15.80		56.7	44.9
		28.65			2.3	49.9
		34.80			5.5	53.9
68201		41.28		3052	9.4	2494 59.0
		14201			52	2494
		54.25		59	104	59 49.88
		0.38	6.828	−	45.25	−1 34.09
		6.86	6.83			
		13.25	15160			
33414		19.40		56	34.08	57 16.48
		3414	58 15.790	59	1.04	59 49.88
				+1	41.71	+ 59.31
				−	45.25	−1 34.09
					146.96	153.40

271

S Draconis Le. C.

h m s
19 12 31
° ′
+112 33

0.16056

	14	2.84		13	23.9
		7.93	13438		27.9
		13.40	13.44		32.2
		18.72			36.6
6719		24.30		1608	40.2
		6719			1608
		35.00		13	3216
		40.65		+1	24.42
		46.00			
		51.24	56660		
		56.70	56.66	14	41.0
		2.00	56.51		43.3
		7.50			49.0
		12.75			52.6
50994		18.10		2431	57.2
		50994			2431
		29.00		14	4862
		34.05	39582	−	7.96
		39.56	3958		
		45.20	18302		
19791		50.10		15	24.5
		19791	14 56.585		29.8
					33.2
					38.3
				1683	42.5
					1683
				15	3366
				−	37.08

M 16 17.92.
M 16 24.30.
M 16 33.55.
M 16 39.70.
M 16 45.72.
M 17 16.95.

M 41 8.48.
M 41 47.35.
M 39 57.58.
M 39 35.92.

M 0 19.17.
M 0 40.17.
M 59 15.25.

118

β Can. Min.

h m s
7 20 35
° ′ 1.17609
+8 32 9.99517
1.17126

	22 46.87		22 37.1
	48.90	50982	38.6
	51.00	50.98	40.0
	53.04		41.7
25491	55.10		2008 43.4
	491		08
	59.28		22 40.16
	1.89		+ 27.48
	3.50		
	5.45	7.637	
	7.60	7.64	23 42.7
	9.74	7.63	45.1
	11.85		46.7
	13.93		48.4
60873	16.04		2337 49.8
	6873		337
	20.03		23 46.74
	22.20	24282	− 39.10
	24.28	2428	
	26.40	13526	
12141	28.50		22 40.76
	2141	23 7.685	23 46.74
			+ 27.48
			− 39.10
			66.58
			1.82334
			1.17126
			2.99460
			1.97845
			8.98385
			5 30 12

M 56 23.98
M 57 59.17
R 57 59.32
R 57 59.02
M 57 59.05
57 59.14
95.16

119

α Geminor.

0.16056

h m s
7 26 52
° ′ 1.17609
+32 9 9.92771
1.10380

	29 2.00		28 50.0
	4.40		51.5
	6.90	690	53.3
	9.36		55.4
3451	11.85		2674 57.2
	3451		174
	16.67		28 5348
	19.00		+ 32.90
	21.50		
	23.97	26378	
	26.45	26.38	30 1.7
	28.77	26.38	3.4
	31.29		5.1
	33.70		7.5
23740	36.05		271 9.4
	23740		271
	41.00		30 542
	43.40	45.856	− 39.04
	45.85	4586	
	48.28	5276	
22928	50.75		28 5348
	22928	29 26.380	30 5.42
			+ 32.90
			− 39.04
			71.94
7 26 56.40			1.85697
			1.10380
			2.96077
			1.94576
			8.98499
			5 31 4

M 19 46.92
M 21 15.37
R 21 15.10
R 21 15.27
M 21 15.00
21 15.18
88.26

32 9 0.1

120

α Can. Min.

0.16056

h m s
7 32 58
° ′
+5 32

0.16056

	35 9.60		35 21.5
	11.48	13586	23.2
	13.55	13.55	25.3
	15.65		27.0
6773	17.65		1254 28.4
	6793		254
	21.80		35 2508
	24.03		+ 5.06
	26.03		
	28.15	30154	
	30.15	30.15	35 55.8
	32.25	30.13	57.8
	34.25		59.2
	36.35		0.8
27139	38.38		2956 2.5
	27139		2956
	42.55		35 5912
	44.60	46710	− 28.98
	46.70	46.71	
	48.80	6026	
23355	50.90		35 25.08
	3355	35 30.140	35 59.12
			+ 5.06
			− 28.98
			36.04
7 38 1.25			1.5

M 56 44.40
M 57 33.60
R 57 33.80
R 57 33.72
M 57 33.57
57 33.67

5 32 2.6

1879 Oct. 7

138

α Hydrae 9.99560

h	m	s
9	21	38
	−8°	8′

0,16856

23 ~~49.00~~		23 56.7	
~~51.00~~		58.0	
53.00		59.5	
55.00		0.8	
57.20		2987 3.7	
8638		2987	
		23 59.74	
1.15			
3.38			
5.40			
7.50	9.598		
9.70	9.59	24 41.3	
11.60		42.7	
13.80		44.0	
15.95		45.6	
8638 17.90		2213 47.7	
8638		213	
22.05		24 44.26	
24.20	26.250		
26.25	26.25		
28.30			
13125 30.45		23 59.74	
13125	24 9.633	24 44.26	

9 21 40.91

M 36 22.98
M 37 26.80
R 37 26.55
R 37 26.72
M 37 26.45
37 26.63
63.65

8 8 9.4

142

ε Leonis

h	m	s
9	38	59
	+24°	20′

1.17609 0.16056
9.95960
1.13569

41 8.65		41 2.7
11.00	13.184	4.4
13.20	13.20	6.0
15.40		7.6
6602 17.67		306 9.9
6592		306
22.12		41 6.12
24.56		+ 25.16
26.70		
29.00	31.290	
31.30	31.29	41 58.4
33.58	31.28	0.2
35.90		2.3
38.10		4.0
28161 40.35		3108 5.9
28161		108
44.80		42 2.16
47.12	49.372	− 30.88
49.34	49.37	
51.60	62.57	
24686 54.00		41 6.12
24686	41 31.285	42 2.16

+ 25.16
− 30.88
56.04
1.74850
1.13569
2.88419
1.87058
8.98639
5 32 8

M 9 9.55
M 10 23.65
R 10 23.97
R 10 23.82
M 10 23.70
10 23.78
74.23

146

α Leonis 0.16056

h	m	s
10	1	56
	+12°	33′

1.17609
9.98950
1.16559

5 6.40		5 1.0
8.50	10.646	2.2
10.68	10.65	4.0
12.70		5.5
5323 14.95		199 7.2
5323		199
19.10		5 3.98
21.12		+ 23.50
23.20		
25.35	27.462	
27.50	27.46	5 55.1
29.60	27.50	56.5
31.70		58.3
33.77		0.2
24716 35.82		2923 2.2
24716		2923
40.17		5 58.46
42.30	44.360	− 30.98
44.38	44.36	
46.40	55.01	
22180 48.55		5 3.98
2180	5 27.480	5 58.46

+ 23.50
− 30.98
54.48
1.73624
1.16559
2.90183
1.88672
8.98489
5 31 0

10 1 58.19

M 55 14.98
M 56 31.82
R 56 32.18
R 56 32.20
M 56 31.90
56 32.02
77.04

12 38 16.9

148 | c

G Leonis | γ' Leonis

h	m	s		h	m	s		
10	9	57		10	13	18		
°	'		0.16056	°	'		1.17609	0.16056
+24	1			+20	27		9.97173	
							1.14782	

13	7.17		12	56.3
	9.32	11.664		58.1
	11.69	11.66		0.4
	13.94			2.1
5832	16.20		3008	3.9
	5832			08
	20.70		13	016
	22.90		+	29.56
	25.30			
	27.38	29717		
	29.71	29.72		
	32.04	29.72		
	34.28			
	36.47			
26745	38.67			
	26745			
	43.20			
	45.60	47792		
	47.80	47.79		
	50.06	5945		
23896	52.30		13	0.16
	23896	13 29.720	+	29.56

16	28.08		16	20.0
	30.22	32496		21.3
	32.48	32.49		22.9
	34.77			24.5
16248	36.93		1154	26.7
	16248			154
	41.28			23.082
	43.60		+	27.02
	4560			
	48.00	50.112		
	50.06	50.11	17	20.8
	52.37	50.08		22.3
	54.50			24.0
	56.70			25.6
45101	58.90		1205	27.8
	101			205
	3.28		17	24.10
	5.50	7.676	−	34.00
	7.65	7.68		
	9.90	100 17		
3838	12.05		16	23.08
	3838	16 50.095	17	24.10
			+	27.02
			−	3400
				61.02
10 13 20.61				1.78547
				1.14782
				2.93329
				1.91656
				8.98327
				52946

M 27 44.78

M	1	41.70
M	3	4.22
R	3	4.30
R	3	4.37
M	3	4.00
	3	4.22
		8252

20 26 56.2

S

Sun c = 46.875

0.16056

1879

Oct. 7–8

56	21.90		57	33.5
	24.04	26166		35.0
	26.40	26.17		36.8
	28.29			38.1
13083	30.20		1829	39.5
	13083			329
	34.52		57	3658
	36.78		−	53.74
	38.75			
	40.70	42858		
	43.03	42.86		
	45.00	42.81		
	46.94			
	49.00			
38572	51.00			
	38572			
	55.30			
	57.40	59462		
	59.36	59.46		
	1.55	8563		
29731	3.70		57	36.58
	29731	56 42.835	−	53.74

R 7 32.80 ·
R 7 32.95 ·

7 32.87

187

α Bootis

h	m	s
14	10	8
°	'	
+19	49	

1.17609
9.97349
1.14958

0.15056

Oct. 8

12	18.18		12	13.3
	20.22	22456		14.7
	22.40	22.46		16.6
	24.68			18.5
11228	26.80		836	20.5
	1228			836
	31.10		12	1672
	33.40		+	2326
	35.63			
	37.75	39.950		
	40.00	39.95	13	8.0
	42.20	40.03		9.9
	44.28			11.5
	46.53			13.5
35955	48.66		584	15.5
	35955			584
	53.14		13	1168
	55.36	57598	−	31.70
	57.65	57.60		
	59.79	8006		
28799	2.05	1.95	12	16.72
	28799	12 39.990	13	11.68
		−005	+	23.27
		39.985	−	31.69
				54.96

14 10 10.81

1.74805
1.14958
2.88963
1.87379
8.98416
53026

M 40 7.47 ·
M 41 22.35 ·
R 41 22.17 ·
R 41 22.20 ·
M 41 22.30 ·
41 22.25
74.78

19 48 86.1

056

596

α Scorpii

h m s
16 21 59
−26° 10′

0.16056

24	8.00		24	10.5
	10.17	12534		11.6
	12.50	12.53		12.8
	15.00			14.2
6267	17.00		652	16.1
	6267			152
	21.72		24	1304
	23.98		+	1782
	26.26			
	28.56	30.842		
	30.75	30.84		
	33.19	30.88		
	35.37			
	37.70			
27758	40.05			
	27758			
	44.54			
	46.90	49.218		
	49.20	49.22		
	51.55	6175		
24609	53.90		24	1304
	24609	24 30.860	+	1782

16 22 2.38

26 9 53.3

228

β Herculis

h m s
16 25 1
+21° 45′

0.16056

27	10.55			
	12.70	14968		
	14.97	1497		
	17.25			
7484	19.37			
	2484			
	23.80			
	26.05			
	28.35			
	30.44	32.774		
	32.75	32.77	27	57.2
	35.03	32.73		58.9
	37.30			0.5
	39.50			2.4
29497	41.75		3035	4.5
	29497			35
	46.10		28	0.70
	48.28	50486	−	2795
	50.40	5049		
	52.70	6546		
25243	54.95			
	243	27 32.750	28	0.70
			−	2795

R 44 37.12
R 44 36.92

44 37.02

597

ζ Ophiuchi

h m s
16 30 30
−10° 19′

0.16056

32	40.50			
	42.40	44620		
	44.63	44.62		
	46.70			
22310	48.87			
	2310			
	53.00			
	55.20			
	57.20			
	59.30	1.411		
	1.42	1.41	33	11.2
	3.50	1.40		12.8
	5.58			14.9
	7.70			16.5
55270	9.80		739	18.5
	1270			239
	14.00			1478
	16.10	18.180	−	18.38
	18.18	18.18		
	20.22	12280		
9090	22.40		33	14.78
	9090	33 1.405	−	13.38

R 48 4.05
R 48 3.82

48 3.93

Ex Sheet - 485

237			241						35 Draconis	
a, Herculis			α Ophiuchi							
h m s 17 9 18 +14° 32'		0.16056	h m s 17 29 19 +12° 39'		1.17609 9.98933 1.16542	0.16056			h m s 17 55 52 +76° 59'	0.16056
1879. Oct. 8										

11 18.25		11 10.4	31 29.98		31 22.8	2344 9164	55 51.80		55 57.1	56 42.7
20.50	22646	12.1	32.06	34182	24.6	2342 8242	56 1.00	9.810	3.0	57.6
22.66	22.65	13.7	34.19	34.18	26.3	2333 7333	115.56 10.00	9.81	10.6	4.8
24.84		15.4	36.30		27.7	2286 6416	23.112 18.70		17.0	58 11.7
1323 26.58		691 17.5	17091 38.38		1308 29.4	2251 5496	4905 27.55		3510 23.3	236.8
1323		191	2091		308		49.05		510	
31.22		11 13.82	42.62		31 26.16	2285 3665	206.38 46.20		56 10.20	57 5.92
33.30		+ 25.88	44.75		+ 24.93	2319 2749	22.931 55.70		+ 1 12.74	
35.40			46.87			2270 1830	57 4.40			
37.58	39705		49.02	51.088		2267 9.07	13.60	22.949		
39.70	39.70		51.13	51.09	32 19.9	2294 -0.02	22.96	22.95	58 2.0	59 8.2
41.87	39.71		53.25	51.09	21.2	2304 914	45.04 32.18		6.7	13.6
43.98			55.25		22.6	2287 1833	22.52 41.20		9.5	22.0
46.10			57.40		24.3	2316 2749	50.65		15.7	28.0
35735 48.20			45979 59.50		1143 26.3	2296 3669	74654 59.65		530 19.1	1034 31.6
35735			979		143		20654		530	59 20.68
52.54			3.80		32 22.86		58 —		58 10.60	−1 57.74
54.60	56.768		5.90	8.010	− 31.77		—		− 47.66	
56.80	56.77		8.00	8.01			—			
58.90	7942		10.15	10219		2254 8246	45.00			
28384 1.00		11 13.82	4005 12.20		31 26.16	2250 9190	54.40		59 52.0	
28384	11 39.705	+ 25.88	4005	31 51.090	32 22.86				56.7	59 20.68
					+ 24.93	22.857			5.4	
					− 31.77	22.836			12.8	
					56.70				3289 22.0	
17 9 10.21			17 29 21.55		1.75358				289	
					1.16542				0 5.78	
					2.91900				−2 42.84	
					1.90151					
					8.98251					
					52912					

R 56 42.10 ·	M 49 28.70 ·	M 30 57.00 ·
R 56 42.12 ·	M 50 48.40 ·	M 31 12.40 ·
	R 50 48.45 ·	M 31 38.37 ·
	R 50 48.45 ·	M 31 57.72 ·
56 42.11	M 50 48.35 ·	M 3~~1~~2 9.87 ·
14 31 50.8	50 48.41	
	79.71	
	12 39 41	

256

S Urs. Min

h m s
18 11 21
+86° 36′

0.16056

257

η Serpentis

h m s
18 15 3
−2° 56′

1.17609
9.99943
1.17552

0.16056

259

χ Draconis 0.16056

h m s
18 23 14
+72° 41′

1.17609
9.47371
0.64980

11 30.60	+2 1950	5 46.4	13 50.10	17 14.64		17 6.5		24 37.00		24 1.4	24 54.2
42.60	7.65	·	13 50.25	16.55	18.670	8.0		43.75	50.730	5.4	58.2
54.60	1 5604	6 41.5	50.64	18.67	18.67	9.9		50.60	50.73	9.2	5.0
12 6.20	1 4434		50.54	20.67		11.1		57.70		16 0	8.6
17.73	1 3277	7 52.9	50.50	9335 22.82		482 12.7		25365 4.60		5.3	3204 14.4
29.22	1 2121		50.43	9335		482		25365			204
40.70	1 960	8 37.2	50.30	26.80		17 9.64		18.38			25 4.08
52.00	0 57.99		49.99	29.00		+ 25.52		25.22			+ 42.04
13 3.80	4630	9 18.7	50.10	31.82				32.28			
15.80	3482		50.62	33.08	35.151			39.30	46.109		
26.90	23.19		50.09	35.20	35.15	18 3.8		46.15	46.11	26 40.0	27 21.6
39.10	+ 11.57		50.67	37.20	35.18	5.3		52.90	46.12	45.2	27.6
50.20	− 0.02		50.18	39.26		6.7		0.00		52.2	33.8
14 1.93	− 11.53		50.40	41.40		8.7		6.85		58.4	38.5
14.00	− 22.15		51.85	31636 43.40		348 10.3		41498 13.90		2595 3.7	1674 45.9
25.30	34.73		50.57	31636		348		41498		259.5	1674
38.05	46.38		51.67	47.52		18 6.96		27.55		26 5.190	27 33.48
48.90	58.02		50.88	49.56	51.676	− 31.80		34.67	41.516	−1 5.78	−1 47.36
15 0.27	−1 9.52		50.75	51.75	51.68			41.46	41.52		
12.15	21.21		50.94	53.70	7035			48.60	21.225		
23.30	32.86		50.44	25838 55.85		17 9.64		20758 55.30			25 4.08
35.77	44.46		51.31	838	17 35.165	18 6.96		20758	25 46.115	26 51.90	27 33.48
47.70	56.03		51.67			+ 26.02					+ 42.04
59.20	−2 7.21		51.49			− 31.30				− 1 5.78	− 1 47.36
16 9.63	−2 19.38		13 50.28			57.32					149.40
						1.75831					2.17435
			13 51.06			1.17552					0.64980
						2.93383					2.82415
						1.91866					1.91666
						8.98483					9.09251
						5 30 57					7 3 14

M 52 53.92 ·
M 53 0.70 ·
M 53 8.35 ·
M 53 17.10 ·
M 53 22.67 ·

M 23 42.37 ·
M 25 5.35 ·
R 25 5.40 ·
R 25 5.25 ·
M 25 5.15 ·
25 5.29
82.92

M 48 18.45 ·
M 48 44.72 ·
M 49 30.80 ·
M 49 47.45 ·
~~49 40.99~~
82.54

111

51 H Cephei L.C.

h m s
6 43 16
+92° 49′

1879 Oct. 8

47 57.80		47 28.1
48 40.50		
49 49.30		48 57.2
52 12.20		
55.80		49 (29.4)
		53 1.9
		54 55.1
		56 11.9

0.16056

603

o Sagittarii

h m s
18 47 46
−26° 27′

49	55.00		49	57.0
	57.40	59728		58.9
	59.90	59.73		1.3
	2.04			3.1
29864	4.30		3051	4.8
	29864			51
	9.00		50	1.02
	11.27		+	17.14
	13.53			
	15.90	18176		
	18.10	18.17	50	46.6
	20.48	18.15		48.3
	22.80			49.7
	25.10			51.4
16358	27.40		2499	53.9
	16358			2499
	31.95		50	4998
	34.24	36574	−	31.82
	36.56	36.57		
	38.92	15630		
18287	41.20		50	1.02
	.18287	50 18.160	50	49.98
			+	17.14
			−	31.82
				48.96
				1.68984

0.16056

~~270~~ 269

λ Aquilae

h m s
18 52 50
−5° 4′

1.17609 0.16056
9.99830
1.17439

2	1.40		1	52.2
	3.50	5610		53.7
	5.60	5.61		55.4
	7.70			57.2
2805	9.85		2769	58.4
	2805			269
	14.02		1	5538
	16.05		+	26.80
	18.03			
	20.13	22173		
	22.15	22.17	2	49.6
	24.28	22.18		51.1
	26.20			52.6
	28.30			54.1
19956	30.40		2631	55.7
	19956			131
	34.48		2	5262
	36.67	38748	−	30.44
	38.75	38.75		
	40.87	4436		
19374	42.97		1	55.38
	19374	2 22.175	2	52.62
			+	26.80
			−	30.44
				57.24
				1.75770
				1.17439
				2.93209
				1.91997
				8.98788
				5 33 16

M 44 5.78
M 44 0.35
M 4~~4~~3 47.30
M 4~~4~~3 41.98
M 4~~4~~3 38.72

M 53 33.25
M 54 37.60

M 31 32.47
M 32 55.47
R 32 55.80
R 32 55.82
M 32 55.47
32 55.64
83.17

271

δ Draconis

h m s
19 12 31
° ′
+67 27

0.16056

14 10.20
15.76
21.28
26.40
10564 32.00
10564
42.66
48.15
53.23
58.82
4.16
9.38
14.75
20.30
57712 25.68
3712
36.45
42.00
47.12
52.30
23577 57.90
23577

21.128
21.13
4.124
4.11
4.14
47.154
47.15
12828
15 4.125

13 43.7
47.2
51.3
56.1
2587 0.4
2587
13 51.74
+1 12.38
16 6.0
10.2
14.4
19.0
731 23.5
731
16 14.62
−1 10.50
13 51.74
16 14.62
+1 12.38
−1 10.50
142.88

15 24.2
28.4
33.0
37.6
1656 42.4
1656
15 33.12
− 29.00
16 39.1
42.8
47.2
129.1
43.0
15 33.12
− 29.00

273

τ Draconis

h m s
19 17 52
° ′
+73 8

1.17609
9.46262
0.63871

0.16056

19 14.00
21.20
28.22
35.40
14152 42.70
14152
56.70
4.00
11.00
18.15
25.00
32.27
39.37
46.15
2234 53.70
22 634
7.75
15.00
22.25
29.50
11077 36.27
11077

28.304
28.30
25.149
24.82
25.22
22.154
22.15
17045
20 25.020

18 43.5
49.2
54.7
59.4
2726 5.8
2726
18 54.52
+1 30.50
20 45.8
54.1
58.6
4.3
2833 10.5
29 33
20 58.66
− 33.64
22 22.6
28.1
33.2
38.9
1694 46.6
1694
22 33.88
−2 8.86

19 40.1
45.2
50.9
57.1
2554 2.1
2554
19 51.08
+ 33.94
21 32.0
36.8
44.0
49.4
2176 54.4
2166
21 43.32
−1 18.30
19 51.08
21 43.52
+ 33.94
−1 18.50
[illegible]244
2.04078
0.63871
2.67949
1.78176
9.10227
71245

142

ε Leo.

C = 46.875

h m s
9 38 59
° ′
+24 20

41 9.95
12.05
14.25
16.55
7160 18.80
7160
23.20
25.55
27.82
30.05
32.35
34.56
36.86
39.14
29090 41.37
29090
43.90
48.10
50.30
52.68
25198 55.00
25198

14.320
14.32
32.322
32.32
32.36
50.396
50.39
6471
41 32.340 +

41 2.0
3.6
5.4
7.2
273 9.1
273
41 5.46
+ 26.88
41 5.46
26.88

M 3 3.02
M 2 59.35
M 3 21.67
M 3 36.27
3

M 21 16.72
M 21 41.57
M 22 12.50
M 22 27.78
M 22 47.02
~~22 17.22~~
60.50

R 9 7.22
R 9 7.25
9 7.23

	111					603				269	
	51 H Cephei L.C.					σ Sagittarii			λ Aquilae		
	h m	s				h m	s			h m	s
	6 43	16		0.16056		18 47	46	0.16056		18 . 59	50 0.16056
	+92°	49′				−26°	27′			−5°	4′
1879	Oct.	12									
43 8.50		39 25.3			49 55.37		49 52.2	2650+2072	2 5.78		1 57.4
22.10					1.70	3,960	53.7	26.34 1864	132.11 7.70	9.846	58.9
35.95					3.90	3.96	55.5	26.43 1658	26.422 9.85	9.85	0.3
50.90					6.28		57.2	26.41 1451	11.90		2.2
44 4.90				20980	8.55		2783 59.7	26.43 1243	4923 14.10		3024 3.6
19.00					1980		283		49 23		24
33.20					13.27		49 5566	27.48 9.29	211.90 18.19		2 0.48
46.55					15.50		+ 2670	26.40 6.21	26.389 20.19		+ 25.98
45 1.25					17.75			2654 4.14	22.40		
15.75					20.20	22386		2642 2.05	24.37		
30.50					22.40	22.38		2640 −000	26.40		
44.50					24.60	22.34		2651 2.07	28.58		
59.00					26.90			26.46 4.14	30.60		
46 (11.00					29.25			26.69 6.21	32.90		
12.87				20147	31.60				—		
14.33)					20147						
27.33					36.05			2647 1243	26.41 38.90		
42.37					38.37	.40734			26.41 —		
54.80					40.80	40.73			—		
47 9.85					43.00	4469			—		
23.30				20367	45.45		49 55.66		—		1 0.48
38.05					20367	50 22360	+ 26.70				
—											
—								26.457			
—								26.463			
—											
—											
R 44 49.25 ·					R 53 18.32 ·				M 31 33.57 ·		
R 44 37.30 ·					R 53 18.25 ·				R 31 33.25 ·		
									R 31 33.42 ·		
									M 31 33.40 ,		
41					53 18,28				31 33,41		

303

ζ Cygni

	h m s 21 7 47		
	° ′ +29 44	1.17609 9.93869 1.11478	0.16056
10 1.15		9 55.6	
3.70	5.954	57.3	
5.95	5.95	58.9	
8.30		0.7	
2977 10.67		2957 3.2	
2977		2957	
15.37		9 5914	
17.80		+ 2576	
20.05			
22.50	24887		
24.90	24.89	10 55.0	
27.30	24.92	56.1	
29.62		57.8	
31.96		0.1	
22398 34.48		2909 1.9	
22398		2909	
39.10		10 5818	
41.50	43898	− 3328	
43.90	43.90		
46.29	4985		
21949 48.70		9 59.14	
1949	10 24.905	10 58.18 + 25.76 − 33.28 59.04 1.77115 1.11478 2.88593 1.86917 8.98324 5 29 45	

307

β Aquarii

	h m s 21 25 11		
	° ′ −6 6	1.17609 9.99753 1.17362	0.16056
27 28.10		27 19.0	
30.15	32288	20.6	
32.29	32.29	22.0	
34.40		23.9	
16144 36.50		1110 25.5	
1144		110	
40.68		27 2220	
42.90		+ 2670	
44.80			
46.90	48942		
48.90	48.94	28 15.1	
50.95	48.87	16.7	
53.05		18.8	
55.00		20.5	
44048 57.30		936 22.5	
44048		936	
1.28		28 1872	
3.37	5.454	− 2982	
5.45	5.45		
7.57	9774		
2727 9.60		27 22.20	
2727	27 48.905	28 18.72 + 26.70 − 29.82 56.52 1.75220 1.17362 2.92582 1.90993 8.98411 5 30 24	

309

ε Pegasi 0.16056

	h m s 21 38 14		
	° ′ +9 19	1.17609 9.99423 1.17032	
40 31.38		40 22.0	
33.40	35566	23.9	
35.60	35.57	25.6	
37.70		27.0	
17783 39.75		1277 29.2	
2783		277	
43.77		40 2554	
46.20		+ 2674	
48.10			
50.20	52268		
52.25	52.27	41 21.6	
54.36	52.30	23.3	
56.38		24.9	
58.50		26.6	
47041 0.65		1241 27.7	
47041		241	
4.70		41 2482	
6.93	9.026	− 3254	
9.05	9.03		
11.20	10460		
4513 13.25		40 25.54	
4513	40 52.285	41 24.82 + 26.74 − 32.54 59.28 1.77291 1.17032 2.94323 1.91190 8.96867 5 18 56	

M 44 29.47 ·
M 45 43.45 ·
R 45 43.30 ·
R 45 43.32 ·
M 45 43.57 ·
45 43.46
73.99

M 33 41.00 ·
M 35 2.15 ·
R 35 2.27 ·
R 35 2.32 ·
M 35 2.35 ·
35 2.27
81.27

M 8 41.55 ·
M 10 3.20 ·
R 10 3.22 ·
R 10 3.15 ·
M 10 3.20 ·
10 3.19
81.64

311

α Aquarii

h m s
21 59 34
° '
−0 54

1.17609
9.99995
1.17604

3.16056

1879

Oct. 12

1 57.29
53.35
55.50
57.60
27734 59.60
2734
3.83
5.85
7.95
10.04
12.10
14.25
16.20
18.23
10855 20.20
10855
24.25
26.36
28.38
30.60
14224 32.65
14224

55468
55.47

1206
12.06
11.96

28448
28.45
14392

2 12.010

1 42.0
43.3
44.8
46.3
2254 49.0
254
1 45.08
+ 26.93

2 45.7
47.2
48.6
50.3
2436 51.8
2436
2 48.72
− 36.71

1 45.08
2 48.72
+ 26.93
− 36.71
63.64
1.80373
1.17604
2.97977
1.95842
8.97865
52618

21 59 38.29

M 22 4.10 ·
M 23 34.95 ·
R 23 34.98 ·
R 23 34.98 ·
M 23 34.98 ·
23349?
90.87

0 54 0.4

138

α Hydrae

h m s
9 21 38
° '
−8 8

0.16056

23 54.00
56.00
58.20
0.30
29080 2.30
29080
6.40
8.60
10.65
12.80
14.80
16.90
19.00
21.00
13315 23.00
13315
27.25
29.40
31.60
33.50
15745 35.70
15745

58160
58.16

14.794
14.79
14.82

31490
31.49
14965

24 14.805

24 39.6
41.0
42.4
43.7
45.0
~~83~~ 46.6

24

9 21 41.04

R 37 17.17 ·
R 37 17.22 ·

8 8 9.7

142

ε Leonis

h m s
9 38 59
° '
+24 20

0.16056

41 13.70
15.40
18.30
20.57
9135 22.88
9135
27.35
29.60
31.90
34.07
36.38
38.65
41.00
43.20
32750 45.55
32770
50.05
52.25
54.55
56.80
2725 59.00
2265

18.270
18.27

36411
3639
36.38

54530
54.50
7277

41 36.387

41 41.4
42.6
44.4
46.2
2225 47.9
225
41 44.50
− 8.11

41 44.50
− 8.11

R 9

3 micros only.

156

δ Leonis

h	m	s	
11	7	40	0.16056
	°	'	
	+21	11	

	9 55.20			9 48.8
	57.65	59690		50.5
	59.60	59.69		52.1
	1.90		~~56~~	54.2
29845	4.10			56
	29845		9	51.12
	8.60		+	26.24
	10.70			
	12.95			
	15.20	17.387		
	17.38	1739	10	50.2
	19.60	17.34		51.8
	21.80			53.5
	24.05			55.0
15648	26.20		2675	57.0
	15648			175
	30.62		10	53.50
	32.80	34998	−	36.14
	35.00	35.00		
	37.10	15469		
17499	39.47			
	17499	10 17.365	10	53.50
			−	36.14

164

β Leonis

h	m	s	
11	42	63	0.16056
	°	'	
	+ 15	15	

	46 8.50		46	4.8
	10.90	12860		6.4
	12.90	12.86		8.0
	14.95			9.0
6430	17.06		395	11.3
	6430			395
	21.40		46	490
	23.60		+	22.06
	25.75			
	27.85	29.970		
	30.00	29.97		
	32.08	29.96		
	34.20			
	36.35			
26973	38.50			
	26973			
	42.68			
	45.00	47.046		
	47.00	47.05		
	49.25	5991		
23523	51.30			46 7.90
	3523	46 29.965	+	22.06

11 42 55.96

M	17	46.12
M	19	9.27
R	19	9.37
R	19	9.50
M	19	9.45
	19	9.40
		83.28

M	13	57.35
R	13	57.52
R	13	57.45
M	13	57.50
	13	57.45
15	14	38.8

S

Ex Sheet.

Sun c = 46,875

187 α Boötis

h m s
13 13 50
° '
−7 49

0.16056

h m s
14 10 8
° '
+19 49

1.16056

1879

Oct. 12 − 13

Oct. 13

15	52.28		17	4.0	18	2.44		17	30.7	12	23.20		12	15.0
	54.25	56326		5.3		4.55	6560		32.6		25.28	27490		16.5
	56.30	56.33		6.8		6.46	6.56		34.2		27.40	27.49		17.8
	58.36			8.0		8.65			35.9		29.65			19.5
28163	0.44		341	10.0	3280	10.70		1710	37.6	13745	31.92		901	21.3
	28163			341		3280			210		13745			901
	4.44		17	682		14.75		17	3420		36.26		12	1802
	6.58		−	53.82		16.70		+	48.96		38.50		+	27.03
	8.70					18.80					40.60			
	11.02	12993				20.95	23112				42.50	45077		
	13.03	1299				23.10	23.11				45.00	45.07	13	14.8
	15.27	13.01				25.40	23.22				47.20	45.03		17.3
	17.25					27.46					49.50			19.2
	19.30					29.30					51.75			20.8
11694	21.35				20801	31.55				40561	53.90		948	22.7
	11694					20801					40569			448
	25.56					35.73					58.17		13	1896
	27.50	29692				37.80	39892				0.30	2568	−	33.91
	29.78	29.69				39.97	39.89				2.60	2.57		
	31.90	146 02				41.98	46 45				4.77	9006		
14846	33.72		17	6.82	19946	43.98		17	34.20	31284	7.01		12	18.02
	14846	16 13.000	−	53.82		19946	18 23.165	+	48.96		1284	12 45.050	13	18.96
													+	27.03
													−	33.91
														60.94
										14	10	10.81		1.78490

M 0 54.57

M 33 52.17

M 40 3.82
M 40 27.90
R 40 28.25
R 40 27.92
M 40 27.85
40 27.73

19 48 35.2

303

ζ Cygni

h	m	s		
21	7	47	1.17609	0.16056
°	′			
+29	44		9.93869	
			1.11478	

10	2.80		9	53.7
	4.38	6718		55.3
	6.72	6.72		57.1
	9.04			58.8
3359	11.45		2857	0.8
	3369			2857
	16.17		9	5714
	18.60		+	2856
	20.86			
	23.34	25693		
	25.60	25.69	10	43.2
	28.05	25.71		45.3
	30.50			47.5
	32.90			49.0
23124	35.22		2360	51.0
	23124			360
	39.87		10	47.20
	42.30	44698	−	21.50
	44.72	44.70		
	47.10	5142		
22349	49.50		9	57.14
	2349	10 25.700	10	47.20
			+	2856
			−	21.50
				50.06
				1.69949
				1.11478
				2.81427
				1.80106
				8.98679
				5 32 26

307

β Aquarii

h	m	s		
21	25	11	1.17609	0.16056
°	′			
−6	6		9.99753	
			1.17362	

27	28.90		27	19.0
	31.04	33076		20.3
	33.10	33.08		21.7
	35.16			23.3
16538	37.18		1088	24.5
	16538			88
	41.20		27	21.76
	43.40		+	27.88
	45.50			
	47.60	49634		
	49.65	49.63	28	18.5
	51.75	49.64		19.9
	53.75			21.3
	55.88			22.6
44671	57.98		1069	24.6
	44671			69
	2.00		28	21.38
	4.10	6210	−	31.74
	6.20	6.21		
	8.35	9929		
3105	10.40		27	21.76
	3105	27 49.635	28	21.38
			+	27.88
			−	31.74
				59.62
				1.77539
				1.17362
				2.94901
				1.93323
				8.98422
				5 30 29

309

ε Pegasi 0.16056

h	m	s		
21	38	14		
°	′		1.17609	
+9	19		9.99423	
			1.17032	

40	32.80		40	24.7
	34.20	36250		26.6
	36.33	36.25		28.3
	38.28			29.6
18125	40.44		1406	31.4
	18125			1406
	44.80		40	28.12
	46.87		+	24.90
	48.93			
	50.88	53067		
	53.02	53.07	41	20.8
	55.20	52.97		22.5
	57.20			24.2
	59.33			25.9
47760	1.37		1214	28.0
	47760			214
	5.40		41	24.28
	7.60	9666	−	31.26
	9.72	9.69		
	11.72	10594		
4844	14.00		40	28.12
	4844	40 53.02	41	24.28
			+	24.90
			−	31.26
				56.16
				1.74943
				1.17032
				2.91975
				1.90227
				8.98252
				5 29 12

M	44	27.20
M	45	30.45
R	45	30.47
R	45	30.35
M	45	30.52
	45	30.45
		63.25

M	33	39.92
M	35	5.78
R	35	5.80
R	35	5.60
M	35	5.50
	35	5.67
		85.75

M	8	42.12
M	10	1.90
R	10	2.15
R	10	1.98
M	10	1.85
	10	1.97
		79.85

311

α Aquarii

h m s
21 59 34 — 1.17609 — 0.16056
−0° 54′ — 9.99995
1879 — Oct. 13 — 1.17604

1 52.10		1 42.2
54.05	56102	44.0
56.08	56.10	45.3
58.10		46.6
28051 0.18		2266 48.5
28051		266
4.38		1 4532
6.42		+ 27.28
8.50		
10.54	12617	
12.60	12.62	2 36.6
14.60	12.59	37.9
16.76		39.4
18.85		41.0
11355 20.90		1975 42.6
11355		1975
24.87		2 3950
27.06	29078	− 26.90
29.10	29.08	
31.18	14518	
14539 33.18		1 45.32
14539	2 12.605	2 39.50
		+ 27.28
		− 26.90
		54.18
21 59 38.29		1.73384
		1.17604
		2.90988
		1.89481
		8.98493
		5311

120

α Can. Min.

h m s
7 32 58 — 1.17609 — 0.16056
+5° 32′ — 9.99797
1.17406

35 15.67		35 7.5	
17.70	19698	9.5	
19.67	19.70	11.5	11.24
21.68		12.0	
9849 23.77		562 14.7	
9849		562	
28.03		35 11.24	
30.07		+ 25.03	
32.09			
34.27	36299		
36.30	3630	36 7.4	
38.48		8.7	
40.38		10.2	1032
42.60		11.7	
32669 44.47		516 13.6	
32669		516	
48.75		36 1032	
50.75	52836	− 34.05	
52.78	52.84		
54.90	7254		
26418 57.00		35 11.24	
26418	35 36.270	36 10.32	
		+ 25.03	
		− 34.05	
		59.08	
7 33 1.43		1.77144	
		1.17406	
		2.94550	
		1.92824	
		8.98274	
		52922	

138

α Hydrae — 016056

h m s
9 21 38
−8° 8′ — 1.17609
9.99561
1.17170

23 55.00		23 47.4
57.00	59086	49.4
59.20	59.09	51.2
1.18		52.6
29543 3.05		2545 53.9
29543		2545
7.37		23 5090
9.48		+ 24.86
11.55		
13.65	15708	
15.68	15.82	24 47.4
17.76	15.69	49.1
19.88		50.7
22.00		52.0
14237 24.00		2529 53.7
14137		2529
28.05		24 5058
30.20	32290	− 34.82
32.35	32.29	
34.35	15138	
16145 36.50		23 50.90
16145	24 15.755	24 50.58
		+ 24.86
		− 34.82
		59.68
9 21 41.07		1.77583
		1.17170
		2.94753
		1.92881
		8.98128
		52816

chk
X

M	22 4.40	M	56 14.07	M	36 2.12
M	23 22.75	M	57 38.78	M	37 27.12
R	23 22.95	R	57 38.87	R	37 26.98
R	23 23.12	R	57 38.87	R	37 26.95
M	23 22.75	M	57 38.85	M	37 26.95
	23 22.89		57 38.84		37 27.00
	78.49		84.77		84.88

0 54 0.4 — 5 33 2.1 — 8 8 9.8