1976phae.proj.1485.

KG
11366
v.481

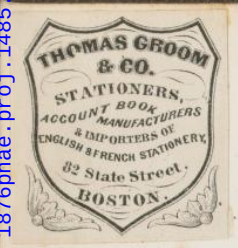
B 5 1876 7

Supplemental List.
Observations & Reductions
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Constants

1876	15 tan i
Jan 10 – May 1	0.12495
May 3 – July 23	0.12193
July 24 – Aug 5	0.12516
Aug 6, 1876 – Jan. 4, 1877	0.12236

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δ Pegasi

α 23 48 8

+18° 25 34

+23° 57 14

1876

Nov. 4 | Dec. 4 | Dec. 23 | 1877 Jan. 2 | Jan. 4

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ω Piscium

h	m	s	α_0	52 56.609	
23	52	54	Corr α	+ .05	
+6°	10′	16″	$\frac{d\alpha}{dt}$	+ 3.0764	
+36°	12′	32″	δ_0	10′ 36.18″	
			Corr δ	+ .2	
			$\frac{d\delta}{dt}$	+ 19.944	

Date	m s		′ ″	
Oct. 27	52 60.23		10 61.2	
Nov. 1	60.21	2	61.2	0
6	60.18	3	61.2	0
11	60.15	3	61.1	[illegible]
16	60.11	4	61.0	1
21	60.07	4	60.9	1
26	60.03	4	60.7	2
Dec. 1	59.98	5	60.5	2
6	59.93	5	60.2	3
11	59.88	5	59.9	3
16	59.83	5	59.6	3
21	59.78	5	59.3	3
26	59.73	5	58.9	4
			58.4	5

log cos δ 9.99747
15 Cos δ tan i 0.11983
tang δ +0.11 +1.01
sin z +.59
I 2.07
I′ .126

1876 — 1877

	Nov. 4 (−.81, −.10 ×)		Nov. 12 (−.67 31 ×)		Nov. 13 (−.69 ×)		Dec. 4 (−.57 ×)		Dec 23 (−.39 ×)		Jan. 2 (× −.40)	
				52 52		52 52						
23	52 12.8	52 34.9	52 15.2	20.4 30.6	52 9.0	19.9 30.0	51 53.3	52 10.6	51 25.9	51 41.3	51 11.7	51 24.5
	14.8	37.0	17.0	22.4 32.7	11.0	21.9 32.2	55.0	12.7	28.1	43.5	13.3	26.6
	16.7	38.1	19.0	24.5 34.8	13.1	24.0 34.7	57.2	14.8	29.9	45.6	15.1	28.6
		43.3		26.6 40.0		26.0 38.3		18.9		49.7		32.7
		45.4		28.7 42.0		28.2 40.4		21.0		57.8		34.8
	53 10.9	47.5	53 10.4	57.7 —	53 12.7	57.2 42.6	52 42.2	23.1	52 13.3	53.8	52 1.0	36.9
	12.8	49.5	11.8	59.8 45.1	14.5	59.1 44.5	44.3	25.2	16.3	55.9	2.7	39.0
	14.3	57.6	13.6	2.0 47.3	16.4	1.3 46.7	46.1	27.2	18.3	58.0	4.2	41.1
		55.7		3.9 51.4		3.3 50.8		31.3		2.1		45.2
		57.9		6.0 53.5		5.4 52.9		33.4		4.2		47.3
		59.7		55.6		55.0		35.5		6.3		49.4
		5216		2520 4330		2463 4676		2537		4122		4061
	52 14.77		52 17.07	4320	52 11.03	4263	51 55.17		51 27.97	59.22	51 13.37	
	53 12.67	52 47.418	53 11.93	43.200 43.300	53 14.53	42.630 42.509	52 44.20	52 23.064	52 15.97	51 53.827 (36)	52 2.63	51 36.918
				.074		.504						
		52 47.418		52 43.187		52 42.506		52 23.064		51 53.836		51 36.918
	+13.00	52 60.190	+17.20	52 60.140	+17.75	52 60.132	+36.98	52 59.948	+1 6.02	52 59.758	+1 22.78	52 59.643
	−.08	− 12787	−.07	− 1695	−.08	− 1763	−.06	− 3688	−.04	− 6592	−.04	− 8272
	−.10	− 1282		− 1700		− 1768		− 3693		− 6597		− 8277
	−3.58		−3.53		−3.52		−3.34		−3.15		−3.03	
	+9.24		+13.60		+14.15		+33.58		+1 2.83		+1 19.71	
+52	56.66		+56.79		+56.66		+56.64		+52 56.67		+56.63	
	+32.65											
	1.51388											
	1.63371	−25.25	+26.12	−28.74	+31.48	−32.02	+27.89	−21.14	+25.87	−22.13	+23.55	−25.71
	G F	1.40226n	1.41697	1.45849n	1.49803	1.50542n	1.44515	1.32510n	1.41280	1.34498n	1.37199	1.41010n
	G H	1.52209n	1.53680	1.57832n	1.61786	1.62525n	1.56528	1.44493n	1.53263	1.46481n	1.49182	1.52993n
	′ ′											
	10 4	15 0	10 4	15 0	10 4	15 0	10 4	15 0	10 4	15 0	10 4	15 0
	″ ″											
	16.6 15.9	32.3 32.2	27.0 28.9	39.3 39.1	18.6 20.1	42.6 43.7	25.9 28.4	29.6 32.5	26.6 33.2	31.2 36.4	31.0 36.4	37.7 41.4
	16.9 10.4	34.3 28.6	28.1 17.6	37.8 30.6	19.6 10.4	42.8 35.2	23.1 10.2	27.3 17.3	25.3 11.7	29.7 16.8	28.9 14.8	33.8 23.0
	335 263	666 608	551 465	771 697	382 305	854 789	490 386	569 498	519 449	609 532	599 512	715 644
	598	1274	1016	1468	687	1643	876	1067	968	1141	1111	1359
	14 14.95	15 31.85	14 25.40	15 36.70	14 17.17	15 41.07	14 21.90	15 26.67	14 24.20	15 28.52	14 27.78	15 33.97
	+ 43.03	− 33.27	+ 34.42	− 37.87	+ 41.48	− 42.19	+ 36.75	− 27.86	+ 34.09	− 29.16	+ 31.03	− 33.88
	14 57.98	58.58	14 59.82	58.83	14 58.65	58.88	14 58.65	58.81	14 58.29	59.36	14 58.81	15 0.09
+ 6	7 50.37	49.77	7 48.53	49.52	7 49.70	49.47	7 49.70	49.54	7 50.06	48.99	7 49.54	7 48.26
+ 36	10 22	11 39	10 32	11 43	10 24	11 48	10 29	11 33	10 31	11 36	10 35	11 41
	1.62410	1.62440	1.62410	1.62440	1.62410	1.62440	1.62410	1.62435	1.62410	1.62440	1.62410	1.62440
	+1220	+1220	+824	+824	+922	+922	+2065	+2065	+2837	+2837	+2670	+2670
	1.63630	1.63660	1.63234	1.63264	1.63332	1.63362	1.64475	1.64500	1.65247	1.65277	1.65080	1.65110
	−43.28	−43.31	−42.89	−42.92	−42.98	−43.01	−44.13	−44.16	−44.92	−44.95	−44.75	−44.78
	− .06	− .04	− .04	− .05	− .05	− .06	− .04	− .02	− .04	− .03	− .03	− .04
	− 1.18	− .14	− 1.23	− .17	− 1.20	− .20	− 1.50 (1.32)	− .12	− 1.41	− .16	− .14 (1.35)	− .18
	+ .17	+ .02	+ .18	+ .02	+ .17	+ .03	+ .17	+ .02	+ .18	+ .02	+ .18	+ .02
	−44.35	−43.47	−42.98	−43.12	−44.06	−43.24	−45.32	−44.28	−46.19	−45.12	−45.95	−44.98
+6*	7 6.02	6.30	7 4.55	6.40	7 5.64	6.23	7 4.38	5.26	7 3.87	3.87	7 3.59	7 3.28
+6	7 6.16	+3 56.32	7 5.48	+3 56.90	7 5.94	+3 56.70	7 4.82	+3 56.70	7 3.87	+3 56.58	7 3.44	+3 56.74
	10′ 1″.2	− 1.4	11 1.1	− 1.4	11 1.1	− 1.4	11 0.3	− 1.3	10 59.1	− 1.2	10 58.2	− 1.6
	+3 55.0	− 25.0	+3 55.6	− 24.9	+3 55.2	− 24.9	+3 55.5	− 24.1	+3 55.2	− 22.9	+3 54.8	− 22.1
	55.2		55.8		55.4		55.7		55.4		55.0	
		+3 29.92		+3 30.60		+3 30.40		+3 31.30		+3 32.48		+3 33.04
6		+10 36.08		+10 36.08		+10 36.34		+10 35.12		+10 36.35		+10 36.48

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39 Piscium

α 23 55 31

δ 6° 42' 31"

+49° 05' 19"

Corrd

Corrd

log cosδ 9.99702

15 Cos Stani 0.11938

tanγδ −0.12 +1.01

sin z +.76

log R+2 1.26839

R+2 18.552

1876

Nov. 4		Nov. 12		Nov. 13		Dec. 4		Dec 6		Dec. 13	
−.81 −.10		−.67		−.69		−.57		−.54		−.53	
h m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
23 54 57.5	55 1.43	55 3.0	55 0.9	55 2.6	55 0.94	54 33.6	54 57.0	54 30.7	54 54 36.9	54 29.5	54 57.7
59.8	1.64	4.7	1.20	4.2	1.15	35.4	52.0	33.4	54 49.0	31.0	59.9
1.1	1.85	6.4	1.40	5.8	13.5	37.4	54.1	35.0	41.0 51.3	32.8	41.9
	2.27		1.82		1.78		58.3		431 554		46.0
	2.48		2.03		1.90		0.3		45.1 57.5		48.0
	2.67	55 3.94	2.24	55 4.03	2.19	55 2.15	2.4		− 59.6		50.2
	2.88	4.16	2.44	4.17	2.39	2.31	4.6		− 1.6		52.3
	3.09	4.34	2.65	4.40	2.60	2.48	6.7		− 3.7		54.4
	3.49		3.06		3.01		10.7		− 7.8		58.5
	3.71		3.28		3.22		12.9		− 10.0		0.6
	3.93		3.48		3.42		14.8		12.0		2.6
	2.944		2.459		2.404		2.668	41.20	3.53		43.21
54 59.47		55 4.70		55 4.20		54 35.47		54 33.03	6.53	54 31.10	55.21
	55 26.764	55 41.47	55 22.355	55 42.00	55 21.855	55 23.13	55 2.436		59.572 59.573		50.191
	55 26.764		55 22.355		55 21.855		55. 2.436		54 59.572		54 50.191
+13.00		+17.20		+17.75		+36.99		+39.89		+49.21	
+.10		+.08		+.08		+.07		+.07		+.06	
−.10											
− 3.72		− 3.67		− 3.65		− 3.47		− 3.45		− 3.38	
+ 9.28		+ 13.61		+ 14.18		+ 33.59		+ 36.51		+ 4.589	
55 36.04		35.96		36.04		36.03		36.08		36.08	

α 23 55 36.038

	+27.29	+17.65	−19.12	+17.66	−20.14	+26.97	−20.69	+26.54		+19.09	
E.	1.43600	1.24674	1.28149n	1.24699	1.30406n	1.43088	1.31576n	1.42390		1.28081	
E.	1.55337	1.36611	1.40086n	1.36636	1.42343n	1.55025	1.43513n	1.54327		1.40018	
	′ ′										
	5 1	5 2	5 2	5 2	5 2	5 1	5 2	5 1	5 3	5 2	
	52.9 42.5	7.2 3.8	56.3 52.6	7.1 4.4	56.7 54.6	55.9 53.4	58.7 57.6	57.1 57.3	9.3 8.4	10.8 12.1	
	52.3 43.4	6.3 3.7.2	54.1 43.7	5.9 5.4.0	54.5 44.8	51.9 38.4	53.3 41.9	54.0 39.2	3.7 5.1.0	5.8 3.0.7	
	1052 904	135 1200	1104 963	130 1184	1112 994	1078 938	1120 995	1111 965	130 1194	166 1228	
	1961	2538	2067	2514	2106	2016	2115	2076	2524	2594	
	6 49.02	7 3.37	7 51.67	7 2.85	7 52.65	6 50.40	7 52.87	6 51.90	8 3.10	7 4.85	
	+ 35.92	+ 23.23	− 25.17	+ 23.25	− 26.51	+ 35.50	− 27.24	+ 34.94		+ 25.13	
	7 24.94	7 26.60	26.50	7 26.10	26.14	7 25.90	25.63	7 26.84		7 29.48	
−6	44 36.59	44 38.25	38.15	44 37.75	37.79	44 37.55	37.28	44 38.49		44 41.63	
	49 02 36	3 10	3 57	3 10	4 00	2 57	4 00	2 57		3 12	
	1.82120	1.82130	1.82150	1.82130	1.82150	1.82120	1.82150	1.82120		1.82130	
	+1226	+826	+826	+926	+926	+2066	+2066	+1573		+904	
	1.83346	1.82956	1.82976	1.83056	1.83076	1.84186	1.84216	1.83693		1.83034	
	−68.15	−67.54	−67.67	−67.70	−67.73	−69.48	−69.53	−68.70		−67.66	
	+ .05	+ .02	+ .02	+ .02	+ .03	+ .04	+ .03	+ .04		+ .02	
	− .50	− .59	− .78	− .56	− .81	− .54	− .87	− .64		− .65	
	+ .07	+ .08	+ .11	+ .08	+ .12	+ .07	+ .16	+ .07		+ .08	
	−1 8.53	−1 8.03	−1 8.22	−1 8.16	−1 8.39	−1 9.91	−1 10.21	−1 9.13		−1 8.21	
−6	45 45.12	45 46.28	46.37	45 45.91	46.18	45 47.46	47.19	45 47.62		45 49.84	
	+3 56.32	45 46.32	+3 56.90	45 46.04	+3 56.70	45 47.48	+3 56.70		+3 56.84		+3 57.51
	− 1.8		− 1.7		− 1.7		− 1.6		− 1.6		− 1.6
	− 22.0		− 21.4		− 21.4		− 19.8		− 19.7		− 19.2
	+3 32.52		+3 33.80		+3 33.60		+3 35.30		+3 35.54		+3 36.71
	−6 42 12.60		42 12.52		42 12.44		42 12.18		42 12.08		42 13.13

−6° 42' 12.49

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Gr 1852	α_0	58 m 55.165 s	Nov. 6	58 m 56.61 s		35′ 24.8″					
h m s		s	11	57.01	40	23.2	16	log cos δ	9.33190n	log I	0.98239
11 58 52	Corr α	+ .08	16	57.44	43	21.7	15				
		s	21	57.90	46	20.3	14	15 cos δ tan i	9.45426n		
+77° 36′ 16″	$\frac{d\alpha}{dt}$	+ 3.1456	26	58.39	49	19.0	13			I	960
~~102° 24′~~		′ ″	Dec. 1	58.90	51	17.8	12			½I	480
102° 23′ 44″	δ_0	35 56.06 / 24 3.94	6	59.43	53	16.8	10	tang δ	~~4.55~~ 4.60		
			11	59.98	55	15.9	9				
−60° 00′ 56″	Corr δ	+ 1.6	16	60.55	57	15.1	8				
		″	21	61.13	58	14.5	6	sin Z	−.87		
	$\frac{d\delta}{dt}$	− 20.168	26	61.71	58	14.1	4				

	1876											
		−.81 −.10		−.67 +		−.69 +		−.59 ×		−.39 ×	×	−.42
	Nov. 4		Nov. 12		Nov. 13		Dec. 6		Dec. 23		Dec. 24	
	Ch. f.		58 12.7	58 17.4	57 19.8	58 17.2	58 17.4	58 –	57 42.4	57 34.6	56 20.0	57 82.4
			20.4	22.0	24.8	21.7	25.2	–	47.6	39.1	26.2	37.4
			27.8	27.4	33.0	26.7	32.4	16.9 7.3	50.8	44.3	32.6	42.3
				32.1		32.0		17.1 12.3	56.0	48.6		46.8
				36.7		36.5		16.8 16.8		53.8		51.8
			59 2.0	41.7	58 56.0	41.1	58 45.5	16.8 21.6		58.4		56.3
			12.4	46.3	4.9	45.6	53.2	17.6 27.2		3.4		1.2
			20.5	51.2	14.4	50.4	4.4	17.3 31.7		8.0		6.1
				56.0		55.6		17.1 36.3		12.8		10.6
				3308		3268				3033		2849
			58 20.30		57 25.87		58 25.00		57 49.20	4833	56 26.27	4649
			59 11.63	58 36.756	59 5.10	58 36.311	58 54.37	58 17.086		57 53.700		57 51.656
			+17.21	58 57.073	+17.75	58 57.157	+39.89	58 59.403	+1 6.03	58 61.333	+1 7.84	58 61.449
	+3.69		+3.05	− 20.33	+3.14	− 20.85	+2.68	− 42.32	+1.77	− 67.63	+1.91	− 69.79
	+.47			− 20.41	1.99	− 20.93		− 42.40		− 67.71		− 69.87
			−1.91		~~−2.00~~		−4.24		−~~5~~6.17		−6.29	
			+18.35		+18.90		+38.33		+1 1.63		+1 +3.46	
			+58 55.11		+55.21		+55.42		+58 55.33		+55.12	
	~~+16.46~~											
			+16.46	−34.87	+70.44	−28.79	−7.91	−37.28	+4.50			
		~~−34.87~~	~~+70.44~~	~~−28.79~~	~~−7.91~~	~~−37.28~~	~~+4.50~~		~~+85.~~		~~+85.~~39	
	E F		1.21643	1.54245n	1.84782	1.45924n	0.89818n	1.57148n	0.65321		1.93141	
	G 76		0.67069n	0.99671	1.30208n	0.91350	0.35244	1.02574	0.10747n		1.38567n	
	0 3	0 3	0 3	0 3	0 4	0 3	0 3	0 3	0 3		0 4	
	54.3 56.9	44.8 48.6	57.9 25	43.3 48.1	14.8 20.1	46.3 50.8	47.9 55.2	39.1 47.2	51.6 1.1		18.8 28.5	
	1.9 41.9	52.8 33.8	4.4 42.3	48.9 29.5	20.3 0.3	52.9 31.3	37.1 25.9	41.7 20.0	55.5 29.7		21.7 57.1	
	1162 988	976 824	1223 1048	122 776	351 204	992 821	990 811	808 672	71 908		415 456	
	58.10 49.40	48.80 41.20	1.15 52.40	46.10 38.80	17.55 10.20	49.60 41.05	49.50 40.55	40.40 33.60	53.55 45.40		20.75 12.80	
	3 53.75	3 45.00	3 56.78	3 42.45	4 13.88	3 45.32	3 45.02	3 37.00	3 49.48		4 16.78	
			− 4.68	+ 9.92	− 20.05	+ 8.19	+ 2.25	+ 10.61	− ~~12.81~~ 1.28		− 24.30	
			3 52.10	52.37	3 53.83	53.51	3 47.27	47.61	3 ~~36.67~~ 48.20		3 54.48 2.48	
+ 102 ~~77~~			18 56.25	55.98	18 54.52	54.84	19 1.08	0.74	19 0.15		18 55.87	
−60		−59	59 56	0 11	59 39	0 08	0 08	0 16	0 04		59 36	
			1.99735	1.99744	1.99726	1.99741	1.99741	1.99747	1.99741		1.99726	
			+830	+830	+934	+934	+1577	+1577	+2860		+3871	
			2.00565	2.00574	2.00660	2.00675	2.01318	2.01324	2.02601		2.03597	
			+101.31	+101.33	+101.53	+101.57	+103.08	+103.09	+106.17		+108.63	
			+ .03	+ .14	+ .57	+ .09	+ .01	+ .16	+ .00		+ .83	
			− 1.09	− 1.04	− 1.18	− 1.06	− 1.14	− 1.08	− 1.22		− 1.38	
			+ .16	+ .15	+ .17	+ .15	+ .15	+ .14	+ .15		+ .17	
			+1 40.41	+1 40.58	+1 41.09	+1 40.75	+1 42.10	+1 42.31	+1 45.10		+1 48.25	
+102			20 36.66	36.56	20 36.61	35.59	20 43.18	43.05	20 45.25		20 44.12	
		+3 56.32	20 36.61	+3 56.90	20 35.60	+3 56.70	20 43.12	+3 56.84	20	+3 56.58		+3 56.27
		+2.0	24 37.0	+2.0	24 37.43	+2.0	24 43.2	+1.8	24 45.37	+1.7	24 45.57	+1.7
			+4 0.4	−33.1	+4 1.7	−33.4	+4 0.1	−39.42	+4 0.5	−41.8	+4 1.6	−41.8
			+3 58.8		+4 0.1		+3 58.5		+3 58.9		+4 0.0	
				+3 25.80		+3 25.30	-	+3 19.44		+3 16.48		+3 16.17
102				+24 2.41		+24 0.90		+24 2.56		+24 1.73		+24 0.29

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L Andromeda

h m s
0 1 56
+28 24 1
+13° 38' 47"

1876

α_0	m s 1 58.14	
Corr^{n}	s + .03	
$\frac{d\alpha}{dt}$	s + 3.0879	
δ_0	' " 24 20.88	
Corr^{n}	" − .2	
$\frac{d\delta}{dt}$	" + 19.907	

log cos δ 9.94431
15 cos δ tan i 0.06667
tan δ +0.54 +1.14
sin z +.24

Dec. 19 × −.41 +

h	m	s	m	s	m	s
0	0	42.8	0	38.9	0	50.5
		46.1		41.2		53.8
		47.7		43.5		54.9
		50.8		45.8		58.7
				48.3		2.0
				20.8		4.7
				23.3		6.7
				25.7		9.2
				28.0		12.8
				30.4		16.1
						18.5
		3459				2886
0	46.85	454			0	27.37
			1	45.91	1	4.418
						.448
			1	4.433		
				+57.67	2	1.831
				−.22		− 57.40
						− 57.43
				−3.02		
				+54.43		
			+1	58.86		

Dec. 23 × −.39 +

0	0	24.9	0	30.2	0	41.9
		27.5		32.7		44.3
		29.1		35.0		46.6
				37.4		51.1
				39.7	35.80	53.7
				42.6		56.0
				44.9		58.3
				47.2		0.6
				49.5		5.4
				22.0		7.8
					17.40	10.0
				2612		3757
						6157
0	26.03					
0	56.120					55.973
						.978
					0	55.976
+1	6.04				2	1.778
	−.21					− 6.580
						− 6.583
	−2.97					
+1	2.87					
+1	58.85					

Dec. 24 × −.42 +

0	0	24.0	0	28.5	0	40.0
		25.9		30.8		42.3
		28.2		33.0		44.8
				35.4		49.5
				37.8		51.8
				40.7	33.00	54.2
				43.0		56.5
				45.4		58.8
				47.7		3.5
				20.0	15.60	5.9
						8.2
				2423		4155
						5955
0	54.230					54.136
						.088
					0	54.112
+1	7.85				2	1.764
	−.23					− 6.765
						− 6.768
	−2.95					
+1	4.67					
	+58.78					

Dec. 27 × −.36 +

0	0	23.1	0	22.8	0	34.3
		24.7		25.1		36.6
		27.0		27.3		39.0
				29.7		43.6
				32.0	27.80	46.0
				4.9		48.3
1	18.3			7.2		50.7
	20.0			9.6		53.1
	21.2			12.0		55.8
				14.3	9.60	0.2
						2.4
				1849		4120
0	24.93					53.20
1	19.83		0	48.49		48.364
						.348
					0	48.356
			+1	13.55	2	1.722
				−.19		− 7.337
						− 7.340
				−2.91		
			+1	10.45		
				+58.81		

		+17.58		+28.61		+28.08
E	F	1.24502		1.45652		1.44840
2	16	1.31169		1.52319		1.51507
		0 1		0 1		0 1
		20.0 27.4		6.1 12.5		7.4 13.2
		1.6 3.8		3.3 4.9		4.8 4.7
		396 312		116 491		122 669
		19.80 15.60		5.80 59.70		6.10 80.45
		1 17.70		1 2.75		1 18.28 3.28
		+ 20.50		+ 33.36		+ 32.74
		1 38.20		1 36.11		1 36.02
28		21 10.15		21 12.24		21 12.33
		13 57 25		57 10		57 10
		1.15560		1.15550		1.15550
		+3400		+2873		+3874
		1.18960		1.18423		1.19424
		−1547		−1528		−1564
		− .07		− .19		− .18
		− .40		− .32		− .35
		+ .05		+ .04		+ .04
		−15.89		−15.75		−16.13
+28	20	54.26	20	56.49	20	56.20
		+3 56.85				+3 56.27
	24	52.0				−0.5
	+3	57.7	24	51.8	24	51.7
		57.5	+3	55.3	+3	55.5
				55.1		55.3
		−0.5		−0.5		
		−31.1		−30.9		−30.8
		+3 25.25		+3 25.18		+3 24.97
28		+24 19.51		+24 21.67		+24 21.17

		+23.43		−31.47		
		1.36977		1.49790n		
		1.43644		1.56457n		
		0 1		0 2		
		12.7 19.4		16.6 21.3		
		12.5 53.2		14.3 0.3		
		12 1346		109 21.8		
		5.60 17.30		1545 10.90		
		1 6.95 9.95		2 13.18		
		+ 27.32		− 36.69		
		1 37.27		36.49		
		21 11.08		11.86		
		57 17		58 20		
		1.15560		1.15620		
		+2547		+2547		
		1.18107		1.18167		
		−1517		−1519		
		− .12		− .22		
		− .38		− .70		
		+ .05		+ .09		
		−1562		−1602		
	20	55.46		55.84		
	20	55.65		+3 56.81		
	24	51.5		−0.5		
	+3	55.9		−30.6		
		55.7				
				+3 25.71		
				+24 21.36		

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−.40 × Jan 2 × −.25 Jan 4

0	58.9	0	—	0	—	0	88	0	10.3	0	21.9				
	1.0		—		—		10.7		12.8		24.3				
	8.1		—		—		13.2		15.0		26.6				
			—		—				17.4		31.1				
			—	38.94	36.6				19.7		33.7				
		53.7	39.00	39.0	1	7.0		52.5		36.0					
		58.2	.06	41.4		8.5		57.8		38.3					
		0.4	.02	43.7		11.5		57.2		40.7					
		2.8	.14	48.5				58.5		42.5					
		5.1	.10	50.8				1.9		47.7					
			.26	53.3						50.0					
		0,440						30.1		39.58					
1	1.00				0	10.90									
		39,209	0	39,074	1	9.00	0	36.110		35.952					
										.968					
			0	39.14					0	35.975					
		+1 22.79	2	1624			+1	25.72	2	1.672					
		−.22	—	8248				−.14	—	8562					
			—	82.51					—	85.65					
		− 2.81						− 2.78							
		+1 19.76					+1	22.80							
		+58.90						+58.78							

		− 21.86						+ 25.08		− 33.02					
		1.33965 m						1.39933		1.51878 m					
		1.40632 m						1.46600		1.58545 m					
		0 2?						0 1		0 2					
		7.3 13.5						12.9 18.9		20.6 27.3					
		5.5 47.3						12.8 52.2		18.8 1.8					
		12.8 8.08						17 711		394 291					
		6.40 30.40						12.85 8555		19.70 14.55					
		2 ~~18.40~~ 3.40						1 ~~24.20~~ 9.20		2 17.12					
		− 25.49						+ 29.24		− 38.50					
		1 37.91						1 38.44		38.62					
+28		21 10.44						21 9.91		9.73					
+13		58 10						57 16		58 24					
		1.15610						1.15360		1.15620					
		+2685						+3527		+3527					
		1.18295						1.19087		1.19147					
		−1524						−15.521		−15.54					
		− .11						− .14		− .25					
		− .63						− .36		− .49					
		+ .08						+ .05		+ .09					
		−1590						−15.94		−1639					
+28		20 54.54						20 53.94		53.34					
			+3	56.74				20 53.64	+3	56.72					
		24' 51.1		− 0.6				24 50.9		− 0.6					
		+3 56.6		− 30.2				+3 57.3		−30.1					
		56.4						57.1							
			+3	25.94					+3	26.02					
28			+24	20.48					+24	19.64					

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γ Pegasi

h m s		α_0	m s 6 51.107	log cos δ	9.98594
0 6 48		Corr α	s + .01	15 cos δ tan i	0.10830
° ′ ″ 14 29 18		$\frac{d\alpha}{dt}$	s + 3.0829		
+27° 53′ 30″		δ_0	′ ″ 29 38.18	tang δ	+ 0.26 + 1.03
		Corr δ	″ + .4	sin z	+ .47
		$\frac{d\delta}{dt}$	″ + 20.031		

1876

	Dec. 6 √.59 +			Dec. 13 √.53 +			Dec. 19 √.41 +			Dec. 23 √.39 +	
h m s 5 45.7	m s 5 51.4	m s 6 1.9	5 39.9	5 42.0	5 52.7	5 27.0	5 33.4	5 44.0	5 19.3	5 25.1	5 35.6
47.1	53.5	4.0	42.3	44.1	54.7	28.5	35.5	46.1	21.4	27.1	37.6
49.1	55.6	6.1	43.6	46.2	56.8	30.5	37.8	48.2	23.1	29.3	39.8
	57.8	10.5		48.4	1.0		39.8	52.4		31.4	44.0
	0.0	12.5		50.5	3.2		41.9	54.6		33.5	46.2
6 33.3	—	14.6		20.3	5.4	6 12.4	11.7	56.6		3.3	48.4
35.3	—	16.8		22.6	7.4	14.4	14.0	58.7		5.5	50.5
37.1	—	19.0		24.6	9.6	17.0	16.2	1.0		7.7	52.6
	—	23.2		26.7	13.9		18.3	5.3		9.8	56.9
	—	25.3		28.9	16.0		20.3	7.5		12.0	59.0
		27.4			18.1			9.6			1.1
	55.660	16.13		35.43	23.88		26.89	38.40		18.47	47.17
5 47.30			5 41.93		5.88	5 28.67		62.40	5 21.27		53.17
6 35.23	14.690	6 14.664		6 5.430	6 5.345	6 14.60	5 56.890	56.727		5 48.470	48.331
					.301			.761			.341
		6 14.677			6 5.323			5 56.744			5 48.338
	+39.90	6 54.428		+49.21	6 54.358		+57.68	6 54.298		+1 6.04	6 54.253
	−.15	— 39.75		−.14	— 49.04		−.11	— 62.55		−.10	— 65.92
		— 39.76			— 49.05			— 57.56			— 65.93
	−3.32			−3.25			−3.19			−3.14	
	+36.43			+45.82			+54.38			+1 2.80	
	+6 51.11			+51.14			+51.12			+51.14	

+27.38
1.43743
1.54573

E F	−20.55 1.31281n	+22	+23.39 1.35005		+28.07 1.44824	−17.86 1.25188n	+27.07 1.43249	
G H	1.42111n		1.45835		1.55654	1.36018n	1.54079	
′ ′ 55 0	55 1		55 0	55 1	55 0	55 1	55 0	55 1
″ ″ 37.0 38.2	37.3 40.6		43.1 47.0	53.3 55.8	34.2 37.9	34.0 35.6	36.4 40.1	53.3 54.9
32.1 20.2	33.6 22.0		38.8 23.1	47.3 36.0	30.1 15.3	39.5 18.2	32.4 16.7	47.7 34.7
9 1 58.4	10.9 62.6		81.9 70.1	100.6 91.8	4 3 53.4	13.5 53.8	8 8 56.8	101.0 89.6
34.55 29.20	35.45 31.30		40.95 35.05	50.30 45.90	32.15 26.70	36.75 26.90	34.40 28.40	50.50 44.80
55 31.88	56 33.38		55 38.50 38.00	56 48.10	55 29.42	56 31.82	55 31.40	56 47.65
+ 35.13	— 26.37		+ 25.73		+ 36.02	— 22.92	+ 34.74	
56 7.01	7.01		56 6.73		56 5.44	8.90	56 6.14	
#4 26 41.34	41.34		26 41.62		26 42.91	39.45	26 42.21	
27 51 39	52 40		51 45		51 36	52 39	51 38	
1.48330	1.48360		1.48330		1.48330	1.48360	1.48330	
+1586	+1586		+912		+3403	+3403	+2890	
1.49916	1.49946		1.49242		1.51733	1.51763	1.51220	
−3156	−3158		−3108		−3291	−3293	−3252	
− .10	− .05		− .07		− .11	− .04	− .10	
− .15	− .48		− .19		− .16	− .47	− .16	
+ .02	+ .06		+ .02		+ .02	+ .06	+ .02	
14 −31.79	−32.05		−31.32		−33.16	−33.38	−32.76	
+26 9.55	9.29		26 10.36		26 9.75	6.07	26 9.45	
+14 26 9.42	+3 56.84			+3 57.57	26	+3 56.85		+3 56.58
30 5.5	−1.0		30 5.2	−1.0	30 4.9	−1.0	30 4.7	−1.0
+3 56.1	−27.3		+3 54.9	−27.0	+3 55.1	−26.7	+3 55.3	−26.5
56.5			55.3		55.5		55.7	
	+3 28.54			+3 29.51		+3 29.15		+3 29.08
14	+29 37.96			+29 39.81		+29 38.90		+29 38.53

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1876 1877

Dec. 24 −.42 Dec. 27 −.36 Jan. 2 −.40 Jan. 14 −.25

Dec. 24			Dec. 27			Jan. 2			Jan. 14		
5 18.3	5 23.3	5 33.8	5 9.7	5 17.4	5 28.0	5 7.7	5 8.2	5 18.7	5 2.2	5 5.1	5 15.7
20.8	25.4	35.9	11.0	19.7	30.1	9.7	10.3	20.8	4.5	7.2	17.8
22.0	27.5	38.0	12.7	21.7	32.2	11.6	12.5	23.1	6.2	9.5	19.9
	29.6	42.3		23.8	36.5		14.4	27.2		11.5	24.1
	31.7	44.3		25.9	38.6		16.6	29.3		13.7	26.3
6 17.5	1.6	46.4	6 .74	27.1	40.8	5 50.8	46.5	31.5	6 0.6	43.5	28.4
19.2	3.6	48.4	8.8	29.9	42.8	52.3	48.7	33.6	2.0	45.7	30.5
20.8	3.8	50.7	10.3	30.1	45.0	54.1	50.6	35.7	4.7	47.8	32.8
	7.9	53.0		32.1	48.4		53.0	40.0		49.9	37.0
	10.2	57.1		34.2	50.7		55.0	42.2		51.9	39.0
		59.4			53.5			44.3			41.3
	1666	5113		2285	4483		3158	3464		2858	3128
5 20.37			5 11.13			5 9.67			5 4.30		
6 19.17	5 46.660	46.482	6 8.83	5 40.850	40.755	5 62.50	5 31.580	31.491	6 2.43	5 28.580	28.436
		531			.721			.451			.451
		5 46.504			5 41.738			5 31.471			5 28.444
	+1. 7.85	6 54241		+1 13.55	6 54.205		+1 22.80	6 54133		+1 25.73	6 54109
	−.11	6774		−.09	73.47		−.10	8266		−.06	8566
		6775			73.48			8267			8567
	−8.13			3.10 −8.09			−3.04			−3.00	
	+1 4.61			+1 10.56			+1 19.66			+1 22.67	
	51.12			+51.10			+51.13			+51.11	

	+26.14	−32.66		+29.61	−28.09		+21.80	−21.03		+24.14	−33.99
	1.41731	1.51402 n		1.47144	1.44855 n		1.33846	1.32284 n		1.38274	1.53135 n
	1.57561	1.62232 n		1.57974	1.55685 n		1.44676	1.43114 n		1.49104	1.63965 n
	53 0	53 1		53 0	53 1		53 0	53 1		53 0	53 1
	36.1 38.9	51.8 54.5		32.8 36.6	47.7 49.8		42.9 48.2	39.2 41.8		41.3 43.9	57.1 58.8
	31.9 15.7	46.7 32.3		28.6 15.9	43.8 30.8		40.4 22.7	34.2 22.2		37.7 18.4	51.6 38.4
	80 546	985 868		614 525	105 806		43 709	134 640		760 623	87 942
	34.00 27.30	49.25 43.40		30.70 26.25	45.25 40.30		42.15 35.45	36.70 32.00		39.50 31.15	54.35 46.60
	55 30.65	56 46.32		55 28.48	56 42.78		65 38.80	56 34.35		55 35.32	56 51.48
	+ 8.355	− 41.91		+ 38.00	− 36.05		+ 27.97	− 26.99		+ 30.98	− 43.62
	56 4.20	4.41		56 4.48	6.73		56 6.97	7.36		56 6.30	7.86
+ 14	26 44.15	43.94		26 41.87	41.62		26 41.58	40.99		26 42.05	40.49
+ 27	51 38	52 53		51 38	52 60		51 46	52 41		51 42	52 58
	1.48330	1.48370		1.48330	1.48360		1.48330	1.48360		1.48330	1.48370
	+8880	+8880		+2558	+2658		+2692	+2692		+3533	+3533
	1.52210	1.52250		1.50888	1.51018		1.51022	1.51052		1.51863	1.51903
	−33.27	−33.30		−32.28	−32.30		−32.38	−32.40		−33.01	−33.04
	− .09	− .14		− .11	− .11		− .06	− .06		− .08	− .16
	− .16	− .58		− .16	− .54		− .18	− .48		− .18	− .54
	+ .02	+ .07		+ .02	+ .07		+ .02	+ .06		+ .02	+ .07
	−33.50	−33.95		−32.53	−32.88		−32.60	−32.88		−33.25	−33.67
+14	26 10.65	999		26 9.34	8.74		26 8.98	8.11		26 8.80	6.82
+14	26 10.32	+3 56.27		26 9.04	+3 56.81		26 8.55	+3 56.74		26 7.81	+3 56.72
	30 4.6	−1.0		30 4.4	−1.0		30 4.0	−1.3		30 3.8	−1.3
	+3 54.3	−26.5		+3 55.4	−26.2		+3 55.4	−25.8		+3 56.0	−25.6
	54.7			55.8			55.8			56.4	
		+3 28.77			+3 29.61			+3 29.64			+3 29.82
14		+29 39.09			+29 38.65			+29 38.19			+29 37.63

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see next page

1876 Wrong #

S

June 13

m s m s
19 5.3 19 8.46
9.7 36.7
12.8 38.8
41.0
43.3
45.4
47.6
49.8
57.8

Supplemental List.

3888

19 9.27 19 43200

-36.37 18 51.17
+1.59 + 52.03
+. 51.77
+1.05
− 33.73
+19 9.47 Rej

+3393
E 7 1.53058
G 16 1.24706m

' '
15 3
" "
50.8 56.1
2.8 55.4
1136 11.5
56.80 5.5
55.75
18 57.15
56.28
— 17.66
18 38.62

4 9.73

43 38
2.21261
−830
2.20431
+1607
+ .22
− .86
+ .16
+239.59

+113 + 6 49.32
9' 26.9
+2 37.6
36.8

+2 35.54
+1.6
−1.8
+2 35.34
+9 24.66 Rej

113

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i Cassiopeiae

α 18 47 Corr

+46° 50' 18" dδ/dt

+113° 09' 42" δ₀

−70° 46' 34" Corr

1876

Jan. 12

Jan. 20

Jan. 24

Jan. 25

Jan. 27

June 7

June 13 pr. page

log cos δ 9.57455n

log Const 9.97195n Jan.
9.97148n June.

tang δ +2.35 −2.34

sin z −.94

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36 H. Cassiop. 2L 2 26 11 | $\mathcal{A}_0$ 26 16.832 | Corr α + .26 | dα/dt + 5.5504

+72° 16' 9"

+107° 43' 51" | δ_0 16 25.63 (43 34.37) | Corr δ + .4 | dδ/dt + 16.104

−65° 21' 03"

1876

June 9	26 14.75		16 24.3	
14	15.10	35	23.8	5
19	15.47	37	23.3	5
24	15.86	39	23.0	3
29	16.26	40	22.7	3
Jan. 1	26 17.35		16 47.5	
6	17.11	24	48.2	7
11	16.86	25	48.8	6
16	16.59	27	49.3	5
21	16.30	29	49.6	3
26	16.01	29	49.7	1
31	15.71	30	49.8	1
Feb. 5				
10				

log cos δ 9.48371n

15 cos δ tan i 9.60866n Jan. / 9.60564n June.

tang δ ± 3.13 − 3.29

sin z −.91

+ +.09 | + +.01 | −.01 | −.68

Jan. 12		Jan. 20		Jan. 25		June 13	
h m s	m s						
14 25 4.4	25 48.0	25 18.2	25 44.1	25 37.4	25 41.9	26 15.8	26 36.1
7.1	51.6	23.0	47.6		45.5	21.2	39.3
10.8	54.4	27.8	50.7		49.0	26.1	42.7
	58.0		54.0		52.2		46.0
	1.3		57.5		55.5		49.6
27 12.0	4.7	27 25.7	1.0	27 11.7	59.0		52.8
19.2	8.1	29.9	4.1	16.7	2.3		56.3
25.8	11.6	36.2	7.9	22.9	5.5		59.7
	15.2		11.0		9.1		3.0
	2529		2779		3200		3854
25 7.43	129	25 23.00	51.79	25 37.40	5000	26 21.03	4454
27 19.00	26 1.433	27 30.30	25 57.544	27 17.10	25 55.556		26 49.489
+15.48	26 16.82	+19.04	26 16.37	+20.98	26 16.08	−36.37	26 15.01
−.28	− 15.39	−.03	− 18.83	+.03	− 20.52	+2.13	+ 34.48
	− 15.65		− 19.09		− 20.78		+ 34.22
+0.01		+0.46		+0.75		+1.82	
+15.21		+19.47		+21.76		−32.42	
+26 16.64		+17.01		+17.32		+17.07	

+54.00
1.73239
ε 1.34105n

	−77.57	+34.54	−92.76	+18.16	−81.54	+28.46	
ε g	1.88969n	1.53832	1.96736n	1.25912	1.91137n	1.45423	
G H.	1.49835	1.14698n	1.57602	0.86778n	1.52003	1.05987n	

40'	4'	40'	3'	40	4	40	3	40	4	40	3	40	3
24.2	30.1	29.2	35.2	7.3	18.4	15.6	26.3	1.5	8.7	22.7	30.0	59.2	58
29.0	25.6	34.0	30.4	6.3	8.3	24.3	17.3	7.2	0.0	29.8	22.7	9.4	2.8
132	557	632	56	136	367	399	436	87	87	125	527	1286	86
26.60	27.85	31.60	32.80	6.80	13.35	19.95	21.80	4.35	4.35	26.25	26.35	4.30	4.30
44	27.22	43	32.20	44	10.08	43	20.88	44	4.35	43	26.30	44	4.30
−	21.93	+	31.50	−	14.03	+	37.67	−	7.38	+	33.12	−	11.48
+44	5.29	44	3.70	43	56.05		58.55	43	56.97		59.42	43	52.82
107 / 72 38	43.06	38	44.65	38	52.30		49.80	38	51.38		48.93	38	55.53
−65 17	39	18	34	17	56	18	45	18	02	18	40	18	02
	2.09512		2.09545		2.09522		2.09548		2.09525		2.09548		2.09525
	~~+2748~~		~~+2743~~		~~+2228~~		~~+2228~~		+2587		+2587		−800
	+4070		+4070		+2498		+2498						
	2.13582		2.13615		2.12020		2.12046		2.12112		2.12135		2.08725
	+136.72		+136.82		+131.89		+131.96		+132.17		+132.24		+122.25
+	.47	+	.96	+	.19	+	1.36	+	.05	+	1.04	+	.13
−	.31	−	.25	−	.38	−	.30	−	.41	−	.34	−	.90
+	.18	+	.14	+	.17	+	.13	+	.16	+	.14	+	.16
+2	17.06	+2	17.67	+2	11.87	+2	13.15	+2	11.97	+2	13.08	+2	1.64
+107 41	0.12	41	2.32	41	4.17		2.95	41	3.35		2.01	40	57.17
+107 41	1.22	+2	3.80	41	3.56	+2	4.10	41	2.68	+2	3.30	43	36.1
43	11.0		+1.7	43	10.4		+1.8	43	10.3		+1.9	~~16~~	~~23.8~~
+2	9.9		+23.3	+2	6.8		+24.0	+2	7.6		+24.1	+2	38.9
	9.5				6.4				7.2				38.5
		+2	28.80			+2	29.90			+2	29.30		
107		+43	30.02			+43	33.46			+43	31.98		

+2 35.54
+1.6
−1.8
+2 35.34
+43 32.51

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50 H. Cephei L.C.

4h 37m 2s

+80° 51'

+99° 09'

−56° 46'

log cos δ 9.20145n | log I 1.11284
15 cos δ tan 9.32338n July 17. 19. | I 12.96
9.32661n July 24. 25. 26 | ½ I 6.48

tang δ −6.21 − 6.25

sin z −.84

	Feb. 29	July 17	July 19	July 24	July 25	July 26
	−.08	−.86	−.88 −.07	−.85	−.79	−.76 −.06
	Ch. f.	36 41.3, 58.1, 2.8; 36 58.2, 4.6, 11.0, 17.8, 24.6, 30.4, 38.0, 44.5, 57.1	37 23.3, 35.1, 48.0; 38 8.7, 22.6, 33.7; 37 — 26.76 13.8, 26.88 20.4, 26.50 26.5, 26.82 33.3, 27.34 40.3, 27.26 46.7, 26.98 52.9	36 23.5, 2.0, 14.2; 37 7.5, 12.9, 20.5, 27.5, 32.9, 40.1, 46.7, 53.8, 0.0	37 17.2; 37 7.8, 15.4, 22.3, 28.7, 34.1, 41.6, 48.6, 54.7, 1.6	37 13.6, 26.2, 32.9; 37 9.3, 15.0, 22.2, 28.2, 36.1, 42.5, 48.5, 53.5, 1.6
		36 52.40 · 28.02 · 22.02 · 37 24.467	37 35.47 · 38 21.67 · 37 26.934	37 2.90 · 24.19 · 30.19 · 37 33.544	37 17.20 · 25.48 · 31.48 · 37 34.978	37 24.03 · 25.89 · 31.89 · 37 35.433
	+.50	−17.53 · +5.34 · +0.79 · −11.40 · 37 13.07	−19.83 · +5.46 · +.44 · +0.51 · −13.22 · 13.71	−25.45 · +5.28 · −0.20 · −20.37 · 13.17	−26.23 · +4.90 · −0.34 · −21.67 · 13.31	−26.86 · +4.72 · +.38 · −0.49 · −22.25 · 13.18

4h 37m 13.288s

		July 17	July 19		July 24	July 25		July 26
E / G		−27.93 +32.07	−8.54	−54.74	+30.64	+17.78		+11.40
F / H		1.44607n 1.50610	0.93146n	1.73830n	1.48629	1.24993		1.05690
		0.76945 0.82949n	0.25484	1.06168	0.81290n	0.57654n		0.38351n
25′ 0′ · 25 0		25 1	25 0	25 0	25 1 · 25 1	25 1	25 1	25 1
13.0 14.8 · 45.2 47.8		4.7 1.1	57.4 52.4	46.6 43.5	44.0 43.6 · 10.6 9.4	48.2 47.3	24.7 23.3	24.2 23.6
19.1 13.6 · 51.2 47.0		10.7 0.9	1.5 53.4	51.8 41.6	44.4 35.4 · 10.3 1.7	48.1 —	25.8 14.2	26.5 15.4
121 84 · 96.4 8		15.4 2.0	118.9 58	98.4 51	4 79.0 · 9 11.1	3	105 37.5	107 39.0
16.05 14.20 · 48.20 47.40		7.70 1.00	59.45 52.90	49.20 42.55	44.20 39.50 · 10.45 5.55	48.15	25.25 18.75	25.35 19.50
25 15.12 · 25 47.80		26 4.35	25 56.18	25 45.88	26 41.85 · 26 8.50		26 22.50	26 22.42
		~~5.88~~ 6.75	+ 1.80	+ 11.53	— 20.03 · — 6.50 (8.00)	— 3.77	−3.77 (22.00)	— 2.42
		26 ~~10.23~~ 5.60	25 57.98	57.41	26 21.82 · 1.50		26 18.23	26 20.00
99 / 80		56 ~~38.12~~ 50.75	56 50.37	50.94	56 · 56 46.85		56 30.12	56 28.35
−56		36 57	37 05	37 15	36 53		36 39	36 39
		1.94030	1.94033	1.94036	1.94027		1.94020	1.94020
		−1665	−1817	−1817	−1192		−793	−450
		1.92365	1.92216	1.92219	1.92835		1.93227	1.93570
		+8388	+8359	+8360	+8479		+8556	+8624
		+ .09	+ .01	+ .26	+ .08		+ .03	+ .01
		− .74	− .16	− .14	− .19		− .24	− .24
		+ .04	+ .04	+ .03	+ .04		+ .06	+ .06
		+1 23.81	+1 23.48	+1 23.75	+1 24.72		+1 25.41	+1 26.07
		58 14.56	58 13.85	14.69	58 11.57		57 55.53	57 54.42
	+2 7.60 +2.7	+2 49.78 · +1.5 · −0.9 · +2 50.38	58 14.27 · +2 49.92 · +1.6 · −1.2 · +2 50.32		+2 53.98 · +1.6 · −1.8 · +2 53.73		+3 9.42 · +1.6 · −2.0 · +3 9.02	+3 8.58 · +1.6 · −2.1 · +3 8.08
		+99 1 4.94	1 4.59		1 5.50		1 4.55	1 2.50

+99° 1′ 4.42″

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β. Geminorum
7. 37. 40
+ 28 19 34
+ 14° 03′ 14″

	m s
α_0	37 43.561
Corr α	+ .01
$\frac{d\alpha}{dt}$	+ 3.6810
δ_0	19 25.45
Corr δ	+ .4
$\frac{d\delta}{dt}$	− 8.354

log cos δ	9.94465
15 cos δ tan i	0.06960 Mar. Apr.
	0.06701 Aug.
tang δ	+ 0.54 + 1.14
sin z	+ .24

1876

Mar. 15 (+ −.05) Mar. 18 (+ −.03) Mar. 19 (× +.02 −.06) Apr. 2 (× −.22)

m s	m s	m s								
36 31.8	36 36.6	36 48.3	36 28.8	36 35.9	36 47.1	36 34.8	36 35.4	36 47.0	36 49.0	36 39.1
34.0	39.0	50.6	31.4	38.3	49.8	36.9	37.7	49.3	51.4	41.4
36.8	41.4	53.0	34.0	40.6	52.1	39.1	40.1	51.7	53.7	43.7
	43.7	57.6		43.0	56.8		42.4	56.4		48.6
	46.0	0.1		45.1	59.1		44.8	58.7		51.0
37 36.6	18.9	2.4	37 34.8	18.0	1.6	37 41.1	17.5	1.1	37 32.5	53.3
38.8	21.3	4.6		20.4	3.9	43.0	19.8	3.4	34.6	55.5
41.4	23.5	7.0		22.8	6.2	44.7	22.3	5.9	37.0	57.8
	25.9	11.7		25.1	11.8		24.5	10.4		2.5
	[28.3]	14.0		27.3	13.1		26.8	12.7		5.0
		16.4			15.7			15.1		7.2
	3246	2657		3165	3175		3113	3117		4051
36 33.93	246	257	36 31.47			36 36.93			36 51.37	5851
37 38.93	37 24.60	37 2.336	37 34.80	37 1.650	37 1.591	37 42.93	37 1.130	37 1.064	37 34.70	36 53.191
		.318			.508			0.988		
		37 2.327			37 1.550			37 1.026		36 53.191
	+42.90	37 45.190		+43.68	37 45.144		+44.11	37 45.128	+51.85	37 44.890
	−.03	− 42.86		−.02	− 43.59		+.01	− 44.10	−.12	− 59.70
		− 42.87			− 43.60		−.07	− 44.11		− 51.71
	−1.63			−1.58			−1.57		−1.33	
	+41.24 .24 .24			+42.08			+42.48		+50.40	
	+37 43.54 .57 57			+43.63			+43.51		+43.59	

+ 28.40
1.45332
1.52292

		−36.60	+30.08	+30.08	−33.25	−24.98	+24.10	−41.93		+1.82	−41.51
E	F	1.56348n		1.47828	1.52179n		1.38202	1.62221n		0.26007	1.61815n
G	H	1.63308n		1.54788	1.59139n		1.45162	1.69181n		0.32967	1.68775n
0	4	5 0		0 4	5 0		0 4	5 0		0 4	5 0
27.8	29.3	45.3 46.4		23.9 29.6	39.9 44.3		33.1 35.2	50.8 52.7		58.1 1.4	48.7 50.6
33.9	35.1	52.2 52.6		32.0 30.6	49.2 47.2		39.4 41.2	57.8 0.3		8.7 −	60.7 62.2
61.7	64.4	97.5 99.0		55.9 60.2	89.1 115		12.5 76.4	86 1130		1268	1094 1128
30.85	32.20	48.75 49.50		27.95 30.10	44.55 45.75		36.25 38.20	54.30 56.50		33.40	54.70 56.40
4	31.52	5 49.12		4 29.02	5 45.65 45.15		4 37.22	5 55.40			5 55.55
	+ 33.34	− 42.96		+ 35.31	− 39.03		+ 28.29	− 49.19		+ 2.14	− 48.72
5	4.86	6.16		5 4.33	6.12		5 5.51	6.21			5 6.83
17	43.49	42.19		17 44.02	42.23		17 42.84	42.14			17 41.52

+ 28
+ 14

2 26	3 43	2 23	3 39	2 31	3 49		3 50
1.15830	1.15905	1.15830	1.15905	1.15840	1.15910		1.15910
+2768	+2768	+3614	+3614	+3610	+3610		+1257
1.18598	1.18673	1.19444	1.19519	1.19450	1.19520		1.17167
−15.34	−15.37	−15.65	−15.67	−15.65	−15.68		−14.95
− .18	− .30	− .20	− .25	− .13	− .41	− .00	− .39
− .81	− .14	− .85	− .15	− .87	− .17		− .19
+ .18	+ .03	+ .18	+ .03	+ .18	+ .04		+ .04
− 16.15	− 15.78	− 16.52	− 16.04	− 16.47	− 16.22		− 15.39

+28 17 27.34	26.41	17 27.50	26.19	17 26.37	25.92	17	26.13
+28 14 26.88	+2 7.96	14 26.84	+2 8.51	14 26.14	+2 8.44	9	+2 8.34
19′ 33.2	− 0.6	19 33.3	− 0.6	19 33.4	− 0.6	19 33.8	− 0.5
+2 6.3	− 7.8	+2 6.5	− 7.8	+2 7.3	− 8.0	+2 7.8	− 8.4
6.7		6.9		7.7		8.2	
	+1 59.56		+2 0.11		+1 59.84		+1 59.44
+28	+19 26.44		+19 26.95		+19 25.98		+19 25.57

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Aug 22 -30 repeated on p. 50

+ −.22 | Aug. 10 | − −.31 | Aug. 11 | + −.85 | Aug. 22 | Aug. 24 Col. J.

m	s	m	s	m	s												
36	15.2	36	22.7	36	34.3	36	16.5	36	22.0	36	33.7	37	28.4	37	35.3	37	46.9
	17.1		25.0		36.6		18.5		24.4		36.6		30.3		37.7		49.4
	19.3		27.3		38.9		20.3		26.8		38.3		32.2		40.0		51.5
			29.7		43.6				29.1		43.0				42.4		56.3
			32.0		45.9				31.3		45.2				44.6		58.6
37	19.8		4.8		48.3				4.2		47.7	38	35.2		17.4		0.9
	21.5		7.1		50.6				6.6		50.6		36.7		19.9		3.3
	24.0		9.5		53.0				8.9		52.4		38.6		22.1		5.6
			11.9		57.6				11.2		57.1				24.4		10.4
			14.1		0.0				13.6		59.4				26.8		12.6
					2.4						1.7						14.9
			1841		4112				1781		4645				3106		3104
36	17.20				5312	36	18.43				5245	37	30.30				
37	21.77	36	48.410		48.291			36	47.810		47.682	38	36.83	38	1.060	38	0.945
					.288						.668						.918
				36	48.288					36	47.675					38	0.932
			+56.60	37	44.745				+57.24	37	44.725				−1 15.28	37	45.142
			−.12		−56.46				−.17		−57.05				−.276		+ 15.79
					−56.47						−57.06						+ 1578
			−1.18						−1.16						−1.58		
			+55.30						+55.91					−1	17.34		
			+43.58						+43.59					+37	43.56		

+31.08
1.49248
1.56208

E	F	−33.49		−	+29.25					+30.63		−35.90					
G	H	1.52492			1.46613					1.48615		1.55509					
		1.59452			1.53573					1.55316		1.62210					
0	4	5	0		0	4				5	1	5	2			5	1
25.1	25.5	41.2	43.7		28.1	29.6				18.3	17.3	36.7	35.2			14.1	12.9
34.9	35.4	52.4	53.7		37.8	40.2				17.7	12.8	34.8	30.6			13.9	9.0
600	639	936	974		659	698				180	101	115	58			80	219
30.00	31.95	46.80	48.70		32.95	34.90				18.00	15.05	35.75	32.90			14.00	10.95
4	30.98	5	47.75		4	33.92				6	16.52	7	34.32			6	12.48
+	36.48	−	39.31		+	34.33				+	35.74	−	41.89				
5	7.46		8.44		5	8.25				6	52.26		52.43				
28 17	40.89		39.91		17	40.10				16	56.09		55.92				
										2	24	3	41				
+14 2	25	3	42		2	28				4	11	5	27				
1.15830		1.15905			1.15840					1.15830		1.15905					
+986		+986			+300					−809		−809					
1.16816		1.16891			1.16140					1.15021		1.15096					
−14.73		−14.76			−14.50					−14.13		−14.16					
− .22		− .25			− .19					− .21		− .29					
− .99		− .18			− 1.01					− .22		− .44					
+ .18		+ .03			+ .18					+ .05		+ .11					
−15.76		−15.16			−15.52					−14.51		−14.78					
+28 17	25.13		24.75		17	24.58				15	41.58		41.14				
+28 17	24.94	+2	9.76				+2	10.24		15	41.36	+3	49.00				
14	34.2		−0.5		19	34.2		−0.5		19	29.1		−0.5				
+2	9.3		−8.8		+2	9.6		−8.7		23	47.7	✓	−3.7				
	9.7					10.0					48.1						
		+2	0.46				+2	1.04				+3	44.80				
28		+19	25.40				+19	25.62				+19	26.16				

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	m	s		'	"
Aug 8	37	44.81		19	30.1
13		44.92	11		29.8 3
18		45.04	12		29.4 4
23		45.16	12		29.0 4
28		45.29	13		28.6 4
Sept 2		45.43	14		28.2 4
7		45.57	14		27.8 4
12		45.72	15		27.4 4
17		45.87	15		27.0 4

For continuation see, father along p.50

18,76

−1.06 + −1.04 v. p.50 × −1.00 × −1.03

Aug. 26 | Aug. 28 | Aug. 29 | Aug. 30

addle addle

7	38	55.7		38	48.6	38	30.7	38	38.0	38	49.5	38	31.2	38	39.4	38	51.0	38	32.2	38	39.2	38	50.8
		37.7			37.9		32.3		40.4		37.9		33.2		41.9		53.3		34.0		41.6		52.2
		39.6			54.3		34.5		42.6		54.2		35.3		44.1		55.7		36.3		44.0		53.5
					57.1				45.0		58.9				46.4		0.4				46.4		0.3
					1.4				48.3		1.3				48.8		2.7				48.7		2.6
					3.6	39	42.1		20.1		3.6				21.5		5.0	39	31.4		21.5		5.0
					6.0		44.0		22.5		6.0				23.8		7.4		32.6		23.7		7.3
					8.3		46.2		24.8		8.4				26.2		9.8		36.0		26.1		9.6
					12.9				27.0		13.0				28.7		14.4				28.4		14.2
					15.5				29.4		15.3				30.8		16.7				30.8		16.7
					17.8						17.6						19.2						18.9
					2794				3371		2797				3516		2356				3504		2341
	38	57.67			394	38	38.50 3	38			397	38	33.23				556	38	34.17				541
				39	3.582	39	44.10 5	38	3.710 4	39	3.609 4568			38 39	5.160	39	5.055 018	39	33.67	38 39	5.040	39	4.918 898
				39	3582					39	3.588 97					39	5036					39	4908
			−1	17.80	37 45244			−1	18.68	37	45.28			−1	19.19	37	45325			−1	18.78	37	45358
				−.57	+ 7834				−.56		+ 7829				−.54		+ 7971				−.56		+ 7956
					+ 7833						+ 7828						+ 7970						+ 7955
				−1.688	−20.05				−1.74						−1.76						−1.79		
			−1	17.75	20.05			−1	20.98					−1	21.49					−1	20.33		
			+	43.83	43.53			+	42.61					+	43.55					+	43.58		
					4353				3														

			+ 5.91			+ 31.09	− 40.51			+ 31.81				+ 30.74	− 28.76				
	E	F	0.77159			1.49262 n	1.60756 n			1.50256				1.48770	1.45879 n				
	G	H6	0.83860			1.55963	1.67457 m			1.56957				1.55471	1.52580 m				
	5	1				5 1	5 2			5 1				5 1	5 2				
	49.6	47.1				21.1 19.5	44.1 42.6			20.3 18.1				20.7 20.2	32.5 32.0				
	46.6	42.6				19.6 15.0	41.6 37.5			18.2 13.6				20.0 14.9	31.9 25.8				
	162	97				407 145	57 801			385 117				7 351	44 578				
	48.10	44.85				20.35 17.25	42.85 40.05			19.25 15.85				20.35 17.55	32.20 28.90				
	6	46.48				6 18.80	7 41.45			6 17.55				6 18.95	7 30.55				
	+	6.90				+ 36.28	− 47.27			+ 37.12				+ 35.87	− 33.56				
	6	53.38				6 55.08	54.18			6 54.67				6 54.82	56.99				
28	15	54.97				15 53.27	54.17			15 53.68				15 53.53	51.36				
14	2	53				2 26	3 48			2 25				2 26	3 38				
	1.15860					1.15830	1.15910			1.15830				1.15830	1.15800				
	− 1212					884	884			− 1144				− 1294	− 1294				
	1.14648					−899	−879			1.14686				1.14536	1.14506				
	− 1401					1.14931	1.15011			− 1402				− 1398	− 1400				
	− .01					− 1410	− 1413			− .22				− .20	− .18				
	− .31					− .22	− .37			− .23				− .23	− .45				
	+ .07					− .23	− .49			+ .05				+ .05	+ .10				
						+ .05	+ .11												
	− 14.26					− 1450	− 1488			− 1442				− 1436	− 1453				
+ 28	15	40.71				15 38.77	39.29			15 39.26				15 39.17	36.83				
			+ 3	49.52		15 30.03	+ 3 50.17				+ 3	50.45		15 38.00	+ 3 51.15				
	19'	28.7		− 0.5		19 28.6	− 0.5			19 28.5		− 0.5		19 28.4	− 0.5				
	+3	48.0		− 3.3		+3 49.6	− 3.1			+3 49.2		− 3.0		+3 50.4	− 3.0				
		48.4				540.0				49.6				50.8					
			+ 3	46.72			+ 3 46.57				+ 3	46.95			+ 3 47.65				
28			+ 19	26.42			+ 19 25.60				+ 19	26.21			+ 19 25.65				

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λ Ursae Min. L.C.

7 19 47 18
+ 88 53 52

91° 04′ 08″

− 48° 41′ 20″

1876

		n.A		Mar + Apr	Oct		Mar + Apr	Oct
α_0	48 17.760	16.887	δ	+ 88 55 36	88 56 19	ρ′	48 16.02	16.01
Corr α	− 1.72		tang δ	− 53.37	− 53.97	n.A. ρ′ n.A.	48 16.94 −.92	−.93
$\frac{d\alpha}{dt}$	− 60.8941		Corr α	− 1.74	− 1.75			
δ_0	56 1.16 / 3 58.84	0.02 / 57.98	Corr δ	− .5	− .5	ρ′	56 0.7	
Corr δ	− .5		log cos δ	8.27259n	8.26773n	n.A. ρ′ n.A.	0.1 +.6	
$\frac{d\delta}{dt}$	+ 9.152		15 cos δ tan i	8.39754n Mar. Apr	8.39009n Oct			
			sin z	−.75				

L.C. −.05 Mar. 13.4 | L.C. −.10 Mar. 30 | L.C. −.22 Apr 2. | L.C. −.68 Oct 18.8 | L.C. −.67 Oct 29.8 | L.C. −.03 Mar 18.4

m s 45 24.6	m s 46 —	50 35.7	—	45 13.4	—			h m s 7 45 50.3	h m s 7 —
46 27.20	46 27.2		—		45 34.2				45 38.6
24.95	47 20.0	53 26.7	—		46 29.9				46 33.6
28.89	48 19.0		—		47 21.0				47 27.7
27.84	49 13.0		—		—				—
25.38	50 5.6		—		—				—
		45 52.57	53 13.0		—				—
		57.95	—						
			56 52.6						
					18 85.1				
45 24.60		50 35.70		45 13.40				45 50.30	
	46 26.852	53 26.70	45 52.260		46 28.367	46 26.78	46 6.67		46 33.30
+42.91 + 2.67	47 13.33 − 46.48	+50.38 + 6.34	47 28.60 − 96.34	+51.86 +11.74	47 31.43 − 63.06	+ 3.79 +36.70	47 83.47 − 41.59	+9.23 +36.16	46 53.54 − 46.35
	− 45.56	+ 5.34 37.36	− 95.42		− 62.14		− 40.66		− 45.92
+ 1 3.55		+ 48.29		+ 47.16		+ 1 8.51		+1 23.87	
+1 49.13		+2 49.35 2137		+1 51.06		+1 49.00		+2 9.26	
+48 15.98		47 41.61 / 48 13.63		48 19.42		48 15.78		48 15.93	

Final column group (Mar 18.4): +43.68 +1.60 | 47 16.05 − 42.75 | − 41.83 | +1 0.84 | +1 46.12 | 48 19.42 | +67.4

E g	+62.25	−283.44	−454.44	+74.97	+43.00	+43.00
$\frac{h}{k}$	1.79414	2.45246n	2.65748n	1.87479	1.63347	1.63347
	0.19168n	0.85000	1.05502	0.27243n		0.0310n

20 1	20 1	20 1	20 1	20 1		20 1
42.4 47.5	39.1 42.4	28.9 35.4	25.1 32.5	36.6 42.2		44.0 50.7
52.0 47.4	48.7 44.1	41.8 38.9	37.8 36.4	51.0 —		54.9 47.8
9.44 9	8.78 75	7.04 14.3	6.29 8.9	8.76		98.9 98.5
47.20 47.45	43.90 43.75	35.35 37.15	31.45 34.45	43.80		49.45 49.25
21 47.32	21 43.82	21 36.25	21 32.95			21 49.35
− 1.56		+ 7.08	+ 11.35	− 18.72		− 1.07
21 45.76		21 43.33	44.30		24 12.21 / 24 14.77	21 48.28
91 / 1 2.59		1 5.02	4.05		58 36.14 / 58 33.58	1 0.07

−48 40 19		40 30	40 33	39 41		40 19
1.81550		1.81550	1.81550	1.81530	1.81530	1.81550
+2789		+1270	+1270	+1561	+2569	+3697
1.84339		1.82820	1.82820	1.83091	1.84099	1.85247
+ 6972		+ 6733	+ 6733	+ 6775	+ 6934	+ 7120
+ .04		+ .82	+ 2.11	+	+	+ .02
− .32	− .31	− .34	− .31	− 1.09	− 1.09	− .34
+ .07	+ .07	+ .06	+ .06	+ .17	+ .17	+ .07
+1 9.51		+1 7.87	+1 9.19	+1 6.83	+1 8.42	+1 10.95

+91 2 12.10		2 12.89	13.24			59 42.97		59 42.00		2 11.02
	+2 7.96	2 13.06	+2 7.51	+2 8.34			+3 53.90 55.05		+3 53.10		+2 8.51
4 22.7	+1.9	4 24.5	+1.9	+1.9		3 41.3	+1.7	3 41.1	+1.6	4 23.1	+1.9
+2 10.6	−22.7	+2 11.4	−24.5			+3 58.3	+18.6	+3 59.1	+18.9	+2 12.1	−23.1
10.0		10.8				57.7		58.5		11.5	
	+1 47.16		+1 44.91				+4 14.20		+4 13.60		+1 47.31
91	+3 59.26		+3 57.97				3 57.17		3 55.60		+3 58.33

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log sin δ 9.99992
" cos δ 8.27259
" cos t 6.73672

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27 Leonis

7h 39m 3s

+51° 37' 53"

− 9° 29' 05"

α_0 m s
59 7.199

Corr$_\alpha$ + .09

$\frac{d\alpha}{dt}$ + 4.5407

δ_0 51° 42' 58"

Corr$_\delta$ + .4"

$\frac{d\delta}{dt}$ − 9.957

Mar 1 — 6, 11, 16, 21, 26, 31; Apr 5, 10

m s
59 10.00 — 9.91, 9.81, 9.71, 9.60, 9.48, 9.36, 9.23, 9.09

9, 10, 10, 11, 12, 12, 13, 14

51' 53.9 — 54.7 8, 55.5 8, 56.1 6, 56.7 6, 57.2 5, 57.6 4, 58.0 4, 58.3 3

log cos δ 9.79063

15 cos Stan 9.91558

tang δ + 1.27 + 1.62

sin z − .17

log I 0.52366

I 334

1876 −.17 + −.15 −.10 + −.04 + −.08 −.10 −.10 + −.22

Mar 6	Mar 7	Mar 13	Mar 14	Mar 30	April 2.
m s / m s	m s / m s	m s / m s	m s / m s	m s / m s	m s / m s
57 30.0 / 58 11.7	57 48.8 / 58 11.1	58 16.8 / 58 [7]9.[1]	58 41.8 / —	57 44.3 / 58 0.4	57 43.5 / 57 57.8
32.8 / 15.0	51.8 / 14.4	20.0 / 11.2	45.7 / —	47.7 / 20.44 4.0	46.8 / 1.1
33.8 / 18.3	57.0 / 17.7	23.4 / 14.6	48.6 / —	51.0 / .98 7.0	48.6 / 4.4
23.0 / 24.4	— / 24.4	— / 21.5	— / —	— / .36 13.6	— / 11.1
28.4 / 27.7	— / 27.7	— / 24.7	— / —	— / .44 17.1	— / 14.6
31.8 / 31.1	58 37.5 / 58 33.9	58 33.9 / 59 18.8	2764 24.3 / —	59 22.0 / .40 20.4	58 48.8 / 17.8
35.1 / 34.4	0.4 / 34.8	38.8 / 21.6	40 27.4 / —	3.3 / .36 23.7	81.0 / 21.3
38.3 / 37.8	3.3 / 37.8	1.9 / 24.7	.56 30.9 / —	— / .52 27.2	53.9 / 24.6
45.1 / 44.4	— / 44.4	— / —	.52 34.2 / —	— / —	— / 31.3
48.4 / 47.9	— / 47.9	— / 24.7	.64 41.0 / —	— / —	— / 34.5
51.8 / 51.1	— / 51.1	— / 28.2	.70 44.4 / —	— / —	— / 37.9
3491	3420	3087	—	46	2564
57 52.87	57 51.53	58 20.07	58 45.37	57 47.67	57 46.03
58 31.736	58 31.091	58 58.84	59 21.70	58 27.58	58 [20].436 / 19
				59 29.70 / 28	58 51.23
					58 17.855
+38.50 / 59 9.905	+39.29 / 59 9.885	+41.84 / 59 9.765	+42.37 / 59 9.745	+50.38 / 59 9.378	+51.86 / 59 9.302
−.22 / − 3.817	−.19 / − 3.879	−.05 / − 41.70	−.10 / − 4.216	−.13 / − 48.94	−.28 / − 51.45
− 3.826	−.146 / − 38.88	− 4.179	− 42.25	−.16 / − 49.03	− 51.54
−2.70	−2.68	−2.56	−2.55	−2.18	−2.10
+ 35.46 58 / 35.38	+ 38.26 / 6	+34.22	+39.72	+48.91	+49.48
+59 7.1 / 1.32 / .32	+7.35	+7.28	+7.31	+ 8.35 / 9	+7.34

	Mar 6	Mar 7	Mar 13	Mar 14	Mar 30	April 2.
	+38.87	+39.56	−29.31	+7.99	−30.81	−17.78
ε H	1.58961	1.59726	1.46702 n	0.90255	1.48869 n	1.24993 n
ψ K	1.50519	1.51284	1.38260 m	0.81813	1.40427 m	1.16551 m
	30 2	30 2	30 3	30 2	30 3	30 3
	31.2 37.0	30.6 34.7	29.0 30.7	28.7 1.8	29.3 32.9	20.6 23.1
	40.9 38.2	42.4 41.4	39.3 37.6	7.4 3.3	38.7 34.8	29.2 25.0
	7.21 1.52	7.30 7.56	6.83 .83	12.61 .51	6.80 8.7	.98 .81
	36.05 37.60	36.50 37.80	34.18 34.15	3.05 2.55	34.00 34.35	24.90 24.05
	32 36.82	32 37.15	33 34.18 / 5 33	33 2.80	33 34.18	33 24.48
	+ 32.00	+ 32.57	− 24.13	+ 6.58	− 25.37	− 14.64
	33 8.82	33 9.72	16.02	33 9.38	8.81	33 9.84
	49 39.53	49 38.63	38.33	49 38.97	39.54	49 38.51
	−9 29 27	29 29	28 32	29 03	28 32	28 42
	0.98350	0.98350	0.98270	0.98310	0.98270	0.98290
	+906	+270	+270	+2094	+2094	+2990
	+120	+307	+307			
	0.99488	0.98657	0.98577	1.00404	1.00364	1.01280
	+988	+9.70	+9.68	+10.09	+10.08	+10.30
	− .39	− .41	− .23	− .02	− .24	− .08
	− .44	− .44	− .61	− .54	− .65	− .61
	+ .10	+ .10	+ .14	+ .12	+ .14	+ .14
	+ 9.15	+ 8.95	+ 8.98	+ 9.65	+ 9.33	+ 9.75
+51	49 48.68	49 47.58	47.31	49 48.62	48.87	49 48.26
		49 47.45	+ 2 8.87	49 48.74	+ 2 7.39	49 48.68
	51' 54.7	51 54.9	+0.5	51 55.7	+0.5	51 55.79
	+2 6.0	+2 7.5	−12.3	+2 7.0	−13.1	+2 7.2
	6.4	7.9		7.4		7.6
		+1 55.13	+1 57.07		+1 54.79	
	51	+51 43.81	+51 44.52		+51 43.53	

	Mar 13	Mar 14	Mar 30	April 2.
	49 49.10	49 50.77	52.74	49 49.40
	+ 2 7.84	49 51.76	+ 2 7.51	49 49.96
	+0.4	51 57.5	+0.4	51 57.8
	−13.3	+2 5.7 6.7	−14.9	+2 7.8
		7.1		8.2
	+1 54.94		+1 53.01	
	+51 43.62		+51 43.78	

	April 2.
	50.51
	+ 2 8.34
	+0.4
	−15.3
	+1 53.44
	+51 43.40

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γ Meas. Mins.

h m s
15 20 57
+72° 16' 44"
−29° 53' 56"

t_0	20h 56.593
Corr^n	− .17
$\frac{d\alpha}{dt}$	− 0.1324
δ_0	16° 30'.83
Corr^n	+ .1
$\frac{d\delta}{dt}$	− 12".814

log cos δ 9.48352
15 constant 960545
tang δ + 3.12 + 3.29
sin z −.50

1876
−88 ✗
−.07
July 19

15 20 11.9 21 8.3
17.7 11.5
21.9 14.8
18.4
22.0
21 43.5 25.6
28.7
31.8
35.3

1964
20 17.17
21 43.50 21 21.822

−19.57 20 59514
−2.74 + 2.31
−.53 + 22.48
−2.92
−25.46
+20 56.86

+64.65
1.81057
1.41602

−21.68
log 1.33606n
log 0.94157n

5' 4' 5 4
" "
9.8 5.8 45.3 40.4
13.9 3.5 47.9 38.3
23.7 9.3 132 78.7
11.85 4.65 46.60 39.35

9 8.25 9 42.98
+ 26.06 − 8.74
9 34.31 34.24

+72 13 14.04 14.11

−29 53 53 53 18
1.51980 1.51970
−.2055 −.2055
1.49925 1.49915
+31.57 +31.56
− .67 − .07
− .74 − .85
+ .16 + .19

+30.32 +30.83

+72 13 44.36 44.94
+72 13 44.65 + 2 49.92
16 34.8 + 0.9
+2 50.2 − 4.0
50.3

+2 46.82

72 +16 31.47

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1876phae.proj.1485.

α Scorpii

h m s
16 21 45
−26° 09′ 9″
+68° 31′ 57″

N.A.
α m s 21 48.425
dα/dt + 3.669 s
δ₀ 9′ 16.90″
dδ/dt − 8.35″

log cos δ 9.95310
15 cos δ tan i 0.07826 thro Aug 5
0.07546 after Aug 5
tan g δ − 0.49 + 1.11
sin Z + .93

1876

	Aug. 2			Aug. 3			Aug. 5			Aug. 6	
	−.84 −.10			−.88			−.91			−1.05	
h m s 16 21 13.6	m s 21 31.4	m s 21 42.8	21 22.8	21 32.4	21 43.7	21 19.1	21 34.5	21 45.8	21 31.0	21 35.4	21 46.7
16.0	33.7	45.1	24.7	34.6	46.0	21.3	36.8	48.1	32.5	37.7	49.0
17.8	36.0	47.4	26.7	36.9	48.4	23.1	39.1	50.4	34.6	40.0	51.3
	38.3	52.0		39.3	53.0		41.4	54.8		42.3	53.9
	40.7	54.4		41.5	55.3		43.6	57.3		44.5	55.2
22 32.8	12.7	56.6	22 19.0	13.7	57.6	22 20.8	15.8	59.8		16.8	0.6
36.0	15.4	58.9	21.0	16.0	59.9	22.9	18.1	1.9		19.1	2.9
38.0	17.4	1.2	23.2	18.4	2.3	24.4	20.5	4.1		21.4	5.2
	19.7	5.7		20.7	6.8		22.8	8.8		23.7	9.7
	22.0	8.1		22.9	9.0		25.8	11.0		25.9	12.0
		10.5			11.3			13.4			14.3
	2670	3837		2764	3933		2984	3555		3068	3058
21 15.80		6227	21 24.73		6333	21 21.17		6555	21 32.70		
22 35.60	21 56.700	56.609 .561	22 21.07	21 57.640	57.573 .581	22 22.70	21 59.840	59.591 .701		22 0.680	0.527 .541
		21 56.585			21 57.537			21 59.646			2 × 2 0.534
	−5.63 +.41	21 51.38		−6.66 +.43	21 51.37		−8.76 +.44	21 51.34		−9.72 +.51	21 51.33
	−.11										
	−2.96			−2.94			−2.92			−2.90	
	−8.29			−9.17			−11.24			−12.11	h m s ~~16 21 48.383~~
	21 48.29			48.37			48.41			48.42	

+40.78
1.61045
1.68871

E₀ F	−39.02	+32.81	−23.53	~~+38.58~~	−23.05	+27.83 ~~−32.17~~	
G H	1.59129n	1.51601	1.37167n	1.58524	1.36267n	~~1.50745n~~	1.44451
	1.66955	1.59427	1.44988n	1.66350	1.44093n	~~1.58291~~ 1.51947	
30 2	[30] ~~20~~ 3	30 2	30 3	30 2	30 3	30 3	
24.0 18.1	59.6 52.2	33.2 25.5	40.5 34.2	33.6 —	47.4 40.0	16.6 9.5	
20.4 19.9	54.4 55.1	28.9 30.6	36.7 39.1	27.8 —	40.6 44.0	11.8 14.1	
44 180	140 73	621 561	772 133	614	80 40	84 236	
22.20 19.00	57.00 53.65	31.05 28.05	38.60 36.65	30.70	44.00 42.00	14.20 11.80	
32 20.60	33 ~~32~~ 55.32	32 29.55	33 37.62		33 43.00	33 13.00	
+ 48.83	− 46.72	+ 39.29	− 28.18	~~+ 46.08~~	− 27.60	+33.11 ~~38.28~~	
33 9.43	8.60	33 8.84	9.44		33 15.40	32 ~~33~~ ~~34.72~~ 46.11	
−26 10 21.08	20.25	10 20.49	21.09		10 27.05	9 ~~10~~ ~~46.37~~ 57.76	
68 29 ~~28~~ 28	30 54	29 29	30 37		30 42	29 20	
2.16146	2.16203	2.16153	2.16193		2.16197	2.16146	
− 747	− 747	− 740	− 740		− 1948	− 2144	
2.15399	2.15456	2.15413	2.15453		2.14249	2.14002	
− 14256	− 14274	− 14260	− 14273		− 13883	− 13804	
+ .35	+ .33	+ .23	+ .12	~~+ .33~~	+ .11	+ ~~.22~~ .17	
− .39	− .66	− .43	− .61	−	− .63	− .51	
+ .09	+ .16	+ .10	+ .14	+	+ .15	+ .13	
−2 22.51	−2 22.91	−2 22.70	−2 23.08		−2 19.20	−2 18.25	
−26 12 43.59	43.16	12 43.19	44.17		12 46.25	13 16.01	
12 43.38	+3 11.08	12 43.68	+3 11.77		+3 13.15		+3 43.61
9 33.5	−1.9	9 33.5	−1.9	9 33.5	−1.9	9 33.5	−2.0
	+16.6		+16.6		+16.6		+16.6
	+3 ~~26.38~~ 25.74		+3 26.47		+3 27.85		+3 58.21
	−26 9 ~~17.00~~ 17.60		9 17.21		9 18.40		9 17.90 .80

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-1.08

Aug. 8

21	37.4	21	49.2
	40.0		51.4
	42.4		53.7
	44.8		58.3
	47.0		06
	49.1		2.9
	51.4		5.2
	53.7		7.5
	56.0		12.1
	58.4		14.5
			16.7
	3305		2721
			321
22	3.050		2.918
			.911
		$2x^2$	2.914
	-12.11	21	51.31
	+.53		
	-2.89		
	-14.47		
	48.44		

A. R.

+3 ~~44.51~~
~~-2.0~~

-1.05

Aug. 9

21	38.0	21	50.3
	41.3		52.7
	43.5		53.70
	45.8		5.96
	48.2		1.7
	20.5		4.1
	22.6		6.3
	24.9		8.7
	27.2		13.3
	29.5		15.6
			18.0
	3425		28.53
			453
22	4.250		4.118
			.111
		$2x^2$	4.114
	-13.38	21	51.30
	+.51		
	-2.87		
	-15.74		
	48.37		

A. R.

+3 ~~46.37~~
~~-2.0~~

$16^h\ 21^m\ 48^s.383$

$-26°\ 9'\ 17''.75$

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16

		Not.			N.A	
		2m 58	4		14	"
July 28	3		47.97	76		21.0 8
Aug	2		47.21	79		22.5 7
	7		46.42	82		23.0 5
	12		45.60	85		23.5 5
	17		44.75	87		23.8 3
	22		43.88	90		24.1 3
	27		42.98			

	2m 58	4	
P'		44.43	
N.A		44.53	
P' N.A		−.10	
P'	14	17.4"	
N.A		17.5"	
P' N.A.		−.1"	

E

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E Upper Mm.

16 58 51

+82 14 22

−39 57 34

	m	s	n.A.
α_0	58	44.399	44.534
Corr^n		+ .03	
$\frac{d\alpha}{dt}$		−6.3754	
δ_0	14	16.94	17.48
Corr^n		+ .5	
$\frac{d\delta}{dt}$		−5.314	

log cos δ 9.13052

15 cos δ tan i 9.25288

tang δ +7.34 +7.37

sin Z −.64

log A-1 1.88291

A-1 76.38

log sin δ 9.99600

" cos δ 9.13052

" const. 6.73762

1876

	Aug 6	Aug. 8	Aug. 9	Aug. 10	Aug. 12	Aug. 13
	−1.05	−1.08	−1.05	−1.05	−1.09	−1.07
	h m s / m s	m s	m s	m s	m s	m s
	16 57 42.6 / 58 33.8	58 23.9	58 35.5	57 7.7	58 36.6	56 59.0
	3.3		48.1	10.5	45.4	57 10.4
	17.3		50.9	38.4	52.0	22.4
			58.5		59.2	
			6.4		6.4	
	0 41	59. 42.4	18.9	58 37.9	14.2	59 23.5
			21.7	48.7	22.0	35.1
			29.3	1.8	29.9	50.7
			36.4		37.4	
	27.79	29.57			30.31	
	58 34.0 / 37.9	58 23.90 / 33.7	57 21.87		6.31	57 10.60
	0 4.10 / 59 4.211	59 42.40	59 6.189	58 49.47	59 7.011	59 36.43
	−9.76 / 58 46.58	−12.14 / 58 46.26	−13.41	58 46.10	−14.51	58 45.94
	−.771 / + 14.63	−.793 / + 19.93	−.771	+ 20.91	−.771	+ 22.44
	+ 17.73	+ 20.03		+ 21.01		+ 22.54
	−2.05	−1.73	1.56		−1.41	
	−19.52	−21.80	22.68		−23.63	
	58 44.69	44.39	44.33		44.75	
	+60.81					
	1.78397					
	1.03685					
		−59.89	+42.29	−36.21	+105.14	+17.54
	f	1.77735$_n$	1.62624	1.55883$_n$	2.02177	1.24403
	g	1.08028$_n$	0.87912	0.81171$_n$	1.27465	0.49691
		10 1	10 3	10 2	10 3	10 2
		46.9 48.4	8.9 10.4	52.2 53.2	6.4 7.5	42.4 43.4
		46.1 35.5	8.1 58.6	49.7 38.9	4.9 62.9	40.8 29.6
		10 83.9	170 1200	1019 921	113 1204	32 730
		46.05 41.95	8.50 4.50	50.95 46.05	5.65 0.20	41.60 36.50
			12 6.50	12 48.50	13 2.92	12 39.05
			− 10.72	+ 7.57	− 6.48	+ 18.82
			55.78	56.07	55.44	57.87
82		9 53.24	52.57	9 52.28	52.91	9 50.48
−39		51 09	50 46	51 04	50 50	67 14
		1.68150	1.68140	1.68150	1.68140	1.68150
		−.2057	−.2057	−.1970	−.1970	−.1843
		1.66093	1.66083	1.66180	1.66170	1.66807
		+.4581	+.4580	+.4590	+.4589	+.4657
		− .27	− .26	− .13	− .10	− .81
		− .43	− .50	− .45	− .48	− .46
		+ .11	+ .12	+ .11	+ .12	+ .11
		+.4522	+.4516	+.4543	+.4543	+.4541
+82		10 38.46	37.73	10 37.71	38.34	10 35.89
		10 38.10	+3 43.61	10 38.02	+3 44.51	10 35.72
		14 22.4	+1.2	14 22.6	+1.2	14 22.7
		+3 44.3	−4.9	+3 44.6	−5.1	+3 47.0
		44.8	2	48.7	47.5	47.5
			+3 39.91		+3 40.61	
			44.5		44.9	
82			+14 18.01		+14 18.63	

	35.56	35.17	35.27
	10 35.22	10 35.22	10 34.88
	+3 46.32	+3 46.34	+3 46.77
	+1.2	+1.2	+1.2
	14 22.8	14 23.0	14 23.1
	+3 47.6	+3 48.1	+3 47.4
	48.1	48.6	47.9
	+3 42.22	+3 42.24	+3 42.47
	47.5	47.3	
	+14 17.94	+14 17.96	+14 17.35

	35.64	35.64
	10 35.92	10 35.73
	+3 46.36	+3 46.36
	+1.2	+1.2
	14 23.1	14 23.1
	+3 47.4	+3 47.4
	47.3	47.3
	+3 41.86	+3 41.86
	+14 17.59	+14 17.59

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18

1876

−96

Aug. 21

m 26 m 2
18 17.6 59 36.3
18.8 42.8
29.6 57.3
37.4
6.4
13.5
20.8
29.1
36.1

29.37
59 15.23 53.4
0 5.967

−1 14.66 58 44.06
−7.05 + 81.91
+ 82.01
+ 43.7
−1 21.24
+58 44.75

+50.74
1.70535
0.95823

10 2

55.0 57.4
55.8 44.1
8 10.15
55.40 50.75

12 53.08
+ 9.08
13 2.16
44.19
59 40.80

−39 57 00
1.68150
−360
1.67790
+4763
= .119
− .49
+ .11
+4706

+8210 3325
+3 48.27
14 23.8 +1.3
+3 50.6 −6.3
57.4
50.5 +3 43.27
82 +14 16.52

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ζ Herculis

α_0 8 59.625

Corr^a +.01

$\frac{d\alpha}{dt}$ +2.7336

δ_0 31 59.40

Corr^d −.15

$\frac{d\delta}{dt}$ −4.377

1876

17 8 57

+14° 32′ 41″

+27° 50′ 44″

log cos δ 9.98588

15 cos δ tan α 0.10824

tang δ +0.26 +1.03

sin z +.47

	Aug. 8				Aug. 9				Aug. 10				Aug. 12			
	17	8	43.6	8	51.5	9	1.9	8	42.8	8	52.6	9	3.1	8	43.5	8	53.7	9	4.3	8	45.3	8	56.0	9	6.4
			45.3		53.5		4.0		45.0		54.8		5.3		45.0		53.9		6.4		47.0		58.0		8.5
			47.0		53.6		6.2		46.4		56.9		7.4		46.7		58.0		8.5		48.8		0.2		10.7
					57.8		10.4				58.0		11.6				0.1		12.7				2.4		14.2
					59.9		12.6				1.1		13.7				2.3		14.8				4.5		17.0
	9	17.6			29.7		14.2	9	45.4		3.0	9	15.8	9	48.4		32.0		17.0	9	17.1		34.2		19.2
		53.5			31.9		16.8		47.4		33.0		18.0		50.1		34.2		19.1		53.1		36.4		21.4
		53.3			34.0		18.9		48.9		35.2		20.1		52.0		36.3		21.2		53.2		38.5		23.5
					36.2		23.2				37.3		24.4				38.5		25.6				40.6		27.7
					38.3		25.4				39.5		26.5				40.7		27.6				42.8		29.8
							27.5						28.6						29.7						31.9
					4484		1816				4004		1745				3517		1869				3136		2110
	8	45.30						8	44.73					8	45.07					8	47.03				
	9	53.47	9		14.840		14.611	9	47.23	9	16.040		15.864	9	50.17	9	17.170		16.991		53.13	9	19.360		19.182
							.711						.911						17.041						.231
				9	14.701							9	15.888					9	17.016					9	19.206
			−12.15	9	2.237				−13.42	9	2.225				−14.51	9	2.223				−16.70	9	2.189	
			−.28	+	12.46				−.27	+	13.66				−.27	+	14.80				−.28	+	17.02	
				+	12.45					+	13.65					+	14.79					+	17.01	
			−2.61						−2.60						−2.59						−2.57			
			−15.04						−16.29						−17.37						−19.55			
			+8 59.66						+59.60						+59.65 .65						+59.66			
			+29.40																					
			1.46835																					
			1.57659																					
			−38.77						+31.16		−31.44				+31.95		−33.15				+32.18		−33.92	
	E	F	1.57850n						1.49360		1.49610n				1.50447		1.52048n				1.52088		1.53046n	
	G	H	1.69674n						1.60184		1.60434n				1.61271		1.62872n				1.61583		1.63870n	
			50 3		55 0				50 3		50 4				50 3		50 4				50 3		50 4	
			34.4		27.0		1.1		53.4		32.0		24.9		52.9		45.2		30.8		23.9		55.3		48.1
			26.9		23.4		55.1		52.1		24.9		21.6		45.1		42.1		23.1		20.8		47.5		45.1
			61.3		10.4		1.6		55		56.9		46.5		98.0		87.3		53.9		44.7		102.8		93.2
			30.65		25.20		58.10		52.75		28.45		23.25		49.00		43.65		26.95		22.35		51.40		46.60
			53		27.92		55.42		53		25.85		48.82		53		24.65		49.00		53		25.70		50.52
			+		27.72		49.74		+		39.98		46.32		+		41.00		42.53		+		41.29		43.52
			54		5.44		5.68		54		6.83		6.11		54		5.65		6.47		54		6.99		7.00
+	14		28		42.71		42.67		28		42.52		42.24		28		42.70		41.38		28		42.36		41.35
+	27		49		35		51		02		49		33		50		53		49		32		50		56		49		33		50		58
			1.48270				1.48310				1.48270				1.48310				1.48265				1.48310				1.48265				1.48310		
			−1935				−1935				−1820				−1820				−1287				−1287				−1403				−1403		
			1.46335				1.46375				1.46950				1.46990				1.46978				1.47023				1.46862				1.46907		
			−29.06				−29.09				−29.48				−29.51				−29.50				−29.53				−29.42				−29.45		
			− .11				− .19				− .13				− .13				− .14				− .15				− .14				− .16		
			− .56				− .78				− .58				− .82				− .58				− .82				− .58				− .82		
			+ .14				+ .08				+ .14				+ .19				+ .14				+ .19				+ .14				+ .19		
			−29.59				−29.98				−30.05				−30.27				−30.08				−30.31				−30.00				−30.24		
+	14		28		13.12		12.69		28		12.47		11.97		28		12.62		11.07		28		11.36		11.11	
+	14		28		12.90		+3 44.51		28		12.22		+3 46.32		28		11.84		+3 46.34		28		11.24		+3 46.77	
			31		57.4		−1.0		31		57.5		−1.0		31		57.6		−1.0		31		57.8		−1.0	
			+3		44.5		+2.0		+3		45.3		+1.9		+3		45.8		+1.8		+3		46.9		+1.6	
					44.0						44.8						45.3						46.1			
							+3 45.51						+3 47.22						+3 47.14						+3 47.37	
	14						+31 58.41						+31 59.44						+31 58.98						+31 58.61	

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1876

m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s
		Aug. 13 (−1.07)						Aug. 15 (−1.04) +						Aug. 21 (−.96) +						Aug. 22 (−.85) +			
9	23.4			9	7.6	8	49.9	8	55.9	9	6.4	9	43.5	9	53.7	10	4.2	9	48.6	9	54.0	10	4.5
					9.8		51.6		58.1		8.6		45.7		55.8		6.3		50.7		56.1		6.7
					12.0		53.4		0.2		10.7		47.4		58.0		8.5		52.3		58.2		8.8
					16.1				2.3		14.9				0.1		12.7				1.3		13.0
					18.3				4.4		17.0				2.3		14.9				2.5		15.2
9	41.8				20.4	9	46.8		34.3		19.2	10	49.8		31.9		17.1	10	58.5		32.3		17.3
	43.8				22.6		49.3		36.4		21.3		51.3		34.1		19.3				34.4		19.4
	45.9				24.8		51.2		38.5		23.4		53.2		36.4		21.3				36.6		21.6
					29.0				40.6		27.7				38.4		25.5				38.7		25.8
					31.2				42.7		29.9				40.7		27.6				40.8		27.9
					33.2						32.0						29.8						30.0
					2250				3134		2181				3514		1872				3549		1902
9	23.40					8	51.63					9	45.53					9	50.53				
9	43.83			9	20.455	9	49.10	9	19.340		19.191	10	51.43	10	17.140		17.018	10	58.50	10	17.490		17.291
											211						011						.361
				9	20.455					9	19.201					10	17.014					10	17.326
		−17.97		9	2.177			−16.78		9	2.148			−1	14.66	9	2.064			−1	15.07	9	2.050
		−.28		+	18.28			−.27		+	17.05				−.25	+	7495				−.22	+	7528
				+	1827					+	1704					+	7494					+	7527
		−2.56						−2.582							−2.44						−2.43		
		−20.81						−19.57						−1	17.35					−1	17.72		
		+59.65						+59.63						+8	59.66						+59.61		

− 2.95
1.46982n
1.57806n

		Aug. 13		Aug. 15		Aug. 21		Aug. 22	
E	F	−23.38		+27.57	−29.90	+31.48	−34.42	+26.80	−41.17
G	H	1.36884n		1.44044	1.47567n	1.49803	1.53681n	1.42813	1.61458n
		1.47708n		1.54868	1.58391n	1.60627	1.64505n	1.53637	1.72282n
				50 3	50 4	50 3	50 4	50 3	55 0
A.R.				36.8 29.1	50.8 43.1	30.1 25.9	55.7 50.4	39.7 34.7	6.3 1.3
				30.5 27.9	43.6 40.9	26.1 21.9	49.4 47.8	34.5 31.5	2.4 0.0
				67.3 57.0	94.4 40	56.2 78	105.1 98.2	14.2 6.2	8.7 1.3
				33.65 28.50	47.20 42.00	28.10 23.90	52.55 49.10	37.10 33.10	4.35 0.65
				53 31.07	54 44.60	53 26.00	54 ~~50.32~~ 50.82	53 35.10	55 ~~2.25~~ 2.50
				+ 35.37	− 38.36	+ 40.39	− 44.16	+ 34.38	− 52.82
				54 6.44	6.24	54 6.39	~~5.66~~ 6.66	54 9.48	9.68
+	14			28 41.91	42.11	28 41.96	41.69	28 38.87	38.67
+27				49 38	50 52	49 33	50 58	49 42	51 10
				1.48270	1.48310	1.48265	1.48310	1.48270	1.48320
				−2008	−2008	−340	−340	−970	−970
				1.46262	1.46302	1.47925	1.47970	1.47300	1.47350
				−29.01	−29.04	−30.15	−30.18	−29.72	−29.75
				− .10	− .12	− .13	− .16	− .09	− .22
				− .59	− .80	− .58	− .82	− .61	− .00
				+ .14	+ .19	+ .14	+ .19	+ .14	+ .00
				−29.56	−29.77	−30.72	−30.97	−30.28	−29.97
+14				28 12.35	12.34	28 11.24	10.72	28 8.59	8.70
		+3 46.36		28 12.34	+3 46.17	28 10.98	+3 48.27	28 8.64	+3 49.67
31	57.9	− 1.0		31 58.1	− 1.0	31 58.5	− 1.1	31 58.6	− 1.1
		+ 1.5		+3 45.8	+ 1.3	+3 47.5	+ 0.9	+3 50.0	+ 0.8
				45.3		47.0		49.5	
		+3 46.86			+3 46.47		+3 48.07		+3 49.37
14					+31 58.81		+31 59.05		+31 58.01

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-.95

Aug. 23 ×

9	48.7	9 57.4	10 4.9
	50.6	56.5	7.1
	52.3	58.6	9.1
		0.8	13.4
		8.0	13.5
10	17.4	32.7	17.7
	53.2	34.8	19.8
	54.7	37.1	21.9
		39.0	26.1
		41.3	28.3
			30.5
		3582	1943
9	50.53		
10	53.10	10 17.820	17.664
			.691
			10 17.678
		-1 15.35	9 2.036
		-.25	+ 7564
			+ 7563
		-2.41	
		-1 18.01	
		+59.67	

Aug. 24
C.V.J.

-1.04

Aug. 28 ×

9	54.6	9 57.5	10 8.0
	56.5	59.6	10.1
	58.6	1.7	12.2
		3.9	16.6
		6.0	18.6
		35.8	20.8
		38.0	22.9
		40.0	25.1
		42.1	29.2
		44.3	31.5
			33.7
		3289	2287
9	56.57		
		10 20.870	20.791
			.761
			10 20.776
		-1 18.59	9 1.956
		-.27	+ 7882
			+ 7881
		-2.33	
		-1 21.19	
		+59.59	

+ 27.15
1.43377
1.54201

E	F
G	K₀
50 '	50 '
3 "	4 "
37.1	31.9
32.1	28.9
9.2	6.8
34.60	30.40
53	32.50
+	34.84
54	7.34
+ 14 2.8	41.01
+ 27 49	40
1.48270	
-380	
1.47890	
-30.16	
- .10	
- .59	
+ .14	
-30.71	
+14 28	10.30
+14 28	10.01
31'	58.6
+3	48.6
	48.1
	+3 48.74
14	+31 58.75

-35.42
1.54925 n
1.65749 n

50 '	50 '
4 "	3 "
57.4	32.2
52.2	50.7
9.6	2.9
54.80	51.45
54	53.12
—	45.45
	7.65
	40.70
57	00
1.48320	
-380	
1.47980	
-30.19	
- .17	
- .83	
+ .20	
-30.99	
	9.71
+3	49.04
	-.1
	+0.8

A.R.

+ 24.21
1.38399
1.49223

50 '	50 '
3 "	3 "
43.9	38.7
38.1	87.1
8.20	1.58
41.00	37.90
53	39.45
+	31.06
54	10.51
28	37.84
49	46
1.48270	
-1125	
1.47145	
-29.61	
- .08	
- .67	
+ .15	
-30.21	
28	7.63
31	58.9
+3	51.3
	50.8
+3	51.24
	-.41
	+0.5
+3	50.64
+31	58.47

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α Ophiuchi

α 17 29 7
+12° 39 10"
+ 29° 43' 38"

1876

L_0	29 10.705	log cos δ	9.98933
Corr α	+ .03	15 constant	0.11169
$\frac{d\alpha}{dt}$	+2.7819	tang δ	+ 0.22 + 1.02
δ_0	39 6.88	sin z	+.50
Corr δ	− .6		
$\frac{d\delta}{dt}$	−2.892		

Aug 12 +

−1.09

h	m	s	m	s	m	s													
17	28	57.3	29	4.3	29	17.6	28	55.9	29	8.6	29	19.0	28	54.5	29	7.2	29	17.6	
		59.1		9.5		18.8		57.7		10.6		21.0		56.3		9.3		19.9	
		0.9		11.6		22.0		59.4		12.7		23.1		58.8		11.4		21.9	
				13.7		26.2				14.8		27.3				13.5		26.2	
				15.7		28.3				16.9		29.5				15.7		28.2	
30		4.6		45.4		30.4	30	8.3		46.5		31.6	30	4.9		45.4		30.3	
		6.7		47.5		32.5		9.9		48.7		33.7		7.2		47.4		32.5	
		8.6		49.6		34.7		12.0		50.8		35.9		9.0		49.4		34.5	
				51.6		36.8				52.9		40.0				51.6		38.7	
				53.7		40.9				55.0		42.2				53.8		40.9	
						43.1						44.3						43.0	
				30.56		33.43				31.75		34.76				30.49		33.37	
28	59.10						28	57.67					28	56.53					
30	6.63		29	30.560		30.391	30	10.07	29	31.750		31.600	30	7.03	29	30.490		30.336	
						.432						.632						.352	
					29	30.412					29	31.616					29	30.349	
				+16.73	29	13388				−17.98	29	13.377				−16.79	29	13.353	
				−.24	+	1702				−.23	+	1824				−.23	+	1700	
					+	16.99					+	18.21					+	1697	
				−2.698						−2.687						−2.65			
				−19.65						−20.88						−19.67			
			+29	10.76						+10.74						+10.68			

Aug 13 +

−1.07

Aug 15 +

−1.04

Aug 21 +

−.96

h	m	s	m	s	m	s													
29	37.4		30	5.1	30	15.3													
	57.5			7.2		17.6													
	58.8			9.2		19.7													
				11.2		23.9													
				13.4		26.1													
30	59.0			43.0		28.2													
	0.7			45.2		30.3													
	2.3			47.3		32.5													
				49.4		36.6													
				37.5		38.7													
						40.8													
				28.25		30.99													
29	57.00																		
31	0.67		30	28.250		28.173													
						.122													
					30	28.148													
			−1	14.66	29	13.274													
				−.21	+	74.89													
					+	74.84													
				−2.57															
			−1	17.44															
			+29	10.71															

+31.31
1.49568
1.60737

E			−36.22				+33.95		−38.45			+33.82		−36.68			+31.15		−32.52	
			1.55895m				1.53084		1.58490n			1.52917		1.56443n			1.49346		1.51215n	
G			1.67064m				1.64253		1.69659n			1.64086		1.67612m			1.60515		1.62384n	
	45	1		45	2		45	1		45	2		45	1		45	2		45	1		45	2	
	22.1	17.7		49.9	43.9		18.5	12.4		52.1	45.9		18.1	13.1		50.9	44.7		21.1	18.8		43.6	37.8	
	16.9	14.1		43.1	40.7		12.2	10.1		44.9	41.7		12.1	11.2		44.3	42.9		17.0	14.3		37.9	35.6	
	390	118		130	46		107	25		970	46		102	43		952	46		381	131		815	154	
	46			47			46			47			46			47			46			47		
	19.50	15.90		46.50	42.30		15.35	11.25		48.50	43.80		15.10	12.15		47.6	43.8		19.05	16.55		40.75	37.70	
	46	17.70		47	44.10		46	13.30		47	46.15		46	13.62		47	45.70		46	12.80		47	39.22	
																				17.80				
	+	40.49		−	46.84		+	43.91		−	49.73		+	43.74		−	47.44		+	40.28		−	42.06	
	46	58.19			57.54		46	57.21			56.37		46	57.36			58.26		46	58.08			57.16	
											42													
+12	35	50.16			50.79		35	51.14			51.93		35	50.99			50.09		35	50.27			51.19	
+29	42	25		43	51		42	20		43	53		42	21		43	53		42	26		43	46	
	1.51640			1.51690			1.51640			1.51690			1.51640			1.51690			1.51640			1.51680		
	−1360			−1360			−1468			−1468			−1964			−1964			−296			−296		
	1.50280			1.50330			1.50172			1.50222			1.49676			1.49726			1.51344			1.51384		
	−3183			−3186			−31.75			−31.78			−3139			−3142			−3262			−3265		
	−	.11		−	.15		−	.13		−	.35		−	.13		−	.35		−	.11		−	.12	
											.19						.16							
	−	.22		−	.46		−	.20		−	.48		−	.20		−	.45		−	.22		−	.46	
	+	.05		+	.11		+	.05		+	.11		+	.05		+	.11		+	.05		+	.11	
12	−	32.11		−	32.36		−	32.03		−	32.32		−	31.67		−	31.92		−	32.90		−	33.12	
+12	35	18.05			18.43		35	19.11			19.61		35	19.32			18.17		35	17.34			18.07	
+12	35	18.24	+3		46.77		35	19.36	+3		46.36		35	18.74	+3		46.17		35	17.72	+3		48.27	
	39	5.5			.0		39	5.6			.0		39	5.8			−1.1		39	6.3			−1.1	
	+3	47.3			+1.4		+3	46.2			+1.3		+3	47.1			+1.1		+3	48.6			+0.6	
		46.7						45.6						46.5						48.0				
				+3	47.17					+3	46.66					+3	46.17					+3	47.77	
12				+39	5.41					+39	6.02					+39	4.91					+39	5.49	

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-.85

Aug.22 X

-.95

Aug.23 X

-1.06

Aug.26 X

-1.04

Aug.28 X

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1876phae.proj.1485

1876 +

−1.00

Aug. 29

h	m	s		m	s		
17	30	42	30	42	30	19.5	
		6.0		11.3		21.7	
		8.2		13.3		23.7	
				15.5		28.0	
				17.5		30.1	
	31	2.7		47.3		32.2	
		4.7		49.3		34.3	
		6.8		51.4		36.4	
				53.5		40.6	
				13.6		42.8	
						44.9	
				3239		3542	
	30	6.13					
	31	4.73	30	32.390		32.200	
						262	
					30	32.231	
			−1	18.82	29	13.150	
				−.22	+	79.08	
					+	79.05	
				−2.45			
			−1	21.49			
			+1	0.74			

+26.10
1.41664
1.52833

		−32.50
Eg	J	1.51188 m
G	Mo	1.62357 m

45	1	45	2
299	265	459	425
274	237	411.0	403
173	162	69	28
28.65	25.10	43.45	41.40
46	26.88	47	42.42
+	3376	−	42.03
47	0.64		0.39
+12 35	47.71		47.96
+29 42	38	43	49
	1.51645		1.51680
	−1140		−1140
	1.50505		1.50540
	−3199		−32.02
	− .08		− .12
	− .25		− .49
	+ .06		+ .11
	−32.26		−32.52
+12 35	15.45		15.44
+12 35	15.44	+3	51.41
	39' 6.8		−1.2
	+3 51.4		+0.1
	50.8		
		+3	51.31 50.31
			50.
12		+39	6.75 5.75
			5.

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28

35 Draconis

17 m 55 s 3

+76° 58' 40"

− 34° 35' 52"

1876

Aug. 26

α_0	54	59.894		
Corrα		+ .24		
$\frac{d\alpha}{dt}$		− 2.964		
δ_0	58	39.66		
Corrδ		+ .2		
$\frac{d\delta}{dt}$		− 0.203		

log cosδ 9.35263

15 cosδ tanα 9.47499

tanδ +4.32 + 4.44

sin z −.57

17	55	55.8	56 4.4
		8.3	9.2
		9.6	13.7
			18.3
			22.9
	56	49.2	27.2
		56.5	32.4
		47	36.6
			41.4

2061

56 22.3

56 56.80 56 22.900

−1 17.60 55 0.528

−4.58 + 8.237

+ 8.213

− 0.64

−1 22.82

55 17.08

+20.67

1.31534

0.79033

−33.90

E γ 1.53020n

G π 1.00519m

25	3	25	3
28.1	27.6	44.0	43.2
26.8	15.0	41.1	31.4
14.9	42.6	51	7.46
27.45	21.30	42.55	37.30
28	24.38	28	39.92
+	6.17	−	10.12
28	30.55		29.80
+76 54	17.80		18.55
−34 35	29	35	13
	1.59870		1.59860
	−1314		−1314
	1.58556		1.58546
	+38.51		+38.50
	− .05		− .15
	− .58		− .63
	+ .14		+ .16
	+38.02		+37.88
+76 54	55.82		56.43
+76 54	56.12		+3 50.37
	58	48.4	+1.2
+3	52.3		− 8.7
	52.5		
			+3 42.87
76			+5838.99

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α Lyrae

18h 32m 42s

+38° 40' 6"

+3 42 42

α_0 18h 32m 44s.406

Corr^n + .02

$\frac{d\alpha}{dt}$ +2.031

δ_0 38° 40' 9".41

Corr^n + .1

$\frac{d\delta}{dt}$ +3.143

log cos δ 9.89254

15 cos δ tan i 001490

tan q +0.80 +1.28

sin z +.076

1876

	Aug. 8		Aug. 9		Aug. 11		Aug. 12	
	−1.08	×	−1.05	×	−.05	×	−1.09	
h m s	18 32 32.9	32 31.3	32 44.1	32 15.0	32 32.5	32 45.4	32 16.3	32 33.5
	35.0	33.8	46.9	18.2	35.0	48.0	18.7	36.2
	37.0	86.6	49.6	20.4	37.8	50.8	20.7	38.8
		39.4	53.8		40.5	56.1		41.5
		41.7	57.5		43.1	59.8		44.1
	33 36.5	—	0.1	33 31.6	19.9	1.4	33 41.9	21.0
	38.6	—	2.9	34.1	22.6	3.9	44.4	23.8
	41.9	—	5.4	36.7	25.2	6.5	46.4	26.4
		—	10.8		28.0	11.9		29.0
		—	13.2		30.6	14.7		31.7
			15.8			17.2		
		36.540	3011		31.52	3147		32.60
	32 34.97		11	32 17.87			32 18.57	
	33 39.33	0.138	33 0.100	33 33.803	1.520	33 1.336	33 44.23	2.600
						.360		
			33 0.119			33 1.348		
		−12.22	32 47.056		−13.48	32 47.042		−14.56
		−.86	+ 13.06		−.84	+ 14.31		−.84
			+ 13.04			+ 14.29		
		−2.65			−2.63			−2.62
		−15.73			−16.95			−18.02
		+32 44.39			+44.40			+44.39

	Aug. 8	Aug. 9	Aug. 11	Aug. 12
	+25.15			
	1.40054			
	1.41544			
	−39.21	+43.48 −32.45	+43.84 −41.82	+29.80 −42.20
	1.59340n	1.63829 1.51121n	1.64187 1.62138n	1.47422 1.62531n
	1.60830n	1.65319 1.52611n	1.65677 1.63628n	1.48912 1.64021n
	45 0	45 0 45 1	45 0 45 2	45 0 45 2
	52.9 50.5	59.9 57.0 35.1 32.7 54.5 51.8	34.2 32.2 41.1 41.4	46.5 44.9 36.0 09
	46.6 39.9	55.2 47.4 30.6 25.6 50.1 43.4	29.9 23.0 59.1 53.1	42.5 37.0 57.5 53.1
	1015 904	151 1044 57 563 46 952	641 552 1232 1145	120 819 1231 1140
	50.75 45.20	57.55 52.20 32.85 28.15 52.30 47.60	32.05 27.60 1.60 57.25	46.00 40.95 1.55 57.00
	45 47.98	46 54.88 45 30.50	46 49.95 45 28.82 47 29.42	45 43.48 46 59.28
	+ 26.03	− 40.58 + 45.00	− 33.58 + 45.37 46 59.42	− 43.68 + 30.84
	46 14.01	14.30 46 15.50	16.37 46 15.19	16.14 46 14.32
+ 38	36 34.34	34.05 36 32.85	31.98 36 33.16	32.21 36 34.03
+ 3	41 55	43 02 41 38	42 57 41 37	43 06 41 50
	0.57080	0.57300 0.57020	0.57300 0.57020	0.57320 0.57060
	−1640	−1640 −1100	−1100 −1014	−1014 −1232
	0.55440	0.55660 0.55920	0.56200 0.56006	0.56306 0.55828
	−3.58	−3.60 −3.62	−3.65 −3.63	−3.66 −3.62
	− .17	− .41 − .51	− .29 − .57	− .47 − .24
	− .13	− .30 − .08	− .31 − .08	− .34 − .12
	+ .03	+ .08 + .02	+ .07 + .02	+ .08 + .03
	−3.85	−4.23 −4.19	−4.18 −4.20	−4.34 −3.95 −4.37
+ 38	36 30.49	29.82 36 28.66	27.80 36 28.96	27.82 36 30.08 28.38
+ 38	36 30.15	+3 44.51 36 28.23	+3 46.32 36 28.39	+3 46.34 36 28.23 +3 46.77
	40 14.84	− 0.1 40 14.86	− 0.1 40 14.48	− 0.1 40 14.6 − 0.1
	+3 44.2	− 5.0 +3 46.84	− 5.2 +3 46.4	− 5.4 +3 46.0 − 5.8
	44.3	46.85	46.85	46.1
		+3 39.41	+3 41.02	+3 40.84 +3 40.87
38		+40 9.56	+40 9.25	+40 9.23 +40 10.10

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-1.07 + Aug. 13 | -.96 + Aug. 21 | -.95 + Aug. 23 | -1.06 + Aug. 26

m	R	m	R																
32	219	32	340	32	380	38	24.0	33	33.4	33	46.4	33	34.7	33	34.1	33	47.1	33	40.6	33	36.6	33	48.3
	247		39.7		52.6		25.8		36.1		49.1		36.4		36.7		49.7		43.0		38.0		62.0
	27.0		42.3		55.3		28.3		38.7		51.7		38.7		39.3		52.3		45.8		41.7	[54.]	55.7
			44.9		0.5				41.4		57.0				42.1		55.7				44.3		0.1
			47.5		8.2				44.0		59.6				44.6		0.3				46.8		2.6
33	41.5		24.6		5.9	34	36.0		20.9		2.1	34	36.0		21.8		3.0	34	37.7		23.9		5.3
	43.7		27.0		8.5		38.2		23.6		4.8		37.0		24.3		5.6		39.7		26.5		7.7
	45.7		28.8		11.1		40.0		26.2		7.6		38.3		27.0		8.3		42.1		29.3		10.5
			32.3		16.4				28.8		10.0				29.3		13.6				31.7		16.0
			35.0		18.0				31.5		13.6				32.1		16.2				34.5		18.4
					21.7						18.1						18.8						21.1
																							23.
			36.01		24.42				32.46		32.50				33.15		27.26				35.43		23.7
32	24.53				44.2	33	26.03					33	36.60				32.6	33	43.13				5.7
33	43.63	32	6.010	33	5.836	34	38.07	34	2.460	34	2.273	34	37.10	34	3.150	34	2.964	34	39.90	34	5.430	34	5.324
					.850						300						.770						245
				33	5.843					34	2.286					34	2.977					34	52.58
			-18.01	32	46.986			-1	14.66	32	46.868			-1	15.37	32	46.846			-1	17.61	32	46.772
			-.86		+ 1886				-.77		+ 75.42				-.76		+ 7615				-.85		+ 78.49
					+ 1884						+ 75.40						+ 7613						+ 78.47
			-2.56						-2.46						-2.42						-2.36		
			-21.43					-1	17.89					-1	18.55					-1	20.82		
			.00					+32	44.40						+44.43						+44.44		
			+44.41																				

+41.31
1.61606
1.63096

		-37.70			+36.26	-35.78			+26.38	-34.12			+22.13	-34.64					
E	F	1.57438m			1.55943	1.55364m			1.42127	1.53301m			1.34498	1.53958m					
G	H	1.57228m			1.57433	1.56884m			1.43617	1.54791m			1.35988	1.55448m					
45	0	45	1		45	0	45	1		45	0	45	1		45	0	45	1	
35.7	32.8	58.2	55.5		40.1	39.7	54.7	54.3		52.1	50.4	53.6	52.7		51.2	54.5	55.3	53.3	
34.2	25.1	54.1	48.4		37.5	29.1	52.3	45.2		47.9	42.5	51.1	43.5		54.5	45.7	52.8	46.8	
70	579	123	1039		776	688	70	995		1020	929	47	982		117	1662	81	1001	
33.95	28.95	56.15	51.95		38.80	34.40	53.50	49.75		51.00	46.45	52.35	49.10		55.85	50.10	54.05	50.05	
45	31.45	46	54.05		45	36.60	46	51.62		45	48.72	46	50.72		45	52.98	46	52.05	
	+ 4275		- 39.11			+ 37.53		- 37.03			+ 2730		- 35.31			+ 2290		- 35.85	
46	14.20		14.94		46	14.13		14.59		46	16.02		15.41		46	15.88		16.20	
36	34.15		33.41		36	34.22		33.76		36	32.33		32.94		36	32.47		32.15	
41	38	43	01		41	44	42	59		41	56	42	58		42	00	42	59	
0.557020		0.557300			0.557040		0.557300			0.557080		0.557300			0.557100		0.557800		
-1844		-1844			-156		-156			-93		-93			-1280		-1280		
-1332		-1332																	
0.556488		0.559668			0.556884		0.557144			0.556987		0.557207			0.558820		0.560520		
3.60		- 3.63			- 3.71		- 3.73			- 3.71		- 3.73			- 3.62		- 3.63		
- .46		- .38			- .35		- .34			- .19		- .31			- .13		- .32		
- .08		- .32			- .10		- .31			- .14		- .31			- .15		- .32		
+ .02		+ .08			+ .02		+ .07			+ .03		+ .07			+ .04		+ .08		
- 4.11		- 4.25			- 4.14		- 4.31			- 4.01		- 4.28			- 3.86		- 4.19		
36	30.94		29.16		36	30.08		29.45		36	28.32		28.66		36	28.61		27.96	
36	29.60	+3	46.36		36	29.77	+3	48.27		36	28.29	+3	47.04		36	28.28	+3	50.37	
40	17.7		- 0.1		40	16.32		- 0.1		40	16.6		- 0.1		40	17.57		- 0.1	
+3	45.8		- 6.0		+3	47.1		- 7.5		+3	48.7		- 7.8		+3	49.4		- 8.3	
	45.9					47.2					48.8					49.5			
		+3	40.26				+3	40.67				+3	41.14				+3	41.97	
38		+40	9.86				+40	10.44				+40	9.63				+40	10.25	

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	Aug. 28	Aug. 29	Aug. 30	Sept. 2
	+ −1.04	−1.00 +	−1.03 +	−1.04 +
	33 22.5 / 24.5 / 27.1	33 37.3 / 39.7 / 42.5 / 45.1	33 37.3 / 40.1 / 42.8 / 45.4	33 37.4 / 40.3 / 42.9 / 45.6
	33 31.9 / 34.3 / 36.1	33 37.3 / 40.1 / 42.8 / 45.4	33 37.4 / 38.0 / 39.8	33 37.8 / 40.3 / 42.9 / 45.6
	33 30.4 / 33.1 / 35.8 / 38.0	33 30.4 / 33.1 / 35.8 / 38.0	33 37.4 / 38.0 / 39.8	33 37.8 / 40.3 / 42.9 / 45.6
	33 50.7 / 53.3 / 56.0 / 58.3	33 50.7 / 53.3 / 56.0 / 58.3	33 50.7 / 53.3 / 56.0 / 58.3	33 50.7 / 53.3 / 56.0 / 58.3
	32 58.7 / 59.0 / 59.4	32 58.7 / 59.0 / 59.4	32 58.7 / 59.0 / 59.4	32 58.7 / 59.0 / 59.4
	32 49.3 / 52.0 / 54.7 / 57.9	32 49.3 / 52.0 / 54.7 / 57.9	32 49.3 / 52.0 / 54.7 / 57.9	32 49.3 / 52.0 / 54.7 / 57.9
	34 40.2 / 43.2 / 46.1	34 42.5 / 44.3 / 46.1	34 28.0 / 29.7 / 31.4	33 52.0 / 53.8 / 56.3
	33 24.70 / 34 43.17	33 34.10 / 34 44.30	33 37.73 / 34 29.70	33 1.07 / 33 54.03
	34 6.240	34 6.118 / .080 / 34 6.099	34 6.720	34 6.536 / .560 / 34 6.548
	34 6.490	34 6.273 / .330 / 34 6.582	34 6.720	34 6.536 / .560 / 34 6.548
	33 5.218 / 33 5.218 / 32 46.624 / + 12.57 / + 18.57			
	−1 18.55 / −.83 / 32 46.736 / + 79.36 / + 79.34	−1 18.81 / −.80 / 32 46.712 / + 79.59 / + 79.57	−1 18.05 / −.82 / 32 46.690 / + 79.86 / + 79.84	−17.74 / −.83 / + 18.57
	−2.33 / −1 21.71 / +44.39	−2.30 / −1 21.91 / +44.39	−2.28 / −1 22.15 / +44.40	−2.21 / −20.78 / +44.44
	+ 41.40 / 1.61700 / 1.63190			
	−37.07	+32.20	−38.00	**+28.82	−23.15	+4.72	−48.81
	Fe 1.56902 m	1.60786	1.57978 m	1.45969	1.36455 m	0.62531	1.68851 m
	He 1.58392 m	1.52276	1.59468 m	1.47459	1.37945 m	0.64021	1.70341 m
	45 0	45 0	45 1	45 0	45 1	45 1	45 2
	37.1 / 35.9	45.9 / 45.0	59.0 / 58.0	50.4 / 48.5	45.0 / 43.6	18.1 / 16.3	11.3 / 9.8
	58.9 / 57.3	59.0 / 58.0	59.0 / 58.0	50.4 / 48.5	45.0 / 43.6	18.1 / 16.3	11.3 / 9.8
	35.4 / 28.0	44.9 / 37.1	57.5 / 51.2	46.8 / 40.5	42.3 / 35.6	14.6 / 6.5	7.3 / 2.1
	57.0 / 51.2	57.5 / 51.2	57.5 / 51.2	46.8 / 40.5	42.3 / 35.6	14.6 / 6.5	7.3 / 2.1
	125 639 / 159 85	108 821 / 165 92	165 92	992 90	73 792	127 228	186 119
	36.25 31.95 / 57.95 54.25	45.40 41.05 / 58.25 54.60	58.25 54.60	49.60 44.50	43.65 39.60	16.35 11.40	9.30 ~~54.50~~ 3.95
	45 34.10 / + 42.85 / 46 16.95	45 43.22 / + 33.82 / 46 16.54	46 56.12 / − 39.23 / 17.09	45 47.05 / + 29.83 / 46 16.88	46 41.62 / − 23.96 / 17.66	46 13.88 / + 4.37 / 46 18.25	47 ~~4.40~~ 7.63 / − 30.52 / 17.10
	− 38.57 / 17.73	− 39.23 / 17.09					
+ 38	36 31.40 / 30.62	36 31.81 / 31.26	36 31.47 / 30.69	36 30.10 / 31.25	
+ 3	41 41 / 0.57040 / − .834 / − .823 / 0.56217 / − .365 / − .46 / − .11 / + .02 / − 4.20	41 50 / 0.57060 / − .733 / − .833 / 0.56227 / − .365 / − .27 / − .13 / + .03 / − 4.02	41 54 / 0.57080 / − 1260 / 0.55820 / − .362 / − .28 / − .14 / + .03 / − 3.96	42 21 / 0.57180 / − 1090 / 0.56090 / − .364 / − .01 / − .23 / + .05 / − 3.83
	43 03 / 0.57300 / − .804 / − .823 / 0.56477 / − .367 / − .36 / − .34 / + .08 / − 4.29	43 03 / 0.57300 / − .733 / − .833 / 0.56467 / − .367 / − .38 / − .34 / + .08 / − 4.31	42 49 / 0.57260 / − 1260 / 0.56000 / − .363 / − .14 / − .31 / + .07 / 4.01 / − 3.25	43 15 / 0.57340 / − 1090 / 0.56250 / − .365 / − .62 / − .40 / + .08 / − 4.59
+ 88	36 27.20 / 26.33	36 27.79 / 26.95	36 27.51 / 26.68	36 26.27 / 26.66
+38	36 26.77 / 46 18.80 / +3 51.2 / 51.3 / + 3 51.24 / − 0.1 / − 8.6	36 27.37 / 40 18.12 / +3 50.8 / 50.9 / + 3 51.41 / − 0.1 / − 8.8	36 24.10 / 40 18.63 / +3 51.2 / 51.3 / + 3 51.41 / − 0.1 / − 8.9	36 26.47 / 40 18.70 / +3 52.2 / 52.3 / + 3 51.55 / − 0.1 / − 9.3
	+ 3 42.54	+ 3 42.51	+ 3 42.41	+ 3 42.15
38	+40 9.31	+40 9.88	+40 9.51	+40 8.62

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32

	m	"
Aug 28	32 46.74	40 18.0
Sept 2	46.63	11 18.7 7
7	46.51	12 19.3 6
12	46.40	11 19.8 5
17	46.28	12 20.1 3
22	46.16	12 20.3 2
27	46.03	13 20.5 2
Oct 2	45.91	12 20.5 0
7	45.78	13 20.5 0
12	45.66	12 20.3 2
17	45.54	12 19.9 4
22	45.42	12 19.4 5
27	45.31	11 18.9 5
	-1.03	-.97

Sept 3 +

	R	m	R	m	R
32	17.6	32	36.0	32	49.1
	20.1		38.7		51.6
	22.4		41.3		54.2
			43.9		59.6
			46.6		2.2
33	48.0		23.6		48
	50.2		26.2		7.5
	52.7		28.8		10.2
			31.5		15.5
			34.1		18.2
					20.8
32	20.37 D3		35.07		29.37
33	50.36	33	5.07 0	33	4.88 2
					.91 0
				33	4.89 6
			-17.45	32	46.60 3
			-.82	+	18.30
				+	18.28
			-2.19		
			-20.46		
			+44.44		

Sept 6 +

	R	m	R	m	R
32	17.7	32	34.5	32	47.6
	19.7		37.1		50.2
	22.2		39.8		52.8
			42.4		58.0
			45.0		0.8
33	46.2		22.0		3.4
	48.0		24.7		6.0
	50.6		27.0		8.6
			30.0		14.0
			32.6		16.6
					19.2
32	19.87		33.51		27.72
33	48.27	33	3.51 0	33	3.38 2
					.35 0
				33	3.96 6
			-16.05	32	46.52 8
			-.78	+	16.84
				+	16.82
			-2.12		
			-18.95		
			+44.42		

Oct 3 +

	R	m	R	m	R
32	6.7	32	19.7	32	32.6
	9.2		22.3		35.3
	11.1		24.9		38.0
			27.6		43.2
			30.2		46.0
33	24.1		7.1		48.5
	26.0		9.8		51.1
	28.7		12.4		53.8
			15.0		56.1
			17.7		1.7
					4.3
32	9.00		18.67		41.36
33	26.27	32	48.67 0		48.50 9
					.51 0
				32	48.57 0
			-1.88	32	45.87 8
			-.71	+	2.63
				+	2.61
			-1.47		
			-4.06		
			+44.48		

Oct 9 X

	R	m	R	m	R
32	14.7	32	17.5	32	30.7
	17.0		20.3		33.4
	19.4		22.9		35.9
			24.5		41.2
			28.1		44.0
33	16.3		5.0		46.4
	18.8		7.6		49.0
	20.5		10.3		51.7
			13.0		57.0
			15.9		59.8
					2.3
32	17.03		16.61		45.14
33	18.53	32	46.61 0		46.49 1
					.45 0
				32	46.47 0
			-0.06	32	45.72 6
			-.66	+	0.74
				+	0.72
			-1.32		
			-2.04		
			+44.43		

+24.87 H
1.65196
1.66686

		-45.40		+43.50	-44.90	+39.51	-37.76
E	H	1.65706 m		1.63849	1.65225 m	1.59671	1.57703 m
G	H	1.67196 m		1.65339	1.66715 m	1.61161	1.59193 m
45	0	45 2		45 0	45 2	45 0	45 1
33.9	32.2	7.1	5.6	34.0	34.1	6.5	6.3
31.9	24.1	5.7	0.5	33.2	25.9	6.4	5.7
58	563	138	61	72	600	9	60
32.90	28.15	6.40	3.05	33.60	30.00	6.45	5.00 3.00
45	30.52	47	4.72	45	31.80	47	9.22 4.72
+	4644	−	46.98	+	4502	−	46.47
46	16.96		17.74	46	16.82		17.25 8.26
	38 36	31.39	30.61	36	31.53	30	40.10

+3	41	38	43	12	41	39	43 12
	0.57020		0.57420 340		0.57020		0.57420 340
	−883		−883		−597		−597
	0.56137		0.56457		0.56423		0.56743
	−3.64		−3.67		−3.67		−3.69
	− .54		− .56		− .50		− .54
	− .09		− .40		− .09		− .40
	+ .02		+ .08		+ .02		+ .08
	−4.25		−4.54		−4.24		−4.55
+38	36	27.14	26.07	36	27.29	25.55	
+38	36	26.60	+3 52.84	36	26.42	+3 53.14	
	40	18.8	−0.2	40	19.2	−0.2	
	+3	52.2	−9.4	+3	52.8	−9.8	
		52.3			52.9		
			+3 43.24			+3 43.14	
38			+40 9.84			+40 9.56	

		+39.51	-37.76		+29.44	-32.06	
		1.59671	1.57703 m		1.46894	1.50596 m	
		1.61161	1.59193 m		1.48384	1.52086 m	
		45 0	45 1		45 0	45 1	
		34.7	37.9	33.0	43.0	49.8	48.9
		37.1	27.2	31.9	47.9	35.9	50.5
		118	651	129	129	857	994
		35.90	32.55	56.45	46.45	42.85	49.70
		45	34.22	46	54.85	45	44.15 44.65
		+	4089	−	39.08	+	30.47
		46	15.11		15.77	46	15.12
		36	33.24		32.58	36	33.23

		41	41	43	02	41	52
		0.57040		0.57300		0.57080	
		−170		−170		+914	
		0.56870		0.57130		0.57994	
		−3.70		−3.73		−3.80	
		− .41		− .37		− .23	
		− .15		− .48		− .17	
		+ .02		+ .08		+ .03	
		−4.24		−4.50		−4.17	
		36	29.00		28.08	36	29.06
		36	28.54	+3	52.19	36	28.76
		40	20.5		−0.2	40	20.5 4
		+3	52.0		−11.1	+3	51.6
			52.1				51.7
				+3	40.89		
				+40	9.43		

		42	56				
		0.57280					
		+914					
		0.58194					
		−382					
		− .27					
		− .45					
		+ .07					
		−4.47					
		36	28.46				
		+3	52.63				
			−0.2				
			−11.0				
			+3 41.43				
			+40 10.19				

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1876phae.proj.14857

-.79 +

Oct. 11

32	99	32	168	32	300	32	87.1		—	32	—
	11.9		19.6		32.7				—		—
	13.9		22.3		35.4				—		—
			24.9		40.5				—	43.98	38.7
			27.5		43.2				—	.94	41.3
33	22.2		4.5		45.9	33	24.7	33	2.6	.90	43.9
	24.7		7.0		48.5		27.4		5.2	.86	46.5
	—		9.8		51.1		30.4		7.9	49.52	49.3
			12.4		53.4				10.4	48.84	54.4
			15.0		59.0				13.0	.90	57.1
					1.7					.86	57.7
			1598		4444				7.820		
32	11.90				5044	32	37.10				
		32	45.980		45.855	33	27.60		43.891	32	43.912
					820						
				32	45838					32	43912
			+0.47	32	45678				+2.25	32	45582
			—.63	+	0.16				—.58	—	1.68
				+	0.14					—	1.70
			-1.27						-1.17		
			-1.43						+0.50		
			+44.41						+43.42		0.40

		+33.94	+6.80	−43.70	
		1.53071	0.83251	1.64048 n	
		1.54561	0,84741	1.63538 n	
	45 0	45 1	45 1	45 1	
	40.7 45.1	57.2 26	12.1 18.1	44 10.1	
	43.0 38.0	58.9 48.9	13.1 3.96	4.7 54.0	
	37 757	161 1115	52 1377	11 1241	
	41.85 37.85	58.05 55.75	12.60 8.85	4.55 2.05	
	45 39.85	46 56.90	46 10.72	46 3.30	
	+ 35.12		+ 7.04	— 45.22	
	46 14.97		46 17.76	18.08	
38	36 33.38		36 30.59	30.27	
3	41 47		42 18	42 10	
	0.57060		0.57160	0.57140	
	+794		+1548	+1548	
	0.58054		0.68705	0.68685	
	— 381		— 386	— 386	
	— .81		— .02	— .50	
	— .18		— .31	— .29	
	+ .03		+ .05	+ .04	
	— 4.27		— 4.14	— 4.61	
+38	36 29.11		36 26.45	25.66	
+38	36	+3 52.17	36 26.05	+3 52.75	
	40 20.8	3 — 0.2	40 20.0	— 0.2	
	+3 51.2	— 10.9	+3 54.0	— 10.6	
	51.3		54.1		
		+3 41.07		+3 41.95	
38		+40 10.18		+40 8.00	

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ζ Tauri

4h 28m 45s		α_0	28m 48s.390	
+16° 15′ 22″		Corr.	− .01	
		$\frac{d\alpha}{dt}$	+ 3.4364	
+ 26° 07′ 26″		δ_0	15′ 29.45″	
		Corr δ	− .3	
		$\frac{d\delta}{dt}$	+ 7.605″	

log cos δ 9.98227

15 cos δ tan i 0.10743 thro Aug 5.
0.10463 after Aug 5

tang δ. + 0.29 + 1.04

sin z + .44

1876

	July 31		Aug. 2			Aug. 3			Aug. 10	
	+ −.80		−.84 −.10 +			−.88 +			−1.05 ×	
h m s: 4 29 27.5	m s	m s	29 21.7	28 32.9	28 43.4	28 23.3	28 34.0	28 44.6	28 35.9	28 42.0 / 28 52.6
29.1			23.2	35.0	45.7	24.7	36.0	46.7	37.4	44.3 / 54.9
30.5			25.3	37.1	47.9	26.7	38.2	48.7	39.2	46.4 / 57.0
				39.2	52.3		40.3	53.1		48.6 / 1.3
				41.4	54.1		42.5 38200	53.7		50.7 / 3.4
	29 9.5			11.5	56.2		12.5	57.3		20.7 / 5.6
	11.8			13.7	58.4		14.6	59.5		22.8 / 7.7
	14.0	29		15.6	0.7		16.8	1.6		25.0 / 9.7
	16.0	54.44 8.0		17.9	4.9		19.0	6.0		27.2 / 14.1
	18.2	.40 5.1		20.0	7.0		21.1 16800	8.1		29.3 / 16.3
		.46 7.3			9.3			10.3		18.4
	13.900			26.43 / 56.43	37.99 / 61.99		2750	3910 / 5710		3570 / 2410 / 610
29 29.03	54.446	28 54.433	29 23.40	56.430	28 56.355 / .300	28 24.90	28 57.500	57.364 / .370	28 37.50	29 5.700 / 5.545 / .570
		28 54.440			28 56.328			28 57.367		29 5.558
	−4.35	28 49.882		−6.04	28 49.946		−7.13	28 49.978		−15.04 / 28 50.202
	−.23	+ 4.56		−.24	+ 6.38		−.28	+ 7.39		−.30 / + 15.36
		+ 4.57		−.10	+ 6.39			+ 7.40		+ 15.37
	−1.49			−1.56			−1.59			−1.81
	−6.04			−7.94			−8.98			−17.15
	+28 48.40			+48.39			+48.39			+48.41

E F / G H		July 31		Aug. 2		Aug. 3		Aug. 10	
		−34.59 / 1.53895n / 1.64638n		−27.07 / 1.43249n / 1.53992n		+32.47 / 1.51148 / 1.61891		+28.06 / 1.44809 / 1.55272	
10′	0′			10 0		5 4		5 4	
35.7″	32.5″			25.1 20.2		10.2 4.1		52.7 45.7	
30.3	29.1			20.4 19.1		3.7 4.5		43.4 42.2	
6.0	61.6			55 39.3		13.9 6		96.1 7.9	
33.00	30.80			22.75 19.65		6.95 4.30		48.05 43.95	
10	31.90			10 21.20		9 5.62		9 46.00	
−	44.30			− 34.67		+ 41.58		+ 35.70	
9	47.60			9 46.53		9 47.20		10 21.70	
+16 13	0.75			13 1.82		13 1.15		12 26.65	
+26 7	31			7 20		6 05		5 53	
1.45075				1.45070		1.45030		1.45030	
−809				−240		−525		−804	
1.44266				1.44830		1.44505		1.44226	
−2771				−2807		−2786		−2769	
− .18				− .11		− .15		− .12	
− .08				− .05		− .70		− .82	
+ .02				+ .01		+ .16		+ .19	
−27.95				−28.22		−28.55		−28.44	
12	32.80	+3 10.87		12 33.60	+3 10.58	12 32.60	+3 11.48	11 58.21	+3 46.00
15′ 42″.8		−0.8		15 43.0	−0.9	15 43.1	−0.9	15 43.8	−0.9
+3 10.0 / 9.7		−13.4		+3 9.4 / 9.1	−13.5	+3 10.5 / 10.2	−13.7	+3 45.6 / 45.3	−14.3
		+2 56.67			+2 56.18		+2 56.88		+3 30.80
16		15 29.47			+15 29.78		+15 29.48		+15 29.01

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-1.09

+ Aug. 12

29 15.8
17.8
19.7

28 55.0
57.2
58.3
3.6
5.7
7.7
10.0
12.2
16.5
18.6
20.7

29 17.77

26.65
8.65
29 78.64

29 78.64
-17.31 28 60.66
-.32 + 17.60
+ 17.61

-1.88
-19.51
+48.35

-9.91
E H 0.99607n
G H 1.00390n

10 0

39.8 33.3
32.9 29.5
12.7 6.28
36.35 31.40

10 33.88
— 12.61
10 21.27

+ 16 12 27.08

+ 26 6 41
1.45080
-1093
1.43957
-.2752
- .01
- .10
+ .02

-27.61

+16 11 59.47 +3 46.23
15' 44.0 - 0.9
+3 44.5 -14.6
44.2

+3 30.73

16 +15 30.20

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36

Quirgae

5h 7m 27s

+45° 52' 5"

−3° 29' 17"

α_0 7m 31.876s

Corr α − .02s

$\frac{d\alpha}{dt}$ + 4.4238

δ_0 52' 9.39"

Corr δ + .1"

$\frac{d\delta}{dt}$ + 4.131"

log cos δ 9.84282

15 constant 9.96798 Hour Angs

9.76518 after Aug 5

tang δ + 1.03 + 1.44

sin z − .06

1876

Aug. 1

J −.82
−.10

h	m	s
5	7	10.7
		13.0
		15.0
		17.1
		19.1
		21.0
		23.4
		25.5
		27.5
		29.5
		31.5
		33.5
		35.5
		37.5
		39.5
		41.5
		43.5
		45.5
		47.5
		49.5
		51.5
		53.5
		55.5
		57.5
		59.5
7	12.90	

m	s
7	7.1
	10.1
	13.1
	16.1
	19.1
	22.0
	24.6
	27.5
	30.5
	33.5
	36.5
	39.5
	42.5
	45.5
	48.5
	51.5
	54.5
	57.5
	980

m	s
7	21.9
	24.7
	27.8
	30.8
	33.8
	36.6
	39.7
	42.6
	45.5
	48.5
	51.5
	54.4
	57.5
	4360

m	s
7	39.850
	39.636
	621
	39.628
	33.460
	6.17
	6.19

−5.19	
−.84	
−.14	
−1.58	
−7.75	
+7 31.88	

m	s
7	2.67

+26.73
1.42700
1.39498

E
G

30 43

22.1 20.7
19.9 12.1
4.20 3.28
21.00 16.40

34.3 18.70
+ 24.83
34.3 43.53

45 48.9 4.82

−3 28.9 42
0.54410
− 860
0.53550
+ 3.43
− .18
− .42
+ .17
+ 2.91

+45 48.9 7.58
+3 11.30
52' 13.6 + 0.1
+43 65.19 − 4.2
6.0

+3 7.20

45 +52 14.93

Aug. 2

J −.84
−.10

m	s
7	8.1
	11.1
	14.1
	17.0
	19.9
	1.5
	4.4
	7.3
	10.3
	13.1
	16.0
	18.9
	21.8
	24.8
	27.8
	30.8
	33.8
	36.8
	39.8
	42.8
	45.8
	48.8
	51.8
	54.8
	57.8
	1068

m	s
7	22.7
	25.8
	28.7
	31.6
	37.6
	40.5
	43.6
	46.5
	52.4
	53.3
	58.3
	4460

m	s
7	40.680
	40.545
	501
	40.523
	33.500
	7.02
	7.04

−6.07	
−.86	
−.14	
−1.62	
−8.69	
+31.83	

m	s
7	4.0
	6.0
	8.4

m	s
7	6.13

+37.85
1.54807
1.54605

30 3

16.4 14.4
13.7 6.5
101 212
15.05 10.60

33 12.82
+ 35.16
38 47.98

49 0.37

29 48
0.54640
− 448
0.54192
+ 3.48
− .39
− .54
+ .13
+ 2.68

49 3.05
52 13.5
+3 10.5
10.6

+3 10.58
+ 0.1
− 4.1

+3 6.58

+52 9.63

Aug. 3

J −.88

m	s
7	9.1
	12.1
	15.1
	18.1
	21.0
	24.0
	27.0
	30.0
	33.0
	36.0
	38.9
	41.9
	44.9
	47.9
	50.9
	53.9
	56.9
	59.9
	1173

m	s
7	23.7
	26.8
	29.8
	32.8
	35.6
	38.6
	41.6
	44.6
	47.6
	50.3
	53.3
	56.3
	59.3
	4572

m	s
7	41.730
	41.564
	557
	41.558
	33.540
	8.02
	8.04

−7.16	
−.90	
− 1.66	
−9.72	
+31.84	

m	s
6	55.9
	58.0
	0.9

m	s
6	58.60

+35.43
1.54937
1.51735

30 3

18.2 17.4
15.6 9.7
138 271
16.90 13.55

33 15.22
+ 32.91
33 48.13

49 0.22

29 46
0.54640
− 684
0.53956
+ 3.46
− .35
− .54
+ .13
+ 2.70

49 2.92
52 13.5
+3 10.6
10.7

+3 11.48
+ 0.1
− 4.1

+3 7.48

+52 10.40

+47.70
1.64852

A. R.

Aug. 6

J −1.05

m	s
7	14.0
	16.9
	19.9
	22.7
	25.7
	7.2
	10.2
	13.1
	16.1
	19.0
	1648

m	s
7	28.5
	31.5
	34.4
	40.4
	43.3
	46.4
	49.3
	52.3
	58.2
	1.0
	4.0
	3793
	5093

m	s
7	46.480
	46.300
	301
	46.300
	33.660
	1264
	1266

−11.57	
−1.08	
−1.78	
−14.43	
+31.87	

+ 0.1

1876phae.proj.1485

1876

Aug. 7 −1.05 +

Aug. 8 −1.08 +

Aug. 9 −1.05 ×

Aug. 10 −1.05 ×

Aug. 7					Aug. 8				Aug. 9				Aug. 10			
6 560	7 14.0	7 28.5	7 10.7		7 15.2	7 29.7	7 27.1		7 16.2	7 31.0	7 34.1		7 [7.5]37	32.3		
590	16.9	31.5	12.9		18.2	32.9	28.6		19.2	33.9	36.7		20.5	35.1		
0.9	19.9	34.5	15.5		21.1	35.7	31.9		22.2	36.9	39.0		23.6	38.1		
	22.7	40.4			24.0	41.7			25.2	42.8			26.3	43.9		
	25.7	43.3			27.0	44.6			28.1	45.8			29.3	46.9		
	7.2	46.4			[8.5] 9.5	47.6	7 49.0		9.7	48.1			10.7	48.9		
	10.2	49.3			11.4	50.6	57.2		12.4	51.7			13.9	53.0		
	13.1	52.3			14.4	53.6	53.2		15.5	54.7			16.6	56.0		
	16.1	58.1			17.3	59.4			18.4	0.5			19.8	1.8		
	19.0	1.0			20.4	2.5			21.5	3.5			22.7	4.7		
		4.0				5.4				6.6				17.6		
	1648	3893			1785	4037			1886	3561			2611	3693		
6 5863		5993	7 13.03			5234	7 29.53			5361	7 36.60		5011	5493		
	7 46.480	46.300			7 47.850	47.609	7 51.13		7 48.860	48.736			7 52.110	7 49.936		
		301				577				1.81				537		
	7 46.300				7 47.593				7 48.708					7 49.934		
	−11.53	7 33.780			−12.79	7 33.740			−13.89	7 34.780			−15.08	7 33.820		
	−1.08	+ 1260			−1.11	+ 1385			−1.08	+ 1493			−1.08	+ 1611		
		+ 12.62				+ 13.87				+ 14.95				+ 16.13		
	−1.82				−1.86				−1.90				−1.94			
	−14.43				−15.76				−16.87				−18.10			
	+31.87				+31.83				+31.84				+31.83			

		+47.67		+34.56			+19.18	−2.42			+13.33					
E	I	1.674824		1.53857			1.28285	0.383824			1.12483					
G	K						1.24803	0.34900$_{n}$			1.09001					
							30 4				30 4					
		A.R.		A.R.			29.4 26.5				16.5 13.4					
							26.1 16.7				12.3 3.0					
							155 432				88 164					
							27.75 21.60				14.40 8.20					
							34 24.68	34 24.68			34 11.30					
							+ 1770	— 223			+ 12.30					
							34 42.38	34 22.45			34 23.60					
45							48 5.97	48 2590			48 24.75					
−3							29 28	29 28			29 42					
								0.54570			0.54620					
								−1044			−1013					
								0.63526			0.53607					
								+343			+3.44					
								− .00			− .05					
							− .74	− .44			− .71					
							+ .18	+ .18			+ .17					
								+2.87			+2.85					
45								48 28.77			48 27.60					
		+3 44.00		+3 43.75					+3 45.00				+3 46.00			
		+0.1		+0.1					+0.1				+0.1			
								52 13.4	−4.0		52 13.4		−4.0			
								+3 44.6			+3 45.8					
								44.7			45.9					
									+3 41.10				+3 42.10			
									+52 9.87				+52 9.70			

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See for continuation of α Aurigae & for β Orionis a few pages beyond, after α Orionis

1876

For continuation see p. 44.

Aug. 12 √ −1.09

m	s	m	s
7	19.9	7	34.5
	22.9		37.5
	25.7		40.4
	28.8		46.4
	31.7		49.4
	13.2		52.3
	16.1		55.2
	19.1		58.3
	22.0		4.2
	25.0		7.0
			10.0
	2244		3952
			5752
7	52440		52.291
			.261
		7	52276
	−17.33	7	38900
	−1.12	+	1838
		+	1840
	−2.02		
	−20.47		
	+31.81		

8 50.4, 52.7, 54.9 — 8 52.67

Aug. 15 −1.04 √ +

m	s	m	s
8	7.9	8	22.7
	10.9		25.8
	13.9		28.7
	16.9		34.6
	19.9		37.5
	1.5		40.4
	4.3		43.5
	7.4		46.5
	10.3		52.4
	13.4		55.2
			58.2
	1064		4455
	4064		
	40,640	8	40.500
			.961
		8	40.480
−1	5.46	7	34024
	−1.07	+	66.46
		+	66.48
	−2.14		
−1	8.67		
	+31.81		

8 9.1, 11.7, 14.2 — 8 11.67

Aug. 21 −.96 √

m	s	m	s
8	17.7	8	32.2
	20.6		35.3
	23.6		38.1
	26.5		44.1
	29.4		47.1
	10.9		49.9
	14.0		53.1
	16.7		56.0
	19.9		2.0
	22.9		5.0
			7.8
	2022		3706
			5506
8	50.220		50.055
			.041
		8	50.048
−1	14.85	7	34276
	−.979	+	7577
		+	75.79
	−2.40		
−1	18.24		
	+31.81		

8 48.6, 45.9, 49.0 — 8 46.17 +

Aug. 26 −1.06 √

m	s	m	s
8	[21.0]	8	35.5
	24.0		38.4
	26.7		41.5
	29.8		47.5
	32.6		50.3
	14.3		53.2
	17.6		56.1
	20.0		59.0
	23.0		6.2
	26.0		8.3
			11.7
	2350		4077
	5350		5877
	53500	8	53.427
			.321
		8	53374
−1	17.76	7	34.493
	−1.09	+	78.88
		+	78.90
	−2.61		
−1	21.46		
	+31.91		

~~−0.16~~

E F
G H

A.R. A.R.

−12.19		+7.20	
1.086600n	+38.38	0.85733	
1.05118n	1.58410	0.82251	
30 4		30 4	
39.8 35.2		23.8 22.1	
36.3 26.4		21.6 13.8	
161 616		54 359	
38.05 30.80		22.70 17.95	
34 34.42		34 20.32	
− 11.25		+ 6.64	
34 23.17		34 26.96	
48 25.18		48 21.39	
29 19		29 33	
0.54530		0.54580	
−1481		−1162	
0.53049		0.53418	
+3.39		+3.42	
− .05		− .02	
− .78		− .73	
+ .18		+ .17	
+2.74		+2.84	
48 27.92		48 24.23	
52 13.3		52 13.4	
+3 45.4		+3 49.2	
45.5		49.3	

+45
−3
+45

Aug. 12	Aug. 15	Aug. 21	Aug. 26
+3 46.23	+3 45.83	+3 46.90	+3 49.52
+0.1	+0.1	+0.1	+0.1
	−3.9		−4.0
	+3 42.03		+3 45.62
	+52 9.95		+52 9.85

45

+ 2
+ 1.

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β Tauri

5 18 23

+28 29 57

+13 52 51

α_0 18 27.249

Corr$^{\alpha}$ −.81 −.00

$\frac{d\alpha}{dt}$ +3.789

δ_0 30 07.7

Corr$^{\delta}$ +4.1

$\frac{d\delta}{dt}$ +3.42

log cos δ 9.94390

15 cos δ tan i 0.06906 then Aug 5
0.06626 after Aug 5

tan δ +0.54 +1.14

sin z +.24

1876

Aug. 2

J −.84 −.10 +

5	18	6.7	18	9.6	18	21.3													
		8.6		12.0		23.6	18	7.2											
		10.5		14.5		26.0		9.7											
				16.8		30.7		11.7											
				19.1		33.1													
				37.9		35.4													
				37.2		37.7													
				37.6		40.1													
				37.0		44.7													
				1.3		47.1													
						49.5													
				2950		3892													

18 8.43 | 18 9.53

			18	35.580		35.382													
						.358													
					18	35.370													
				-6.08	18	28.726													
				-.45	+	6.64													
				-.11	+	6.64													
				-1.48															
				-8.128															
			+18	27.25															

Aug. 3

J −.88 +

18	7.2	18	10.7	18	22.3	18	22.9												
	9.7		13.0		24.6		25.0												
	11.7		15.4		27.0		27.2												
			17.8		31.7														
			20.1		34.0														
			53.0		36.4														
			55.3		38.9														
			57.4		41.0														
			0.0		45.8														
			2.3		48.1														
					50.5														
					4004														
			2463		3984														

18 9.53 | 18 25.03

18	36.530		36.400																
			.388																
		18	36.394																
-7.17		18	28.758																
-.47		+	7.64																
		+	7.64																
-1.57																			
-9.15																			
+27.24																			

Aug. 6

J −1.05 ×

18	15.3	18	26.9	18	22.9														
	17.7		29.2		25.0														
	20.0		31.6		27.2														
	22.4		36.3																
	24.7		38.6																
	27.6		41.0																
	29.9		43.3																
	2.3		45.7																
	4.6		50.3																
	7.0		52.7																
			55.0																
	2315		4506																

18 41.150

			40.964																
			41.008																
		18	40.986																
-11.58		18	28.854																
-.57		+	12.13																
		+	12.13																
-1.60																			
-13.75																			
+27.24																			

Aug. 7

J −1.05 ×

18	15.3	18	26.8	18	22.9														
	17.7		29.2		25.0														
	20.0		31.6		27.1														
	22.4		36.3																
	24.7		38.6																
	27.6		41.0																
	29.9		43.3																
	2.2		45.7																
	4.7		50.4																
	7.0		52.8																
			55.0																
	2315		4507																

18 24.67

18	41.150		40.973																
			41.008																
		18	40.990																
-11.34		18	28.786																
-.57		+	12.13																
		+	12.10																
-1.64																			
-13.75																			
+27.24																			
+27																			

Aug. 2

			+26.94	
		E	1.43040	
		H	1.49946	
	55	0		
	4.8	3.2		
	3.2	0.3		
	8.0	3.5		
	4.00	1.75		
	55	2.88		
	+	31.58		
	55	34.46		
+28	27	13.89		
+13	52	02		
	1.15270			
	−515			
	1.14755			
	−1405			
	−	.14		
	−	.00		
	+	.00		
	−14.21			
+28	26	59.68	+3	10.58
	30′	9.5	−	0.4
	+3	9.8	−	8.7
		10.9		
			+3	1.48
+28			+30	1.16

Aug. 3

			+26.86	
		E	1.42911	
		H	1.49817	
	55	0		
	4.6	3.2		
	3.2	0.9		
	7.8	4.1		
	3.90	2.05		
	55	2.98		
	+	31.49		
	55	34.47		
	27	13.88		
	52	02		
	1.15270			
	−780			
	1.14490			
	−1396			
	−	.14		
	−	.00		
	+	.00		
	−14.12			
	26	59.76	+3	11.48
	30	7.5	−	0.4
	+3	9.7	−	8.7
		10.8		
			+3	2.38
			+30	2.14

Aug. 6

			+15.96	
		E	1.20303	
		H	1.26929	
	55	0		
	31.0	27.7		
	28.3	23.6		
	59.3	1.13		
	29.65	25.65		
	55	27.65		
	+	18.59		
	55	46.24		
	27	2.11		
	51	35		
	1.15250			
	−2108			
	1.13142			
	−1353			
	−	.06		
	−	.05		
	+	.01		
	−13.63			
	26	48.48		
	30	9.6	−	0.5
	+3	21.1	−	8.8
		22.2		

Aug. 7

			+15.99	
		E	1.20385	
		H	1.27011	
	55	0		
	52.9	48.7		
	48.8	44.8		
	101.7	13.5		
	50.85	46.75		
	55	48.80		
	+	18.62		
	56	7.42		
	26	40.93		
	51	36		
	1.15280			
	−2113			
	1.13167			
	−1354			
	−	.06		
	−	.14		
	+	.03		
	−13.71			
	26	27.22	+3	44.00
	30	9.6	−	0.5
	+3	42.4	−	8.9
		43.5		
			+3	34.60
			+30	1.82

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40

Aug 8	m 18	2891	16	30	9.6	1
13		29.07	17		9.9	1
18		29.24	17		9.9	2
23		29.41	17		10.1	2
28		29.58	17		10.3	2
Sept 2		29.75	17		10.5	1
7		29.92	17		10.6	2
12		30.09	18		10.8	2
17		30.27			11.0	2

1876

J1.08 Aug 8 +

m	R	m	R														
18	13.0	18	16.7	18	28.2	18	15.0	18	17.9	18	29.4	18	12.6	18	21.3	18	32.9
	15.1		19.0		30.7		17.0		20.1		31.7		14.8		23.7		35.2
	16.9		21.4		33.0		19.0		22.5		34.1		16.5		26.0		37.6
			23.8		37.6				24.8		38.8				28.4		42.3
			26.0		40.0				27.1		41.0				30.7		44.6
			28.8		42.4	19	16.9		0.0		43.4				34.5		46.9
			1.2		44.6		18.4		2.4		45.8				35.9		49.3
			3.6		47.0		20.1		4.6		48.1				8.2		51.7
			5.8		51.7				6.9		52.8				10.6		56.3
			8.3		54.0				9.4		53.0				13.0		58.2
					56.4						57.5						1.0
	1846				4656				1357		4776				1713		4565
18	1500					18	17.00					18	14.63				5165
		18	42.460		42.327	19	18.47	18	43.570		43.418			18	47.130		46.955
					.318						428						588
				18	42.322					18	43.423					18	46.972
			-12.80	18	28.918		-13.90	18	28.950						-17.34	18	29.046
			-.58	+	1340		-.57	+	1447						-.59	+	1793
				+	13.40			+	1447							+	17.93
			-1.67				-1.70								-1.80		
			-15.05				-16.07								-19.73		
			+27.27				+27.85								+27.24		

J1.05 Aug 9 +

J1.09 Aug 12 ×

-1.04 Aug 15 ×

19	27.6	19	11.9	19	21.1														
	29.4		14.2		23.5														
	31.3		16.6		25.8														
			18.8		30.6														
			57.7		32.9														
			54.1		35.2														
			56.5		37.6														
			58.8		39.9														
			1.2		44.5														
					46.8														
					49.2														
			2934		3871														
19	2943		3534																
			35.340	19	35.191														
					198														
				19	35.194														
		-1	5.47	18	29.146														
			-.56	+	66.05														
				+.	66.05														
			-1.70																
		-1	7.92																
		+18	27.27																

+27.32
1.43648
1.50274

+26.42
1.42193
1.48814

-35.05
1.54469
1.61095

+32.34
1.50974
1.57600

+5.76
0.76042
0.82668

55	0			55	1					55	0			55	1				
38.8	36.3			52.8	49.3					35.7	32.7			6.3	1.9				
36.2	30.2			48.7	44.5					33.2	27.5			2.9	58.3				
150	65			101.5	138					89	60.2			9.2	120.2				
37.50	33.25			50.75	46.90					34.45	30.10			4.60	0.10				
55	35.38			56	48.82	56	48.82			55	32.28			56	2.35				
+	31.82			+	30.77	−	40.83			+	37.67			+	6.71				
56	7.26			57	19.59		7.99			56	9.95			56	9.66				
26	41.15			25	28.76	26	40.36			26	38.40			26	39.29				

13	57	42				52	56			51	39			52	09				
1.15250						1.15320				1.15250				1.15270					
−1307						−1100				−1332				−1481					
1.13943						1.14220				1.13918				1.13799					
−13.79						−13.87				−13.78				−13.74					
−	.17					−	.28			−	.24			−	.01				
−	.10					−	.31			−	.08			−	.17				
+	.02					+	.07			+	.02			+	.04				
−14.04						−14.39				−14.08				−13.88					
26	27.11					26	25.97			26	24.32			26	25.41				
		+ 3	43.75					+ 3	45.00			+ 3	46.23			+ 3	45.83		
30	9.6		−0.5			30	9.6		−0.5	30	9.7		−0.5	30	9.8		−0.5		
+3	42.5		−8.8			+3	43.6		−8.8	+3	45.4		−8.9	+3	44.4		−9.1		
	43.6						44.7				46.5				45.5				
		+ 3	34.45					+ 3	35.70			+ 3	36.82			+ 3	36.23		
28		+ 30	1.56					+ 30	1.67			+ 30	1.15			+ 30	1.64		

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1876

Aug. 21 (−.96) +

19 11.0 | 13.0 | 14.7

19 19.1 | 21.5 | 23.8 | 26.2 | 28.4 | 1.3 | 3.6 | 6.0 | 8.3 | 10.7 | 1489

19 30.6 | 33.0 | 35.3 | 40.0 | 42.3 | 44.8 | 47.0 | 49.4 | 54.1 | 56.5 | 58.7 | 4917

19 12.90

19 44.890 | 44.700 | 148 | 19 44.724 | 18 29.350 | + 7537 | + 7537

−1 14.85 | −.52 | −2.10 | −1 17.47 | +27.25

Aug. 26 (−1.06) +

19 21.8 | 23.7 | 25.6 | 19 23.70

19 22.4 | 24.7 | 26.9 | 29.1 | 31.7 | 4.2 | 6.7 | 9.6 | 11.2 | 13.7 | 1802 | 4802

19 33.9 | 36.0 | 38.4 | 43.1 | 45.4 | 47.8 | 52.1 | 52.5 | 57.2 | 59.6 | 1.8 | 4658 | 5258

19 48.020 | 19 47.800 | 878 | 19 47.839 | 18 29.520 | + 7832 | + 7832

−1 17.76 | −.57 | −2.27 | −1 20.60 | +27.24

Aug. 28 (−1.04)

Ch. f.

−.56

Sept. 4 (−1.00) ×

18 17.8 | 19.6 | 22.0 | 18 19.80

18 [21.3] | [23.7] | 26.0 | 28.7 | 31.0 | 3.9 | 6.1 | 8.5 | 10.8 | 13.3 | 1733 | 4733 | 18 47.330

18 33.1 | 35.7 | 37.9 | 42.6 | 44.7 | 47.1 | 49.6 | 51.9 | 56.5 | 59.0 | 1.5 | 4596 | 5196 | 18 47.236 | 188 | 18 47.212 | 18 29.826 | + 1739 | + 1739

−16.84 | −.54 | −2.58 | −19.96 | +27.25

	Aug. 21	Aug. 26	Aug. 28	Sept. 4
	+31.82	+24.14		+27.41
	1.50270	1.38274		1.43791
	1.56896	1.44900		1.50417
	55 0	55 0	55 0	55 0
	34.6 34.3	47.6 44.4	44.8 42.7	44.8 41.5
	34.2 28.1	44.3 40.7	42.4 37.7	40.3 38.7
	8 62.4	119 51	72 80.4	51 80.2
	34.40 31.20	45.95 42.55	43.60 40.20	42.55 40.10
	55 32.80	55 44.25	55 41.90	55 41.32
	+ 37.06	+ 28.12		+ 31.93
	56 9.86	56 12.37		56 13.25
+ 28	26 38.49	26 35.98		26 35.10
+ 13	51 40	51 51		51 48
	1.15250	1.15260		1.15260
	−192	−1166		−14
	1.15058	1.14094		1.15246
	−1414	−1383		−1421
	−.23	−.13		−.17
	−.08	−.12		−.13
	+.02	+.03		+.03
	−14.43	−14.05		−14.48
+28	26 24.06	26 21.93		26 20.62
	30′ 10.″0	30 10.2		30 10.5
	+3 45.9	+3 48.3		+3 49.9
	47.0	49.4		51.0

Aug. 21	Aug. 26	Aug. 28	Sept. 4
+3 46.90	+3 49.52	+3 50.17	+3 52.32
−0.5	−0.6	−0.6	−0.6
−9.2	−9.4		−9.7
+3 37.20	+3 39.52		+3 42.02
+30 1.26	+30 1.45		+30 2.64

28

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1876

Aug. 8 | Aug. 9 | Aug. 15 | Aug. 26

Procyon

α 7h 48m 24s

δ +7° 22' 53"

λ +34° 59' 55"

α_0 48m 27s.538

Corr$^{\alpha}$ −.02

$\frac{d\alpha}{dt}$ +3.2479

δ_0 22' 55".450

Corr$^{\delta}$ +.8

$\frac{d\delta}{dt}$ +1.009

log cos δ 9.99638

15 sec t sin 1" 0.11874

tang δ +0.13 +1.01

sin z +.57

	Aug. 8		Aug. 9		Aug. 15		Aug. 26	
	−1.08	+	−1.05	+	−1.04	+	−1.06	+
	m s	m s	m s	m s	m s	m s	m s	m s
	48 11.7	48 19.2	48 29.3	48 13.8	48 20.2	48 30.5	49 7.6	49 11.9
	13.2	21.1	31.4	16.1	22.3	32.5	9.4	14.0
	14.8	23.2	33.4	18.0	24.4	34.4	11.4	16.2
		25.2	37.7		26.4	38.8		18.2
		27.3	39.7		28.4	41.0		20.2
		56.4	41.8		57.5	43.0		49.3
		58.6	44.0		59.6	45.0		37.4
		0.6	46.0		2.0	47.1		53.6
		2.6	48.1		3.8	57.2		55.6
		4.9	52.2		6.0	53.3		57.7
			54.3			55.5		
	2391		4599		2508	4725	3481	3818
48	13.23	48	15.97	48	43.080	42.955	49	9.47
	48 41.911		41.809			.954	49	34.810
		48	41.797			42.954		
	−12.82	48	28.847		−13.92	48 28.875	−1	5.49
	−.14	+	12.95		−.14	+ 14.08		−.14
		+	12.95			+ 14.08		+ 65.65
	−1.31				−1.34			−1.50
	−14.27				15.40		−1	7.13
	+48 27.53				+27.55			+27.57
	.53							

		+28.57		+26.98		+25.23		+6.42	
		1.45591		1.43104		1.40192		0.80754	
		1.57465		1.54978		1.52066		0.92628	
		° ′		° ′		° ′		° ′	
		0 2		0 2		0 2		0 2	
		″							
		9.2 4.5		12.7 8.7		15.8 10.4		42.8 38.3	
		4.2 0.6		6.8 4.6		10.2 8.4		38.3 36.0	
		13.4 5.1		19.5 13.3		6.0 18.8		8.11 1.43	
		6.70 2.55		9.75 6.65		13.00 9.40		40.55 37.15	
		2 4.62		2 8.20		2 11.20		2 38.85	
		+ 8.755		+ 35.46		+ 33.16		+ 8.44	
		2 42.17		2 43.66		2 44.36		2 47.29	
+7		20 6.18		20 4.69		20 3.99		20 1.06	
+34		58 12		58 15		58 18		58 46	
		1.60480		1.60480		1.60490		1.60800	
		−1440		−1225		−1481		−1176	
		1.59040		1.59255		1.59009		1.59324	
		−38.94		−39.13		−38.91		−39.20	
		− .06		− .06		− .04		− .01	
		− .36		− .36		− .37		− .44	
		+ .08		+ .08		+ .09		+ .10	
		−39.28		−39.47		−39.23		−39.55	
+7		19 26.90		19 25.22		19 24.76		19 21.51	
		23′ 8.3	+3 43.75	23 8.4	+3 45.00	23 8.9	+3 45.83	23 9.6	+3 49.57
		+3 41.4	− 1.2	+3 43.2	− 1.2	+3 44.1	− 1.2	+3 48.1	− 1.3
		42.2	−13.8	44.0	−13.9	44.9	−14.4	48.9	−15.1
			+3 28.75		+3 29.90		+3 30.23		+3 33.12
		7	+22 55.65		+22 55.12		+22 54.99		+22 54.63

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1876

−1.09 ×

Sept. 4

48 170 48 239 48 34.1
187 26.0 36.1
256 28.0 38.2
28.1 42.5
32.1 28520 44.7
1.2 46.5
8.3 48.6
53 50.7
7.5 54.8
9.6 5350 57.0
57.9

1670 5122

48 1877

48 46.700 46.564
.574
48 46.569
−16.84 48 29628
−.13 + 16.94
+ 16.96

−2.09
−19.16
+7.41

+27.80

E 7 1.111100
G 46 1.56278

0 2

14.1 10.7
9.8 9.2
239 199
11.95 9.95

2 10.95
+ 36.54
2 47.49

+ 7 20 8.86

+ 34 58 18
1.60490
−100
1.60890
−4017
− .06
− .42
+ .09

−40.56

+7 19 20.30
23′ 10.″0
+3 49.7
−30.5

+3 52.32
−1.4
−15.5

+3 35.42

7 +22 55.72

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14

α Aurigae

5h 7m 27s

+45° 52′ 5″

− 3° 29′ 17″

1876

L_0 7m 31.876s

Corr α − .02s

$\frac{d\alpha}{dt}$ +4.4238s

δ_0 52′ 9.39″

Corr δ + .1″

$\frac{d\delta}{dt}$ +4.131″

log cos δ 9.84282

15 cos δ sin 1 9.96518

tang δ +1.03 +1.44

sin z −.06

∫ −1.04

+

Aug 28

m	s	h	s	m	s
8	2.6	8	21.7	8	36.5
	5.8		24.7		39.4
	8.0		27.8		42.3
			30.5		48.1
			33.5		51.2
			15.2		54.2
			18.0		57.4
			20.9		10.2
			24.0		5.9
			27.0		8.7
					11.8
					5
			2433		3569
8	5.47				5959
		8	54.330		54.173
					.157
				8	54.162
		−1	18.67	7	34.581
			−1.07	+	7958
				+	7960
			−2.70		
		−1	22.44		
		+7	31.74		

+48.69

E F 1.687444

G 76 1.655262

30 3

44.8 43.0

42.4 34.3

72 77.3

43.60 38.65

33 41.12

+ 44.94

34 26.06

+45 48 22.29

−3 30 12

0.54720

− 18

0.54702

+ 3.52

− .65

− .67

+ .15

+ 2.35

+45 48 24.64

+3 50.17

52′ 13.4 + 0.1

+3 48.8 − 4.0

48.9

+3 46.27

45 +52 10.91

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β Orionis

$5^h\ 8^m\ 32^s$

$-8^\circ\ 20'\ 53''$

$+35^\circ\ 43'\ 41''$

	m s
L_0	8 34.58
Corr	− .02
$\frac{d\lambda}{dt}$	+2.8817
β_0	20 48.49
Corr	+ .6
$\frac{d\beta}{dt}$	+4.447

Log cos 9.99537
15 cos Stan 0.11773
tang β −0.157 1.01
sin z +.77

1876

−.96

×

Aug 21

				38.6
10	21.7	9	— 9	40.7
	23.9		—	42.8
	26.1		—	47.0
			—	49.1
			—	51.1
			3.8	53.4
			7.9	55.3
			10.0	57.4
			12.2	1.5
			14.2	3.6
			10.20	44.25
10	23.90			56.25
			51.144	9 51.136
				9 51.148
		−1	14.85	8 36.398
			+.14	+ 74.74
				+ 74.76
			−1.64	
		−1	16.35	
		+3	34.79	
		+8		

		−32.76
E	F	1.515342 n
G	H	1.63307 n

45 1'

39.0 30.6
31.8 27.0
108 57.6
35.40 28.80

46 32.10
− 42.96
45 49.14

−8 23 0.79

+50 42 39
1.84670
−192
1.84478
−6995
+ .28
− .25
+ .06

−1 10.06

−8 24 10.85 +3 46.90

20' 26.8 − 1.7
+3 44.0 −21.7
44.6

+3 28.50

−8 −20 47.35

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1876

2 Canis Maj.

$6^h\ 39^m\ 8^s$

$-16°\ 32'\ 46''$

$+58°\ 55'\ 34''$

N.A.

	m	s
α_0	39	40.999
$\frac{d\alpha}{dt}$		+2.645
δ_0	32	50.29
$\frac{d\delta}{dt}$		− 4.66

$\log \cos\delta$ 9.98162

15 Constant 0.10398

$\tan\delta$ −0.30 +1.04

$\sin z$ +.86

−1.04 −1.03

Sept. 2 Sept. 3

h	m	s	m	s	m	s		m	s	m	s
6	39	28.0	39	36.0	39	46.5	39	28.8	39	35.7	39	46.3
		29.4		38.1		48.7		30.3		37.8		48.4
		31.0		40.2		50.9		32.0		40.0		50.6
				42.4		53.2				42.1		53.0
				44.4		55.2				44.3		55.1
				14.7		55.5				14.3		55.3
				16.9		1.6				16.6		1.3
				19.0		3.8				18.7		3.5
				21.1		8.1				20.9		7.7
				23.3		10.3				23.0		9.9
						12.3						12.1
				29.61		35.41				29.34		35.12
	39	29.47				65.41		39	30.37			65.12
			39	59.610		59.464				39	59.341	59.200
						.480						.211
				−17.01	39	59.472					39	59.206
				−16.51	39	42.21				−17.26	39	42.25
				+.31						+.31		
				− 1.28						− 1.25		
				− 17.48		1.91				− 18.20		19
			39	42.06						41.02		
				41.56								

$6^h\ 39^m\ 41.290$

	+30.00		+28.84
E	7		1.46000
G	16		1.56398
	55	2	55 2
	6.6	58.2	6.9 59.1
	59.7	59.9	0.8 2.3
	12.63	1.81	7.7 12.14
	3.15	59.05	3.85 0.70
	54	1.10	57 2.28
	+	38.12	+ 36.64
	57	39.22	57 38.92
−16	34	50.87	34 50.57
	58 53	08	53 09
	1.97819		1.97819
	−520		−644
	1.97299		1.97175
	−9397		−9370
	+	.13	+ .12
	−	.38	− .38
	+	.08	+ .08
Σ	−1	34.14	−1 33.88
−16	36	25.01	36 24.45
		+3 48.50	+3 51.70
	32	34.2	− 2.0 32 34.2 − 2.0
		− 16.1	− 16.1
		+3 30.40	+3 33.60
	−16	32 54.61	32 50.85

$-16°\ 32'\ 52''.73$

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α Can. Min.

7 32 45 (m s)		α₀	32 48.541	Aug 28	32, 49.91	12 32	36.4 1
+ 5° 32 37		Corr	− .02	Sept 2	50.03	13	36.5 0
+ 36° 50′ 11″		dα/dt	+ 3.1463	7	50.16	13	36.5 0
		δ₀	32 28.01	12	50.29	14	36.5 1
		Corr δ	+ .8	17	50.43	14	36.4 2
		dδ/dt	− 8.763	22	50.57	14	36.2 2
				27	50.71	15	36.0 3
				Oct 2	50.86	15	35.9 3
				7	51.01	15	35.4 4
				12	51.16	16	35.0 5
				17	51.32	15	34.5 5
				22	51.47	16	34.0 6
				27	51.63		33.4

log cos δ 9.99797

15 cos δ tan i 0.12033

tang δ + 0.10 + 1.00

sin z. + .60

1876

Aug 30 (+ −1.03)				Aug 31 (−1.02) +			Sept 2 (−1.04) ×				Sept 3 (−1.03) ×		
6 7 33 57.0	33 47.5	33 57.7	32 41.1	32 45.7	32 56.0	32 [?] 38.2 (+62)	32 34.9 (+62)	32 46.7 (+62)	32 41.8	32 44.9	32 53.0
53.0	49.5	57.6	42.9	47.8	58.0	3 35.0	37.2	49.3	43.3	46.9	57.0
55.0	51.6	1.6	44.5	49.9	.01	37.0	39.6	51.7	45.1	49.0	59.1
	53.8	5.9		51.9	4.2		42.0	56.5		51.0	3.3
	55.7	7.9		34.0	49.860 6.3		44.4	39.620 59.0		53.0	48.960 5.4
	24.8	10.1	33 36.0	23.0	8.3		18.5	1.4		22.0	7.5
	26.8	12.1	37.7	25.0	10.4		21.0	3.8		24.1	9.5
	28.8	14.2	39.5	27.1	12.4		23.4	6.2		26.1	11.5
	30.9	18.4		29.1	16.6		26.0	11.1		28.2	15.7
	32.0	20.3		31.2	27.080 18.6		28.3	23.44 13.6		30.3	26.140 17.8
		22.5			20.7			16.0			19.8
	4014	2303		3847	2116		3153	3153		3755	2616
33 53.00	33 4 19.140	1103	32 42.83		916	32 ~~35.07~~ 41.07			32 43.40		816
	33 4 9.140	34 9.027	33 37.73	33 8.470	33 8.327	3	33 7.530	33 7.391		33 7.550	33 7.418
		.014			.344			7.404			.424
		34 9.020			33 8.336			33 7.398			33 7.421
	−1 18.98	32 49.964		−18.24	32 49.988		−16.49 (49)	32 50.036		−17.24	32 50.062
	−.10	+ 7906		−.10	+ 1835		−.10	+ 17.36		−.10	+ 17.36
		+ 7908			+ 1837			+ 17.38			+ 17.38
	−1.42			−1.45			−1.50			−1.52	
	−1 20.50			−19.79			−18.09 59			−18.86	
	+32 48.52			+48.55			−~~43.34~~ .31 48.81			+48.56	

E F	+16.02	+25.51	−29.39	~~+26.33~~	−33.67	+24.02
G H	1.20466	1.40671	1.46820n	1.42045	1.52724n	1.38057
	1.32499	1.52704	1.58853n	1.54078	1.64757n	1.50090
50 3		50 2	50 3	50 4		50 2
0.1 56.6		49.1 45.2	3.1 58.6	3.0 58.3		49.9 47.0
57.7 54.8		44.1 43.5	58.2 57.8	59.0 57.6		46.5 46.0
178 114		132 87	213 164	220 159		164 130
58.90 55.70		46.60 44.35	0.65 58.20	1.00 57.95		48.20 46.50
53 57.30		52 45.18	52 59.42	53 59.48		52 47.35
+ 21.13		+ 33.65	− 38.77	+ 34.73	−44.42	+ 31.69
53 18.43		53 19.13	20.65	54 3 34.21	15.06	53 19.04
−16 +5 29 29.92		29 29.22	27.70	~~28 14.14~~ 29 33.29		29 29.31
5 +36 49 04		48 52	49 06	50 6		48 54
1.63420		1.63420	1.63420	1.63450		1.63420
~~−855~~ −1270		−1796	−1796	−660		−900
1.62150		1.61624	1.61624	1.62790		1.62520
−4183		−4133	−4133	−4245		−4219
− .01		− .03	− .04	− 05		− .03
− .54		− .50	− .54	− .76		− .53
+ .12		+ .15	+ .12	+ .16		+ .15
Σ −42.26		−41.71	−41.79	−43.10		−42.60
−1 +5 28 47.66		28 47.51	45.91	28 50.19		28 46.71
	+3 51.15	28 46.71	+3 51.65		+3 48.50		+3 51.70
32′ 36.4″	−1.4	32 36.5	−1.4	32 36.5	−1.4	32 36.5	−1.4
~~11.3~~ +3 48.7 49.5	−8.4	+3 49.8 50.6	−8.5	+3 46.3 47.1	−8.5	+3 49.8 50.6	−8.5
	+3 41.35		+3 41.75		+3 38.60		+3 41.80
5	+32 29.01		+32 28.46		+32 28.79		+32 28.51

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Sept. 4 — −1.00 +

Oct. 2 — −.92 +

Oct. 9 — −.70 +

Oct. 15 — −.72 ×

Sept. 4				Oct. 2				Oct. 9				Oct. 15			
82 388	32 443	32 546		82 273	32 304	32 406		82 221	32 286	32 387		33 110	32 263	32 366	
410	464	547		292	325	427		237	307	408		127	284	387	
421	485	387		300	346	447		263	326	427		143	305	407	
	505	28			366	490			348	469			326	450	
	326	48460	570		387	34560	571		368	32700	490		346	30480	470
33 381	216		70		78		531		60		571		37		490
403	237		90		98		551		79		533		56		511
424	258		111		118		572		100		554		79		532
	278		153		138		13		121		594		99		575
	299	25760	174		159	11820	34		141	10020	16		120	7820	595
			194				54				36				14
	3711		2570		2319		4036		2136		4425		1915		4797
32 4063			770	32 2883			5836	32 2403			5625	33 1267			5397
33 4027	33 7110	33 7000			32 53190	32 53055			32 51360	32 51136			32 49150	32 49064	
		6984				064				234				024	
		33 6992				32 53060				32 51185				32 49047	
	−16.80	32 50088			−2.08	32 50868			−0.13	32 51078			+2.27	32 51264	
	−.10	+ 1690			−.09	+ 219			−.07	+ 111			−.07	− 222	
		+ 1692				+ 221				+ 013				− 220	
	−1.55				−2.38				−2.54				−2.72		
	−18.45				−4.50				−2.74				−0.528		
	+48.54				+48.56				+48.44				+48.52		

+24.36
1.42095
1.54128

	Sept. 4	Oct. 2	Oct. 9	Oct. 15
	−33.28	+24.23	+27.15	−23.63
f	1.52218	1.38435	1.43377	1.37346
fc	1.64251	1.50468	1.55410	1.49379
	50 2	50 4	50 2	50 3
	476 439	6.4 2.5	460 454	513 553
	43.2 43.5	2.2 1.8	44.9 42.2	474 406
	108 14	86 43	109 76	1007 959
	45.40 43.70	4.30 2.15	45.45 43.80	50.35 47.95
	52 44.55	54 3.22	52 44.62	52 43.02	53 49.15
	+ 3478	− 43.91	+ 31.96	+ 35.82	− 31.17
	53 19.33	19.31	53 16.58	53 18.84	53 17.98
5	29 29.02	29.04	29 31.77	29 29.51	29 30.37
36	48 52	50 10	48 52	48 50	49 56
	1.63420	1.63460	1.63420	1.63420	1.63430
	−396	−396	+1045	+1276	+1816
	1.63024	1.63064	1.62375	1.62144	1.61634
			1.64467	1.64696	1.65266
	−4268	−4272	−4412	−4435	−4494
	− .08	− .05	− .03	− .04	− .03
	− .51	− .78	− .65	− .68	− .99
	+ .11	+ .16	+ .11	+ .11	+ .15
	−43.11	−43.39	−44.69	−44.96	−45.81
+5	28 45.91	45.65	28 47.08	28 44.55	28 44.56
+5	28 45.78	+3 52.32	28	+3 52.65	+3 53.95
	32 36.5	−1.4	32 35.7	−1.5	32 34.7	−1.5
	+3 50.7	−8.5	+3 48.6	−7.2	+3 50.1	−6.7
	51.5		49.4	51.4	50.9	
		+3 42.42		+3 42.60	+3 43.95	+3 45.75
6		+32 28.20		+32 29.68	+32 28.50	+32 30.31

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β Geminorum

α 7h 37m 40s
δ +28° 19' 34"
+14° 03' 14"

log cos δ 9.94465
15 cos Stamp 0.06701
tang δ +0.54 + 1.14
sin z +.24

1876

	Aug. 31		Sept. 3		Sept. 4		Aug. 22	
α	7h 37m 40s		7h 37m 40s		7h 37m 40s		7h 37m 40s	
Con α	+.01		+.01		+.01		+.01	
dα/dt	+3.6810		+3.6810		+3.6810		+3.6810	
	19 25.45		19 25.45		19 25.45		19 25.45	
Corr δ	+.4		+.4		+.4		+.4	
dδ/dt	−8.354		−8.354		−8.354		−8.354	
	−1.02		−1.03		−1.00		−.85	328 opposite page
	37 23.6	37 38.5	37 27.1	37 50.1	37 37.6	37 49.2	37 25.1	37 48.7
	27.8	40.4	28.8	52.5	40.0	51.5	27.0	51.1
	29.7	43.2	31.0	54.7	42.3	53.9	28.8	53.5
		45.8		56.6	44.6	55.6		55.1
		47.9		1.8	47.0	1.0		0.5
	38 25.6	20.7	38 39.1	41	19.7	3.3	38 21.0	2.8
	28.1	23.1	41.1	6.5	22.1	5.6	22.7	5.1
	30.7	25.4	43.6	8.9	24.4	8.0	23.7	7.5
		27.8		13.6	26.9	12.6		12.2
		30.0		15.9	29.1	14.9		14.6
				18.2		17.3		16.9
		34.30		28.59	33.37	27.59		32.98
	37 27.70		37 28.97	45.9		35.9	37 26.97	27.11
	38 37.80	38 4.300	38 41.27	38 4.175	38 3.870	38 3.264	38 22.93	38 2.980
				158		.228		.838
				38 4.166		38 3.246		38 2.832
		−18.24		37 45381	−17.24	37 45465		−16.80
		−.54		4 1878	−.54	4 1778		−.54
				+ 18.77		+ 1777		4 1734
								+ 1733
		−1.82			−1.90			−1.93
		−20.60			−19.44			−19.27
		+37 43.51			+43.46			+43.56

	Aug. 31		Sept. 3		Sept. 4		Aug. 22	
	37 27.6	37 48.2	37 25.1	37 48.7	37 28.4	37 48.7	37 28.4	37 46.9
	29.4	50.0	27.0	51.1	30.3	51.1	30.3	49.4
	31.2	52.3	28.8	53.5	33.2	53.5	33.2	51.5
		54.5		56.2		56.1		53.3
		56.8		58.9		58.8		55.6
	38 39.1	41.1	38 21.0	23.7	38 35.3	36.8	38 35.3	17.4
	41.1	43.6	22.7	26.4	36.8	39.6	36.8	19.8
	43.6	46.4	25.1	29.1	38.6	42.4	38.6	22.1
		49.2		31.9		45.2		24.4
		52.0		34.7		48.0		26.8
								29.2
								31.5
	37 28.97		37 26.97		37 30.63			
	38 41.27	38 3.870	38 22.93	38 3.264	38 36.90	38 2.980	38 1.050	0.945
				.228		.838		.908
		38 3.246		38 3.036		38 2.832		38 0.926
		37 45465		37 45.265		37 45493		
		−.54		−.54		−.54		
		+ 1778		+ 1778		+ 1734		
		+ 1777		+ 1777		+ 1733		
		−1.90		−1.90		−1.93		
		−19.44		−19.44		−19.27		
		+43.46		+43.46		+43.56		

	Aug. 31		Sept. 3		Sept. 4		Aug. 22	
	+36.47							
	1.56194							
	1.62895							
E F	−33.63		+34.28	−38.02	+35.86	−20.10	+30.50	−35.97
	1.52673n		1.53504	1.58001n	1.55461	1.30320n	1.48611	1.55594n
G H	1.59374n		1.60205	1.64702n	1.62162	1.37021n		
	5 1	5 2	5 1	5 2	5 1	5 2	5 1	5 2
	16.4 14.8	38.3 36.3	18.4 17.3	43.6 42.2	17.4 16.6	24.7 22.8	18.3 17.3	36.7 35.2
	13.6 9.9	35.3 30.6	16.5 12.1	40.8 37.1	14.9 10.8	21.6 17.6	17.7 12.8	34.8 32.6
	100 247	136 69	144 94	44 793	173 74	63 404	160 101	115 58
	15.00 12.35	3680 33.45	17.45 14.70	42.20 39.65	16.15 13.70	23.15 20.20	18.00 15.05	35.75 32.90
	6 13.68	7 35.12	6 16.88	7 40.92	6 14.92	7 21.68	6 16.52	7 34.32
	+ 42.55	− 39.24	+ 40.00	− 44.37	+ 4484	− 23.45		
	6 56.23	55.88	6 56.08	55.55	6 56.76	58.23		
				6.55				
+28	15 52.12	52.47	15 52.27	41.80	15 51.59	50.12		
			2 23	3 48				
+14	2 21	3 42	++ 59	49	2 22	3 29		
	1.15830	1.15900	1.15830	1.15910	1.15830	1.15895		
	−1796	−1796	−930	−930	−410	−410		
	1.14034	1.14104	1.14900	1.14980	1.15420	1.15485		
	−13.81	−1384	−1409	−1412	−1426	−1428		
	− .30	− .25	− .26	− .33	− .29	− .09		
	− .22	− .47	− .25	− .51	− .23	− .44		
	+ .05	+ .16	+ .05	+ .11	+ .05	+ .09		
	−14.28	−1446	−14.55	−14.85	−14.73	−14.72		
+28	15 37.84	38.01	15 37.72	36.95	15 36.86	35.40		
+28	15 37.92	+3 51.65	15	+3 51.70	15 36.13	+3 52.32		+3 49.00
	17 28.3	− 0.5	19 28.1	− 0.6	19 28.0	− 0.6		− 0.5
	+3 50.4	− 2.9	+3 50.4	− 2.6	+3 51.9	− 2.6		
	50.8		50.8		52.3			
		+3 48.25		+3 48.50		+3 49.12		
28		+19 26.17		+19 26.22		+19 25.25		

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Aug. 22-30 also given on p. 6

Eq v. p. 50

~~+.06~~ ~~+.04~~ ~~+.00~~ ~~+.03~~

Aug 26 | Aug. 28 × | Aug 29 × | Aug 30 ×

38	55.8		38	49.7	38	31.8	38	38.9	38	52.5	38	31.3	38	39.4	38	57.1	38	32.1	38	39.2	38	50.8
	57.7			52.0		33.4		41.4		52.9		33.1		41.9		53.3		34.0		41.6		53.2
	59.6			54.3		35.6		43.6		53.2		35.2		44.1		53.7		36.3		44.0		53.5
				57.0				46.1		53.9				46.4		1.3				46.4		0.3
				1.4				48.3		2.3				48.8		2.7				48.6		2.6
				3.6	39	43.0		21.1		4.6				21.5		5.2	39	31.4		21.5		5.0
				5.9		44.8		23.5		7.0				23.8		7.4		33.6		23.7		7.3
				8.3		47.3		25.8		9.3				26.3		9.8		36.0		26.1		9.6
				12.9				28.1		14.0				28.7		14.4				28.4		14.2
				15.4				30.4		16.3				30.8		16.9				30.8		16.7
				17.8						18.6						19.2						18.8
				2803				3472		2906	3			3517		2370				3503		2340
38	57.70			40.3	38	33.60				306	28	33.20				570	38	34.13				540
			39	3.664	39	45.03	39	4.720		4.600			39	5.170		5.182	39	33.67	39	5.030		4.909
										578						028						888
			39	3.664					39	4.589					39	5.105					39	4.898

~~+5.96~~ ~~.479525~~ | ~~+30.90~~ ~~1.09122~~ ~~40.44~~ ~~1.606812~~ | ~~+31.90~~ ~~1.52379~~ | ~~+30.77~~ ~~1.48813~~ ~~28.77~~ ~~1.05894~~

5	1			5	1	5	2			5	1			5	1	5	2		
49.6	47.1			21.1	19.5	44.1	42.6			20.3	18.1			20.7	20.2	32.5	32.0		
46.6	42.6			18.6	13.0	41.6	37.5			18.2	13.6			20.0	14.7	31.9	25.8		
16.2	9.4			40.7	14.5	5.7	8.0.1			38.5	11.7			7	3.51	44	5.78		
48.10	44.35			20.35	17.25	42.85	40.05			19.25	15.85			20.35	17.55	32.20	28.90		
6	46.48			6	18.80	7	41.45			6	17.55			6	18.95	7	30.55		

+3 49.52 −0.5 | +3 50.17 −0.5 | +3 50.45 −0.5 | +3 51.15 −0.6

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452

	m	ℓ			ν	
Sept 17	37	4587	16	19	270	4
22		4603	16		266	5
27		4619	17		261	4
Oct 2		4636	17		257	5
7		4653	17		252	4
12		4670	18		248	5
17		4688	18		243	4
22		4706	18		239	5
27		4724			234	

← Sept 2 + Oct. 2 + Oct. 3 + Oct. 10 +

m	ℓ	m	ℓ	m	ℓ												
38	10.4	37	45.0	37	53.3	38	21.8	37	[23.2]	37	33.0	37	19.3	37	23.0	37	34.6	37	20.5	37	21.2	37	32.8
	11.5		47.1		57.4		23.7		25.6		37.1		21.0		25.4		37.0		22.3		23.6		35.1
	12.4		49.3		59.5		25.7		28.0		39.6		23.3		27.7		39.3		24.5		25.9		37.6
			51.3		3.6				30.4		44.3				30.0		44.0				28.1		42.1
			53.3		5.6				32.7		46.6				32.4		46.3				30.6		44.6
38	35.6		22.2		7.7				5.5		49.0				5.1		48.6				3.4		46.8
	37.2		24.4		9.8				7.8		51.3				7.6		50.9				5.7		49.1
	39.6		26.5		11.9				10.2		53.7				9.8		53.3				7.9		51.6
			28.6		16.0				12.4		58.2				12.1		58.0				10.3		57.2
			30.6		18.0				14.7		0.6				14.5		0.4				12.6		58.3
					20.1						3.0						2.6						1.0
	6		3783		2649				1905		4184				1875		4150				1693		4554
38	41.43				54.4	38	23.73		4905		5384	37	21.20				5380	37	22.43				5154
38	37.47	38	2830	38	2718			37	49.050	37	48.945			37	48.750		48.636			37	46.930		46.855
	32		2		12						.908						.608						.788
				38	2703					37	48.926					37	48622					37	46822
	99			37	48.437					37	46368					37	46402					37	46640
	−16.49			+	1227				−2.08	+	2.55				−1.67	+	2.22				+0.26	+	0.18
	−.56				2226				−.50	+	2.53				−.54	+	2.21				−.24	+	0.17
					17																		
	−1.85								−2.81						−2.84						−3.08		
	−1.23								−5.17		39.39				−4.75		3.03				−3.26		
	+48.77								+43.44		54				+43.67		.57				+43.56		
	43.25																						

−3.73
0.54171m
0.63872m

		−2.77		−34.80				+27.42				+24.39					
E	I	1.47378m		1.54158m				1.43807				1.38721					
C	Ho	1.54079m		1.60859m				1.50508				1.45422					
				5 2				5 1				5 1					
				332	416			275	306			321	365				
				34.5	33.7			29.1	22.9			33.3	34.4				
				7	753			166	535			54	109				
				39.35	37.65			28.30	26.75			32.70	35.45				
				7	38.50			6	27.52			6	34.08				
		− 4.35	− 3.74	—	40.61			+	31.99			+	28.46				
				6	57.89			6	59.51			7	2.54				
+ 28				15	50.46			15	48.84			15	45.81				+ 28
+ 14				3	46			2	35			2	41				+ 1
				1.15910				1.15850				1.15837					
					+672				−111				+998				
					+1032				1.15739				1.16848				
				1.16942					−1437				−1474				
		− .01	− .27	−	.28			−	.16			−	.13				
				−	.62			−	.32			−	.40				
				+	.10			+	.06			+	.06				
					−15.54				−1484				−15.21				
+ 28				15	34.89			15	34.00			15	30.60				+ 2
		+3 48.50				+3	51.80			+3	52.30			+3	52.20		
		− 0.6				−	0.6			−	0.6			−	0.6		
				19	25.7	−	0.2	19	25.6	−	0.2	19	24.7	+	0.6		
				+3	50.8			+3	51.6			+3	54.3				
					51.2				52.0				54.7				
						+3	51.00			+3	51.50			+3	52.20		
28						+19	25.89			+19	26.50			+19	22.80		

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-.68

Oct. 18

37 37.0 37 — 37 29.4 37 37.0
39.1 — 31.8 39.1
41.7 — 34.1 41.7
— 38.6
— 41.0
38 0.0 43.5
2.4 45.9
4.8 48.3
7.0 52.9
9.3 53.2
57.6

4.700 4783

37 39.27 37 39.27
43.484 37 43.482

37 43.483
+3.79 37 46.925
−.37 — 3.44
— 3.45
−3.36
+0.03
+43.54
.54

+4.21
0.62428
0.69129

5 0 (1)
59.1 46
59.2 44.8
3 11.24
59.35 56.20
56 57.68
57
54 4.91
2.59
+ 28 15 45.96
+ 14 3 5
1.15870
+1.583
1.17463
−14.95
− .01
− .52
+ .08
−1540
+ 28 15 30.36
19' 24."2
+3 53.8
54.2
+3 53.90
− 0.5
+ 1.2
+3 54.60
28 +19 24.96

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1454

γ Aquilae

		α_1	m s 40 21.865
α	19h 40m 19s	Corrα	+ .10
δ	+10° 18′ 36″	$\frac{d\alpha}{dt}$	+2.8526
	+32° 04′ 12″	δ_0	18 41.49
		Corrδ	+ .1
		$\frac{d\delta}{dt}$	+8.508

log cos δ 9.99292
15 Constant 0.11528

tang δ +0.18 + 1.02
sin z +.53

1876

-.78 ×

Oct. 19

h	m	s	m	s	m	s
19	39	37.4	39	57.2	40	7.6
		53.1		57.3		9.6
		55.3		1.4		11.6
				3.5		15.9
				5.5		18.0
	40	37.5		8.5		20.1
		53.1		8.7		22.1
		54.8		8.9		24.3
				11.1		28.5
				13.3		30.6
						32.7
				32.23		221.0
	39	53.27				
	40	53.13	40	20.23		20.091
						.123
					40	20.097
				+4.19	40	24.164
				-.14		- 4.07
						- 4.57
				-2.29		
				+1.76		
			+40	21.86		

39	44.3	39	52.2
	45.9		54.3
	47.5		56.3
			58.6
			06
			29.9
			32.0
			34.1
			36.1
			38.3
			39.24
39	45.90		
		40	15.240

40	2.6	
	4.6	
	6.7	
	10.9	
	13.0	
	15.1	
	17.2	
	19.3	
	23.5	
	25.5	
	27.6	
	1660	
	15.091	
	.113	
40	15.102	
40	23.990	
	- 8.89	
	- 8.89	
	-2.13	
	+6.79	
	+21.89	

-.70 ×

Oct. 24

+26.83
1.42862
1.54390

α_0	Σ	-33.03	+29.20
		1.51891n	1.46538
δ	K.	1.63419n	1.58066
		5- 1	5- 2	5- 1
		37.1 41.1	53.7 37.9	32.9 33.6
		36.9 38.1	54.8 47.9	33.8 24.3
		140 69.2	105 105.8	58 57.9
		6	4	32.90 28.95
		37.00 34.6	55.25 52.9	6 30.92
		6 35.80	7 54.08	6 30.92
		+ 34.99	- 43.07	+ 38.08
		7 10.79	11.01	7 9.00
+10	15	37.56	37.34	15 39.35

B	2	2	43	4	01
	1.55670			1.55700	
	~~+955~~			~~+965~~	
	+844			+844	
	1.56514			1.56544	
	-36.74			-36.77	
	- .07			- .10	
	- .42			- .75	
	+ .06			+ .12	
	-37.17			-37.50	
+10	15	0.39		59.84	
+10	15	0.12	+3	54.85	
	18	53.9		- 1.3	
	+3	53.8		- 9.41	
		53.9			
			+3	44.15	
	10		+18	44.27	

2	38		
1.55670			
+1082			
1.54752			
-36.74			
- .08			
- .41			
+ .06			
-37.37			
15	1.98		
18	53.5	+3	53.55
+3	51.5		- 1.3
	51.6		- 9.0
		+3	43.25
		+18	45.23

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α Aquilae

h 19	m 44	s 41	α_0	44^m 43.989^s
+8°	32′	23″	Corr α	+ .00^s
+33°	50′	25″	$\frac{d\alpha}{dt}$	+2.9285^s
			δ_0	32′ 31.80″
			Corr δ	+ .0″
			$\frac{d\delta}{dt}$	+9.231″

log cos δ 9.99516
15 cos δ tan i 0.11752
tang δ +0.15 + 1.01
sin z +.56

1876

Oct. 2 (−.90) · Oct. 10 (−.80) × · Oct. 11 (−.79) × · Oct. 12 (−.76) ×

h 19

m s	m s	m s														
44 21.6	44 26.3	44 36.5	44 22.2	44 23.7	44	34.0	44 20.5	44 23.3	44	38.6	44 16.0	44 22.8	44	33.2
23.4	28.3	38.7	24.0	25.8		36.0	22.1	25.5		35.7	17.8	25.0		35.2
25.2	30.4	40.8	26.0	27.8		38.0	23.9	27.5		37.6	19.5	27.0		37.3
	32.5	44.9		30.0		42.3		29.6		41.9		29.1		41.6
	34.5 30.400	46.9		32.0	27.860	44.3		31.6		44.0		31.2	27.020	43.6
45 19.5	3.8	49.0		1.2		46.5		[0.8]		46.0		0.4		45.7
20.9	5.9	51.2		3.2		48.5		[2.9]		48.1		2.4		47.8
22.6	8.1	53.2		5.4		50.7		5.0		50.3		4.5		49.9
	10.0	57.4		7.4		54.8		7.0		54.5		6.7		53.9
	12.2 8.000	59.4		9.5	5.340	56.9		9.1		56.4		8.8	4.560	56.2
		1.6				59.0				58.7				58.2
	1920	4796		1660		5110		1623		5068		1579		5026
44 23.46		5396	44 24.07				44 22.17	4623			44 17.77			
45 21.00	44 49.200	49.055		44 46.600		46.455		46.230	44	46.073		44 45.790		45.691
		.074				.474				.104				.664
		44 49.064			44	46.464			44	46.088			44	45.678
	−2.25	44 46.646		+0.17	44	46.518		+0.49	44	46.502		+0.95	44	46.486
	−.14	+ 2.42		−.12	−	0.05		−.12	−	0.41		−.11	−	0.81
		+ 2.42			−	0.05			−	0.41			−	0.81
	−2.686			2.53				−2.51				−2.50		
	−5.05			−2.48				−2.14				−1.66		
	+44 44.01			+43.98				+43.95				+44.02		

+25.66
1.40926
1.52678

	Oct. 2		Oct. 10		Oct. 11		Oct. 12	
	E T	−31.94	+22.39 !		+23.92		+27.91	
		1.50433n	1.35005		1.37876		1.44576	
	G H	1.62185n	1.46757		1.49628		1.56328	
	50′ 2′	50 4	50 2		50 2	50 4	50 2	
	45.9″ 44.2″	1.1 59.3	50.7 50.6		47.5 48.9	4.0 6.2	42.2 43.9	
	45.1 41.1	0.6 56.1	51.0 45.0		46.9 38.9	8.7 57.0	41.9 34.9	
	10 53	17 154	17 956		144 878	77 1232	41 788	
	52	54	50.85 47.80		47.20 43.90	3.85 1.60	42.05 39.40	
	45.50 42.65	0.85 57.70	52 49.32		52 45.55	54 2.72	52 40.72	
	52 44.08	53 59.28	52 49.32		52 45.55	54 2.72	52 40.72	
	+ 33.63	− 41.86	+ 29.35		+ 31.35		+ 36.58	
	53 17.71	17.42	53 18.67		53 16.90		53 17.30	
+ 8	29 30.64	30.93	29 29.68		29 31.45		29 31.05	
+ 33	48 57	50 06	48 56		48 53		48 48	
	1.58610	1.58630	1.58610		1.58610		1.58600	
	−30	−30	−627		+1274		+1143	
	1.58580	1.58600	1.57983		1.59884		1.59743	
	−38.53	−38.55	−38.00		−39.70		−39.58	
	− .05	− .08	− .04		− .05		− .06	
	− .65	− .96	− .70		− .70		− .70	
	+ .11	+ .16	+ .11		+ .11		+ .11	
	−39.12	−39.43	−38.63		−40.34		−40.23	
+8	28 51.52	51.50	28 51.05		28 51.11		28 50.82	
+8	28 51.51	+3 51.84		+3 ~~52.00~~ 51.55		+3 52.17		+3 52.75
	32′ 41.3″	−1.4	32 41.4	−1.4	32 41.4	−1.4	32 41.4	−1.4
	+3 49.8	−9.5	+3 50.4	−9.6	+3 50.3	−9.6	+3 50.6	−9.6
	49.8		50.4		50.3		50.6	
		+3 40.94		+3 40.55		+3 41.17		+3 41.75
δ		+32 32.45		+32 31.60		+32 32.28		+32 ~~31.57~~ 32.57
								32.

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58

1876

	Oct. 15	Oct. 16	Oct. 17	Oct. 18
	−.72 +	−.67 +	−.72 +	−.64 ×
	44 13.6 15.3 17.4	44 [31.4] 33.5 35.7 39.9	44 20.8 22.9 25.0 27.0	44 20.1 22.3 24.3 26.4
	45 17.4 18.8 21.2	45 12.2 14.0 15.8	45 9.0 10.3 12.3	44 30.4 32.5 34.7 38.7
	44 15.43	44 40.60	44 11.27	44 14.80
	45 19.13	45 23.93	45 14.00	45 10.53
	44 44.430	44 44.302 .304	44 43.711	44 43.110
	44 46.438	44 43.964 46.422	44 43.574 46.406	44 42.983 .984 43.390
	+2.25 −.11	+2.53 −.10	+2.92 −.11	+3.50 −.10
	− 2.14	− 2.46	− 2.83	− 3.41
	− 2.14	− 2.46	− 2.83	− 3.41
	−2.45 − 0.31 +43.99	−2.43 − .00 + 43.96	−2.42 + 0.39 +43.44 .96 .98	−2.40 +1.00 +43.98
	2043	2840	1971	2511
	4873	4837	4792	4728
	25680		24940	24340
	3180		2480	1860
	2043	2840	1971	2511
	4873	4837	4792	4728
	+28.87 1.146045 1.157797			
	−34.83 1.541952 1.659472	+3.36 −39.97 0.526344 1.601732 0.643866 1.719282	+32.30 −30.43 1.509202 1.483302 1.626672 1.600822	+28.18 −27.55 1.449942 1.440122 1.567462 1.557642
	50 2	50 3	50 2	50 3
	50 4	50 4	50 4	50 3
	41.1 43.9	14.9 19.5	38.8 41.9	44.9 47.5
	43 38	11.6 16.2	0.5 3.9	37.2 39.7
	40.4 31.0	15.3 4.9	38.1 27.9	42.8 35.2
	53.8	10.7 1.5	53.3 50.2	54.3 47.2
	15 749	102 244	9 698	77 827
	11.96	23 177	1198 1141	115 1069
	52	53	52	52
	54 53	11.15 8.85	53	53
	40.75 37.45	15.10 12.20	38.45 34.90	43.85 41.35
	3.45 5.98	54 10.00	39.90 57.05	55.75 53.45
	52 39.10	53 13.65	52 36.68	52 42.60
	54 1.62	54 10.10	53 58.48	53 54.60
	+ 37.84	+ 4.40	+ 42.34	+ 36.94
	− 45.65	− 52.39	− 39.89	− 36.11
	53 16.94	53 18.05	53 19.02	53 19.54
	15.97	17.21 61	18.69	18.49
+8	29 31.41	29 30.30	29 29.33	29 28.81
	32.38	30.94	29.76	29 29.86
+3	33 48 46	48 21	48 44	48 30
	50 09	50 17	50 05	50 02
	1.586000	1.586200	1.586000	1.586000
	1.58630	1.58640	1.58630	1.58630
	+1596	+643	+970	+696
	+1596	+643	+970	+696
	1.601896	1.592663	1.595570	1.592996
	1.602226	1.592783	1.596000	1.593326
	−3999	−3914	−3942	−3917
	−4002	−3916	−3945	−3920
	− .07	− .00	− .08	− .06
	− .10	− .13	− .07	− .06
	− .70	− .83	− .68	− .70
	− 1.04	− 1.09	− 1.98	− 1.01
	+ .11	+ .13	+ .10	+ .11
	+ .16	+ .17	+ .16	+ .16
	−40.65	−39.84	−40.08	−39.82
	−41.00	−40.21	−40.40	−40.11
+8	28 50.76	28 50.46	28 49.25	28 48.99
+8	28 51.07	28 50.59	28 49.30	28 49.37
	32 41.4	32 41.4	32 41.4	32 41.4
	+3 50.3	+3 50.8	+3 52.1	+3 52.0
	50.3	50.8	52.1	52.0
	51.38	50.73	49.36	49.75
	+3 41.75	+3 41.69	+3 42.51	+3 44.05
	82.75	52.69	53.51	55.05
	− 1.4	− 1.4	− 1.4	− 1.4
	− 9.6	− 9.6	− 9.6	− 9.6
8	+32 32.85	+32 32.28	+32 31.81	+32 33.42

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1870phae.proj.1485.

-78 ×

Oct. 19

44	13.0	44	19.5	44	29.9	44	10.1
	15.2		21.7		32.0		11.9
	17.0		23.7		34.0		13.7
			25.9		38.0		
			27.8	23720	40.3		
45	10.1		5.7.1		42.3		
	12.2		39.2		44.4		
	14.0		1.3		46.4		
			8.2		50.6		
			5.3	1220	52.7		
					33.0		
			2447		4656		
44	15.07					44	11.90
45	12.16	44	42.470		42.327		
					.344		
				44	42336		
			+4.19	44	46.374		
			-.12		- 4.04		
					4.04		
			-2.38				
			+1.69				
			+44.03				

-70 X

Oct. 29

44	14.5	44	24.7
	16.4		26.8
	18.6		28.9
	20.7		33.1
	22.7	18580	35.1
	32.0		37.2
	34.0		39.3
	36.1		41.4
	38.2		45.5
	0.4	56140	47.7
			49.8
	3136		4095
44	37.360		37.227
			.234
		44	37230
	+9.05	44	46.214
	-.10		- 8.98
			- 8.98
	-2.22		
	+6.73		
	+43.96		

+27.27
1.43569
1.55321

-29.76
1.47363 m
1.59115 m

+25.33
1.40364
1.52116

30	2	30	4	30	2		
46.1	49.5	1.2	4.1	48.8	47.6		
46.3	36.9	0.5	52.0	42.7	40.0		
4	864	1	7 1161	185	76		
52		54	53	49.25	43.80		
46.20	43.20	0.85	58.05	52	46.52		
52	44.70	53	59.45	52	46.52		
	+ 35.74		- 39.01		+ 33.20		
53	20.44		20.44	53	19.72		
+ 8	29 27.91		27.91	29	28.63		
+ 33	48 52	50	06	48	54		
	1.58610	1.58630		1.58610			
	+ 858	+ 858		+ 1092			
	1.59468	1.59488		1.59702			
	- 39.33	- 39.34		- 39.54			
	- .06	- .07		- .05			
	- .70	- 1.04		- .76			
	+ .11	+ .86		+ .11			
	- 39.98	- 40.29		- 40.24			
+ 8	28 47.93		47.62	28	48.39		
+ 8	28 47.77	+ 3	54.85			+ 3	50.55
	32 41.4		- 1.4	32	41.0		- 1.3
	+ 3 53.6		- 9.6	+ 3	52.6		- 9.2
	53.6			52.6			
		+ 3	43.85			+ 3	43.05
8		+ 32	31.62			+ 32	31.44

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62

α Cygni

α 20 37 10
δ +44 50 4

− 2° 27' 16"

α
Conv
dα/dt
δ₀
Conδ
dδ/dt

1876

Oct. 25 | Oct. 29 | Oct. 30 | Nov. 4

log cosδ 9.85074
log Constant 997310
tanδ +0.99 +1.41
sin z −.04

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-.83
-.10 ×

Nov. 3

-.69 ×

Nov. 13

36	35.4	36	29.3	36	48.6	37	14.7		—		—		
	38.2		32.2		46.4		17.3		—		—		
	41.4		35.0		49.3		20.1		—		—		
			37.9		53.0				—		—		
			40.8		58.0				—		—		
37	32.2		21.4		1.0	37	44.0	37	17.0		—		
	54.2		24.4		3.7		46.1		20.0		—		
	36.8		27.3		6.7		49.4		22.7	37	—		
			30.2		12.4				25.7	56.36	8.0		
			33.0		15.5				28.5	.45	1.0		
					18.4					54	140		
	3833		3115		3103				22.780				
36	35.00					37	17.37						
37	54.40	37	1.150	37	0.936	37	46.50		56.445	36	56.450		
					.974								
				37	0.955					36	56.448		
			+13.53	36	13.500				+17.63	37	13.306		
			-.82		12.54				-.68		16.86		
			-.14		12.54						1691		
			-1.23						-1.04				
			+11.34						+15.91				
			+12.30						+12.36				

+ 22.63
1.35468
1.32778

			-53.44				-20.92		-50.05				
			1.72787n				1.32056n		1.69940n				
			1.76097n				1.29366n		1.67250n				
	35	0	35	1		35	1	35	1				
	47.9	48.8	38.7	39.9		29.5	31.9	33.6	17.6				
	51.5	37.1	1.8	49.2		33.5	16.9	37.0	43.7				
	99.4	85.9	40.5	89.1		63.0	48.8	14.6	10.13				
	49.70	42.95	~~35.25~~ 40.25	54.55		31.50	24.40	57.30	50.65				
	35	46.32	36	~~54.00~~ 57.40		36	27.95	36	53.98				
	+	21.27	—	~~36.23~~		—	19.66	—	47.05				
	36	7.59		7.17		36	8.29		6.93				
+ 44	46	40.76		41.18		46	40.06		41.42				
- 2	28	07	26	84		28	25	26	59				
	0.39490		0.39130			0.39280		0.39160					
	~~+1449~~		~~+1449~~				+448		+448				
	+1357		+1877										
	0.40847		0.40507			0.39728		0.39608					
	+2.56		+2.54			+2.50		+2.49					
	- .13		- .80			- .12		- .68					
	- .22		- .56			- .12		- .53					
	+ .03		+ .08			+ .06		+ .08					
	+ 2.24		+ 1.26			+ 2.02		+ 1.36					
# 44	46	43.00		42.44		46	42.08		42.78				
+ 44	46	42.72	+ 3	56.58		46	42.43	+ 3	56.70				
	50	38.49		+ .01		50	38.51		+ .01				
	+3	56.2		-2.22		+3	56.2		-2.20				
		56.2					56.2						
			+ 3	34.48				+ 3	34.80				
44			+50	17.20				+50	17.23				

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64

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L Pegasi

	h m s		m s	
	22 58 32	λ_0	58 35.109	
	° ′ ″	Corr	− .01	
	+14 32 00	$d\lambda/dt$	+2.9856	
	+27° 50′ 48″	β_0	32 1891	
		Corr	− .7	
		$d\beta/dt$	+19.328	

log cos δ 9.98588
log cos i 0.10824
tan δ +0.26 +1.03
sin z +.47

1876

Nov. 13						Dec. 5						Dec. 6						Dec. 7					
h	m	s	m	s	m	s																	
22	57	50.8	57	57.4	58	7.9	57	31.4	57	36.4	57	46.9	57	44.2	57	[35.0]	57	45.5	57	30.8	57	32.7	57	44.1
		52.7		59.5		10.1		33.4		38.5		49.0		46.5		37.1		47.6		32.5		35.8	58	46.0
		54.6		1.6		12.2		34.8		40.6		51.3		48.0		39.2		49.7		34.0		37.8		48.4
				3.7		16.4				42.9		53.4				41.3		53.9				40.0		52.6
				6.0		18.5				44.9		57.5				43.5		56.0				42.1		—
	59	1.7		35.7		20.7	58	28.3		47.7		59.6				13.2		58.2				[11.9]		—
		2.8		37.9		22.9		30.3		48.8		1.8				15.4		0.5				14.0		—
				40.0		25.0		32.6		49.1		3.9				17.6		2.5				16.0		—
				42.0		29.2				52.3		8.3				19.7		6.8				18.4		—
				44.2		31.4				53.3		10.5				21.8		8.9				20.4		7.6
						33.4						12.5						11.0						4.4
				3280		2277				2982		3567				2838		3406				2701		
	57	52.70					57	33.20				6567	57	46.23		5838		6406	57	32.43		5701		
	59	2.25	58	20.800		20.700	58	30.82	57	59.820		59.700			57	58.380	57	58.236						56.863
						16.11		.47				.691						.251						.881
					58	20.886					57	54.696					57	58.244					57	56.872
				+17.72	58	38.184				+38.35	58	34.929				+39.84	58	37.917				+41.16	58	37.905
				−.18		17.50				−.15		38.23				−.15		39.67				−.13		41.03
						17.49						38.22						39.66						41.02
				−3.07						−2.82						−2.81						−2.79		
				+14.47						+35.38						+36.88						+38.24		
			+55	35.16						+35.08						+35.12						+35.11		

			+27.69																						
			1.44760																						
			1.53324																						
				−41.56				+26.50		−30.77				+12.01						+24.44					
			Ep	1.61868n				1.42325		1.44813n				1.07954						1.38510					
			G	1.72692n				1.53149		1.59637n				1.18778						1.49634					
			50	2	50	4		50	3	50	4			50	3					50	3	50	4		
			″	″	267	238		0.2	2.1	157	171			179	198	W.A.R.				50	54	149	166		
			56.9	46.4	233	142		53.9	44.2	43	58.7			131	21					0.3	47.2	9.7	58.6		
			139	101.9	83	38.0		136.1	106.3	244	135.8			110	21.9					53	112.6	246	135.2		
			56.95	50.95	24.15	19.00		3.05	53.15	12.20	7.90			15.50	10.95					2.65	56.30	12.30	7.60		
								56.00																	
			52	53.95	54	21.58		53	28.10	54	10.05			53	13.22					53	26.48	54	9.95		
								52	55.60											52	57.48				
				+ 36.91		− 53.32			+ 34.00		− 39.48				+ 15.41						+ 31.36				
			53	29.84		28.26		53	29.60		30.57			53	28.63					53	30.84				
	+ 14		29	18.49		20.09		29	18.75		17.78			29	19.72					29	17.51				
																				40					
	+ 27		49	01	50	29		49	03	50	17			49	20					46	06				
			1.48250		1.48295			1.48250		1.48290				1.48260						1.48252					
														+ 1500						+ 1007					
			1.49038		1.49083			1.49907		1.50027				1.49760						1.49257					
			−30.73		−30.96			−30.64		−31.42				−31.45						−31.09					
			− .11		− .23			− .09		− .13				− .02						− .08					
			− .81		− 1.20			− .87		− 1.26				− .96						− .93					
			+ .12		+ .17			+ .12		+ .17				+ .13						+ .12					
			−31.73		−32.22			−32.45		−32.86				−32.30						−31.98					
	+14		28	46.76		47.87		28	46.30		44.92			28	47.42					28	45.53				
	+14		28	46.82	+3	58.72		28	45.61	+3	58.87					+3	56.84					+3	56.90		
			32	43.9		−1.1		32	43.3		−1.0			32	43.3		−1.0			32	43.2		−1.0		
			+3	56.6		−25.0		+3	57.7		−24.4			+3	55.9		−24.4			+3	57.7		−24.3		
				55.9					57.0						55.2						57.0				
					+3	30.60				+3	31.47					+3	31.44					+3	31.60		
	14				+32	17.92				+32	17.08					+32	18.86					+32	17.13		

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66

1876

Dec. 10 — −.46 +

Dec. 13 — −.53 ×

Dec. 24 — −.42 +

Dec. 27 — −.36 +

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1877

-.40 X

Jan. 2

57	22.4		—	57	—		
	24.5		—		—		
	26.3		—		—		
			—	1496	10.7		
			—	1503	12.9		
57	53.8	57	30.0	1490	14.9		
	57.0		82.2	1507	17.2		
	59.0		34.4	.04	19.3		
			36.5	.18	22.7		
			38.7	.05	25.1		
				.02	27.8		
			34360				
57	24.40						
57	57.27	57	15.067	57	15.031		
				57	15.049		
		+1	22.70	58	37.652		
			—.10		— 8260		
					— 8254		
			-2.54				
		+1	20.06				
			+35.11				

-9.35
0.970812
1.07905$_2$

-42.22
1.62552$_2$
1.73376$_2$

50	3	30	4				
48.9	1.24	30.7	34.8				
43.9	30.1	26.8	14.6				
128	828	575	494				
46.40	41.40	28.75	24.70				
53	43.90	54	26.72				
—	12.00	—	5.47				
53	31.90		32.55				
14	29	16.45		15.80			
27	49	51		50	33		
	1.48280			1.48295			
	+2574			+2574			
	1.50854			1.50869			
	-3225			-3226			
	— .01			— .24			
	— 1.11			— 1.34			
	+ .15			+ .18			
	-33.22			— 32.66			
+14	28	43.23		43.14			
+ 14	28	43.18	+3	56.74			
	32	40.9		— 1.3			
	+3	57.7		— 22.0			
		57.0					
			+3	33.44			
14			+32	16.62			

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68

α Cam. Mer.

	α_0	m s 32 48.54
h m s 7 32 45	Corr^n	s − .02
	$\frac{d\alpha}{dt}$	s + 3.1463
+ 5° 32′ 37″		′ ″
	δ_0	32 28.01
	Corr^n	″ + .8
+ 36° 50′ 11″	$\frac{d\delta}{dt}$	″ − 8.763

log cos δ 9.99797
15 Const^n 0.12033

tang δ + 0.10 + 1.00
sin z + .60

1876 −.68 +
Oct. 18

m	s	m	s	m	s
32	44.8	32	—	32	31.0
	46.9		—		37.3
	49.1		—		39.2
			—		43.4
			—		45.4
		33	2.2		47.7
			4.3		49.7
			6.5		51.8
			8.4		55.9
			10.4		58.0
					0.0
			6.360		4634
32	46.93				5234
			47.596	32	47.582
				32	47.589
			+3.79	32	51.358
			.07		— 3.77
					— 3.75
			−2.82		
			+0.90		
		+32	48.54	49	

+0.66

6 5 ~~.08195~~ 9.81954
2 76 9.93987
50 3

198 242
18.2 10.0
180 342
19.00 17.10
53 18.05
+ 0.87
53 18.92

+5 29 29.43

+36 49 25
1.63430
+1590
1.65020
−4469
− .00
− .86
+ .13
− 45.42

++ 30 14.85
+0 28 44.01 + 3 53.90
32′ 34.4″ − 1.5
+3 50.4 − 6.4
51.2

+3 46.00

+ 5 +32 30.01

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α Bootis α₀ — m s: 10 1.329 (Oct 27) / Nov 1 / 6 / 11 / 16 — m s: 10 1.53 / 1.57 / 1.63 / 1.70 / 1.78 — ′ ″: 49 28.8 / 27.6 / 26.3 / 24.9 / 23.4

h m s: 14 9 38 Corr α +19 50 3 dα/dt — ″: +.03 / +2.7388

+22° 32′ 45″ δ₀ — ′ ″: 49 44.19

Corr δ — ″: −.5

dδ/dt — ″: −18.881

log cos δ 9.97344 — 15 Constant 0.09580 — tang δ +0.36 +1.06 — sin z +.38

1876 — ✓ −.80 +1.50 +1.10 + — ∫ −1.67 — Oct. 31 — Nov. 12 — ×

h	m	s	m	s	m	s	9	13.0	9	20.6	9	31.5
14	9	19.7	9	25.5	9	36.1		14.9		22.7		33.6
		21.6		27.6		38.4		16.8		25.0		35.8
		23.3		29.7		40.6				27.2		40.2
				31.9		45.0						
				34.0		47.2				29.3		42.3
	10	19.4		4.8		49.4	10	21.7		0.0		44.6
		21.5		7.0		51.6		23.1		2.1		46.7
		24.5		9.3		53.8		26.0		4.4		49.0
				11.5		58.1				6.6		53.3
				13.7		0.3				8.9		55.5
						2.6						57.7
				1950		4231				1468		4902
	9	21.53				5431	9	14.90				
	10	21.80	9	49.500		49.373	10	23.60	9	44.650		44.564
						368						548
					9	49370					9	44.556
				+10.87	10	1564				+17.45	10	1.720
				−.29		−12.19				−.24		−1.716
				+1.574								
				−1.23		−12.22						−1.719
										1.39		
										+15.82		
				+9.24		10.94			+10	0.38		
			+9	58.6								
				10 0.31								

+2784
1.44467
1.54047

		−32.43			+29.66	−39.04		
E	E	1.51095			1.47217	1.59151		
G	G	1.60675			1.56797	1.68731		
35	1	35	2		35	1	35	2
192	202	870	374		210	235	473	484
21.4	11.2	884	285		228	11.5	47.5	348
406	314	154	659		38	350	8	832
20.30	15.70	37.70	32.95		21.90	17.50	47.40	41.60
36	18.00	37	35.32		36	19.70	37	44.50
+	34.71	−	40.43		+	36.98	−	48.68
36	52.71		54.89		36	56.68		55.82
19	45	55.64		53.46		45	51.67	52.53
22	32	25	33	42		32	27	33	52
	1.37880		1.37848			1.37835		1.37844	
	−30		−30			+460		+460	
	1.37850		1.37850			1.38295		1.38350	
	−23.86		−23.91			−24.15		−24.18	
	− .13		− .18			− .15		− .27	
	− .35		− .70			− .36		− .76	
	+ .05		+ .10			+ .05		+ .11	
	−24.31		−24.69			−24.61		−25.10	
+19	45	31.33		28.77		45	27.06		27.43
+19	45	30.05	+3	55.12		45	27.24	+3	56.90
	49	27.8		−0.9		49	24.5		−0.9
	+3	57.8		+16.4		+3	57.3		+19.7
		57.3					56.8		
			+3	70.62				+3	75.70
19			+49	40.67				+49	42.94

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α Aquarii | α₀ 59ᵐ 24ˢ.861 | Dec 6 59ᵐ 27ˢ.58 | 5 | 55′ 24″ | 3

h 21 m 59 s 22 | Corr α + .02 | 11 27.53 | 4 | 2.7 | 3 | log cos δ 9.99994

° −0 ′ 55 ″ 35 | dα/dt +3.0830 | 16 27.49 | 4 | 3.0 | 4 | 15 cos δ tan 0.12230

21 27.45 | 3 | 3.4 | 4

26 27.42 | 3.8

+43° 18′ 23″ | δ₀ 55′ 17″.41 | tang δ −0.02 + 1.00

Corr δ − .1 | sin z +.69

dδ/dt +17.340

1876

	Dec. 5 J .57	+		Dec. 6 J .59	+		Dec. 7 J .50	+		Dec. 10
h m s	m s	m s								
21 58 · 21.0	58 26.8	58 36.9	58 31.8	58 25.2	58 35.4	58 21.2	58 24.0	58 34.0	58	Coh. J.
22.8	28.9	39.0	33.8	27.3	37.6	23.0	26.0	36.3		
24.8	30.9	41.0	35.7	29.3	39.6	24.8	28.1	38.3		
	32.9	45.2		31.5	43.8		30.1	42.4		
	35.0	47.3		33.6	45.8		32.1	44.5		
59 9.9	[3.9]	49.3		2.4	47.9	59 18.7	1.0	46.5		
11.7	[5.9]	51.4		4.5	50.0	20.5	3.0	48.7		
13.9	8.0	53.6		6.5	52.0	22.3	5.2	50.6		
	10.1	57.7		8.6	56.0		7.2	54.7		
	12.2	59.7		10.7	58.0		9.3	56.9		
		1.8			0.2			58.9		
	1945	4829		1796	4663		1660	5118		
58 22.87	4945	5429	58 33.77		5263	58 23.00				
59 11.83	49450	58 49355		58 47.960	47.845	59 20.50	58 46.600	46.527		
		325			1.835			475		
		58 49340			58 47840			58 46.501		
	+38.29	59 27.588		+39.78	59 27.578		+41.12	59 27.568		
	+.01	− 38.25		+.01	− 39.74		+.01	− 41.07		
		− 38.27			− 39.76			− 41.09		
	−2.73			−2.72			−2.71			
	+35.57			+37.07			+38.42			
	+59 24.91			+24.91			+24.92			

+26.47
1.42275
1.54505

ε	δ	−22.19		+16.07		+23.50	−34.00		
		1.35199ₙ		1.14829		1.37107	1.53148ₙ		
		1.47429ₙ		1.27059		1.49337	1.65378ₙ		
20	0	20 1		20 0	20 1	20 0	20 1	20 0	
19.9	19.9	25.0 24.9		36.1 36.4	42.7 37.9	24.3 25.6	40.2 41.3	39.3 40.7	
17.2	5.9	20.6 10.5		32.9 19.6	33.9 23.2	22.4 9.5	35.7 26.8	34.6 20.4	
17.1	25.8	56 35.4		90 56.0	76.6 61.1	6.7 35.1	75.9 68.1	13.9 61.6	
18.55	12.90	22.80 17.70		34.50 28.00	38.30 30.55	23.35 17.55	37.95 34.05	36.95 30.60	
20	15.72	21 20.25		20 31.25	21 34.42	20 20.45	21 36.00	20 33.88	
+	35.08	− 29.80		+ 18.65		+ 31.14	− 45.06		
20	50.80	50.45		20 49.90		20 51.59	50.94		
−0 58	2.45	2.10		58 1.55		58 3.24	2.59		
43 16	23	17 27		16 38		16 27	17 43		
	1.73370	1.73390		1.73370		1.73370	1.73400		
	+1576	+1576		+1424		+957	+957		
	1.74946	1.74966		1.74794		1.74327	1.74357		
	−56.16	−56.19		−55.97		−55.37	−55.41		
	+ .00	+ .00		+ .00		+ .00	+ .01		
	− .09	− .39		− .15		− .09	− .50		
	+ .01	+ .05		+ .02		+ .01	+ .06		
	−56.24	−56.53		−56.10		−55.45	−55.84		
−0 58	58.69	58.63		58 57.65		58 58.69	58.43		
−0 58	58.66	+3 56.87			+3 56.84	58 58.56	+3 56.90		+3 57.23
55	2.3	−1.5		55 2.4	−1.5	55 2.5	−1.5		−1.5
+3	56.4	−15.1		+3 4.8	−15.0	+3 56.1	−15.1		
	56.3			56.2 / 56.1		56.0			
		+3 40.27			+3 40.34		+3 40.30		
−0		+55 18.39			+55 17.31		+55 18.26		

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α Piscis Australis

	h	m	s
α	22	50	44
	°	′	″
δ	−30	17	2

+72° 39′ 60″

N.A.

	m	s
α	50	47.706
$\frac{d\alpha}{dt}$		+3.328
δ	16′	43.″22
$\frac{d\delta}{dt}$		+18.99

log cos δ 9.93628
15 Constant 0.05864

tang δ − 0.58 + 1.16
sin z + .95

1876 −.36 Dec. 27

1877 −.40 Jan. 2

√ −.36 Dec. 27

1876
22h 50m 47.s740

1877
22 50 47.740

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α Arietis

h m s
2 0 8.
0 ' "
+22 52 13

+19° 30' 35"

1876

Dec. 6

Dec. 14

Dec. 19

Dec. 24

log cos δ 9.96442
1.5 cos δ tan δ 0.08678
tan δ +0.42 +1.09
sin z +.33

See previous page for last date.

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δ Ursae Min

h m s		δ = +86 36 39	α₀	m s 12 19.887	αA 19.892	δ′ R.A.	m s 12 19.84	log cos δ	8.77172
18 12 39			Corr α	−.05		δ′−R.A.	−.05	15 cos δ tan i	8.89408
+86° 36′ 39″			dα/dt	−19.4199		δ′	36′ 28.8″		
−44 13 51			δ₀	36′ 28.03″	28.53″	R.A.	28.5	tang δ	+1.689
			Corr δ	+.8″		δ′−R.A.	+.3″	sin z	−.70
			dδ/dt	+1.098″					

1876

Oct 3.2 U.C. −.89	Oct 9 U.C. −.83	Oct 11 U.C. −.79	λ Urs. Min. Oct 16.3 U.C. −.67
12 17.68	12 12.24	12 10.50	47 44.30 / 47 52.28
−1.89 11 60.35	−0.05 11 57.65	+0.46 11 56.73	+2.53 47 11.57
−15.03 + 17.33	−14.02 + 14.59	−13.34 + 13.77	−36.17 +32.79 + 40.77
+ 17.38	+ 14.64	+ 13.82	+33.72 + 41.70
+19.54	+22.24	+23.16	+1 5.38
+2.62	+8.17	+10.28	+ 11.74
12 20.30	12 20.41	12 20.78	48 16.04

50 57.71	50 59.40	51 0.04	31 24.54
+86 31 50.64	31 48.95	31 48.31	51 23.81
−44 12 55			−46 32 29
1.74790	1.74790	1.74790	1.78320
−183	+841	+911	+646
1.74607	1.75631	1.75701	1.78966
+55.73	+57.06	+57.15	+61.61
−.25	−.25	−.25	−.36
+.04	+.04	+.04	+.06
+55.52	+56.85	+56.94	+1 1.31
+86 32 46.16	32 45.80	32 45.25	52 25.12
+3 52.19	+3 52.63	+3 52.17	+3 52.69
36 39.0 / +3 53.8 / 54.2 ; +1.6 −11.0 −10.5	36 38.8 / +3 53.0 / 53.4 ; +1.6 −10.8 −10.3	36 38.6 / +3 53.4 / 53.8 ; +1.6 −10.6	56 18.6 / +3 53.5 / 54.1 ; +1.6 −17.5 −18.6
+3 42.79 / 8.12	+3 43.43 / 73	+3 43.47 / 7	+3 35.69
86 +36 28.95 / 29.45	+36 29.23 / 29.73	+36 28.42 / 29.02	+56 0.81

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λ Ursae Min

h m s	δ +88 56 19	α₀	48 17.760	16.887	ρ′ n.A	48 16.01	log cosδ	8.26773
19 49 18		Corr α	− 1.75		ρ′ − n.A	16.94	15 cosδ tan	8.39009
+88 ~~55~~ ~~52~~ 56 19		dα/dt	− 60.8941			− .93		
− 46 33 31		δ₀	56 1.16	0.02	ρ′ n.A	56 0.7	tan δ	+53.98
		Corr δ	− .5″		ρ′ − n.A	0.1	sin 2	− .73
		dδ/dt	+ 9.152″			+ .6″		

U.C. −.78 3 Oct 19		U.C. −.70 Oct 29		U.C. −.79 +1.50 Oct 30		U.C. −.88 Nov 2		U.C. −.81 −.10 Nov 4		U.C. −.83 −.10 Nov 5	
+4.19	47 43.20	+9.05	47 19.18		46 3.69		47 33.60	+13.14	47 26.07	+13.54	47 24.45
−42.10	46 67.68	−37.69	46 53.64	+9.50	46 ~~51.46~~ 52.39		46 48.55	−43.70	46 45.73	−44.80	46 44.25
	+ 35.59		+ 25.54	−42.64	− 48.70		+ 45.05	− 5.40	+ 40.34	− 5.40	+ 40.20
	+ 36.44		+ 26.47	+1 20.98	− 47.77		+ 45.98		+ 41.27		+ 41.13
+1 9.20		+1 23.25		+1 24.49		+1 29.21		+1 31.16		+1 32.63	
+31.29		+54.51		+2 12.33				+ 55.18		+55.97	
48 14.49		48 13.69		48 16.02				48 21.25		48 20.42	

Left margin: 44.30, ~~52.28~~, 11.51, ~~40.77~~, 4.70

Oct 19		Oct 29		Oct 30		Nov 2		Nov 4		Nov 5	
31 25.83		31 25.54		31 27.03		31 24.13		31 25.94		31 28.92	
51 22.52		51 22.81		51 21.32		51 24.22		51 22.41		51 19.43	
1.78320		1.78320		1.78320		1.78320		1.78320		1.78320	
+ 869		+ 1102		+ 849		− 447		+ 379		+ 1194	
1.79189		1.79422		1.79169		1.77873		1.78699		1.79514	
+ 61.93		+ 62.26		+ 61.90		+ 60.08		+ 61.23		+ 62.39	
− .36		− .38		− .38		− .38		− .39		− .42	
+ .06		+ .06		+ .06		+ .06		+ .06		+ .06	
+1 1.63		+1 1.94		+1 1.58		+ 59.76		+1 0.90		+1 2.03	
52 24.15	+3 54.85	52 24.75	+3 53.55	52 22.90	+3 54.83	52 23.98	3 53.80	52 23.31	+3 56.32	52 21.46	+3 56.58
56 18.8	+ 1.7	56 18.9	+ 1.7	56 18.9	+ 1.7	56 18.9	+ 1.6	56 18.9	+ 1.6	56 18.9	+ 1.6
+3 54.6	~~17.6~~	+3 54.1	~~17.7~~	+3 56.0	~~17.8~~	+3 54.9	~~17.7~~	+3 55.6	~~17.7~~	+3 57.4	~~17.8~~
55.2	− 18.8	54.7	− 18.8	56.6	− 18.9	55.5	− 18.9	56.1	− 18.4	58.0	− 18.8
	+3 37.75		+3 36.45		+3 37.63		+3 36.50		+3 39.02		+3 39.38
88	+56 1.90		+56 1.20		+56 0.53		+55 59.48		+56 2.33		+56 0.84

Left margin: 52.69, + 1.6, ~~17.5~~, − 18.6, 35.69, 0.81

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Polaris

	Sept.	Nov.	Dec.		m s	a	m s
L.C.	+88 38 59	+88 39 25	+88 39 35	α_0	13 20 338	21.185	13 21 01
					s		21.18
	13h 12m 59s	−42.45	*42.65	Corrα	+.67	N.A	−.19
		−.75	−.75		s		
	+88° 38′ 34″	8.87226 n	8.36993 n	$d\alpha/dt$	+20.980		
					′		′
	+ 91 21 26	15 cos tan 8.49462 Sept.	8.49229 Nov.	8.49139 Dec. Jan	δ_0	38 53 22	38 52.9
						21 6.78 N.A	52.8
	−48 58 38			Corrδ	− .3		+.1
				$d\delta/dt$	+19.055		

1876 L.C.−.67 Nov. 12.8 | L.C.−.57 Dec 4.8 | L.C.−.57 Dec 5.8 | L.C.−.55 Dec 14.8 | L.C.−.41 Dec 19.8 | L.C.−.39 Dec 23.8

	13	16.42			13	22.55			12	48.70			12	31.40			12	22.12			12	12.19		
+17	13	62.50	+37	58	13	50.75	+39	20	13	32.78	+50	99	13	44.55	+58	93	13	40.74	+1	6.98	13	37.77		
−36	−	46.00	−30	77	13	51.78	+30	77	−	50.80	−29	69	−	22.98	−22	05	−	78.19	−21	05	−	85.58		
+28	−	45.83	+24	81		43	+24	81	−	17.72	+23	68	−	22.81	+17	52		78.81	+16	67	−	85.41		
						−28.88				−6197	−6180													
						−28.71																		
−41	24		−30	24			−29	49			−23	19			−19	11			−7	658				
+ 4	78		+ 31	58			+ 34	02			+ 51	31			+ 57	34			+1	702				
13	21.20		13	54.13			13	22.72			22	71			19	46				19.21				

	7	17.67			7	31.03			7	28.33			7	28.63			7	35.89			7	37.29		
+91	15	30.68			15	17.32			15	20.02			15	19.72			15	12.46			15	11.06		
−48	56	35			56	22																		
	1.81960				1.81960				1.81960				1.81960				1.81960				1.81960			
	+ 672				+ 2076				+ 2761				+ 1126				+ 5136				+ 4668			
	1.82632				1.84036				1.84721				1.83086				1.87096				1.86658			
	+ 67.04				+ 69.24				+ 70.34				+ 67.74				+ 74.29				+ 73.55			
	− .64				− .75				− .75				− .78				− .81				− .83			
	+ .09				+ .10				+ .10				+ .10				+ .10				+ .10			
	+1	6.49			+1	8.59			+1	9.69			+1	7.06			+1	13.58			+1	12.82		
+91	16	37.17			16	25.91			16	27.71			16	26.78			16	26.04			16	23.88		
			+3	56.90			+3	56.70			+3	56.87			+3	57.50			+3	56.85			+3	56.58
	20	35.2		+1.7	20	28.4		+1.6	20	28.1		+1.5	20	26.1		+1.5	20	25.0		+1.5	20	24.4		+1.5
	+3	58.0	+	32.0	+4	2.5		+38.8	+3	58.4		+39.0	+3	59.3		+41.1	+3	59.0		+42.1	+4	0.5		+42.8
		57.9				2.4				58.3				59.2				58.9				6.4		
			+4	30.60			+4	37.10			+4	37.47			+4	40.10			+4	40.45			+4	40.88
91			+21	7.77			+21	30.1			+21	7.18			+21	6.88			+21	6.49			+21	4.76

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1877 L.C. -.40 Jan 2.8

L.C. Jan 3.8

L.C. -.25 Jan 4.8

1876 Dec. 9.8

1876 -.36 Dec. 27.8

1876 -1.03 Sept 3.1

12 48.01 3.91
13 28.92 40
– 44.29 8.49
– 40.21 84.32
– 7.08

12 2092 +1 27.15
13 2793 42 +13.56
– 66.50 +10.69
– 66.33 – 5.29
+1 32.55
2191

11 4936
13 2676 47
– 9911
– 96.74

13 4767 +1 14.47
– 1.963
+ 1.6289
– 12.58
+1 1.728
13 2.27 3 Rej

11 44.59
13 33.77
1 2.878
1 2.861

–17.58
+55.60
+ 44.02
– 32.03
– 5.59
8.96 3 Rej

13 14.55
13 53.21
– 38.66
– 38.49

7 34.05
15 14.30

1.81960
+ 4389
1.86349
+ 73.03

– .78
+ .10

+1 1235
16 26.65

20 23.0
+3 564
56.3

7 36.92
15 11.43

1.81960
+ 4522
1.86482
+ 73.25

– .78
+ .10

+1 1257
16 24.00

20 22.9
+3 58.9
58.8

6 40.67
16 7.68

57 12
1.81980
– 1690
1.80290
+ 63.52

– .82
+ .07

+1 3.27
17 10.95

21 14
+3 50.4
50.3

56.58
+ 1.5
4.28
40.88
4.76

+3 56.74
+2.0
+4
21

+3 56.72
+2.0
+44.3
+4 43.02
+21 7.02

+1.5

+3 52.84
+1.6
+5.7
+4 .0.14
+21 11.09

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