1999plno..proj..1514.

KG
11306
v.510

Fundamental Stars.
Observations and Reductions.
By

From Oct. 14 1880. to Dec. 16 1880.

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1980phae.proj..151A.

781

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1880phae.proj.1514.

329 α Pegasi

h m s
22 58 44
° '
+14 33

0,12621

1880 Oct. 14

h m s
22 59 —
— —
— —
— —

m s
59 55.0
57.0
58.3
0.0
29.23 2.0
423

+8.53 34.43 25.90 910.21
6.40 34.37 27.97 34.468
4.26 34.48 30.22
+2.11 34.42 32.31 34.471
−0.70 34.47 34.47 3447

2.13 34.49 36.62
4.26 34.44 38.70
6.40 34.60 41.00
8.54 31 024 43.05 34.51
4024 172.64

12.70 34.70 47.40 34.528
14.92 34.48 48.40 51.580
17.06 34.39 53.45 5158
18.19 34.46 53.65
−21.34 25.90 56.00 34.61
790

59 5846
+23.97
0 20.3
21.2
22.0
22.9
1100 23.6
100

0 22.00
−47.51

59 5846
0 22.00

h m s
7 — —
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— —

+2.20 19.58 4 10.38
6.40 18.88 96.92 12.48
3.99 19.35 19.384 14.86
+2.28 19.58 17.30
+0.00 19.33 19.33

— —
— —
— —
— —

+16.04 19.81 58.28 35.90
18.40 19.22 1 9426 37.62
20.70 19.25 39.95
—

19.405
19.400

m s
4 46.3
48.0
49.6
51.0
2474 52.5
474

4 49.48
−30.08

4 4948

x
7 m s
21 5.70
7.94 9.966
9.87 9.97
12.12
4983 14.20
4983

18.30
20.40
22.46
24.50 26.648
2660 2665
25.72 2661
30.70
33.00
23983 35.15
5983
39.00
41.25 43.250
43.30 4325
45.20 53.22
21625 47.50
1623

21 26630

118 — Canis Min.

h m s
7 20 35
° '
+8 32

m s
20 55.6
57.2
58.4
59.9
2926 1.5
426
20 58.52
+28.11
21 57.0
58.8
0.8
2.3
3028 3.9
28
22 0.56
−33.93
20 58.52
22 056
+ 28.11
− 33.93
6 [illegible]2.04
2.00 877
1.17126
3.18003
1.90238
8.72235
3 1 14

1.17609 D.12621
9.99517
1.17126

4 5736

B 47 27.65.
B 47 57.75.
R 47 57.95.
R 47 57.75.
B 47 57.78.
47 57.81.

B 31 47.98.
B 31 48.08.
R 31 48.18.
R 31 47.95.
31 48.05.

B 48 33.80.
B 49 53.70.
R 49 53.62.
R 49 53.78.
B 49 53.58.
49 53.67.
79.87

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1880phae.proj.1514.

119					120				122			
α Gem.					α Canis Min				β Gem.			0,12621
h m s					h m s				h m s			
7 26 52			1.17609	0,12621	7 32 58		1.17609	0,12621	7 37 58		1.17609	
° ′			9.92771		° ′		9.99797		° ′		9.94465	
+32 49			1.10380		+5 32		1.17406		+28 19		1.12074	
1880												
Oct. 14												
h m s			m s		h m s		m s		h m s		m s	
7 27 21.50			27 11.4		7 33 28.35		33 22.4		7 38 23.80		38 7.2	
23.80	26360		13.0		30.30	32386	24.0		26.83	28562	9.7	
26.40	2636		14.4		32.28	3239	25.4		28.33	2856	11.8	
28.80			16.8		34.50		26.8		31.00		13.3	
13180 31.30			717 17.1		16193 36.50		1272 28.6		14281 33.00		582 15.6	
3180			2.7		1193		272		4281		82	
36.03			27 14.34		40.80		33 25.144		37.95		38 11.64	
38.60			+31.64		42.85		+23.59		40.45		+35.81	
41.15					44.94				42.97			
43.40	45989				47.00	49138			45.23	47507		
45.80	4599		28 01.7		49.25	4914	34 19.1		47.55	4751	39 16.5	
48.62	4597		24.1		51.28	4893	20.5		49.83	4740	18.7	
51.00			25.9		53.22		21.8		52.27		20.2	
53.44			27.7		55.50		23.2		54.47		22.0	
41390 55.86			1288 29.4		44224 57.60		1091 24.5		42756 56.87		1009 23.5	
5390			288		8224		91		6756		89	
0.65			28 25.76		1.28		34 21.82		1.45		39 20.18	
3.00	5574		-39.78		3.30	5462	-32.79		4.95	6232	-32.73	
5.50	557				5.44	546			6.16	623		
8.05	9193				7.59	9785			8.60	9479		
2787 10.67			27 1434		2731 9.70		33 2544		3116 11.00		38 1164	
2787	27 45980		28 2576		2731	33 47035	34 2182		3116	38 47455	39 2018	
			+ 31.64				+ 23.59				+ 35.81	
			- 39.78				- 32.79				- 32.73	
			71.42				58.38				68.54	
			1.85382				1.76626				1.83594	
			1.10380				1.17406				1.12074	
			2.95762				2.94032				2.95668	
			1.90612				1.88694				1.90287	
			8.94850				8.94662				8.94619	
			5 4 32				5 3 14				5 2 56	

B	11 58.92	·			B	48 26.48	·		B	1 56.48	·	
B	13 19.22	·			B	49 42.95	·		B	3 16.32	·	
R	13 19.62	·			R	49 43.85	·		R	3 16.48	·	
R	13 19.60	·			R	49 43.88	·		R	3 16.70	·	
B	13 19.50	·							B	3 16.28	·	
	13 19.48	·				49 43.56	·			3 16.44	·	
	80.56					77.08				79.96		

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1880phae.proj.1514:

570

15 Argus

h m s
8 2 23
° ′
−23 57

1.17609 0.12621
9.96090
1.13699

Oct. 14

h	m	s		m	s	h	m	s
8	21	49.98		2	36.3	9	39	30.50
		52.05	54356		37.6			32.70
		54.38	5436		39.3			35.03
		56.51			41.0			37.30
	27178	58.86		1966	42.4		17503	39.50
		2178			406			2503
		3.15		2	39.32			44.00
		5.70			+33.04			46.30
		7.95						48.50
		10.10	12.353					50.87
		12.32	1235		40.0			53.00
		14.70	1237		41.2			55.38
		16.90			42.4			57.66
		19.00			43.6			59.93
	11118	21.36		2119	44.7		47771	2.10
		2118			119			2771
		25.92		3	42.38			6.60
		28.04	30376		−30.02			9.00
		30.25	3038					11.20
		32.57	14474					13.43
	15188	35.00		2	3932		5600	(15.77)
		188	3 12360	3	42.38			600
				+	33.04			
				−	30.02			
					63.06			
					1.79975			
					1.13699			
					2.93674			
					1.88275			
					8.94601			
					5248			

B 16 9.38 ·
B 17 26.95 –
R 17 25.72 ·
R 17 25.72 ·
B 17 25.50 –
17 25.72
76.34

142

ε Leonis

h m s
9 38 59
° ′
+24 20

0.12621

Oct. 16

h	m	s			
	m	s			
39	16.6				
	18.3		35006		
	19.8		35.01		
	21.5				
992	23.0				
	1192				
39	19.84				
	+33.25				
			53.079		
			5308		
			5310		
			11.200		
			1120		
			106.21		
39	1984				
39	53090				
+	33.25				

R
R

146

α Leonis

h m s
10 1 56
° ′
+12 33

0.12621

Oct. 16

h	m	s		m	s
10	2	27.90		2	24.2
		30.20	32090		25.5
		32.45	3209		27.0
		34.70			28.8
	16045	36.90		1359	30.4
		1045			359
		40.60		2	2718
		42.72			+21.86
		44.85			
		47.00	49058		
		49.00	4906		
		51.15	4902		
		53.32			
		55.40			
	44152	57.48			
		8152			
		1.70			
		3.86	5950		
		6.00	595		
		8.04	9804		
	2975	10.15		2	2718
		2976	2 49040		
				+	21.86

R 47 37.67 ·
R 47 37.82 ·

47 37.72 ·

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1880phae.proj.1514.

S

Sun.

h m s
13 21 24
° '
−9 35

1880

Oct. 17

570

15 Argus 0,12621

h m s
8 2 23
° '
−23 57

1.17609
9.96090
1.13699

Oct. 17

h	m	s			m	s	m	s	h	m	s			m	s
+2043	13	29	48.60	9.53			30	58.4	8	2	52.48			2	42.7
			—					57.6			54.67	56938			44.7
			—					1.0			56.90	36.94			47.9
14.66	9.66	28.66	55.00					2.4			59.18				49.7
12.58	9.47	9.553	52.92				3049	3.5			28469 1.46			236	3 51.3
								49			3469				363
8.37	9.47	57.38	1.10				31	0.98			6.00			2	47.26
46.28	9.58	9.576	3.80					−51.42			8.04				27.74
			—								10.28				
			—								12.70	14,973			
			—								15.25	1497		3	50.2
−2.04	9.76		11.55								17.18	1804			51.8
4.14	9.57		13.70								19.37				54.0
6.28	9.52		15.80								21.96				55.2
−8.38	9.54		17.92								13476 24.18			2677	36.5
											4476				169
			—								28.57			3	53.38
			—								30.70	33,154			−38.38
			—								33.25	3315			
			—								35.60	150.09			
			—				31	0.98			16577 37.50			2	4726
											1577	3 15.005		3	53.54
														+	27.74
														−	38.54
															66.28
9.564												3			1.82138
9.56															1.13699
															2.95837
															2.14856
															9.19019
															5.48219

R 11 51.98

B 16 14.02
B 187 34.82
R 18 34.92
R 18 34.70
B 187 34.80
18 34.81
140.79

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1880phae.proj.1514.

149

α Ors. Maj.

h m s
10 15 7
o ,
+42 6

0,12621

153

β Ors. Maj.

h m s
10 54 32
o ,
+57 2

0,12621

154

ε Ors. Maj.

h m s
10 56 15
+62 24

0,12621

h	m	s		m	s	h	m	s		m	s	h	m	s		m	s
10	14	34.10				10	53	49.13		53	28.4	10	55	26.40		55	49.2
		36.80	39646					52.98	56940		31.5			30.80	35210		51.1
		39.70	3965					57.04	5694		34.8			35.30	3521		53.8
		42.45						0.80			36.8			39.50			58.0
	19823	45.18					28470	+.73		1705	39.0		17605	44.05		2717	0.1
		49873						34470			205			2605			217
		50.75						12.05		33	34.10			53.18		55	54.34
		53.47						16.05						57.60			+16.63
		56.20						19.60						2.15			
		59.00	1817					23.53	27303					6.55	10908		
		1.83	182	15	35.6			27.18	2730	54	44.7			11.02	1100	56	54.5
		4.65	170		38.0			31.20			46.4			15.33	1094		59.2
		7.28			39.8			35.00			50.4			20.00			2.2
		10.17			41.5			38.77			52.4			24.30			4.8
	55635	13.00		1993	44.4		24573	42.35		2499	56.0		63898	28.80		3091	8.14
		16356			493			6573			499			4898			91
		18.62		15	39.86			50.20		54	49.78			37.70		57	1.82
		21.30	24154		−38.00			(56.48)	58086					42.02	466641		−50.85
		24.05	2415					57.85						46.53	4666		
		27.00	12380					1.60						51.30	14187		
	12077	29.90						5.30		53	3410		23332	55.77		57	40.0
		2077	15 1860	15	3986			4043	53 27.408	54	4998			3332	56 10.970		41.7
					−38.00												45.6
																	47.7
																2250	50.0
																	2.50
																57	45.00
																−1	34.03

R 16 28.20·
R 16 28.05·

16 28.12·

B 20 7.75·
B 21 —

B 58 20.60·
B 59 2.00·
B 59 26.95·
R 59 26.90·
R 59 26.80·
59 26.88·

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1880phae.proj.1514.

155 × Ors. Maj

156 S Leonis

164 β Leonis

1880 Oct. 17

	h	m	s				h	m	s				h	m	s				h	m	s			
	11	2	16.50				11	1	58.1				11	7	11.55				11	6	59.3			
			19.47	22.370					0.4						13.75	15.940					1.0			
			22.80	2.236					2.5						16.00	1.594					2.7			
			25.07						4.8						18.19						4.2			
	11179		28.22				3126		6.8				7970		20.30				8127		5.5			
			1185						126						2970						127			
			34.02				2		2.52						24.80				7		2.54			
			36.94						+43.28						27.00						+31.09			
			40.05												29.20									
			43.03	4.5856											31.35	3.3652								
			45.90	4586			3		26.0						33.60	3365			8		5.8			
			48.30	45.75					28.5						35.95	3361					7.3			
			51.70						30.9						38.17						9.2			
			54.68						33.5						40.30						11.0			
	41270		57.57				1547		35.8				36287		42.50				46313.0					
			52.70						4.7						3287						463			
			3.25				3		30.41						46.90				8		9.26			
			6.22	9126					−45.14						49.00	51276					−35.63			
			9.00	913											51.30	5128								
			12.16	9149											53.48	6722								
	4563		15.00				2		25.2				25638		55.70				7		25.4			
			4563	2 45805			3		3094						638	7 33630			8		9.26			
									+ 43.28												+ 31.09			
									− 45.14												− 35.63			
									88.42												6672			
									1.94655												1.82426			
									1.02444												1.14571			
									2.97099												2.96997			
									1.92205												1.92865			
									8.95106												8.95868			
									5 619												5 1143			

B	12	23.70	.				B	9	59.45	.							B	6	13.70	.				
B	13	47.22	.				B	11	23.35	.														
R	13	47.25	.				R	11	25.98	.	23.48.													
R	13	47.35	.				R	11	23.58	.														
									3.47	.														
	13	47.27	.					11	24.30															
		83.57							84.85															

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1880phae.proj.1514

166

S

Ursae Maj

Sun c= 44 830

h m s
11 47 28

° '
+54 22

0,12621

h m s
13 35 19

° '
-9 57

0,12621

Oct. 17

Oct. 17/18

h	m	s		m	s	h	m	s		m	s	m	s		m	s
11	46	46.20		46	25.7	13	33	33.40		34	47.6	35	4.45		35	16.0
		49.63	53320		28.3			35.45	37570		51.2		46.68			18.4
		53.37	5332		30.4			37.79	3757		52.6		48.60			20.4
		56.98			32.7			39.65			54.1		50.90			21.8
	26660	0.40		1525	35.4		18785	41.65		2608	55.3		53.04		995	22.9
		1660			25			3785			108					1496
		7.33		46	3050			45.93		34	52.16		57.20		35	19.90
		11.00			+57.21			48.06			-57.79		59.00			
		14.45						50.20					1.28			
		18.26	21.713					52.38	54383				3.50	5.583		
		21.90	2171	48	6.5			54.48	5438				5.60	558		
		25.36	21.71		9.2			56.50	5436				7.97			
		28.83			11.1			58.60					9.80			
		32.33			14.7			0.60					11.90			
	19542	35.96		595	18.0		48945	2.70				59025	14.00			
		1542			995			3945					5025			
		40.00		48	11.90			7.05					18.89			
		46.58	50,108		-50.19			8.90	11.156				20.54	22430		
		50.04	5011					11.18	1116				22.47	2243		
		53.70	16343					13.25	10873				24.45			
	25054	57.22		48	36.8		5578	15.40		34	52.16	11215	26.50		35	19.90
		054	47 21.710		38.6			578	33 54370				12.15			
					39.7						-57.79					
					41.8											
				2009	44.0											
					09											
				48	4018											
				-1	18.47											

B 59 47.65
B 1 7.08
B 1 28.02
K 1 28.10
28.21
1 21.17
93.62

B 0 1.32
B

B 33 1.02

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1880phae.proj.1514.

306 ξ Cephei

307 × β Aquarii

309 (ε Pegasi)

311 α Aquarii

0,1262 21

	h	m	s
	21	15	41
	o	′	
	+62	4	

	h	m	s
	21	25	11
	o	′	
	−6	6	0,1262 21

	h	m	s
	21	38	14

	h	m	s
	21	59	34
	o	′	
	−0	54	

1.17609
9.99995
1.17604

1880 Oct. 18

h	m	s	m	s	h	m	s	m	s	h	m	s	m	s
21	15	54.05	15	20.3	21	38	48.04	38	39.9	21	0	8.00	59	55.2
	56.00	0250	23.0			50.15	52.260	41.8			10.00	12.140	57.0	
	0.47	025	26.0			52.32	5226	43.3			12.15	1214	58.8	
	4.60		28.4			54.37		44.8			14.25		0.6	
30125	9.13		1290	31.3	26130	56.42		2162	46.4	6070	16.30		2940	2.4
	125		290			1130			162		1070			440
	17.90		15	2580		0.60		38	43.24		20.30		59	58.80
	22.38		+1	9.85		2.70			+25.75		22.47			+29.85
	26.85					4.90					24.58			
	31.40	35.687				6.78	8950				26.60	28.660		
	35.80	3589	17	11.8		8.95	895	39	34.7		28.70	2866	0	53.4
	40.05	35.62		13.9		10.93	8.96		36.3		30.75	2864		57.6
	44.50			16.6		13.10			37.7		32.70			58.9
	49.00			21.0		15.16			39.0		34.98			0.7
32118	53.30		920	24.7	8055	17.43		1877	40.0	25794	37.02		2961	2.5
	5118			42.0		8055			374		7794			461
	2.00		17	18.40		21.60		39	37.54		40.97		0	59.22
	6.74	10984		−42.75	2374	23.25	25670		−28.59		43.05	45.154		−30.57
	11.03	1098				25.80	2567				45.19	45.15		
	15.45	71.23				27.75	137.93				47.29	5729		
5492	19.70		17	38.0	12815	2995		38	4324	22577	49.27		59	5880
	492	16 35655		42.2		2835	89 8.955	39	3754		2577	0 28650	0	5922
				45.0				+	25.71				+	29.85
				49.0				−	28.59				−	30.57
			2265	52.3					54.30					60.42
				265										1.78118
			17	45.30										1.17604
			−1	9.65										2.95722
														1.90146
														8.94424
														51 35

B	15	42.30	·
B	17	8+7.85	·
B	17	25.02	·
R	17	25.12	·
R	17	25.15	·
B	17	25.10	·
17 25.10	17	~~22.85~~ 25.10	
		100.55	

?

B	13	42.10	·
B	15	1.92	·
R	15	1.80	·
R	15	1.70	·
B	15	1.78	·
		151.80	·
		79.70	

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322

η Pegasi

h m s
22 37 20

o ′
+29 35

1.17609 0.12621
9.93934
1.11543

h	m	s		m	s
22	37	51.45		37	39.0
		53.45	56.046		40.5
		56.00	56.05		42.3
		58.45			44.0
28028		0.55		2116	45.8
		3023			116
		5.64		37	4232
		7.83			+32.69
		10.35			
		12.50	14.992		
		14.91	1499	38	45.5
		17.32	1503		47.0
		19.78			48.5
		22.15			50.1
13493		24.45		2431	52.0
		4493			431
		29.30		38	4862
		31.65	34024		−33.61
		34.00	3402		
		36.40	15007		
17012		38.77		37	4232
		2012	38 15.010	38	4862
					+32.69
					−33.61
					66.30
					1.82151
					1.11543
					2.93694
					1.88975
					8.95281
					5733

B 44 31.75 •
B 45 49.35 •
R 45 49.45 •
R 45 49.15 •
B 45 49.38 •
45 49.33 •
77.58

619

α Piscis Austr.

h m s
22 50 58

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−30 16

1.17609 0.12621
9.93636
1.11245

h	m	s		m	s
22	51	28.24		51	17.0
		30.60	33020		18.7
		32.92	3302		19.9
		35.56			21.6
16510		37.76		1010	23.8
		1510			510
		42.70		51	2020
		45.05			+32.02
		47.48			
		49.93	52.279		
		52.30	5228	52	19.0
		54.62	52.17		21.3
		57.04			23.0
		59.47			24.7
47051		1.90		1155	27.5
		2051			155
		6.65		52	2310
		8.90	11326		−30.88
		11.20	1133		
		13.70	10435		
5663		16.18		51	2020
		663	51 52225	52	2310
					+32.02
					−30.88
					62.90
					1.79865
					1.11245
					2.91110
					1.87622
					8.96512
					5 16 21

B 32 53.38 •
B 34 8.58 •

34 8.58 •
75.20

153

β Urs. Maj L.C.

h m s
22 54 32

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+122 58

0.12621

h	m	s		m	s
22	54	44.48		54	34.9
		48.52	52.088		38.0
		52.30	5209		41.4
		55.52			44.7
26044		59.62		2065	47.5
		1044			65
		7.30		54	4130
		10.92			+41.17
		14.90			
		18.83	22.509		
		22.46	2251	55	52.0
		26.44	2244		2.0
		30.18			13.8
		33.95			7.3
20258		37.60		3217	9.6
		2258			217
		45.32		56	434
		49.24	52.988		−41.87
		52.85	52.79		
		57.03	16488		
26294		0.50		54	4130
		1494	55 22475	56	434
					+41.17
					−41.87
					83.04

28 55.145 •
27 −

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153

β Urs. Maj

h m s
10 54 32
° ′
+87 2

0,12621

154

α Urs. Maj

h m s
10 56 15
° ′
+62 24

0,12621

155

χ Urs. Maj

h m s
11 2 57
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+45 9

1.17609 0,12621
9.84835
1.024444

+38.81	28.74	10	54	49.98		55	27.3		10	56	—		56	43.5	11	3	17.13		3 2.5
39.50	28.80		143.41	53.90	57622		29.5				—			45.8			20.02	23002	4.0
31.05	28.63		28.682	57.58	5762		32.5				—			49.5			23.02	2300	5.7
27.17	28.55			1.38			35.0				—			52.4			25.87		7.7
23.37	28.64		28811	5.27		16	24 38.1				—		2464	55.2		11501	28.97		299 10.0
				3811			124							464			1501		294
15.52	28.22		251.75	12.70		55	3248	+17.81	11.54	104.78	54.08		56	4928			34.70		3 598
11.69	28.24		27.972	16.60			-4.25	13.36	11.66	11.642	58.30			+22.37			37.70		+40.46
7.75	28.22			20.47				8.50	11.62		2.72						40.60		
+3.84	28.14			24.30	27.979			49.91	11.57		7.18	11.649					42.60	46497	
−0.00	27.30			27.30	2798			−0.20	11.53		11.53	1165	55	5.3			46.48	4643	4 19.2
3.87	28.18			32.05				4.44	11.66		16.10			9.7			49.50	4646	21.0
7.76	27.81			35.57				8.41	11.54		20.445			13.4			52.23		22.7
11.64	27.93			39.87				12.36	11.64		25.00			16.5			55.33		25.2
15.39	27.71		25181	43.25				17.83	11.72	64484	29.85		653	20.4		41787	58.28		1157 27.6
				7181						1484				153			5847		157
				—				26.72	11.73	58.86	35.45		58	1306			14.06		4 2314
				—				34.14	11.67	11.672	42.86	47230	−1	1.41			7.06	9.918	− 36.70
	28.327			—				35.66	11.71		47.36	4723					4.94	912	
	28.226			—				−30.07	11.73		57.80						12.80	92.92	
				—		55	3248	44.66	11.52	23665	56.18		56	4928		4759	15.73		3 598
										3665			58	1306			4959	3 46445	4 2314
																			+ 40.46
								11.657											− 36.70
								11.653											77.16
																			1.887739
																			1.024444
																			2.911183
																			1.885479
																			8.942962
																			5042

R 58 20.28.

B 20 52.65.
B 24 11.55.
R 24 11.35.
R 24 11.35.
B 24 9.22.
24 10.87 11.42
198.22

B 12 31.02.
B 13 42.75.
R 13 42.38.
R 13 42.68.
13 42.60.
71.58

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156

S Leonis

1880

Oct. 18

h	m	s			m	s
11	8	12.30			8	2.8
		14.45	16.644			4.4
		16.63	1664			6.0
		18.80				7.4
	8322	21.04			300	9.4
		3322				300
		25.40			8	6.00
		27.75				+ 28.36
		30.00				
		32.18	34.374			
		34.40	3437		9	5.0
		36.50	3435			7.0
		38.85				8.5
		41.02				10.1
	30937	43.27			427	12.1
		3937				427
		47.62			9	8.54
		49.84	52054			- 34.18
		52.05	5205			
		54.30	6869			
	28027	56.46			8	6.00
		1027	8	34360	9	8.54
						+ 28.36
						- 34.18
						62.54
						1.79616
						1.14571
						2.94187
						1.88868
						8.94681
						5 3 21

B	10	6.58	·
B	11	23.85	·
R	11	23.85	·
R	11	24.02	·
B	11	24.08	·
	11	23.9[illegible]5	
		77.39	

h m s
11 7 40
0 ' "
+21 11 19 9.6962
1.17609 0,12621
1.14571

164

R Leonis

h m s
11 42 53
0 ' "
+15 15

h	m	s			m	s
11	43	25.23				
		27.40	29.546			
		29.50	2955			
		31.68				
	14773	33.92				
		4773				
		38.10				
		40.36				
		42.45				
		44.55	46757			
		46.80	4676			
		48.90	4669			
		51.00				
		53.20				
	42081	55.45				
		6081				
		59.60				
		1.85	3830			
		3.90	383			
		6.00	9338			
	31915	8.00				
		1915	48	46725		

B	7	3.55	·
B	7	41.62	·
R	7	41.52	·
R	7	41.65	·
	7	41.59	

0,12621

h	m	s			m	s
11	43	53.5				
		58.0				
		57.5				
		58.8				
	2864	0.3				
		364				
	43	57.28				
		- 10.56				
	44	28.5				
		25.0				
		26.5				
		28.2				
	1332	30.0				
		332				
	44	26.64				
		- 39.92				
	43	57.28				
	44	26.64				
		- 10.56				
		- 39.92				
		50.48				

166

X Mus. Maj

h m s
11 47 28
0 ' "
+54 22

h	m	s			m	s
11	47	46.30				
		50.40	53886			
		53.80	5389			
		57.43				
	26943	1.00				
		1943				
		8.02				
		11.60				
		15.27				
		18.40	22.353			
		22.44	2235			
		25.90	22.30			
		29.55				
		33.00				
	20118	36.80				
		2118				
		43.66				
		46.94	50710			
		50.80	5071			
		54.23	16460			
	25355	57.92				
		355	48	22325		

B	59	55.42	
B	12	-	
B	1	32.28	·
R	1	32.15	·
	1	32.22	·
		9680	

1,12621

h	m	s			m	s
11	47	31.2				
		33.7				
		36.3				
		38.2				
	1800	40.6				
		300				
	47	3600				
		46.32				
	49	14.3				
		17.1				
		19.3				
		21.8				
	974	24.9				
		474				
	49	1948				
		- 57.16				
	47	3600				
	49	1948				
		+ 46.32				
		- 57.16				
		103.48				

1,12621

0.94146
2.01486
2.95632
1.98588
9.02956
6 6 36

0.94146
9.76537
1.17609

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S

Sim. C = 44 830

187

2 Bootis

| | | |

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153

β Ursæ Maj.

h m s
10 54 32
° ′
+57 2

0,12621

1880
Oct. 19

154

α Ursæ Maj.

h m s
10 56 15
° ′
+62 24

0,12621

155

χ Ursæ Maj.

h m s
11 2 51
° ′
+45 9

1.17609 0,12621
9.84835
1.02444

h	m	s		m	s																
10	54	50.47		54	27.4	10	56	—		56	50.0	11	3	17.75		3	2.3				
		54.20	58.142		30.2			—			58.0			20.65	23.624		4.2				
		58.12	58.14		32.0			—			57.0			23.60	2362		6.9				
		2.04			34.5			—			0.4			26.65			9.2				
	29071	5.88		1609	36.8			—		2838	3.4		11812	29.47			337	11.1			
		4071			109						338			1812				337			
		13.40		54	32.18	17.83	12.71	109.82	57.58	56	56.76			35.45		3	6.74				
		17.20			+56.37	13.36	12.12	12.262	58.76		+15.41			38.40			+40.30				
		20.85				8.41	11.97		3.06					41.19							
		24.70	28.581			+4.44	12.12		7.63	12.169				44.06	47.082						
		28.80	2858	55	40.2	8.80	12.16		12.26	1217	58	2.7		47.06	4708	4	26.9				
		32.48	28.53		42.1	4.14	12.39		16.53			6.0		50.00	4700		29.0				
		36.05			44.1	8.51	12.11		21.02			9.0		52.90			31.7				
		39.85			47.0	12.36	12.14		25.50			11.9		55.80			34.0				
	25723	43.90		2229	49.5	17.83	12.106	4952	29.93			441	14.5	42374	58.88		1580	36.4			
		7723			229				1950				441		6374			80			
		51.40		55	44.58	26.71	13.84	60.63	58.60	58	8.82			4.80		4	31.60				
		55.00	58.922		−16.03	31.16	12.02	12.126	43.18	47770	−56.65			7.50	10.372		−44.56				
		58.78	58.92			35.62	12.36		47.97	47.77				10.36	1037						
		2.83	17706			40.07	12.25		52.32					13.00	9379						
	29461	6.60		54	32.18	44.66	12.12	23885	56.78	58	39.7			5186	16.48	3	47040	3	6.74		
		4461	55 28555	55	44.58				3885		42.2			1186				4	31.60		
				+	56.37						46.0							+	40.30		
				−	16.03	12.164					49.2							−	44.56		
					72.40	12.175				2306	53.5								84.86		
											46.12							1.92870			
																		1.02444			
																		2.95314			
																		1.90558			
																		6.95244			
																		6 26 46	5 7 18		

B 20 8.52 ·
B 21 1.85 ·

B 58 25.48 ·
B 59 9.12 ·
B 59 30.75 ·

B 12 30.40 ·
B 13 50.95 ·
R 13 50.78 ·

13 50.86 ·
80.46

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156

S Leonis

h m s
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+21 11

1.17609 0.12621
.996962
1.14571

11	8	12.90			7	59.6	11	43	25.90			43	16.3	11	47	47.38		47	21.6
		15.00	17248			1.7			28.05	30224			18.3			50.98	54452		22.7
		17.20	1727			3.0			30.26	3022			20.0			54.50	54.45		25.5
		19.48				4.6			32.25				21.8			58.00			28.2
	8634	21.76			3152	6.3		15112	34.64			1003	23.9		27226	1.50		1286	30.6
		3634				152			112				03			2226			486
		26.04			8	3.04			38.60			43	20.06			8.70		47	29.72
		28.25				+31.90			41.00				+27.29			12.00			+53.11
		30.47							43.17							15.70			
		32.78	34938						45.27	47348						19.30	22818		
		34.85	3494		9	8.7			47.00	4735		44	17.4			22.80	2282	48	35.3
		37.20	3494			10.4			49.37	4736			18.8			26.50	2284		57.3
		39.50				11.9			51.60				20.0			29.93			59.8
		41.55				13.3			54.12				21.5			33.43			1.3
	31444	43.80			598	15.0		42613	56.00			1015	23.8		20536	37.00		2979	4.7
		4444				93			6613				15			2536			479
		48.20			9	1.86			0.43			44	2030			44.37		48	64.58
		50.30	52600			-36.92			2.35	4498			32.95			47.72	51234		-36.75
		52.58	5260						4.41	450						51.25	5123		
		54.92	6987						6.60	94.72						54.75	16568		
	26300	57.00			8	304		2249	8.70			43	2006		25617	58.38		47	25.72
		1300	8	34940	9	1.186			2249		43	47355	44	2030		64	48	22830	48	5958
						+ 31.90								+ 27.29						+ 57.11
						- 36.92								- 32.95						- 36.75
						6.852								6024						93.86
						1.53771								1.77988						
						1.14571								1.16052						
						2.98342								2.94040						
						1.94002								1.88593						
						8.95660								8.94553						
						5 1014								5 228						

164

B Leonis

h m s
11 42 53
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+15 15

1.17609 0.12621
.998443
1.16052

B 10 1.25 .
B 11 28.40 .
R 11 28.20 .
R 11 28.42 .
B 11 28.38 .
11 28.35 .
87.10

B 6 16.15 .
B 7 33.32 .
R 7 32.90 .
R 7 32.92 .
7 33.05 .
76.90

166

γ Ursæ Maj.

h m s
11 47 28
° ′
+54 22

0.12621

B 5-9 47.70 .
B 0 2 1.05 .
B 1 25.90 .

B 5 25.5 .

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S

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13 42 32
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−10 40

1880
Oct. 19/20

0.12621

43 37.5 44 18.15 43 50.9
39.2 20.40 52.5
40.7 22.50 54.0
42.0 24.48 55.8
2030 43.6 11195 26.62 2707 57.5
30 1195 207
43 40.60 80.90 43 54.14
−1 12.65 83.00 +45.15
35.00
37.20 39.337
37.27 39.34
41.40 39.25
43.53
46.93
35403 47.70
8403
51.55
54.04 54.112
56.97 5611
58.20 78.50
43 40.60 28056 0.40 43 5414
3056 44 39.295
− 12.65 + 45.15

9.05 11.086
11.18 11.09
13.00
5543 15.30
543
19.55
21.62
23.65
26.00 27.956
28.00 2796
30.05 27.95
32.05
34.28
25160 36.40
7160
40.58
42.60 44.806
44.80 4481
46.95 5590
22403 49.10
2403 42 27955

B 43 33.10 B 16 8.62

322

Y Pegasi

h m s
22 37 20
° ′
+29 35

0.12621
1.17609
9.93974
1.11583

Oct. 20

22 37 52.38 37 48.18
54.85 57.194 50.0
57.04 5718 51.7
59.40 53.2
28589 2.10 2587 55.0
3597 87
6.60 37 51.74
9.06 +24.42
11.60
13.88 16141
16.10 1614 38 51.9
18.47 16.19 53.5
20.97 55.0
23.13 56.3
14527 25.46 2749 58.2
557 249
30.48 38 54.98
32.78 33212 − 38.82
35.30 3521
37.50 15239
17606 40.04 37 51.74
2606 38 16165 38 54.98
+ 24.42
− 38.82
63.24
1.80099
1.11543
2.91642
1.86958
8.95316
5748

B 44 40.80
B 45 54.85
B 45 54.87
B 45 54.67
B 45 55.02
45 54.86
74.06

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1880phae.proj.1514.

619

2 Pisces Aust

h m s
22 50 38
° '
−30 16

A12621

153

2 Ms. Maj. L.C.

h m s
22 54 32
° '
+122 58

A12621

154

2 Ms. Maj. L.C.

h m s
22 56 13
° '
+117 36

A12621

| | | |

1880phae.proj.1514.

329

α Pegasi

h m s
22 58 44
° '
+14 33

1880
Oct. 20

0,12621

166

χ Urs. Maj. L.C.

h m s
23 47 28
° '
+125 38

0,12621

154

α Urs. Maj

h m s
10 56 18
° '
+62 24

1.17609
9.66586
0.84195

0,12621

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1880phae.proj.1514.

155

X Ursae Majoris

h m s
11 2 51
° ′
+45 9

1.17609 0,12621
9.84835
1.02444

1880
Oct. 20

| | | |

1880phae.proj.1514.

S

Sun. C = 44 76.7

h m s
13 46 39
' '
-11 1

01126 21

181

Iglis. Maj

h m s
13 42 46
° '
+49 33

01126 21

1880 Oct. 20/21

Oct. 22/23

h	m	s		m	s													
13	45	54.50		47	27.0	48	—			47	44.5	13	42	8.90		43	21.4	
		56.68	58.772		28.8		8.05	18.91	26.96	107.95	46.2			12.00	15.272		25.6	
		58.78	58.77		31.3		10.22	16.83	27.05	26.987	47.9			15.18	1527		30.7	
		0.85			32.4		12.28	14.72	27.00		49.4			18.48				
	29386	3.05		1539	34.42		14.30	12.64	26.94	2386	50.6		7636	21.80				
	4386				39						386			2636				
		7.08		47	30.78		18.60	8.41	27.01	47	47.72	+39.29		28.04				
		9.20		-1	15.15		20.75	6.31	27.06	243.92				31.36				
		11.40					22.88	4.20	27.08	27.182				34.60				
		13.50	15.618	+2.08	27.11		25.03	2.7107						37.87	40978			
		15.58	1562	-.020	27.18		27.18	2711						40.95	4098			
		17.64	1565				29.20	-2.10	27.10	54.22				44.05	4090			
		19.90					31.40	4.21	27.19	27.11				47.46				
		22.06					33.46	6.31	27.15					50.57				
	14056	24.85				24396	35.46	-8.42	27.04				36880	53.90				
	5056						6396							880				
		28.20					—							0.07				
		30.40	32542				—							3.16	6532			
		32.48	3254				—							6.41	653			
		34.70	151.31				46.18	-16.92	27.26					9.68	87.80			
	16271	36.95		47	30.78		48.05	-21.09	26.96	47	47.72		3266	13.94				
	1271		46 15636		5									32.66	42 40940			
				-	75.15													
								27.066										
								27.006										

4 56.02

37 36.22

B 27 54.12 '
B 27 53.70 '

27 53.91 .

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1880phae.proj.1514.

311

α Aquarii

h m s
21 59 34
° ′
−0 34

Col. 23

Q12621

322

γ Pegasi

h m s
22 37 20
° ′
+29 35

Q12621

21	59	10.57			58	59.57	22.73	22	36	54.00	17.73		36	48.6	
		12.57	14,676			1.4	24.35	17.50	87.84	56.15	5 5,590			51.0	
		14.78	1468			2.7	18.49	17.49	17.576	58.50	5859			52.6	
		16.73				4.0	14.62	17.57		0.95				54.5	
	7388	18.72			3126	5.0	14.24	17.59	29295	3.35			2631	56.4	
	2338					126				4295				131	
		23.00			59	2.52				—			36	52,62	
		25.02				+28.68				—				+24.98	
		27.05								—					
		29.20	31,208							—					
		31.15	3121		0	2.8				—					
		33.25	3119			5.8	2.37	17.69	70.52	20.06					
		35.38				7.0	4.75	17.75	17.63	22.20					
		37.40				8.3	7.12	17.64		24.80					
	28087	39.42					9.50	17.70		27.20					
	1087														
		43.56								—					
		45.58	47688							—					
		47.60	4769							—					
		49.90	6237							—					
	23844	51.80			59	2.52				—			36	52.62	
	3844		59 31,200												

17.603
17.600

B 13 45,22 ·
B 15 10.22 ·
R 15 10.00 ·
R 15 9.75 ·
B 15 9.88 ·
15 9.90 ·
84.64

B 44 40,90 ·

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1880phae.proj.1514.

S

Sun. C = 44 8.3

h m s
13 58 5
o '
-12 4

1880
Oct. 23/24

h	m	s														
13	57	21.46	170.44	+21.11	42.57											
		23.55	42.610	18.98	42.53											
		—														
		28.00		14.78	42.78											
		29.90		12.66	42.56											
		34.04	382.94	8.44	42.48											
		36.06	42.354	6.33	42.39											
		38.45		4.22	42.67											
		40.40	42.557	+2.04	42.44											
		42.40	42.56	−0.00	42.40											
		44.90		2.10	42.80											
		46.70		4.22	42.48											
		48.78		6.33	42.45											
38301		50.98		8.45	42.53											
		2301														
		—														
		—														
		—														
		—														
		—														

42.382
42.571

Ra only

0.12621

322

η Aquil

h m s
22 37 20
o '
+29 35

Oct. 24

22	37	54.03					37	44.8								+3
		56.40	58.772					46.4								34
		58.80	58.77					48.1								30
		1.15						50.0								27
	29386	3.48					2413	52.0								22
		4386						413								
		8.20					37	48.26								15
		10.70						+29.50								11
		12.92														7
		15.48	17.751													+3
		17.80	1775													−0
		20.03	17.78													9
		22.50														7
		24.85														11
	15976	27.28														15
		6976														
		32.05														
		34.50	36790													
		36.75	3679													2
		39.15	155.56													2
	18395	41.50					37	48.26								
		3396	38 17.765					+ 29.50								

R 44 36.15
R 44 36.25

44 36.20

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1880phae.proj.1514

153

β Urs. Maj. Sch.

L m s
10 37 32
o ′
+122 38

0.12621

329

α Pegasi

L m s
22 58 44
o ′
+14 33

0.12621

166

β Urs. Maj. Sch.

L m s
11 47 28
o ′
+54 22

0.12621

+38.84	10	54 47.68	25.72		54 27.7	22	59 20.55			+ 35.43	11	47 45.32	20.75		47 18.0				
34.16	25.76	129.56 51.60	55422		29.2		22.78	24826		31.88	20.38	102.49 48.50	52160		21.1				
30.34	2584	25.912 55.50	5542		31.5		24.80	2483		28.34	20.34	20.498 52.20	5216		22.8				
27.16	2644	59.28			33.5		27.00			28.74	20.27	55.48			24.5				
22.75	25.80	27711 3.05			1574 35.5		12413 29.00			31.25	20.55	26080 59.30			1124 25.7				
		2711			74		2413					1080			124				
15.14	23.54	231.52 10.40			54 31.48		33.28			14.19	20.49	185.99 6.30			47 22.48				
11.38	25.73	25.724 14.35			+ 54.31		35.50			10.62	20.67	20.665 10.05			+ 58.12				
7.59	25.62	18.03					37.65	953		7.09	21.16	14.07							
+ 3.78	25.78	22.00	25.718				39.95	4195		+ 3.53	20.73	17.20	20659						
− 0.00	25.70	25.70	25.72		56 30.9		42.05		0 8.1	− 0.00	20.44	20.44	2066		49 23.5				
9.75	25.95	29.70			34.8		44.08	4191	9.5	3.50	20.55	24.05							
7.38	25.62	33.20			37.9		46.26		11.4	7.08	20.59	27.67							
11.38	25.38	36.88			37.8		48.35		12.6	10.62	20.53	31.15							
15.17	26 03	23146 41.20			1846 41.2		37758 50.46		558 14.2	14.17	20.83	18593 35.00							
		5146			346		1758		58			593							
		—			56 36.92		5480		0 11.16			—							
		—			−1 11.13		56.85	58.976	− 29.23			—							
25.818		—					57.00	5898				—							
25.791		—					1.00	8381				—							
		—			54 31.48		29488 − 3.23					—			47 2248				
					56 36.92		4488	59 41.930	0 11.16										
									− 29.23	20.581									
										20.605									

R 28 3.12 -
R 27 36.72 -

R 47 36.15 -
R 47 35.92 -

47 36.03 -

R 51 27.92 -
R 49 55.80 -
R 49 55.52 -

49 55.66 -

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1880phae.proj.1514.

570

15 Aegyptii

h m s
8 2 23
° ′
−28 54

0,12264

1880 Oct. 24

h m s
8

306

α Ecaphiæ Lo.C.

h m s
21 16 41
° ′
117 36

0,12624

138

α Hydræ

h m s
9 21 38
° ′
−8 8

0,12621

1.17609
9.99561
1.17170

h m s
21 15 46.45
53.00
57.00
1.50
28585 5.90
3585

57170
5717

h m s
21 15 49.8
51.8
54.9
58.7
2778 2.1
273

9 h m s
22 13.87
16.00
18.18
20.05
9030 22.20
4030

18060
1806

h m s
21 59.0
1.0
2.5
4.2
3126 5.9
126

14.56
18.90
23.37
27.87
32.40

32.354
3235

15 55 46
+36.94

26.32
28.50
30.57
32.65
34.70

34693
3469

21 2.02
+1 32.19

h m s
11 1.0
3.0
4.7
6.8
245 9.0
245

37.00
41.35
45.70
29119 50.04
2119

3246

16 45.2
49.2
52.6
56.3
2627 59.4
127

38.73
38.95
40.87
31224 42.95
4224

3473

23 5.5
7.2
9.0
10.4
440 11.9
440

-13.54 18.64
15.80 18.82
18.06 18.38
20.32 18.68
22.65 18.70

3 32.13
93.43 34.62
18.686 36.65
39.00
18.380 41.35
3380

36760
3676

4 4.90
−46.31

59.17
3.37
7.72
12.06
33882 16.30
3882

7.764
776
1893

16 52.54
−20.14

47.39
49.37
51.28
53.40
25699 55.55
699

51.398
5140
6946

23 8.80
−34.04

22 25.2
23 8.80
+ 32.19
− 34.09
66.28
1.82138

4 4.90

16 32405

17 39.4
42.6
46.7
50.0
2333 54.6
333

22 34.710

18.686

17 4666
−1 14.26

1.17170
2.99308
1.93742
8.94434
5139

B 17 47.80.
B 17 47.75.

17 47.77.

B 31 10.50.
B 30 34.55.
B 31 0.55.
R 31 0.72.
R 31 0.62.
31 0.66
30 15.63

B 28 9.30.
B 29 35.88.

29 35.88.
86.58

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1880phae.proj.1514.

140

δ Ursae Majoris

h m s
9 24 45
o ′
+82 14

1.17609 0,12621
9.78707
0.96316

153

β Ursae Majoris

h m s
10 57 82
o ′
+54 2

1.17609 0,12621
9.73572
0.91181

154

ε Ursae Majoris

h m s
10 56 18
o ′
+62 24

0,12621

| | | |

1880phae.proj.1514.

155

ψ X Urs. Maj.

1880 Oct. 24

h m s
11 2 57

1.17609 0.12621
9.84835
1.02444

h	m	s		m	s																
11	3	30.25		3	8.0	11	48	28.80		48	16.6	11	48	—		48	53.0				
		23.03	26078		10.0			30.40	32580		18.7	+31.85	0.73	3.53	28.88		55.7				
		26.06	2608		12.0			32.70	3258		20.1	28.35	0.80	.682	32.55		58.0				
		29.10			14.0			34.70			21.8	24.80	0.85		36.05		1.2				
	13039	31.95		600	16.0		16290	36.80		1006	23.4	21.25	0.75		39.70		2916	3.7			
		3039			100			1290			06							416			
		38.00		3	1200			41.12		43	2012	14.17	0.73	4.93	46.55		48	5832			
		40.75			+ 37.51			43.27			+ 29.58	10.63	1.11	.821	58.48			+ 2.53			
		43.75						45.48				7.08	0.78		53.70						
		46.60	49570					47.57	49699			4.50	1.86		57.56						
		49.60	4957	H	19.8			49.88	4970	44	32.0	1.00	0.78		0.78		49	37.4			
		52.48	4946		23.0			51.70	4970		33.6	3.33	0.57		4.00			40.5			
		55.35			25.0			53.93			35.0				—			43.2			
		58.42			26.6			56.00			36.5				—			45.4			
	14613	1.18		1282	28.8		4729	58.34		1752	38.1				—		2144	47.9			
		8613			232			8729			252							1444			
		7.00		4	24.64			2.64		44	3504				—		49	42.88			
		9.85	12830		− 35.13			4.66	6834		− 45.34				—			− 42.03			
		12.80	1283					6.97	683			.851			—						
		15.80	9891					8.90	9941			0.846			—						
	6415	18.70		8	1200			11.00		43	2012				—		48	5832			
		6415	3 49515	4	2464			3417	43 49700	44	3504						49	4288			
				+	37.51					+	29.58										
				−	35.13					−	45.34										
					72.64						74.92										
				1.86118						1.87460											
				1.02444						1.16052											
				2.88562						3.03512											
				1.83455						1.98263											
				8.94893						8.94751											
				5 4 50						5 3 51											

B	12	35.82	·				B	6	13.32	·				B	1	29.75	·				
B	13	44.10	·				B	7	49.50	·				B	1	31.87	·				
R	13	44.18	·				R	7	49.30	·				R	1	32.20	·				
R	13	44.15	·											R	1	32.15	·				
														B	1	32.18	·				
	13	44.14	·					7	49.40	·					1	32.10	·				
		68.32							96.08							2.35					

164

β Leonis

h m s
11 42 53

1.17609 0.12621
+15 15' 9.98443
1.16052

166

γ X Urs. Maj.

h m s
11 47 28

0 ,
+57 22

0.12621

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1880phao.proj.1514.

S

306

Sun - c = 44 8.3

ζ Cephei

h m s
14 1 55
° '
−12 25

0.12621

h m s
21 15 41
° '
+62 4

0.12621

1880

Oct. 24/26

Oct. 25

| | | |

1880phae.proj.1514.

307 β Aquarii

h m s
21 25 11
0 ·
−6 6
1.17609 0,12621
9.99753
1.17362

1880 Oct. 25

h	m	s		m	s														
21	25	48.00		25	44.7	21	38	51.00		38	41.9	22	0	11.00		59	59.7		
		50.00	5.2140		46.8			53.00	5.5210		43.4			13.05	1.513		1.6		
		52.20	5.214		48.4			55.31	5.524		44.9			15.05	1.513		3.0		
		54.20			50.3			57.41			46.4			17.25			4.5		
	26070	56.30		2417	51.5		27620	59.48		2246	48.0		7565	19.30		3150	6.2		
	1070			417			2620			246				2565			150		
		0.43		25	48.34			3.70		38	44.92			23.58		0	3.00		
		2.57			+20.42			5.72			+27.07			25.57			+28.64		
		4.68						7.80						27.60					
		6.70	8.768					9.90	11.991					29.62	31.710				
		8.78	8.77		26 45.0			12.05	11.99		39 45.4			31.66	31.71		1 9.9		
		10.85	8.75		46.9			14.07	11.99		48.9			33.71	31.67		11.2		
		12.90			48.2			16.10			48.3			35.80			12.6		
		15.00			49.8			18.28			49.8			37.85			14.5		
	7891	17.00		2409	51.0		10792	20.30		2417	51.3		28539	40.05		644	16.2		
	7891			409			1792			417			1539			144			
		21.05		26	48.18			24.50		39	48.34			44.06		1	12.88		
		23.28	2.5356		−34.42			26.65	2.8746		−36.35			46.15	48.216		−41.19		
		25.40	2.536					28.68	28.75					48.20	4822				
		27.40	137.50					30.90	143.99					50.30	63.35				
	12678	29.65		25	48.34		14373	33.00		38	44.92		24408	52.37		0	3.00		
	2678		26 8.760	26	48.18		4373		39 11.990	39	48.34		4108		0 31.690	1	12.88		
					+20.42						+27.07						+28.69		
					−39.42						−36.35						−41.19		
					59.84						63.42						69.88		
					1.77699						1.80223						1.84435		
					1.17362						1.17032						1.17604		
					2.95061						2.97255						3.02039		
					1.89404						1.92542						1.97424		
					8.94343						8.95287						8.95385		
					511						5736						5817		

309 ε Pegasi

h m s
21 88 14
0 ·
+2 19
1.17609 0,12621
9.99423
1.17032

311 ζ Aquarii

h m s
21 59 34
0 ·
−0 34
1.17609 0,12621
9.99995
1.17604

B 25 34.70 ·
B 26 53.17 ·
R 26 53.00 ·
R 26 52.90 ·
B 26 53.15 ·
26 53.05 ·
78.35

B 0 22.85 ·
B 1 47.10 ·
R 1 47.65 ·
R 1 46.67 ·
B 1 46.85 ·
1 47.07 ·
84.22

B 13 44.32 ·
B 15 18.52 ·
R 15 18.52 ·
R 15 18.52 ·
B 15 18.67 ·
15 18.56 ·
94.24

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1880phae.proj.1514

322

h Pegasi

h m s
22 37 20
° ′
+29 35

1.17609 0,12621
9.93934
1.11543

| | | |

1880phae.proj.1514.

154

α Ursæ Maj. L.C.

h m s
22 56 15
° ′
+117 36

0.12621

1880
Oct. 28

| | | |

1880phae.proj.1514.

164

P Leonis

h m s
11 42 53
° ′
+15 15

1.17609 0.12621
9.98443
1.16052

11	43	28.04			43	16.0	11	47	49.47		
		30.06	32300			17.6			53.03	56632	
		32.30	3230			19.1			56.75	5663	
		34.50				20.6			0.18		
	16150	36.66			954	22.1		28316	3.73		
	1150				454				3.316		
		41.00			43	1908			11.00		
		43.18				+30.42			14.32		
		45.24							17.85		
		47.40	49.541						21.50	25.091	
		49.40	4954		44	17.0			25.00	2509	
		51.60	49.47			19.0			28.65	2500	
		53.90				20.5			32.30		
		56.00				22.0			35.90		
	44587	58.15			1020	23.5		22582	39.30		
	8587					2.0			4582		
		2.35			44	2049			46.40		
		4.50	6630			−30.90			47.62	53370	
		6.60	663						53.33	5337	
		8.77	9893						57.00	170.00	
	3315	10.93			43	1908		26685	0.50		
	3315		43 49505		44	2040		1685	48	25045	
					+	30.42					
					−	30.90					
						11.32					

1.78760
1.16052
2.94812
1.89545
8.95033
5549

1880phae.proj.1514.

142

E Leonis

S

Sun. C = 44 430

h m s
9 38 57
0 ' "
+24 20

1.17609 01/2621
9.95960
1.13569

h m s
14 13 29.7
0 ' "
-13 20

01/2621

1880
Oct. 26.

Oct. 27/28

h	m	s		m	s		h	m	s		h	m	s		h	m	s
9	39	34.05		39	17.0		14	12	45.10		13	54.5	14	58.02		14	24.9
		36.18	38498		19.1				47.20	49276		56.0		0.18	2402		23.5
		38.54	3850		20.6				49.30	4928		57.7		2.48	240		24.7
		40.72			22.0				51.80			59.0		4.58			26.0
	19249	43.00		1026	23.9			24638	53.48		2876	0.4	31201	6.75		1237	27.6
	4249				26			4638			376		1201			237	
		47.48		39	2052				57.90		13	54.52		11.00		14	24.74
		49.90			+36.11				59.85			- 51.19		13.00			+54.67
		52.12							2.00					15.22			
		54.41	56.642						4.28	6.313				17.25	19.402		
		56.68	5664	40	26.7				6.37	631				19.50	1940		
		58.84	5662		28.5				8.40	6.35				21.47	1943		
		1.17			29.9				10.80					23.58			
		3.40			31.6				12.62					25.70			
	50978	5.70		1498	33.1			39682	14.90				17462	27.90			
	5978				498				5682					8462			
		10.20		40	2996				19.00					32.18			
		12.48	14750		-33.33				21.20	23424				34.30	36.464		
		14.80	1475						23.40	2342				36.42	3646		
		17.00	11325						25.67	13270				38.62	3886		
	7375	19.22		39	2052			11712	27.85		13	5752	18232	40.80		14	24.74
+1	2375		39 56630	40	2996				1712	13 6.330				3232	15 19415		
				+	36.11							- 51.19					+ 54.67
				-	33.33												
					69.44												
				1.84161													
				1.13569													
				2.97730													
				1.92547													
				8.94817													
				5 418													

B 1 20.75 .
B 2 44.98 .

B 28 39.20
B 1 38.42

2 44.98 .
84.23

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1880phae.proj.1514

170		138		140	
15 Aegus		λ Hydrae		Q Urs Maj	
h m s		h m s		h m s	
8 2 23		9 21 38		9 24 45	
° ′	0.12621	° ′	1.17609 0.12621	° ′	0.12621
−28 54		−8 8	9.99561	+52 14	
			1.17170		
Oct. 28					

8	2	55.92				9	22	13.35		22	0.3	9	—			26	16.6						
		58.00	0324					15.25	17.440		2.0		—				20.2						
		0.25	032					17.50	1744		4.0		—				21.7						
		2.60						19.50			5.5		—				23.8						
	30162	4.85					8720	21.60			183 6.5		—			1095	27.2						
		~~162~~						3720			183						95						
		9.30						23.80			22 3.66		—			26	21.90						
		11.50						26.00			+ 30.47		—				− 36.29						
		14.00						30.05					—										
		16.43	18.509					32.05	34.142				—										
		18.40	1851	3	56.00			34.10	3414	23	6.6		—			27	0.0						
		20.68	1847		57.5			36.20	3412		8.3		—				2.0						
		23.23			59.5			38.38			9.8		—				3.5						
		25.44			0.8			40.60			11.3		—				5.3						
	16658	27.60			2.4		30728	42.40			486 12.6		—			178	7.0						
		7658						3728			486						178						
		02.17						46.40		23	9.72	−20.21	45.79	26	6.00			27	3.56				
		34.20	36610					48.75	50800		− 35.59	23.57	45.43	224.07	9.00	12.580			− 17.45				
		30.68	3661					50.77	5080			26.95	45.75	45.614	12.70	1258							
		38.80	3693					53.83	68.24			30.31	45.54		15.85								
	18305	41.20					25400	55.05		22	366	−33.79	45.56	6290	19.35			26	2190				
		3305	3 18.490					400	22 34130	23	972				1290			27	3.56				
										+	30.47												
										−	35.59												
											6606												
											1.819941												
											1.17170												
											2.99164												
											1.94022												
											8.94856												
											5435												

1880phae.proj.1514.

307 Pegasi

h m s
21 25 11
° '
−6 6

01 12 621

1880 Oct. 21

h m s
21 38 49.32

51.45 53584
53.60 5358
55.68
26792 57.87
1792

2.03
4.03
6.20
8.28 10371
10.40 1037

12.50 10.34
14.54
16.66
9334 18.70
334

23.00
25.00 27100
27.00 2710
29.20 14068
13550 31.30
3550

46.23 7.23 26 1.00
4.15 7.15 57.25 3.00
42.05 7.25 7.158 5.00
6.00 7.18 7.18

26 34.6
36.5
38.0
39.7
1902 41.4
402

2.07 7.13 9.20
4.16 7.19 11.34
6.23 7.27 13.80
8.31 7.05 1536

26 38.04
−30.84

12.45 7.00 35.76 19.45
14.32 7.28 7.152 21.80
16.00 7.18 23.78
18.68 7.12 25.80
20.82 7.18 1188 3 28.00
1883

2.8766
2377

26 3804

7.156
7.154

R 26 43.35
R 26 43.82

26 43.58

309 Pegasi

h m s
21 38 14
° '
+ 9 19

01 12 621

38 39.4

41.0
42.6
44.0
2126 45.8
126

38 42.52
+ 27.83

38 4252

39 10355

+ 27.83

R 0 23.18
R 0 23.32

0 23.25

322 Pegasi

h m s
22 37 20
° '
+ 29 35

01 12 621

37 52.60

55.04 57448
57.45 5745
59.90
28724 2.25
3724

6.98
9.27
11.76
14.00 16451
16.50 1645
18.75 1643
21.16
23.65
14806 25.99
5806

30.65
33.00 35410
35.40 3541
37.77 15286
17705 40.17
2705

38 16.440

R 44 29.15
R 44 28.08

44 28.88

37 39.0

41.0
42.5
44.0
2117 45.2
117

37 42.34
+ 34.10

37 4234

38 16.440 + 34.10

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1880phae.proj.1514

619

α Piscis Aust.

h m s
22 50 58
° ′
−30 16

0,12621

153

β Ors. Maj. L.C.

h m s
10 14 32
° ′
122 58

0,12621

154

α Urs. Maj. L.c.

h m s
10 56 15
° ′
117 84

0,12621

| | | |

1880phae.proj.1514.

306

ζ Cephei Sec.

h m s
9 15 41
0 ′ ″
+117 56

0,(26 21

1880
Oct. 31

h m s
9 15 41.15

	51.20	55.480	20.4	15.2	14.55	16788	
	55.17	5548	22.5	17.0	16.90	1679	
	59.13		25.3	19.4	18.92		
27740	4.25		1135 27.3	875 24.5	8394 21.00		
	2740		135	375	3394		
	13.25		15 22.70	16 17.50	25.20		
	17.95				27.20		
	22.27				29.17		
	26.71				31.37	33.467	
	30.90	30968	16 54.3	17 57.8	33.37	3347	
	35.17	3085	58.4	55.4	35.53	3350	
	39.90		1.0	58.5	37.58		
	44.06		5.1	2.6	39.88		
	48.50		3066 7.8	2941 5.8	30120 41.90		
			66	441	3120		
	57.40		17 1.32	17 5882	46.00		
	2.00	6220			48.15	50.208	
	6.37	622			50.20	5021	
	10.45	18170			52.30	67.00	
3310	14.83		15 2270	16 1750	25104 54.39		
	3110	16 30.909	17 1.32	17 5882	104	22 33485	

B 31 28.98 .
B 30 53.20 .
B 30 26.60 .
B 29 49.52 .

B 28 23.75 .
B 29 38.82 .

29 38.82 .
75.07

138

ζ Hydrae

h m s
9 21 38
5 .
−8 8

1.17609 0,12621
9.99561
1.17170

	32 7.9	9	25 11.08		24 58.6		
	9.3		14.30	17626	0.5		
	10.8		17.75	1763	3.5		
	12.0		20.85		5.1		
	535 18.5		8813 24.20		3156 7.9		
	35		3813		166		
	22 1.070		31.17		25 3.32		
	+22.78		34.53		+41.29		
			37.53				
			41.40	44.633			
	23 4.8		44.58	4463	26 25.8		
	6.5		48.15	4459	29.0		
	8.2		51.34		32.6		
	10.2		54.80		35.0		
	414 11.7		40170 58.25		1596 37.2		
	414		4170		96		
	23 8.28		4.82		26 31.92		
	−34.80		8.44	11.560	−47.31		
			11.68	1156			
			14.76	8919			
	22 1070		5780 18.40		25 312		
	23 828		780	25 44610	26 31.92		
	+ 22.78		4560		+ 41.49		
	− 34.80				− 47.31		
	57.58				25.80		
	1.76627				1.94841		
	1.17170				0.96316		
	2.93797				2.91157		
	1.87547				1.85643		
	8.94350				8.94516		
	5 1 4				5 2 13		

B 8 19.90 .
B 9 31.68 .
R 9 31.68 .
R 9 31.85 .
B 9 32.00 .
9 31.80 .
71.90

140

Q Leo. Maj.

h m s
9 24 45
0 ′ ″
+62 14

1.17609 0,12621
9.78707
0.96316

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1880phae.proj.1514

142

ε Leonis

h m s
9 38 39
° ′
+24 20

1.17609 0.12621
.99596
1.13569

Oct. 31

9 39 37.80
35.15 37.424
37.50 3742
39.75
18712 41.92
3712
46.47
48.74
51.00
53.40 55.604
55.57 5560
57.93 5661
0.18
2.40
50044 4.75
5044
9.05
11.50 13796
14.02 1380
16.15 11122
6898 18.28
6898 39 55.605

39 19.8
21.7
23.2
24.7
1156 26.2
156
39 2312
+32.48
40 27.2
29.0
31.2
33.0
1552 34.8
52
40 3104
− 35.44
89 2312
40 3104
+ 3248
− 3544
67.92
1.83260
1.13569
2.98776 2.96769
1.90942
8.92163 8.94173
4 4621 4 5951

B 1 26.38
B 2 47.65
R 2 47.62
R 2 47.62
B 2 47.32
2 47.55
81.17

306

α Cephei L.C.

h m s
9 15 41
° ′
+117 56

0.12621

Nov. 1

9 — —
— —
— —
— —
— —
+1764 30.64 16 13.00
13.22 30.27 27.587 17.05
8.81 30.96 30.674 21.65
+4.39 30.74 26.35 30647
−6.80 30.48 30.48 3065
4.36 30.84 35.25
8.80 30.94 39.77
13.22 30.50 43.72
17.63 30.92 27582 48.55
582
— —
— —
— —
— —
— —

14 59.0 15 39.4
1.3 45.5
3.5 48.5
6.2 51.5
3213 11.3 2409 56.0
213 409
15 426 15 4818
+1 26.41 +42.49
17 5.6 17 89.5
10.7 0.2
14.5 1.0
17.0 1.5
670 19.2 3044 2.2
170 44
17 1340 18 0.88
−1 30.21
15 426 15 4818
17 1340 18 0.88

B 31 40.08
B 31 11.52
B 30 18.50
B 30 47.60

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1880phae.proj.1514.

138

α Hydrae

1880

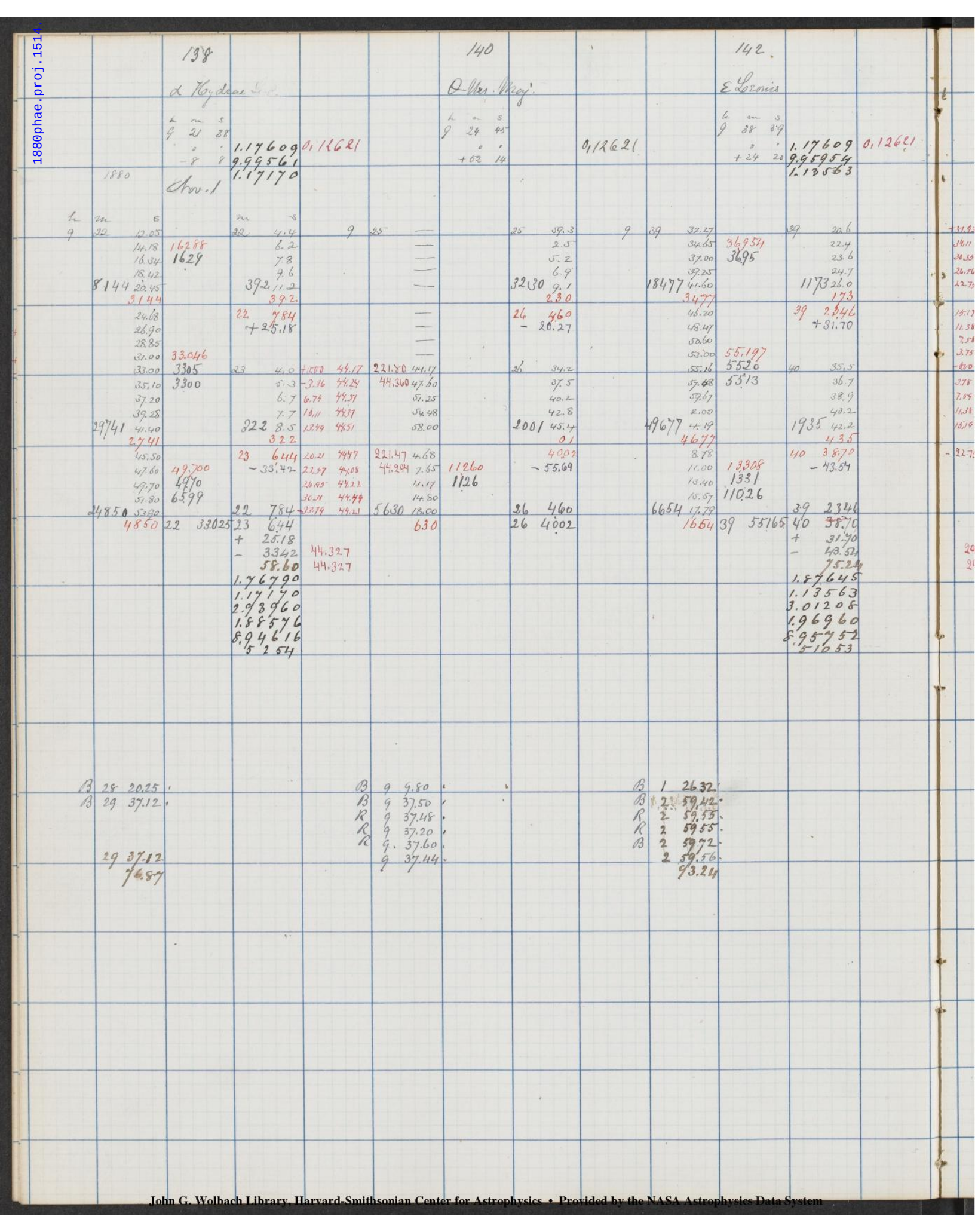
Arr. 1

140

Dlltn. Proj.

142

ε Leonis



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1880phae.proj.1514.

153

B Obs. Maj.

h m s
10 54 32
o ,
+47 2

154

L Obs. Maj.

h m s
12 56 16
o ,
+62 24

153

X Obs. Maj.

h m s
11 2 57
o ,
+45 9

0,12621 | 0,12621 | 0,12621

| | | |

1880phae.proj.1514.

156

S Leonis

h m s
11 7 40
° '
+21 11

1/12621

1880 Nov. 1

S

Lun. c = 44 45.2

h m s
14 33 4
° '
-15 2

0,12621

Nov 1/2

h	m	s		m	s													
11	8	13.50						1	32	—		33	37.0	34	30.62		33	59.5	+29.
		15.75	17.846	7	59.5					—			38.5		32.70	34824		1.8	20.9
		17.80	1785		0.9					—			40.4		34.80	3482		2.7	18.6
		20.00			2.4					—			42.0		37.00			4.2	16.3
	8923	22.18			3.5					—		2025	44.6	17412	39.00		3134	5.7	13.9
		39 23		3115	5.2								25		2412			134	
		26.75			11 5					—		33	4050		43.50		34	2.680	4.3
		28.90		8	2.30					—		−1	2.58		43.60			+44.41	6.48
		31.00			+33.24					—					47.85				4.65
		33.33	35.548							—					49.98	52.110			+2.3
		35.55	3555					−0.00	38.00	189.76	38.00				52.05	5211			−07
		37.80	3354					2.18	37.99	37.952	40.17				54.20	5207			2.3
		40.00						4.27	37.88		42.15				56.46				
		42.20						6.41	37.95		44.36				58.65				
	31993	44.40						8.56	37.94		46.50			46899	0.70				
		4993													1899				
		48.85						12.86	37.90	189.45	50.75				5.00				
		51.00	53230					14.95	37.72	37.84	52.77	55020			7.15	9.326			
		53.20	5323					17.09	37.91		55.00	5502			9.40	933			
		55.40	7108					19.23	37.95		57.18				11.50	10415			
	26615	57.70		8	2.30			−21.43	37.97	27510	59.40			4663	13.58		34	268	
		1615	8 35545								2510				4663	34 52090			
				+	33.24												+	49.41	
								37.921											35.
								37.921											35
R	10	4.78							B	6 49.28				B	38 42.00				
R	10	4.90							B										
	10	4.84																	

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1880phae.proj.1514

d

ε Bootis

h m s
14 39 42
- ° '
+27 35

Nov. 2

0,12621

309

ε Pegasi

h m s
21 38 14
° '
+9 19

1.17609
9.99423
1.17032

0,12621

311

α Aquarii

h m s
21 59 24
° '
-0 54

1.17609
9.99995
1.17604

0,12621

| | | |

1880phae.proj.1514.

166

1

ν Tegaci

χ Hes. Maj. L.C.

α Andromeda.

h m s
22 37 20

h m s
23 47 28

h m s
0 2 8

0 ' "
+125 38

0 ' "
+28 25

0.12621

1880 Nov. 2.

Chf

h	m	s		m	s														
22						23	47	43.96		47	48.8		0	2	41.58			2	30.5
								47.50			51.3				43.80	46232			32.2
								51.00	50.962		52.7				46.18	4623			34.2
								54.35			54.8				48.70				35.8
								58.05		2659	58.3			23116	50.90			1699	37.2
											159				3116				199
								5.03		47	53.18				55.62			2	33.98
								8.60							58.05				+31.08
								12.26							0.30				
								16.30	19187						2.70	5066			
								19.05	1919	48	46.2				5.00	507		3	33.0
								22.77			49.6				7.37	506			35.0
								26.20			52.5				9.90				36.9
								29.80			56.0				12.15				38.8
				17268				33.42		2639	59.6			28659	14.50			1845	40.8
								8268			139				45.59				345
								40.46		48	02.78				19.20			3	36.90
								44.06	47580						21.50	23880			−31.84
								47.58	4758						24.00	2388			
								51.00							26.20	13011			
				23790				54.80		49	26.7			11940	28.50			2	3398
								3790							1940		5.060	3	3690
									48 19.229		27.7							+	31.08
											28.6							−	32.84
											29.6								63.92
										1432	30.6								1.80564
											432								1.11964
										49	2864								2.92528
																			1.87192
																			8.94664
																			5 3 14

1880phae.proj.1514.

3

γ Pegasi

L m s
0 7 0
° ′
+14 31

1.17609 0.12621
9.88591
1.16200

0 7 35.43
37.60 39.736
39.78 8974
41.82
19868 44.05
4868
48.34
50.48
52.65
54.70 56856
56.88 5686
59.00 5681
1.00
3.25
51170 5.40
6170
9.63
11.83 13878
13.76 1388
16.02 11362
6939 18.15
1939 7 56835

7 23.0
24.4
26.0
27.5
1299 29.0
299
7 25.98
+30.85
8 26.0
27.6
29.0
30.4
1452 32.3
452
8 29.04
−32.21
9 2598
8 2904
+ 30.85
− 32.21
63.06
1.79975
1.16200
2.96175
1.92355
8.96180
5 13 57

0 49 44.40
48.58
52.68
57.05
26381 1.10
1381
9.80
13.70
17.66
21.33 25.949
25.92 2589
29.85 2595
34.05
38.52
23304 42.67
5354
50.90
55.00 59.146
59.15 5915
3.38 171.91
29573 7.80
4573
50 25.920

49 12.0
14.7
18.0
21.0
899 24.2
399
49 17.98
+1 7.94
50 52.0
55.3
58.4
1.3
2916 4.6
416
50 58.12
− 32.30
51 34.4
38.6
40.4
42.7
2020 45.9
20
51 40.40
−1 14.48

9 15 45.94
50.66 54.894
55.02 5489
59.30
47447 3.55
2447
12.72
17.28
21.53
25.87 30.200
30.00 3020
34.55 3012
38.90
43.30
27180 47.65
180
58.18
1.00 5.362
5.38 536
9.80 180.25
32681 14.15
2681 16 30.160

306

α Cephei L.C.

L m s
9 15 41
° ′
+117 37

0.12621

15 31.5 16 15.2
35.7 22.8
40.0 25.0
42.5 27.6
1949 45.2 1229 29.8
449 229
15 38.95 16 24.58
+51.18 + 5.58
17 16.3 17 30.8
18.7 38.3
22.7 1.7
25.9 4.4
1136 30.0 3064 7.2
136 64
17 22.72 18 1.28
− 52.56 −1 30.12
15 38.98 16 24.58
17 22.72 18 1.08
+ 51.18 + 5.58
− 52.56 − 90.92
103.74 96.50

B 48 53.32
B 50 17.22
R 50 16.97
R 50 17.20
B 50 17.35
50 17.18
83.86

B 16 36.90
B 18 44.05
B 18 11.48
18 57.76
140.80

B 31 24.12
B 30 55.98
B 30 19.08
B 30 55.08
32 43.3

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138

α Hydrae

h m s
9 21 38
° ′
−8 8

1.17609 0.12621
9.99561
1.17170

1880
Nov. 2

h	m	s		m	s
9	22	12.00		21	58.7
		14.00	16046		0.3
		16.00	1605		2.0
		18.05			3.5
8023		20.18		3099	5.4
3023					99
		24.33		22	198
		26.65			+20.77
		28.67			
		30.71	32.734		
		32.69	3273	23	1.5
		34.75	3278		3.5
		36.90			5.3
		39.00			7.9
29461		41.00		259	8.7
2461				259	
		45.48		23	518
		47.40	49522		−32.43
		49.53	4952		
		51.50	6557		
2461		53.70		22	1.98
461	22	32755		23	518
					+ 30.77
					− 32.43
					63.20
					1.80072
					1.17170
					2.97242
					1.91740
					8.94498
					5 2 5

140

Ο Ursae Maj.

h m s
9 24 45
° ′
+52 14

0.12621

h	m	s			
9	25	9.71		25	51.5
		13.24			54.5
		16.77	16.82		58.8
		20.50			58.7
8		23.88		2819	0.4
					319
		30.55		25	56.38
		33.93			
		37.30			
		40.65	44.054		
		44.06	4405	26	26.0
		47.50			28.6
		50.82			31.2
		54.20			34.0
29649		57.48		1566	38.8
3649					66
		4.05		26	31.32
		7.40	10938		
		11.16	1094		
		14.38			
5469		17.70		25	5638
469	25	43.94		26	3132

153

β Ursae Maj.

h m s
10 54 22
° ′
57 2

0.12621

h	m	s			
10	54	31.02		54	35.8
		54.94	58762		38.3
		58.97	5876		41.0
		2.70			44.10
29381		6.18		2056	46.5
4381					56
		13.90		54	41.12
		17.82			+ 48.04
		21.65			
		25.57	29222		
		29.15	2922		
		33.11	2911		
		36.80			
		40.60			
26300		44.40			
8300					
		51.80			
		55.60	59458		
		59.50	5945		
		3.35	178.21		
29725		7.00		54	41.12
4725	55	29.165			
					+ 48.04

B 28 10.62 .
B 29 33.30 .

29.33.30 .
82.68

B 9 4.22 .
B 9 33.28 .
R 9 33.12 .
R 9 33.28 .
B 9 33.20 .
9 33.22 .

R 20 21.90 .

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S 52

Lyr.

(14) h m s
18 37 1
° ′
−15 21

0,12621

1880
Nov. 2/3

B Cygni.

h m s
19 25 50
° ′
+27 42

0,12621

Nov. 3.

Chf

14	36	13.00			37	28.9	38	27.40		37	49.8	19	
		15.15	17286			30.5		29.44	31.688		52.0		
		17.18	1729			32.3		31.62	3169		53.4		
		19.40				34.0		33.98			55.0		
	8643	21.70			1614	35.7	15844	36.00		2672	57.0		
		3643				114		844			172		
		26.00			37	32.28		40.30		37	53.41		
		28.05				−57.84		42.40			+55.49		
		30.30						44.60					
		32.30	34458					46.80	48933				
		34.47	3446					49.00	4893				
		36.53	3443					51.00	4893				
		38.70						53.42					
		40.75						55.40					
	31012	43.00					44040	57.48					
		4012						8040					
		47.20						1.90					
		49.44	51574					4.05	6178				
		51.53	5157					6.20	618				
		53.70	6886					8.34	9787				
	25787	56.00			37	3228	3089	10.40		37	5344		
		787	36	34445				3089	38	48930			
						−57.84					+55.49		

1880phae.proj.1514.

277 ν Aquilae

L m s
19 40 38
0 ,
+10 19

1.17609 0,12621
9.99292
1.16901

1880 Nov. 3

h	m	s		m	s
19	41	3.28		40	48.8
		5.44	2.510		50.4
		7.60	151		51.9
		9.45			53.2
	3755	11.78		2588	54.5
		3755			88
		15.90		40	5176
		18.05			+32.54
		20.28			
		22.42	24.404		
		24.58	2440	41	32.4
		26.56	2430		53.6
		28.56			55.0
		30.60			56.5
	21964	32.77		2757	58.0
		3964			257
		36.83		41	55.14
		39.00	41.076		−30.79
		41.00	4108		
		43.25	4859		
	20538	45.30		40	5176
		5.38	41 24350	41	55.14
					+ 32.59
					− 30.79
					6338
				1.80195	
				1.16901	
				2.97096	
				1.92054	
				8.94958	
				5 5 17	

B 0 41.55 .
B 2 4.82 .
R 2 4.77 .
R 2 4.90 .
2 4.83 .
8328

280 ζ Aquilae

L m s
19 44 53
0 ,
+8 33

1.17609 0,12621
9.99515
1.17124

h	m	s		m	s
19	45	26.00		45	14.0
		28.05	30.144		15.5
		30.05	3014		17.2
		32.20			18.6
	15072	34.42		856	20.3
		072			356
		38.60		45	1712
		40.60			+29.72
		42.60			
		44.84	46.687		
		46.86	4689	46	15.6
		49.00	4680		17.0
		51.00			19.0
		53.18			20.8
	42198	55.30		948	22.4
		6198			448
		59.40		46	1896
		1.40	3.460		−32.12
		3.40	346		
		5.50	9360		
	31730	7.62		45	1712
		1730	45 46845	46	18.96
					+ 29.72
					− 32.12
					61.84
				1.79127	
				1.17124	
				2.96251	
				1.91228	
				8.94977	
				5 5 25	

B 46 51.82 .
B 48 13.57 .
R 48 13.50 .
48 13.53 .
81.71

283 β Aquilae

L m s
19 49 22
0 ,
+6 6

1.17609 0,12621
9.99753
1.17362

h	m	s		m	s
19	49	55.45		49	41.8
		57.38	59530		43.2
		59.62	5953		44.5
		1.50			45.7
	29765	3.70		2223	47.1
		4765			223
		8.00		49	4446
		10.05			−31.77
		12.05			
		14.27	16280		
		16.30	1628	50	43.8
		18.35	1619		45.3
		20.40			46.7
		22.50			48.4
	14632	24.60		2339	49.7
		5652			339
		28.72		50	4678
		30.75	32814		− 30.55
		32.80	3284		
		34.95	15237		
	16422	37.00		49	4446
		1422	50 16235	50	4678
					+ 31.77
					− 30.55
					62.32
				1.79463	
				1.17362	
				2.96825	
				1.91116	
				8.94291	
				5 0 40	

B 13 25.72 .
B 14 47.45 .
R 14 47.02 .
14 47.23 .
81.51

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294

δ Cygni

h m s
20 37 18
° ′
+44 51

1.17609 0.12621
9.85062
1.02671

20	37	42.80			37	22.4	20	41	48.30		
		45.65	48.616			24.1			50.60	53116	
		48.65	4862			26.3			53.00	5312	
		51.60				28.0			55.60		
	24308	54.38			1315	30.7		26568	58.08		
		4308				315			1558		
		0.35			37	2630			3.00		
		3.17				+45.60			5.40		
		6.10							7.80		
		9.05	11.924						10.40	12824	
		12.00	1192		38	47.5			13.00	1282	
		14.85	11.89			49.9			15.36	1287	
		17.72				51.4			17.58		
		20.58				53.5			20.20		
	10732	23.50			2584	56.1		11542	22.68		
		1732				84			2542		
		29.46			38	5168			27.60		
		32.26	35156			−39.78			30.05	32618	
		35.00	3616						32.45	3262	
		38.06	14378						35.24	14574	
	17578	41.00			37	2630		16309	37.75		
		2578	38	11905	38	5168			1309	42	12845
					+	4560					
					−	39.78					
						85.38					
					1.93136						
					1.02671						
					2.95807						
					1.91294						
					8.95490						
					592						

41	41.8	21									
	43.7										
	45.6										
	47.0										
2271	49.0										
	271										
41	45.42										
	+ 27.42										
42	44.0										
	46.0										
	47.7										
	49.8										
2395	52.0										
	395										
42	4790										
	−35.06										
41	4572										
42	4790										
	+ 27.42										
	− 35.06										
	62.48										
1.79574											
1.09711											
2.89285											
1.85071											
8.95786											
518											

B 29 18.12 .
B 30 10.05 .
R 30 39.98 .
R 30 39.85 .
30 39.96 .
81.84

B 49 9.52
B 50 20.35 .
R 50. 20.57 .
R 50 20.42 .
B 50 20.38 .
5020.43 .
7091

0.12621

Chf

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1880phae.proj.1514.

619

2 Fixes Asst

153

B Alles. Maj. L.C.

154

2 Alles. Maj. Le.

1880 Aug. 3

| h | m | s | | m | s | | h | m | s | | |

1880phae.proj.1514.

329

α Pegasi

h m s
22 58 44
° ′
+14 33

0112621

166

α Aqr. Myr. L.C.

h m s
23 47 28
° ′
+15° 38

0112621

22 59 —
— 59 37.9 35.53 83 48 4.60 40.12 48 23.0
— 39.6 31.88 39.76 200.37 7.88 11716 25.0
— 40.7 28.39 40.24 40.074 11.90 1172 26.7
+18.93 39.23 78.52 24.30 42.2 24.74 40.15 15.36 30.0
12.79 39.29 39.26 28.50 2036 43.2 21.25 40.04 5858 18.84 1365 31.8
36 858 365
8.53 39.56 355.23 31.03 59 40.72 14.19 40.49 360.57 26.30 48 27.30
6.40 39.60 39.47 33.20 −1.28 10.63 40.23 40.063 29.60 +22.77
4.26 39.48 35.19 7.09 40.09 33.00
+2.11 39.58 37.47 39.473 + 3.53 39.53 36.00 40.057
−1.70 39.44 39.44 3947 0 19.0 −0.00 40.05 40.05 4006 48 55.0
2.13 39.45 41.58 20.6 3.50 40.18 43.68 58.2
4.26 39.54 43.70 22.0 7.08 34.92 47.00 1.5
6.40 39.30 45.70 23.3 10.63 40.05 52.66 3.8
8.54 39.41 35526 47.95 1093 24.4 14.17 40.03 36051 54.20 3056 7.1
8526 893 8051 56
12.70 39.46 197.27 52.16 2086 — 49 1.12
14.92 39.42 39.44 54.34 56.506 −41.42 — −21.05
17.06 39.49 56.55 5651 40.068 —
19.19 39.51 58.70 40.067 —
−21.34 39.39 28253 0.78 59 40.72 — 49 27.0
3253 0 2186 29.4
31.5
39.394 34.6
39.439 1585 36.0
85
49 31.70
−41.63

B 46 55.18
B 48 52.45
R 48 52.55
R 48 52.37
B 48 52.42
48 52.445
113.27

B 50 34.75
B 50 12.42
B 49 57.90

1880phae.proj.1514.

153

B Urs. Maj.

h m s
10 57 32
° ′
+57 2

0112621

1880
Nov. 6

h	m	s	m	s					
+37.93	27.4210	54	49.50		54	31.4	10	56	26.04
34.11	27.41	136.50	53.30	57.040		33.3			30.58
30.35	27.35	27.30	57.00	57.04		36.2			35.12
26.56	27.36		0.80			38.4			39.70
22.75	27.35	28520	4.60		1808	41.5			44.47
		3520				308			
15.17	27.31	245.53	12.14		54	3616			53.10
11.38	27.21	27.281	15.83			51.13			57.58
7.58	27.30		19.72						2.26
+3.75	27.26		23.50	27288					6.47
−0.00	27.30		27.30	27.29					10.85
3.78	27.22		31.06						15.30
7.59	27.36		34.95						19.85
11.38	27.27		38.65						24.25
15.19	27.31	24559	42.50						28.67
		6559							
			—						37.65
			—						42.10
			—						46.45
			—						51.00
			—		54	3616		23265	55.45
									3265

154

α Urs. Maj.

h m s
10 56 15
° ′
+62 24

0112621

Nov. 6

				56	46.0	
					49.1	
					52.3	
	35,182				56.4	
		2628			59.3	
					128	
				56	5256	
	10.926			58	58.0	
					58.8	
					57.6	
					58.4	
		2878			57.0	
					378	
				58	57.56	
	46530					
	4653					
				56	5256	
	10,891			58	57.56	

1880phae.proj.1514

S

Sun c = 44 80.8

L — S
14 52 54
· ·
−16 33

0,12621

1880
Nov. 6/7

14 52 —
— — — — —
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— — — — —
— — — — —

53 11.0
12.9
14.7
16.3
734 18.5
2.34

53 14.68
−45.49

54 22.95
25.00
27.28
29.48
13637 31.66
3637

27.274
2727

+8.61 29.01 262.08 20.40
6.46 29.13 29.12 22.87
4.30 29.00 24.70
+2.13 29.15 27.00
−0.86 29.15 29.15
2.15 29.12 31.27
4.31 29.17 33.48
6.46 29.14 35.60
8.62 29.23 26212 37.85
8217

29.1241
2912

44.541
4454
44.60

12.91 29.26 146.54 42.17
15.07 29.26 29.308 44.33
17.22 29.28 46.50
19.36 29.38 48.76
−21.54 29.36 23271 50.75
3271

46542
4654

53 1468

40087 53.00
4087
57.60
57.70
1.90
4.20
30968 6.28
968

1936
194
8921

54 44570

29.214
29.187

R 35 13.42

201
S Bootis

L — S
15 10 37
· · ·
+33 46

0,12621

Nov. 7

15 11 3.97
6.37
8.90
11.30
4440 13.81
4440
18.75
24.28
23.82
26.27
28.80
2879
31.20
33.70
36.28
25870 38.60
7870
42.70
46.30
48.75
51.18
25853 53.60
4353

8.880
8.88

25.744
28.74
2879

48706
4871
5759

11 28765

R 36 21.52
R 36 21.32

36 21.42

11 43.0
43.0
46.6
48.0
2326 50.0
326

11 46.52
− 17.76

11 46.52
− 17.76

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	252 β Draconis			257 η Serpentis			269 λ Aquilae		
	h m s			h m s			h m s		
	17 53 41			18 15 29			18 59 56		
	o ,			o ,			o ,		
	+51 30		0.12621	−2 56		0.12621	−5 3		0.12621
1880									
Nov. 7									
h m s		m s							
17 54 44.5		53 45.7	18 15 34.65			19 0 21.40		0	
7.78	11.066	48.0	36.75	38854		23.60	25.690		
11.00	1107	50.0	38.81	3885		25.80	2569		
14.47		52.1	41.00			27.90			
5533 17.63		2502 54.4	19427 43.00			12845 29.75			
533		02	4427			2845			
24.30		53 5004	47.00			33.87			
27.70		+47.58	49.15			36.06			
31.00			51.15			38.20			
34.38	37.631		53.20	55339		40.20	42.292		
37.62	3763		55.30	5534		42.30	4229	0 57.5	
41.00	37.61		57.50	5538		44.40	4231	59.2	
44.30			59.55			46.50		0.7	
47.50			1.60			48.50		2.4	
33868 50.88			39805 3.60		1195 27.2	38063 50.60		3038 4.0	
6868			4805		195	2063		38	
57.50			7.78		16 23.90	54.80		1 0.76	
0.90	4150		9.90	11922	−28.54	56.90	58.940	−18.46	
4.05	415		11.90	1192		59.00	58.94		
7.80	7522		13.98	11077		1.00	8463		
32075 10.80		53 5004	5961 16.05			29470 3.00			
2075	54 37620	+ 47.58	961	15 55360	16 23.90	4470	0 42300	1 0.76	
					− 28.54			− 18.46	
R 50 41.72			R 16 54.20			R 24 29.35			
R 50 41.90			R 16 54.38			R 24 28.88			
50 41.81			16 54.29			24 29.11			

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1880phae.proj.1514.

275

β Cygni

h m s
19 25 50
° ′
+27 42

0,12621

| | | |

1880phae.proj.1514.

306 α Cephei L.e.

h m s
9 15 41
° ′
+117 56

0,12621

1880 Nov. 7

h	m	s		m	s																
9	15	29.95		15	51.4	9	21	56.62		21	49.0	10	2	14.38		2	5.9				
		34.57	38712		55.4			58.60	0.804		50.3			16.60	18638		7.8				
		38.57	3871		58.7			0.80	080		51.8			18.64	1864		9.2				
		43.20			1.1			3.00			53.3			20.70			10.9				
	19356	47.27		2898	3.2		30402	5.00		2592	54.8		9319	22.87		463	12.5			
		4356			398			402			92			4319			463				
		56.28		15	5796			9.17		21	51.84			27.14		2	9.26				
		0.85			+26.06			11.20			+25.69			29.18			+26.24				
		5.20						13.37						31.39							
		9.58	13932					15.48	17550					33.43	35569						
		13.70	1393	17	5.4			17.61	1755	22	49.5			35.50	3557	3	10.8				
		18.18	1412		10.5			19.65	1751		50.8			37.60	3553		12.3				
		22.40			16.0			21.70			52.1			39.88			14.0				
		27.40			19.0			23.87			53.4			42.00			15.6				
	66539	31.83		727	21.8		15795	25.95		2603	54.5		32012	44.00		697	17.0			
		3539			227			6795			103			5012			197				
		40.85		17	1454			30.04		22	52.06			48.17		3	13.94				
		45.34	49542	−1	0.52			32.04	34212		−34.53			50.30	53408		−38.39				
		49.70	4954					34.20	3421					52.40	5241						
		53.60	14825					36.38	3501					54.55	7105						
	24771	58.22		17	34.9		17106	38.40		21	5184		26204	56.62		2	926				
		4771	16 14.025		36.0			2106		22	17530			1204	2 35.550		3 13.94				
					37.3						5206						+ 26.29				
					38.4						+ 25.69						− 38.39				
				1861	39.5						− 34.53						6468				
					361						60.22						1.81077				
				17	3722						1.77974						1.16559				
				−1	23.20						1.17170						2.97636				
											2.95144						1.92983				
											1.90730						5.95347				
											8.95586						581				
											5943										

B 30 54.65 .
B 29 30 6.28 .
B 29 53.45 .
R 29 53.72 .

29 53.58 .

B 28 20.90 .
B 29 41.68 .

29 41.68
80.78

B 47 37.20 .
B 49 2.22 .
R 49 2.57 .
R 49 2.17 .
B 49 2.15 .

49 2.28
85.08

138 α Hydrae

h m s
9 21 38
° ′
−8 8

1.17609 0,12621
9.99561
1.17170

146 α Leonis

h m s
10 1 56
° ′
+12 83

1.17609 0,12621
9.98950
1.16559

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1880phae.proj.1514.

148

ζ Leonis

| | | |

1880phae.proj.1514.

S

306

Sun - C = 44 74.8

2 Cephei 0.126 21

0.126 R1

1880 Nov. 7/8 Nov. 8.

h	m	s		m	s														
14	55	55.24		56	55.7	58	10.57		57	47.8	21	15	55.65		15	13.7	15	46.0	
		57.34	59492		57.2		12.72	14670		49.3			40.15	44656		16.6		46.6	
		59.50	5949		58.6		15.00	1497		50.8			44.70	4466		18.8		51.3	
		1.63			59.8		17.15			52.3			49.18			21.8		54.7	
	29746	3.75		2931	1.8	7485	19.36		2537	58.5	22328		52.60		960	25.1	2536	57.0	
	4746			431		2485			37		2328				460		36		
		8.00		56	5862		23.70		57	5074			2.25		15	1920	15	5072	
		10.30			−41.84		25.95			+41.56			6.73		+1	0.75		+29.23	
		12.57					28.00						11.00						
		14.70	16782				30.00	32286					15.44	19947					
		16.80	16.78				32.40	3229					20.00	1995	17	10.0	17	41.8	
		19.00	16.78				34.54	3232					24.20	1995		15.2		46.2	
		21.00					36.50						28.90			18.3		47.4	
		23.20					38.68						33.30			21.1		50.6	
	15104	25.47				29057	40.80				17952		37.70		883	23.7	2395	54.0	
	6104					2057					8952				383		395		
		29.90					45.34						46.30		17	1766	17	47.90	
		31.96	34068				47.63	49672					51.10	55230	−	54.71	−1	27.95	
		34.05	3407				49.57	4967					55.20	5523					
		36.05	15356				51.80	6464					57.55	159.89					
	17034	38.38		56	5862	24836	54.00		57	5074	27615		3.80		15	1920	15	5072	
	2034		56 16.780		L		4836	58 32.305		+ 41.56	2615	16	19.950		17	1766	17	47.90	
					− 41.84										+	60.75	+	29.23	
															−	57.71	−	87.95	
																118.46		117.18	
																2.07357		2.06886	
																0.84675		0.84675	
																2.92032		2.91561	
																2.00432		2.00432	
																9.08400		9.08871	
																6556		6535	

B 53 25.02
B 52

B 27 1.20

B 16 7.15
B 16 34.58
B 18 19.72
B 18 37.45

~~17 47.25~~
~~100.10~~

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1880phae.proj.1514.

154

α Ursæ Maj. L.C.

h m s
10 56 15
° ′
+117 36

0.12621

10	56	7.52			55	49.0									
		11.78	16.240			51.2									
		16.35	1624			55.1									
		20.55				58.0									
	8120	25.00			2735	0.2									
		3120				235									
		34.10			55	5470									
		38.70				+37.22									
		43.26													
		47.48	51.923												
		52.00	5192		56	41.8									
		56.63	51.93			46.2									
		0.40				50.0									
		5.12				53.2									
	46731	9.70			2465	55.3									
		1731				465									
		18.87			56	4930									
		23.00	27624			+ 2.62									
		27.60	2762												
		32.05	10386												
	13812	36.80			57	56.6									
		3812	56	51.925		69.6									
						2.2									
						7.3									
						3171	11.4								
						171									
					58	342									
					−1	11.50									

B	49	16.00	′
B	48	46.12	′
B	47	55.25	′
R	47	55.52	′
R	47	55.62	′
B	47		
		55.46	′

166

χ Ursæ Maj. L.C.

h m s
23 47 28
° ′
+125 38

0.12621

23	47	28.50			46	54.0									
		32.30	35800			56.0									
		35.75	3580			58.8									
		39.55				1.2									
	17900	42.90			2948	4.8									
		2900				448									
		50.02			46	5896									
		53.40			+1	511									
		57.00													
		0.55	4.081												
		4.00	4.08		47	34.2									
		7.57	4.06			37.2									
		11.14				39.2									
		14.70				41.7									
	57673	18.35			1967	44.4									
		3673				467									
		25.38			47	3934									
		28.78	32326			+ 24.73									
		32.30	3233												
		35.72	12813												
	16163	39.45			48	53.5									
		1163	48	40%		55.7									
						0.6									
						3.2									
						2982	5.2								
						482									
					48	59.64									
						−55.57									

B	51	25.08	′
B	50	50.82	′
B	~~49~~ 54	16.68	′

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1880phae.proj.1514.

1

α Andromæ.

h m s
0 2 8
° ′
+28 25

1.17609 .112621
9.944424
1.12033

1880
Nov. 8

h	m	s		m	s
0	2	26.03		2	17.5
		28.17	30624		19.0
		30.62	3062		21.0
		33.00			23.0
		35.30		1052	24.7
		312			5.2
		40.00		2	21.04
		42.04			+28.27
		44.60			
		47.00	49314		
		49.38	4931	3	21.8
		51.72	4932		23.5
		54.00			25.1
		56.34			26.9
		58.75		1259	28.6
		8383			259
		3.35		3	2518
		5.60	8028		−35.87
		8.00	803		
		10.42	9865		
		4014	12.77	2	2104
		4014	2 49315	3	2518
				+	28.27
				−	35.87
					64.14
					1.80713
					1.12033
					2.92746
					1.87697
					8.94951
					5514

B 54 35.62
B 55 50.67
R 55 51.07
R 55 51.10
B 55 51.48
~~55 50.95~~
75.33

3

χ Pegasi

h m s
0 7 0
° ′
+14 31

1.17609 .112621
9.998891
1.16200

h	m	s			
0	7	19.98		7	18.7
		21.95	24086		15.2
		24.00	2409		16.7
		26.20			18.0
		28.30		831	19.5
		2043			3.31
		32.65		7	1662
		34.75			+24.54
		36.90			
		38.98	41146		
		41.16	4115	8	11.9
		43.35	4117		13.6
		45.37			15.2
		47.50			17.0
		37031	49.65	762	18.5
		1031			262
		54.00		8	15,24
		56.00	58252		−34.08
		58.32	5825		
		0.44	8234		
		29126	2.50	7	1662
		4126		8	1524
				+	24.54
				−	3408
					58.62
					1.76805
					1.16200
					2.93005
					1.88395
					8.95390
					5820

B 49 3.32
B 50 19.92
R 50 19.90
R 50 19.87
B 50 19.80
50 19.87
76.55

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1880phae.proj.1514.

Sheets not numbered

S Sun C = 44 698

h m s
15 1 0
° ' "
-17 8

0,12621

1880

Sun. 8/9

587

α Virginis

h m s
13 18 49
° ' "
-10 32

0,12631

15

+20.99	13	19	6.03	2,702	18	56.7
18.88	27.10	134.79	8.22	1016		58.6
16.80	26.80	26.958	10.00	1017		0.4
14.70	26.95		12.25			2.2
12.54	26.92	5083	14.33		3023	4.2
			083			x23
8.40	27.18	54.78	18.78		19	0.46
+6.30	27.60	27.39	21.30			+26.55
			—			
			—			
			—			
			—			
			—			
			—			
			—			
-14.64	27.01	108.03	41.70			
16.79	26.96	27.007	43.75			
18.84	27.11		46.00			
-21.05	26.95		48.00		19	0.46

27.118
27.054

B 10 26.88

B 43 43.18

B 52 5.40

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1880phae.proj.1514.

S

Sm. C = 44 730

h m s
15 57 4
0 ,
-17 24

0,12621

1880 Nov. 9/10

h m s
15 3 59.10

m s
1.35 3346
3.25 335
5.38
31673 7.65
1673
12.30
14.40 +9.60
16.46
18.60 20.748
20.70 20.75
25.00 20.74
25.27
27.00
18673 29.00
673
33.88
36.05 38.126
38.10 38.13
40.20 41.48
19063 42.40
4063 4 20.745

m s
5 7.0
8.5
10.1
12.0
517 14.1
17
5 10.34
+6.49 36.91
4.32 36.82
+2.14 36.88
-0.00 36.90
2.16 36.87
4.33 36.87
6.49 37.01
8.66 36.89
12.97 36.93
15.13 36.90
17.26 37.16
+19.36 37.19
5 10.34
— 49.60
36.953
36.932

m s
6 —
—
—
—
—
28.35 +8.65 37.00
332,12 30.42
36.902 32.50
34.74 36.907
36.90 36.91
39.00
41.20
43.35
332.16 45.53
6.216
185.07 49.90
37.014 52.03 54.316
54.42 54.32
56.65
27.158 58.58 -21.69 36.89
2.158

h m s
5 32.2
33.6
35.0
36.2
1740 37.0
2.40
5 34.80
+1 2.13
5 3480

h m s
22 51 17.70
15.03 17462
17.50 1746
19.90
8731 22.18
3.731
27.03
29.35
31.78
34.20 36.558
36.57 36.56
39.00 36.59
41.30
43.75
32902 46.04
5.902
49.92
53.40 55.730
55.88 5573
58.05 7319
27865 0.40
2.865 51 36.575

h m s
22 50 38
0 ,
-30 16
1.176 09
9.936 36
1.112 45

Nov. 11

m s
57 0.2
2.3
3.8
5.3
191 7.5
191
57 3.82
+32.75
62 6.0
9.5
8.8
10.0
443 12.0
443
52 8.86
-32.29
51 38.2
52 8.86
+ 32.75
- 32.29
15.04
1.81318
1.11245
2.92563
1.88013
8.95450
5845

B 22 19.85
B 0 23.22
B 33 10.32 .
B 34 26.20 .
34 26.20
75.88

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astrophot-proj-1514

153

β Ves. Maj. L.C.

h m s
22 54 32
° '
+122 58

0,12621

Nov. 11

h m s
22 54 30.80

34.45	36.290	
38.40	38.29	
42.05		
19145 45.75		
4145		
53.20		
57.20		
0.88		
4.72	8.502	
8.54	850	
12.47	859	
16.18		
19.63		
61652 23.70		
7652		
31.34		
35.00	38888	
38.90	3889	
42.70	13718	
19444 46.50		
4444	55 8.545	

m s
54 2.5

	6.3	
	10.4	
	12.7	
465	14.6	
	465	
54	9.30	
	+ 59.24	
54	29.0	
	31.2	
	36.1	
	39.0	
1766	41.3	
	266	
54	3532	
	+ 33.22	
55	58.4	
	12	
	4.0	
	6.2	
3185	8.4	
36	3.7	
	4.10	

h m s
22 56 —

17.84	50.84	45861	33.00
13.36	50.86	50.956	37.50
8.91	51.11		42.20
4.44	50.94		46.50
0.98	50.98		50.98
4.41	50.91		55.32
8.90	51.00		59.90
13.36	51.04		4.40
17.82	50.93	45855	8.75
			855
26.72	51.00	25588	17.72
31.14	50.87	51.00	22.06
35.66	51.01		26.66
40.07	51.04		31.11
44.55	51.08	13318	35.63
			3318
	50.978		
	50.972		

β 28 50.68 .
β 28 28.62 .
β 27 28.50 .

154

α Ves. Maj. L.C.

h m s
22 36 15
° '
+117 36

0,12621

m s
56 34.5

	32.2	
	41.0	
	45.2	
2065	48.6	
	65	
56	41.30	
	+ 9.67	
57	54.4	
	56.4	
	1.7	
	5.6	
3071	9.0	
	71	
58	142	
-1	10.45	
56	41.30	
58	1.42	

26636
2664

β 48 36.75 .
β 47 47.65 .

h m s
22 57 2.05

	4.03	
	6.26	
	8.44	
3136	10.58	
	3136	
	14.78	
	16.90	
	19.05	
	21.18	
	23.40	
	25.40	
	27.70	
	29.80	
21011	31.90	
	3011	
	36.06	
	38.18	
	40.32	
	42.52	
20178	44.70	
	178	
59	23.335	

50.950
5095

β 46 28.60 .
β 47 44.52 .
R 47 44.80 .
R 47 44.62 .

47 44.61 .
76.01

329

α Pegasi

h m s
22 58 44
° '
+14 33

6.272	
6.27	
23.346	
2335	
2332	
40.356	
4036	
46.63	

h m s
58 55.7

	57.0	
	58.4	
	0.0	
2928	1.7	
	428	
58	58.56	
	+ 24.77	
59	54.4	
	55.9	
	57.4	
	58.9	
2871	05	
	371	
59	57.42	
	- 34.09	
58	58.56	
59	57.42	
+	24.77	
-	34.09	
	58.86	

1.17609 0,12621
9.98584
1.16193

1.76982
1.16193
2.93175
1.88087
8.94912
5 4 58

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1880phae.proj.1514.

166 | 1 | 3

χ Ursæ Maj. S.C. | α Andom. | χ Pegasi

h m s
23 47 28
0 .
+135 38

0,12621

h m s
0 2 8
0 .
+28 25

1.17609 0,12621
9.94424
1.12033

h m s
0 7 0
0 .
+14 31

0,12621

1880
Nov. 11

h m s
23 47 27.62
31.15 34650
34.60 3465
38.20
17325 41.68
2325
48.88
52.35
55.85
57.40 2.974
2.90 297
6.56 295
10.12
13.53
56677 17.18
2677
24.25
27.68 31.258
32.16 3126
34.80 125.91
15629 38.40
629

h m s
47 13.4
15.5
17.7
20.3
917 24.8
417
47 18.34
+44.62
48 12.0
14.7
17.6
19.7
862 22.2
362
48 17.24
−14.28
49 12.7
13.5
14.5
15.4
724 16.3
224
49 14.48
−1 11.52

h m s
0 2 25.00
27.27 29638
29.67 2964
32.00
14819 34.25
4819
39.00
41.26
43.73
46.04 48.372
48.33 4837
50.75 4841
53.10
55.39
43535 57.75
7535
2.50
4.75 7.180
7.15 718
9.58 9682
3590 11.92
3590 2 48.390

h m s
2 11.5
13.0
14.6
16.0
729 18.0
229
2 14.58
+33.81
3 21.2
23.0
24.6
26.4 -6.39 40.21 80.47 4660
1231 27.9 8.54 40.26 40.23 5480
231
3 24.62 12.79 40.21 200.88 53.00
−36.23 14.82 40.08 40.17 55.00
12.05 40.22 57.27
14.19 40.18 59.37
-21.38 40.19 28621 1.57
2 14.58
3 24.62
+ 33.81
− 36.23 40.205
70.04 40.193
1.84535
1.12033
2.96568
1.91834
8.95266
5727

h m s
57242
57.24
3621

h m s
8 10.9
12.8
14.3
16.2
720 17.8
2.20
8 14.40
−34.21
8 14.40

B 50 51.32
B 50 4.50
B 50 22.30

B 54 28.42
B 55 51.17
R 55 51.30
R 55 51.30
B 55 51.35
55 51.28
82.86

B 50 21.42
R 50 21.25
B 50 21.25
50 21.31

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13

χ Cassiop

h m s
0 49 25
° ′
+60 04

h	m	s
0	49	27.65
		31.63
		35.92
		40.07
17957	44.30	
	2957	
		52.40
		56.65
		0.98
		4.95
		9.00
		13.25
		17.30
		21.66
62219	26.00	
	8219	
		34.00
		38.15
		42.28
		46.30
21109	52.36	
	1109	

35.914
35.91
9.132
913
9.07
42.218
4222
138.13
50 9.100

0.12621

m	s
48	57.2
	0.8
	3.4
	6.4
3172	9.4
	172
49	3.44
+1	57.64
50	16.8
	20.3
	23.2
	26.8
1167	29.6
	167
57	23.34
−	14.24
51	10.3
	13.5
	16.2
	20.2
842	24.0
	342
51	16.84
−1	7.74

B 16 35.85 ·
B 16 30.78 ·
B 18 5.25 ·

17 ·55

148

ζ Lyncis

h m s
10 9 57
° ′
+24 1

h	m	s
10	10	14.41
		16.93
		18.88
		21.18
9974	23.48	
	4474	
		27.87
		30.20
		32.44
		34.74
		37.00
		39.27
		41.54
		43.78
33287	46.03	
	6287	
		50.45
		52.82
		55.02
		57.27
27511	57.56	
	2511	

18.948
1895
36.986
3699
36.99
55.022
5502
73.97
10 36.990

B 20 9.70 ·
B 21 33.25 ·
R 21 33.25 ·

21 33.25
83.55

1.17609 0.12621
996067
1.13676

h	m	s
10	10	0.5
		2.2
		3.5
		4.9
178	6.7	
	178	
10	3.56	
+	33.43	
11	7.8	
	180	
	11.5	
	13.5	
578	15.0	
	78	
11	11.56	
−	34.57	
10	3.56	
11	11.56	
+	33.43	
−	34.57	
	68.00	
	1.832.51	

1.13676
2.96927
1.91672
8.94745
5348

C

χ' Leonis

h m s
10 18 18
° ′
+20 27

h	m	s
10	13	35.14
		37.57
		39.77
		41.90
19842	44.04	
	4842	
		48.57
		50.75
		52.96
		55.24
		57.24
		59.58
		1.90
		4.00
51664	6.40	
	6664	
		10.57
		12.75
		14.90
		17.02
7456	19.32	
	2456	

39.684
39.68
14.912
14.91
114.59
13 57.350

B 54 55.60 ·
B 55 37.48 ·

1.
0.12621

m	s
14	2.4
	4.8
	6.1
	7.2
295	9.0
	295
14	5.90
−	8.55
14	36.4
	38.1
	39.4
	40.9
1973	42.2
	47.3
14	39.46
−	42.11
14	5.90
14	39.46
−	8.55
−	42.11
	50.66

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1880phae.proj.1514.

149

Je Ues. Maj.

h m s
10 15 7
° '
+42 6

0,12621

1880
Nov. 11

h	m		m	s		h	m	s		m	s	h	m	s		m	s
10	15	—	16	(15.0)		10	54	35.00		54	1.8	10	56	11.85		56	37.2
		—		17.2				3.880	42676		4.1			16.75	21.010		39.6
		—		18.9				42.68	4268		6.0			20.95	2101		44.0
		—		20.6				46.62			8.8			25.50			46.9
		—		22.5			21	338 50.28		327	12.0		10505	30.00		2172	49.5
				24.6				1338			327			8505			172
+11.12	47.50	427.62	36.38					57.98		54	654			38.97		56	43,44
8.34	47.54	47.524	39.20		16	20.76		1.50		+1	6.48			43.45			
5.56	47.56		42.00					5.47						47.82			
+2.75	47.45		44.40	47.518				9.35	13051					52.18			
-5.20	47.56		44.56	4752	16	37.6		12.88	1305	55	23.6			56.70		57	33.5
2.77	47.42		47.20			39.4		16.90	1300		26.9			1.00	3661		56.8
5.56	47.44		53.00			40.9		20.60			28.8			5.42			0.2
8.34	47.61		55.95			43.0		24.60			33.9			10.23			2.3
11.14	47.53	42766	58.67		2063	45.4		65746	28.18	1506	36.4			14.50		3003	7.5
			6766			63			2746		506						0.3
16.68	47.32	237.78	4.20		16	41.26			35.67		3012			23.35		58	0.06
19.46	47.36	47.556	7.02	9,820		- 53.73			39.50	43,310	55 30.12			27.78	32,224		
22.25	47.60		9.85	982					43.38	4331	- 17.10			32.34	3222		
25.03	47.62		12.65						47.00	145.99				36.65	1123		
-27.40	47.48	4910	15.38					21655	51.00		54 654		16112	41.00		58	29.3
			4910		16	41.26			1855	55	13.025	55	30.12		1112	56	56,61		30.8
											+ 66.48						33.6
47,540											- 17.10						36.4
47,528											83.58					1684	33.3
											1.92210						184
											0.91161					58	33.68
											2.83391						
											1.79358						
											8.95967						
											5 1225						

B	16	33.72				B	20	8.68				B	58	34.45			
B	17	53.20				B	21	10.85				B	59	21.30			
R	17	53.30										B	59	41.12			
R	17	53.22															
B	17	53.30															
	17	53.25					21	10.85					59				
		79.53						62.17									

153

B Ues. Maj.

h m s
10 54 32
° '
+57 2

1.17609
9.73572
0.91161

0,12621

154

A Ues. Maj.

h m s
10 56 15
° '
+62 24

0,12621

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1880phae.proj.1514.

587

α Virginis

Sheet not numbered

Sem. C = 44 733

h	m	s			m	s
13	19	15.95			19	40.7
		17.85	20024			42.5
		20.00	2002			44.2
		22.12				45.7
	10012	24.20			2201	47.0
		012				201
		28.30			19	4402
		30.50				−7.21
		32.52				
		34.65	36813			
		36.73	3681		20	6.1
		38.90	3681			8.1
		41.15				9.4
		43.20				10.7
	33132	45.37			463	12.0
		6132				46.3
		49.40			20	9.26
		51.45	53610			−32.45
		53.50	5361			
		55.70	7363			
	26805	58.00			19	4402
		1805	19	36810	20	9.26
						−7.21
						−9.45
						14.66

h	m	s		h	m	s		h	m	s	
15	18	12									
	0	′									
	−17	57									
B	52	49.40	′	B	0	19.80	′	B	33	12.18	
B	53	23.85	″								

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1880phae.proj.1514.

149

U Ursae Maj.

S

Sun - ⊙ = 44 733

h m s
10 15 7
° '
+42 6

0,12621

h m s
15 21 24
° '
−18 28

0,12621

1880

Nov. 13

Nov. 13/14

h	m	s		m	s	h	m	s	m	s		
10	15	32.00		15	2.16	15	20	—	22	47.27		
		34.67	37.494		24.0			—		49.43	51.550	
		37.50	37.49		25.6			—		52.50	5155	
		40.30			27.4			—		53.65		
	18747	43.00		1281	29.5			—	25775	55.90		
		37.47			28.1					775		
		48.55		15	25.62			—		0.18		
		51.28			+ 04.11			—		2.52		
		54.15				+4.35	52.23	365.92 47.88		4.93		
		57.10	59.726			2.15	52.22	52.274 50.07		7.00	9.068	
		59.80	59.73			−6.70	52.25	52.25		9.15	907	
		2.50	59.74			2.17	52.23	54.40		11.12	9.10	
		5.20				4.36	52.25	56.60		13.35		
		8.13				6.53	52.32	58.85		15.58		
	53753	10.82				8.71	52.42	1.13	8161	17.78		
		87.53								8161		
		16.43								22.30		
		19.17	22.000			13.05	52.12	26044 5.17		24.45	26660	
		22.00	2200			15.22	52.08	52.088 7.30	9.5024	26.65	2666	
		24.90	11.949			17.41	51.99	9.70	950	28.75	13821	
	11000	27.50		15	25.62	19.38	52.12	11.70				
		1000	15 59.735			21.58	52.13	4752 13.95		13330	31.15	
				+	34.11			4752		3330	28 9.085	
						52.181						
						52.196					23 9	

R 15 28.72 .
R 15 28.88 .

15 28.80 .

A Rouby

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154 | 1 | 3

α Ursae Maj. | α Androm. | β Pegasi

h m s: 10 56 15 | 0 2 8 | 0 7 0

° ′: 0 ′ | 0 ′ | 0 ′

+62 24 | +28 25 | +14 31

0.12621 | 0.12621 | 0.12621

Nov. 14

h m s: 22 56 — | m s: 57 32.6 | h: 0 | h m s: 2 — | m s | h m s: 0 4 31.30 | m s: 4 24.2

			—		36.9			—			33.57	35.604	25.5		
			—		41.2			—			35.70	35.60	26.5		
			—		44.5			—			37.70		28.1		
			—		2031 47.9			—			1802 39.75		1346 30.3		
					31						2.05		346		
+	17.81	3.11	28.67	45.30		57 40.62	+8.34	0.52	5.11	51.13			43.95		7 26.92
	13.36	3.44	3.185	50.08		− 37.32	7.04	0.51	.639	53.47			46.10		+25.62
	8.90	2.48		54.08						—			48.05		
+	4.41	2.44		58.58	3.193		+2.32	0.52		56.20			50.50	52.478	
−	1.40	3.00		3.00	319	58 36.6	−0.00	0.50		0.50	3 32.4		52.70	5248	
	4.44	3.21		7.65		38.4	2.34	0.61		2.95	33.9		54.70	5260	
	8.41	3.47		12.38		39.5	4.69	0.71		5.40	35.4		56.80		
	13.36	3.31		16.67		40.6	7.64	1.01		8.05	36.9		58.85		
	17.84	3.16	6874	21.00		1967 41.6	9.40	.73		10.13	1772 38.6		47230 0.85		
				2874		467					2.72		2.30		
	26.72	3.58	17.55	30.30		58 39.34	14.08	0.67	3.07	14.75	3 35.44		5.35		
	31.17	3.18	3.51	34.35	39.168	− 1 36.04	16.32	0.68	.614	17.10	− 34.81		7.50	9.600	
	35.63	3.53		39.16	3917		18.77	0.53		19.30			9.55	960	
	40.09	3.77		43.86			21.12	0.63		21.75			11.70	105.20	
−	44.68	3.49	9584	48.17		57 40.62	−23.34	0.56	9700	24.10			4800 13.90		7 26.92
				4584		58 39.34				4700	3 35.44		4800	7 52.540	
															+ 25.62
	3.347					.626									
	3.301					.629									

R 48 20.85 · | R 5 48.62 · | R 19 2.28 ·

R 47 44.40 · | R 5 48.52 · | R 19 2.30 ·

5 48.57 · | 19 2.34 ·

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306

α Cophia L.e.

h m s
21 15 41
° ′
117 56

1880
Nov. 15

0.12621

146

2 Leonis

h m s
10 1 56
° ′
+12 33

0.12621

148

3 Leonis

h m s
10 9 57
° ′
+24 1

1.17609 0.12621
9.96064
1.13676

h m s
9 15 —

h m s
15 44.0

h m s
10 2 —

m s
2 43.8

h m s
10 10 13.80

m s
10 13.2

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C

153

154

α Lyrae

β Cas. Maj.

α Cas. Maj.

h m s
10 13 18

h m s
10 54 32

h m s
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° ′
+20 27

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+62 24

1.176090,12621
9.97173
1.14782

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0.12621

h m s
10 13 34.98
36.80
38.95
41.28
19561 43.60
45.61
48.00
50.05
52.40
54.70 56.502
56.78 56.80
59.20 56.75
4.15
3.38
5122 5.56
6.22
9.90
12.18 1.4376
14.48 14.38
16.55 113.50
7188 18.77
21.88 13 56.775

m s
13 20.2
22.0
23.9
25.7
1196 27.8
19.6
13 23.92
+ 32.85
14 25.5
27.3
29.2
31.2
1466 33.4
46.6
14 29.32
− 32.55
13 23.92
14 29.32
+ 32.85
− 32.55
65.49
1.81558
1.14782
2.96340
1.91719
8.95379
58 45

h m s
10 54 34.480
38.78
42.32
46.10
21190 50.50
1.90
57.40
1.40
4.96
8.90
12.80
16.70
20.41
24.20
65475 27.98
2.75
35.30
38.90
43.00
46.75
21427 50.32
1.427

42.380
4238
5.000
12.750
12.75
1262
42.8554
4285
145.23

s m s
54 17.3
19.4
21.6
24.4
1104 27.7
1.04
54 22.08
+ 50.60
11.8
13.4
17.0
19.7
843 22.4
34.3
55 16.86
− 4.18
54 22.08
55 16.86
+ 50.60
− 4.18
54.78

0.12621

h m s
10

+17.81 56.09 506.08 38.28
13.36 56.26 56.23 42.90
5.50 56.22 43.32
+ 4.41 56.19 52.38
4.20 56.10 56.10
4.44 56.26 0.70
5.51 55.86 4.77
13.36 56.14 9.50
17.84 56.36 0615 14.20
5.15
26.72 56.28 280.61 23.00
31.17 56.03 56.12 27.20
35.63 56.37 32.00
40.19 56.31 36.40
44.68 55.62 5890 40.30
890

h m s
56 —
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1987 45.6
4.87
56 39.74
+ 16.45
56.239
56.24
57 50.3
58.5
57.7
1.6
2889 5.8
3.89
57 54.78
−1 1.54
31.780
31.78
58 36.2
37.2
39.0
40.5
1952 42.3
45.2
58 39.04
−1 42.85

B 54 3.88
B 55 26.52
55 26.52
82.64

B 20 23.40
B 21 5.05

B 58 36.02
B 59 —
B 59 46.80
59 46.80
70.78

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166 h

J Ves. Maj.

h m s
11 47 28
° '
+54 22

S1/2621

1880

Nov. 15

		h	m	s		m	s							
+25.43	6.80	11	47	31.37		47	10.0		12	48	42.00		48	14.5
31.85	6.38	33.23		34.63	3.9330		13.5				45.75	49.490		16.3
26.35	6.65	6.646		38.30	38.33		15.6				49.47	49.49		18.9
24.80	6.75			41.95			17.5				53.13			21.8
21.26	6.75		19165	45.70		770	20.4			24745	57.10		959	24.4
			4665				270				4745			459
14.17	6.71	60.12		52.54		47	1540				4.50		48	1918
10.63	6.63	6.680		56.00			+51.27				8.30		+1	40
7.08	6.72			59.64							12.03			
+3.50	6.80			3.30	6.687						16.00	19.649		
−0.70	6.65			6.65	669	49	20.5				19.80	1965	49	16.6
3.53	6.62			10.15			22.0				23.37	1952		18.7
7.04	6.61			13.70			24.2				27.28			22.0
10.63	6.67			17.30			26.1				30.90			24.4
14.19	6.71		68018	20.90		1212	28.4			17684	34.66		1092	27.3
			6018				2.12				8684			92
						49	2424				41.95		49	21.84
						−1	17.57				45.80	49.546		− 2.26
	6.663										49.50	4955		
	6.668										53.35	159.04		
						47	1540			24773	57.101		50	15.5
						49	2424				4773	49 19585		18.3
														21.5
														24.9
													1084	28.2
														84
													50	21.68
													−1	2.10

173

E Ves. Maj.

h m s
12 48 42
° '
+56 37

D1/2621

R 0 3.22 .
R 1 42.45 .
R 1 42.95 .

1 42.70 .
99 48

B 45 1.52 .
B 45 49.32 .
B 46 31.70 .

~~46 10.51~~
68.99

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1880phae.proj.1514

S

Sun e = 44 733

h m s
15 29 39
° ′
−18 58

Nov. 15/16

0,12621

306

α Cephei

h m s
21 15 41
° ′
+62 4

Nov. 16

1.17609 0,12621
9.67066
0.84675

| | | |

1880phae.proj.1514.

153

B Ursæ Maj. Lic.

h m s
22 57 32
° ′
+122 58

0,12621

1880
Nov. 16.

h	m	s		m	s												
22	54	29.80		54	6.6												
		33.72	37.494		9.7												
		37.60	3745		11.7												
		41.15			14.2												
	18727	45.00		585	16.3												
	3747				85												
		52.10		54	11.70												
		56.39			+56.12												
		0.00															
		4.00	7.868														
		8.00	787	55	122												
		11.80	7.77		19.5												
		15.85			21.0												
		19.30			22.2												
	61081	22.77		1048	25.0												
	7081				49												
		30.65		55	2098												
		34.38	38.076		- 13.16												
		38.10	3808														
		41.65	135.53														
	19038	45.66		54	11.70												
	14038		55 7820	55	2078												
				+	56.12												
				+-	13.16												
					69.28												

B 29 4.65 .
B 28 12.48 .

154

d Ursæ Maj. Lic.

h m s
22 56 15
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+117 36

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h	m	s															
22	56	6.21															
		10.56															
		14.95	14.868														
		19.10															
		23.50															
		32.40															
		37.00															
		41.70															
		46.18	50.522														
		50.70	5052														
		55.30															
		59.37															
		3.75															
	45470	8.30															
		470															
		17.45															
		21.85	26270														
		26.05	2627														
		30.80															
	13135	35.17															
		3135		56	50.569												

B 48 43.35 .
B 48 17.68 .
B 47 51.15 .

h	m	s															
				56	44.0												
					47.8												
					51.0												
					53.2												
				2515	55.5												
					15												
				56	5030												
				57	22.3												
					26.4												
					29.3												
					32.9												
				1469	36.0												
					469												
				57	29.38												
				58	5.2												
					8.7												
					11.1												
					14.2												
				579	18.7												
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				58	11.58												

166

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h	m	s															
23	47	26.80															
		30.35	33950														
		34.05	3395														
		37.55															
	16975	41.00															
		1975															
		48.33															
		51.60															
		55.30															
		58.98	2426														
		2.25	243														
		5.88	231														
		9.60															
		13.15															
	56183	16.74															
		2183															
		23.60															
		27.00	30656														
		30.58	3066														
		34.04	124.61														
	15328	38.08															
		3328		48	2.370												

B 51 28.95 .
B 50 53.58 .
B 50 41.20 .

h	m	s															
				46	56.7												
					58.7												
					2.2												
					5.5												
				3108	7.7												
					108												
				47	216												
				+1	0.21												
				47	42.3												
					44.3												
					46.8												
					49.0												
				2345	52.1												
					345												
				47	4690												
					+ 15.41												
				48	50.9												
					53.3												
					55.9												
					58.7												
				2802	1.4												
					302												
				48	56.04												
					-53.67												

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1.17609 0.12621
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3

γ Pegasi

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173

E Ursæ Maj. L.C.

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153				154				329			
β Ursæ Maj. L.C.				α Ursæ Maj. L.C.				α Pegasi			
h m s				h m s				h m s			
22 54 32				22 56 10				22 58 44			
° ′			0,12621	° ′			0,12621	° ′			0,12621
+122 58				+117 36				+14 33			
1880											
Nov. 18											
h m s		m s									
22 54 80.17		54 2.5		22 56 6.63		54 40.0		22 59 0.90		59 19.6	
33.76	37538	5.0		11.00		42.7		3.04	5.156	21.5	
37.18	3754	10.0		14.77		44.6		5.17	516	22.6	
41.40		13.0		19.88	15,132	48.7		7.23		23.8	
18769 45.18		447 14.2		23.88		2289 52.7		2578 9.44		1129 25.4	
3767		447				289		2578		129	
52.90		54 8.94		32.60		56 45.78		13.67		59 22.58	
58.55		+ 58.82		37.42				15.70		−0.33	
0.10				41.75				18.00			
4.10	7851			46.00	50533			20.22	22274		
7.76	785	55 4.7		52.78	5053	57 19.7		22.30	2227	0 2.0	
11.55	7.87	8.0		55.00		22.0		24.48	2224	3.7	
15.70		10.4		59.20		25.5		26.55		5.3	
19.02		17.0		3.90		29.5		28.70		6.9	
61066 23.02		614 21.5		415480 8.15		1318 33.5		20047 30.85		262 8.13	
7066		116		480		318		2047		262	
30.60		55 12.32		17.43		57 2636		35.00		0 5.24	
34.30	38.214	− 4.46		21.70	26206			37.20	39.324	− 42.49	
38.17	3821			26.20	2621			39.35	3932		
41.95	13575			30.80				41.47	4448		
19107 46.05		54 894		13108 34.90		57 45.5		19662 43.60		59 2258	
4107	55 7860	55 1232		3103	56 50,669	48.3		4662	59 22255	0 5.24	
		+ 58.92				52.1				− 0.33	
		− 446				55.7				− 42.99	
		63.38				2611 59.5				43.32	
						111					
						57 5222					

B 29 6.50.
B 28 20.05.

B 48 42.88.
B 48 17.75.
B 48 3.22.

B 46 58.72.
B 47 54.27.
R 47 54.47.
R 47 54.52.
B 47 54.42.
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1880phae.proj.1514.

166 χ Ursæ Majoris

h m s
23 47 28
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1880phae.proj.1514.

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1880phae.proj.1514.

149				153				154			
α Ursæ Maj.				β Ursæ Maj.				α Ursæ Maj.			
h m s				h m s				h m s			
10 15 7				10 57 22				10 56 15			
0 .				0 .				0 .			
+42 6			0.12621	+57 2			0.12621	+62 24			0.12621
10 15 19.00		15 52.8	10 54 34.55		54 23.6	10 56 11.50			56 31.8		
21.65	24446	54.9	38.10	41966	26.9	15.87			35.8		
24.28	2445	57.0	41.88	4197	29.6	20.13	20,226		38.6		
27.30		58.8	45.70		32.7	24.65			40.7		
12223 30.00		2840 0.5	20983 47.60		1486 35.8	28.98			1913 44.4		
2223		340	983		486				413		
35.60		15 5680	57.86		54 29.72	38.35			56 38.26		
38.40			0.70		+42.57	42.90					
41.30			4.80			46.70					
44.05			8.50	12.239		51.47	56000				
46.95	46.395	16 33.0	12.35	1224	55 43.0	56.00	5600		57 48.3		
49.52	4673	35.5	16.00	1234	46.6	0.46			52.4		
52.03		38.0	19.78		48.5	4.92			55.0		
~~55.80~~		40.2	23.46		51.0	9.30			59.6		
57.80		1893 42.6	65015 27.20		2429 53.8	50400 13.90			2798 3.5		
		393	2015		429	5400			298		
8.15		16 3786	35.20	42714	55 48.58	22.65			57 55.96		
6.18	9008		38.80	4271	− 36.29	27.10	31500				
9.20	901		42.80	14468		31.50	3150				
11.87	9346		46.37			35.70					
4.507 14.67		15 5680	21357 50.40		54 29.72	15750 40.55			58 30.2		
4507	15 46.561	16 3786	1357	55 12.290	55 48.58	4750	56 55.931		31.5		
					+ 42.57				32.9		
					− 36.29				34.2		
					78.86				1648 36.0		
									148		
									58 32.96		
B 16 14.40			B 20 32.20			B 58 31.98					
B 16 5442			B 21 −			B 59 25.60					
R 16 54.52						B 59 44.98					
R 16 54.70											
B 16 54.75											
54.60											

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1880phae.proj.1514.

166 χ Urs. Maj.

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1880 Nov. 18

h	m	s		m	s												
11	47	30.60		47	19.2	12	48	41.80		48	19.5	12	56	24.95		56	17.6
		34.20	3.7716		21.8			45.45	4.9156		22.0			27.00	2.9080		19.1
		37.67	37.72		24.1			49.23	4.916		24.9			29.00	2.908		21.0
		41.26			27.2			52.75			27.8			31.15			22.6
	18858	44.85		12 32	30.3		24578	58.55		1245	30.3		14540	33.30		1044	24.1
		3858			232			4578			245			4540			44
		52.03		47	24.64			4.13		48	24.90			37.46		56	20.88
		55.60		+	41.52			8.00		+	54.31			39.50		+	25.09
		59.00						11.60						41.80			
		2.67	6.168					15.80	19.281					43.80	45.968		
		6.25	617					19.35	1928		49 23.7			45.96	45.97		57 15.0
		9.70	6.16					23.05	19.15		27.4			48.14	45.97		16.9
		13.13						26.90			30.7			50.20			18.5
		16.85						30.30			33.4			52.43			20.0
	59551	20.28					17353	34.40		1509	35.7		41371	54.40		929	22.5
		5551						8353			09			5371			429
		27.36						41.72		49	30.18			58.60		57	18.58
		30.70	34602					45.42	49.132		− 10.47			0.70	2.850		− 32.61
		34.70	3460					49.00	4913					2.80	285		
		38.45	13232					52.90	158.29					5.00	91.93		
	17301	41.80		47	24.64		24566	56.62		50	14.5		31425	7.15		56	20.88
		2301	48 6165					4566	49 19215		17.7			1425	56 45.970	57	18.58
				+	41.52						20.5					+	25.09
											23.7					−	32.61
										1036	27.2						57.70
											36						1.76118
										58	20.72						1.16710
										− 1	1.51						2.92828
																	1.88564
																	8.95736
																	51047

R 0 13.92

B 45 8.42
B 46 42.78
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~~46 37.94~~
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B 44 36.08
B 45 52.68
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R 45 53.02
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173 ε Urs. Maj.

h m s
12 48 42
0 ,
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0.12621

176 ε Virginis

h m s
12 56 9
0 ,
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1.17605
9.99101
1.16710

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1880phae.proj.1514.

587

α Virginis

h m s
13 18 49
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S

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h m s
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Nov. 18/19

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	173		176		587	
	ε Ursae Majoris		ε Virginis		α Virginis	
	h m s		h m s		h m s	
	12 48 42		12 56 9		13 18 49	
	° ′		° ′		° ′	
	+56 37	0,12621	+11 37	0,12621	−10 32	0,12621
	1880 Nov. 20					
h	m s	m s				
12	—	49 11.5	12 58 24.29		13 19 3.92	
	—	13.6	26.35		6.00	8.084
	—	16.0	28.40		8.00	8.08
	—	19.5	30.55		10.02	
	—	831 22.5	32.60		4042 12.48	
		3.31			4042	
+1.500	18.68 49 3.68	49 1662	37.00		16.60	
11.25	18.35 166.81 7.10	+ 1.91	39.00		18.70	
7.53	18.53 18.534 11.00		41.00		20.75	
+3.71	18.51 14.30 1.8537		43.20 45299		22.82 24.952	
−0.90	18.57 18.57 1854	50 29.0	45.27 4530	57 5.3	25.00 2495	19 44.3
3.74	18.51 22.25	31.5	47.47	7.0	27.00 25.00	45.8
7.50	18.50 26.00	34.1	49.50	8.5	29.00	47.5
11.25	18.65 29.90	37.7	51.50	9.8	31.30	49.0
15.02	18.51 16683 33.53	1733 41.0	40769 53.75	417 11.1	22457 32.40	2376 51.0
	7683	2.33	4769	417	4457	3.74
	—	50 3466	57.95	57 8.34	37.60	19 4.752
	—	−16.13	57.95 2090		39.87 41.924	− 22.55
	—		2.00 209		41.90 4192	
	—		4.25		44.00 0.000	
	—	49 1662	6.30 31045		20762 46.25	
		50 34.66	1045	56 45.280 57 8.34	962 19 24.975	19 4.752
						− 22.55
18.512						
R 45 44.22			R 45 40.40		R 53 6.92	
R 45 47.48			R 45 40.30		R 53 6.58	
R 46 43.12						
	46 15.30		45 40.35		53 6.75	

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1880phae.proj.1514.

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1.17609 0.12621
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Nov. 21

15	49	22.56			57		40.95		10	54	33.00		54	13.0			
		24.60	2.6814				43.23	4.5376			36.57	40.400		16.0			
		26.80	2681				45.30	4538			40.05	4040		18.2			
		28.95					47.55				44.36			20.9			
	13407	31.76				22688	49.85			20200	48.02			928 24.7			
		3407					2688				200			428			
		35.08					54.28				55.54		54	15.56			
		37.75					56.54				59.67			+52.37			
		40.02					58.76				3.45						
		42.20	4.1331				1.00	3.166			7.50	10990					
		44.30	4439				3.20	317			10.70	1099	55	48.4			
		46.55	4445				5.32	310			15.00	1087		49.6			
		48.58					7.62				18.05			51.5			
		51.00					9.77				22.50			56.2			
	39948	53.30				36649	12.00			63891	26.50			26.26 58.9			
		3898					2849				891			126			
		57.75					16.45				33.85		55	52.52			
		59.90	2.086				18.60	2.0820			37.40	41.344		−41.59			
		2.18	209				20.87	2082			41.37	4134					
		4.20	8890				22.93	12620			45.10	141.74					
	31043	6.40				10410	25.25			20672	47.00			54 1856			
		1043	49	44420			410	52 3.135			672	55 10930		55 5252			
														+ 52.37			
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														93.96			
														1.97294			
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154

α Ures. Maj.

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1880
Nov. 21

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α Virginis

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9.99262
1.16871

Nov. 21

13	19	3.80			18	58.5			15	53	34.57			54	37.2	56	—			55	27.6
		5.80	7.890			0.3					37.00	39.050			39.0		—				29.6
		7.80	789			2.4					38.95	3905			41.4		—				31.0
		10.00				4.0					41.17				43.5		—				33.0
	3945	12.05			3106	5.4				19525	43.56			2062	45.1		—			1552	34.0
		3945				106					4525				62						52
		16.23			19	2.12					47.60			54	41.24	140.40	6.72	+ 6.80	15.52	55	31.04
		18.30				+22.50					50.05			+ 6.60	− 44.52	15.655	9.00			+1	44.74
		20.40									52.25			4.40	15.68		11.16				
		22.80	24.640								54.84	56684		+ 2.18	15.56		13.57	15658			
		24.70	2464		20	5.8					56.70	5668		− 0.20	15.75		15.80	1566			
		26.70	2460			7.3					58.88	56.76		2.19	15.80		17.85				
		28.88				8.8					1.00			4.40	15.66		20.02				
		31.00				10.3					3.86			6.60	15.62		22.20				
	22176	32.95			439	12.0				51016	5.78			8.81	15.60	14092	24.60				
		4176				439					6016				15.79		5092				
		37.13			20	878					10.00			13.20	15.40	78.89	29.10				
		39.32	41304			−44.16					12.30	14470		15.40	15.88	15.778	31.28	33396			
		41.30	4130								14.50	1447		17.61	15.69		33.30	3340			
		43.30	4919								16.70	11352		−14.81	15.79		35.60				
	20652	45.47			19	212				72.35	18.85			54	4124	16698	37.70	−2207	15.63	55	3104
		652	19	24620	20	878					2235	53	56720	−	44.52		1698				
						+ 22.50															
						− 44.16															
						66.66															
						1.82387															
						1.16871															
						2.99258															
						1.94734															
						8.95476															
						5 8 56															

15.716
15.699

B	52	7.18						B	22	57.32				B	56	35.42			
B	53	35.75						B											
R	53	36.72																	
R	53	35.82																	
	53	35.76																	
		88.58																	

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1880phae.proj.1514.

	173		30		32	
	E Chs Maj. L.c.		R Orietis		K Androm.	
	h m s		h m s		h m s	
	0 48 42		1 47 58		1 56 29	
	° ′	0,12621	° ′	0,12621	° ′	1.17609 0,12621
	+123 23		+20 13		+41 45	9.87277
						1.04886
1880	Nov. 22.					
h m s		m s		h m s		h m s
0 48 26.34		48 13.2	1	48 13.97	47 59.2	1 56 41.30		56 34.2
40.04	43.850	16.0		16.03	18370	0.9		44.00	46766	36.5
43.90	4385	18.8		18.48	1837	2.4		46.70	4677	38.3
47.70		22.0		20.50		3.7		49.53		41.6
21925 51.37		939 23.9		9185 22.87		3120 5.8		23383 52.80		1938 48.2
1925		439		4185		120		2383		38
58.70		48 18.78		27.10		48 2.40		57.75		56 40.76
2.95		+ 55.16		29.38		+ 33.53		0.52		+ 28.10
6.40				31.53				3.36		
10.20	13.941			33.78	35929			6.20	8834	
14.04	1394	49 52.5		35.95	3593	49 3.9		8.90	883	57 42.4
17.84	13.94	58.0		38.05	3594	10.7		11.49	889	44.8
21.30		58.6		40.30		13.0		14.80		46.6
25.19		2.4		42.60		15.0		17.02		48.3
66547 28.85		2949 5.4		32336 44.67		646 17.0		61951 19.97		2328 50.7
3547		449		5336		146		7951		328
36.37		49 58.98		49.04		49 12.92		25.48		57 46.56
40.18	44.030	− 45.04		51.30	53522	− 36.49		28.18	31022	− 37.70
44.05	4403			53.60	5352			31.00	3102	
48.00	147.88			55.77	7189			33.85	137.79	
22015 51.55		51 22.5		26761 57.90		48 240		15511 36.60		56 38.76
2015	49 13940	24.1		1761	48 35.935	49 1292		4571	57 8860	57 4656
		26.0				+ 33.53				+ 30.10
		28.1				− 37.09				− 37.96
		1320 31.3				76.62				68.06
		32.0								1.83289
		51 2640								1.04886
		− 2 12.46								2.88175
										1.82478
										8.94303
										50 45
B 4 44.90			B 6 38.15		B 35 17.98	
B 3 27.00			B 7 8 6.32		B 36 25.12	
B 3 10.95			R 7 6.42		R 36 24.65	
			R 7 6.55		R 36 24.58	
			B 7 6.58			
			7 6.47		36 24.78	
					66.80	

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1880phae.proj.1514

33

α Arietis

h m s
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+22 53

0.12621

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α Virginis

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1.17609
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182

γ Bootis

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1880
Nov. 22/23

h	m	s		m	s														
15	57	48.00		58	57.0	0	—		59	46.0									
		50.20	52434		58.8		—			47.4									
		52.37	5243		0.6		—			49.0									
		54.70			2.8	58.08	13.45	+15.43	28.88	50.5									
	26217	56.90		3026	3.9	29.04	15.98	13.22	25.20	2449	52.0				3518	11.30		2789	58.1
		1217			26						449					3518			289
		1.18		59	0.52	262.56	20.36	8.81	29.17	59	48.98					15.60		18	54.78
		3.50		+6.61	−50.39	29.173	22.58				+40.23					17.53			+ 28.10
		5.75		4.90	29.12		24.72									19.90			
		8.00	10168	+2.17	29.15		26.98		29180							21.80	23903		
		10.18	1017	−8.00	29.23		29.23		2918							23.90	2390	19	51.9
		12.40	1010	2.20	29.27		31.47									26.00	2386		53.2
		14.70		4.41	29.09		33.50									28.00			54.5
		16.80		6.61	29.19		35.80									30.20			55.8
	9151	19.00		8.83	29.15	6262	37.98								21513	32.20		2724	57.0
		151					8262									3513			224
		23.37		13.22	29.33	146.80	42.53									36.46		19	54.48
		25.57	27768	15.42	29.23	29.36	44.65	46910								38.48	40192		− 30.60
		27.70	2777	17.62	29.28		46.90	4691								40.68	4069		
		30.02	14020	19.38	29.77		49.15									42.90	4773		
	13884	32.18		59	0.52	23455	51.30	−22.11	29.19	59	48.98				20346	44.95		18	55.78
		3884	58 10135	−	50.39		3455									346	19 23880	19	54.48
																		+	28.10
																		−	30.60
																			58.70
																			1.768604
																			1.16871
																			2.93735
																			1.87616
																			8.93881
																			45751

29.191
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B 35 15.08

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Nov. 23

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182

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166 | 1 | 3

α Ursæ Maj.	α Androm.	β Pegasi
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11 47 28	0 2 8	0 7 0
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+54 22	+28 25	+14 31
0,1262 21	0,1262 21	0,1262 21

1880 Nov. 25

h	m	s	m	s												
11	47		47	50.2	0	2	21.00		2	8.2	0	7	15.10		7	10.0
				52.2			23.37	29.694		10.3			17.30	17310		11.7
				54.2			25.70	2569		11.6			19.25	1931		13.6
				56.3			28.00			13.3			21.40			14.8
			2719	57.0		12847	30.40		586	15.2		9655	23.50		664	16.3
				219			4847			86			3655			164
+14.17	0.57	3.620 46.40	47	54.38			35.00		2	11.72			27.88		7	13.28
10.63	0.53	0402 49.90		+6.02			37.63			+32.83			30.00			+23.11
7.08	0.41	53.33					39.98						32.00			
+3.30	0.35	56.80	0409				42.18	44576					34.30	36354		
-0.00	0.60	0.60	041		48		44.67	4458					36.84	3638		
3.53	0.37	3.90		1.3			46.92	4452					38.46	3640		
7.04	0.26	7.35		3.3			49.20						40.70			
10.63	0.25	10.88		5.5			51.60						42.80			
14.19	0.28	54368 14.47		3177 8.6		40118	54.00					32746	44.98			
		368		177			4118						5746			
			49	3.54			58.78						49.15			
			−1	3.14			1.00	3350					51.30	53498		
							3.37	335					53.57	5350		
							5.70	8904					55.67	7281		
			47	5438		31675	7.95		2	11.72		26749	57.80		7	13.28
			49	354			1675	2 44550		+32.83			1749	7 36.390		+23.11

0.402

R 50 40.78 · R 54 11.98 · R 48 54.35

R 49 45.15 · R 54 12.40 · R 48 54.45

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173

Ellis. Maj. L.C.

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12 48 42
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173

Ellis. Maj.

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	12	48	35.60	+37.62	13.22	48	23.2	12	48	39.80		48	36.7	13	19	2.57		19	0.0
+33.75	12.75	64.52	39.00	42878			26.4			42.70	46.512		39.9			4.50	6644		1.7
38.1	12.93	12.904	42.92	4288			29.5			46.48	4659		43.0			6.60	664		3.1
26.25	12.75		46.50				31.2			50.38			45.4			8.65			5.3
22.50	12.87	21439	50.37			1450	34.7		23296	54.00		2145	49.5		3322	10.90		169	6.8
		1439					450			3256			145			3322			169
19.02	12.87	115.62	57.85			48	29.00			1.00		48	42.90			15.00		19	3.38
11.25	12.85	12.846	1.60				+43.87			5.00			+33.64			16.90			+19.97
7.50	12.76		5.26							9.20						19.00			
+3.74	12.74		9.00	12840						12.90	16.506					21.20	23363		
−6.40	12.85		12.85	1284		50	7.0			16.55	1651					23.45	2336		
3.71	12.79		16.50				9.5			20.20	1638					25.45	2334		
7.45	12.96		20.45				12.0			24.10						27.67			
11.25	12.95		24.20				14.9			28.10						29.90			
−15.00	12.85	65556	27.85			612	17.8		14855	31.50					21027	31.70			
			2556				112			5853						3027			
			—			50	12.24			38.78						35.87			
			—				−59.37			42.80	46566					38.03	40040		
			—							46.50	4657					40.00	4004		
			—							50.25	15316					42.00	46.68		
			—			48	2900		23283	54.40		48	4290		20020	44.30		19	3.38
						50	12.24			3283	49 16.545					020	19 23350		
													+ 33.64						+ 19.97

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12.867

R 4 23.48.
R 3 5.25.

R 45 16.30.
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R 51 58.62.
R 51 41.02.

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3

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1880 Nov. 27

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173

Ellis. Maj. L.C.

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1880
Nov. 29

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1880phae.proj.1514.

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	δ Arietis		E Ceti		S Ceti	
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	+22 33		−21 34		−15 50	
1880						
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h m s		m s	h m s	m s	h m s	m s
2 0 35.00		0 24.4	12 3 4.97		12 22 48.00	
37.38	3.9596	25.9	7.25	9.452	50.20	52.262
39.54	3960	27.4	9.40	9.45	52.35	5226
41.90		28.8	11.68		54.29	
19798 44.18		1368 30.3	4726 13.96		26131 56.47	
4798		368	4726		1131	
48.60		0 27.36	18.30		0.70	
50.81		+ 30.18	20.46		2.96	
53.10			22.70		5.00	
55.30	57.540		24.90	27.152	7.28	9.384
57.50	5754		27.18	2.715	9.50	938
59.80	5754		29.38	2726	11.70	943
2.00			31.50		13.60	
4.25			33.90		15.72	
81786 6.50			24437 36.05		8446 18.00	
6786			6437		8446	
10.97			40.60		22.40	
13.17	1.5.476		42.78	45.072	24.47	26.606
15.30	1548		45.00	4507	26.55	2661
17.74	115.08		47.30	5452	28.81	138.87
7738 20.00		0 27.36	22536 49.68		13303 30.80	
2738	0 57540	+ 30.18	2536	3 27.205	3303	23 9.405

	m s		m s		m s
	3 50.16		3 46.5		23 35.0
−	22.96		48.4		36.6
			50.0		38.0
			51.9		39.5
	2508 54.0				1905 41.4
	08				405
					23 38.10
					− 28.70
	3 50.16				23 38.10
−	22.96				− 28.70

R	25 22.70	R 17 12.58	R 11 32.28
R	25 22.78	R 17 12.75	R 11 32.28
	25 27.74	17 12.66	11 32.28

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1880phae.proj.1514.

585

B Carrie

h m s
12 28 2
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172

J Virginis

h m s
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173

Elles. Maj

h m s
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h	m	s		m	s	h	m	s		m	s	h	m	s		m	s
12	27	12.43				12	34	44.25				12	47	20.75			
		14.77	17054					46.32						23.50	26098		
		17.15	1705					48.40						25.34	2610		
		19.28						50.46						28.50			
	8527	21.64						52.54					18049	32.40			
		3527												3049			
		26.02						36.66						38.03			
		28.46						58.78						41.40			
		30.50						0.80						45.80			
		32.70	35003					3.00	4988					49.20	53090		
		35.00	3500	27	53.8			5.00	499	35	35.7			53.20	5309	49	21.7
		37.16	3499		55.6			7.03			37.3			57.00	5459		24.0
		39.44			57.7			9.27			38.9			0.58			26.0
		41.75			59.0			11.13			40.3			4.40			28.4
	31503	44.00		2868	0.7		58489	13.22		1944	42.2		47781	8.00		1311	31.0
		4503			368			4489			444			2781			311
		48.40		27	57.36			17.42		35	38.88			7.65		49	26.22
		52.85	52930		− 22.37			19.30	21.448					19.28	23090	− 1	32.38
		53.00	5293					21.36	2145					23.22	2309		
		55.22	69.98					23.56						26.70	109.19		
	26465	57.48					10724	25.60					11545	30.60			
		1465	27 34995	27	57.36			724	35 4953	35	3888			1545	47 53840	49	2622
					− 2237												− 92.38

R	3	55.90	·	R	−	3.45	·	R	45	3.52	·
R	3	55.95	·	R		3.52		R	45	31.42	·
	3	55.92	·			3.48			45	31.42	·

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587

α Virginis

h m s
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η Bootis

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1880

Nov. 29

h	m	s		m	s	h	m	s		m	s
13	18	1.00		17	52.7		49	6.38		48	58.2
		3.20	5286		54.3			8.45	10692		59.6
		5.18	529		55.8			10.66	1069		1.8
		7.40			57.5			12.97			4.0
	2643	9.65		2793	59.0		5346	15.00		3091	5.5
		2643			293			346			91
		13.84		17	5586			19.45		49	182
		15.96			+26.36			21.68			+26.33
		18.00						23.77			
		20.15	22257					26.00	28147		
		2226	2226					2820	2815		
		24.40	2218					30.46	2815		
		26.43						32.31			
		28.57						34.68			
	20031	30.70					25332	36.80			
		2031						7332			
		35.00						41.38			
		36.90	39074					43.45	45548		
		39.00	3907					45.50	4560		
		41.17	4436					47.66	5629		
	19537	43.30		17	5586		27799	50.00		49	182
		4537	18 22220		+ 26.36			2799	49 28.150		+ 26.33

R 51 53.75 ·
R 51 54.05 ·

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1880phae.proj.1514.

166

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16 28 54
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1880
Nov. 29/30

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23194 50.80
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2.00 4.190
4.20 419
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57771 13.22
3771
17.52
19.80 21978
21.94 2198
24.17 12837
10989 26.46
989 28 41.90

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30 2.50
4.50 6816
6.73 682
9.00
3408 11.35
3408
15.70
18.04
20.26
22.50 24706
24.90 2471
27.00 2467
29.00
31.30
22235 33.65
4235
38.05
40.17 42532
42.70 4253
44.74 4935
21266 47.00
1266 30 24.90
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0,12621

+35.53
31.88
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59.13 23

47 23.60
293.45 26.75 30.332
58.650 30.36 3033
33.57
15166 37.38
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14.19
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57.86
58.76
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529.96 44.67
58.884 48.14
5180
5326 58.878
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Nov. 30

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Nov. 30

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0	2	19.53		2	13.5		0	48	34.15	37.62 11.77	48	27.6		1	17	52.90		17	53.3
		21.83	24.196		15.5	+33.74	11.71	57.99	37.97	41.568		30.2				57.00	1.200		58.0
		24.20	24.20		17.4	30.02	11.48	11.595	42.46	41.57		31.9				1.55	1.29		0.4
		26.50			19.0	26.27	11.63		45.36			34.3				5.50			3.3
12098		28.92		860	20.6	22.50	11.40	20784	48.90		1609	36.9		30645		9.50		3043	7.3
2098				360					7.84			1.09				6.45			4.3
		33.60		2	17.20	15.00	11.46	102.90	56.45		48	32.18				17.30		18	08.6
		36.00		+25.72		11.25	11.45	11.433	0.20			+39.31				21.88		+33.13	
		38.20				7.53	11.50		3.97							25.80			
		40.48	42.899			+3.71	11.36		7.65	11.426						29.82	33.970		
		42.78	42.90			−0.00	11.30		11.30	11.43	50	11.2				33.70	3397		
		45.16	42.94			3.74	11.19		14.93			13.1				38.18	3401		
		47.62				7.50	11.48		18.98			15.5				42.38			
		49.95				11.26	11.74		22.90			17.7				46.22			
38609		52.30				15.02	11.43	64283	26.45		780	20.5		30573		50.45			
2609									12.83			2.80				3.573			
		56.90							—		50	15.60				58.45			
		59.30	1.692						—		−1	4.11				2.45	6.730		
		1.75	169			11.574			—							6.90	673		
		4.15	85.89			11.492			—							11.85	6602		
30846		6.36		2	17.20				—		48	32.18		33365		15.00		18	08.6
846	2	42.920		+	25.72						50	15.60				3.365	18 33.190	+	33.13

R 54 27.00.
R 54 27.15.

54 27.07.

α Ursæ Maj. L.C.

h m s
12 48 42

° ′
123 23

0,12621

R 4 23.45.
R 3 6.92.

Mass.

h m s
1 17 35

° ′
+59 36

0,12621

R 44 8.90.
R 44 8.75.

44 8.82.

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1880phae.proj.1514

S

Sun -

16 37 34

° ' "

-21 54

01126 21

1880

Dec. 1/2

h	m	s		m	s	m	s		
16	35	20.90		36	1.90	37	41.32		
		23.00	25.310		2.04		43.41		
		25.28	25.31		2.17		45.60		
		27.55			2.34		48.18		
	12655	29.82			1094 2.49		50.37		
		26.55			94				
		34.00		36	21.88		54.78		
		36.38			- 38.72		57.02		
		38.70					59.25		
		40.95	43.127				1.60	3.762	
		43.15	4313				3.74	3.76	
		45.38	4320				6.03		
		47.60					8.24		
		49.93					10.45		
	38814	52.05				5/386	12.75		
		28.14					3.386		
		56.63					17.36		
		58.83	1092				19.30	21678	
		1.00	109				21.78	2168	
		3.30	8640				23.85		
	30546	5.70		36	2188	10839	26.10		
		546	35 43165				839		
					- 38.72				

46 7.20

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S

Sun. C = 44 64.7

3

J Pegasi

| h | m | s | | |

1880phap.proj.1514

173

E Ulrs. Maj. L.C.

h m s
12 48 42
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D, 12621

30

B Ariels

h m s
1 47 38
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+20 13

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32

J Andrew.

h m s
1 56 29
° '
+41 45

D, 12621

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1880phae.proj.1514.

33 α Arietis					582 ε Ceti					584 S Ceti				
h m s					h m s					h m s				
2 0 21				0.12621	12 3 54				0.12621	12 23 27				0.12621
° ′					° ′					°				
+22 53					−21 54					−15 50				
1880 Dec. 7.														
h m s		m s		h m s			m s		h m s			m s		
2 0 34.02				12 4 4.00					12 23 47.20					
36.17	38.410			6.15	8.420				47.00	51.192				
38.32	3841			8.35	842				51.03	5119				
40.54				10.60					53.25					
19205 43.00				4210 13.00					25596 55.48					
4205				4210					596					
47.37				17.15					0.30					
4260				19.48					2.00					
52.00				21.80					4.48					
54.00	56.353			24.00	26192				6.30	8.370				
56.38	5635	1	21.7	26.10	2619	5	6.1		8.20	837	24	33.6		
58.58	56.31.		23.0	28.55	26.26		7.4		10.28	836		35.0		
0.80			24.7	30.85			9.1		12.42			36.5		
3.15			26.3	32.80			10.4		14.55			37.8		
50718 5.30		1237	28.0	23573 35.00		457	12.7		7533 16.80		1822	39.5		
5718			237	5573		457			7533			32.2		
9.75		1	2474	39.50		5	9.14		21.00		24	36.44		
11.90	14.200		−28.41	41.90	44100		−42.92		23.27	25532		−28.08		
14.25	1420			44.03	4410				25.65	2553				
16.50	11261			46.40	5252				27.72	13672				
7100 18.60				22050 48.67					12766 30.02					
2100	0 56330	1	2474	2050	4 26225	5	9.14		2766	24 8.365	24	36.44		
			−28.41				−42.92					−28.08		
R 27 33.58				R 17 34.40					R 11 29.48					
R 27 33.92				R 17 34.55					R 11 29.68					
27 33.75				17 34.47					11 29.58					

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1880phae.proj.1514.

173

Ellis. Maj.

h m s
12 48 42
o ′
+56 37

0.12621

1880
Dec. 8

h	m	s		m	s
12	48	36.75		48	57.5
		40.53	41.378		2.0
		44.48	4438		5.0
		48.10			4.4
	22189	52.03		3212	9.3
		2189			212
		59.55		49	4.24
		3.30			+10.15
		7.00			
		10.70	14426		
		14.40	1443	50	0.0
		18.16	1435		1.6
		21.65			3.3
		25.67			5.7
	66983	29.40		199	9.3
		3983			199
		37.10		50	3.98
		40.40	44310		−49.54
		44.20	4431		
		48.10	148.69		
	22155	51.75		49	4.24
		2155	49 14.370	50	3.98
				+	10.15
				−	49.59
					39.74

R 46 22.00
R 46 22.35

46 22.17

S

Sun - @ = 44 61.9

h m s
17 8 10
o ′
−22 53

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Dec. 8/9

h	m	s		m	s	m	s		m	s
17	6	55.30		7	5.45	9	16.90		8	33.3
		57.55	59.610		57.0		17.18	21446		35.1
		59.50	5961		57.0		21.38	2145		37.1
		1.80			1.0		23.52			38.5
	29805	3.90		2945	3.0	10723	25.95		1839	39.9
		4805			445		723			339
		8.65		7	58.90		30.60		8	36.78
		10.80			−41.27		32.80		+1	2.74
		13.12					35.00			
		15.50	17686				37.30	39.277		
		17.95	1769				39.42	3948		
		20.00	1757				41.55	3956		
		22.24					43.96			
		24.30					46.18			
	15917	26.58				35529	48.48			
		6917					8529			
		31.00					53.20			
		33.37	35534				55.50	57670		
		35.60	3553				57.55	5767		
		37.50	155.14				59.90	7912		
	17767	39.90		7	58.90	28835	2.20		8	36.78
		2767	7 17630		−41.27		3835	9 39520		+62.74

B 57 32.95

B 30 57.62

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153 Blue Majolica

h m s
22 54 32
o ′
+122 38

0.12621

Dec. 9

h	m	s		m	s	h	m	s		m	s	h	m	s		m	s
22	54	25.47		53	42.5	22	56	2.00		56	23.3	0	7	11.90		7	0.9
		29.30	33134		46.8			6.30	18770		26.3			13.90	16.094		2.6
		33.00	3313		50.0			10.95	1077		28.9			16.15	1609		4.3
		36.90			52.0			15.00			32.0			18.15			5.7
	16567	41.00		2459	54.6		5385	19.60		1467	36.2		8047	20.37		208	7.3
		1567			459			385			46.4			3047			208
		48.40		53	49.18			28.57		56	29.34			24.65		7	4.16
		52.23		+1	14.36			33.00			+17.04			26.78			+29.06
		56.00						37.65						29.00			
		59.67	3569					41.75	46372					31.10	33256		
		3.65	357	55	16.9			46.40	4637	57	37.0			33.37	3326	8	2.4
		7.20	351		20.3			50.78	4640		40.2			35.40	33.19		3.5
		11.17			21.8			55.34			43.4			37.50			4.9
		15.60			25.7			59.70			47.4			39.65			6.5
	57212	18.80		1137	29.0		47735	4.16		2189	50.9		29930	41.85		250	7.7
		3212			137			5735			189			2930			250
		26.25		55	22.74			13.10		57	43.78			46.00		8	5.00
		30.00	33890		−19.20			17.60	22030		−57.40			48.14	50292		−31.78
		33.80	3389					22.00	2203					50.28	5029		
		37.55	12702					26.45	9280					52.48	6638		
	16945	41.85		53	49.18		11015	31.00		56	29.34		25146	54.56		7	4.16
		1945	55	3540	55	22.74		1015	56	46.385	57	43.78		146	7	33225	8	5.00
					+	74.36					+	17.04					+	29.06
					−	19.20					−	57.40					−	31.78
						93.56						74.44						60.84
																		1.78419
																		1.16200
																		2.94619
																		1.89387
																		6.94768
																		53.58

3 Vegae

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0.12621

1.17609
9.98591
1.16200

B 29 23.55 -
B 29 13.62 -

B 48 51.30 -
B 48 6.05 -

B 48 48.72 -
B 50 7.12 -
R 50 7.07 -
R 50 6.95 -
B 50 7.02 -
50 7.04 -
78.32

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1880phae.proj.1514.

173 Eq. Hours

Eltas. Proj. Sol.

12

h m s
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1880 Dec. 9

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30

β Aristæ

h m s
1 47 58
0 ' "
+20 13

1.17609 0,12621
9.97238
1.14847

32

χ Andromedæ

h m s
1 56 29
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+41 45

1.17609 0,12621
9.87277
1.04886

h	m	s			m	s	h	m	s		m	s	h	m	s		m	s	
0	48	32.95			47	51.0	1	48	9.65		48	6.8	1	56	36.72			56	21.6
		3660	40364			53.10			12.00	14100		8.8			39.48	32,214			23.6
		4020	4036			55.5			14.20	14.10		10.1			42.30	4221			25.7
		4415				57.8			16.25			12.3			44.95				27.7
	20182	47.92			2783	1.0		7050	18.40		519	13.9		21107	47.62			1286	30.0
		182				2.83			20.50			19			107				486
		55.50			47	59.66			22.73		48	10.38			53.32			56	25.72
		59.18			+1	14.68			25.00			+21.20			56.00				+38.62
		2.91							27.37						58.70				
		6.70	10384						29.40	31.582					1.60	4332			
		1040	1038		49	21.9			31.50	3158	48	55.6			4.35	433		57	41.3
		1420	1031			24.9			33.70	3159		0.3			7.10	4.36			43.1
		1770				27.0			35.95			1.6			9.90				45.2
		2150				29.4			38.14			3.1			12.53				47.4
	63346	25.38			1362	33.0		28424	40.45		3080	44		57899	15.47			2267	49.7
		346				36.2			1424			80			3899				267
		3280			49	27.24			44.70		49	1.60			20.70			57	45.34
		3650	40250			−16.90			46.90	49080		−30.02			23.80	26.516			−41.00
		4015	4025						48.00	4908					26.60	2652			
		4400	14061						51.32	6318					29.30	128.73			
	20125	4780			50	13.7		24540	53.48		48	10.38		13258	32.18			56	25.72
		125	49	10.345		15.5			4540	48	31585	49	1.60		3258	57	4345	57	45.34
						21.0						+	21.20					+	38.62
						24.0						−	30.02					−	41.00
					1007	26.5							51.22						79.62
						07							1.70944						1.90102
					50	20.14							1.14847						1.04886
					−1	9.80							2.85791						2.94988
													2.08707						1.89862
													9.22956						8.94874
													9 3743						5 4 42

B 4 54.25 ·
B 3 45.75 ·
B 3 6.50 ·

B 6 56.15 ·
B 8 58.14 ·
R 8 58.30 ·
R 8 58.30 ·
B 8 58.32 ·
8 58.35 4
12220

B 35 8.68 ·
B 36 28.05 ·
R 36 27.68 ·
36 27.86 ·
79.18

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33

α Arietis

Koall's Star No. 5

Koall's Star No. 11

h	m	s			m	s	h	m	s		m	s	h	m	s		m	s
2	0	33.03			0	19.5	2				10	42.3	2				13	59.2
		35.30	37.546			21.5						44.8						1.9
		37.50	37.55			23.2						47.0						5.5
		39.90				24.8						50.0						9.2
	8773	42.00			1,59	26.9					2364	52.3					3289	13.1
		37.73				1.59						364						2.89
		46.60			0	23.18	+1.93	32.96	10	18.03	10	47.28	+15.06	3.46	11	48.70	14	5.78
		49.00				32.38	11.20	33.20	249.42	22.00		− 14.01	11.30	3.70	31.84	52.40	− 2	2.24
		51.18					7.46	33.51	33.26	26.05			7.52	3.45	3.543	55.93		
		53.15	55.603				+3.64	33.35		29.66	33.276		+3.72	3.59		59.87	3.550	
		55.60	55.60		1	23.8	−0.80	33.20		33.20	3328		−0.80	3.65		3.65	355	
		57.70	55.53			25.8	3.72	33.18		36.90			3.75	3.65		7.40		
		0.70				27.8	7.47	33.11		40.58			7.53	3.47		11.00		
		2.50				29.5	11.20	33.36		44.56			11.30	3.70		15.00		
	50043	4.50			1380	31.1	−14.95	33.53	2.948	48.50			15.04	3.22	7195	18.30		
		5043				380				2.948						3.195		14 5.78
		8.98			1	27.60												
		11.32	13.500			− 32.04												
		13.46	1350															
		15.40	11.05															
	6750	18.05			0	23.18						10 47.28						
		1750	0	55565	1	27.60												
					+	32.38												
					−	32.04												
						6.42												
					1.80902													
					1.14049													
					2.94951													
					1.88241													
					8.93290													
					4 53.51													

B	26	22.65	·															
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R	27	39.02	·															
R	27	38.85	·															
B	27	39.05	·															
	27	38.93	·															
		76.28																

Mouly

B	35	50.70	·															
B	36	37.58	·															

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166 — X Urs. Maj.

h m s
11 47 28
o ' 1.17609 0,12621
+54 22 9.76537
0.94146

1880 Dec. 12

h	m	s		m	s	h	m	s		m	s	h	m	s		m	s
11	47	25.22		46	57.4	12	4	—	4	41.5		12	48	33.55		48	14.8
		28.78	32.328		2.6			—		43.5				39.32	43.150		18.1
		32.28	3233		4.5			—		45.5				43.30	4315		20.4
		35.90			6.8			—		47.0				46.85			22.7
	16164	39.46		3223	9.0			—	2262	48.7		21575		50.73		1015	25.5
		1164			2.23					26.2				1575			15
		46.45		47	44.6			—	4	45.24				58.20		48	20.30
		50.00			+56.15			—		−20.04				1.90			+ 52.94
		53.50						—						5.75			
		57.00	0.608					—						9.60	13.261		
		0.68	061	49	20.0									13.20	1326	49	46.2
		4.15	062		20.8			—						17.00	1323		48.7
		7.78			21.5	−4.43	25.53	75.67	30.00					20.82			51.4
		11.18			22.0	6.67	25.03	25.223	31.70					24.58			54.0
	54547	14.73		10270	22.4	8.91	25.04		34.00			65935		28.30		2575	57.2
		547			40									2.935			7.5
		21.70		49	21.40	13.35	25.30	125.92	38.65					35.74		49	51.50
		25.40	25.914	−1	20.76	15.57	25.31	25.184	40.88	42996				39.60	43302		− 98.26
		28.97	2891			17.80	25.30		43.00	42.00				43.37	4330		
		32.50	12124			20.02	25.73		45.15					46.95	14645		
	14457	36.00		47	44.6	−22.32	24.98	1498	47.30		4	4524		21651	50.85	50	29.0
		4457	48 .0615	49	21.40				1498					1651	49 13.245		32.3
				+	56.15												35.7
				−	80.79	25.209											38.7
					136.94	25.199										1773	41.6
				2.13646												50 3546	27.3
				0.94146												0.91664	
				3.07792												−1	22.22
				2.02304													
				8.94512													
				5 2 11													

B 59 56.95 '
B x56 42.40 :?

56
8 42.40
105.45

B 17 17.25 '
R 17 17.10 '
R 17 17.00 '
B 17 16.98 '
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17 17.33

B 45 5.05 '
B 46 13.10 '
B 46 43.65 '

46 28.38
8.33

582 — E Cowi

h m s
12 8 54 0,12621
o ' −21 57

173 — E Urs. Maj.

h m s
12 48 42 1.17609 0,12621
o ' +56 27 9.74085
0.91664

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166

χ Ursae Maj.

h m s
11 47 28
o ' "
+54 22

1880
Dec. 13

0,12621

582

ε Corvi

h m s
12 8 54
o ' "
-21 54

1.17609
9.96732
1.14341

0,12621

584

ε Corvi

h m s
12 23 37
o ' "
-15 50

1.17609
9.98320
1.15929

0,12621

h	m	s		h	m	s		h	m	s		h	m	s
11	47	24.80		11	47	9.4		12	4	2.52		11	0.7	
		28.40	32000			11.6				4.85	7038		2.7	
		32.03	32.00			14.0				7.00	704		4.1	
		35.60				16.7				9.32			5.8	
	160	00 39.17			709	19.2		3519		11.50		193	6.5	
		1000				209				3519			193	
		46.30			47	14.18				16.00		4	3.86	
		49.90				+46.25				18.18			+21.00	
		53.30								20.42				
		56.87	0.476							22.60	24879			
		0.40	048		48	9.2				24.90	2488	4	5.45	
		4.00	0.38			11.6				27.10	24.85		56.0	
		7.60				13.7				29.27			57.2	
		11.15				16.2				31.60			58.7	
	54428	14.76			700	18.3		22391		33.84		2869	0.5	
		428				200				4391			369	
		21.66			48	14.00				38.20		4	5.738	
		25.14	28754			-13.57				40.45	42660		-32.52	
		28.75	28.75							42.65	4266			
		32.37	120.75							44.55	49.70			
	14377	35.85			49	20.4		21330		47.15		4	3.86	
		4377	48 0.430			21.4				1330	4 24865	4	5738	
						23.2						+	21.00	
						24.7						−	32.52	
					1159	26.2							53.52	
						159							1.72852	
					49	23.18							1.14341	
						22.75							2.87193	
													1.82406	
													8.95213	
													5 7 5	

h	m	s		h	m	s		h	m	s		h	m	s
												12	23	45.50
														47.68
														50.00
														52.00
												24948		54.30
														4948
														58.30
														0.55
														2.73
														4.80
														7.00
														9.24
														11.37
														13.40
												60299		15.60
														6299
														19.70
														22.02
														24.12
														26.25
												12059		28.50
														2059

1880phae.proj.1514.

585

β Corvi

h m s
12 28 2
o ′
−22 44

1.17609 0.12621
9.96488
1.14097

1880
Dec. 13

h	m	s		m	s	h	m	s	h	m	s	h	m	s		m	s
11	12	28	10.35			28	3.5	12	35	40.17	12	36	29.2	12			
			12.93	14722			4.9			42.21			30.8			Ch. f.	
			14.66	1472			6.6			46.25			32.5				
			17.00				8.2			48.25			34.6				
		7361	19.17				337 10.5			50.20		1631	36.0				
			2.361				3.37						1.31				
			23.65			28	6.74			54.57		36	32.62				
			25.88				+25.85			56.45							
			28.15							58.48							
			30.35	32628						0.50	2614						
			32.60	3263		29	18.3			2.55	261	36	41.4				
			34.77	3261			19.8			4.60			43.21				
			37.20				21.4			6.85			44.2				
			39.45				22.9			8.85			45.7				
		29365	41.60				1074 25.0		36353	10.90		2212	47.5				
			2.365				74			2.353			2.12				
			46.00			19	21.48			14.92		36	44.24				
			48.19	50486			−48.86			17.00	19114						
			50.50	5049						19.15	1911						
			52.74	65.21						21.20							
		25243	55.00			28	6.74		9557	23.30		36	32.62				
			2.43	28 32620		28	21.48			4.557	36 2.482	36	44.24				
							+ 25.88										
							− 48.86										
							74.74										
							1.87355										
							1.14097										
							3.01452										
							1.96492										
							8.95040										
							5552										

1880phae.proj.1514

198

Ellen Mi

Sun. C = 44 619

h m s
14 37 7
0 ,
+74 39

0,12621

h m s
17 30 13
0 ,
−23 17

0,12621

Dec. 13

Dec. 13/14

h	m	s		m	s	h	m	s		m	s	m	s		m	s
14				51	42.5	17	28	58.00		29	56.1	31	19.90		30	57.5
					47.2			0.20	2.580		57.6		22.10	24.460		53.2
					52.0			2.55	255		57.4		24.45	24.46		54.5
					57.4			4.90			0.8		26.85			55.6
				2680	6.6		31275	7.10		2968	2.9	12230	29.00		27.34	57.6
					180			12.75			46.8		29.30			2.24
	50	56.75	+31.17	27.92	57	53.60		11.44		29	59.36		33.38		30	54.48
		4.53	23.38	27.93	252.36	25.57		13.86			−38.81		35.66			+48.01
		12.50	+15.57	24.07	28.031			16.10					36.00			
	+7.71	26.14	20.43	28.056				18.30	20563				40.24	42501		
	−0.40	28.80	28.00	28.06	52	17.4		20.55	2056				42.50	4250		
		35.40	−7.77	28.13		24.3		22.90	2054				44.73	4248		
		43.60	15.64	28.01		29.6		25.15					47.00			
		51.47	23.38	28.09		33.3		27.27					49.40			
	7	59.30	31.22	28.08		40.6	18507	29.50				8825	51.60			
		72.50				45.8		507					22.51			
						0		34.00					56.10			
								36.45	38538				58.14	0508		
								38.50	3854				0.48	051		
								40.74	41.09				2.82	8497		
					53	3.8	19269	43.00		29	59.36	30	5.00		30	54.48
						7.5		4269	29 20.550		−38.81		254	31 42.490		+48.01
						13.2										
						19.0										
					688	25.3										
						188										
					53	13.76										
					−1	45.73										
B	44	2.58					B	18	7.15			B	52	50.75		
B	44	15.20														
B	44	30.02														

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153 — β Urs. Maj. Lc.

h m s
22 54 32
o ′
+122 58

0,126 21

1880 Dec. 14

h m s
22 54 25.00
29.00 32620
32.50 3262
36.30
16310 49.30
1.310
48.00
51.68
55.38
59.10 2951
3.00 295
7.00 2.89
10.40
64.00
16356 18.00
2.656
25.66
29.00 33.148
33.20 3315
36.88 12577
16574 41.00
1.574

m s
54 6.1
54 10.58
+1 18.62
54 1058
55 2920
+ 78.62

h m s
14 —

−23.38 17.17 51 50.55
31.22 17.28 34.45 58.50
17.225
46.76 17.94 14.70
54.35 17.85 84.60 22.40
62.36 17.84 17.80 30.20
70.15 17.85 38.00
76.18 17.52 15100 45.70
100
2
17.512
17.635

198 — β Urs. Min.

h m s
14 51 7
o ′
+74 39

0,126 21

m s
52 22.8
28.0
33.3
39.7
1698 46.0
1.98
52 33.96
−1 16.23
53 1.4
7.4
13.7
20.0
687 26.2
1.87
53 13.74
−1 56.11
53 44.3
51.1
56.4
2.8
2848 99
3.48
53 56.96
−2 39.33

30200
30.20

199 — β Boötis 0,126 21

h m s
14 57 23
o ′
+40 52

1.17609
9.87866
1.05475

h m s
14 57 24.55
27.20 30.000
30.00 30.00
32.80
15000 35.45
0.00
40.70
43.78
46.30
49.20 51.823
51.80 5182
54.48 61.80
57.30
0.00
46641 2.85
1.641
8.03
10.85 13.592
13.60 1359
16.45 10359
6796 19.08
1.796
57 57.8 10

m s
57 12.3
15.6
.178
12.8
881 21.6
3.81
17 17.62
34.14
58 36.4
39.4
42.0
44.4
2091 46.9
9.1
58 41.82
−50.01
57 17.62
58 41.82
+ 34.19
− 40.01
74.10
1.86982
1.05475
2.92457
1.51834
8.99377
5.3745

B 28 42.35 .

B 44 16.62 .
B 44 29.68 .
B 44 42.95 .

B 29 29.45 .
B 30 52.30 .
R 30 52.32 .
30 52.31 .
82.86

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S

Sun - C = 44 61.9

h m s
17 34 39
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−23 20

01.12.621

1880

Dec. 14/15

h	m	s		m	s	m	s		m	s	h	m	s		m	s
14	33	23.18		34	38.0	35	45.25		35	5.3	11	43	2.37		42	49.8
		25.35	2.622		37.6		47.40	49.762		6.6			4.50	6.674		51.5
		27.60	2.762		41.4		49.80	4.976		7.7			6.70	6.67		53.0
		29.95			43.0		52.00			9.1			8.80			54.1
	13811	32.03		2074	45.4	24881	54.36		391	10.4		8337	11.00		2647	56.0
	3811				7.4		4.81			3.91			3.337			1.47
		36.75		34	41.48		58.77		35	7.82			15.10		42	5.294
		38.97			− 55.79		1.00			+ 59.99			17.40			+ 30.83
		41.18					3.30						19.50			
		43.48	45.703				5.56	7.792					21.65	23.768		
		45.70	4.570				4.80	4.79					23.83	2.377		
		47.90	4.368				10.00	7.83					25.88	23.77		
		50.13					12.25						28.03			
		52.40					14.50						30.17			
	41133	54.82				61013	14.95					21391	32.35			
	5133						7.013						3.391			
		59.28					21.40						36.58			
		1.50	3.736				23.67	2.5914					38.73	40.882		
		3.70	3.74				26.00	2.591					40.95	4.088		
		6.00	91.36				28.10	135.67					43.00	47.55		
	31868	8.20		34	41.48	12957	30.40		35	7.82		20441	45.15		42	52.94
	1868		33 45.690		− 55.79		4.957	36 7.810		+ 59.99			4.41	43 23.770		+ 30.83

B	22	23.62			13	55	33.35					R	6	16.76			
B												R	6	16.68			
													6	16.73			

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584

P Carrie

h m s
12 23 37
o ′
−15 30

1.17609
9.98320
1.15929

1880 Dec. 15

585

P Carrie

h m s
12 28 2
o ′
−22 44

1.17609
9.96488
1.14097

172

γ Virginis

h m s
12 35 32
o ′
−0 47

| | | |

1880phae.proj.1514.

173

E Elec. Maj.

h m s
12 48 42
° '
+56 87

h	m	s			m	s		h	m	s			m	s			m	s
12	48	34.80	+3731	12.31	48	16.0		12	49	—			50	9.0			56	12.0
13.74	12.29	01.87	38.55	4 2.366		18.7				—				10.3				13.5
30.02	12.42	12.354	42.40	4237		21.3				—				11.6				15.1
26.27	12.31		46.04			24.1	+ 14.49	0.29	.75	45.80				13.1				16.8
22.50	12.34	21183	50.04		1066	27.0	12.41	0.46	.375	48.05			584	14.4		11080	757	18.3
			118.3			66								84				25.7
15.00	12.30	110.97	57.30		48	2.132	6.21	0.34	2.12	62.05			50	11.68			56	15.14
11.26	12.25	12.33	1.00			+ 51.02	6.21	0.36	.346	54.15				− 11.33				+ 23.86
7.52	12.39		4.87				4.13	0.34		56.21								
3.71	12.21		8.50	12.334			+2.05	0.25		58.20	0349							
0.00	12.33		12.33	1233			−0.00	0.30		0.30	035		50	46.0			57	8.1
3.74	12.37		16.11				2.06	0.32		2.38				47.4				9.7
7.30	12.28		19.78				4.14	0.36		4.50				48.9				11.5
11.26	12.26		23.52				6.21	0.39		6.60				50.1				13.0
15.02	12.58	65101	27.60				8.24	0.46	54814	8.75			2439	51.5		35090	578	15.0
			2.101							3.14				4.39				7.3
			—				12.41	0.39	.169	12.80			50	48.78			57	14.46
			—				14.48	0.42	.338	14.90	16.900			− 48.43				− 32.46
12.342			—				16.30	0.30		16.85	16.90							
12.348			—				18.62	0.33		18.95								
			—		48	2.132	20.78	0.25	8450	21.00			50	1168		279.95	54	15.14
										3.450			50	4878		2935	56	39000

.953
.348

57 11.46
+ 23.86
− 32.46
56.32

B 44 8695

B 18 21.82 -
R 18 13.40 -
R 18 13.55 -
B 18 13.18 -

18 13.38 -

B 44 34.95 -
B 44 49.20 -

174

S Virginis

h m s
12 49 30
° '
+4 3

176

E Virginis

h m s
12 56 9
° '
+11 87

h	m	s			m	s			m	s			m	s			m	s
12	56	15.00															56	12.0
		20.00		2.2160														13.5
		22.20		2.216														15.1
		24.20																16.8
11080		26.40															757	18.3
		1.080																25.7
		30.55															56	15.14
		32.60																+ 23.86
		34.80																
		36.95		3.8989														
		39.00		3.899													57	8.1
		41.00		8.901														9.7
		42.15																11.5
		45.33																13.0
35090		47.52															578	15.0
		8.090																7.3
		51.60															57	14.46
		52.77		5.5870														− 32.46
		53.83		5587														
		58.00		7.803														
279.95		0.15															54	15.14
2935			56	39000													57	11.46
																		+ 23.86
																		− 32.46
																		56.32

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S

Sun - ☉ = 44 619

h m s
17 39 5
0 .
−23 22

0,12621

1880

Dec 15/16

h	m	s		m	s	m	s		m	s
17	37	48.35		38	49.7	40	10.47		39	41.1
		50.70	52886		57.0		12.70	14998		42.7
		52.90	5289		52.2		15.00	15.00		44.3
		55.10			53.5		17.26			45.6
	26443	57.38		2627	56.3	7499	19.56		2207	47.0
		1443			12.7		2499			2.07
		1.75		38	52.54		23.70		39	44.14
		4.18			−41.64		26.25			+48.87
		6.30					28.50			
		8.62	10879				30.70	33.039		
		11.00	1088				33.00	3301		
		13.14	1092				35.30	3302		
		15.40					37.80			
		17.66					39.56			
	9791	19.56				2970	5 42.04			
		791					2735			
		24.45					46.50			
		26.67	28946				48.85	51.044		
		29.00	2895				51.00	5104		
		31.16	14184				53.29	6604		
	14473	33.45		38	52.54	25522	55.58		39	44.14
		4473	38 10.900		− 41.64		522	40 33015		+ 48.87

B 24 32.55

B 56 12.85

2

β Cassiop.

h m s
0 2 44
0 ,
+58 29

0,12621

Dec. 16.

h	m	s		m	s
0	2	36.70			
		40.70	44564		
		4445	4456		
		48.50			
	22282	52.47			
		2282			
		0.35			
		4.18			
		8.30			
		12.47	16198		
		16.33	1620	4	10.0
		20.15	1620		11.5
		24.00			12.8
		28.00			16.6
	14578	32.00			699 19.0
		6578			199
		37.90		4	1398
		43.90	47526		− 57.78
		47.70	4783		
		51.75	15239		
	23913	55.58			
		3913	3 16200	4	1398
					− 57.78

B 52 29.25
B 52 29.45

52 29.35

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