KG
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Polaris.

Observations and Reductions.

By

From Feb. 15. to Aug. 20. 1879

1879phjun..1..555T

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1

1879. Feb. 15 L.C.

$112.5 \sin\delta \sin 1'' \cos\delta [T_m - T_{sy}]^2$

$\frac{g}{112.5} = 2.05115$ log. $b = 6.73660$

0.11559 9.94488 $\cos\delta = 8.36542_m$

8.36542_m 4.68557 5.10202_m

8.48101_m 6.73660

5 55.9	13	7	26.9		52	9.9	+21 16.9				M	10	48.10	10'	9.45	10' 48.83
5 26.2		8	0.5				1276.9	3.10615	6.21230				−88.65		−20.62	
4 56.3		8	26.5	8 29.14	53	19.1	20 7.7	1.58716	1.31432		R	10	48.12		8.56	50.11
4 26.8		9	2.1	5 5.67			1267.7	3.08196	6.16392				−36.56		−18.45	
3 57.3		9	29.7		54	42.7	18 44.1	1.86297	1.26594		M	10	38.50		4.78	48.12
3 27.4		10	3.9				1124.1	3.05081	6.10162				−34.02		−16.36	
2 57.6		10	27.7		55	48.0	17 37.8	1.53162	1.20364		R	10	36.10		4.08	49.93
2 28.2			57.8	10 59.96			1057.8	3.02441	6.04882				−32.62		−14.15	
1 58.5		11	29.6		57	7.7	16 19.1	1.50542	1.15044		M	10	31.48		1.85	49.73
1 28.7		12	1.4				979.1	2.99078	5.98156				−29.63		−12.12	
0 59.1			25.0		58	24.1	15 27.1	1.47179	1.08358		R	10	27.79		59.95	49.64
0 29.5			51.8				902.7	2.95554	5.91108				−27.32		−10.31	
0 00		13	28.3	13 27.96	59	42.9	13 43.4	1.43655	1.01310		M	10	22.02		5.08	46.27
+0 28.7			55.5				823.9	2.91587	5.93174				−24.94		−10.81	
1 58.3		14	25.2		0	52.9	12 33.9	1.39688	1.03376		R	10	18.30		55.53	48.32
2 28.3		14	56.2				753.9	2.87731	5.75462				−22.82		−7.21	
2 57.8		15	23.7	15	2	18.6	11 8.2	1.35832	0.85664		M	10	1.80		53.57	47.92
3 27.4			55.3	15 53.64			668.2	2.82491	5.64982				−20.23		−5.65	
3 56.9		16	25.3		3	21.9	+10 4.9	1.30592	0.75184		R	10	10.47		52.16	47.52
4 26.5			47.5				004.9	2.78168	5.56336				−18.31		−4.64	
4 56.7		17	26.4		22	57.5	−9 30.7	1.26269	0.66538		M	9	33.20		50.47	46.35
5		17	51.8	23			−570.7	2.75641	5.51282				+17.27		−4.12	
		18	22.6	18 22.10	24	48.7	−11 21.9	1.23745	0.61484		R	9	30.87		51.51	45.63
			52.8	3			−681.9	2.83372	5.66774				+20.64		−5.88	
		19	22.0		26	1.4	−12 34.6	1.31473	0.76946		M	9	29.45		52.29	45.09
							−754.6	2.87772	5.75544				+22.64		−7.20	
					27	12.9	−13 53.1	1.35873	0.85746		R	9	29.17		54.39	45.61
							−833.1	2.92070	5.84140				+23.22		−8.78	
~~1 7 1380~~					28	22.9	−14 56.1	1.40171	0.94342		M	9	29.10		56.22	46.06
							−896.1	2.90236	5.90472				+27.12		−10.16	
					29	23.8	−15 57.0	1.43337	1.00674		R	9	27.24		56.24	44.66
							−957.0	2.98091	5.96182				+28.64		−11.58	
					30	20.2	−16 53.4	1.46192	1.06384		M	9	26.30		56.38	44.28
							−1013.4	3.00388	6.01176				+30.68		−12.70	
					31	12.3	−17 45.5	1.48689	1.11378		R	9	25.52		57.77	43.41
							−1065.5	3.02755	6.05510				+32.25		−14.36	
					32	18.4	−18 37.6	1.50856	1.15712		M	9	26.25		60.48	44.31
							−1131.6	3.05330	6.10660				+34.23		−16.17	
					33	36.8	−20 10.0	1.53431	1.20862		R	9	26.75		63.38	44.86
							−1210.0	3.08279	6.16558				+36.63		−18.52	
								1.56380	1.26760							

1 13 96.76 = mean Ref nures

1 13 46.29 = Calcs for Jan 6. 88 40 15.23

including a term

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log 15 Tan i = 0.11559
log 15 Cos S = 8.36542
log 15 tan i cos S = 8.48101

6.73660
8.36542
5.10202

1879. Feb. 16 Wash.

	13	8	51.3	8 51.3	12	57	19.8	+17 2579			14 47.2	M	6.04064	48 21.00	48+52.72	49'	6.61
				-5 55.9				#10499 3.02032						+31.72	+ 13.89		
						58	34.5	16 132 1.50133				R	1.14266	48 24.90	+ 54.36		6.34
		9	16.7					+5932 2.88720					5.97640	+29.76	+ 11.98		
			22.3	9 22.2		59	42.4	15 53 1.46921			14 48.4	M	1.07842	48 27.17	+54.57		4.94
			27.5	-5 26.2				+6053 2.95679					5.91358	+27.40	+10.37		
		9	45.6	6	13	0	32.0	14 857 1.43780				R	1.01560	48 30.67	+57.48		7.38
			51.0	9 51.5				885.7 2.94729			14 46.9		5.89458	+26.81	+9.90		
9 52.42			58.2	-4 56.3		1	27.8	13 19.9 1.42830				M	0.99660	48 33.12	+ 57.23		5.61
		10	14.9					799.9 2.90304					5.80608	+24.21	+8.28		
			20.5	10 20.0		2	17.3	12 30.4 1.38405			14 47.8	R	0.91810	48 38.62	+ 58.45		5.65
			27.5	-4 26.8				+54.4 2.87760					5.75520	+ 2283 +58	+ 7.20		
		10	46.4			3	29.4	11 18.3 1.35861				M	0.85722	48 39.25	+ 59.78		5.60
			50.2	10 5.0				678.3 2.83142			14 48.2		5.66284	+ 2053 +715	+ 5.82		
			56.4	-3 57.2		4	15.0	10 32.7 1.31243				R	0.76486	48 41.80	+60.02		5.12
		11	14.4	11 2.0.0				632.7 2.80120					5.60240	+1916 +753	+ 5.06		
10 2.54			20.1	11 20.0		5	8.0	9 39.7 1.28221			14 47.4	M	0.70442	48 44.17	+61.76		6.01
			25.6	-3 27.4				+5767 2.76320					5.52640	+ 1759	+ 4.25		
		11	46.5			6	6.8	+8 409 1.24421				R	0.62842	48 47.02	+ 62.79		6.22
			50.8	11 50.9				+ 520.9 2.71675			14 48.5		5.43350	+1577	+ 3.43		
			56.3	-2 57.6		20	56.9	-6 92 1.19776				M	0.53552	49 14.20	- 63.02		4.74
		12	13.5					-366.2 2.56726					5.13452	-11.18	- 1.72		
12 19.42			18.2	12 19.2		22	7.7	-7 20.0 1.04827			14 47.4	R	0.23654	49 16.50	- 63.18		5.63
12 19.42			24.8	-2 28.2				-440.0 2.64345					5.28690	-13.32	- 2.45		
		12	43.5			24	6.3	-9 18.6 1.12446				M	0.38892	49 18.10	- 61.19		5.14
			47.9	12 48.2				-558.6 2.74710			14 46.7		5.49420	-16.41	- 3.95		
			53.1	-1 58.5		24	55.3	-10 7.6 1.22811				R	0.59622	49 19.25	- 60.86		5.64
		13	12.5					-667.6 2.78362					5.56724	-18.39	- 4.78		
			18.9	13 18.8		26	3.3	-11 15.6 1.26463			14 47.5	M	0.67926	49 19.30	- 58.85		4.62
			25.1	-1 28.7				-675.6 2.82969					5.65938	-20.45	- 5.77		
		13	43.0			27	8.1	-12 20.4 1.31070				R	0.76140	49 20.10	- 57.69		4.64
			48.3	13 48.6				-740.4 2.86947			14 47.7		5.73994	-22.41	- 6.95		
12 47.44			54.6	-0 59.1		28	18.2	-13 30.5 1.35048				M	0.84196	49 20.35	- 55.82		4.13
		14	13.9					-8.8 10.5 2.90875					5.81750	-24.53	- 8.31		
			19.1	14 19.2		29	14.0	-14 26.3 1.38976			14 48.7	R	0.91952	49 21.17	- 54.95		4.44
			24.7	-0 29.5				-866.3 2.93767					5.87534	-26.22	- 9.49		
		14	41.7			30	17.1	-15 29.4 1.41868				M	0.97736	49 21.22	- 53.09		4.02
			47.2	14 46.7				-929.4 2.96820			14 46.7		5.93640	-28.13	- 10.93		
14 47.44			51.1	-0 00.0		31	8.9	-16 21.2 1.44921				R	1.03842	49 21.97	- 51.67		3.85
		15	11.2					-988.2 2.99176					5.98352	-29.70	- 12.18		
			17.4	15 16.6				1.47237			14 47.1		1.08554				
			21.2	+0 29.5													
		15	39.9														
			46.2	15 ~~52.8~~ 46.1							14 46.9						
			52.2	+0 59.2													
16 18.24		16	11.3								14 47.4						
			15.2	16 16.3													
			22.3	+1 28.7													
		16	40.0					1 13 46.95								88 40 15.16	
			45.0	16 45.2							14 46.8						
			50.2	+1 58.3													
		17	8.8														
17 18.24			15.2	17 14.6							14 46.5						
17 15.26			19.9	+2 28.1													
		17	41.0														
			46.5	17 45.6							14 47.8						
			49.2	+2 57.8													
		18	9.7														
			14.8	18 14.7							14 47.3						
			19.5	+3 27.7													
		18	39.2														
			43.8	18 44.0							14 47.1						
			48.9	+3 56.9													
		19	8.3														
			13.6	19 13.6							14 47.4						
			19.9	+4 26.5													
		19	40.1														
19 44.38			47.6	19 46.1							14 49.7						
19 45.52			50.6	+4 56.4													
		20	9.8														
			13.5	20 14.6							14 48.6						
			20.6	+5 26.0													
		20	37.9														
			43.5	20 43.3							14 47.0						
14 47.74			48.4	+5 56.3													
7			Tm	14 47.724													

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1879 Feb. 21 | Ω.C. | T-S | T-S

Log 15 tan i = 0.11539
8.36551
8.48110

6.78660
8.36551
5.10211

13	8	50.8													
		—	8 55												
		—													
	9	20.7			m s										
		—	9 25.7	55	36.3	+ 19 12.6			M.	48	+14.62	48' +49.52	49'	6.33	
		—				+11526	3.06168	6.12336			+34.80	+16.81			
				56	38.7	18 10.2	1.54278	1.22547	R.	48	18.17	+51.18		6.22	
	9	46.0				10902	3.03751	6.07502			+33.01	+15.04			
9 52.44		52.2	9 51.9	57	42.5	17 6.4	1.51861	1.17713	M	48	22.88	+53.93		7.26	
9 52.44		57.4				10264	3.01132	6.02264			+31.08	+13.33			
	10	13.3		58	32.7	16 16.2	1.49242	1.12475	R.	48	26.25	+55.81		7.87	
		19.0	10 19.4			976.2	2.98954	5.97908			+29.56	+12.06			
		25.8		59	35.4	15 13.5	1.47064	1.08119	M	48	28.12	+55.78		6.34	
	10	42.6				913.5	2.96071	5.92142			+27.66	+10.56			
		48.7	10 49.4	0	22.7	14 26.2	1.44181	1.02353	R	48	31.70	+57.93		7.72	
		52.8				866.2	2.93762	5.87524			+26.23	+9.49			
	11	15.9		1	33.1	13 15.8	1.41872	0.97735	M	48	33.87	+57.96		5.97	
		19.5	11 20.1			+795.8	2.90080	5.80160			+24.09	+8.01			
		25.0		2	24.0	12 24.9	1.38190	0.90371	R	48	37.22	+59.77		6.79	
	11	43.2	49.8			7449	2.87210	5.74420			+22.55	+7.02			
		50.1	11 50.2	3	28.0	11 20.9	1.35320	0.84631	M	48	39.36	+59.96		5.82	
		56.2				6804	2.83308	5.66616			+20.61	+5.86			
	12	14.7		4	58.7	+ 9 50.2	1.31418	0.76827	R	48	43.79	+61.65		6.06	
		20.6	12 21.0			4590.2	2.77100	5.54200			+17.87	+4.41			
12 20.68		27.8		24	6.4	- 9 17.5	1.25210	0.64411	M	49	18.27	-61.39		6.34	
	12	46.8				5507.8	2.74624	5.59248			-16.88	-4.95			
		53.8	12 52.9	25	20.5	- 10 31.6	1.22734	0.69459	R	49	18.82	-59.70		4.75	
		58.0				- 631.6	2.80044	5.60088			-19.12	-5.05			
	13	13.5		27	29.6	+ 12 40.7	1.28154	0.70299	M	49	17.87	-56.84		2.65	
		20.8	13 19.6			- 7604.7	2.88121	5.76242			-23.03	-5.81			
		24.5		28	29.0	- 13 40.1	1.36231	0.76453	R	49	20.22	-55.39		3.90	
	13	44.4				-820.1	2.91387	5.82774			-24.83	- 8.51			
		51.9	13 50.6	29	10.4	- 14 21.3	1.39497	0.92985	M	49	21.02	-54.94		4.35	
		55.5				-861.5	2.93526	5.87152			-26.08	- 9.41			
	14	15.8		30	5.4	- 15 16.5	1.41636	0.97363	R	49	20.67	-52.52		3.55	
		21.3	14 20.6			-916.6	2.96213	5.92426			-27.75	-10.63			
		24.7		30	53.4	- 16 4.5	1.44323	1.02637	M	49	20.97	-51.77		3.81	
	14	43.0				-964.5	2.98430	5.96860			-29.20	-12.04			
14 48.84		47.7	14 ~~52.5~~ 48.2	31	50.7	- 17 1.8	1.46540	1.08071	R	49	21.42	-50.48		3.69	
14 48.84		53.8				4021.8	3.00937	6.01874			-30.94	-13.21			
	15	13.0		32	47.3	- 17 58.4	1.49047	1.12085	M	49	20.85	-48.20		2.91	
		19.7	15 19.1			10784	3.03278	6.06556			-32.65	-14.71			
		24.7		33	55.2	- 19 9.3	1.51388	1.16767	R	49	22.50	-47.70		4.41	
	15	38.4				-1149.3	3.06043	6.12086			-34.80	-16.71			
		45.1	15 45.7				1.54153	1.22297							
		53.6													
	16	12.6													
		16.8	16 17.1												
		22.0													
	16	39.9				1 13 42.11							88 40	14.27	
		44.8	16 45.8												
		52.7													
	17	14.1													
17 17.02		18.9	17 19.3												
17 17.02		24.9													
	17	38.7													
		47.6	17 46.8												
		54.0													
	18	10.8													
		17.3	18 16.1												
		20.1													
	18	37.9													
		45.5	18 45.0												
		51.5													
	19	9.5	8												
		16.0	19 15.2												
		22.0													
	19	38.1													
19 45.70		44.5	19 44.6												
19 45.50		51.2													
	20	9.0													
		15.7	20 16.1												
		23.5													
	20	41.0	46.0												
		45.1	20 ~~47.6~~												
14 48.95		51.8													
			1448.952												

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Feb. 22 L.C.

T's T − S

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		13																			
			—																		
			—		9 41.9																
			—																		
		8	5.6			19	53.5	− 6 14.9			M	9	2840	8'	7'.85	9'	39'.75	9'	37'.98		
			11.7	8 11.9				− 3749	25 7392	5.14784			+11.35		+1.77		−1.77				
			18.4			21	10.5	− 7 31.9	1 05502	0.24995	R	9	2687		73.19		40.55		38.55		
		8	36.6					−451.9	2.63304	5.31008			+13.68		71.40		−2.00				
	8	41.80	41.9	8 42.7		22	16.4	− 8 37.8	1.13614	0.31219	M	9	2582		70.22		41.42		38.03		
	8	41.80	49.7					−517.8	2.71416	5.42832			+15.60		1.39		−3.39				
		9	6.3			23	7.6	− 9 29.0	1.19526	0.53043	R	9	2527		68.04		42.50		38.41		
			9.8	9 10.2				− 569.0	2.75511	5.51022			+17.23				−4.09				
			14.4			24	17.7	− 10 39.1	1.23621	0.61233	M	9	2385		64.50		43.20		38.04		
		9	37.0					−639.1	2.80557	5.61114			+19.35				−5.16				
			42.5	9 42.3		25	4.0	− 11 25.4	1.28667	0.71325	R	9	2237		61.52		43.12		37.18		
			47.5					−685.4	2.83594	5.67188			+20.75				−5.94				
		10	8.4			26	15.9	− 12 37.3	1.31704	0.77399	M	9	2285		59.82		45.78		38.93		
			12.6	10 13.0				−757.3	2.87727	5.75854			+22.93				−7.25				
			18.0			27	4.0	− 13 25.4	1.36037	0.86065	R	9	2140		57.02		45.78		37.58		
		10	33.8					−805.4	2.90601	5.81202			+24.38				−8.20				
			42.7	10 41.3		28	3.1	− 14 24.5	1.38711	0.91413	M	9	2132		58.15		47.49		38.04		
			47.4					−864.5	2.93676	5.87352			+26.17				−9.45				
		11	6.0			28	55.2	− 15 16.6	3.41786	0.87563	R	9	1927		51.52		47.02		36.39		
11	11.70		18.4	11 10.6				−916.6	2.96218	5.92436			+27.75				−10.63				
11	11.70		15.3						3.44328	1.02647											
		11	35.9																		
			42.0	11 43.1																	
			51.6																		
		12	5.2																		
			11.7	12 10.5																	
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			41.8	12 42.7																	
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		13	0.8																		
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			12.4																		
		13	32.0																		
13	38.52		38.8	13 37.7																	
13	38.52		42.3																		
		14	2.3																		
			6.5	14 7.5																	
			13.6																		
		14	33.1																		
			37.6	14 37.5																	
			41.9																		
		15	7.5																		
			10.5	15 10.2																	
			12.5																		
		15	31.1					1 13 44.98									.88 40		13.91		
			33.7	15 34.7																	
			39.4																		
		15	59.3																		
16	~~5.75~~ 6.50		2.5	16 4.4																	
16	6.50		11.4																		
		16	29.7																		
			37.6	16 37.6																	
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		16	55.5																		
			5.1	16 5.6																	
			12.2																		
		17	31.3																		
			35.7	17 35.8																	
			40.5																		
		17	58.4																		
			2.0	18 3.0																	
			8.7																		
		18	29.7	18 36.6																	
18	34.74		38.2																		
18	34.74		41.8																		
		18	54.2																		
			2.6	19 1.0																	
			6.3																		
		19	30.0																		
			36.8	19 37.3																	
13	38.65 ~~44.7~~ 65		45.0																		
				13 38.652																	

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		13	8	48.0															
				57.5	8 56.6														
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			9	22.0															
4.29				25.7	9 26.1														
				30.7															
3.93			9	40.7															
	9	56.24		56.6	9 57.2														
4.02	9	56.24		4.3															
			10	19.7		1	50.3	+13 2.2	S			M	48	3955	48'	+ 63.23	49'	10.97	
4.33				25.5	10 25.2			+782.2	2.89332	5.78664			48	+23.68		+ 7.74			
				30.3		3	50.3	11 2.2	1.37442	0.88875		R	48	4292		+ 62.77		7.50	
3.41			10	47.3				6622	2.62099	5.64198				+20.05		+ 4.73			
				57.0	10 56.1	4	41.3	10 11.2	1.30209	0.54409		M	48	4685		+ 67.85		8.78	
3.44				4.0				611.2	2.78618	5.57236			48	+18.50		+ 3.93			
			11	19.9		5	35.2	9 173	1.26728	0.67447		R	48	4947		+ 66.34		9.68	
2.68				26.2	11 26.3			558.3	2.74609	5.49218			49	+1687		+ 3.34			
				32.7		6	19.0	8 33.5	1.22719	0.59429		M	48	4967		+ 65.22		7.88	
3.79			11	47.7				513.5	2.71054	5.42108			49	+15.55		+ 2.66			
				54.7	11 53.7	7	13.5	7 39.0	1.19164	0.52319		R	48	5382		+ 67.72		9.95	
3.08				58.8				459.0	2.66181	5.32362			49	+13.90		+ 2.23			
			12	17.6		7	52.8	+ 6 59.7	1.14291	0.42573		M	49	1502		+ 77.73		19.56	
2.85	12	2446		23.3	12 24.1			+419.7	2.62294	5.24588			49	+1271		+ 1.83			
	12	24.46		31.5		21	10.0	- 6 17.5	1.10404	0.34799		R	49	1537		- 63.94		6.41	
2.45			12	48.7				-377.5	2.57692	5.15384			49	- 1143		- 2.47			
				55.5	12 54.9	22	14.7	- 7 22.2	1.05802	0.25595		M	49	1705		63.66		6.90	
3.49				0.6				442.2	2.64562	5.29124			49	- 1339		- 3.27			
			13	17.2		23	19.0	- 8 26.5	1.12672	0.39335		R	49	1785		62.52		7.16	
1.32				23.7	13 23.3			-506.5	2.70458	5.40916			49	- 1533		- 4.64			
				29.1		24	58.5	- 10 6.0	1.18568	0.51127		M	49	1887		60.52		6.01	
1.99			13	46.5				-606.0	2.78247	5.56494			49	- 1835		- 5.49			
				51.7	13 51.9	25	57.4	- 10 58.9	1.26357	0.66705		R	49	2067		60.72		7.41	
2.31				57.6				-658.9	2.81882	5.63764			49	- 1995		- 6.69			
			14	15.6		26	59.9	- 12 7.1	1.29992	0.73975		M	49	2112		59.10		6.83	
2.58				22.2	14 22.2			- 727.4	2.86177	5.72354				- 2202		- 7.73			
				28.8		27	54.3	- 13 7.8	1.34287	0.82565		R	49	2127		5760		6.20	
3.91			14	44.5				-781.8	2.89310	5.78620				- 2367		- 8.60			
	14	5250		53.2	14 52.7	28	36.9	- 13 44.4	1.37420	0.88831		M	49	2142		5676		6.31	
2.87	14	52.30		57.3				- 824.4	2.91614	5.83228				- 2496		- 9.85			
			15	13.3		29	34.9	- 14 42.4	1.39724	0.93439		R	49	2210		5538		6.26	
1.71				25.0	15 22.0			- 882.4	2.94567	5.89134				- 2672		- 10.98			
				27.7		30	24.0	- 15 31.5	1.42677	0.99345		M	49	2362		5542		7.76	
2.37			16	49.5				- 931.5	2.96918	5.93836				- 2820		- 12.34			
				53.9	15 53.7	31	20.0	- 16 27.5	1.45028	1.04047		R	49	2350		5360		8.62	
				57.6				- 987.5	2.99454	5.98908				- 2990		- 15.02			
			16	12.3		32	13.0	- 17 20.5	1.47564	1.09119		M	49	2250		5100		6.25	
				20.2	16 18.0			- 1040.5	3.01724	6.03448				- 3150		- 15.25			
				24.4		33	10.6	- 18 18.1	1.49834	1.17659		R	49	2400		5075		6.98	
			16	42.7				- 1098.1	3.04064	6.08128				- 3325		- 16.23			
				49.0	16 48.6	33	58.1	- 19 5.6	1.52174	1.18339									
				54.2				- 1145.6	3.05903	6.11806									
			17	16.3					1.54013	1.21017									
	17	2022		22.4	17 21.9														
	17	20.22		26.9															
			17	47.3															
				53.3	17 52.2														
				55.9															
			18	17.2															
				21.2	18 19.4			1 13	40.01									55 40	13.53
				29.9															
			18	44.7															
				50.2	18 50.7														
				57.3															
			19	15.1															
				25.6	19 23.1														
				28.6															
			19	42.9															
	19	49.28		47.7	19 47.6														
	19	49.28		52.1															
			20	12.4															
				19.5	20 18.5														
				23.6															
			20	41.1															
				46.4	20 46.5														
	14	5254		52.0															
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13	7	22.9																	
		33.4	7 31.5																
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	7	44.4		1	17.1	+12 10.5			M	10	1160	9	93.72	9'	49.48	9''	42.73		
		3.0	8 2.8			+730.5	2.86362	5.72724			-22.12				-6.75				
		11.0		2	46.0	10 42.6	1.34481	0.82942	R	10	1046		89.91		40.99		35.77		
	8	26.0				642.6	2.80794	5.61588			-19.46				-5.22				
8 31.52		28.8	8 30.2	3	45.7	9 41.9	1.28913	0.71808	M	10	637		83.99		38.75		34.47		
8 31.52		35.7				581.9	2.76485	5.52970			-17.62				-4.28				
	8	55.0		4	44.8	8 42.8	1.24604	0.63190	R	10	345		81.28		34.62		36.16		
		2.2	9 1.9			522.8	2.71834	5.43668			-15.83				-3.46				
		5.5		5	53.0	7 34.6	1.19953	0.53888	M	10	132		75.09		37.53		34.95		
	9	24.5				454.6	2.65763	5.31526			-13.77				-2.61				
		31.1	9 31.2	6	40.0	6 47.6	1.13882	0.41746	R	10	3872		71.06		46.38		44.28		
		38.0				+407.6	2.61023	5.22046			-12.34				-2.10				
	9	48.7		19	39.4	-6 11.8	1.09142	0.32266	M	9	3182		80.56		42.08		40.23		
		4.2	10 4.3			-371.8	2.57031	5.14062			+11.26				-1.75				
		9.9		20	56.5	-7 28.9	1.05148	0.24282	R	9	3187		77.98		45.16		42.62		
	10	24.6				448.9	2.65215	5.30430			+13.59				-2.54				
		28.8	10 30.2	22	2.4	-8 34.8	1.13334	0.40650	M	9	2957		73.98		45.16		41.81		
		37.2				-514.8	2.71164	5.42328			+15.54				-3.35				
11 0.74	10	53.0		22	55.0	-9 27.4	1.19283	0.62548	R	9	2917		71.99		46.35		42.28		
~~10 19.74~~		0.7	10 59.9			-567.4	2.75389	5.50778			+17.18				-4.07				
11 0.74		5.9		24	12.0	-10 44.4	1.23508	0.60998	M	9	2865		69.14		48.16		42.91		
	11	25.0				-644.4	2.80916	5.61832			+19.51				-5.25				
		31.3	11 30.8	25	20.3	-11 52.7	1.29035	0.72052	R	9	2662		65.08		48.16		41.73		
		36.0				-712.7	2.85291	5.70582			+21.54				-6.43				
	11	50.0		26	40.4	-13 12.6	1.33300	0.80802	M	9	2627		62.26		50.28		42.33		
		58.9	11 58.5			-792.8	2.89916	5.79832			+24.01				-7.95				
		5.5		27	38.1	-14 10.5	1.38035	0.90052	R	9	2600		60.25		51.75		42.60		
	12	19.4				850.5	2.92967	5.85934			+25.75				-9.15				
		25.8	12 27.5	28	55.2	-15 27.6	1.41086	0.96154	M	9	2532	8	5723		53.41		42.52		
		34.3				-927.6	2.96736	5.93472			+28.09				-10.89				
	12	52.3		29	54.0	-16 26.4	1.44855	1.03692	R	9	2545		5568		55.32		43.11		
		0.6	12 59.7			-986.4	2.99405	5.98810			+29.87				-12.21				
		6.2		31	5.8	-17 38.2	1.47525	1.09030	M	9	2492		5288		56.96		42.79		
	13	20.0				-1058.2	3.02457	6.04914			+32.04				-14.17				
13 28.12		26.5	13 26.9	32	9.3	-18 41.7	1.50576	1.15134	R	9	2397		5000		57.94		42.02		
13 28.12		34.2				-1121.7	3.04988	6.09976			+33.97				-15.52				
	13	51.9		33	14.4	-19 46.8	1.53107	1.20196	M	9	2502		4908		60.96		43.14		
		57.5	13 57.3			-1186.8	3.07438	6.14876			+35.94				-17.82				
		2.6		34	12.3	-20 44.7	1.55557	1.25096	R	9	2372		46.11		61.33		41.68		
	14	24.4				-1244.7	3.09506	6.19012			+37.61				-19.65				
		29.9	14 29.2				1.57625	1.29232											
		33.3																	
	14	49.6																	
		56.3	14 56.4																
		3.3																	
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		27.8	15 27.9																
		32.2																	
	15	49.4																	
~~15 56.16~~		57.4	15 56.8 5																
15 56.12		2.7				'1 13	39.72							88 40		13.40			
	16	19.9																	
		24.0	16 23.6																
		27.0																	
	16	51.3																	
		55.0	16 56.2																
		2.3																	
	17	21.0																	
		25.9	17 25.4																
		29.3																	
	17	43.3																	
		49.3	17 49.8																
		56.8																	
	18	16.7																	
18 21.46		20.2	18 21.0																
18 21.46		26.1																	
	18	46.5																	
		50.8	18 50.9																
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13 ~~25.20~~		28.0																	
13 27.600			13 27.600																

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	13	8 55.5						0.11559				6.73660							
		0.6	9 1.1					8.36560				8.36560							
		7.3						8.48119				5.10220							
		9 22.7		57 17.0	+17 38.0														
		31.1	9 29.6		+1058.0	3.02449		6.04898					M	48	2177	48	+53.81	49	7.97
		34.9		58 37.3	16 17.7	1.50568		1.15118					R	48	2780		+14.16		
	9	54.5			977.7	2.99021		5.98042							+29.61		+57.41		9.51
10 0.18		58.5	9 59.5	0 29.7	14 25.3	1.47140		1.08262					M	48	3273		+12.10		
10 0.18		5.6			865.3	2.93717		5.87484							+26.20		+58.95		8.42
	10	24.3		1 13.3	13 41.7	1.41836		0.97654					R	48	3357	49	+ 9.47		
		30.8	10 30.4		821.7	2.91471		5.82942							+34.88		+ 0.45		8.59
		36.0		2 9.7	12 45.3	1.39580		0.93162					M	48	3892		+ 8.54		
	10	54.0			765.3	2.88383		5.76766							+23.18		+ 2.10		9.51
		1.4	10 0.3	2 55.5	11 59.5	1.36502		0.86986					R	48	4067		+ 7.41		
		5.6			719.9	2.85727		5.71454							+21.80		+ 2.47		9.23
	11	23.9		3 54.8	0 11 0.2	1.33846		0.81674					M	48	4357		+ 6.56		
		29.7	11 29.1		660.2	2.81968		5.63936							+19.99		+ 3.56		9.07
		33.7		4 54.6	10 0.4	1.30087		0.74156					R	48	4330		+ 5.51		
	11	52.4			600.4	2.77844		5.55688							+18.18		+ 1.48		6.04
		57.8	11 57.8	6 40.7	8 14.3	1.25963		0.65908					R	48	5182		+ 4.56		
		3.1			494.3	2.69399		5.38798							+14.97		+ 6.79		9.88
	12	21.9		7 57.2	+ 6 57.8	1.17518		0.19018					M	48	5335		+ 3.09		
12 26.88		25.9	12 26.7		+417.8	2.62097		5.24194							+12.65		+ 6.80		8.21
12 26.88		32.3		21 9.0	− 6 14.0	1.10216		0.34414					M	49	1910		+ 2.21		
	12	50.1			−374.0	2.57287		5.14574	m						−7.92		+ 7.78		9.55
		55.9	12 55.8	22 13.5	− 7 18.5	1.05406	m	0.24794	m				R	49	1967		+ 1.77		
		1.5			−438.5	2.64197		5.28394							−13.28		+ 6.39		8.16
	13	19.0		23 12.4	− 8 17.4	1.23316		0.38614					M	49	1960		+ 2.43		
		26.0	13 25.0		−497.4	2.69671		5.39342							−15.06		+ 4.54		7.67
		31.0		24 5.5	− 9 10.5	1.17790		0.49562					R	49	1962		+ 3.13		
	13	49.6			−550.5	2.74076		5.48152							−16.67		+ 2.95		6.78
		54.5	13 54.8	24 57.9	− 10 2.9	1.22195		0.58372					M	49	2130		+ 3.83		
		0.3			−602.9	2.78025		5.56050							−18.26		+ 3.04		7.64
	14	18.9		25 47.2	− 10 52.2	1.26144		0.66270					R	49	2132		+ 7.60		
		23.4	14 24.4		−652.2	2.81438		5.62876							−19.75		+ 1.57		6.95
		31.0		26 57.7	− 12 2.7	1.29557		0.79096					M	49	2147		+ 5.38		
	14	50.3			−722.7	2.85896		5.71792							−21.58		+ .59		7.10
14 54.40		55.6	14 55.5	27 40.9	− 12 45.9	1.34015		0.82012					R	49	2445		+ 6.61		
14 54.40		0.7			− 765.9	2.88417		5.77834							−23.19		+ 1.24		8.85
	15	18.2		28 30.0	− 13 35.0	1.36536		0.88054					M	49	2260	48	+ 7.59		
		24.6	15 25.0		− 815.0	2.91116		5.82232							− 24.12		+ 5848		6.88
		32.3		29 4.7	− 14 9.7	1.39235		0.92452					R	49	2397		+ 8.40		
	15	46.7			− 849.7	2.92927		5.85854	m						−25.13		+ 58.24		7.69
		53.1	15 52.3			1.41048	m	0.96074									+ 9.35		
		57.1																	
	16	17.4																	
		23.3	16 23.0																
		28.4																	
	16	49.9																	
		57.2	16 55.7																
		0.1																	
	17	17.0																	
17 22.88		21.4	17 22.0																
17 22.88		27.5			1 13 38.41													88 40	12.76
	17	46.2																	
		57.1	17 51.6																
		57.4																	
	18	16.8																	
		21.8	18 22.1																
		27.6																	
	18	44.7																	
		52.9	18 51.5																
		57.0																	
	19	14.0																	
		23.4	19 22.2																
		29.3																	
	19	44.9																	
19 50.94		57.0	19 50.7																
19 50.94		58.1																	
	20	15.7																	
		20.8	20 19.8																
		22.9																	
	20	42.9																	
		51.5	20 50.5																
14 58.06		57.0																	
			14 58.056																

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Obs. very ? on account of clouds.

1879 Feb. 27 L.C.

13 7 35.5 S.
12 7.1
13 34.9
D. 9. 6.

0.11559
8.36560m
8.48119m

6.73660
8.36560m
5.10220m

			56	37.0			M	10	0.70	2.93666	5.87339	48'	59".50	49' 8".95
										1.41794	0.97561		9.45	
			7	17.0			M	9	4992	2.90233	5.80466	49'	0.79	8.86
										1.38361	0.90695		8.07	
			11	2.0			M	9	4857	2.87105	5.74210		2.53	9.52
										1.35233	0.84439		6.99	
							M	9	3060	2.83816	5.67632		3.32	9.33
			12	55.7						1.21944	0.77861		6.01	
										2.79007	5.58014		4.23	9.04
			20	43.7						1.27135	0.68243		4.81	
										2.76080	5.52160		5.13	9.34
										1.24208	0.62389		7.21	
										2.64082	5.28164		5.53	8.66
										1.17210	0.48393		3.05	
										2.63459	5.27918		6.13	8.57
										1.12087	0.38147		2.41	
										2.57229	5.14458		6.31	8.08
										1.05357	0.24687		1.77	
										2.64008	5.28016		6.03	8.44
										1.12136	0.38245		2.41	
					1	13 38.18	88	40	12.64	2.69975	5.39950		4.38	7.55
										1.18103	0.50179		3.17	
										2.74186	5.48372		4.83	8.68
										1.22314	0.58601		3.86	
										2.78433	5.56866		3.64	8.22
										1.26561	0.67095		4.58	
										2.81617	5.63234		2.56	7.99
										1.29545	0.73463		5.43	
										2.85327	5.70654		0.54	6.98
										1.33453	0.80883		6.44	
										2.88578	5.77026		0.37	7.83
										1.36641	0.87265		7.46	
										2.91981	5.83762	48'	56.47	7.22
										1.40109	0.94191		8.75	
										2.94330	5.88660		57.82	7.57
										1.42458	0.98889		9.75	
										2.96937	5.93874		55.92	6.91
										1.45063	1.04103		10.99	
										2.99189	5.98378		54.22	6.41
										1.47317 m	1.08607		12.19	

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March 2 Ch. C.

0,11559
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8,48128

6,73660
8,36569
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	13	8	53.6																
			1.0	8	59.7												8 59.7	+5 56.2	14 55.9
			4.5	+5	53.8						53.5	14 56.0							
95		9	24.6	5	56.3	0	30.9	+14	24.3				M	48	3332				
			28.8	9	29.5				8643						+26.18		9 29.5	5 25.9	55.6
86			35.0	-5	25.4	1	36.6	13	18.6		54.9	55.5	R	48	3660				
		9	52.4	5	26.0				7986						+24.14				
52			57.7	9	58.4	2	32.1	12	23.1				M	48	4002		9 58.4	4 58.3	54.7
			5.2	-4	55.9				7431		54.3	54.8			+22.51				
33		10	23.7	4	56.4	3	26.3	11	28.9				R	48	4245				
			28.5	10	29.1				6886						+20.87		10 29.1	4 26.4	55.5
04			35.0	-4	26.8	4	38.5	10	16.7		55.9	55.6	M	48	4133				
		10	61.6	4	26.5				6167						+18.68				
34			57.9	10	57.9	5	18.7	9	36.5				R	48	4767		10 57.9	3 56.9	54.8
			4.3	-3	57.4				5765		55.3	54.8			+17.46				
66		11	21.0	3	56.9	6	44.5	8	10.7				M	48	5067				
			27.1	11	27.1				4987						+14.86		11 27.1	3 27.4	54.5
34			33.1	-3	27.3	7	39.1	+7	16.1		54.4	54.5	R	48	5292				
		11	49.9	3	27.4				4361						+13.21				
08			55.6	11	56.5	21	8.7	-6	13.5				M	49	1762	#	11 56.5	2 57.7	54.2
			4.1	-2	57.9				3723		54.4	54.3			-11.31				
44		12	20.3	2	57.8	22	11.8	5	16.6				R	49	1925				
			27.6	12	26.9				4366						-13.22		12 26.9	2 28.1	55.0
53			32.9	-2	27.8	23	16.1	8	20.9		54.7	55.0	M	49	1953				
			50.1	2	28.1				5008						-15.17				
68			57.3	12	56.5	24	7.1	9	11.9				R	49	2153		12 56.5	1 58.2	54.7
			2.0	-1	58.4				5519		54.9	54.8			-14.72				
22		13	20.5	1	57.3	25	3.8	10	8.6				M	49	2207				
			27.3	13	26.5				6086						-18.43		13 26.5	1 28.9	55.4
99			31.7	-1	28.5	25	50.1	10	54.9		55.0	55.4	R	49	2230				
		13	50.7	1	28.9				6549						-19.74				
98			57.2	13	56.6	26	48.5	11	53.3				M	49	2215		13 56.6	0 57.2	55.8
			1.8	-0	59.2				7193		55.8	55.8			-21.61				
83		14	18.8	0	59.2	27	42.8	12	47.6				R	49	2362				
			24.9	14	25.3				7847						-23.25		14 25.3	0 29.5	54.8
22			32.1	-0	29.3	28	46.6	13	51.4		54.6	54.8	M	49	2365				
		14	53.9	+0	29.5				8314						-25.18				
57			57.0	14	56.5	29	32.8	14	37.6				R	49	2440		14 56.5	-0 0.04	56.5
			58.7	-0	.04				8717		14 56.1	56.5			-26.58				
91		15	12.6	-0	00.0	30	27.1	15	31.9				M	49	2415				
			26.3	15	23.4				9314						-27.23		15 25.7	-0 29.4	55.3
41			31.3	-0	29.6	31	16.7	-16	21.5		56.1	56.2	R	49	2395				
		15	50.2	-0	29.5				9815						-29.73				
			55.9	15	55.5												15 55.5	-0 59.1	56.4
			0.5	-0	58.3						57.2	56.4							
		16	18.6	-0	59.1										53.33		16 24.9	-1 28.7	56.2
			25.5	16	24.9										54.93				
			30.7	-1	28.3						56.6	56.2			54.63				55.5
				-1	28.7										53.33				
															56.07				55.4
															55.03				
															6)331.34				
															14 55.22				

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1879 1879 March 2 L.C. T's $\pi - S$ 0.11559 8.36560m 8.48119m 6.73660 8.36560m 5.10220m

13	13	7	29.4																					
			34.3	7	34.3																			
			39.3																					
		8	0.0			0	46.0	+12	46.2															
			4.2	8	4.5			+	766.2	2.88434	5.76868														
			9.4			1	59.5	11	32.7	1.36553	0.87088	41.91	R	10	886	47982	9.92	8	4.5	5	26.1	30.6		
		8	30.0						692.7	2.84065	5.68110														
	8 3356		34.1	8	34.1	3	26.2	10	6.0	1.32164	0.78330	40.15	M	10	316	44802	4.12	8	34.1	4	56.3	30.4		
	8 33.56		38.3						606.0	2.78247	5.56494														
		8	58.3			4	25.9	9	6.3	1.26366	0.66714	40.08	R	10	040	43866	8.75								
			2.0	9	2.8			+	546.3	2.73743	5.47486														
			8.0			5	34.3	+	7 57.9	1.21862	0.57706	39.09	M	9	5637	41911	41.91	9	2.8	4	26.7	27.5		
		9	26.0						477.9	2.67934	5.35868														
			31.5	9	32.1	23	17.4	-	9 45.2	1.16053m	0.46088	38.04	R	9	2465	42376	6.93	9	32.1	3	57.1	29.2		
			38.9						585.2	2.76730	5.53460														
		9	56.6			24	44.5	-	11 12.3	1.24849	0.63680	37.59	M	9	2295	43312	2.59								
			0.8	10	2.3			0	672.3	2.82756	5.65512														
			9.4			25	29.1	-	11 56.9	1.30875	0.75732	37.61	R	9	2240	44111	.69	10	2.3	3	27.4	29.1		
		10	28.3						716.9	2.85546	5.71092														
			33.2	10	33.2	26	30.0	-	12 57.5	1.33665	0.81312	38.00	M	9	2210	45655	8.55	10	33.2	2	57.5	30.3		
			38.1						777.5	2.89087	5.78174														
		10	55.3			27	13.3	-	13 41.1	1.37206	0.88394	37.55	R	9	2122	46085	6.36								
	11 2.62		1.0	11	1.6				821.1	2.91440	5.82880														
	11 2.62		8.6			28	11.2	-	14 39.0	1.39559	0.93100	38.81	M	9	2197	48595	5.35	11	1.6	2	28.2	29.8		
			26.3						879.0	2.94399	5.88798														
			30.4	11	31.7	28	53.5	-	15 21.3	1.42518	0.99018	37.81	R	9	2065	48555	2.75	11	31.7	1	58.4	30.1		
			38.4						921.3	2.96440	5.92880														
		11	59.4			29	52.5	+	16 20.3	1.44559	1.03100	38.35	M	9	2082	50571	51.13								
			3.8	12	4.3				980.3	2.99136	5.88972														
			9.8			30	34.2	-	17 2.0	1.47255	1.08492	37.20	R	9	1947	50424	8.32								
		12	27.0						1022.0	3.00945	6.01890														
			30.7	12	31.6	31	37.2	-	18 5.0	1.49064	1.12110	38.09	M	9	2015	52854	7.45	12	31.6	0	59.1	30.7		
			37.0						1080.0	3.03342	6.06684														
		12	56.0	13	0.5	32	27.7	-	18 55.5	1085.0	1.51460	1.16904	36.16	R	9	1940	52104	5.01								
			57.9	12	57.7				1135.5	3.05519	6.11038														
			5.5			33	23.0	-	19 50.8	1.53638	1.21258	37.32	M	9	1920	55268	3.14	13	0.5	0	29.4	29.9		
		13	25.9						1908	3.07584	6.15168														
	13 3118		30.0	13	30.9	34	6.4	-	20 34.2	1.55703	1.25388	36.90	R	9	1880	56177	1.43	13	30.9	0	0.0	30.9		
	13 31.86		36.8						1234.2	3.09139	6.18278														
		13	58.9			35	8.3	-	21 36.1	1.57258	1.28498	37.51	M	9	1952	58774	0.27								
			3.0	14	3.3				1296.1	3.11264	6.22528														
			8.0			36	57.1	-	22 18.9	1.59363	1.32748	36.79	R	9	1892	59478	8.37	14	3.3	0	29.5	33.8		
		14	27.7						1338.9	3.12675	6.25350														
			32.5	14	33.0					1.60748	1.35570							14	33.0	0	59.2	33.8		
			38.7																					
		14	56.7																					
			2.3	15	2.2													15	2.2	1	28.9	33.3		
			7.5																					
		15	28.9																					
			34.9	15	34.8													15	34.8	1	58.2	36.6		
			40.6																					
	10	16	3.9																					
	16 4.04		7.1	16	7.5													16	7.5	2	28.1	39.4		
	16 4.10		11.4					1	13	36.65									88	40	12.99			
		16	30.6																					
			35.1	16	35.3													16	35.3	2	57.7	37.6		
			40.2																					
		16	55.8																					
			0.2	17	0.7													17	1.7	3	27.1	33.6		
			6.1																					
		17	24.5																					
			28.3	17	29.5													17	29.5	3	56.9	32.6		
			35.7																					
		17	49.7																					
			56.1	17	56.3													17	56.3	4	26.4	29.9		
			3.0																					
	18 2956			18	29.0													18	29.0	4	56.3	33.3		
	18 29.56																							
				19	0.0													19	0.0	5	35.9	34.1		
				19	33.0													19	33.0	5	56.2	36.8		
	13 3279.202			13	32.204																			
	3283																							

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March 3 U.C.

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6.73660
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		13														
13 38.1			—													
			—	9 0.00												
			—													
			—		56 34.0	+ 18 17.4			M	48	24.52	48' 57.76	49' 12.90			
30.6			—	9 28.5	57.4	+ 1097.4	3.04036	6.08072			+ 33.24	+ 15.24				
			—		57 49.3	17 2.1	1.52164	1.18801	R	48	29.77	49' 0.73	13.96			
		9	53.2			1022.1	3.00949	6.01898			+ 30.96	+ 13.23				
30.4	9 56.96		57.4	9 58.5	58 48.4	16 3.0	1.49077	1.12127	M	48	32.50	1.67	13.41			
	9 56.96		3.0			963.0	2.98363	5.96726			+ 29.17	+ 11.74				
		10	21.3		59 57.7	14 59.7	1.46491	1.06955	R	48	34.30	1.55	11.79			
29.5			26.2	10 25.8		897.7	2.95410	5.90820			+ 27.25	+ 10.24				
			29.8		0 38.6	14 12.8	1.43538	1.01049	M	48	38.32	4.15	13.35			
		10	45.3			852.8	2.93085	5.86170			+ 25.83	+ 9.20				
29.2			57.5	10 52.0	2 9.6	12 41.8	1.41213	0.96399	R	48	41.65	4.72	12.06			
			59.3			761.8	2.88184	5.76368			+ 23.07	+ 7.34				
		11	18.0		3 7.2	11 44.2	1.36312	0.86597	M	48	45.55	6.88	13.16			
29.7			23.9	11 24.4		704.2	2.84770	5.69540			+ 21.33	+ 6.26				
			31.3		4 31.3	10 20.1	1.32898	0.79769	R	48	48.05	7.83	12.70			
		11	48.4			620.1	2.79246	5.58492			+ 18.78	+ 4.87				
30.7			51.4	11 53.9	5 52.2	8 59.2	1.27374	0.68721	M	48	52.40	8.73	12.41			
			1.9			539.2	2.73175	5.46350			+ 16.33	+ 3.68				
		12	18.0		7 31.4	+ 7 20.0	1.21303	0.56579	R	49	18.53	31.88	34.33			
29.8	12 24.36		24.5	12 24.8		+ 440.0	2.64345	5.28690			+ 13.33	+ 2.45				
	12 24.36		31.9		21 17.3	— 6 25.9	1.12473	0.36919	M	49	19.92	+ 8.23	10.11			
		12	48.9			— 385.9	2.58647	5.17294			— 11.69	+ 1.88				
30.1			57.0	12 53.8	22 25.6	— 7 34.1	1.06773	0.27523	R	49	20.72	+ 6.97	9.58			
			58.5			— 454.1	2.65715	5.31430			— 13.75	+ 2.61				
		13	21.5		23 45.5	— 8 54.1	1.13843	0.41659	M	49	22.87	+ 6.69	10.30			
33.0			24.7	13 24.9		— 534.1	2.72762	5.45524			— 16.18	+ 3.61				
			28.6		24 47.0	— 9 55.6	1.20890	0.55753	R	49	22.90	+ 4.86	9.35			
		13	42.4			595.6	2.77495	5.54990			— 18.04	+ 4.49				
30.7			48.0	13 48.4	25 41.2	10 49.8	1.25623	0.65219	M	49	24.15	+ 4.47	9.81			
			54.8			— 649.8	2.81278	5.62556			— 19.68	+ 5.34				
		14	15.5		26 57.1	— 11 59.7	1.29406	0.72785	R	49	23.20	+ 1.40	7.65			
29.9			18.9	14 20.4		— 719.7	2.85715	5.71430			— 21.80	+ 6.55				
			26.8		27 35.7	— 12 44.3	1.33843	0.81659	M	49	24.35	+ 1.20	8.54			
		14	46.3			— 764.3	2.88326	5.76652			— 23.15	+ 7.39				
30.9	14 49.32		57.8	14 51.4	28 28.9	— 13 37.5	1.36464	0.86881	R	49	23.20	48' + 58.54	6.90			
	14 49.32		58.0			— 817.5	2.91249	5.82498			— 24.76	+ 8.46				
		15	15.3		29 16.0	— 14 24.6	1.39377	0.92727	M	49	26.10	+ 58.91	8.37			
33.8			20.6	15 20.0		— 864.6	2.93682	5.87364			— 26.19	+ 9.46				
			24.2		30 14.2	— 15 22.8	1.41810	0.97593	R	49	26.90	+ 58.95	9.73			
33.8		15	39.5			922.8	2.96511	5.93022			— 27.95	+ 10.78				
			47.7	15 46.4	31 5.0	— 16 13.6	1.44639	1.03251								
			57.9			973.6	2.98838	5.97676								
		16	10.8				1.76966	1.07905								
33.3			17.2	16 16.2												
			20.7													
		16	45.8													
36.6			50.4	16 51.1												
			57.1													
		17	12.7													
39.4	17 19.24		19.3	17 19.7												
	17 19.24		27.0			1 13 36.37								88 40 11.89		
		17	45.0													
37.6			50.5	17 50.3												
			55.5								5.10458					
		18	13.6													
33.6			18.4	18 18.9												
			24.7													
		18	40.4													
32.6			45.0	18 45.8												
			52.0													
		19	13.0													
29.9			18.4	19 18.4												
			23.8													
		19	43.7													
33.9	19 47.38		46.5	19 47.3												
	19 47.38		57.8													
		20	8.4													
34.1			15.8	20 16.9												
			26.5													
		20	41.8													
36.8			48.6	20 48.5												
	14 51.45		55.1													
				14 51.452												

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1879 March 4 Ve. C.

		m o	T's	T₂-S										
13	8	50.9					0.11559			6.73660				
		55.7	8 57.1				8.36564			8.36569				
		4.8	+5 53.8				8.48128			5.10229				
	9	28.7	+5 56.3	52 29.1	+22 27.59	(50.9) 14 (53.4)		M	48 47.5	48' 45.57	8 57.1	5 56.2	14 53.3	49' 8.56
6.35918		30.8	9 30.9		+1347.3		8.12959		+40.82	+22.99	9 30.9	5 25.9	56.8	
1.36147		33.1	-5 25.4	53 43.5	21 12.9	56.3	56.9	1.61087R	48 9.90	48.45				8.77
6.20560	10	0.7	+5 26.0		1272.9			2.10480	+38.55	+20.32				
1.30789		9.7	10 3.6	54 57.8	20 4.86			1.58608M	48 13.82	50.41	10 3.6	4 56.3	59.9	8.78
6.16172		6.4	-4 55.9		1204.6	59.5	15 0.0	3.08086	+36.49	+18.37				
1.26401	10	22.5	4 56.4	55 52.0	19 4.84			1.56214R	48 17.62	52.30				8.89
6.11756		27.6	10 28.2		1144.4			3.05875	+34.68	+16.59	10 28.2	4 26.4	54.6	
1.21979		34.6	-4 26.8	58 48.6	16 8.07.6	53.0	54.7	1.57003M	48 27.47	56.78				461
5.97158	10	55.5	4 26.5		967.8			2.98579	+29.31	+11.83				
1.07387		0.7	11 0.3	59 27.1	15 29.5	3		1.46707R	48 28.52	56.67	11 0.3	3 56.9	57.2	760
5.93632		4.7	-3 57.4		9 29.3	57.7	57.2	2.96816	+28.15	+10.93				
1.03861	11	22.5	3 56.9	0 34.1	14 22.53			1.44947M	48 32.02	58.14				755
5.87132		27.5	11 28.2		8 6.23			2.93566	+26.12	+ 9.41	11 28.2	3 27.4	55.6	
0.97301		34.7	-3 27.3	1 13.7	13 42.87	53.5	55.6	1.41694R	48 34.40	59.31				8.88
6.83058	11	61.2	3 27.4		822.7			2.91524	+24.91	+ 8.57				
0.99287		57.9	11 57.9	2 33.0	12 23.84	55.8		1.39652M	48 37.57	49' 0.09	11 57.9	2 57.7	55.6	7.08
5.74244		4.6	-2 57.9		743.4	55.8	55.7	2.87122	+22.52	+ 6.99				
0.84473	12	21.1	2 57.8	3 39.0	+11 17.84			1.33250R	48 41.45	57.87				485
5.35776		26.3	12 26.7		677.4			2.83085	+20.52	+ 2.88	12 26.7	2 28.1	54.8	
0.76005		32.8	-2 27.8	23 30.1	-8 33.57	54.5	54.8	1.31213M	49 19.70	4.14				7.48
5.72142	12	51.7	2 28.1		-513.7			2.71071	-15.56	+ 3.34				
0.52371		56.5	12 58.0	24 45.1	9 48.57			1.19196R	49 19.60	2.17	12 58.0	1 58.2	56.2	6.56
5.53978		5.9	-1 58.4		588.7	56.4	56.3	2.76989	-17.43	+ 4.39				
0.67201	13	19.5	1 58.3	25 46.6	10 50.82			1.24117M	49 19.75	0.06				5.41
5.62610		25.4	13 25.5		650.2			2.81305	-19.69	+ 5.35	13 25.5	1 28.9	55.4	
0.72839		31.5	-1 28.5	26 39.2	11 42.68	54.0	54.4	1.29133R	49 21.37	0.08				6.33
5.69366	13	52.0	1 28.9		702.8			2.84683	-21.29	+ 6.26				
0.79595		57.2	13 57.6	27 42.9	12 46.85			1.32811M	49 21.72	48' 58.50	13 57.6	0 59.2	56.8	5.94
5.76902		3.6	-0 59.2		766.3	56.8	56.8	2.88451	-23.22	+ 7.44				
0.87131	14	21.8	0 59.2	28 43.5	13 46.87.1			1.36579R	49 22.55	57.50				6.16
5.83512		25.5	14 26.1		827.1			2.91756	-25.05	+ 8.66	14 26.1	0 29.5	55.6	
0.93741		31.1	-0 29.3	30 1.8	15 5.24	55.4	55.6	1.39884M	49 22.57	54.15				5.53
5.91368	14	53.4	+0 29.5		905.4			2.95684	-27.42	+ 10.38				
1.01597		0.4	14 59.0	30 55.0	15 58.46			1.43812R	49 23.25	54.31	14 59.0	-0 0.0	59.0	5.89
5.96046		3.3	- 0.4		955.6	58.6	59.0	2.98023	-28.84	+ 11.58				
1.06375	15	23.2	- 0.9	32 0.3	17 3.49			1.46154M	49 23.50	57.38				5.24
6.03932		28.6	15 27.4		1043.9		57.9	3.01866	-31.62	+ 13.86	15 27.4	-0 29.4	58.0	
1.14161		30.5	-0 29.6	32 45.5	-17 48.99.1	57.8	56.9	1.49994R	49 22.67	49.68				4.69
6.07414	15	52.8	- 29.5		1089.1			3.03707	-32.99	+ 15.01				
1.17643		53.0	15 57.1					1.51835			15 57.1	-0 59.1	58.0	
		2.6	-0 58.3			58.8	56.2							
			-0 59.1										15 845.8	
						78.81 15 84.45			56.67					
						56.29	56.30		53.80				13 14 56.39	
									55.53					
						14 7921	7911		55.60					
						14 56.58	56.51		58.33					
									281.93					
									14 56.39					

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			13	8	58.3														
					0.8	9 06													
					1.6														
8.36				9	23.2														
					29.3	9 28.6													
8.77					33.4		55	59.0	18 34.5	1.55695	1.25354	M	48	1500	48	+51.05	48	8.98	
				9	51.4				1134.5	3.05480	6.10960			+36.05		+17.93			
8.78	9	57.68			56.2	9 56.8	57	7.7	17 45.8	1.53617	1.21198	R	48	1847		+52.84		9.13	
	9	57.68			2.8				1065.8	3.02768	6.05536			+34.37		+16.29			
8.89				10	21.4		58	3.2	16 50.3	1.50905	1.15774	M	48	2202		+54.31		8.69	
					23.7	10 25.9			1010.3	3.00445	6.00890			+32.29		+14.38			
8.61					32.6		58	59.2	15 54.3	1.48582	1.11128	R	48	2537		+55.98		8.90	
				10	52.0				954.3	2.97968	5.95936			+30.61		+12.92			
7.66					56.8	10 56.5	3	50.2	11 3.3	1.45105	1.06164	M	48	2667		+54.92		6.44	
					6.7				663.3	2.82171	5.64342			+28.25		+11.52			
7.55				11	19.6		5	12.0	9 41.5	1.30308	0.74580	R	48	4200	49	+ 2.04		7.66	
					24.0	11 25.1			581.5	2.76455	5.52910			+20.09		+ 5.57			
8.88					31.8		6	12.4	8 41.1	1.24592	0.63146	M	48	4600		+ 9.62		7.90	
				11	50.6				521.8	2.71692	5.43384			+17.62		+ 4.28			
7.08					53.8	11 55.4	7	22.9	7 30.6	1.19829	0.53622	R	48	4795		+ 3.74		7.16	
					1.9				450.6	2.65379	5.30758			+15.79		+ 3.44			
4.85				12	21.0		8	11.9	+ 6 41.6	1.13516	0.41096	M	48	5062		+ 4.27		6.85	
					26.0	12 25.8			+ 401.6	2.60379	5.20758			+13.65		+ 2.56			
7.48	12	25.16			30.4		21	8.9	− 6 15.4	1.08516	0.31096	R	48	5340		+ 5.57		7.62	
	12	25.16												+12.17		+ 2.05			
				12	49.4				− 375.4	2.57449	5.14898	M	49	1620		+ 4.83		6.61	
6.56					55.3	12 55.0	23	31.4	− 8 37.9	1.05586	0.25136			−11.37		+ 1.78			
					0.2				− 517.9	2.71425	5.42850	R	49	1980		+ 4.11		7.40	
5.41				13	19.6		24	47.0	− 9 53.5	1.19562	0.53088			−15.64		+ 3.39			
					24.7	13 24.5			593.5	2.77342	5.54684	M	49	1955		+ 1.57		6.03	
6.33					29.1		25	40.8	(10 47.3	1.25489	0.64922			−17.98		+ 4.46			
				13	46.9				− 647.3	2.81111	5.62222	R	49	2100		+ 1.39		6.69	
5.94					53.9	13 53.2	26	42.7	− 11 49.2	1.29248	0.72450			−19.61		+ 5.30			
					58.8				− 709.2	2.85077	5.70154	M	49	2165		+ .26		6.63	
6.16				14	18.6		27	37.8	− 12 44.3	1.33214	0.80392			−21.49		+ 6.37			
					23.6	14 23.5			− 764.3	2.88326	5.76652	R	49	2220	48	+ 59.29		6.66	
5.53					28.2		28	45.7	− 13 52.2	1.36463	0.86890			−23.15		+ 7.39			
				14	42.7				− 832.2	2.92023	5.84046	M	49	2235		+57.14		5.91	
5.89	14	53.46			54.2	14 54.7	29	44.0	− 14 50.5	1.40160	0.94284			−25.21		+ 8.77			
	14	53.46			0.1				− 890.5	2.94963	5.89926	R	49	2210		+ 55.13		5.17	
5.24														−26.97		+ 10.04			
				15	16.1		30	45.2	− 15 51.7	1.43090	1.00164	M	49	2342		+ 54.79		6.26	
4.69					24.4	15 22.9			− 951.7	2.97850	5.95700			−28.63		+ 11.47			
					28.3		31	41.3	− 16 47.8	1.45987	1.05938	R	49	2357		+ 53.06		5.90	
				15	48.2				− 1007.8	3.00303	6.00606			−30.81		+ 12.84			
					53.4	15 53.0				1.48440	1.10844								
					56.9														
				16	19.2														
					23.2	16 23.6													
					28.3														
				16	45.7														
					50.9	16 51.2													
					57.1														
				17	16.7														
	17	21.72			21.0	17 21.4													
	17	21.72			26.6				1 13 35.58									88 40 11.41	
				17	45.4														
					50.3	17 50.9													
					56.4														
				18	16.3														
					22.1	18 21.5													
					26.0														
				18	48.3														
					50.9	18 51.6													
					55.6														
				19	13.7														
					19.0	19 20.0													
					27.2														
				19	44.6														
	19	49.58			49.6	19 49.4													
	19	49.58			53.2														
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					18.9	20 19.1													
					23.9														
				20	41.9														
					48.3	20 47.8													
	14	53.52			52.3														
						14 53.520													

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0.11559
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		m s														
13	7 25.3									M	10 16.55	10' 39.64	9' 53.46	9' 46.11		
	29.6	7 30.3									−23.09		−7.35			
	36.0									R	10 11.37	32.22	50.52	44.52		
	7 55.3		0 44.5	+12 42.1							−28.85		−6.80			
	58.6	7 59.3		+762.1	2.88201	5.76402				M	10 8.17	26.90	49.44	44.60		
	4.0		1 58.2	11 28.4	1.36338	0.86640					−18.73		−4.84			
	8 24.8			688.4	2.83784	5.67568				R	10 6.87	22.98	48.60	44.62		
8 29.30	29.4	8 29.7	3 8.3	10 18.3	1.31921	0.77806					−17.11		−4.04			
8 29.30	29.8			618.3	2.79120	5.58240				M	9 58.85	9' 14.53	45.15	42.17		
	8 51.7		4 1.9	9 24.7	1.27257	0.66478					−14.70		−2.98			
	56.4	8 57.3		564.7	2.75182	5.50364				R	9 32.12	20.65	43.69	41.93		
	3.7		5 21.5	+8 5.1	1.23319	0.60602					+11.57		−1.76			
	9 24.1			+485.1	2.68583	5.37166				M	9 30.45	16.83	44.07	41.51		
	28.4	9 29.9	19 39.7	−6 13.1	1.16720	0.47404					+13.62		−2.56			
	37.3			−373.1	2.57183	5.14366				R	9 28.57	13.01	44.13	40.79		
	9 55.3		20 56.1	−7 29.5	1.06320	0.24604					+15.56		−3.34			
	1.0	10 1.2		−449.5	2.65273	5.30546				M	9 27.62	9.95	45.29	40.99		
	7.2		22 0.2	−8 33.6	1.13410	0.40784					+17.67		−4.30			
	10 28.0			−513.6	2.71062	5.42124				R	9 25.25	5.82	44.68	39.47		
	31.9	10 32.1	23 9.8	−9 43.2	1.19199	0.52362					+19.43		−5.21			
	36.3			−583.2	2.76582	5.53164				M	9 25.27	3.75	46.79	40.40		
	10 55.3		24 8.0	−10 41.4	1.24719	0.63402					+21.52		−6.39			
11 0.68	0.0	11 0.5		−641.4	2.80713	5.61496				R	9 24.22	1.96	47.88	40.26		
11 0.68	6.3		25 16.9	−11 50.3	1.28850	0.71664					+22.96		−7.62			
	11 25.0			710.3	2.85144	5.70288				M	9 24.02	8' 58.37	49.67	40.60		
	32.9	11 31.3	26 22.3	−12 55.7	1.33281	0.80526					+25.65		−9.07			
	36.0			−775.7	2.88969	5.77938				R	9 22.42	55.49	48.35	39.34		
	11 51.8		27 33.1	−14 6.5	1.36106	0.88176					+26.93		−10.01			
	58.2	11 58.3		−846.5	2.92763	5.85526				M	9 22.07	53.33	50.81	39.41		
	5.0		28 15.7	−14 49.1	1.40900	0.95764					+28.74		−11.40			
	12 12.6			−889.1	2.94895	5.89790				R	9 21.85	51.37	52.33	39.52		
	27.4	12 26.7	29 15.2	−15 48.6	1.43032	1.00028					+30.48		−12.81			
	33.1			−948.6	2.97708	5.95416				M	9 22.30	50.19	54.81	40.41		
	12 53.4		30 12.7	−16 46.1	1.45845	1.05644					+32.31		−14.40			
	57.0	12 58.0		−1006.1	3.00264	6.00528				R	9 21.95	48.12	55.78	39.89		
	3.6		31 13.0	−17 46.4	1.48901	1.10756					+33.83		−15.89			
	13 22.4			−1066.4	3.02792	6.05584				M	9 22.35	47.59	57.11	39.66		
13 26.32	26.5	13 27.2	32 3.4	−18 36.8	1.50929	1.15822					+34.76		−17.45			
13 26.32	32.6			−1116.8	3.04798	6.09596				R	9 21.42	44.33	58.51	39.51		
	13 48.6		33 0.7	−19 34.1	1.52935	1.19834					−37.04		−18.97			
	53.8	13 54.3		−1174.1	3.06971	6.13942				M	9 22.35	47.59	57.11	39.66		
	0.4		33 51.0	−20 24.4	1.54108	1.24180					+34.76		−17.45			
	14 20.8			−1224.4	3.08792	6.17584				R	9 21.42	44.33	58.51	39.51		
	25.0	14 25.4			1.56929	1.27812					−37.04		−18.97			
	30.3															
	14 49.1															
	56.2	14 56.1														
	3.0															
	15 19.6															
	24.0	15 25.2														
	32.0															
	15 46.8															
15 53.98	52.3	15 52.5														
15 53.98	58.3				1 13	35 87							88	40 11.29		
	16 16.7															
	21.9	16 22.8														
	29.8															
	16 46.2															
	52.2	16 53.3														
	1.4															
	17 20.3															
	25.9	17 26.0														
	31.8															
	17 48.4															
	52.6	17 53.7														
	0.0															
	18 16.2															
18 22.78	21.7	18 22.2														
18 22.78	28.6															
	18 46.7															
	51.0	18 51.4														
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13 26.61	27.2															
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				m s															
	13	7	26.7	31.0															
			30.3	7 30.7															
			36.0																
		7	59.1		0	41.0	+12 46.4					M	10	1075	10	34.03	9'	47.47	9' 40.09
			3.0	8 3.1			+766.4	2.88446	5.76892					-23.28				-7.44	
			7.1		1	48.5	11 37.9	1.36592	0.87139			R	10	742		28.57		46.27	40.10
		8	22.5				+697.9	2.84379	5.68758					-21.15				-6.17	
8	~~2.98~~		28.7	8 28.X 9	2	57.8	10 29.6	1.32525	0.79005			M	10	537		24.46		46.29	41.27
8	29.98		35.6				629.6	2.79906	5.59812					-19.08				-5.02	
		8	53.5		4	1.1	9 26.3	1.28052	0.70059			R	10	182		18.98		44.66	40.60
			58.7	8 59.3			566.3	2.75305	5.50610					-17.16				-4.06	
			5.6		5	5.7	8 21.7	1.23451	0.60857			M	9	5765		2.85		42.45	39.26
		9	20.2				+501.7	2.70044	5.40088					-15.20				3.14	
			24.9	9 27.6	19	52.2	- 6 24.8	1.18190	0.50835			R	9	2967	9'	18.01		41.33	39.46
			37.6				-384.8	2.58824	5.17048					+11.66				-1.87	
		9	57.2		21	27.0	- 7 59.6	1.06670	0.27295			M	9	2640		11.87		40.93	38.02
			0.4	10 1.1			-479.6	2.68088	5.36176					+14.53				-2.91	
			5.8		22	32.8	- 9 5.4	1.16234	0.46423			R	9	2560		9.67		42.13	38.36
		10	23.2				-545.4	2.73672	5.47344					+16.53				3.77	
			26.9	10 26.8	23	36.8	- 10 9.4	1.21818	0.57591			M	9	2437		5.90		43.84	39.14
			30.2				-609.4	2.78490	5.56980					+18.47				4.70	
		10	54.6		24	38.4	- 11 11.0	1.26636	0.67227			R	9	2445		4.12		44.78	38.95
10	~~58.00~~		58.0	10 58.8 7			-671.0	2.82672	5.65344					+20.33				5.83	
10	57.98		3.5		25	50.9	- 12 23.5	1.30818	0.76591			M	9	2347		.94		46.00	39.00
		11	21.2				743.5	2.87128	5.74256					+22.53				7.00	
			25.7	11 25.8	26	44.0	- 13 16.6	1.35274	0.84509			R	9	2150	8'	57.36		45.64	37.61
			30.5				796.6	2.90124	5.80248					+24.14				8.03	
		11	50.3		28	23.9	- 14 56.5	1.38270	0.90495			M	9	2187		54.70		49.04	38.97
			56.3	11 57.5			896.5	2.95253	5.90510					+27.17				10.17	
			5.9		29	40.5	- 16 13.1	1.43401	1.00757			R	9	2192		52.43		51.41	39.42
		12	29.6				973.1	2.98816	5.97632					+29.49				11.99	
			33.3	12 33.1	30	50.0	- 17 22.6	1.46962	1.07879			M	9	2175		50.16		53.34	39.58
			36.5				-1042.6	3.01812	6.03624					+31.59				13.76	
		12	52.8		31	36.2	- 18 8.5	1.49958	1.13871			R	9	2075		47.76		53.74	38.79
			58.6	12 58.4			-1088.5	3.03695	6.07390					+32.59				15.81	
			3.9		32	30.3	- 19 2.9	1.51841	1.17637			M	9	2092		46.29		53.55	39.01
		13	17.3				-1142.9	3.05801	6.11602					+34.63				16.54	
13	28.32		25.8	13 25.2	33	22.0	- 19 54.6	1.53947	1.21849			R	9	1877		42.77		55.17	37.10
13	28.32		32.6				-1194.6	3.07722	6.15444					+36.20				18.07	
		13	54.0		34	21.4	- 20 54.0	1.55868	1.25691			M	9	2052		42.52		58.52	38.61
			58.8	13 58.8			1254.0	3.09830	6.19660					+38.80				19.91	
			3.7		35	7.7	- 21 40.3	1.57976	1.29907			R	9	1962		40.22		59.02	37.61
		14	20.9				- 1300.3	3.11404	6.22808					+39.40				21.41	
			25.8	14 26.1				1.59558	1.33055										
			31.7																
		14	51.6																
			56.3	14 56.9															
			2.8																
		15	21.6																
			26.4	15 26.3															
			31.0																
		15	48.4																
15	55.78		55.4	15 54.6															
15	55.78		0.0				1 13 33.20											88 40 10.46	
		16	19.8																
			25.2	16 25.4															
			31.3																
		16	44.7																
			56.5	16 55.7															
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		17	17.1																
		26	26.1	17 24.2															
			29.4																
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18	~~2.00~~		—	18 25.4															
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13 8 47.6 8.36587 8.36587

53.3 8532 1 8.0 Rej. 8.48146 5.10247

58.7 M 48

9 14.2 3 14.2 +11 33.4 R 48 4030 49' 1.31 49' 7.40 1.15 5.62916 0.73163

20.5 9 21.8 +693.4 2.84098 5.68196 M 48 +31.01 +6.09 5.74918

30.0 4 19.8 10 27.8 1.32241 0.78443 4337 2.39 7.37 0.65165

9 47.3 627.8 2.79782 5.59564 +19.02 +4.98 5.52806

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9 51.62 54.2 561.9 2.74966 5.49932 +17.03 +4.00 5.13966

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27.6 21 3.2 − 6 15.6 1.11280 0.36515 R 49 1585 4.47 6.26 0.44185

10 44.9 −375.6 2.57473 5.14946 −11.38 +1.79 5.15229

50.3 10 50.9 22 22.3 − 7 34.7 1.05618 0.25193 M 49 1885 5.07 7.64 .01 −.14 0.25469

57.4 454.7 2.65772 5.31544 −13.78 +2.62 5.00240

11 15.2 23 18.5 − 8 30.9 1.13918 0.41791 R 49 1915 3.67 6.97 0.10487

21.2 11 20.7 −510.9 2.70834 5.41668 −15.48 +3.30 4.79768

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20.3 12 20.0 −614.6 2.78859 5.57718 −18.62 +4.78 8.65431

12 1938 26.0 26 11.7 −11 24.1 1.27005 0.67965 R 49 2042 0.16 6.08 .05 .05 3.23918

12 19.38 12 41.5 −684.1 2.83512 5.67024 −20.26 +5.92 8.34065

48.5 12 49.3 27 26.8 −12 39.2 1.31658 0.77271 M 49 2200 48' 59.00 6.30

58.0 −759.2 2.88036 5.76072 −23.00 +7.30 4.40444

13 13.0 28 20.0 −13 32.4 1.36182 0.86319 R 49 2247 37.65 6.01 9.50691

19.1 13 18.8 −812.4 2.90977 5.81954 −24.62 +8.36 4.60120

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13 42.2 −855.4 2.93217 5.86434 −25.92 +9.26 5.16412

46.7 13 47.3 29 36.0 −15 8.4 1.41363 0.96681 R 49 2265 55.13 5.58 0.16659

52.9 908.4 2.95828 5.91656 −27.52 +10.45 5.30488

14 13.0 30 47.4 −15 59.8 1.43974 1.01903 M 49 2317 54.09 5.75 5.14 0.40735

20.5 14 19.5 −959.8 2.98218 5.96436 −29.08 +11.66 5.38938

24.9 31 41.6 −16 54.0 1.46364 1.06683 R 49 2385 53.12 6.14 0.49165

14 41.2 −1014.0 3.00604 6.01208 −30.73 +13.02 5.39654

14 4724 45.4 14 46.0 32 36.8 −17 49.2 1.48750 1.11455 M 49 2272 50.32 4.79 0.49901

14 47.24 51.5 −1069.2 3.02906 6.05812 −32.40 +14.47 5.60404

15 10.9 33 25.9 −18 38.3 1.51052 1.16059 R 49 2387 49.68 5.51 5.17 0.70651

16.6 15 17.0 −1118.3 3.04856 6.09712 −33.84 +15.83 5.67050

23.5 34 10.9 −19 23.3 1.53062 1.19959 0.77297

15 40.0 −1163.3 3.06569 6.13138 5.73422

45.5 15 46.4 1.54715 1.23385 0.83669

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16 9.7 0.88943

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21.2

16 39.7

46.0 16 46.0

52.3

17 10.5

17 1578 14.5 17 15.3 88 40 10.01

17 15.18 21.0 1 13 32.55

17 40.4

44.5 17 45.1

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18 9.6

14.5 18 14.5

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18 39.7

44.0 18 44.7

50.4

19 8.0

15.4 19 14.5

20.0

19 39.0

19 4432 45.6 19 44.9

19 44.32 49.4

20 8.0

14.1 20 14.4

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20 36.5

43.7 20 43.3

14 4756 49.7

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1879 March 12 Pe. Cm's m-s

13	8	55.3														
		58.7	9 0.3	55	27.5	+ 19 26.8				M	48	2235				
		6.0				+ 1166.8	3.06700	6.13400				+35.36	48	57.71	49'	14.95
	9	33.1		57	10.8	17 43.5	1.54855	1.23656		R	48	2445		+17.24		
		27.6	9 28.2			1063.5	3.02674	6.05348				+32.23		56.68		11.00
		33.9		58	16.7	16 37.6	1.50829	1.15604		M	48	28.70		+14.32		
	9	54.0				997.6	2.99896	5.99792				+30.24		58.94		11.54
9 5902		58.3	9 59.3	59	1.9	15 52.4	1.48051	1.10046		R	48	3147		+ 12.60		
9 58.94		4.7				952.4	2.97882	5.95764				+28.86	49	0.23		11.82
	10	24.0		0	28.8	14 26.5	1.46037	1.06020		M	48	3635		+11.49		
		29.1	10 29.5			865.5	2.93727	5.87454				+26.23		2.58		12.07
		25.5		1	19.5	13 34.8	1.41882	0.97710		R	48	3837		+ 9.49		
	10	57.4				814.8	2.91105	5.82210				+24.69		3.06		11.47
		57.5	10 57.4	2	29.7	12 24.6	1.39250	0.92466		M	48	4162		+ 8.41		
		3.2				744.6	2.87192	5.74384				+22.57		4.19		11.21
	11	20.1		3	21.5	11 32.8	1.35347	0.84640		R	48	4437		+ 7.02		
		25.4	11 26.8			692.8	2.84061	5.68122				+21.00		5.37		11.45
		34.7		4	13.8	10 40.5	1.32216	0.78378		M	48	4637		+ 6.08		
	11	50.4				640.5	2.80652	5.61304				+19.41		5.78		10.97
		56.7	11 56.7	5	16.3	+ 9 38.0	1.28807	0.71560		R	48	4840		+ 5.19		
		3.0				+ 578.0	2.76193	5.52386				+17.52		5.92		10.25
	12	22.2		21	5.1	- 6 10.8	1.24348	0.63642		M	49	1952		+ 4.33		
12 2638		27.9	12 27.3			- 370.8	2.56914	5.13628				- 11.24		8.28		10.02
12 26.34		31.8		22	9.5	- 7 15.2	1.05069	0.24084		R	49	1927		+ 1.74		
	12	49.7				- 435.2	2.63869	5.27738				- 13.19		6.08		8.48
		55.3	12 55.5	23	7.0	- 8 12.7	1.12024	0.37994		M	49	2025		+ 2.40		
		1.5				492.7	2.69238	5.38516				- 14.93		5.32		8.39
	13	20.3		24	11.3	- 9 17.0	1.17413	0.45772		R	49	2077		+ 3.07		
		24.7	13 25.5			553.2	2.74609	5.49218				- 16.89		3.88		7.81
		31.4		25	11.7	- 10 14.4	1.22764	0.59474		M	49	2287		+ 3.93		
	13	48.7				- 617.4	2.79057	5.58114				- 18.71		4.16		8.99
		55.9	13 5.52	26	1.6	- 11 7.3	1.27212	0.68370		R	49	2317		+ 4.83		
		0.9				- 669.3	2.82432	5.64864				- 20.22		2.95		8.59
	14	19.4		26	57.0	- 12 12.7	1.30587	0.75120		M	49	2385		+ 5.64		
		24.9	14 24.7			- 722.7	2.85896	5.71792				- 21.90		1.95		8.54
		29.8		28	5.5	- 13 11.2	1.34051	0.82048		R	49	2432		+ 6.61		
	14	50.0				791.2	2.89829	5.78658				- 23.98		.34		8.09
14 5502		55.7	14 55.8	30	42.0	- 15 47.7	1.37984	0.88914		M	49	2530		+ 7.75		
14 55.02		0.7				947.7	2.97667	5.95334				- 26.72	48'	56.78		8.15
	15	19.0		31	25.6	- 16 31.3	1.45822	1.06590		R	49	2582		+ 11.37		
		26.0	15 25.6			991.3	2.99621	5.99242				- 30.04		55.78		8.22
		31.8					1.47776	1.04998						+ 12.44		
	15	42.7														
		54.5	15 53.8													
		58.3														
	16	16.7														
		22.3	16 22.4													
		28.3														
	16	45.1														
		51.1	16 51.1													
		57.2														
	17	15.8														
17 2110		22.4	17 21.9													
17 21.10		27.5				1 13 31.92									88 40 9.40	
	17	44.1														
		50.1	17 50.1													
		56.0														
	18	14.7														
		20.5	18 20.0													
		24.8														
	18	46.2														
		51.1	18 50.3													
		54.7														
	19	12.9														
		19.9	19 19.4													
		25.4														
	19	44.0														
19 4986		49.9	19 49.6													
19 49.86		54.9														
	20	13.6														
		21.2	20 20.4													
		26.3														
	20	44.7														
		50.0	20 49.6													
14 5428		54.1														
			14 54.276													

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	13	7	55.4	7 30.7	1	05	+ 12 27.8				M	10	54.2	10	28.08	9	42.76	9	35.68
			1.0	8 2.1			+ 7 47.8	2.87379	5.74758				− 22.66				− 7.08		
			9.7		2	13.9	11 14.4	1.35534	0.85014		R	10	19.5		22.39		41.51		35.75
		8	24.8	30.4			6744	2.82892	5.65794				− 20.44				− 5.76		
	8 ~~3.44~~		29.3	8 ~~31.0~~	3	30.0	9 58.3	1.31047	0.76040		M	9	56.2		14.75		38.49		33.96
	~~31.48~~		37.0				598.3	2.77692	5.55384				− 18.13				− 4.53		
	8 31.34	8	56.2		4	42.7	8 45.6	1.28847	0.65630		R	9	53.30		9.43		37.57		34.07
			0.3	9 ~~1.85~~			5256	2.72066	5.44132				− 15.93				− 3.50		
			7.9		5	52.0	+ 7 36.3	1.20221	0.54388		M	9	50.25		4.08		36.42		33.79
		9	24.5				+ 456.3	2.65925	5.31850				− 13.83				− 2.63		
			33.0	9 ~~30.3~~ 32.0	23	25.0	− 9 56.7	1.14080	0.42106		R	9	19.12	9	1.04		37.20		32.69
			38.4				− 596.7	2.77576	5.55152				+ 18.08				− 4.51		
		9	56.8		24	43.4	− 11 15.1	1.25731	0.65408		M	9	16.57	8	56.11		37.03		31.26
			1.1	10 2.0			− 6751	2.82937	5.65874				+ 20.46				− 5.77		
			8.2		25	39.0	− 12 10.7	1.31092	0.76130		R	9	18.32		56.34		38.66		31.90
		10	25.0				730.7	2.86374	5.72748				+ 22.14				− 6.76		
			30.7	10 30.5	26	53.8	− 13 25.5	1.34529	0.83004		M	9	15.40		50.99		39.81		31.59
			35.7				805.5	2.90607	5.81214				+ 24.41				− 8.22		
		10	53.9		27	36.6	− 14 8.3	1.38762	0.91470		R	9	16.82		51.11		42.59		33.36
	11 0.02		1.8	11 1.5			− 848.3	2.92855	5.85910				+ 25.71				− 9.15		
	~~11 0.02~~		6.8		28	43.1	− 15 14.8	1.41010	0.96166		M	9	13.22		47.49		42.95		32.35
		11	23.8				− 914.8	2.96153	5.92266				+ 27.73				− 10.60		
			28.0	11 28.0	29	28.9	− 16 0.6	1.44288	1.02572		R	9	14.80		44.69		43.91		32.22
			33.2				960.6	2.98254	5.96508				+ 29.11				− 11.69		
		11	52.7		30	26.8	− 16 58.5	1.46409	1.06764		M	9	14.42		43.55		45.29		32.15
			56.5	11 58.1			− 1018.5	3.00796	6.01592				+ 30.87				− 13.14		
			8.2		31	15.8	− 17 47.5	1.48651	1.11848		R	9	14.25		41.90		47.60		33.17
		12	22.0				− 1067.5	3.02837	6.05674				+ 32.35				− 14.43		
			26.9	12 27.5	32	24.7	− 18 56.4	1.50982	1.15930		M	9	14.62		40.18		49.16		32.81
			33.7				− 1136.4	3.03333	6.11106				+ 34.44				− 16.35		
		12	54.6		33	11.8	− 19 43.5	1.53708	1.21362		R	9	13.87		38.00		49.74		32.00
			59.5	12 59.8			− 1183.5	3.07317	6.14634				+ 35.87				− 17.74		
			5.2		34	13.0	− 20 44.7	1.55472	1.24890		M	9	13.95		36.23		51.67		32.05
		13	24.0				− 1244.7	3.09506	6.19012				+ 37.72				− 19.62		
	13 28.38		29.2	13 29.4	34	57.8	− 21 26.5	1.57661	1.29268		R	9	14.10		35.11		53.09		32.13
	~~13 28.38~~		33.0				− 1284.5	3.10941	6.21882				+ 38.99				− 20.96		
		13	58.0		35	48.0	− 22 14.7	1.59096	1.32138		M	9	14.00		33.55		54.45		31.89
			63.1	13 56.5			− 1334.7	3.12558	6.25076				+ 40.45				− 22.56		
			4.5		36	5.4	− 22 37.1	1.60693	1.35332		R	9	13.47		32.34		54.60		31.28
		14	21.7				− 1357.1	3.13261	6.26522				+ 41.13				− 23.32		
			28.1	14 28.7	3			1.61416	1.36778										
			36.3																
		14	52.8																
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		15	49.5				1 13 31												
	15 56.46		54.0	15 55.6															
	~~15 56.46~~		3.3																
		16	22.1																
			26.6	16 27.1															
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		16	57.1																
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		8.0				+1076.0	3.03181	6.06362				+32.62		14.67		
	9	23.9		58	22.3	16 31.7	1.51345	1.16627		R	48	30.97	49	1.03		13.44
		28.7	9 29.4			991.7	2.99638	5.99276				+30.06		+12.46		
		35.5		59	27.0	15 25.0	1.47802	1.09541		M	48	33.97		2.01		12.85
	9	58.0				925.0	2.96614	5.93228				+28.04		+10.84		
9 58.88		0.7	9 59.9	0	21.0	14 33.0	1.47778	1.03493		R	48	36.87		3.33		12.98
9 58.88		5.9				873.0	2.94101	5.98202				+26.46		+ 9.65		
	10	23.7		1	30.8	13 23.7	1.42265	0.98467		M	48	41.35		5.71		13.84
		28.1	10 28.2			803.7	2.90509	5.81018				+24.36		+ 8.18		
		32.8		2	25.7	12 26.3	1.38673	0.91283		R	48	44.12		6.80		13.89
	10	49.6				748.3	2.87408	5.74816				+22.66		+ 7.09		
		55.6	10 55.7	3	31.3	11 22.7	1.35572	0.85081		M	48	47.02		7.72		13.62
		2.0				682.7	2.83423	5.66846				+20.70		+ 5.90		
	11	22.8		4	22.0	10 32.0	1.31587	0.77111		R	48	49.20		8.36		13.42
		28.1	10 28.3			632.0	2.80072	5.60144				+19.16		+ 5.06		
		37.0		5	22.7	9 31.3	1.28246	0.70409		M	48	51.32		8.64		12.77
	11	52.0	55.6			571.3	2.75686	5.51372				+17.32		+ 4.13		
		53.7	11 56.9	6	19.8	+ 8 34.2	1.23850	0.61637		R	48	54.17		9.76		13.11
		1.2				+514.2	2.71113	5.42226				+15.39		+ 3.35		
	12	18.9		21	8.8	− 6 14.8	1.19277	0.52491		M	49	21.40		10.04		11.86
12 26.42		25.2	12 25.3			− 374.8	2.57380	5.14760				−11.36		+ 1.82		
12 26.16		31.9		22	1.9	− 4 7.9	1.05545	0.25025		R	49	23.15		10.18		12.40
	12	50.3				497.9	2.63134	5.26268				−12.97		+ 2.32		
		53.7	12 55.7	23	9.3	− 8 15.3	1.11298	0.36533		M	49	23.37		8.36		11.47
		1.0				495.3	2.69487	5.38974				− 15.01		+ 3.11		
	13	20.1		23	56.1	− 9 2.1	1.17651	0.49239		R	49	24.10		7.67		11.39
		25.8	13 25.9			542.1	2.73408	5.46816				−16.43		+ 3.72		
		31.8		24	52.7	− 9 58.7	1.21572	0.57081		M	49	25.30		6.15		10.69
	13	49.6	13 56.2			598.7	2.77721	5.55442				−16.15		+ 4.54		
		57.4		25	45.7	− 10 51.7	1.23885	0.65707		R	49	26.60		5.84		11.22
		1.5				651.7	2.81405	5.62810				−19.76		+ 5.38		
	14	20.8		26	46.7	− 11 52.7	1.28569	0.73075		M	49	26.35		4.75		11.18
		24.5	14 25.8			712.7	2.85291	5.70582				− 21.60		+ 6.43		
		32.3		27	36.8	− 12 42.8	1.33455	0.80847		R	49	27.60		3.48		10.85
	14	46.4				762.8	2.88241	5.76482				−23.12		+ 7.37		
4 54.32		52.9	14 55.3	28	35.0	− 13 41.0	1.36405	0.86747		M	49	28.53		3.63		12.17
14 54.18		0.7				821.0	2.91434	5.82868				−24.84		+ 8.54		
	15	18.0	2	29	25.0	− 14 31.0	1.39598	0.93133		R	49	27.87		1.47		11.08
		23.2	15 23.8			− 871.0	2.94002	5.88004				−26.40		+ 9.61		
		28.5					1.42166	0.98269								
	15	46.9														
		52.5	15 52.4													
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17 21.04		22.2	17 21.5													
17 21.04		26.2				1 13 30.08								88 40 7.84		
	17	43.0														
		51.1	17 50.0													
		55.8														
	18	13.0														
		19.6	18 19.0													
		24.3														
	18	45.9														
		51.7	18 51.5													
		56.8														
	19	12.1														
		18.6	19 18.2													
		24.0														
	19	44.0														
19 49.12		48.0	19 48.3													
19 49.08		52.8														
	20	13.5														
		20.7	20 19.5													
		24.4														
	20	42.7	47.9													
14 53.96		48.0	20 48.1													
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1879 March 18 L. C. T's $T_m - S$

0,11559
8.36605 m
8.48164 n

6.73640
8.36605 n
5.10265 m

13	7	28.7															
		29.9	7 30.1	0	42.0	+ 12 44.4				M	10	7.53	10′	30.72	9′	44.38	9′ 36.98
		31.6				764.4	2.88332	5.76664				−23.17				−7.40	
	7	54.6		1	52.0	11 34.4	1.36496	0.86929		R	10	39.7		25.62		42.92	36.81
		58.8	7 59.7			694.4	2.84161	5.68322				−21.85				−6.11	
		5.6		2	58.6	10 27.8	1.32325	0.78587		M	9	010		18.14		41.06	36.67
	8	23.6				627.8	2.79782	5.59564				−19.04				−4.99	
8 2996		29.4	8 28.7	4	11.0	9 15.4	1.27956	0.69829		R	9	53.20		12.04		38.36	34.45
8 29.96		33.1				555.4	2.74461	5.48922				−16.84				−3.91	
	8	53.3		5	24.4	8 2.0	1.22625	0.59187		M	9	53.97		8.58		39.36	36.42
		1.0	9 0.3			482.0	2.68305	5.36610				−14.61				−2.94	
		6.6		6	28.2	+ 6 58.2	1.16469	0.46875		R	9	50.60		3.28		37.92	35.70
	9	26.2				418.2	2.62138	5.24276				−12.68				−2.22	
		30.7	9 32.0	23	2.0	9 35.6	1.10302	0.34541		M	9	21.47	9′	3.92		38.92	34.72
		36.0				575.6	2.76012	5.52024				+17.45				−4.20	
	9	52.8		23	52.0	− 10 25.6	1.24176	0.62289		R	9	20.25		1.29		39.21	34.25
		59.7	9 59.6			625.6	2.79630	5.59260				+18.96				−4.96	
		6.2		24	50.9	− 11 24.5	1.27794	0.69825		M	9	19.75	8′	59.00		40.50	34.57
	10	23.6				684.5	2.83537	5.67074				+20.75				−5.93	
		28.9	10 29.2	25	48.6	− 12 22.2	1.31701	0.77339		R	9	18.42		55.92		40.92	33.94
		35.0				742.2	2.87052	5.74104				+22.50				−6.98	
10 58.92	10	52.5		26	48.5	− 13 22.1	1.35216	0.84369		M	9	17.62		53.30		41.94	33.79
4 1.89		0.4	10 59.9			802.1	2.90423	5.80846				+24.32				−8.15	
10 58.92		6.9		27	28.7	− 14 2.3	1.38587	0.91111		R	9	17.97		52.44		43.50	34.49
	11	24.6				842.3	2.92547	5.85194				+25.53				−9.01	
		27.4	11 28.6	28	37.5	− 15 11.1	1.40711	0.95459		M	9	16.06		49.44		43.68	33.17
		33.7				911.1	2.95957	5.91914				+27.62				−10.57	
	11	52.8		29	16.0	− 15 49.6	1.44121	1.02179		R	9	17.17		48.36		45.96	34.54
		56.4	11 57.3			949.6	2.97754	5.95508				+28.74				−13.42	
		2.7		30	14.1	− 16 47.7	1.45918	1.05773		M	9	16.65		46.12		47.18	34.33
	12	22.6				1007	3.00303	6.00606				+30.33				−12.85	
		26.2	12 27.2	30	57.5	− 17 25.4	1.47367	1.08871		R	9	16.73		45.07		48.43	34.91
		32.7				1145.1	3.01916	6.03832				+31.68				−13.52	
	12	49.8		31	51.8	− 18 25.4	1.48549	1.13097		M	9	17.32		43.81		50.83	35.95
		55.5	12 55.4			1105.4	3.04352	6.08704				+33.51				−15.48	
		0.8		32	36.5	− 19 10.1	1.52516	1.18969		R	9	15.35		40.79		50.21	33.46
	13	17.8				1150.1	3.06074	6.12148				+34.86				−16.75	
13 2440		21.7	13 22.7	33	45.5	− 20 19.1	1.54238	1.22413		M	9	15.30		38.34		52.26	33.44
13 24.40		28.5				1219.1	3.08607	6.17208				+36.96				−18.82	
	13	48.5		34	34.4	− 21 8.0	1.56768	1.27473		R	9	13.62		37.18		54.06	33.70
		52.2	13 53.4			1268.0	3.10312	6.20624				+38.44				−20.36	
		59.6					1.58476	1.30889									
	14	17.9															
		23.0	14 23.3														
		28.8															
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		22.0	15 22.8														
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	15	53.6															
15 54.28		57.3	15 57.1														
15 54.28		0.4				1 13	79.88									88 40	7.70
	16	20.4															
		24.0	16 24.5														
		29.0															
	16	48.8															
		52.4	16 53.2														
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13	8	45.7						2.86273		5.72346															
12 9.0		50.6	8 51.0	2	37.3	12	8.7	1.34546		0.82620	M	48	4427	50"97	13.12	8	51.0	5	56.2	14	47.2				
29.0		56.7	5 53.8					44.8	14	47.3			+ 6.70	22.15											
11 17.2	9	11.0	5 56.3	3	29.1	11	16.9				R	48	4670	5251	13.09										
77.2		19.2	9 19.2					2.80372		5.66144			+ 5.81	20.58											
9 59.5		27.4	5 25.4	4	46.8	9	59.2	44.61.31945	45.2	0.76418	M	48	5005	54.60	12.82	9	19.2	5	25.9		45.1				
59 9.5	9	42.1	5 26.0					2.77779		5.65338			+ 4.55	18.22											
9 12.1		51.3	9 49.4	5	34.2	9	18.8	1.26052		0.65832	R	48	5215	56.02	12.80	9	47.4	4	56.3		45.7				
55.21		54.7	4 53.9					45.32.74202	45.7	5.48404			+ 3.87	16.78											
8 19.1	10	17.0	4 56.3	6	27.2	8	18.8	1.22475		0.68676	M	48	5420	6735	12.52										
4991		22.6	10 22.6					2.69819		5.39638			+ 3.15	15.17		10	22.6	4	26.4		49.0				
7 35.1		28.3	4 26.8	7	11.2	9	34.8	49.41.18092	49.1	0.99812	R	48	5370	5883	12.16										
45.51	10	44.6	4 26.5					2.65711		5.31622			+ 2.63	13.83											
6 42.9		49.4	10 49.6	8	3.4	6	42.6	1.14084		0.41996	M	48	5765	6971	11.95	10	49.6	3	56.7		46.5				
40 29		54.7	3 57.4					47.02605	20 46.5	5.21040			+ 2.06	12.24											
6 13.5	11	10.8	3 56.9	8	32.8	+6	13.2	1.08793		0.31314	R	49	2802	3979	11.14										
37 2.5		16.8	11 17.0					2.57229		5.14458			+ 1.77	11.35		11	17.0	3	27.4		44.4				
-12 47.5		23.4	3 27.3	27	33.8	-12	47.8	443.05502	44.4	0.27732	M	49	2702	32.95	9.63										
767.5	11	42.0	3 27.4					2.88508		5.67016			+ 5.93	23.32											
13 48.0		47.7	11 47.7	28	34.3	13	48.3	1.36781		0.77290	R	49	2845	37.13	11.97	11	47.7	2	37.7		45.4				
8280		53.3	2 57.9					45.92980	345.5	5.83606			+ 8.68	25.16											
14 49.4	12	12.4	2 57.8	29	35.7	14	49.7	1.50076		0.93870	M	49	2902	36.88	9.95										
88 9.4		18.3	12 18.2					2.99910		5.89820			+ 7.96	27.03		12	18.2	2	28.1		46.3				
15 39.0		23.8	2 27.8	30	25.3	15	39.3	46.01.43183	46.3	0.90094	R	49	2920	5037	11.83										
9390	12	42.2	2 28.1					2.97267		5.94534			+ 11.17	28.54											
16 22.9		45.8	12 46.6	31	9.2	16	29.2	1.45540		1.04808	M	49	2990	42.14	12.27	12	46.6	1	58.2		44.8				
98 29		51.7	1 58.4					45.09925	44.9	5.98502			+ 12.24	29.87											
17 17.4	13	10.8	1 58.3	32	1.7	17	15.7	1.47524		1.08776	R	49	3010	43.73	12.18										
10374		17.2	13 16.8					2.01892		6.03184			+ 13.63	31.52		13	16.8	1	28.9		45.7				
17 53.5		22.4	1 28.5	32	29.8	17	53.8	45.[illegible]	45.7	1.13458			233.5												
107 3.5	13	42.6	1 28.9					2.03080	46.7	1.06160			226.6												
19 6.9		47.7	13 47.5	33	53.2	-19	7.2	1.51353		1.16434			187.9			13	47.5	0	57.2		46.1				
1146.9		52.3	0 57.2					46.72.03952	46.7	6.11904			648.0												
	14	16.8	0 57.2					1.34225		1.22178	1.34		46.28												
		18.4	14 18.4																						
		19.9	0 29.3					47.7	47.9							14	18.4	0	29.0		47.9				
	14	40.7	0 29.5																						
		46.3	14 46.3													14	46.3	-0	0.0		46.3				
		51.9	- 0.4					14 45.9	46.3																
	15	11.2	- 0.0																						
		15.9	15 16.4																						
		22.2	-0 29.6					46.8	46.9							15	16.4	-0	29.4		47.0				
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	17	46.9	3																						
		48.3	17 48.2																						
		49.6	-2 57.2					(51.1)	(50.7)																
			2 57.6					14) 64424	15) 6991																
								14 46.03	4661							17	48.3	2	57.5		56.8				
									14) 6484																
									46.32																
						1	13 29.68																		
																88	40	7.55							

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13	7	18.9																	
		22.5	7	27.1	0	27.4	+12 53.8				M	10	7.82	10	3.28	9	43.96	9	35.78
		28.9					773.8	2.88863	5.77726				-23.46				-7.58		
	7	44.0			1	23.4	11 57.6	1.37636	0.88000		R	10	55.2		27.28		42.76		37.23
		48.0	7	49.2			717.6	2.85600	5.71200				-21.76				-6.53		
		53.5			2	25.8	10 55.2	1.33773	0.81474		M	10	27.7		22.64		42.96		37.46
	8	18.0					655.2	2.81667	5.63302				-19.87				-5.44		
8 2358		24.7	8	25.3	3	13.4	10 7.6	1.29824	0.73576		R	9	58.32		16.75		39.89		35.21
8 23.08		32.2					607.6	2.78376	5.56752				-18.43				-4.68		
8 2312	8	47.3			4	55.8	8 25.2	1.26549	0.67026		M	9	53.45		13.88		40.13		36.89
		51.1	8	51.7			505.2	2.70364	5.40728				-15.32				-3.24		
		56.6			5	42.8	7 38.2	1.18537	0.51002		R	9	52.72		6.62		38.82		36.16
	9	22.9					458.2	2.66124	5.32248				-13.90				-2.66		
		35.0	9	24.6	6	43.7	+6 37.8	1.14297	0.42522		M	9	49.22		1.27		37.17		35.17
		26.0					397.8	2.59934	5.19868				-12.05				-2.00		
	9	47.0			23	8.7	-9 42.2	1.08107	0.30142		R	9	20.42	9	2.76		38.18		34.18
		51.4	9	52.7			582.2	2.76530	5.53060				+17.66				-4.30		
		59.7			24	10.4	-10 49.2	1.24703	0.63334		M	9	24.25		.57		39.93		33.59
	10	14.6					649.2	2.81238	5.62476				+19.68				-5.34		
		21.1	10	20.4	25	11.2	-11 50.8	1.29411	0.77750		R	9	18.90	8	57.87		40.43		34.04
		25.4					710.8	2.85126	5.70252				+21.53				-6.39		
	10	43.6			26	14.7	-12 53.5	1.33299	0.80526		M	9	19.37		55.92		42.82		35.24
10 5106		50.9	10	49.8			773.5	2.88846	5.77692				+23.45				-7.58		
10 51.06		54.9			27	2.8	-13 41.8	1.37019	0.87966		R	9	16.42		51.51		41.33		32.78
	11	17.6					821.8	2.91466	5.82932				+24.91				-8.55		
		22.2	11	21.7	28	14.3	-14 53.1	1.39639	0.93206		M	9	17.05		49.97		44.13		34.02
		25.4					893.1	2.95090	5.90180				+27.08				-10.11		
	11	46.5			29	8.1	-15 366	471 1.43263	1.00454		R	9	15.32		46.85		43.79		32.67
		50.6	11	50.7			936.6	2.97169	5.94338				+28.47				-11.12		
		54.9			30	14.5	-16 53.3	5 947.1	1.04612										
	12	20.0					1013.3	3.00574	6.01148										
		23.7	12	23.7				5 1.48744	1.11422										
		27.5																	
	12	47.1																	
		53.8	12	53.5															
		58.6																	
	13	17.6																	
13 2328		23.5	13	23.4															
13 23.28		29.1																	
	13	42.4																	
		51.7	13	51.7															
		55.9																	
	14	19.7																	
		23.9	14	24.1															
		29.5																	
	14	44.3																	
		46.6	14	48.3															
		54.1																	
	15	14.4																	
		19.8	15	19.0															
		22.7																	
	15	42.7																	
15 47.82		45.9	15	47.1															
15 47.52		52.6					1.13 2949										88	40	7.41
	16	12.9																	
		16.5	16	17.9															
		24.3																	
	16	39.0																	
		44.7	16	45.3															
		52.3																	
	17	14.0																	
		18.6	17	20.0															
		27.4																	
	17	44.7																	
		47.9	17	49.0															
		54.3																	
		—																	
18 20.00		—	18	21.0															
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	m s	T_{Ua}	$T_{Ua} - \delta$							
13 8 51.3										
53.5	8 54.5	0 4.0	+14 46.87			M	48	3355	49' 0.73	49' 10.39
58.6			886 2.94773	5.89546				26.85	+9.96	
9 17.0		1 54.3	12 56.34	1.42946	0.99820	M	48	4167	3.21	12.84
22.0	9 23.3		776.5 2.89003		5.78006			23.54	+7.63	
30.8		3 12.1	11 38.56	1.57176	0.88280	M	48	4585	7.03	13.21
9 47.5			698.5 2.84417		5.68834			21.18	+6.18	
9 5336 53.7	9 53.2	4 28.9	10 21.8	1.32590	0.79108	M	48	4897	7.82	12.72
9 53.36 58.3			621.5 2.79358		5.58716			14.65	+4.90	
10 15.5		5 37.7	9 12.6	1.07531	0.68990	M	48	5180	8.26	12.43
22.5	10 21.9		552.4 2.74265		5.48530			16.76	+3.87	
27.8		6 49.7	8 00.0	1.01438	0.58804	M	48	5465	9.23	12.16
10 47.5			484.4 2.68205		5.36410			14.58	+2.93	
52.8	10 53.9	7 24.9	7 25.8	1.16378	0.46684	R	48	5622	9.73	12.25
1.3			445.5 2.64904		529808			1251	+2.52	
11 16.7		8 20.9	+ 6 29.8	1.13077	040082	M	48	5835	11.86	13.78
23.0	11 22.9		389.5 2.59073		5.18146			11.81	+1.92	
29.0		21 40.0	- 6 49.4	1.07246	0.28410	R	49	2165	9.24	11.37
11 46.0			409.5 2.61215		5.22430			-12.41	+2.13	
52.0	11 51.9	23 50.8	9 0.8	1.09388	0.32704	M	49	2437	7.99	11.69
57.7			540.5 2.73255		5.46510			16.38	+3.70	
12 15.3		24 55.3	-10 4.6	1.21428	0.56784	R	49	2477	6.44	11.07
12 22.16 22.6	12 22.5		604.5 2.78154		5.56308			18.33	+4.63	
12 22.16 28.6		25 53.6	-11 3.0	1.26327	0.66582	M	49	2572	5.62	11.19
12 46.1			665.0 2.82151		5.64302			20.10	+5.57	
53.4	12 52.2	26 55.9	-12 5.2	1.30324	0.74576	R	49	2680	4.51	11.17
57.1			725.5 2.86052		5.72104			21.99	+6.66	
13 15.5		27 46.5	-12 55.8	1.34225	0.82378	M	49	2733	3.82	11.45
21.4	13 21.3		772.5 2.88981		577962			23.53	+7.63	
26.9		28 24.5	-13 33.9	1.37154	0.88236	R	49	2785	3.17	11.36
13 47.5			813.5 2.91057		5.82104			24.68	+8.39	
53.1	13 53.0	31 42.9	-16 52.2	1.39230	0.92378	M	49	2882	48 58.13	11.11
58.4			1012.5 3.00331		6.01062			-30.69	+12.98	
14 14.5				1.48704	1.11334					
20.4	14 20.2									
25.6										
14 44.7										
14 50.12 50.9	14 50.7									
14 50.12 56.4										
15 14.8										
19.4	15 19.2									
23.4										
15 41.3										
47.7	15 47.5									
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16 16.9										
22.7	16 22.3									
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50.1	16 49.6									
54.8										
17 11.8										
17 20.04 22.2	17 20.5									
17 20.04 27.5			1 13 29.30							88 40 7.25
17 43.8										
50.0	17 49.8									
55.6										
18 14.3										
18.7	18 18.0									
21.0										
18 42.8										
47.7	18 47.8									
53.0										
19 12.4										
19.3	19 18.6									
24.2										
19 49.0										
19 47.60 49.9	19 49.8									
19 47.60 50.5										
20 12.0										
15.5	20 15.7									
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20 40.0										
46.3	20 46.1									
14 50.66 52.1										
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	13	7	24.6														
			28.9	7 29.3	0	29.5	+12 57.3				M	10	532	10'	28.81	9' 41.75	9' 34.09
			34.3				772.3	2.89059	5.78118				-23.57			-7.66	
		7	36.5		1	48.4	11 38.4	1.37241	0.88401		R	10	032		21.50	39.14	32.96
			0.9	8 1.5			698.4	2.84410	5.68820				-21.18			-6.18	
			7.0		3	0.7	10 26.1	1.32592	0.79103		M	9	5395		14.94	36.96	31.99
		8	27.5				626.1	2.79664	5.59328				-18.99			-4.97	
	8 30.46		31.1	8 31.5	4	9.7	9 17.1	1.27845	0.69611		R	9	3317		10.06	36.28	32.35
	8 30.46		36.0				557.1	2.74593	5.49186				-16.89			-3.93	
		8	53.7		5	24.5	8 2.3	1.22775	0.59469		M	9	5042		5.05	35.79	32.84
			59.1	8 59.7			482.3	2.68332	5.36664				-14.63			-2.95	
			6.3		6	16.5	7 10.3	1.16514	0.46947		R	9	4878		1.83	35.73	33.38
		9	24.2				430.3	2.63377	5.26754				-13.05			-2.35	
			30.5	9 30.3	07	15.9	+6 10.9	1.11559	0.37037		M	9	4640	9'	59.45	35.15	33.41
			36.1				379.9	2.56926	5.13852				-11.25			-1.74	
		9	54.1		22	58.1	- 9 31.3	1.05108	0.24135		M	9	1902		1.70	36.34	32.20
			57.8	9 59.5			571.3	2.75686	5.51372				+17.32			-4.14	
			6.6		24	2.6	- 10 35.8	1.23868ₙ	0.61655		R	9	1750	8'	59.82	36.78	31.66
		10	24.5				635.8	2.80332	5.60664				+19.28			-5.12	
			28.3	10 29.6	25	42.2	- 12 15.1	1.28514	0.70947		M	9	1617		53.87	38.47	31.62
			36.0				735.4	2.86652	5.73304				+22.30			-6.85	
		10	53.8		26	44.4	- 13 17.6	1.34834	0.83587		R	9	1497		50.78	39.16	31.10
	10 58.08		58.0	10 58.6			797.6	2.90179	5.80358				+24.19			-8.06	
	10 58.08		4.0		27	52.0	- 14 25.2	1.38361	0.90631		M	9	1422		47.98	40.46	30.97
		11	23.0				865.2	2.93712	5.87424				+26.24			-9.49	
			27.9	11 28.9	28	40.9	- 15 14.1	1.41894	0.97707		R	9	1337		45.65	41.09	30.48
			35.8				934.1	2.96099	5.92198				+27.72			-10.61	
		11	52.6		29	46.3	- 16 19.5	1.44281	1.02481		M	9	1380		44.40	43.50	31.24
			58.0	11 58.8			976.5	2.99100	5.98200				+29.70			-12.26	
			5.7		30	49.8	- 17 23.0	1.47282	1.08483								
		12	20.6				1043.0	3.01828	3.03656								
			26.0	12 26.8				1.50010ₙ	1.13939								
			33.7														
		12	52.3														
			57.5	12 58.2													
			4.7														
		13	21.0														
	13 26.60		25.0	13 25.4													
	13 26.60		30.2														
		13	52.2														
			56.8	13 57.2													
			2.5														
		14	20.1														
			24.7	14 25.4													
			31.4														
		14	49.6														
			54.9	14 55.0													
			0.5														
		15	17.6														
			24.7	15 24.7													
			31.8														
		15	47.5														
	15 54.64		53.3	15 54.3													
	15 54.64		2.0				1 13 28.30									88 40 6.09	
		16	19.5														
			24.4	16 25.3													
			32.0														
		16	49.5														
			52.7	16 53.9													
			59.6														
		17	18.3														
			22.4	17 23.6													
			29.8														
		17	46.6														
			52.5	17 52.9													
			57.0														
	18 23.12		—	18 2.40													
	18 23.12		—														
			—	18 53.9													
			—														
			—	19 23.9													
	13 26.78		—														
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	13	8	49.7																				
			55.0	8	55.7	56	45.5	+ 18	5.3					M	48	3100	48'	3.91	49	18.84			
			2.3						1085.3	3.03355	6.07110					+32.91		+14.93					
		9	18.5			58	0.7	16	50.1	1.51737	1.17402			R	48	3445		5.08		18.01			
			24.3	9	24.6				1010.1	3.00436	6.00872					+30.63		+12.93					
			31.0			59	5.9	15	44.9	1.48618	1.11164			M	48	3690		7.53		18.85			
		9	50.5						944.9	2.97539	5.95078					+28.66		+11.32					
	9	54.20	55.7	9	55.2	0	15.8	14	35.0	1.45721	1.05370			R	48	3953		6.09		15.79			
	9	54.20	59.5						875.0	2.94201	5.88402					+26.54		+9.70					
		10	17.6			1	2.2	13	48.6	1.42383	0.78694			M	48	4265		7.78		16.48			
			21.7	10	21.7				828.6	2.91834	5.83668					+25.13		+9.70					
			25.8			2	9.5	12	41.3	1.40016	0.93960			R	48	4517		8.26		15.61			
		10	47.7						761.3	2.88156	5.76312					+23.09		+7.35					
			53.9	10	53.8	2	53.5	11	57.3	1.36338	0.86604			M	48	4692		8.67		15.19			
			57.8						714.3	2.85570	5.71140					+21.75		+6.52					
		11	16.0			3	46.5	11	4.3	1.33752	0.81732			R	48	5124		11.49		17.01			
			23.2	11	23.1				664.3	2.82236	5.64472					+20.15		+5.59					
			30.0			4	51.3	9	59.5	1.30418	0.74764			M	48	5345		11.63		16.29			
		11	51.2						594.5	2.77779	5.55558					+18.18		+4.66					
			55.5	11	55.5	6	7.4	8	43.4	1.25961	0.65850			R	48	5650		12.37		15.79			
			59.7						523.4	2.71883	5.43766					+15.87		+3.42					
		12	15.0			7	0.7	+ 7	50.1	1.20065	0.53458			M	49	2140		35.62		14.42			
	12	22.92	22.2	12	22.0				470.1	2.67219	5.34438					+14.22		+2.80					
	12	22.92	28.8			21	2.4	− 6	11.6	1.15301	0.44730			R	49	2197		10.70		12.45			
		12	47.5						371.6	2.57008	5.14016					−11.27		+ 1.75					
			52.0	12	52.2	21	52.8	− 7	2.0	1.05188	0.24308			M	49	2300		10.20		12.46			
			57.2						422.0	2.62531	5.25062					−12.80		+ 2.26					
		13	15.3			23	3.0	− 8	12.2	1.10713	0.35354			R	49	2435		9.42		12.49			
			21.4	13	21.8				492.2	2.69214	5.38428					−14.93		+ 2.07					
			28.6			23	58.2	9	7.4	1.17396	0.48720			M	49	2575		9.15		12.22			
		13	43.7						547.4	2.73830	5.47660					−16.60		+ 3.80					
			49.3	13	50.8	25	3.5	− 10	12.7	1.22012	0.57952			R	49	2433		7.97		12.73			
			59.5						612.7	2.78725	5.57450					−18.58		+ 4.76					
		14	17.6			25	45.9	− 10	55.1	1.26907	0.67732			M	49	2635		6.48		11.92			
			22.3	14	22.8				655.1	2.81631	5.63262					−19.87		+ 5.44					
			28.6			26	44.0	− 11	53.2	1.29813	0.73554			R	49	2697		5.34		11.79			
		14	45.9						713.2	2.83321	5.70642					−21.63		+ 6.45					
	14	51.78	53.8	14	52.9	27	35.6	− 12	44.8	1.33503	0.80934			M	49	2812		4.93		12.34			
	14	51.78	58.9						764.8	2.88355	5.76710					−23.19		+ 7.41					
		15	15.4			28	32.6	− 13	41.8	1.36537	0.87002			R	49	2850		3.88		12.44			
			22.0	15	21.8				821.8	2.91477	5.82954					−24.92		+ 8.56					
			27.9			29	18.3	− 14	22.5	1.39659	0.93246													
		15	45.0						862.5	2.93576	5.87152													
			50.5	15	50.6					1.41758	0.97444													
			56.4																					
		16	11.3		4																			
			19.0	16	18.7																			
			24.8																					
		16	45.4		0																			
			51.6	16	51.8																			
			55.3																					
		17	13.6																					
	17	19.76	20.4	17	19.5																			
	17	18.90	24.5						1	13	28.12											88	40	5.58
		17	39.8																					
			47.6	17	46.8																			
			52.9																					
		18	13.3																					
			18.6	18	19.0																			
			25.2																					
		18	42.2																					
			47.9	18	47.8																			
			53.2																					
		19	10.0																					
			15.7	19	16.0																			
			22.4																					
		19	40.0																					
	19	46.06	44.4	19	45.3																			
	19	46.06	51.5																					
		20	10.3																					
			14.3	20	15.6																			
			22.2																					
		20	37.3																					
			46.4	20	45.6																			
	14	50.82	51.2																					
				14	50.824																			

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		13	8	58.8															
+	1451.0			1.8	9	26	0	6.0	+ 13	22.4					R	10	0.97		
+	891.0			7.3		5 569				802.4			4						
	13 39.1	9		25.7		4 27.6	1	17.9		12 10.5	13	30.2	#	35.8	M	9	53.30		
+	819.1			28.7	9	30.6	4	26.6		730.5									
	12 21.6			36.4		3 261	2	35.4		10 53.0				27.8	R	9	57.92		
+	741.6	9		57.3		3 570				653.0		27.6	7	33.4					
	11 20.0			1.4	10	2.0	3	37.0		9 51.4					M	9	48.55		
+	680.0			7.4		4 569				591.4				29.8					
	10 35.2	10		25.8		3 267	4	21.8		9 6.6		28.7		34.6	R	9	46.55		
+	635.2			36.0	10	30.7				546.6				28.3					
	9 38.1			36.2		4 27.6	5	23.9		8 4.5			7	33.1	M	9	45.05		
+	573.1	10		57.2		2 57.8				484.5		28.5		29.4					
	8 55.1			59.7	11	0.0	6	1.9		7 26.5					R	9	42.50		
+	335.1			6.0		3 570				446.5				28.8					
	7 54.0	11		25.3		2 28.1	7	3.0		6 25.4		28.1		31.8	M	9	40.32		
+	474.0			30.0	11	30.7				385.4									
	7 16.8			36.8		3 267	7	40.2		5 48.2				28.2	R	9	38.77		
+	436.8	11		55.6		1 58.4				348.2		29.1		32.2					
+	6 17.6			59.8	12	0.6	8	39.4	+	4 49.0				29.3	M	9	36.82		
+	377.6			6.4		2 578				289.0									
−	7 59.5	12		24.0		1 290	22	56.5	−	9 28.1		29.6		31.9	R	9	12.12		
−	479.5			28.0	12	28.6				668.1									
	9 11.9			33.8		2 281	24	8.9		10 40.5				27.8	M	9	11.02		
−	551.9	12		53.3		0 58.6				640.5		27.2		29.5					
	9 57.6			58.0	12	58.0	24	54.6		11 26.2					R	9	10.47		
−	597.6			2.6		0 584				686.2				27.5					
	10 58.0	13		23.2		0 29.3	25	55.0		12 26.6		27.3		32.5	M	9	9.15		
−	658.0			27.0	13	24.8				746.6									
	11 42.7			33.2		0 290	26	39.7		13 11.3					R	9	8.12		
−	702.7	13		52.0		0 0.0				791.3	13	28.5	13	27.8					
	12 44.1			56.7	13	57.6	27	41.1		14 12.7			13	28.1	M	9	8.00		
−	764.1			4.0		0 586				852.7									
	13 31.5	14		22.4		0 29.3	28	28.5		15 0.1		28.3		27.1	R	9	7.12		
−	811.5			28.1	14	28.1				900.1				28.9					
	14 36.4			33.8		0 293	29	33.4		16 5.0		29.1		27.3	M	9	7.17		
−	876.4	14		53.9		0 590				965.0									
	13 24.7			57.7	14	58.4	30	21.7		16 53.3				29.5	R	9	6.17		
−	924.7			2.7		0 0.0				1013.3									
	16 29.2	15		21.8		1 288	31	26.2		17 57.8		29.6		27.3	M	9	7.05		
−	989.2			25.6	15	26.6				1077.8									
−	17 33.6			32.3		0 293	32	30.6	−	19 2.2							284.22		
−	1053.6	15		51.4		1 57.9				142.2		28.7		28.7			284.0		
				55.5	15	56.3											286.9		
				2.0		0 590											227.4		
		16		21.2		2 27.1						29.2		28.2			1082.5		
				25.3	16	26.1									13	14	56.47		
				31.7		0 288													
		16		49.6		2 57.6						28.5		28.3					
				54.2	16	54.8													
				0.5		0 590													
		17		18.9		3 27.5						27.3		27.4					
				23.5	17	24.1													
				29.8		2 27.1								27.2					
		17		48.8		3 57.3						26.8		26.9					
				53.7	17	54.0													
				59.5		2 57.6													
						4 25.9						28.1		27.8					

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0.11559
8.36659
8.48218

6.73660
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		m s																	
13	8	40.2																	
		46.3	8 45.3	4	29.5	+10 14.0					M	48	57.22	49	12.86	49	17.64		
		47.4				614.0	2.78817	5.57634					+15.64		+4.78				
	9	10.9		6	0.8	+ 8 42.7	1.27035	0.67953			R	49	0.22		16.08		19.54		
		16.9	9 15.8			522.7	2.71825	5.43650					+15.86		+3.46				
		19.7		7	6.4	7 37.1	1.20043	0.53969			M	49	0.92		14.79		17.49		
	9	41.2				457.1	2.66001	5.32002					+13.87		+2.65				
9 46.08		44.9	9 44.8	7	47.6	+ 6 55.9	1.14219	0.42321			R	49	3.40		16.02		18.27		
9 46.08		48.2				+ 415.9	2.61899	5.23798					+12.62		+2.23				
	10	12.5		20	57.9	- 6 14.4	1.10117	0.34117			M	49	27.65		16.29		18.07		
		18.1	10 17.7			374.4	2.57334	5.14668					-11.36		+1.78				
		22.4		21	55.7	- 7 12.2	1.05552	0.24987			R	49	28.65		15.53		18.90		
	10	41.0				432.2	2.63568	5.27136					-13.12		+2.37				
		46.3	10 46.8	22	56.6	- 8 13.1	1.11786	0.37455			M	49	29.17		14.20		17.28		
		53.1				493.1	2.69293	5.38586					-14.97		+3.08				
	11	14.5		23	37.0	- 8 53.8	1.17511	0.48805			R	49	30.47		14.27		17.88		
		18.5	11 18.5			533.8	2.72738	5.45476					-16.20		+3.61				
		22.4		24	44.5	- 10 1.0	1.20956	0.55795			M	49	30.97		12.73		17.31		
	11	44.8				601.0	2.77887	5.55774					-16.24		+4.58				
		48.6	11 49.4	25	38.7	- 10 55.2	1.26105	0.66093			R	49	31.07		11.18		16.62		
		53.3				655.2	2.81637	5.63274					-16.89		+5.44				
	12	10.2		26	52.1	- 12 8.6	1.29855	0.73593			M	49	30.75		8.64		15.37		
12 17.12		16.8	12 15.8			728.6	2.86249	5.72498					-22.11		+6.73				
12 17.12		20.5		27	47.4	- 13 3.9	1.34467	0.82817			R	49	33.02		9.23		17.02		
	12	42.4				783.9	2.89426	5.78852					-23.79		+7.79				
		47.0	12 46.8	28	47.2	- 14 3.7	1.37644	0.89171			M	49	32.75		7.14		16.17		
		50.9				843.7	2.92619	5.85238					-25.61		+9.03				
	13	9.2		29	34.0	- 14 50.5	1.40837	0.96557			R	49	33.87		6.84		16.90		
		15.4	13 15.1			890.5	2.94963	5.89926					-27.03		+10.06				
		20.7		30	46.5	- 16 3.0	1.43181	1.00245			M	49	33.75		4.45		16.21		
	13	38.6				963.0	2.98363	5.96726					-29.30		+11.76				
		44.5	13 43.9	31	42.2	- 16 58.7	1.46581	1.07045			R	49	34.24		3.35		16.51		
		48.5				1018.7	3.00805	6.01610					-30.92		+13.16				
	14	7.8		32	36.4	- 17 52.9	1.49023	1.11999			M	49	34.37		1.81		16.41		
		12.1	14 13.1			1072.9	3.03056	6.06112					-32.56		+14.60				
		19.3		33	33.9	+ 18 50.4	1.51274	1.16431			R	49	34.20	48	59.89		16.10		
	14	38.4				1130.4	3.05323	6.10646					-34.31		+16.21				
14 43.60		41.8	14 42.5	34	25.7	- 19 42.2	1.53541	1.20965			M	49	33.87		59.19		16.91		
14 43.60		47.4				1188.2	3.07269	6.14538					-35.88		+17.72				
	15	8.3		35	10.9	- 20 27.4	1.65487	1.24857			R	49	34.80		57.55		16.66		
		13.5	15 13.6			1227.4	3.08899	6.17798					-37.25		+19.11				
		19.0					1.57117	1.28117											
	15	39.1																	
		45.5	15 44.9																
		50.0																	
	16	5.0																	
		10.5	16 10.9																
		17.3																	
	16	33.0																	
		39.3	16 39.8																
		47.2																	
	17	3.9																	
17 10.66		9.8	17 10.6																
17 10.66		18.0					1 13	27.19									88	40	1.91
	17	34.2																	
		41.0	17 40.5																
		46.3																	
	18	6.8																	
		10.0	18 11.5																
		17.7																	
	18	34.3																	
		38.2	18 39.7																
		46.5																	
	19	5.3																	
		10.7	19 10.7																
		16.0																	
	19	35.7																	
19 40.12		39.3	19 40.2																
19 40.12		45.6																	
	20	4.1																	
		11.6	20 10.9																
		17.2																	
	20	33.8																	
		39.6	20 39.1																
14 43.52		44.0																	
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D. 11559
8.36659 m
8.48218 m

G. 73660
8.36659 m
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	13	7	13.5																
			21.2	7	20.3	44	17.6	+ 29	09.9				M	11 322	11	56.06	10	10.38	9 31.84
			26.2						1746.9	3.24077	6.48154			-52.84				-3.844	
		7	47.8			45	25.1	27	53.7	1.72295	1.58473		R	10 3642		47.21		5.63	30.19
			51.9	7	53.7				1673.4	3.22380	6.44720			-50.79				-3.531	
			1.3			46	33.9	26	44.6	1.70578	1.55039		M	10 5260		43.39		3.90	31.25
		8	16.5						1604.6	3.20537	6.41074			-48.70				-3.265	
	8 2246		21.2	8	22.3	47	20.2	25	58.3	1.68765	1.51393		R	10 4942		36.72		2.12	31.32
	8 22.46		29.2						1558.3	3.19266	6.38530			-47.30				-3.080	
		8	49.1			54	1.7	19	16.8	1.67483	1.48849		M	10 2222		7.33	9'	47.11	30.14
			54.0	8	54.0				1156.8	3.06326	6.12652			-35.11				-16.97	
			59.0			55	11.7	18	6.8	1.54544	1.22971		R	10 2053	10'	33.54		47.56	32.38
		9	16.4						1086.8	3.03613	6.07230			-32.44				-14.98	
			21.4	9	22.0	0	8.8	0 13	9.7	1.51833	1.17549		M	10 067		33.66		32.70	28.79
			28.2						769.7	2.89746	5.79492			-23.97				-7.91	
		9	46.6			1	22.5	11	56.0	1.37964	0.89811		R	9 5690		18.63		35.17	28.67
			52.4	9	52.9				716.0	2.85491	5.70982			-21.73				-6.50	
			59.7			2	40.5	10	38.0	1.33709	0.81301		M	9 3347		12.83		34.11	28.97
		10	17.9						638.0	2.80482	5.60964			-18.36				-5.14	
			21.8	10	22.4	3	50.2	+ 9	28.3	1.28700	0.71083		R	9 5032		6.70		33.74	29.96
			27.6						546.3	2.73743	5.47486			-16.58				-3.78	
		10	43.7			23	1.7	- 9	43.2	568.3	0.57805		M	9 1390	8'	56.20		31.60	27.29
	10 57.24		49.4	10	50.3				583.2	2.76682	5.53164			+ 17.70				- 4.31	
	10 57.04		57.2			24	9.5	-10	51.0	1.24798	0.63483		R	9 1160		51.84		31.36	25.99
		11	13.5						651.0	2.81358	5.62716			+ 19.76				- 5.37	
			18.3	11	19.8	25	17.5	11	59.0	1.29576	0.73035		M	9 1170		49.88		33.52	26.96
			27.7						719.0	2.85673	5.71346			+ 21.82				- 6.56	
		11	44.5			26	5.6	- 12	47.1	1.33891	0.81665		R	9 1132		48.04		34.60	27.14
			50.2	11	50.8				767.1	2.88485	5.76970			+ 23.28				- 7.96	
			57.7			27	17.0	- 13	58.5	1.36703	0.97289		M	9 1205		46.60		35.50	26.58
		12	14.5						838.5	2.92350	5.84700			+ 25.45				- 8.92	
			19.0	12	19.1	28	18.2	- 14	59.7	1.40568	0.95019		R	9 952		42.21		36.83	26.56
			23.9						899.7	2.95410	5.90820			+ 27.31				- 10.27	
		12	44.7			29	23.2	- 16	4.7	1.43628	1.01139		M	9 927		39.99		38.55	27.09
			50.0	12	49.9				964.7	2.98439	5.96878			+ 29.28				- 11.53	
			55.0			30	14.0	- 16	55.5	1.46657	1.07197		R	9 902		38.19		39.85	26.77
		13	14.5						1015.5	3.00678	6.01356			+ 30.83				- 13.08	
	13 19.20		18.6	13	18.8	31	22.3	- 18	3.8	1.48896	1.11675		M	9 832		35.43		41.21	26.31
	13 19.20		23.4						1083.8	3.03495	6.06990			+ 32.89				- 14.90	
		13	39.6			32	11.3	- 18	52.8	1.51713	1.17309		R	9 815		33.77		42.53	26.26
			48.3	13	48.0				1132.8	3.05415	6.10830			+ 34.38				- 16.27	
			56.2							1.53633	1.21149								
		14	15.4																
			19.3	14	20.2														
			25.8																
		14	43.3																
			49.1	14	49.5														
			56.2																
		15	14.8																
			19.3	15	18.8														
			25.4																
		15	41.3																
	15 46.56		46.0	15	46.3														
	15 46.52		51.5					1	13	27.24								88 40	1.75
		16	5.3		7														
			10.4	16	12.8														
			22.5																
		16	38.3																
			46.0	16	45.3														
			51.7																
		17	8.7																
			13.8	17	13.6														
			18.4																
		17	37.6																
			41.3	17	42.8														
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+	55.3				1	52.0	+12 46.7	5			+12	46.5	M	48	45'60	49'	8.87	49'	16.32						
							+766.5					766.5			+23.27		+7.45					2.88451	5.76902		
					2	45.1	11 53.6	4			11	53.4	R	48	57.23		1291		20 37			1.36679	0.87231		
							+713.4	5				7134			+21.66		+ 6.46					2.85333	5.70666		
	25.1				3	56.0	+10 42.7				10	425	M	48	.5445		13.96		19.20			1.39561	0.80995		
							+642.5					642.5			+19.51		+ 5.24					2.80787	5.61574		
	55.6				21	6.9	-6 28.2	4			-6	284	R	49	2660		14.81		16.72			1.99015	0.71903		
							-3884					3884			-11.79		+ 1.91					2.38928	5.17856		
					23	9.6	8 38.9	1			8	31.1	M	49	3012		14.60		17.91			1.07156	0.28185		
							-511.1					511.1			-15.52		+ 3.31					2.70851	5.41702		
	25.8				24	4.6	9 25.9	1			9	26.1	R	49	3110		1391		17.98			1.19079	0.52031		
							-566.1					566.1			-17.19		+ 4.07					2.75289	5.50578		
	5.3				24	58.0	10 19.3	5			10	19.5	M	49	3102		19.21		17.68			1.29517	0.60907		
							-619.5					6195			-18.81		+ 4.87					2.79204	5.58408		
					25	58.0	11 20.3	5			11	20.5	R	49	3215		11.49		17.36			1.27432	0.68737		
		11	0.3				-680.5					680.5			-20.66		+ 5.87					2.83283	5.66566		
	26.8		5.0	11 58	26	58.9	12 20.2	4	(32.6)	(~~32.6~~)	12	20.H	M	49	3200		9.52		16.57			1.31511	0.76895		
			12.2	+3 26.8			-740.4					7404			-22.48		+ 6.95					2.86947	5.73894		
			21.0								13	20.9	R	49	3388		9.54		17.68			1.35175	0.84223		
	57.3		38.8	11 38.3	27	59.4	13 20.7	9				80.9			- 24.31		+ 8.14					2.90358	5.80716		
			45.1	2 57.6			-800.9		35.9	35.6	14	22.4	M	49	3483		8.67		18.10			1.38586	0.91045		
		12	3.0		29	0.9	14 22.2	4				862.4			-26.18		+ 9.43					2.93571	5.87142		
	27.7		10.0	12 9.6			-862.4																		
			15.9	2 27.4	29	55.7	15 17.0	2	37.0	37.3	15	17.2	R	49	3500		7.16		17.83			1.41799	0.97471		
							-917.2					917.2			- 27.84		+ 10.67					2.96246	5.92492		
		12	32.3								76	16.5	M	49	3575		6.10		18.19			1.44474	1.02621		
	57.9		38.0	12 38.4	30	55.0	16 16.3	5				9765			- 29.65		+ 12.09					2.98967	5.97934		
			45.0	1 57.4			-976.5		35.8	36.3	17	4.5	R	49	3865		4.55		17.87			1.47195	1.08263		
		13	1.3		31	48.0	17 4.8	5				1024.5			- 31.10		+13.32					3.01051	6.02102		
	28.7		6.7	13 6.9			-1024.5																		
			12.6	1 28.4	32	35.9	17 57.2	4	35.3	35.6	17	57.4	M	49	3565		2.94		17.67			1.49279	1.12431		
		13	34.0				-1057.4					1077.4			- 32.71		+ 14.73					3.03238	6.06476		
	59.0		38.2	13 38.9	33	21.8	18 43.3	3			18	43.3	R	49	3695		2.85		18.85			1.51466	1.16805		
			44.4	0 58.8			-1123.3		37.7	37.9	19	1123.3			- 34.10		+ 16.00					3.03044	6.10088		
		14	3.5		34	22.7	19 44.2	2			19	44.2	M	49	3620		0.25		18.04			1.53272	1.20417		
							-1184.2	3.1				1184.2			- 35.95		+ 17.79					3.07339	6.14678		
+ 0	29.5		7.9	14 8.5								1184.1													
			14.1	0 29.9	35	11.6	20 32.8	4	38.4	38.2	20	33.1	R	49	3632	48'	59.19		18.17			1.55567	1.25007		
		14	33.1				-1233.1					1223.1			- 37.13		+ 18.98					3.08747	6.17494		
- 0	0.0		37.5	14 37.4	36	4.9	21 26.2	4			21	26.4	M	49	3675		56.10		17.09			1.56975	1.27823		
			41.6	+ 0.6			-1286.4		38.0	37.4		1286.4			- 39.05		+ 20.99					3.10938	6.21876		
		14	59.0		36	57.6	-22 18.9				22	19.1	R	49	3502		54.37		17.12			1.59166	1.32205		
- 0	29.4		4.0	14 5.6			-1339.1					1339.1			40.65		+22.75					3.12681	6.25362		
			13.8	0 29.0					36.6	35.0					182.7							1.60909	1.29691		
		15	30.7												188.8										
- 0	59.0		36.7	15 37.5											198.6										
			46.0	0 59.1					38.4	38.5					161.7										
		16	2.7												731.8										
- 1	28.5		9.1	16 8.2										13	14 38.51										
			12.9	1 28.3					39.9	39.7															
		16	31.4												731.8										
- 1	58.1		37.4	16 37.4										13	14 38.51										
			43.3	1 57.7					39.7	39.3															
		17	1.4																						
- 2	27.8		8.2	17 7.7					40.2	(1 13	27.459				ex					88	40	1.25			
			13.4	3 27.5																					
		17	29.2							39.9															
- 2	57.1		38.6	17 36.9																					
			42.5	2 57.0					39.9	39.8															
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+ 3	26.8		7.9	18 6.3																					
			11.6	3 26.7					39.6	39.5															
		18	31.0																						
- 3	56.5		36.7	18 36.6																					
			42.0	3 56.9					39.7	40.1															
		18	59.5	5.0																					
- 4	26.1		5.2	19 ~~4.56~~																					
			10.2	4 26.2					38.8	38.9															
		19	31.2																						
- 4	55.5		36.7	19 37.0																					
			42.8	4 55.5					41.5	41.5															
		19	59.5																						
- 5	25.3		4.8	20 5.0																					
			10.6	5 25.5					39.5	39.7															
		20	31.6																						
- 5	54.9		36.2	20 36.5																					
			41.6	5 53.7					42.8	41.6															
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	13	7	16.5	2.2.3															
			20.8	7 256	44	40.5	+28 39.1					M	11	647	11	52.71	10'	8.21	9' 30.72
02			30.6				1719.1	3.23330	6.47060					-52.26				-37.49	
31		7	47.1		45	35.2	27 44.4	1.71818	1.57389			R	10	5370		46.68		4.72	29.58
66			52.8	7 53.1			1664.4	3.22126	6.44252					-50.48				-35.14	
25			59.3		46	39.0	26 40.6	1.70314	1.54581			M	10	5777		46.43		3.11	30.61
74		8	19.6				1600.6	3.20428	6.40856					-48.66				-32.50	
3	8 2444		23.7	8 24.4	53	26.3	19 53.3	1.68716	1.51185			R	10	2402		0.30	9'	4.14	29.68
6	8 23.76		29.8				1193.3	3.07675	6.15350					-36.28				-18.06	
5		8	49.7		55	0.6	18 19.0	1.55963	1.25679			M	10	1842	10'	51.83		15.01	29.69
02			55.2	8 54.7			1099.0	3.04100	6.08200					-33.41				-15.32	
31			58.2		0	18.9	13 0.7	1.52388	1.18529			R	9	5975		23.48		3.602	28.29
78		9	18.8				780.7	2.89248	5.78496					-23.73				- 7.73	
17			23.8	9 24.3	1	56.4	11 23.2	1.37536	0.88825			M	9	3372		15.89		34.35	28.43
8			30.3				683.2	2.83456	5.66910					-20.77				- 5.92	
7		9	48.8		2	56.2	10 23.4	1.31743	0.77239			R	9	3767		6.02		32.72	27.79
6			55.7	9 55.1			623.4	2.79477	5.58954					-18.45				- 4.93	
5			0.9		4	3.8	9 15.8	1.27765	0.69283			M	9	5042		7.31		33.53	29.62
4		10	17.7				555.5	2.74468	5.48936					-16.89				- 3.91	
3			21.9	10 22.2	4	50.0	8 29.6	1.22756	0.59265			R	9	4670		2.19		31.21	27.92
6			26.9				509.6	2.70723	5.41446					-15.48				- 3.29	
5		10	44.6		23	3.9	- 9 44.3	1.19011	0.51775			M	9	1327	8	55.51		31.03	26.70
2			49.3	10 50.3			584.3	2.76664	5.53328					+ 17.76				- 4.33	
1	10 52.26		56.9		24	16.2	-10 56.6	1.24952	0.63657			R	9	1152		51.56		31.58	26.36
2	10 52.26	11	16.3				656.6	2.81730	5.63460					+ 19.96				- 5.22	
1			21.6	11 21.8	25	22.0	- 12 2.4	1.30018	0.73789			M	9	1097		49.01		32.93	26.31
4			27.6				722.4	2.85878	5.71756					+ 21.96				- 6.62	
3		11	45.7		26	21.8	- 13 2.2	1.34166	0.82085			R	9	927		45.49		33.05	25.29
2			50.2	11 51.9			782.2	2.89332	5.78664					+ 23.78				- 7.76	
1			57.7		27	22.9	- 14 3.3	1.37620	0.88993			M	9	1027		44.63		35.91	26.89
6		12	15.0				843.3	2.92598	5.85196					+ 25.64				- 9.02	
5			19.5	12 20.5	28	3.8	- 14 44.2	1.40886	0.95525			R	9	917		42.29		36.05	26.13
7			26.9				884.2	2.94655	5.89310					+ 26.88				- 9.92	
7		12	44.0		29	9.3	- 15 49.7	1.42948	0.99639			M	9	885		39.88		37.79	26.28
8			50.3	12 50.6			949.7	2.97759	5.95518					+ 28.87				- 11.44	
7			57.5		29	58.5	- 16 39.9	1.46047	1.05847			R	9	790		37.50		38.30	25.62
4		13	15.4				999.9	2.99996	5.99992					+ 30.40				- 12.68	
3	13 20.50		21.4	13 22.1	31	0.3	- 17 40.7	1.48284	1.10321			M	9	790		35.65		40.15	25.88
6	13 20.50		29.5				1060.7	3.02559	6.05118					+ 32.25				- 14.27	
5		13	46.8		31	53.5	- 18 33.9	1.50847	1.15447			R.	9	790		34.04		41.76	26.02
9			51.4	13 51.6			1113.9	3.04685	6.09370					+ 33.86				- 15.74	
2			56.6					1.52973	1.19699										
1		14	11.8																
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	15 46.68		45.3	15 46.0															
	15 46.68		52.5				1 13 27.59											88 40	1.01
		16	10.2																
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	+	17	20.5	57	22.9	17	16.4				M	48	4′ 4″				
			10403					3.01725	603450								
		16	21.7	58	21.7	16	17.6	1.49953	1.13774		R	48	3707	48′ 49″27	49′	19″07	
			981.7					2.99198	598396				+12.20	+29.80			
		15	15.7	59	27.7	15	11.6	2.97426	1.08625		M	48	4062	5126		19.06	
			915.7					2.96175	592350				+10.64	+27.80			
		14	13.3	0	30.1	14	9.2	1.44403	1.02679		R	48	4267	5191		17.81	
			8553					2.93110	586220				+9.24	+25.90			
		12	38.6	2	4.8	12	34.5	1.41338	0.96549		M	48	4895	5625		19.28	
			7586					2.88001	576002				+7.30	+23.03			
		11	47.2	2	55.2	11	44.1	1.36228	0.86331		R	48	5063	5699		18.96	
			7072					2.84957	569908				+6.34	+21.47			
		10	46.4	3	57.0	10	42.3	1.33182	0.80237		M	48	5325	5855		18.17	
			6464					2.81030	562100				+5.30	+19.62			
	+	9	4.64	4	53.0	9	46.3	1.29278	0.72429		R	48	5645	49′ 0.72		18.14	
			5804					2.76373	552746				+4.27	+17.62			
	−	9	18.9	24	2.3	9	23.0	1.24601	0.63075		M	49	2245	3341		16.44	
			5589					2.74733	549466				+3.96	−16.97			
		10	50.3	25	33.7	10	54.4	1.22967	0.59795		R	49	3130	3686		17.12	
			6503					2.81311	562622				+5.36	−19.74			
		12	16.9	27	0.3	12	21.0	1.29539	0.72951		M	49	3310	3999		17.62	
			7369					2.86741	573482				+6.84	−22.37			
		13	35.1	28	18.5	13	39.2	1.34969	0.83811		R	49	3370	4213		17.39	
			8151					2.91121	582242				+8.43	−24.74			
		15	12.9	29	56.3	15	17.0	1.39349	0.92571		M	49	3420	4477		17.06	
			9129					2.96042	592084				+10.57	−27.71			
		16	27.1	31	10.5	16	31.2	1.44270	1.02413		R	49	3430	4766		17.69	
			9871					2.99436	598872				+12.36	−29.97			
		17	29.2	32	12.6	17	33.3	1.47664	1.09201		M	49	3485	4881		16.96	
			10492					3.02087	6.04174				+13.96	−31.85			
		18	38.6	33	17.0	18	37.7	1.50315	1.14563		R	49	3540	5113		17.33	
			11386					3.04669	6.09338				+15.73	−33.80			
		20	00.5	34	43.9	20	4.6	1.52897	1.19667		M	49	3505	5333		17.71	
			12005					3.07936	6.15872				+18.28	−35.62			
	−	21	25.4	36	8.8	21	29.5	1.55164	1.26201		R	49	3487	5584		16.81	
			12854					3.10917	6.21834				+20.97	−39.03			
								1.59145	1.32163								

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16 33.0
38.7 15 38.7
44.5 −0 59.1
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14 39.6 39.7 47.8 44.7 43.6 45.5

15 38.7 −0.59.0 1439.7

16 1.8
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2) 787 786
14 39.35 39.30

13 14 43.36 260.2

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Q−1 88 40 0.64

14 (35.0) 8 42.1 23 37.1 −8 57.8 −5 42.1 14 55.0

14 47.8 10 20.8 25 8.6 10 29.3 −10 20.8 14 47.8

14 45.7 11 49.7 26 34.4 11 55.1 −11 49.7 14 49.7

14 43.6 13 18.3 28 1.9 13 27.6 −13 18.3 14 43.6

14 45.9 14 47.3 29 33.2 14 53.8 −14 47.7 14 45.5

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13	17	13.5																		
		18.9	7 18.7	44	1.9	+29	11.6			M	10	5995	11	33	15	10	6.75	9	27.82	48	38.26	14.99
		23.6					1751.6	3.24343	6.48686			−53.20					−38.93				+36.73	
	7	42.4		44	49.0	28	24.5	1.72589	1.59033	R	10	5682		48	59		5.05		28.18		39.57	14.74
		47.0	7 47.9				17045	3.23160	6.46320			−51.77					−36.87				+35.17	
		54.2		45	59.9	27	13.6	1.71406	1.56667	M	10	5735		40	96		31.74		27.87		42.54	15.97
	8	12.5					1633.6	3.21315	6.42630			−49.61					−33.87				+33.43	
8 1808		17.5	8 18.1	46	51.3	26	22.2	1.69561	1.52977	R	10	4765		33	70	9	59.60		27.09		43.79	16.17
8 18.08		24.2					1552.2	3.19726	6.39852			−48.05					−32.51				+32.38	
	8	41.6		0	22.0	12	51.5	1.68172	1.50199	M	9	5672	10	20	15		33.29		25.74		46.27	16.14
		48.3	8 48.3				771.5	2.88734	5.77468			−23.43					−7.55				+29.87	
		54.9		1	40.9	11	32.6	1.36980	0.87815	R	9	5284		13	90		31.84		25.75		48.15	16.63
	9	12.8					692.6	2.84048	5.68096			−21.03					−6.09				+27.88	
		17.2	9 17.4	2	48.5	10	24.0	1.32294	0.78443	M	9	5060		10	44		30.76		25.82		30.31	16.67
		22.2					624.0	2.79518	5.59036			−19.84					−4.94				+26.36	
	9	40.9		3	39.7	9	33.8	1.27764	0.69383	R	9	4797		4	61		31.33		28.69		55.24	16.25
		45.1	9 45.6				573.8	2.75876	5.51752			−16.64					−2.64				+21.01	
		50.8		4	53.2	8	20.3	1.24122	0.42099	M	9	4447	9	58	66		29.28		26.10	49	4.64	16.64
	10	8.6					500.3	2.69923	5.39846			−15.19					−3.18				+11.50	
		14.8	10 15.1	5	45.6	+7	27.9	1.18169	0.50193	R	9	4292		56	52		29.32		26.77		11.07	17.37
		21.0					447.9	2.65118	5.30236			−13.60					−2.53				+6.30	
	10	40.3		22	56.9	−9	43.4	1.13364	0.40583	M	9	1122	8	53	50		28.94		24.68		12.55	17.07
10 44.94		45.1	10 45.1				583.4	2.76697	5.53194			+17.72					−4.31				+4.52	
10 44.94		49.2		24	3.0	−10	49.5	1.24848	0.63441	R	9	1015		50	42		27.88		22.53		12.17	11.04
	11	9.9					649.5	2.81268	5.62516			+19.73					−5.36				−1.16	
		14.0	11 14.9	25	13.9	−12	0.1	1.29504	0.72863	M	9	955		47	67		31.43		24.87		18.21	15.04
		20.8					720.4	2.85757	5.71514			+21.88					−6.56				−3.20	
	11	38.0		26	14.7	+13	1.2	1.34003	0.81861	R	9	890		45	17		32.63		24.89		27.97	21.19
		43.3	11 43.0				781.2	2.89276	5.78552			+23.73					−7.74				−6.78	
		50.6		27	36.5	−14	23.0	1.37522	0.88899	M	9	652		40	31		32.73		23.28		27.07	10.80
	12	9.4					863.0	2.93601	5.87202			+26.21					−9.45				−16.77	
		13.9	12 14.4	28	32.6	−15	19.1	1.41847	0.97549	R	9	720		39	29		35.11		24.39		35.60	16.02
		20.0					919.1	2.96336	5.92672			+27.91					−10.72				−19.58	
	12	38.3		29	40.0	−16	26.5	1.44582	1.03029	M	9	757		37	61		37.53		25.18		51.59	12.59
		42.4	12 43.4				986.5	2.97410	5.98820			+29.96					−12.35				−34.00	
		48.4		30	38.3	−17	25.8	1.47656	1.09167	R	9	697		35	21		38.73		24.85		2.01	19.51
	13	3.0					1058.8	3.01945	6.03890			+31.76					−13.88				−42.50	
13 12.70		12.0	13 13.3	31	48.7	−18	30.2	1.50191	1.14237	M	9	627		32	55		39.99		24.35		3.37	18.78
13 12.70		20.6					1110.2	3.04540	6.09080			+33.72					−15.64				−44.59	−18.78
	13	37.3		32	37.4	−19	23.9	1.52786	1.19427	R	9	637		31	01		41.73		24.54			
		40.6	13 40.9				1163.9	3.06592	6.13184			+35.36					−17.19					
		44.7						1.54848	1.23531													
	14	6.6																		
		11.0	14 11.5																	
		17.0																		
	14	37.3																		
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15 41.52		40.0	15 40.7																	
15 41.52		47.6				1	13	28.56									88	39	59.43	
	16	6.2																		
		12.4	16 12.1																	
		17.6																		
	16	34.0																		
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		38.4	17 39.9																	
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18 10.18			18 10.0																	
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13	17	13.3															
		16.9	7 17.5	43	58.0	+29 12.8											
		22.4				1752.8	3.24373	6.48746									
	7	39.1		44	47.3	28 23.5	1.72629	1.59093	R	10	5627	4701		4.53		27.70	
		43.7	7 ~~55.0~~			1703.5	3.23134	6.46268			−51.74			−36.83			
		52.1	45.0	45	47.2	27 23.6	1.71380	1.56615	M	10	5205	4197		2.13		27.83	
	8	9.0				1643.6	3.21680	6.43160			−49.92			−34.28			
8 1584		14.6	8 15.0	46	32.4	26 38.4	1.69826	1.53507	R	10	4870	3723		.15		27.73	
~~8 15.90~~		21.5				1598.4	3.20369	6.40738			−48.55			−32.42			
	8	42.2		47	41.4	25 29.4	1.68615	1.51085	M	10	4417	30.62	9′	57.72		28.04	
		47.7	847.3			1529.4	3.18452	6.36904			−46.45			−29.68			
		51.9		53	13.1	19 57.7	1.66698	1.47251	R	10	2235	10′ 58.73		45.97		27.77	
	9	4.2				1197.7	3.07835	6.15670			−36.38			−18.20			
		14.1	9 14.4	54	36.2	18 34.6	1.56081	1.26017	M	10	1670	50.85		42.85		27.08	
		30.0				1114.6	3.04712	6.09424			−33.85			−15.77			
	9	40.0		59	46.8	13 24.0	1.52958	1.19771	R	9	5935	20.78		34.92		26.72	
		45.8	9 45.5			804.0	2.90526	5.81052			−24.43			−8.20			
		50.6		1	21.7	11 49.1	1.38772	0.91399	M	9	5377	14.82		32.72		26.34	
	10	8.9				709.1	2.85071	5.70142			−21.05			−6.38			
		15.4	10 15.0	2	16.6	10 54.2	1.33317	0.80489	R	9	5732	11.19		31.45		26.02	
		20.7				654.2	2.81571	5.63142			−19.87			−5.43			
	10	38.6		3	22.9	9 47.9	1.29817	0.73489	M	9	4924	6.12		31.42		27.03	
10 43.74		44.1	10 44.2			587.9	2.76930	5.53860			−17.85			−4.39			
10 43.74		49.8		4	13.4	8 57.4	1.25776	0.64207	R	9	4605	2.87		27.73		26.07	
	11	6.5				537.4	2.73030	5.46060			−16.32			−3.66			
		11.8	11 12.8	5	24.9	7 45.9	1.21276	0.56407	M	9	4405	9′ 58.20		29.90		27.15	
		20.1				465.9	2.66829	5.33658			−14.15			−2.75			
	11	35.8		6	5.0	+7 5.8	1.15075	0.44005	R	9	4102	53.85		28.09		25.79	
		41.0	11 41.2			425.8	2.62921	5.25842			−12.83			−2.30			
		46.7		22	18.8	−9 38.0	1.11167	0.36189	M	9	1292	8′ 55.36		30.48		26.24	
	12	5.4				578.0	2.76193	5.52386			+17.56			−4.24			
		11.6	12 11.4	23	46.1	−10 35.3	1.24439	0.62733	R	9	995	50.96		29.24		24.12	
		17.3				635.3	2.80298	3.60596			+19.24			−5.12			
	12	39.2		24	54.7	−11 43.9	1.28544	0.70943	M	9	877	47.39		30.15		23.85	
		43.5	12 43.1			703.9	2.84751	5.69502			+21.38			−6.30			
		46.7		25	43.8	−12 33.0	1.32997	0.79849	R	9	907	46.20		31.94		24.75	
	13	8.6				768.9	2.87679	5.75358			+22.87			−7.19			
~~13 11.52~~		13.4	13 13.1	26	55.7	−13 44.9	1.35925	0.85705	M	9	840	48.36		33.45		24.82	
13 11.48		17.2				824.9	2.91640	5.83280			+25.05			−8.63			
	13	34.2	3	27	43.0	−14 32.2	1.39886	0.93627	R	9	725	42.76		35.74		26.09	
		39.1	13 40.5			872.2	2.94062	5.88124			+26.49			−9.65			
		42.7					1.42308	0.98471									
	14	3.6															
		9.4	14 9.5														
		15.5															
	14	32.3															
		37.0	14 37.1														
		42.0															
	15	3.7															
		7.3	15 8.3														
		13.7															
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15 37.48		37.8	15 37.7														
15 37.48		42.8				1 13 28.64								88 39 59.14			
	15	59.4															
		6.9	16 7.0														
		14.6															
	16	30.8															
		37.2	16 37.3														
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		5.9	17 5.6														
		10.3															
	17	30.3															
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	13																				
				~~8 49.0~~		52	43.2	+ 22	3.4						M	48	1897	48	59.16	49	21.39
									1323.4	3.12169	6.24338						+40.19		+22.23		
		8	44.3			53	48.7	20	56.9	1.60415	1.34685				R	48	2347	49	1.64		21.69
			49.2	8	49.2				1256.9	3.09930	6.19860						+38.17		+20.05		
			54.0			54	52.2	19	54.4	1.58176	1.30207				M	48	27.45		3.72		21.82
		9	14.1						1194.4	3.07715	6.15430						+36.27		+18.10		
			18.0	9	18.2	55	48.4	18	58.2	1.55961	1.25777				R	48	3067		5.24		21.68
			22.5						1138.2	3.05622	6.11244						+34.57		+16.44		
		9	44.3			56	42.7	18	3.9	1.53868	1.21591				M	48	3347		6.39		20.96
	9	50.12	49.8	9	50.1				1083.9	3.03499	6.06998						+32.92		+14.57		
	9	50.12	56.0			57	31.0	17	15.6	1.51745	1.17345				R	48	3570		7.15		20.76
		10	16.2						1033	56 3.01519	6.03038						+31.45		+13.61		
			20.7	10	20.8	58	23.7	16	22.9	1.49765	1.13385				M	48	3920		9.05		21.31
	59	53.2	35.6						982.9	2.99251	5.98502						+29.85		+12.26		
		59.0	10	46.0		59	23.7	15	22.9	1.47497	1.08849				R	48	4210		9.52		19.86
		3.8	52.6		10 52.3				932.9	2.95564	5.91128						+27.42		+10.34		
			58.4			1	11.5	13	35.1	9229	1.61475				M	48	4753		12.31		20.98
	1	22.4	14.8						815.1	2.91721	5.83442						+24.76		+ 8.67		
		27.6	18.9	11	19.7	3	11.9	11	34.7	1.39367	0.93789				R	48	5342		14.52		20.64
		32.0	24.3						694.7	2.84180	5.68360						+21.10		+ 6.12		
			42.0	11		6	53.8	7	52.8	1.32426	0.78707				M	49	427		18.63		21.53
	2	52.0	48.5		11 48.6				472.8	2.67468	5.34936						+14.36		+ 2.90		
		57.5	56.0			21	2.4	6	15.8	1.15714	0.45283				M	49	2980		18.39		20.18
		2.0	12	11.0					375.8	2.57496	5.14992						— 11.41		+ 1.79		
	12	18.44	18.2		12 17.6	21	57.8	7	11.2	1.05742	0.25349				M	49	3020		17.10		19.46
	4	21.8	23.6						431.2	2.63468	5.26936						— 13.10		+ 2.36		
		26.6	12	41.7		22	43.0	7	56.4	1.11714	0.37283				M	49	3187		17.41		20.29
		30.0	47.5		12 47.8				476.4	2.67797	5.35594						— 14.46		+ 2.88		
			54.2			24	21.7	9	35.1	1.16043	0.45942				M	49	3290		15.43		19.63
	5	47.7	13	13.2					575.1	2.75974	5.51948						— 17.47		+ 4.20		
		52.0		18.9	13 18.6	25	28.6	10	42.0	1.44220	0.62295				M	49	3397		14.47		19.70
		57.4		23.7			31.0	10	44.4	2.80753	5.61506						— 19.50		+ 5.23		
						26	46.0	11	37.1	1.28999	0.71853				M	49	3380		11.95		17.29
	12	18.44							719.4	2.85697	5.61832						— 21.85		+ 5.27		
					13 41.0	28	12.8	13	26.2	1.33943	0.72179				M	49	3612		11.64		18.21
									806.2	2.90644	5.71394						— 24.48		+ 6.57		
					14 17.0	29	51.7	15	5.1	1.38880	0.81741				M	49	3723		9.76		18.61
									905.1	2.95670	5.81288						— 27.49		+ 8.25		
		14	44.0			32	37.8	17	51.2	1.43916	0.91635				M	49	3730		4.77		15.17
	14	47.14	49.0		14 48.7				1071.2	3.02987	5.91340						— 32.53		+ 10.48		
	14	47.14	53.2							1.51233	1.01687										
			15	10.5							6.05974										
			16.6		15 16.4						1.16321										
			22.2																		
		15	39.7																		
			47.0		15 45.6																
			50.2																		
	23	39.5	16	11.6		1	13	28.70												88 39	5~~2~~9.9
			17.1		16 16.7																
			21.4																		
		16	36.7																		
	25	1.5	45.7		16 44.5																
		5.6	57.0																		
		11.2	17	8.5																	
	17	14.98	13.6		17 12.0				a+1						a−1						
	26	30.4	19.8			89	58.7	+14	47.9	+14	46.8	23	39.5	−8	52.9	−8	51.9	14	47.6		
		35.9	17	38.7							14 45.5										
		40.4	44.2		17 43.9	1	27.3	+13	19.3	+13	17.6	25	6.1	−10	19.5	−10	20.5		45.6		
	17	14.98	48.7								14 44.9										
	27	56.0	18	10.6		2	57.2	+11	49.4	+11	49.7	26	35.6	−11	49.0	−11	49.4		46.2		
		1.0	15.0		18 15.8						14 46.4										
		7.4	21.7			4	26.1	+10	20.5	+10	20.9	28	1.5	−13	14.9	−13	18.0		43.5		
			18	37.3							14 47.0										
						5	53.4	+8	53.2	+8	51.9	29	33.0	−14	46.4	−14	47.3		45.7		
	29	28.0	44.1		18 43.2						14 45.3										
		33.3	48.3																		
		37.8	19	5.7							229.6								228.6		
			11.4		19 11.5						45.92								45.72		
			17.5																		
			19	35.0							9164										
	19	42.16	41.1		19 41.8						45.82										
	~~19~~	~~42.08~~	48.2																		
			20	7.8																	
			13.3		20 12.8																
	14	46.57	17.3																		
			20	36.0																	
			42.3		20 41.5																
			46.3																		

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13	8	18.1																	
		21.8	8 22.7	45	28.8	+28 48.5				M	10	54.78	11	47.20	10	2.26	9	24.33	
		28.3	–			1728.5	3.23767	6.47534				-52.52				-37.93			
	8	46.6		46	50.0	27 27.3	1.72031	1.57899		R	10	52.57		42.62		2.52		28.07	
		51.9	8 52.1			1647.3	3.21677	6.43354				-50.05				-34.45			
		57.9	–	48	1.2	26 16.1	1.69941	1.53719		M	10	46.78		34.67	9	58.89		27.35	
	9	14.7				1576.1	3.19758	6.39516				-47.84				-31.54			
9 21.88		21.7	9 21.4	34	11.6	19 35.7	1.68022	1.49881		R	10	20.60	10	56.22		54.78		27.23	
9 21.88		27.8	–			1175.7	3.07030	6.14060				-35.72				-17.55			
	9	45.9		1	0.8	13 16.5	1.55294	1.24425		M	9	58.20		22.40		34.00		25.95	
		50.3	9 54.4			796.5	2.90119	5.80238				-24.20				-8.05			
		55.0	–	2	13.8	12 3.5	1.38383	0.10603		R	9	53.15		14.83		31.47		24.86	
	10	14.0				713.5	2.85339	5.70678				-23.68				-6.61			
		19.7	10 18.8	3	23.7	10 51.6	1.33603	0.10043		M	9	49.70		9.96		29.44		24.05	
		25.7	–			651.6	2.81398	5.62796				-20.26				-5.39			
	10	43.4		4	23.6	9 53.7	1.30662	0.13161		R	9	46.50		6.76		28.04		23.57	
		48.2	10 49.2			593.7	2.77357	5.54714				-18.46				-4.47			
		56.0	–	5	39.4	+ 8 37.9	1.26621	0.65079		M	9	44.88		.62		29.14		25.74	
	11	10.8				557.9	2.71425	5.42850				-15.74				-3.40			
		16.8	11 17.5	6	27.3	+ 7 50.0	1.19689	0.53215		R	9	44.22	9	58.83		29.61		26.81	
		24.8	–			478.0	2.67210	5.34420				-14.61				-2.80			
	11	42.5		23	30.7	- 9 33.4	1.15474	0.44785		M	9	10.26	8	52.83		27.67		23.50	
11 48.42		47.8	11 47.7			573.4	2.75846	5.51692				+17.42				-4.17			
11 48.42		52.7	–	24	49.4	-10 32.1	1.24118	0.62057		R	9	9.28		50.07		28.49		23.42	
	12	13.4				632.1	2.80079	5.60158				+19.21				-5.07			
		18.4	12 18.3	26	4.0	-11 46.7	1.28343	0.70523		M	9	8.02		46.35		29.49		23.15	
		23.0	–			706.7	2.84924	5.69848				+21.47				-6.34			
	12	43.2		26	54.2	-12 36.9	1.33188	0.80213		R	9	7.12		44.72		30.72		22.85	
		49.8	12 49.4			756.9	2.87904	5.75808				+23.00				-7.27			
		55.2	–	28	3.8	-13 46.5	1.36168	0.86173		M	9	6.62		41.51		31.73		23.06	
	13	14.5				826.5	2.91724	5.83448				+25.11				-8.67			
		18.9	13 19.6	28	48.4	-14 31.1	1.39988	0.93813		R									
		23.3	–			871.1	2.94007	5.88014											
	13	41.6		29	58.8	-15 42.5	1.42278	0.98379		M	9	6.00		37.36		34.64		23.36	
		46.8	13 46.9			942.5	2.97428	5.94856				+28.64				-11.28			
		52.3	–	31	11.8	-16 54.5	1.45692	1.05221		R	9	4.50		33.68		35.32		22.25	
	14	12.0				1014.5	3.00625	6.01250				+30.82				-13.07			
14 17.38		18.5	14 18.0	32	7.4	-17 50.1	1.48889	1.11615		M	9	5.20		32.69		37.71		23.17	
14 17.48		23.6	–			1070.1	3.02942	6.05884				+32.51				-14.54			
	14	38.7		33	11.6	-18 54.3	1.51206	1.16249		R	9	4.70		30.24		39.16		22.83	
		44.7	14 45.4			1134.3	3.05473	6.10946				+34.46				-16.33			
		52.9	–	34	1.4	-19 44.1	1.53737	1.21311											
	15	10.3	3			1184.1	3.07339	6.14678											
		16.4	15 17.9				1.56603m	1.25043											
		25.3	–																
	15	39.4																	
		46.7	15 46.3																
		52.9	–																
	16	8.0																	
		10.9	16 13.3																
		21.0	–																
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16 44.60		44.8	16 45.3																
16 44.60		51.1	–			1 13	29.63									88	39	57.50	
	17	7.6																	
		14.7	17 13.8																
		19.0	–																
	17	37.9																	
		44.1	17 44.3																
		50.9	–																
	18	8.4																	
		13.4	18 13.8																
		19.6	–																
	18	39.6																	
		43.5	18 44.3																
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19 14.02		—	19 14.0																
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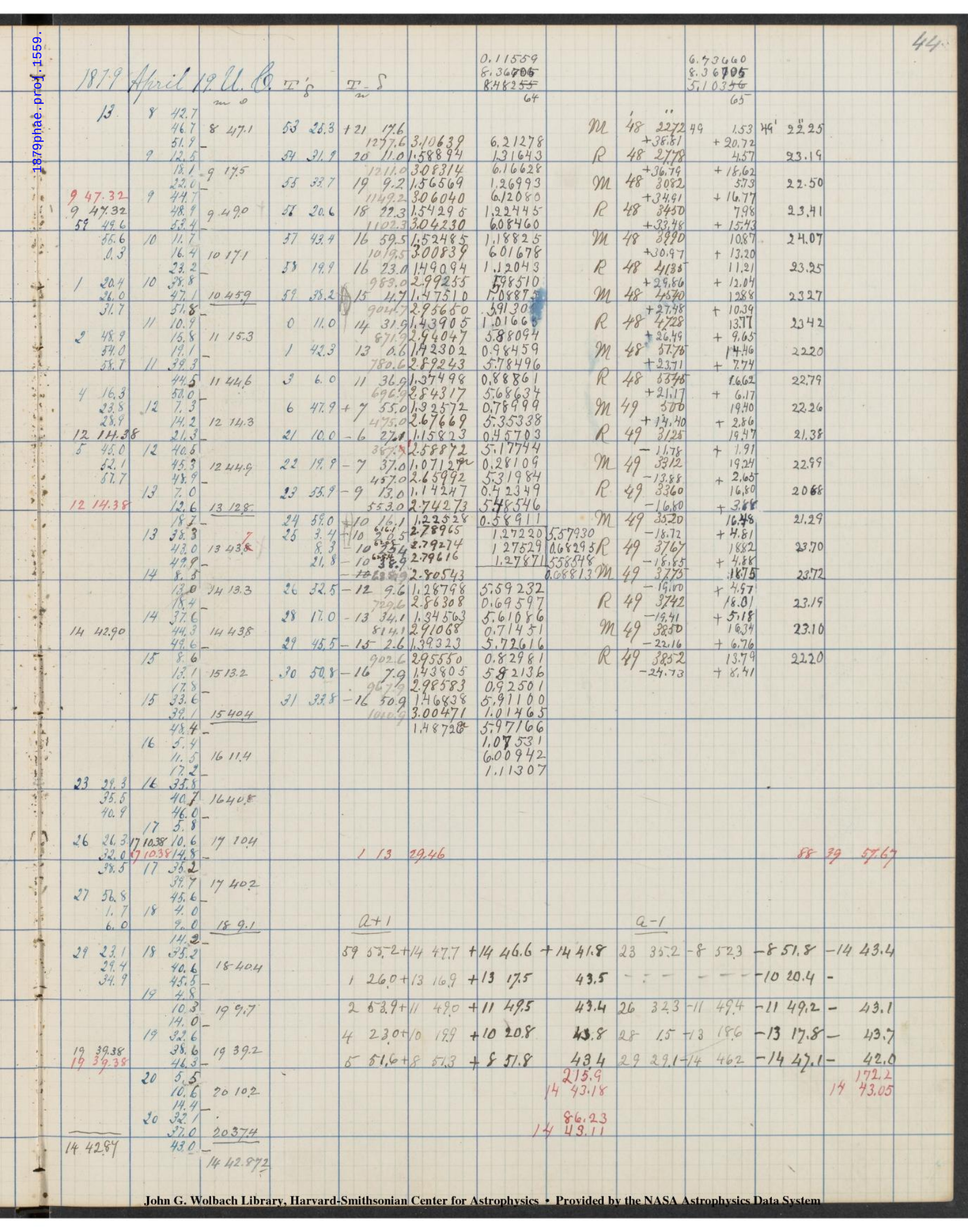

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										0.11559					6.73660				
										8.36705m					8.36705m				
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13	7	14.0																	
		18.4	7 19.3	44	11.0	+29	5.2				M	1	0 57.15	11	50.17	10	4.13	9	
		23.4				1745.2		2.24185		6.48370			+53.02				−38.67		25.46
	7	44.5		45	7.8	28	8.4	1.72449		1.58735	R	1	0 53.90		45.20		2.60		26.41
		48.3	7 49.1			1686.4		3.22748		6.45496			+51.30				−36.19		
		54.5		46	35.9	26	40.3	1.71012		1.55861	M	1	0 48.32		36.95	9	5.69		27.18
	8	13.8				1600.3		3.20420		6.40840			−48.63				−32.51		
8 20.10		20.6	8 20.3	47	38.6	25	37.6	1.68684		1.51205	R	1	0 42.95		39.67		36.23		26.22
8 20.10		26.4				1587.6		3.18684		6.37368			−46.72				−30.01		
	8	45.2		0	15.6	13	0.6	1.66948		1.47733	M	9	5630	10'	20.02		32.58		24.84
		50.0	8 50.6			780.6		2.89243		5.78586			−23.72				−17.74		
		56.6		1	32.8	11	43.4	1.37507		0.88851	R	9	5125		12.47		30.03		23.75
	9	14.7				703.4		2.84720		5.69440			+21.32				−6.28		
		20.4	9 21.2	2	58.2	10	18.0	1.32984		0.79805	M	9	4850		7.27		29.73		24.89
		28.4				618.0		2.79099		5.58198			+18.77				−4.84		
	9	45.4		3	58.0	9	18.2	1.27363		0.68463	R	9	4592		2.88		28.96		25.09
		50.3	9 51.2			556.2		2.74679		5.49358			+16.96				−3.87		
		58.0		5	14.0	8	2.2	1.22943		0.59723	M	9	4217	9'	56.82		27.52		24.57
	10	14.6				482.2		2.68323		5.36646			+14.65				−2.95		
		20.2	10 20.4	6	1.0	+7	15.2	1.16587		0.47011	R	9	3995		53.47		26.73		24.33
		26.3				435.2		2.63869		5.27738			+13.22				−2.40		
	10	45.0		23	23.2	−10	7.0	1.12133		0.38103	M	9	278	8	51.34		28.22		23.54
10 50.18		50.0	10 50.2			607.0		2.78319		5.56638			+18.44				−4.68		
10 50.18		55.7		24	26.8	−11	20.6	1.26583m		0.67003	R	9	862		47.94		29.30		23.42
	11	15.6				680.6		2.83289		5.66578			+20.68				−5.88		
		21.3	11 20.7	25	47.4	−12	31.2	1.31553		0.76943	M	9	750		44.68		30.32		23.16
		25.1				751.2		2.87576		5.75152			+22.82				−7.16		
	11	42.4		26	44.2	−13	28.0	1.35840		0.85517	R	9	717		42.62		31.72		23.43
		48.6	11 48.4			808.0		2.90741		5.81482			+24.55				−8.24		
		54.1		28	0.7	−14	14.3	1.39005		0.91847	M	9	632		38.22		34.42		23.57
	12	12.9				944.6		2.96591		5.93182			+28.10				−10.85		
		17.5	12 18.3	29	3.1	−15	46.9	884.5		1.44865	1.03547 R	9	532		36.55		34.09		22.71
		24.6				946.9		2.97630		5.95260			+28.77				−11.38		
	12	42.0		30	5.5	−16	49.3	1.45894		1.05625	M	9	527		34.61		34.04		21.40
		46.8	12 47.1			1099.3		3.00402		6.00804			+30.66				−12.64		
		52.4		31	2.9	−17	46.7	1.48666		1.11169	R	9	440		31.99		35.06		20.61
	13	8.6				1066.7		3.02804		6.05608			+32.41				−14.45		
13 16.16		13.6	13 14.3	32	10.5	−18	54.3	1.51068		1.15973	M	9	462		30.16		39.08		22.74
13 16.16		20.8				1134.3		3.05473		6.10946			+34.46				−16.34		
	13	40.8		33	5.5	−19	49.3	1.53707		1.21311	R	9	378		27.15		39.91		21.95
		45.4	13 46.2			1189.3		3.07529		6.15058			+36.13				−17.96		
		52.4						1.55798m		1.25423									
	14	9.0																	
		14.6	14 14.9																
		21.0																	
	14	38.7																	
		44.0	14 43.9																
		49.0																	
	15	6.0																	
		11.9	15 12.6																
		19.9																	
	15	35.8																	
15 43.14		43.0	15 42.4																
15 43.14		48.4				1	13	29.98									88	39	57.17
	16	6.9																	
		10.7	16 12.5																
		19.8																	
	16	38.3																	
		44.5	16 44.3																
		50.0																	
	17	5.0																	
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18 11.60			18 11.0																
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13 16.24			13 16.236																

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	m	s														
13	8	45.0														
		50.8	8	50.5	53	30.3	+21	15.6								
		56.8						1275.6	3.10571	6.21142						
	9	15.5			54	27.0	20	18.9	1.58835	1.31507						
		19.5	9	20.7				1218.9	3.08597	6.17194						
		27.0			55	36.9	19	9.0	1.56761	1.27559						
	9	45.4						1149.0	3.06032	6.12064						
9 49.90		50.9	9	50.3	56	26.0	18	19.9	1.54296	1.22429						
9 49.90		54.7						1099.9	3.04135	6.08270						
	10	15.1			57	23.8	17	22.1	1.52399	1.18635						
		19.4	10	19.5				1042.1	3.01791	6.03582						
		24.1			58	13.6	16	32.3	1.50055	1.13947						
	10	43.8						992.3	2.99664	5.99328						
		47.8	10	48.5	59	11.1	15	34.8	1.47928	1.09693						
		54.0						934.8	2.97072	5.94144						
	11	14.0			0	6.6	14	39.3	1.45346	1.04509						
		18.6	11	19.3				879.3	2.94414	5.88828						
		25.3			1	5.1	13	40.8	1.42678	0.99183						
	11	45.3						820.8	2.91424	5.82848						
		49.4	11	49.6	1	55.8	+12	50.1	1.39688	0.92213						
		54.1						770.1	2.88655	5.77210						
	12	14.5			21	1.4	−6	15.5	1.36929	0.87575						
12 18.42		18.9	12	19.3				375.5	2.57461	5.14922						
12 18.42		24.5			22	1.4	−7	15.5	1.05775	0.25287						
	12	39.4						435.5	2.63899	5.27798						
		48.1	12	46.6	22	59.0	−8	13.1	1.12163	0.38063						
		52.2						493.1	2.69293	5.38586						
	13	11.7			23	49.4	−9	3.5	1.17557	0.48951						
		18.1	13	17.3				543.5	2.73520	5.47040						
		22.0			24	45.0	−9	59.1	1.21784	0.57405						
	13	41.5						599.1	2.77750	5.55500						
		47.0	13	47.4	25	38.2	−10	52.3	1.26014	0.65865						
		53.7						652.3	2.81445	5.62890						
	14	11.4			27	0.2	−12	14.3	1.29709	0.73255						
		16.2	14	16.3				734.3	2.86587	5.73174						
		21.4			27	41.5	−12	55.6	1.34851	0.83539						
	14	39.2		44.9				775.6	2.88964	5.77928						
14 45.68		45.5	14	45.3	28	49.1	−14	3.2	1.37228	0.88293						
14 45.60		50.1						843.2	2.92593	5.85186						
	15	8.2			29	45.7	−14	58.8	1.40857	0.95561						
		14.7	15	14.5				898.8	2.95221	5.90442						
		20.6						9	1.43488	1.00807						
	15	39.6														
		45.3	15	44.9												
		49.8														
	16	9.6														
		15.0	16	14.7												
		19.6														
	16	38.6														
		44.4	16	44.3												
		50.0														
	17	9.4														
17 13.50		13.2	17	13.7												
17 13.50		18.4						1	13	29.80						
	17	39.4														
		44.4	17	44.2												
		48.8														
	18	5.9														
		10.2	18	10.6												
		15.8														
	18	37.2														
		43.3	18	42.6												
		47.3														
	19	6.8														
		13.0	19	12.2												
		17.8														
	19	35.0		41.2												
19 42.18		40.3	19	40.9												
19 42.24		48.2														
	20	7.7														
		13.7	20	13.5												
		19.1														
	20	38.0														
		41.3	20	41.7												
14 45.94		45.8														
			14	45.936												

0.11559
8.36705
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M	48	24′35″	49′	3.11	49	23.77										
		+38.76		+20.66												
R	48	2845		5.40		24.26										
		+36.95		+18.86												
M	48	3240		7.31		24.07										
		+34.91		+16.76												
R	48	3490		8.32		23.68										
		+33.42		+15.36												
M	48	3887		10.53		24.32										
		+31.66		+13.79												
R	48	4107		11.22		23.72										
		+30.15		+12.50												
M	48	4325		12.66		23.73										
		+28.41		+11.07												
R	48	4782		14.54		24.35										
		+26.72		+9.81												
M	48	4995		14.99		23.35										
		+24.94		+8.36												
R	48	5240		15.80		23.31										
		+23.40		+7.51												
M	49	3057		19.16		20.95										
		−17.41		+1.79												
R	49	3317		19.94		22.34										
		−13.23		+2.40												
M	49	3390		18.92		22.01										
		−14.98		+3.09												
R	49	3490		18.39		22.14										
		−16.51		+3.75												
M	49	3587		17.67		22.23										
		−18.20		+4.56												
R	49	3627		16.45		21.85										
		−19.82		+5.40												
M	49	3730		14.99		21.84										
		−22.31		+6.85												
R	49	3835		14.78		22.42										
		−23.57		+7.64												
M	49	3845		12.83		21.86										
		−25.62		+9.03												
R	49	3905		11.73												
		−27.22		+10.19		21.92										

88 39 57.33

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13	7	11.5															
		15.6	7 16.3	44	8.0	+29 3.9				M	10	5782	10	4.82	9	26.20	
		21.8				1743.9	3.24152	6.48304				−53.80		−38.62			
	7	40.8		45	3.5	28 8.4	1.72425	1.58678		R	10	8420		2 89		26.69	
		45.6	7 46.6			1688.4	3.22748	6.45496				−51.31		−36.20			
		53.4		46	3.2	27 8.7	1.71021	1.55870		M	10	4907	9	59.57		25.89	
	8	11.8				1628.7	3.21184	6.42368				−49.50		−33.68			
8 17.06		16.4	8 17.2	46	53.9	26 18.0	1.69457	1.52742		R	10	4572		57.76		26.14	
8 17.06		23.3				1578.0	3.19811	6.39622				−47.96		−31.62			
	8	41.5		48	1.6	25 10.3	1.68084	1.49996		M	10	4047		5457		25.61	
		47.2	8 47.6			1510.3	3.17906	6.35812				−45.90		−28.96			
		54.0		49	4.8	24 7.1	1.66179	1.46186		R	10	3698		52.97		26.38	
	9	11.8				1447.1	3.16050	6.32100				−43.98		−26.59			
		17.8	9 17.6	50	14.8	22 57.1	1.64323	1.42474		M	10	3157		49.72		25.64	
		23.1				1377.1	3.13897	6.27794				−41.85		−24.08			
	9	37.0		51	13.0	21 58.9	1.62170	1.38168		R	10	2786		47.77		25.68	
		42.7	9 43.3			1318.9	3.12021	6.24042				−40.08		−22.07			
		50.3		52	21.7	20 50.2	1.60294	1.34416		M	10	2347		45.63		25.78	
	10	2.6				1250.2	3.09698	6.19396				−37.84		−19.85			
		16.0	10 15.9	53	10.0	20 1.9	1.57971	1.29770		R	10	2077		44.24		25.90	
		22.0				1201.9	3.07987	6.15974				−36.53		−18.34			
	10	40.6		54	58.9	13 13.0	1.56260	1.26348		M	9	5732		33.22		25.24	
10 44.26		46.2	10 45.6			793.0	2.89927	5.79854				−24.10		−7.98			
10 44.26		51.0		1	7.5	12 4.4	1.38200	0.90228		R	9	6395		31.94		25.28	
	11	7.3				724.4	2.85998	5.71996				−22.01		−6.66			
		13.8	11 13.5	2	32.7	10 39.2	1.34278	0.82370		M	9	4932		29.89		24.70	
		19.4				639.2	2.80564	5.61128				−19.43		−5.19			
	11	36.5		3	31.8	9 40.1	1.28837	0.71502		R	9	4752		29.89		25.61	
		43.4	11 43.0			580.1	2.76350	5.52750				−17.63		−4.28			
		49.0		4	38.7	8 33.2	1.24624	0.63124		M	9	4262		27.02		23.68	
	12	6.0				513.2	2.71029	5.42058				−15.60		−3.34			
		11.4	12 11.9	5	29.6	7 42.3	1.19302	0.52432		R	9	4477		27.72		25.01	
		18.2				462.3	2.66492	5.32984				−13.05		−2.71			
	12	36.7		6	32.2	+6 39.7	1.14765	0.43358		M	9	3897		26.82		24.79	
		41.6	12 41.9			399.7	2.60173	5.20346				−12.15		−2.03			
		47.5		22	57.8	−9 38.9	1.08446	0.30710		R	9	1025		27.86		23.60	
	13	8.2				5789	2.76260	5.52520				+17.39		−4.25			
13 12.08		13.8	13 13.6	24	4.1	−10 52.2	1.24533	0.62894		M	9	275		29.57		24.17	
13 12.08		18.9				652.2	2.81438	5.62876				+19.82		−5.40			
	13	36.6		25	2.8	−11 50.9	1.29711	0.73250		R	9	812		29.72		23.29	
		41.1	13 42.0			710.9	2.85181	5.70362				+21.60		−6.43			
		48.2					1.33457	0.80736									
	14	6.0															
		11.0	14 11.0														
		16.0															
	14	34.0															
		40.0	14 40.3														
		47.0															
	15	3.7															
		9.7	15 9.8														
		15.9															
	15	32.5															
15 39.00		36.8	15 37.9														
15 39.00		44.3				1 13 30.84									88	39 56.58	
	16	3.3															
		9.3	16 8.6														
		13.2															
	16	32.3															
		38.8	16 38.4														
		44.0															
	17	2.7															
		7.6	17 7.4														
		12.0															
	17	31.7															
		36.0	17 36.6														
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	13	8	52.6														
			59.4	8	58.3	54	22.5	+ 20 26.6				M	48	29'22"	49'	6"49	49' 25"59
			2.8					1226.6	3.08870	6.17740				+37.27		+19.10	
		9	16.7			55	14.5	19 34.6	1.57134	1.28105		R	48	3195		7.64	24.76
			24.7	9	23.5			1174.6	3.06989	6.12978				+35.69		+17.12	
			29.0			56	14.1	18 35.0	1.55253	1.23343		M	48	3502		8.90	24.68
		9	46.8					1115.0	3.04727	6.09454				+33.88		+15.78	
	Qβ 54.72		53.5	9	53.1	57	4.7	17 44.4	1.59991	1.19819		R	48	3825		10.59	24.97
	Qγ 54.72		58.0					1064.0	3.02710	6.05420				+32.34		+14.38	
		10	16.1			58	10.4	16 38.7	1.50974	1.15785		M	48	4180		12.14	24.80
			23.9	10	23.9			998.7	2.99943	5.99886				+30.34		+12.66	
			31.8			59	1.3	15 47.8	1.48207	1.10251		R	48	4472		13.52	24.92
		10	47.0					947.8	2.97672	5.95344				+28.80		+11.40	
			56.2	10	54.8	0	12.8	14 36.3	1.45936	1.05709		M	48	4677		13.39	24.14
			1.1					876.3	2.94265	5.88530				+26.62		+9.75	
		11	15.4			1	6.1	13 43.0	1.42529	0.98895		R	48	4712		1613	24.73
			21.4	11	20.8			823.0	2.91540	5.83080				+25.01		+8.60	
			25.7			2	9.0	12 40.1	1.39804	0.93445		M	48	5492		18.02	25.35
		11	44.0					760.1	2.88087	5.76174				+23.10		+7.33	
			51.8	11	50.7	3	26.6	11 22.5	1.36351	0.86539		R	48	5810		18.84	24.75
			56.6					682.5	2.83410	5.66820				+20.74		+5.91	
		12	16.5			4	30.8	9 58.3	1.31674	0.77185		R	49	222		20.40	24.94
	12 24.26		23.4	12	22.3			598.3	2.77692	5.55384				+18.18		+4.54	
	12 21.26		27.0			6	53.9	+ 7 55.2	1.25956	0.65749		M	49	712		21.56	24.43
		12	48.2					475.2	2.67688	5.35376				+14.44		+2.87	
			53.2	12	51.1	21	15.8	− 6 26.7	1.15952	0.45741		R	49	3400		22.25	24.15
			56.8					386.5	2.58749	5.17498				− 11.75		+1.90	
		13	16.2			23	9.8	− 8 20.7	1.07013	0.27863		M	49	3535		20.14	23.32
			21.4	13	21.4			500.7	2.69958	5.39916				− 13.21		+3.18	
			26.7			24	2.8	− 9 13.7	1.18222	0.50281		R	49	3642		19.60	22.78
		13	46.4					553.7	2.74327	5.48654				−16.82		+3.89	
			52.1	13	51.2	25	34.1	− 10 45.0	1.22591	0.59019		M	49	3707		17.47	22.75
			55.0					645.0	2.80956	5.61912				−19.60		+5.28	
		14	14.4			26	20.4	− 11 31.3	1.29220	0.72277		R	49	3870		17.70	23.77
			18.5	14	19.1			491.3	2.83967	5.67934				−21.00		+6.07	
			24.3			27	21.1	− 12 32.0	1.32231	0.78299		M	49	3825		15.40	22.58
		14	42.6					752.0	2.87622	5.75244				−22.85		+7.18	
	14 48.24		48.2	14	47.8	28	20.1	− 13 31.0	1.35886	0.85609		R	49	3945		14.81	23.16
	14 48.24		52.6					811.0	2.90902	5.81804				−24.64		+8.35	
		15	10.9			29	21.4	− 14 32.3	1.39166	0.92169		M	49	3985		12.73	24.99
			17.6	15	16.8			872.3	2.94067	5.98134				−27.12		+12.16	
			21.8						1.47233	1.08499							
		15	40.3														
			46.5	15	46.3												
			52.2														
		16	8.5														
			13.6	16	15.0												
			23.0														
		16	41.1														
			49.4	16	48.2												
			54.2														
		17	10.8														
	17 16.00		17.2	17	16.7												
	17 16.04		22.0					1 13 30.62									88 39 56.72
		17	39.7														
			51.0	17	48.5												
			54.7														
		18	6.3														
			12.6	18	11.8												
			16.6														
		18	44.8														
			50.3	18	49.7												
			54.0														
		19	9.6														
			15.4	19	15.1												
			20.3														
		19	38.4														
	19 45.46		45.3	19	44.1												
	19 45.46		48.7														
		20	8.3														
			15.8	20	15.2												
			21.5														
		20	35.8														
			45.1	20	43.2												
	14 49.14		48.8														
				14	49.136												

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13	7	7.9														
		12.5	7 13.6	45	22.5	1 27 47.2				M	10	52.25	10	1.58	9	26.28
		20.3				1667.2	3.22199	644398				-50.67		-35.30		
	7	40.7		46	13.7	26 56.0	1.70472	1.54772		R	10	4937		.26		27.10
		45.6	7 46.1			1616.0	3.20844	6.41688				-49.11		-33.16		
		51.9		47	19.7	25 50.0	1.69117	1.52062		M	10	4460	9	37.50		26.99
	8	8.0				1550.0	3.19033	6.38066				-47.10		-30.51		
8 14.46		13.8	8 14.2	48	10.2	24 59.5	1.67306	1.48440		R	10	4090		55.33		26.78
8 14.46		20.7				1499.5	3.17595	6.35190				-45.57		-28.55		
	8	38.2		49	16.7	23 53.0	1.65868	1.45564		M	10	3640		52.83		26.77
		43.9	8 44.0			1433.0	3.15625	6.31250				-43.55		-26.08		
		50.0		50	6.4	23 3.3	1.63898	1.41624		R	10	3347		57.43		27.13
	9	8.8				1383.3	3.14092	6.28184				-42.04		-24.30		
		13.5	9 14.4	51	22.0	21 47.7	1.62365	1.38558		M	10	2895		49.21		27.50
		20.8				1307.7	3.11661	6.23302				-39.74		-21.71		
	9	37.9		52	12.3	20 57.4	1.59924	1.33676		R	10	2485		46.81		26.73
		42.8	9 42.7			1257.4	3.09947	6.19894				-38.04		-20.08		
		47.4		53	28.0	19 41.7	1.58020	1.30268		M	10	2042		44.51		26.48
	10	8.3				1181.7	3.07251	6.14502				-35.91		-17.73		
		11.8	10 11.6	54	20.0	18 49.7	1.55524	1.24876		R	10	1665		42.32		26.11
		14.7				1126.7	3.06296	6.10592				-34.33		-16.21		
	10	39.0		0	1.4	13 8.3	1.53569	1.20966		M	9	5730		33.35		25.76
10 42.48		44.2	10 44.5			788.3	2.89669	5.79338				-23.95		-7.89		
10 42.48		50.4		D	54.3	12 15.4	1.37942	0.89712		R	9	3732		30.97		24.10
	11	—				735.4	2.86652	5.73304				-22.35		-6.87		
		—	11 12.0	2	5.3	11 4.4	1.34925	0.83678		M	9	5700		30.81		25.21
		—				664.4	2.82243	5.64486				-20.19		-5.60		
	11	37.3		2	48.2	10 21.5	1.30516	0.74860		R	9	4837		29.68		24.78
		40.3	11 41.6			621.5	2.79344	5.58688				-18.89		-4.90		
		47.2		3	55.0	9 14.7	1.27617	0.69062		M	9	4507		29.11		25.20
	12	3.7				554.7	2.74406	5.48812				-16.86		-3.91		
		8.6	12 9.4	4	41.8	8 27.9	1.22679	0.59186		R	9	4322		27.78		24.50
		15.8				507.9	2.70578	5.41156				-15.44		-3.28		
	12	34.8		5	45.2	7 24.5	1.18851	0.51530		M	9	4065		27.14		24.64
		40.0	12 40.5			444.3	2.64787	5.29574				-13.51		-2.50		
		46.7		22	50.9	-9 41.2	1.13060	0.39948		R	9	1960		28.26		23.97
	13	5.2				581.2	2.76433	5.52866				+17.66		-4.29		
13 9.18		10.3	13 10.5	24	3.0	-10 53.3	1.24706	0.63240		M	9	2835		29.70		24.28
13 9.18		16.1				653.3	2.81571	5.63022				+19.85		-5.42		
	13	31.7		24	54.0	-11 44.3	1.29784	0.79396		R	9	8955		30.35		24.05
		36.7	13 36.9			704.3	2.84776	5.69552				+21.40		-6.30		
		42.3					1.33044	0.79926								
	14	2.4														
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		15.1														
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		13.3														
	15	29.8														
15 36.60		34.4	15 35.0													
15 36.60		40.9				1 13 31.27									88	39 56.31
	16	0.8														
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	13	8	52.4													
			58.8	8 58.6	52	50.5	+ 22 1.5				M	48	2478	49' 4"94	49'	27.12
			4.5				1321.5	3.12107	6.24214				+40.16	+22.18		
		9	21.3		53	42.6	21 9.4	1.60380	1.34588		R	48	2660	5.18		25.64
			28.2	9 28.5			1269.4	3.10360	6.20720				+38.58	+20.46		
			36.0		54	37.2	20 14.8	1.58633	1.31094		M	48	3015	7.07		25.81
		9	52.6				1214.8	3.08450	6.16900				+36.92	+18.74		
	9 57.38		0.0	9 59.2	55	25.5	19 26.5	1.56723	1.27274		R	48	3465	10.10		27.38
	9 57.38		6.0				1166.5	3.06688	6.13376				+35.45	+17.28		
		10	19.0		56	22.4	18 29.6	1.54961	1.23750		M	48	3775	11.47		27.07
			24.6	10 24.3			1109.6	3.04517	6.09034				+33.72	+15.60		
			29.4		57	3.9	17 48.1	1.52790	1.19318		R	48	4030	12.76		27.25
		10	50.8				1068.1	3.02861	6.05722				+32.46	+14.49		
			56.6	10 56.3	58	39.3	16 12.7	1.51134	1.16096		M	48	4305	14.61		26.62
			1.5				972.7	2.98798	5.97596				+29.36	+12.01		
		11	19.6		59	30.0	15 22.0	1.47071	1.07970		R	48	4885	16.87		27.67
			27.7	11 26.4			922.0	2.96473	5.92946				+28.02	+10.80		
			32.0		0	33.4	14 18.6	1.44746	1.03320		M	48	5230	17.39		26.75
		11	47.5				858.6	2.93379	5.86758				+26.09	+9.36		
			55.3	11 54.4	1	21.1	13 30.9	1.41652	0.97132		R	48	5512	17.76		26.11
			0.5				810.9	2.90897	5.81794				+24.64	+8.35		
		12	25.9		5	16.6	9 35.4	1.39170	0.92168		M	49	440	21.89		26.09
	12 25.62		27.7	12 27.6			575.4	2.75997	5.51994				+17.49	+4.20		
	12 25.62		29.2		6	23.1	8 28.9	1.24270	0.62368		R	49	675	22.22		25.61
		12	50.3				508.9	2.70663	5.41326				+15.47	+3.29		
			53.6	12 55.4	7	35.0	+ 7 17.0	1.18936	0.51700		M	49	1102	24.30		26.72
			0.3				437.0	2.64048	5.28096				+13.28	+2.42		
		13	17.0		21	7.8	6 X 159	1.12321	0.38470		R	49	3447	21.22		23.63
			25.8	13 24.3			438.9	2.63939	5.27878				+13.25	+2.41		
			30.2		24	9.5	- 9 17.5	1.12218	0.38252		M	49	3725	20.31		24.26
		13	48.5				557.5	2.74624	5.49248				−16.94	+3.95		
			54.0	13 54.3	25	31.3	-10 39.3	1.22897	0.59622		R	49	3822	18.79		23.98
			0.5				639.8	2.80570	5.61140				−19.43	+5.79		
		14	15.8		27	15.8	-12 23.8	1.28843	0.71514		M	49	3992	17.32		24.34
			22.7	14 21.8			743.8	2.87146	5.74292				−21.60	+7.02		
			26.8		28	44.6	-13 52.6	1.35419	0.84666		R	49	4227	16.97		25.77
		14	42.8				832.6	2.92044	5.84088				−25.30	+8.80		
	14 51.00		47.3	14 48.0	30	17.7	-15 25.7	1.40317	0.94462		M	49	4030	12.17		23.05
	14 51.00		53.8				925.7	2.96647	5.93294				−28.13	+10.88		
		15	12.7		31	12.8	-16 20.8	1.44920	1.03668		R	49	4232	12.51		27.72
			17.8	15 18.7			980.8	2.99158	5.98316				−29.81	+12.21		
			25.7					1.47438	1.08690							
		15	46.0													
			52.0	15 52.2												
			58.7													
		16	16.5													
			20.4	16 20.6												
			24.9													
		16	42.3													
			50.2	16 49.1												
			54.8													
		17	13.8													
	17 19.18		18.7	17 18.7												
	17 19.18		23.5				1 13 38.06								8 39 56.45	
		17	44.0													
			49.3	17 49.4												
			54.8													
		18	12.3													
			17.7	18 18.1												
			24.4													
		18	44.0													
			49.9	1849.7												
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		19	11.0													
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	19 46.88		46.7	19 46.4												
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			46.0	20 45.7												
	14. 52.01		57.1													
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1	8 53.0															
	57.6	8 57.2	57 5.7	+17 47.3				R	48	41.37	49	13.81	49	28.62	
	1.1			1067.3	3.02829	6.05658				+32.44		+14.81			
	9 2.4		58 44.5	16 8.5	1.51111	1.16041		R	48	43.40		14.84		26.75	
	28.9	9 29.7		968.5	2.98610	5.97220				+29.44		+11.91			
	35.7		0 1.5	14 45.5	1.46892	1.07603		R	48	37.17		18.09		28.05	
	10 1.0			885.5	2.94719	5.89438				+26.92		+ 9.96			
9 59.74	4.5	10 3.8	1 34.3	13 18.7	1.43001	0.99821		R	48	34.75		19.20		27.30	
9 59.74	6.0			798.7	2.90238	5.80476				+24.45		+ 8.10			
	10 22.3		2 55.8	11 53.2	1.38820	0.90869		R	48	59.52		21.20		27.66	
	28.2	10 28.3		713.2	2.85321	5.70642				+ 21.68		+ 6.46			
	33.4		4 20.3	10 32.7	1.33603	0.81025		R	49	1.75		20.98		26.06	
	10 54.4			632.7	2.80120	5.60240				+19.23		+ 5.08			
	1.8	10 59.7	6 29.4	8 23.6	1.28402	0.70623		R	49	8.32		24.01		27.23	
	2.9			503.6	2.70209	5.40418				+15.69		+ 3.22			
	11 20.4		7 54.5	+ 6 58.5	1.19491	0.50801		R	49	11.82		24.54		26.76	
	26.3	11 26.1		418.5	2.62170	5.24340				+12.72		+ 2.22			
	31.7		21 14.1	- 6 21.1	1.10452	0.34723		R	49	33.47		23.89		25.73	
	11 50.0			381.1	2.58104	5.16208				−11.58		+ 1.84			
	57.1	11 56.0	23 7.6	- 8 16.6	1.06380	0.26591		R	49	37.40		22.30		25.43	
	1.9			496.6	2.69601	5.39202				−15.10		+ 3.13			
	12 21.2		24 50.3	- 9 57.3	1.17883	0.49585		R	49	39.75		19.59		24.12	
12 26.02	26.6	12 26.2		597.3	2.77619	5.55238				−18.16		+ 4.53			
12 26.02	30.7		30 18.4	-15 25.4	1.25901	0.65621		R	49	40.95		12.82		23.70	
	12 57.9			925.4	2.96633	5.93266				−28.13		+ 10.88			
	1.8	13 0.9	31 47.3	-16 54.3	1.74915	1.03649		R	49	42.45		11.62		24.69	
	3.0			1014.3	3.00617	6.01234				−30.83		+ 13.07			
	13 16.3		33 49.9	-18 56.9	1.48899	1.11617		R	49	42.37		7.86		24.28	
	20.0	13 20.9		1136.9	3.05572	6.11144				−34.51		+ 16.42			
	26.3		35 2.5	-20 9.5	1.53794	1.21527		R	49	42.62		5.86		24.47	
	13 48.1			1209.5	3.08261	6.16522				−36.76		+ 18.61			
	54.6	13 54.3	36 41.3	-21 48.3	1.56543	1.26985		R	49	41.95		2.18		23.92	
	0.3			1308.3	3.11671	6.23342				−38.77		+ 21.74			
	—		38 2.2	-23 9.2	1.59953	1.33725		R	49	41.87	48	59.64		24.15	
	—	14 22.0		1389.2	3.14276	6.28552				−42.23		+ 24.51			
	—		39 25.6	-24 32.6	1.62558	1.38935		R	49	41.80		58.25		23.72	
	—			1432.6	3.15612	6.30224				−43.55		+ 25.47			
14 52.16	—	14 53.0	40 52.9	-25 59.9	1.63894	1.40007		R	49	39.95		52.53		23.43	
14 52.16	—			1559.9	3.19310	6.38620				−47.42		+ 30.90			
	—				1.67593	1.49003									
	—	15 21.0													
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	15 46.6														
	50.3	15 50.5													
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	20.7	16 20.1													
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	16 43.8														
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17 20.20	24.7				1 13 32.23								88 39 55.68		
	17 42.4														
	48.2	17 48.3													
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	18 22.3														
	23.3	18 23.3													
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	44.0	20 43.7													
14 52.88	50.9														
		14 52.964													

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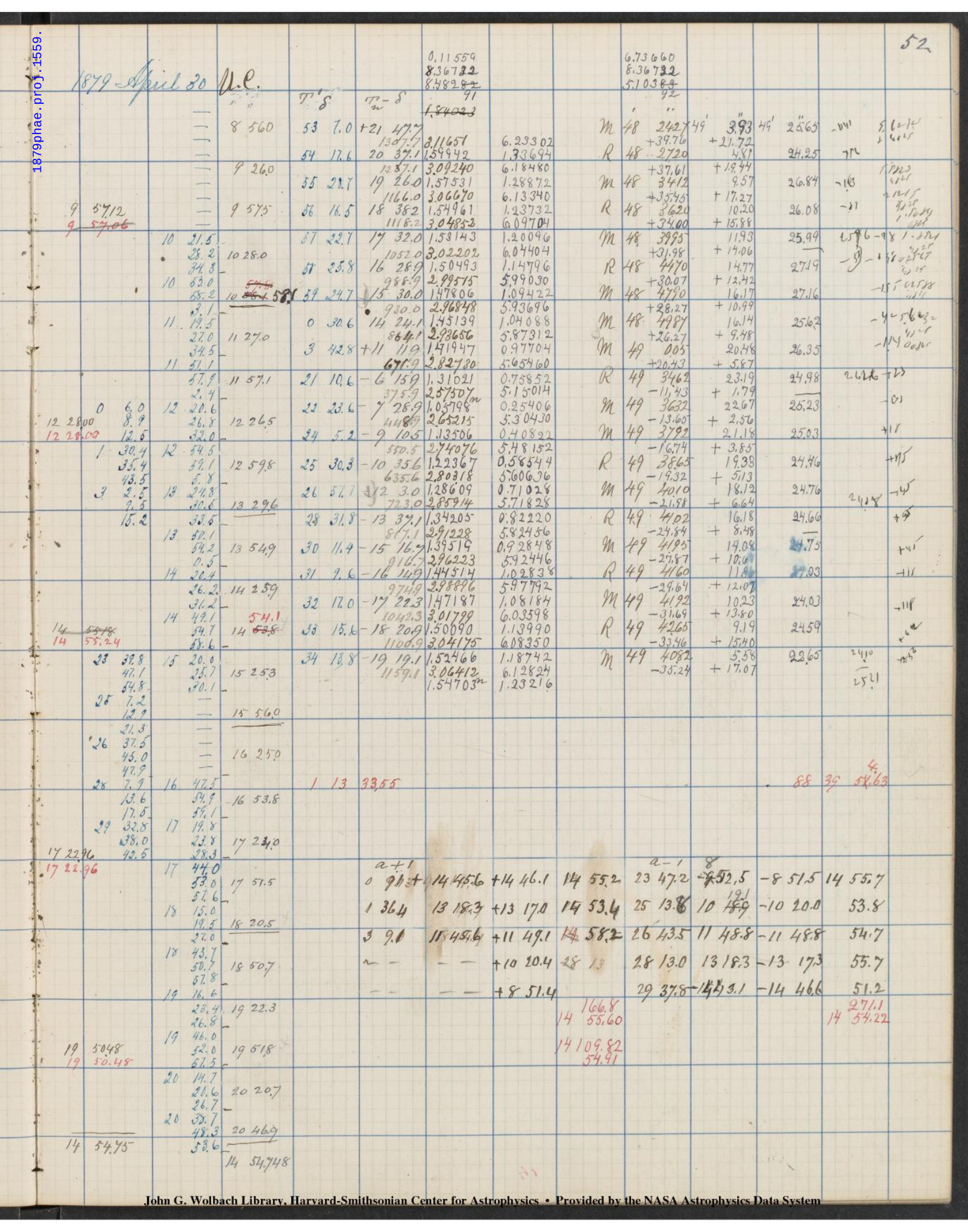

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	7 37.3														
	42.0	7 42.5	58	57.0	+13 ~~403~~	39.9			M	10	20.77				
	48.3				820.3	2.91397									
	8 7.3		1	1.2	12 ~~36.7~~	35.7			R	10	17.95	2.82230	5.64460	29.29	
												1.30521	0.74852		
	11.6	8 12.7			736.1	2.87858						2.76373	5.52746	30.00	
	19.2		2	12.4	11 ~~24.5~~				M	9	53.85	1.24664	0.63138		
	8 37.7				684.9	2.83563						2.64953	5.29906	27.89	
8 40.70	41.7	8 41.6	3	4.5	10 ~~32.4~~				R	9	57.27	1.13294	0.40308		
~~8 40.70~~	45.3				632.8	2.80127						2.50079	5.10158	28.95	
	9 1.3		4	4.0	9 ~~32.9~~				M	9	47.35	0.98370	0.20550		
	7.6	9 7.4			573.3	2.75838						2.36040	4.72080	35.00	
	13.3		4	53.7	8 ~~43.2~~				R	9	45.80	0.84391	0.82472		
	9 34.7				523.6	2.71900						2.12516	4.25016	31.95	
	38.5	9 39.3	6	7.4	~~17~~ 29.5				M	9	43.22	0.60807	0.35468		
	44.6				441.9	2.66312						3.14535	6.29070	28.02	
	10 5.1		7	6.4	+6 30.5				R	9	40.17	1.62826	1.39462		
	9.9	10 9.7		9.5	3909 27.4	2.59207						3.15661	6.31322	26.38	
	14.0			16.9	+ 20.0	2.58861			M	9	37.17	1.63952	1.41714		
	10 32.9				380.4	2.58024						3.17658	6.35316	29.12	
	36.9	10 37.4	23	26.0	- 9 ~~48.7~~	49.1			R	8	6.35	1.65949	1.45708		
	42.4				588.7	2.76989 m						3.19136	6.38272	30.24	
	11 4.5		24	28.2	- 10 ~~50.0~~	51.3			M	8	6.02	1.67427	1.48664		
11 8.90	8.3	11 9.1			650.9	2.81351						3.20421	6.40842	31.37	
~~11 8.90~~	14.4		25	22.7	- 11 ~~45.8~~				R	8	3.60	1.68712	1.51234		
	11 34.6				705.4	2.84844									
	39.8	11 40.4	26	24.0	- 12 ~~46.7~~	47.1			M	8	4.00	3.22076	6.44152	26.74	
	46.7				766.7	2.88463						1.70367	1.54544		
	12 4.2		27	12.5	+ 13 35.6				R	8	4.75	3.22750	6.45520	26.84	
	8.1	12 7.9			815.2	2.91126						1.71041	1.55912		
	11.5		28	25.6	- 14 ~~48.6~~				M	8	3.12	3.24067	6.48134	25.99	
	12 33.8				886.2	2.94857						1.72358 m	1.58526		
	39.4	12 39.3	29	14.4	- 15 ~~37.5~~				R	8	2.57				
	44.6				947.1	2.97179									
	13 2.4		30	20.0	- 16 ~~42.7~~	43.1			M	8	3.10				
	7.5	13 7.7			1002.7	3.00174									
	13.2		31	3.5	- 17 ~~26.5~~				R	8	2.25				
13 36.78	13 30.0				1046.2	3.01961									
~~13 36.78~~	36.1	13 36.2	32	12.5	- 18 ~~35.5~~				M	8	2.70				
	42.4				1115.2	3.04735									
	14 2.9		32	58.2	- 19 ~~21.9~~	22.3			R	8	2.37				
	5.0	14 5.2			1161.9	3.06517 m									
	7.7														
	14 29.9	35.5													
	35.0	14 ~~32.1~~													
	41.5														
	14 52.5														
	5.1	15 5.3													
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	15 27.5														
	32.0	15 32.9													
	38.3														
	15 58.0														
16 4.38	3.5	16 4.4													
~~16 4.38~~	11.8				1 13							88 39			
	16 29.3														
	32.3	16 34.6													
	42.3														
	16 58.7														
	4.3	17 ~~4.7~~													
	10.0														
	17 28.6														
	33.4	17 33.9													
	38.8														
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18 33.68		18 34.0													
		19 3.5													
		19 33.0													
13 ~~36.71~~		13 ~~37.288~~													
36.885		36.88													

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8 53.2 −
58.3 8 58.3 3 53.2 +11 6.0 (53.6) (53.3) 11 4.2 M 11 3.70 9.10 8 58.3 +5 55.3 14 53.6
3.5 5 55.3 664.2 +5.60 +20.19
+5 55.0 5 17.0 9 42.2 9 40.4 M 49 807 12.35
9 58 04 +4.28 +17.65
7 31.0 7 28.2 7 26 4 M 49 1207 14.60
44 64 +2.53 +13.57
10 9 40.6 5 18.6 5 16.8 M 49 1772 19.32
31 68 +1.60 +9.63
10 28.8 − 11 8.1 +3 51.1 3 49.3 M 49 2185 28.03
35.1 10 34.7 22 93 +6.68 +6.97
4 25.8 40.3 4 25.6 17 10.8 −2 11.6 15 0.3 0.2 2 13.7 M 49 3375 36.01 10 34.7 4 25.8 15 0.5
4 25.5 13 34 +2.26 −4.06
38 14.9 23 15.7 0.2 23 17.5 M 49 4370 49 10.51
13978 +24.81 −42.49
38 57.6 23 52.4 23 54.2 M 49 4385 9.98
14 34.2 +26.13 −43.60
40 0.1 25 0.9 23 2.7 M 49 4612 14.77
6. 7.5 15027 +28.66 −45.65
40 57.1 25 57.5 25 53.7 M 49 4575 16.11
15537 +30.66 −47.24
41 37.8 26 38.6 26 40.4 M 49 4447 17.00
16004 +32.53 −48.65
42 39.9 27 40.7 27 42.5 M 49 4217 17.28
16625 +35.11 −50.54
43 5.9 28 6.7 28 8.5 M 49 4192 18.15
1688.5 +36.23 −51.34
43 58.0 −28 58.8 29 0.6 M 49 4042 18.90
1740.6 +38.48 −52.91

1 13

88 39 55.

17 49.7 −
34.8 17 55.2 17 55.2 −2 57.1 14 58.1
1.1 −2 57.0 172.2
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14 58.2 58.3
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		h m s															
	7	10.9									M	10	5360	10	29.06	10	20.79
		14.0	7 15.5	59	44.0	+13	27.0						+24.54		−8.27		
		21.5	−				867.0	2.90687	5.81374		R	10	4790		26.76		20.62
	7	38.3		1	35.8	11	35.2	1.38987	0.91775				+21.14		−6.14		
		45.6	7 45.6				695.2	2.84211	5.68422		M	10	4342		24.47		19.65
		51.9	−	2	47.9	10	23.1	1.39511	0.78823				+18.95		−4.82		
	8	9.6					623.1	2.79486	5.58912		R	10	4015		23.10		19.11
8 15.70		16.0	8 15.8	3	50.3	9	20.7	1.27756	0.69313				+17.05		−3.99		
8 15.70		21.7	−				566.7	2.74873	5.49746								
	8	41.1		4	53.8	8	17.2	1.23173	0.60147		M	10	3485		19.38		16.24
		46.8	8 46.8				497.2	2.69653	5.39306				+15.47		−3.14		
		52.6	−	5	36.8	7	34.2	1.18953	0.49707		R	10	1647		2.66		.04
	9	9.8					454.2	2.65725	5.31450				+13.81		−2.62		
		14.7	9 14.8	6	39.7	+ 6	31.3	1.14025	0.41851		M	10	1137	9'	59.47	9'	57.52
		19.8	−				391.3	2.59251	5.18502				−11.90		−1.95		
	9	40.0		22	42.3	− 9	31.3	1.07551	0.28903		M	9	5385	10'	11.22	10'	7.07
		44.7	9 45.6				5713	2.75686	5.51372				+17.27		−4.15		
		52.0	−	24	10.4	−10	59.4	1.23986 n	0.61773		R	9	4867		8.72		3.20
	10	8.6					659.4	2.81915	5.63830				+20.05		−5.32		
		12.2	10 13.5	24	33.4	−11	42.4	1.30215	0.74231		M	9	4490		6.26	9	59.99
		19.8	−				702.4	2.84658	5.69316				+21.36		−6.27		
	10	36.3		26	1.3	−12	50.3	1.32958	0.79717		R	9	4220		5.62		58.08
10 43.48		43.6	10 43.5				770.3	2.88666	5.77332				+23.42		−7.54		
10 43.48		50.5	−	26	48.0	−13	37.0	1.36966	0.87733		M	9	3937		4.21		55.73
	11	8.3					817.0	2.91222	5.82444				+24.84		−8.48		
		12.0	11 13.0	27	53.8	−14	42.8	1.39522	0.92845		R	9	3772		4.56		54.66
		18.8	−				882.8	2.94586	5.89172				+26.84		−9.90		
	11	36.6						1.42886 n	0.99573		M	9	3482				
		40.4	11 41.8														
		48.3	−								R	9	640				
	12	7.0															
		11.3	12 12.3								M	9	382				
		18.7	−														
	12	34.9									R	9	407				
		40.9	12 40.7														
		46.2	−								M	9	310				
	13	4.5															
13 11.22		10.4	13 10.8								R	9	170				
13 11.22		17.6	−														
	13	34.8									M	9	097				
		40.7	13 40.9														
		47.1	−														
	14	5.6															
		11.6	14 11.4														
		17.0	−														
	14	34.8															
		39.6	14 40.2														
		46.3	−														
	15	3.7		1	13	36.47										88	39 53.11
		9.3	15 9.3														
		14.8	−														
	15	33.8															
15 38.80		37.5	15 38.3														
15 38.80		43.5	−														
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	7 4.9												
	7.7	7 9.1	44	10.3	+28 55.0								
	14.7				1735.0	3.23930	6.47860						
	7 33.0		45	16.6	27 48.7	1.72230	1.58261						
	38.3	7 39.1			1668.7	3.22238	6.44476						
	45.9		46	33.5	26 31.8	1.70536	1.54877						
	8 5.9				1691.8	3.20889	6.40378						
8 9.44	9.6	8 10.3	47	30.7	25 34.6	1.68489	1.60779						
8 9.44	15.5				1534.6	3.18600	6.37200						
	8 35.9		52	38.0	20 27.3	1.66900	1.47601						
	40.2	8 40.2			1227.3	3.08895	6.17790						
	44.6		53	27.7	19 37.6	1.57195	1.28191						
	9 3.9				1177.6	3.07100	6.14100						
	7.5	9 8.5	54	32.0	18 33.3	1.55400	1.24501						
	14.2				1113.3	3.04661	6.09322						
	9 32.8		55	28.3	17 37.0	1.52961	1.19723						
	38.2	9 38.7			1067.0	3.02407	6.04814						
	45.0		59	45.8	13 19.5	1.50707	1.15215						
	10 2.7				799.5	2.90282	5.80564						
	7.0	10 7.7	1	5.3	12.000	1.38582	0.90965						
	13.3				720.0	2.85733	5.71466						
	10 32.2		2	23.1	10 422	1.34033	0.81867						
10 37.48	37.0	10 37.4			642.2	2.80767	5.61534						
10 37.48	43.0		3	12.3	9 53.0	1.29067	0.71935						
	11 1.0				593.0	2.77305	5.45610						
	6.3	11 7.0	4	26.4	8 38.9	1.25605	0.56011						
	13.7				518.9	2.71508	5.43016						
	11 31.4		5	19.0	7 46.3	1.19808	0.53417						
	35.3	11 36.6			466.3	2.66867	5.33734						
	43.0		6	33.1	6 32.2	1.15167	0.41435						
	12 2.7				392.2	2.59351	5.18702						
	7.0	12 7.4	22	26.2	− 9 20.9	1.07651	0.29103						
	12.5				566.9	2.74889	5.49778						
	12 30.4		23	39.2	−10 33.9	1.23184m	0.60179						
	34.6	12 36.5			633.9	2.80202	5.60404						
	44.4		24	41.0	−11 35.7	1.28502	0.70805						
	12 59.0				695.7	2.84242	5.68484						
13 5.76	5.2	13 5.3	25	57.0	−12 45.7	1.32542	0.78886						
13 5.76	11.7				765.7	2.88406	5.76812						
	13 30.7		26	42.0	−13 37.7	1.36706	0.87213						
	34.7	13 35.6			817.7	2.91259	5.82518						
	41.5		27	55.6	−14 50.3	1.39559	0.93919						
	13 58.6	14			890.3	2.94954	0.85908						
	3.7	14 4.0				1.43254m	0.96309						
	9.7												
	14 31.4												
	34.9	14 35.4											
	39.9												
	14 56.8				1 13 36.13								
	2.4	15 3.0											
	9.8												
	15 28.0												
15 32.82	32.3	15 32.6											
15 32.82	37.6												
	15 57.4												
	2.5	16 3.3											
	8.0												
	16 24.4												
	30.0	16 29.8											
	35.0												
	16 54.5												
	1.8	17 1.5											
	8.2												
	17 27.3												
	30.3	17 30.5											
	34.0												
18 1.20	—	18 2.0											
18 1.20	—												
	—	18 30.0											
	—												
13 5.34	—	19 2.0											
		13 5.340											

M	10	5370	10'	0.94	9'	22.69							
		−52.76		−38.25									
R	10	4982	9'	59.08		23.70							
		−50.74		−35.38									
M	10	4390		55.50		23.30							
		−48.40		−32.20									
R	10	4062		53.95		24.03							
		−46.67		−29.92									
M	10	1975		42.43		23.29							
		−37.32		−19.14									
R	10	1652		40.71		23.13							
		−35.81		−17.58									
M	10	1280		38.95		23.20							
		−33.85		−15.75									
R	10	950		37.36		23.16							
		−32.14		−14.20									
M	9	5332		31.21		23.16							
		−24.31		− 8.05									
R	9	4772		25.83		19.24							
		−21.89		− 6.59									
M	9	4615		26.62		20.38							
		−19.53		− 5.24									
R	9	4487		26.84		23.21							
		−18.63		− 3.63									
M	9	4132		25.54		22.12							
		−15.78		− 3.42									
R	9	3810		23.92		21.16							
		−14.18		− 2.76									
M	9	3645		24.52		22.57							
		−11.93		− 1.95									
R	9	765		24.71		20.71							
		+17.06		− 4.00									
M	9	880		25.08		19.97							
		+19.28		− 5.11									
R	9	382		26.98		20.83							
		+24.16		− 6.15									
M	9	520		28.48		21.03							
		+23.28		− 7.45									
R	9	297		27.83		19.14							
		+24.86		− 8.69									

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				a-s															
	9	4.9																	
		11.3	9	10.4	52	45.8	+22 ~~56.9~~	18.7				M	48	27.02	48	8.95	48	33.05	
		15.0					1378.9	3.13963		6.27806				+41.93		+24.10			
	9	36.6			53	55.3	21 ~~44.4~~	8.2	1.62253	1.38207		R	48	32.30		12.12		33.90	
		41.7	9	41.6			1309.4	3.11707		6.23414				+39.82		+21.78			
		46.6			54	57.6	20 ~~53.1~~	12.9	1.60007	1.33815		M	48	36.85		15.04		34.99	
		50					1253.1	3.09799		6.19598				+38.19		+19.95			
	10	5.0																	
10 10.26		7.7	10	9.5	55	40.7	~~29~~ ~~4.0~~	23.8	1.58199	1.29999		R	48	39.10		15.71		34.13	
10 10.26		14.9					1204.0	3.08063		6.16126				+36.61		+18.42			
	10	34.5			56	46.6	18 ~~58.1~~	17.9	1.56363	1.26527		M	48	43.40		18.81		35.27	
		43.2	10	41.8			1138.1	3.05618		6.11236				+35.41		+16.46			
		47.7			57	31.6	17 ~~13.1~~	32.9	1.54918	1.21637		R	48	45.32		18.56		34.74	
	11	1.7					1093.1	3.03866		6.07732				+33.24		+15.18			
		7.0	11	8.0	58	33.5	~~16~~ ~~4.2~~	34.0	1.52166	1.18133		M	48	48.32		19.88		34.39	
		15.2					1031.2	3.01334		6.02668				+31.36		+13.51			
	11	31.6			59	18.7	16 ~~26.0~~	42.8	1.49634	1.13069		R	48	57.52		21.50		33.85	
		37.5	11	38.1			986.0	2.99388		5.98776				+29.98		+12.35			
		45.3			0	35.7	14 ~~9.0~~	28.8	1.47688	1.09177		M	48	53.45		23.19		33.69	
0 15.5	12	0.9					909.0	2.95856		5.91712				+27.64		+10.50			
21.5		7.3	12	7.1	2	13.5	12 ~~31.2~~	52.0	1.44156	1.02113		M	48	59.62		24.29		32.65	
25.9		13.0					811.2	2.90913		5.81826				+24.67		+ 8.36			
1 41.2	12	34.0			3	41.0	12 ~~37~~	23.7	1.39213	0.92227		M	49	3.52		25.53		32.18	
46.3	12 37.62	39.2	12	38.7			723.7	2.85956		5.71912				+22.01		+ 6.65			
53.4	12 37.62	42.9			5	2.3	10 ~~42.1~~	2.2	1.34956	0.82313		M	49	7.15		26.69		31.93	
3 9.6	13	2.4					642.4	2.80781		5.61562				+19.54		+ 5.24			
16.5		8.1	13	7.6	6	35.5	8 ~~9.2~~	29.0	1.29081	0.71963		M	49	12.75		27.45		31.28	
21.3		12.2					549.2	2.73973		5.47946				+16.70		+ 3.83			
4 40.7	13	31.5			7	38.7	9 ~~6.0~~	25.8	1.22273	0.58347		R	49	14.65		29.43		32.43	
46.6		36.8	13	36.6			486.0	2.68664		5.37328				+14.78		+30.0			
50.5		41.6			8	33.1	+ ~~6.0~~ 17.6	21.4	1.16964	0.47729		M	49	16.42		29.54		31.91	
6 7.0	13	59.4					431.6	2.63508	~~.508~~	5.27016				+13.12		+ 2.37			
11.1		4.5	14	4.9	21	16.1	- 6 ~~31.4~~	16.6	1.11808	0.37417		R	49	39.53		29.47		30.87	
16.7		10.8					331.4	2.52035		5.04070				- 10.08		+ 1.40			
	14	28.7			24	12.8	- 9 ~~26.1~~	8.3	1.00335	0.14471		M	49	41.12		25.67		28.95	
		34.4	14	35.0			508.1	2.70595		5.41190				- 15.45		+ 3.28			
		41.8			25	41.0	- 10 ~~56.3~~	36.5	1.18895	0.51591		M	49	43.75		25.62		30.14	
	14	58.7					596.3	2.77546		5.55092				- 18.13		+ 4.52			
15 4.36		4.5	15	4.3	27	7.7	- 12 ~~23.0~~	8.2	1.25846	0.65493		M	49	44.05		23.28		29.21	
15 4.36		9.7					683.0	2.83442		5.66884				- 20.77		+ 5.93			
	15	28.7			28	40.0	- 13 ~~55.3~~	35.1	1.31742	0.77285		M	49	45.75		22.57		30.21	
		34.2	15	33.8			775.3	2.88947		5.77894				- 23.58		+ 7.64			
		38.4						1.37247		0.88295									
	15	58.9																	
		4.0	16	3.8															
		8.4																	
	16	26.0																	
		31.3	16	32.2															
		37.2																	
23 49.2	16	55.9					1 13	36.81									88	39 52.98	
54.3		2.6	17	2.0															
58.4		7.4																	
25 20.4	17	26.8																	
26.1	17 31.34	30.5	17	31.5															
31.5	17 31.34	37.2					a+1							a-1					
26 46.5	17	53.1																	
53.1		58.7	17	59.0			0 20.0	+ 14 43.5	+ 14 45.7	+ 15 6.7			23 54.3	- 8 49.8	- 8 51.3	15 53.0			
57.9		4.6																	
28 15.8	18	27.7					1 47.0	13 17.5	+ 13 16.6	3.6			25 26.0	10 21.5	- 10 19.8	6.2			
22.0		31.7	18	32.0															
26.6		36.5					3 15.8	11 48.7	+ 11 48.8	4.6			26 52.5	11 48.0	- 11 48.5	4.0			
29 46.4	18	53.5																	
50.7		59.7	18	59.7			4 45.9	10 18.6	+ 10 20.1	6.0			28 21.5	13 17.0	- 13 17.0	4.5			
55.5		5.9																	
30 42.4	19	25.2					6 11.6	8 52.9	+ 8 51.2	2.8			29 50.9	14 46.4	- 14 46.2	4.7			
45.9		31.0	19	30.5							23.7						22.4		
50.1		35.2									4.74		30 46.1	15 41.6			4.48		
31 28.1	19	54.9											350						
35.5	19 58.76	0.6	20	0.0							9.22		31 36.0	-16 30.5					
41.3	19 58.76	4.6									4.61								
	20	21.7																	
		26.7	20	27.6															
		34.5																	
	20	50.0																	
		56.3	20	56.0															
14 44.7		1.6																	
15			15	4.468															

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														′	″		
			7	0 3.5								M	10	5270	10′ 1.44	9′	23.34
				8.9	7 9.2	44	59.6	+28 5.6						-51.26	-36.10		
				15.2				1685.6	3.22675	6.45350							
			7	36.6		45	49.5	27 15.7	1.70975	1.55751		R	10	4883	9′ 59.11		25.12
				40.8	7 41.1			1635.7	3.21370	6.42740				-49.74	-33.99		
				46.0		46	58.2	26 10.0	1.69670	1.53141		M	10	4480	57.05		25.73
			8	3.5				1570.0	3.19590	6.39180				-47.75	-31.32		
	8 9.62			8.4	8 8.5	47	56.0	25 10.2	1.67890	1.49581		R	10	4095	55.03		26.05
	8 9.62			13.6				1510.2	3.17903	6.35806				-45.92	-28.98		
			8	34.7		52	53.9	20 11.3	1.66203	1.46207		M	10	2020	43.37		24.29
				39.5	8 40.1			1211.3	3.08325	6.17650				-36.83	-19.08		
				46.2		53	45.8	19 19.4	1.56625	1.28051		R	10	1753	42.29		25.21
			9	4.3				1159.4	3.06423	6.12846				-35.26	-17.08		
				9.2	9 9.2	54	54.8	18 10.4	1.54723	1.23247		M	10	1357	40.41		25.30
				14.2				1090.4	3.03759	6.07518				-33.16	-15.11		
			9	31.7		59	37.3	13 27.9	1.62059	1.17919		M	9	5692	32.35		24.06
				38.2	9 38.0			807.9	2.90736	5.81472				-24.57	-8.29		
				44.0		1	37.9	11 27.3	1.39036	0.91873		M	9	5082	29.92		23.92
	59 48.4		10	2.1				687.3	2.83715	5.67430				-20.90	-6.00		
	46.1			7.4	10 8.1	3	3.0	10 2.2	1.32015	0.77831		M	9	4625	27.94		23.33
	52.3			14.7				602.2	2.77974	5.55948				-18.31	-4.61		
	1 1.9		10	33.0		4	48.5	8 16.7	1.26274	0.66349		M	9	4152	26.42		23.29
	15.6			37.7	10 37.8			496.7	2.69609	5.39218				-15.10	-3.13		
	22.0			42.7		5	46.2	+7 19.0	1.17906	0.49619		R	9	3907	25.72		23.27
	2 38.4		10	57.9				439.0	2.64246	5.28492				-13.35	-2.45		
	44.2			5.3	11 6.5	22	55.7	-9 50.5	1.12546	0.38893		M	9	827	26.23		21.80
	48.5			14.2				590.5	2.77122	5.54244				+17.96	-4.43		
	4 9.5		11	32.7		23	52.6	+10 47.1	1.25422$_m$	0.64645		R	9	765	27.34		22.02
	15.3			37.5	11 37.1			647.4	2.81114	5.62234				+19.69	-5.32		
	21.3			41.0		35	9.7	-12 4.5	1.29417	0.72635		M	9	652	28.55		21.86
			12	0.6				724.5	2.86004	5.72008				+22.03	-6.67		
	10 37.50			6.0	12 6.2	24	3.5	-12 58.3	1.34304	0.82409		R	9	617	29.84		22.14
	10 37.50			12.1				778.3	2.89115	5.78230				+23.67	-7.70		
			12	32.2	8	27	5.0	-13 59.8	1.37415	0.88631		M	9	554	31.11		22.15
				37.1	12 37.2			839.8	2.92418	5.84836				+25.54	-8.96		
				42.2		28	5.2	-15 0.0	1.40718	0.95237		R	9	440	31.77		21.48
			12	57.7				900.0	2.95424	5.90848				+27.37	-10.29		
	13 5.34			4.2	13 4.8	29	19.7	-16 14.5	1.43724	1.01249		M	9	477	34.40		22.33
	13 5.46			12.5				974.5	2.98878	5.97756				+29.63	-12.07		
			13	28.0		30	20.4	-17 15.2	1.47178	1.08157		R	9	337	34.85		21.23
				33.8	13 34.3			1035.2	3.01502	6.03004				+31.48	-13.62		
				41.2					1.49802$_m$	1.13405							
			13	58.6													
				2.7	14 4.2												
				10.4													
			14	29.2													
				32.5	14 33.5												
				38.8													
	22.557		14	58.2				1 13	37.77							88	39 52.65
				2.9	15 3.0												
				7.9													
			15	26.8													
	15 32.82			32.0	15 33.0												
	15 32.82			40.2				a+1									
			15	54.6													
				0.2	16 1.1			57 47.6	+13 17.6	+ 14 46 2	+14 33.8						
				8.5													
			16	29.5				1 15.8	11 49.4	+13 17.0	32.8						
				38.4	16 33.5												
				37.7				2 43.7	10 21.5	+11 48.5	32.2						
			16	54.5													
				59.6	17 1.1			4 15.4	8 49.8	+10 19.8	35.2						
				9.2													
			17	28.3				— —	— —	+18 50.0	— —						
				38.7	17 29.9						134.0						
				37.7							14 33.66						
				—													
	18 0.80			—	18 1.0												
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		9	4.6																						
+5	55.3		11.2	9 9.3		54	17.6	+23	46.3					M	48	3525		9	9.3	+5	55.3	15	4.6		
			15.1	~~3 56.7~~										R	48	3782									
		9	33.7	5 55.3	+5 55.0	54	6.2	20	57.7	4.6	4.3	4.6													
.5	25.1		40.0	9 39.5										M	48	4190		9	39.5	5	25.1		4.6		
			44.9	~~3 26.6~~		55	3.6	20	0.3																
		10	5.2	5 21.2	5 24.9					4.7	4.4	4.6		R	48	4427		10	9.4	4	55.6		5.0		
4	55.6		9.3	10 9.4		56	5.5	18	58.4																
			13.6	~~2 57.9~~																					
		10	33.5	4 55.3	4 55.3	56	54.9	18	9.0	4.7	4.7	5.0		M	48	4740									
4	25.8		38.3	10 38.5														10	38.5	4	25.8		4.3		
			43.7	~~2 27.7~~		57	52.5	17	11.4					R	48	5634									
		11	3.0	4 25.6						4.1	4.0	4.3													
3	56.3		9.1	11 8.7	4 25.5	0	39.4	14	24.5					M	49	092		11	8.7	3	56.3		5.0		
			13.9	~~1 57.9~~																					
		11	30.6	3 53.8	3 56.1	2	12.0	12	51.9	4.5	4.8	5.0		R	49	587									
3	26.8		34.7	11 36.2														11	36.2	3	26.8		3.0		
			43.2	~~1 28.8~~		3	57.3	11	6.6					M	49	882									
		12	1.0	3 26.8	3 26.7					3.0	2.9	3.0													
2	57.3		6.6	12 6.4		4	59.9	10	~~4.0~~					R	49	1107		12	6.4	2	57.3		3.7		
			11.1	~~0 58.3~~																					
		12	30.2	2 57.6	2 57.1	6	0.3	9	3.6	4.0	3.5	3.7		M	49	1467									
2	27.7		35.6	12 35.9														12	35.9	2	27.7		3.6		
			41.9	~~0 29.1~~		7	8.6	7	55.3					R	49	1717									
		13	0.2	2 27.4						- 3.3	3.5	3.6													
1	57.9		5.5	13 5.2	2 27.6	7	51.3	+7	12.6					M	49	4325		13	5.2	1	57.9		3.1		
			10.0	~~1 03~~						2.6	3.0	3.1													
				1 57.4	1 57.8					9) 35.5	3.51	3.69		M	49	4915							36.9		
										15 3.94	3.90	4.10										15	4.10		
														R	49	4812									
														M	49	4957									
														R	49	4910									
																18.5									
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																36.9									
																4.10									
					1 13 37.45														88	39	52.75				
			20	21.5																					
			27.5	~~2 26.6~~																					
			30.8																						

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0.11559
8.36750m
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	7	9.3	ang°																						
		14.6	7 147	44	30.8	428 3[illegible]							M	10	56[illegible]									
3.23505		20.3	-5 55.3			1718.4	13	10.0	9.3	6.47010				-37.57										
	T	40.5	-5 54.6	45	23.1	27 46.X1				1.57490m	R	10	52[illegible]											
3.22170		45.4	7 456			1666.1				6.44340				-35.28										
		57.0	-5 26.0	46	46.0	26 23.82		10.6	10.6	1.54750m	M	10	46[illegible]				7	43.6	5 25.3		10.9			
3.20088	8	8.7	5 25.0			1588.2				6.40176				-32.05									4.3	
		14.8	8 146	51	48.0	21 21.82				1.56586m	R	10	2667											
3.10763		20.3	-4 55.6			1281.2		10.2	9.9	6.21526				-20.86			8	14.6	4 55.5		10.1			
	8	40.2	4 55.3	53	23.4	19 46.38				1.31930m	M	10	1770								7.8			
3.07436		44.0	8 449			1186.4				6.14872				-17.90										
		50.4	4 26.0	54	25.2	18 44.60		10.9	10.7	1.25282m	R	10	1630				8	44.9	4 26.1		11.0			
3.05077	9	8.5	4 25.8			1124.0				6.10154				-16.06							9.0			
		14.5	9 144	59	43.7	13 26.X5				1.20564m	M	9	5753				9	14.4	3 56.5		10.9			
2.90660		20.3	-3 56.7			806.5		11.1	10.7	5.81320m				-8.27										
	9	39.3	3 56.3	1	46.8	11 23.84				0.91730m	R	9	5085											
2.83442		42.6	9 442			683.0				5.66884				-5.93			9	44.2	3 26.8		11.0			
		50.4	-3 26.6	2	53.9	10 15.83		10.8	10.9	0.77294m	M	9	4785											
2.78909	10	7.4	3 26.7			615.3				5.57818				-4.81										
		13.2	10 13.5	3	42.0	9 27.82				0.68226m	R	9	4690				10	13.5	2 57.1		10.6			
2.75374		19.9	-2 57.9			567.2		11.4	10.4	550748				-4.09										
	10	38.2	2 56.9	4	44.4	8 25.48				0.61158m	M	9	4347											
2.70398		42.3	10 42.8			505.8				5.40786				-3.25			10	42.8	2 27.8		10.6			
		48.0	-2 27.7	5	35.0	4 34.82		10.5	10.5	0.51196m	R	9	4132											
2.65725	11	6.0	2 27.7			454.2				5.31450				-2.62										
		9.7	11 1.0	6	49.5	+6 [illegible]				0.41860m	M	9	3830				11	11.0	1 58.1		9.1			
2.57944		17.2	-1 57.9			379.7		8.9	9.0	5.15888				-1.83										
	11	34.6	1 58.0	20	55.8	4 46.06				0.26298m	M	9	1202											
2.66876		38.7	11 40.0			466.6				5.33752				-2.76			11	40.0	1 28.5		8.5			
		46.7	-1 28.8	22	11.7	9 2.85		8.8	8.4	0.44162m	M	9	1080											
2.73440	12	5.2	1 28.4			542.5				5.46880				-3.74										
		10.2	12 10.1	23	4.0	9 59.48				0.57290m	M	9	972				12	10.1	0 59.0		9.1			
2.77481		14.8	-0 58.3			59[illegible]		8.4	8.4	5.54962				-4.50										
	12	34.3	0 58.9	33	47.4	10 37.6		8.0		0.65372m	M	9	890											
2.80496		39.2	12 40.1			638.2				5.60992				-5.06										
		46.8	-0 29.1	25	10.0	12 0.28		9.2	9.4	0.70402m	M	9	875				12	40.1	0 29.4		9.5			
2.85781	13	8.8	0 29.3			720.8				5.71562				-6.60										
		7.5	13 7.8	25	58.9	12 49.X7				0.81972m	M	9	780											
2.88632		12.0	-4 0.3			769.7		8.1	7.8	5.77264				-7.53										
	13	33.8	-0 0.0	27	16.3	14 6.57		7.1		0.87674m	M	9	680											
2.92793		38.4	13 38.6			847.1				5.85586				-38.12			13	38.6	-0 29.5		9.1			
		43.7	-0 29.4					9.2	9.2	0.95996m				49.7										
	14	2.3	-0 29.4											47.9										
		7.3	14 8.1											46.1			14	8.1	-0 59.0		9.1			
		14.8	-0 59.2					8.9	9.1					183.4										
	14	33.2	-0 59.0										13	9.17										
		38.8	14 39.3														14	39.3	-1 28.7		10.6			
		45.8	-1 29.0					10.3	10.7												183.4			
			-1 28.6																		13 9.17			
								16) 1573	1556															
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21 55.9 +51 13.9 -8 46.1 +8 51.1 +13 4.8
-8 51.2
23 24.3 49 45.5 -10 14.5 +10 20.0 4.3
-10 19.6
24 56.4 48 13.4 -11 6.6 -11 48.6 7.8
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27 [illegible] 46 [illegible] -14 44.7 -14 45.5 9.9
-14 46.0
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3 56.

4 26

4 55.

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1879phae.proj.1559.

1879 May 11 U.C.

0.11554
8.36750
8.48309

6.73660
8.36750
5.10410

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1879phae.proj.1559.

1879 May 12 L. C.

0.11559
8.36759 m
8.48318 m

6.73660
8.36759 m
5.10419 m

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1879phae.proj:1559.

1879 May 13 L.C.

0.11559
8.36759 m
8.48318 m

6.73660
8.36759 m
5.10419 m

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1879phae.proj.1559.

1559

1879 May 14 L.C.

0.11559
8.36759 m
8.48318 p

6.73660
8.36759 m
5.10419 p

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1879phae.proj.1559.

1879 May 14 M.C. X

0.11559
8.36759
8.48318

6.73660
8.36759
5.10419

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1879phae.proj.1559.

1879 May 29 L.C.

0.11559
8.36786m
8.48345n

6.73660
8.36786n
5.10446n

			for 0	T'S	T''-S														
	7	35.4																	
		39.3	7 40.3	44	31.6	+29 1.6					M	II	1692	10′	23″90	9′	45″32		
		46.2				1741.6	3.24095	6.48190					-53.02		-38.58				
	8	0.9		45	49.6	27 43.6	1.72440	1.68636			R	II	1110		19.99		44.79		
		5.5	8 7.1			1663.6	3.22105	6.44210					-51.11		-35.20				
		15.0		47	14.3	26 18.9	1.70850	1.57656			M	II	540		17.34		45.63		
	8	33.6				157.69	3.19835	6.39670					-48.06		-31.71				
8 38.32		37.6	8 38.1	57	38.5	15 54.7	1.68180	1.50116			M	10	2685	9′	57.79		46.26		
8 38.32		43.1				954.7	2.97987	5.95974					-29.06		-11.59				
	9	2.8		58	50.2	14 43.0	1.46332	1.06420			R	10	2185		54.97		45.05		
		7.3	9 8.0			883.0	2.94596	5.89192					-26.88		- 9.92				
		14.0		59	59.5	13 33.7	1.42941	0.99638			M	10	1802		53.81		45.39		
	9	33.7				813.7	2.91046	5.82092					-24.21		- 8.42				
		37.7	9 38.1	0	58.9	12 34.3	1.39351	0.92538			R	10	1450		51.53		44.25		
		42.9				754.3	2.87754	5.75508					-22.97		- 7.24				
	9	59.0		2	12.9	11 20.3	1.36109	0.85954			M	10	1115		50.44		44.55		
		2.8	10 4.7			680.3	2.83270	5.66540					-20.71		- 5.89				
		12.2		3	19.4	10 13.8	1.31615	0.76986			R	10	732		48.64		43.85		
	10	29.8				613.8	2.78803	5.57606					-18.68		- 4.79				
		33.6	10 35.3	4	25.3	9 7.9	1.27148	0.68082			M	10	442		47.74		43.92		
		42.6				544.9	2.73870	5.47740					-16.68		- 3.82				
	11	0.9		5	33.0	8 0.2	1.22215	0.58186			R	10	132		46.70		43.77		
11 5.08		5.3	11 6.0			480.2	2.68142	5.36284					-14.62		- 2.93				
11 5.08		11.8		6	46.1	+6 46.1	1.16487	0.46730			M	9	5747		43.05		42.83		
	11	28.7				408.1	2.61077	5.22154					-12.42		- 2.12				
		34.0	11 34.6	24	37.2	-11 24.0	1.09422	0.32600			R	9	2702		47.82		41.87		
		41.1				684.0	2.83506	5.67012					+20.82		- 5.95				
	11	58.5		26	55.2	13 22.0	1.31851	0.77458			M	9	2595		50.36		42.18		
		4.6	12 4.8			802.0	2.90417	5.80834					+24.41		- 8.18				
		10.4		28	1.8	-14 28.1	1.38762	0.91280			R	9	2585		52.28		42.70		
	12	29.3				868.1	2.93887	5.87714					+26.43		- 9.58				
		33.2	12 34.3	29	26.0	-15 52.8	1.42202	0.98160			M	9	2410		53.10		41.55		
		40.4				952.8	2.97900	5.95800					+29.00		- 11.55				
	12	57.7		30	23.8	-16 50.6	1.46245	1.06246			R	9	2342		54.18		41.19		
		3.0	13 3.7			1010.6	3.00458	6.00916					+30.76		- 12.99				
		10.3		31	37.2	-18 4.0	1.48803	1.11362			M	9	2340		56.40		41.45		
	13	32.1				1065.0	3.03503	6.07006					+33.00		- 14.95				
13 33.36		34.0	13 33.9	32	36.6	-19 3.4	1.51848	1.17452			R	9	2307		57.88		40.86		
13 33.36		35.5				1134.4	3.05820	6.11640					+34.81		- 17.02				
	13	58.0		33	42.6	-20 16.4	1.54165	1.22086			M	9	2295		59.98		41.16		
		1.9	14 2.5			1216.4	3.08508	6.17016					+37.03		- 18.82				
		7.7					1.56853	1.27462											
	14	26.2																	
		31.0	14 32.4																
		39.9																	
	14	56.0																	
		0.6	15 1.8																
		8.8						52.59											
	15	22.3				1 13		48.87								88	39	48.35	49.63
		28.0	15 28.8																
		36.0																	
	15	55.8																	
15 59.90		59.5	16 0.5																
15 59.90		6.3																	
	16	25.5																	
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		34.4																	
	16	57.9																	
		56.9	16 58.3																
		6.0																	
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		28.6	17 29.1																
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	17	52.7	57.9																
		57.4	17 59.6																
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18 29.34		—	18 30.0																
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		—																	
		—	19 3.0																
13 33.20		—																	
			13 33.200																

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1879phae.proj.1559.

1879 May 29 Ne

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6,73660
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1879phae.proj.1559.

1879 May 31 ME

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5.1044.6

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1879 May 31 Le. 6.

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	7	45.7															
		49.3	7 50.7	45	14.7	+28 28.2				M	11	11'40	10'	19".70	9'	42".29	
		57.0				1708.2	3.23254	646508				-52.00		-37.11			
	8	14.2		46	26.0	27 18.9	1.71599	1.56954		R	11	620		16.31		42.16	
		20.6	8 20.9			1638.9	3.21455	6.42910				-46.89		-34.15			
		27.0		3	45.3	9 59.6	1.69800	1.53356		R	11	497	9	46.72		42.15	
	8	45.3				599.6	2.77786	5.55572				-18.25		-4.57			
8 50.14		50.6	8 50.6	7	18.0	+ 6 26.9	1.26131	0.66018		M	10	3470		42.92		40.97	
8 50.14		57.9				386.0	2.58760	5.17520				-11.78		-1.95			
	9	14.8		25	5.7	- 11 20.8	1.07105	0.28966		M	9	2447		43.19		39.30	
		19.2	9 20.0			+ 680.8	2.83302n	5.66604				+20.72		- 5.89			
		26.0		26	8.1	- 12 20.2	1.31647	0.77050		R	9	2292		45.45		38.48	
	9	43.5				740.2	2.86935	5.73870				+22.53		- 6.97			
		47.2	9 48.5	27	1.8	- 13 16.9	1.35280	0.84316		M	9	2187		46.13		37.87	
		54.1				796.9	2.90140	5.80280				+24.26		- 8.26			
	10	13.3		27	43.0	- 13 58.1	1.38485	0.90726		R	9	2123		46.76		37.83	
		18.0	10 18.6			838.1	2.92330	5.84660				+25.51		- 8.93			
		24.5		28	42.5	- 14 57.6	1.40675	0.95106		M	9	2080		48.12		37.87	
	10	42.2				897.6	2.95308	5.90616				+27.32		- 10.25			
		47.2	10 47.6	29	34.8	- 15 49.9	1.43653	1.01062		R	9	2057		49.49		38.01	
		53.3				949.9	2.97768	5.95536				+28.92		- 11.48			
	11	12.3		30	34.0	- 16 49.1	1.46113	1.03982		M	9	2040		51.12		38.17	
11 17.02		16.7	11 17.2			1069.1	3.00393	6.00786				+30.72		- 12.95			
11 17.02		22.5		31	26.0	- 17 41.1	1.48738	1.11282		R	9	2002		52.31		37.99	
	11	41.3				1061.1	3.02576	6.05752				+32.29		- 14.32			
		43.5	11 46.2	32	33.3	- 18 47.4	1.50911	1.15598		M	9	1887		53.19		37.02	
		54.6				1127.4	3.05208	6.10416				+34.32		- 16.17			
	12	10.0		33	14.9	- 19 30.0	1.53553	1.20862		R	9	1947		55.09		37.68	
		14.5	12 15.5			1170.0	3.06819	6.13638				+35.62		- 17.41			
		21.9		34	4.0	- 20 14.1	1.55164	1.24084		M	9	1775		57.01		37.95	
	12	39.7				1224.1	3.08782	6.17964				+37.26		- 19.06			
		46.4	12 45.8	34	54.8	- 21 9.9	1.67127	1.28010		R	9	1945		58.11		37.60	
		57.2				1269.9	3.10377	6.20754				+38.66		- 20.51			
	13	10.0		35	52.0	- 22 7.1	1.58722	1.31200		M	9	1733		57.95		35.55	
		14.7	13 15.2			1317.1	3.12290	6.24580				+40.40		- 22.40			
		21.0					1.60633	1.35026									
	13	38.8															
13 44.66		43.7	13 44.7														
13 44.66		57.5															
	14	9.0															
		13.8	14 14.1														
		19.6															
	14	38.7															
		42.8	14 43.5														
		49.0															
	15	8.8															
		12.5	15 13.6														
		19.4															
	15	37.2				1 13 55.29										88 39.4790	
		41.7	15 42.3														
		47.9															
	16	3.6															
16 12.20		11.0	16 11.7														
16 12.20		18.6															
	16	36.8															
		41.8	16 42.4														
		48.6															
	17	6.9															
		10.4	17 11.0														
		16.8															
	17	35.2															
		39.3	17 40.0														
		45.6															
	18	3.7															
		8.7	18 9.6														
		13.0															
			14 = 17.410														
17 40.32																	
18 40.32																	
			16 = 18 10.0														
			19 = 18 41.0														
13 44.87			13.44.868														

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1879phae. proj. 1559.

-- 1879 June 1 M.C.

0.11559
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6.73660
8.36786
5.10446

											M	49	5.30		
											R	49	8.60		
											M	49	10.27		
											R	49	16.33		
											M	49	19.27		
											M	49	21.67		
											M	49	26.30		
											R	49	29.05		
											M	49	33.20		
											M	49	37.37		
											R	49	42.22		
											M	49	43.72		

140.5
145.4
335.9
15 29.99

1 13 54.81

a	+1			
0	42.3	+14 45.3	+14 44.8	15 27.1
2	11.5	13 16.1	+13 15.8	27.3
3	39.5	11 48.1	+11 48.1	27.6
5	8.4	10 19.2	+10 19.5	27.9
6	36.4	8 51.2	+8 50.5	26.9

136.8
15 27.36

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1879phae.proj.1559.

1879 June 4 L.C.

0.11297
8.36795 m
8.48092 m

6.73660
8.36795 m
5.10470 m

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1879 June 4

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1879phae.proj.1559.

1879 June 5 L.6.

0.11297
8.36795 m
8480 92 m

6.73660
8.36795 m
5.10446 55 m

			m s																
	9	40.8																	
		43.1	7 42.7	2	18.3	+ 11 18.2						M	10	9.65		7 42.7	13 36.9		
		44.3	+ 5 54.2			+6779 89	13	36.9	36.9							5 54.2	33.7		
	8	6.0	+5 54.2	3	25.3	10 11.2						M	10	5.92					
		10.7	8 11.5			6109 4										8 11.5	36.1		
		17.9	5 24.9	4	14.8	9 21.8		36.4	36.1			M	10	4.07		5 24.6	34.0		
	8	36.3	5 24.6			5614													
		41.0	8 41.4	5	13.1	8 23.4						M	10	1.52		8 41.4	36.3		
		47.0	4 54.8			5031 38		36.2	36.3							4 54.9	37.0		
	9	6.7	4 54.9	6	12.4	+ 9 24.1						M	9	5.823					
		11.4	9 11.7			+4438										9 11.7	37.2		
		17.0	4 24.7	23	43.5	-10 7.2	3	36.4	37.2			M	9	2.652		4 25.5	36.8		
	9	36.7	4 25.5			-6073 342													
		40.5	9 40.9	25	0.4	11 23.7						M	9	2.570		9 40.9	36.9		
		43.6	3 55.2			-6842 60		36.1	36.9							3 56.0			
	10	3.2	3 56.0	26	7.2	12 36.7						M	9	2.507					
		7.0	10 8.0			-757.0 92										10 8.0	37.4		
		13.8	3 26.0	27	45.4	14 R9		34.0	34.1			M	9	2.335		3 26.4			
	10	33.8	3 26.4			-849.2 14													
		39.1	10 39.7	28	38.6	15 2.4						M	9	2.310		10 39.7	36.4		
		46.3	2 56.7			-9024 365		36.4	36.4							2 56.7			
	11	2.1	2 56.7	29	12.7	15 32.6						M	9	2.202					
		8.4	11 9.1			-9365 91										11 9.1	36.6		
		16.8	2 27.5	30	5.3	16 28.8		36.6	36.6			M	9	2.195		2 27.5			
	11	31.6	2 27.5			989.1 7													
		37.1	11 38.1	30	48.9	17 12.4						M	9	2.137		11 38.1	36.6		
		45.7	8 58.4			-10327 8		36.5	36.0							1 57.7			
	12	4.3	1 57.9	31	42.0	18 5.5						M	9	2.090					
		8.6	12 8.9			10858 4.2										12 8.9	37.2		
		13.9	1 28.5	32	30.4	18 57.8		37.4	37.2			M	9	2.110		1 28.3			
	12	29.6	1 28.3			-11342 9													
		36.3	12 37.4	33	10.1	19 33.6						M	9	2.115		12 37.4	36.2		
		44.3	0 58.7			-11739 8		36.1	36.2							0 58.8			
	13	0.7	0 58.8	34	3.0	20 26.5						M	9	2.057					
		4.7	13 5.8			-12268 8										13 5.8	35.1		
		12.1	0 29.2	34	48.0	21 11.2		35.0	35.1			M	9	2.050		0 29.3			
	13	29.6	0 29.3			12718 9													
		34.0	13 3.54	35	35.1	21 58.9						M	9	2.085		13 35.4	35.4		
		42.7	0.1			-13189 8	13	35.3	35.4							0 0.0			
	14	0.2	0 0.0	35	57.7	-22 21.2								17.70					
		5.4	14 6.1			-13415								18.23		14 6.1	36.7		
		12.6	0 29.3					36.8	36.7					18.24		-0 29.4			
	14	30.0	-0 29.4											18.00					
		34.0	14 35.2											11.18		14 35.2	36.3		
		41.7	0 58.4					36.8	36.3					833.5		-0 58.7			
	15	0.4	0 58.9											13 36.24					
		4.6	15 5.0													15 5.0	36.5		
		10.1	1 27.5					37.2	36.5	1	13	58.99				-1 28.5			
—	15	27.0	-1 28.5														88 39 47.52		
—		34.2	15 33.9													15 33.9	36.2		
—		40.6	1 57.6					36.9	36.2							-1 57.7			
23 48.8	16	0.2	-1 57.7																
32.6		4.2	16 5.7													16 5.7	38.3		
58.0		12.8	2 27.4					38.6	38.3							-2 27.4			
25 18.0	16	30.5	-2 27.4																
21.9		33.4	16 34.2													16 34.2	37.3		
25.8		38.8	2 56.8				13	37.4	37.3							-2 56.9	833.5		
26 47.9		—	-2 56.9														13 36.24		
52.0		—				19) 697.30		69.20						a-1					
58.1		—				20.68													
28 1.7		—				13 36.47		36.42						23 53.1	-10 16.6	-10 19.4	13 39.9		
20.3		—												25 21.9	11 45.4	-11 47.9	34.0		
28.2		—				a+1								26 52.7	13 16.2	-13 15.7	37.0		
		—												28 21.4	14 45.9	-14 46.6	36.8		
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1879phae.proj.1559.

1879 June 7 U.C.

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1879phae.proj.1559.

1879 June 8 L.C.

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		m s																	
	41.2																		
	45.0	7 46.1	44	11.7	+29	28.5						m	10	2064		7 46.1	13 40.3		
	52.0	+5 54.2					13	40.3	40.3							5 54.2			
8	86	+5 54.2	45	26.4	28	13.8						m	10	1480					
	13.7	8 13.7														8 13.7	38.3		
	18.9	- 5 24.9	46	21.5	27	18.7		38.6	38.3			m	10	1085		5 24.6			
8	39.3	5 24.6																	
	44.7	8 45.3	53	8.7	20	32.0						m	10	4300		8 45.3	40.2		
	52.0	- 4 54.8						40.1	40.2							4 54.7			
9	10.8	4 54.9	54	5.0	19	35.2						m	10	3917					
	15.2	9 15.9														9 15.6	41.1		
	21.6	- 4 24.7	2	39.0	11	1.2		40.3	41.1			m	10	1105		4 25.5			
9	40.8	4 25.5																	
	45.8	9 45.8	4	35.6	9	4.6						m	10	572		9 45.8	41.8		
	50.7	- 3 55.2						41.0	41.8							3 56.0			
10	11.2	3 56.0	5	33.3	8	6.9						m	10	370					
	15.8	10 15.5														10 15.5	41.9		
	19.6	- 3 26.0	6	22.8	7	17.4		41.5	41.9			m	10	115		3 26.4			
10	37.8	3 26.4																	
	43.6	10 44.1	7	18.6	+6	20.6						m	9	5867		10 44.1	40.8		
	51.0	- 2 56.7						40.8	40.8							2 56.7			
11	6.2	2 56.7	23	44.2	-10	4.0						m	9	2967					
	11.4	11 11.8														11 11.8	39.3		
	17.7	- 2 27.5	24	36.7	10	56.5		39.3	39.3			m	9	2890		2 27.5			
	36.6	2 27.5																	
	41.7	11 42.6	25	22.8	11	42.6						m	9	2705		11 42.6	40.5		
	49.6	- 1 58.4						41.0	40.5							1 57.9			
12	8.4	1 57.9	26	16.0	12	35.8						m	9	2733					
	12.9	12 13.1														12 13.1	41.4		
	17.9	- 1 28.5	26	57.2	13	19.0		41.6	41.4			m	9	2660		1 28.3			
12	37.0	1 28.3																	
	41.4	12 41.2	27	44.0	14	3.8						m	9	2677		12 41.2	40.0		
	45.1	- 0 58.7						39.9	40.0							0 58.8			
13	3.1	0 58.8	28	37.7	14	57.5						m	9	2587					
	8.8	13 10.3														13 10.3	39.6		
	17.0	- 0 29.2	29	35.4	15	55.2		39.5	39.6			m	9	2535		0 29.3			
13	35.4	0 29.3				43.2													
+	40.9	13 42.1	30	23.4	16	42.3						m	9	2480		13 42.1	42.1		
	57.0	- 0.0					13	42.0	42.1							0 00.0			
14	5.0	- 0.0	(30	44.2	)17	4.0						m	9	2407					
	8.6	14 9.5														14 9.5	40.8		
	15.0	- 0 29.3	31	44.3	-18	4.1		40.2	40.1					201.7		- 0 29.7			
14	31.7	- 0 20.4												203.9					
	38.2	14 38.0												238.4		14 38.0	39.1		
	44.1	- 0 58.4						39.6	39.1					647.0		- 0 58.7			
15	0.3	- 0 58.9												40.25					
	4.6	15 6.0														15 6.0	37.5		
	13.0	- 1 27.8						38.2	37.5							- 1 28.5			
		- 1 28.5							(1 14	1.37						88		39 47.28	
							*16)	6439	6440									644.0	
							13	40.24	40.25									13 40.25	

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9	46.0	52.4										m	49	2352	
	32.3	9 5 5.8	59	4.5	+16 41.2										
	59.0	+ 53.4			+ 1001.0	5	15	45.8	47.0						
10	16.5	5 54.6	3	22.0	12 23.2				44.9			m	49	3737	
	21.0	10 21.9			+7435	5									
	28.2	- 5 24.1	4	26.0	11 19.7			46.0	46.4			m	49	3895	
10	45.2	5 24.5			+6795	5			44.0						
	49.9	10509	5	20.0	10 25.7							m	49	4214	
	57.6	- 4 54.6			+ 6255	5		45.5	45.9						
11	13.2	4 55.0	6	17.0	9 28.7				45.6			m	49	4505	
	20.2	11 20.0			+5685										
	26.6	- 4 25.4	7	7.3	8 38.4	2		45.4	45.2			m	49	4767	
11	45.4	4 25.2			+5182	5			45.6						
	51.2	11506	9	43.0	+6 2.7							m	49	5385	
	55.3	- 3 58.7			+3625	9		46.3	46.4						
12	14.3	3 55.8	22	44.1	-6 18.7				44.4			m	50	1380	
	19.0	12 19.2			-3789										
	24.3	- 3 27.0	23	35.1	7 49.6			46.2	45.6			m	50	1697	
12	42.0	3 26.4			+4696	5									
	46.6	12 47.1	24	48.0	9 2.3							m	50	1747	
	52.8	- 2 57.0			+5425	7		44.1	44.0						
13	13.9	2 56.9	26	15.2	10 29.5							m	50	1832	
	17.7	13 18.1			-6297										
	22.8	- 2 26.9	28	0.3	12 14.6	8		45.0	45.5			m	50	1953	
13	43.6	2 27.4			-7348										
	47.0	13 48.6	29	18.3	13 32.6	8						m	50	2057	
	55.2	- 1 57.8			-8128	7		46.4	46.3						
14	12.0	1 57.7	30	40.2	14 54.5							m	50	2172	
	18.7	14 17.8			-8947										
	22.8	- 1 28.9	31	32.0	15 46.5	8		46.7	46.3			m	50	2065	
14	41.4	1 28.5			-9465										
	48.0	14 47.6	32	27.7	16 42.0							m	50	2107	
	53.4	- 0 56.9			-10022	5		46.5	46.5						
15	11.1	0 58.9	33	17.0	17 31.5	7						m	50	2207	
	15.0	15 16.0			-10515										
	21.9	- 0 28.6	34	9.2	18 23.5	7		44.6	45.4			m	50	2222	
15	38.9	0 29.4			-11037	5									
	43.3	15 44.3	35	7.0	19 21.2							m	50	2290	
	50.6	+ 0.2			-11615	7	15	44.5	44.3						
16		- 0 0.0	35	55.2	-20 9.5							m	50	2222	
					-12097										

228.2
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24	35.5	- 8 49.8	15	44.9	
- 8	50.6				
26	3.4	10 17.7		44.6	
- 10	19.4				
27	33.5	11 4.78		45.6	
- 11	47.9				
29	1.3	13 15.6		45.6	
- 13	15.7				
30	29.0	14 43.3		44.4	
- 14	44.6				

20 33.8
42.0 20 40.7
46.3 - 4 58.0 15 45.7 45.8

21 3.8 4 54.9
7.3 21 9.0
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													m	49	25.5
						53	41.3	+22	9.1				m	49	53.0
						54	40.0	21	10.4						
						57	11.0	18	39.4				m	44	147.0
						58	5.7	17	44.7				m	49	176.7
		11	22.3			58	44.8	17	5.6				m	49	194.7
			26.6	11	266										
			30.8	+4	25.7	59	20.9	16	29.5	15	52.0	51.8	m	49	218.7
		11	46.8	+4	25.2							50.2			
			52.6	11	526	0	1.32	15	37.2				m	49	244.5
			58.3	3	55.7						48.3	48.4			
		12	18.7	3	55.8	1	43.0	14	7.4			50.3	m	44	294.5
			24.0	12	24.1										
			29.7	3	27.0	2	49.0	13	1.3		57.1	50.5	m	49	326.2
1	0.3	12	47.6	3	26.4							48.3			
	5.5		52.7	12	533	4	31.5	+11	18.9			50.2	m	49	374.2
	10.9		57.6	2	57.0						50.3	48.9			
2	29.8	13	18.0	2	56.9										
	34.3		23.8	13	235										25.12
	38.7		28.7	2	26.9										25.29
											50.4	50.9			14.82
3	54.0	13	47.2	2	27.4										65.23
	0.9		57.7	13	548									15	50.18
	7.2		57.6	1	57.6						52.6	52.5			
	—	14	16.8	1	57.7										65.23
	—		22.8	14	225									15	50.18
	—		27.9	1	28.9						57.4	51.0			
	—	14	44.7	1	28.5										
	—		49.5	14	49.6										
	—		54.7	0	58.9						48.5	48.5			
		15	14.7	0	58.9										
			20.0	15	20.1										
			25.5	0	28.6						48.7	49.5			
		15	44.0	0	29.4										
			50.0	15	50.2										
			56.6	+0	0.2					15	50.4	50.2			
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										10	50 3.7	50 35			
										15	50,37	50.35			

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1	5.6	+14	44.8	15	50.2
+14	44.6		161		
2	34.3	13	457		50.3
+13	16.0				
4	0.7	11	49.7		48.3
+11	47.6				
					148.8
				15	49.60

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1879 June 18 G.C.

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8.49101n

6.73660
8.36804m
5.10464n

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8.36804
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1	16.3	+14	44.7	+14	44.4	16	0.7		
2	44.6	13	16.4	13	15.5		0.1		
4	15.3	11	45.7	11	47.8		3.1		
5	42.2	10	18.8	10	19.2		1.4		
7	11.7	8	49.3	8	50.5		2.2		
							7.5		
						16	1.50		

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87

1879 June 18 L.6

0.11297
8.36804m
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8.36804m
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Identical

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m o

8 7.0
8.7 8 8.6 44 323 +29 29.8 M 11 2087
10.2 + 5 54.2 +1769.8 14 2.8 2.8
8 33.3 + 5 54.2 45 33.7 28 28.4 M 11 1500
35.6 8 38.5 +1708.4
43.5 - 5 24.9 46 38.9 27 23.2 M 11 1000
9 3.0 8 24.6 +1643.2
6.8 9 7.6 47 29.2 26 32.9 M 11 547
13.0 - 4 54.8 +1592.9 2.4 2.5
9 28.5 4 54.9 52 20.0 21 42.1 M 10 4630
34.0 9 34.2 +1302.1
40.2 - 4 24.7 53 20.9 20 41.2 13 58.9 59.7 M 10 4235
10 1.4 4 25.5 +1241.2
8.6 10 7.6 54 29.5 19 32.6 M 10 3830
12.7 - 3 55.2 +1172.6 9 14 2.8 3.6
10 28.5 10 3 56.0 2 27.2 11 34.8 M 10 1202
37.4 36.0 +694.9
42.0 - 3 26.0 3 59.4 10 2.7 2.0 2.4 M 10 738
10 58.6 3 26.4 +602.7
63 11 5.3 4 52.3 9 9.8 M 10 545
11.0 - 2 56.7 +549.8 2.0 2.0
11 29.6 2 56.7 5 44.5 8 17.6 M 10 262
33.4 11 33.6 497.6
37.8 - 2 27.5 6 31.6 7 30.5 1.1 1.1 M 10 075
2 7.6 11 58.0 2 27.5 +450.5
14.2 56 12 4.7 7 21.9 +6 40.2 M 9 5890
19.5 10.6 - 1 58.4 400.2 3.1 2.6
3 3.0 12 28.5 1 57.9 311.7
4.1 33.6 12 34.7 310.5
4.9.4 40.3 - 1 28.5 2.6 2.4 307.5
5 5.9 12 54.7 1 28.3 250.0
10.7 3.6 13 2.5 1179.7
16.7 9.3 - 2 26.7 1.2 1.3 14 2.09
13 26.0 0 58.8
30.3 13 30.7 1179.7
35.8 - 0 29.2 13 59.9 0.0 14 2.04
13 56.2 0 29.3
+ 1.5 14 2.2
8.8 - - 0.1 14 2.1 2.2
14 24.8 - 0 0.0
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35.1 - 0 29.3
14 35.1 - 0 29.4 0.7 0.6
3.0 15 2.3
8.8 - 2 58.4
15 26.0 - 0 58.9 3.9 3.4
31.7 15 31.5
36.8 - 1 27.8 3.7 3.0
15 43.3 - 1 28.5 1 14 12.49 '88 39 4650
58.7 16 0.5
63 - 1 57.0 3.5 2.8
16 23.0 - 1 57.7
29.5 16 29.6
34.4 - 2 27.1 2.5 2.2 a+1
16 52.6 - 2 27.4 2 13.8 +11 48.3 +13 18.5 15 29.3
02 16 58.9
8.9 - 2 56.8 14 2.1 2.0 3 43.8 10 18.3 11 47.8 31.6
- 2 56.9 19) 1807 397 5 11.1 8 51.0 10 19.2 30.3
14 0.844 2.14 2.09 91.2
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		10	8.8									
			14.7	10	14.7	(57	13.0	+18	55.5			
			20.7	5	53.4					16	8.1	9.3
		10	38.8	+5	54.6	58	55.2	17	13.2			7.9
			43.7	10	43.9							
			48.2		24.1	0	56.0	15	12.6		8.0	8.3
		11	7.9	5	24.4							9.4
			12.7	11	13.4	1	12.2	14	56.2			
			19.7	4	54.6						8.0	8.4
		11	37.2	4	55.0	2	2.6	14	5.8			9.2
			42.6	11	42.5							
			47.7		25.4	3	15.9	12	52.5		7.9	7.7
		12	3.0	4	25.2							
			11.8	12	12.0	4	32.7	11	30.7		6.7	7.8
			19.1	3	55.7						8.0	
		12	36.1	3	55.8	6	22.1	9	46.8			8.0
			41.2	12	42.0							
			48.6		27.0	7	32.9	8	30.5		9.0	8.4
1	18.6	13	5.4	3	26.4							10.3
	24.4		11.4	13	11.3	10	21.7	+5	46.7			
	27.4		17.1	2	57.0						8.3	8.2
2	48.6	13	35.1	2	56.9							
	54.3		42.9	13	41.2							
	58.7		45.7		26.9						8.1	8.6
4	15.2	14	6.0	2	27.4							
	22.0		11.5	14	11.5							
	27.1		17.0	1	57.8						9.3	9.2
5	42.6	14	35.7	1	57.7							
	48.6		41.6	14	41.1							
	55.1		46.0	1	28.9						10.0	9.6
7	16.2	15	3.2	1	28.5							
	18.8		9.6	15	9.6							
	24.3		16.0	0	58.9						8.5	8.5
		15	34.7	0	58.9							
			40.5	16	39.7							
			44.0		28.6						8.3	9.1
		16	3.0	0	29.4							
			8.1	16	8.5							
			13.8	+	0.2					16	8.7	8.5
				−	0.0					13)	108.9	
											8.38 ✓	1116
												8.58
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	a	+1				
1	23.5	+14	44.9	+14	44.4	16 7.9
2	53.9	13	14.6	13	15.5	9.4
4	21.4	11	47.0	11	47.8	9.2
5	48.8	10	19.6	10	19.2	8.0
7	19.8	8	48.6	8	50.5	10.3
						44.8
						16 8.96

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		10	12.2																
			18.3	10	17.6	58	22.8	+19	49.2						M	49	1210		
			22.2	+5	53.4					16	11.0	12.2							
		10	43.9	+5	54.6	38	6.5	18	5.5			12.1			M	49	1805		
			50.2	10	49.2														
			58.6	−5	24.7	59	10.7	17	1.3		13.3	13.6			M	49	2132		
		11	12.0	5	24.4							13.5							
			18.7	11	18.3	0	4.7	16	7.3						M	49	2510		
			24.2	−4	54.6						12.9	13.3							
		11	40.5	4	55.0	1	21.7	14	50.3			13.9			M	49	2917		
			47.2	11	46.6														
			52.0	−4	25.4	2	5.9	14	6.1		12.0	11.8			M	49	3120		
		12	11.7	4	25.2							12.4							
			16.5	12	17.1	3	22.7	12	49.3						M	49	3487		
			23.2	−3	55.7						12.8	12.9							
		12	42.2	3	55.8	4	37.8	11	34.2			13.9			M	49	3845		
			47.2	12	47.6														
			53.3	−3	27.0	5	30.2	10	41.8		14.6	14.0			M	49	4147		
1	23.2	13	7.3	3	26.4														
	27.9		14.7	13	13.9	6	23.0	9	49.0						M	49	4327		
	32.1		19.7	−2	57.0						10.9	10.8							
2	52.6	13	38.9	2	56.9	7	30.0	8	42.0						M	49	4652		
	57.8		46.0	13	45.6														
	3.7		52.0	−2	26.9	7	57.7	8	14.3		12.5	13.0			M	49	5205		
4	21.2	14	9.2	2	27.4														
	25.7		13.5	14	13.6	10	2.9	+6	9.1						M	50	682		
	31.3		18.0	−1	57.8						11.4	11.3							
5	46.8	14	38.2	1	57.9	18	3.0	−1	51.0						M	50	1117		
	52.3		44.7	14	43.8														
	0.6		48.6	−1	28.9	20	22.3	4	10.3		12.7	12.3			M	50	1505		
	−	15	7.0	1	28.5														
	−		14.3	15	13.7	22	56.9	6	44.9						M	50	1662		
	−		19.7	−0	58.9						12.6	12.6							
7	18.3	15	34.2	0	58.9	25	38.4	9	26.4						M	50	1917		
	23.0		41.1	15	41.0														
	29.0		47.8	−0	28.6	27	28.7	11	16.7		9.6	10.4			M	50	2007		
		16	5.6	0	29.4														
	4		13.1	16	12.1	29	49.3	13	37.5						M	50	2067		
			17.7	−	0.2					16	12.3	12.1							
		16	35.0	−0	0.0	31	42.2	15	30.2						M	50	2060		
			41.7	16	41.3														
			47.3	−0	30.0	33	44.8	17	32.8		11.3	12.0					12.94		
		17	3.2	−0	29.3												12.98		
			8.7	17	9.1												12.28		
			13.7	−0	58.7						10.4	10.3					11.40		
		17	33.3	−0	58.8												49.52		
			40.6	17	39.4											16	12.38		
			44.3	−1	27.9						11.5	11.1							
				−1	28.3							14	14.61					88	39	4646

16) 19.18 — 19.37
16 11.99 — 12.10

259.4
16 12.35

a +1

1	27.7	+14	44.3	14	44.4	16	12.1												
2	58.0	13	14.0	13	15.5		13.5												
4	26.1	11	45.9	11	47.8		13.9												
5	53.2	10	18.8	10	19.2		12.4												
7	23.4	8	48.6	8	50.5		13.9												
							65.5												
						16	13.16												

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1879phae..proc.1559.

1879 June 24 L.C.

0, 11297
8, 36804 m
8H 8101 m

6, 73660
8, 36804 m
5, 10464 m

Identical.

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1879phae.proj.1559.

25

1879 June 24 U.C.

0.11297
8.36804
8.48101

6.73660
8.36804
5.10464 Identical

1879phae.proj.1559.

1879 June 25 L.C.

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1879phae.proj.1559.

97

1879 June 25

Identical

0,11297
8.36804
8481 01

6.73660
8.36 804.
5.10464

R 49′ 2185

R 49 3022

M 49 3610

M 49 4240

M 49 4712

M 50 1585

M 50 1733

M 50 1904

16.76
16.50
16.58
49.84

16 16.61

a+1 a−1

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1879phae.proj.1559.

Ul.

1879 June 26 L_6 π_{12} π'_8 $\pi_a - S$

0.11297
8.36804$_n$
8.48101$_n$

6.73660
8.36804$_n$
5.10464$_n$

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1879phae.proj.1559.

1879 June 26 U.T. π'_δ π_α S

0.11297
8.36804$_n$
8.48101$_m$

6.73660
8.36804$_n$
5.10464$_m$

	8	56																	
		112	8 11.3	55	25.2	+18	41.3					M	49	9.55	43.49				
		17.0					1121.3	3.04972	6.09944					+33.94	16.00				
	8	36.0		38	34.1	17	32.4	1.53873	1.20408			M	49	13.17	45.03				
		41.6	8 41.8				1052.4	3.02218	6.04436					+31.86	14.09				
		47.8		57	36.7	16	29.8	1.50319	1.14890			M	49	16.45	46.34				
	9	6.0					989.8	2.99555	5.99110					+29.89	12.47				
9 11.22		11.0	9 11.3	58	23.0	15	43.5	1.47656	1.09574			M	49	7.95	48.13				
9 11.22		17.0					943.5	2.97474	5.94948					+28.56	11.33				
	9	36.1		59	26.8	14	39.7	1.45575	1.05412			M	49	22.22	48.85				
		41.7	9 41.6				899.7	2.94433	5.88866					+26.63	9.85				
		47.1		2	31.7	11	34.8	1.42594	0.99330			M	49	24.78	45.81				
		5.0					694.8	2.84186	5.68372					+21.03	6.44				
	10	10.2	10 10.1	3	33.0	10	13.5	1.32287	0.78836			M	49	28.92	47.49				
		15.0					613.5	2.78781	5.57562					+18.57	4.79				
	10	35.0		4	37.2	9	15.3	1.26682	0.68026			M	49	31.72	48.53				
		40.6	10 40.6				555.3	2.74453	5.48906					+16.81	3.92				
		46.3		5	41.9	8	24.6	1.22554	0.59370			M	49	34.47	49.74				
59 16.4	11	4.7					504.6	2.70295	5.40580					+15.27	3.24				
22.1		9.4	11 9.9	6	30.6	7	35.9	1.18396	0.51044			M	49	36.78	50.89				
25.9		15.7					455.9	2.65887	5.31774					+14.11	2.64				
30.32	11	34.7		7	39.0	+6	27.5	1.13988	0.42238			M	49	39.15	50.88				
11 39.52		39.8	11 39.7				387.5	2.58827	5.17654					+11.73	1.91				
11 39.32		44.7		23	46.4	−9	39.9	1.06928	0.28118			M	49	42.40	27.85				
2 15.0	12	3.4					599.9	2.76335$_m$	5.52670					+17.55	4.28				
18.5		8.1	12 8.7	24	12.4	+10	5.9	1.24436	0.63134			M	49	45.33	27.21				
22.7		14.6					605.9	2.78240	5.56480					−18.34	4.67				
3 41.2	12	31.7		24	31.1	+10	24.6	1.26341	0.66944			M	49	47.42	28.47				
47.3		37.6	12 37.7				624.6	2.79560	5.59120					−18.85					
52.6		43.8		25	39.7	−11	53.2	1.27761	0.69584			M	49	49.05	27.46				
5 10.3	13	2.0					713.2	2.85321	5.70642					−21.59					
15.7		5.8	13 7.3	26	43.8	−12	37.3	1.33422	0.81166			M	50	1.42	59.50				
20.6		14.0					757.3	2.87927	5.75854					−22.92					
	13	31.2		27	49.2	−13	42.7	1.36028	0.86318			M	50	16.22	51.32				
		37.0	13 37.4				822.7	2.91524	5.83048					−24.98					
		44.0		29	9.4	−15	2.9	1.39625	0.93512			M	50	16.78	49.45				
	14	1.3					902.5	2.95564	5.91138					−27.33					
14 6.48		7.0	14 6.3	30	0.2	−15	53.7	1.43665	1.01602			M	50	18.10	49.23				
14 6.48		10.7					953.7	2.97941	5.95882					−28.87					
	14	30.7		30	45.0	−16	38.5	1.46042	1.06346			M	50	19.42	49.19				
		35.8	14 36.0				995.5	2.99935	5.99870					−30.23					
		41.6		31	30.6	−17	24.1	1.48036	1.10394										
	14	59.8					1044.1	3.01874	6.03748										
		5.6	15 5.4	32	25.7	−18	19.2	1.49975	1.14212										
		10.7					1099.2	3.04108	6.08216										
	15	29.7						1.52209$_m$	1.18680										
		35.6	15 35.4																
		40.8																	
	15	58.6											−1	14 17.81			88	39	46.37
		5.4	16 4.8																
		10.3																	
	16	28.8																	
16 34.16		34.3	16 34.1																
16 34.16		39.3																	
	16	57.8																	
		3.0	17 3.4																
		9.4																	
	17	27.6																	
		32.6	17 33.1																
		39.2							Q + 1										
	17	57.6		59	21.5	+14	45.0	+14 44.4		14 5.9									
		23	18 2.5																
		7.6																	
	18	29.3																	
		31.6	18 31.3	2	18.7	(+	47.8	11 47.8		6.5									
		37.0																	
				3	47.0	10	19.5	10 19.2		6.2									
19 1.46			19 1.5																
19 1.46				5	15.5	8	51.0	8 50.5		6.0									
										24.6									
			19 31.0									14	6.15						
			20 1.0																
14 6.37																			
528			14 6.528																

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1879phae.proj.1559.

1879 June 30 L.C.

Duplicate

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1879phae.proj.1559.

1879 June 30 U.C. m's m − s

0.11297
8.36804
8.48101

6.73660
8.36804
5.10464

		m o																	
	10 26.0																		
	32.0	10 31.9	55	47.2	+20 36.8														
	37.7				1236.8	3.09230													
	10 55.0		58	40.0	17 44.0	1.57331	6.18460												
	59.6	10 59.4			1064.0	3.02694	1.28924												
	3.7		0	25.3	15 58.7	1.50795	6.05388												
	11 25.0				958.7	2.98168	1.15852												
11 2954	28.3	11 29.4	2	5.7	14 18.3	1.46269	5.96336												
11 29.54	35.0				858.3	2.93364	1.06800												
	12.6		3	39.7	12 44.3	1.91465	5.86728												
	58.6	11 58.3			764.3	2.88326	0.97192												
	3.7		4	28.9	11 55.1	1.36427	5.76652												
	12 23.3				715.1	2.85437	0.87116												
	29.5	12 28.4	5	17.3	11 6.7	1.33538	5.70874												
	33.3				666.7	2.82393	0.81338												
	12 32.0		6	16.7	10 7.3	1.30494	5.64786												
	56.7	12 56.8			607.3	2.78340	0.75250												
	.16		7	17.2	9 6.8	1.26441	5.56680												
	13 20.6				546.8	2.73783	0.67144												
	25.1	13 27.2	8	25.3	7 58.7	1.21884	5.47566												
	33.8				478.7	2.68006	0.58090												
	13 46.7		9	15.2	7 8.8	1.16107	5.36012												
13 56.46	58.1	13 56.7			428.8	2.63225	0.46476												
13 56.46	33		10	7.2	6 16.8	1.11326	5.26450												
	14 20.0				376.8	2.57611	0.36914												
	25.4	14 25.7	22	44.6	− 6 20.6	1.05712	5.15222												
	31.7				380.6	2.58047	0.25686												
	14 48.3		24	7.0	− 7 43.0	1.06148	5.16094												
	56.8	14 55.9			463.0	2.66558	0.26558												
	26		25	53.6	− 8 29.6	1.14659	5.23116												
	15 18.4				509.6	2.70723	0.33580												
	23.6	15 28.4	25	57.6	− 9 27.6	1.18824	5.41446												
	29.7				567.6	2.75404	0.57910												
	15 46.4		26	57.7	−10 33.7	1.23805	5.50808												
	58.1	15 55.1			633.7	2.80188	0.61272												
	06		27	50.6	−11 26.6	1.28289	5.60376												
	16 18.5				686.6	2.83670	0.71840												
16 2346	23.0	16 23.5 X	28	40.2	−12 16.2	1.31771	5.67340												
16 23.46	29.1				736.2	2.86700	0.77804												
	16 47.4		29	35.9	−13 11.9	1.34801	5.73400												
	54.0	16 53.9			791.9	2.89867	0.83864												
	04					1.37968	5.79734												
	17 16.0						0.80198												
	21.6	17 20.9																	
	25.2																		
	17 46.1																		
	52.0	17 52.0																	
	57.9																		
	18 11.6				1 14 21.52														
	22.1	18 20.4																	
	27.5																		
	18 46.0																		
18 5078	52.4	18 51.8																	
18 50.78	57.0																		
	19 —																		
	—	19 20.0																	
	—																		
	19 43.4																		
	49.2	19 46.7																	
	52.4																		
	20 15.7																		
	21.6	20 21.1																	
	26.0																		
	20 42.0																		
	48.3	20 48.6																	
	55.4																		
	21 18.3																		
21 1987	20.6	21 20.0																	
21 19.62	26.0																		
	21 43.3																		
	49.1	21 50.2																	
	58.1																		
	22 14.4																		
	19.4	22 19.2																	
16 2401	23.9																		
		16 24.012																	

1879phae.proj.1559.

1879 July 1 L.C. π' δ $\pi_m - \delta$

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1879phae.proj.1559.

1879 July 1 U.T.'s $\frac{m}{n}$ − S

0.11297
8.36804
8.48101

6.73660
8.36804
5.10464

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1879phae.proc.1559.

3 missing in beginning

1879 July 2 L.C.

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1879phae.proj.1559.

1879 July 2 M.C.T.'s T − δ

0.11297
8.36804
8.48101

6.73660
8.36804
5.10464

| | | |

1879phae.proc.1559.

1879 July 2 UL

1879phae.proj.1559.

107

1879 July 6 L.C.

1879phae.proj.1559.

1879 July 5 L.C.

0,11297
8,36795m
8,48092

6,73660
8,36795
5,10455m

| | | |

1879phae.proj.1559.

209

1879 July 8 L.6

0.11297
8.367955
8.48092n

6.736600
8.367955
5.104555n

			9	47.4	4 25.2																				
	+ 4	25.6	5	76	9 52.9	(2	58.0)	+11	20.4	18.1	18.2	18.5	M	10				9	52.9	14	18.4			
			5	96	~~5 55.5~~													4	25.6		18.1			
					+ 4 25.3	(5	28.8)	8	49.6				M	10	5485										
																					18.4			
						(6	15.0)	8	3.4				M	10	5237										
			10	45.8	3 2.64					18.7	18.8	18.8													
	3	26.5	3	25.5	10 52.3	7	5.0	7	13.4				M	10	5090			10	52.3		18.7			
			5	87	~~4 55.5~~													3	26.4		17.3			
					3 26.5																				
			11	16.8	2 57.3	7	58.2	6	20.4	18.5	18.2	17.9	M	10	4817										
	2	56.7	11	21.2	11 21.2													11	21.2		17.9			
			25	7	~~2 55.5~~	8	51.0	5	27.4				M	10	2967			2	56.7		17.6			
			2	5	2 27.6					18.1	17.9	18.0													
			11	44.0	11 50.5	9	47.4	4	31.0				M	10	2660			11	50.5		18.0			
			51	0														2	27.3		19.4			
			56	4	~~3 56.6~~																				
			2	27	2 27.4																				
			12	13.1	1 58.1	(18	4.2	+3	45.8	18.2	17.8	18.0	M	10	2570										
	1	57.9	21	0	12 20.1													12	20.1		18.0			
			26	2	~~3 26.4~~	20	22.8	6	4.4				M	10	2450			1	57.9		18.8			
			1	57	1 57.7					19.3	19.5	19.3													
			12	45.0	1 28.3																				
	-	28.3	51	3	12 51.0	21	14.6	6	56.2				M	10	2295			12	51.0		19.3			
			56	8	~~2 55.5~~													1	28.3					
			1	28	1 28.5																				
			13	13.4	0 58.6	22	5.5	7	47.1	17.8	18.1	18.1	M	10	2137										
		58.9	19	5	13 19.2													13	19.2		18.0			
			24	7	~~0 58.8~~	23	26.0	9	7.6				M	10	2127			0	58.8					
2			13	42.0	0 58.8																				
			0	28	0 28.5					17.1	18.0	17.9													
		29.3	48	4	13 48.6	24	15.0	9	57.4				M	10	2022			13	48.6		17.9			
			53	3	~~1 58.1~~													0	29.3					
3	53.3		14	13.6	+ 0 28.4	25	16.6	10	58.2	18.9	19.1	19.1	M	10	1837										
	58.8	0.0	18	7	14 19.1													14	19.1		19.1			
	5.3		24	9	~~2 28.0~~	26	23.2	12	4.8				M	10	1787			0	0.0					
			14	42.0	0 29.4					18.6	18.7	18.6													
		29.4	48	7	14 48.0	27	58.7	13	40.3				M	10	1765			14	48.0		18.6			
			53	3	~~2 58.1~~													- 0	29.4					
			15	11.3	- 0 29.3	29	20.2	15	1.8	18.5	18.1	18.1	M	10	1678										
		58.9	18	1	0 58.5													15	17.0		18.1			
			15	17.0	15 17.0													- 0	58.9					
			21	7	~~2 25.5~~	30	12.3	15	53.9				M	10	1682										
			0	58	0 58.9					17.4	17.6	17.4													
			41	2	1 28.5								M	10	1700			15	45.9		17.4			
	- 1	28.5	44	8	15 45.9	31	7.9	16	49.5									- 1	28.5					
			57	8	~~0 58.4~~																				
			1	28	1 28.3																				
			16	11.3	0 58.4	31	58.3	17	39.9	18.4	18.9	19.1	M	10	1672										
	- 1	57.7	17	3	16 16.8													16	16.8		19.1			
			21	9	~~2 31.4~~ 15.7	32	42.8	18	31.4						18.18			- 1	57.7					
										19.6	20.1	20.2			18.18										
			16	43.4	1 28.0										18.62			16	47.6		20.2			
	- 2	27.4	46	5	16 47.6	33	38.1	19	19.7						18.68			- 2	27.4					
			53	0	~~2 59.3~~					14) 2572	2590	2590			73.66						368.3				
					- 2 27.5					14 18.37	18.50	18.50			14 18.41						14 18.41				
-	23	2.6									1 14	29.41							88		39 46.91				
		9.7																							
		14.7																							
	24	31.6																							
		36.8																							
		41.7																							
	26	0.2																							
		5.8																							
		10.4																							
	27	31.2																							
		34.8							a + 1						a − 1										
		39.3													23 9.0		−8 50.6	−8	50.6	14	18.4				
	28	59.0																							
		8.5													24 36.7		10 18.3	−10	19.4		17.3				
		7.7																							
															26 5.5		11 47.1	−11	47.9		17.6				
									.3	59.1	7 10	19.3	+10	19.0	14	18.1	27 35.1		13 16.7	−13	15.7		19.4		
																	29 3.4		14 45.0	−14	44.6		18.8		

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– 1879 July 8 U.C.

0.11297
8.36795
848092

6.73660
8.36795
5.10455

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1879phae.proj.1559.

11

1879 July 9 L.C. T's $T_w - S$

0,11297
8,36795
848092

6,73660
8,36740
5,10406

	8 18.1												
	24.7	8 24.1	0	36.0	+13 43.3			M	11	9.75			
	29.4				823.3	2.91556							
	8 47.0		1	49.2	12 30.1			M	11	6.52			
	54.0	8 53.5			750.1	2.87572							
	59.5		2	36.5	11 42.8			M	11	4.35			
	9 18.7				702.8	2.84683							
9 23.74	25.0	9 24.3	3	32.2	10 47.1			M	11	0.85			
9 23.74	29.2				647.1	2.81097							
	9 48.7		5	9.0	9 10.3			M	10	5.622			
	54.6	9 53.8			550.3	2.74060							
	58.2		6	4.1	8 15.2			M	10	5.330			
	10 17.0				495.2	2.69478							
	22.4	10 23.0	7	11.4	7 7.9			M	10	5.107			
	28.6				427.9	2.63134							
	10 46.7		8	10.9	6 8.4			M	10	4.865			
	53.8	10 52.5			368.4	2.56632							
	57.7		24	4.5	- 9 45.2			M	10	2.097			
0.369	11 15.7				585.2	2.76730	u						
	22.5	11 22.2	24	59.6	- 10 40.3			M	10	1.972			
	28.5				640.3	2.80638							
	11 43.5		25	46.9	- 11 27.6			M	10	1.922			
11 51.22	51.0	11 50.1			647.6	2.83734							
11 51.22	55.7		26	36.1	- 12 16.8			M	10	1.835			
	12 13.7				736.8	2.86735							
	21.0	12 20.3	27	32.0	- 13 12.7			M	10	1.748			
	26.3				792.7	2.89911							
	12 43.7		28	28.5	- 14 9.2			M	10	1.700			
	50.1	12 51.0			849.2	2.92901							
	57.2		29	17.7	- 14 58.4			M	10	1.662			
	13 15.2				898.4	2.95347							
	20.6	13 20.6	30	3.7	- 15 44.4			M	10	1.622			
	25.9				944.4	2.97576							
	13 48.3		30	52.0	- 16 32.7			M	10	1.547			
	-	13 50.8			992.7	2.99682							
	56.2		31	36.6	- 17 17.3			M	10	1.547			
	14 13.3				1037.3	3.01590							
14 19.32	19.0	14 19.0	32	25.6	- 18 6.3			M	10	1.542			
14 19.32	24.6				1086.3	3.03595							
	14 42.4		33	22.0	- 19 2.7			M	10	1.537			
	48.0	14 48.2			1142.7	3.05793	n						
	53.3												
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	18.0	15 18.0											
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	15 43.2												
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	18.2	16 17.6											
	22.6												
	16 40.9												
16 47.04	47.7	16 46.9											
16 47.04	52.0												
	17 10.1												
	15.3	17 15.7											
	21.4												
	17 42.1												
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19 15.02	—	19 15.9											
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14 19.27	—	14 19.268											

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1879 July 10 L.C. m s

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63

1879 July 10 M.T. m's m−s

0.15854
8.36795
8.52649

6.73660
8.36795
5.10455

		m s		s									
	10	8 6.7		3	40.0	+1	54.8						
							774.8	2.88919					
		4 23	10 4 25	5	7.4	11	27.4		M	50	3180		
		4 85					654.4	2.83721					
	11	6.6		6	8.0	10	26.8		M	50	3457		
		11.7	11 11.3				626.8	2.79713					
		15.4		6	57.0	9	35.8		M	50	3682		
	11	33.7					575.8	2.76027					
11 40.50		39.3	11 39.2	7	46.4	8	48.4		M	50	3872		
11 40.50		44.6					518.4	2.71466					
	12	2.5		8	33.0	8	1.8		M	50	4140		
		9.7	12 9.4				481.8	2.68287					
		15.1		9	21.7	7	13.1		M	50	4265		
	12	35.3					433.1	2.63659					
		39.2	12 40.1	10	11.3	6	23.5		M	50	4417		
		43.6					383.5	2.58377					
	13	4.0		22	44.7	−6	9.9		M	51	664		
		7.4	13 ~~7.6~~				369.9	2.56808	n				
		11.4	7.6	24	3.3	−7	28.5		M	51	770		
	13	31.6					448.5	2.65176					
		37.3	13 36.8	24	57.7	−8	22.9		M	57	917		
		41.6					507.9	2.70148					
	14	2.0		25	52.4	−9	17.6		M	57	910		
		7.6	14 7.8				557.6	2.74632					
14 6.94		13.8		26	51.3	−10	16.5		M	51	1112		
14 6.94							616.5	2.78993					
	14	31.0											
		35.9	14 36.0	27	52.8	−11	18.0		M	51	1085		
		41.1					678.0	2.83123					
	15	0.7		28	37.6	−12	2.8		M	51	1172		
		6.1	15 6.5				722.8	2.85902					
		12.7		29	31.4	−12	56.6		M	51	1232		
	15	29.8					776.6	2.89020					
		36.3	15 36.0	30	21.2	−13	46.4		M	57	1235		
		41.9					826.4	2.91719					
	16	2.0		31	6.6	−14	31.8		M	51	1230		
		6.5	16 7.0				871.8	2.94042					
		12.4		31	57.0	−15	24.2		M	51	1325		
	16	29.1					924.2	2.96577					
16 35.00		35.3	16 35.0	32	57.5	−16	21.3		M	57	1337		
16 35.00		40.7					984.7	2.99330	n				
		16 58.4											
		3.3	17 3.5										
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		10.0											
	18	25.3				1	14	30.84				88	39 46.96
		33.3	18 32.7										
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19 1.84		2.4	19 2.2										
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	19	27.2											
		30.9	19 31.7										
		36.9											
	19	52.8											
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16 34.78		31.0	16 34.78										

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1879 Aug. 14 S.C.

0.15854
8.36741m
8.52595m

6.73660
8.36741m
5.10401m

								m' s		π − δ						′	″		
								59 59.2	+ m 14 12.3		852.3	2.93059			M	11	764	
							8 15.0	2 24.0		11 47.5	707.2	284954			M	10	5817	
								5 6.3		9 5.2	545.4	273656			M	10	5395	
							8 45.0	6 42.1		7 29.4	449.4	2.65263			M	10	5015	
		9 15.20					9 16.0	8 0.5		6 11.0	371.0	256937			M	10	4537	
		9 15.20													M	10	4140	
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3	18.8			12	8.0														
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				18	3.7														
					10.4	18 9.2			1	56.7	12	14.8	13	17.0		13.7			
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				18	33.6				3	23.6	10	47.9	11	48.5		12.1			
					37.6	18 37.6													
					41.7				4	55.8	9	16.2	10	19.8		15.1			
				19	0.0														
		19 6.06			5.6	19 5.9			6	20.4	7	51.1	8	57.3		11.7			
		19 6.06			12.2														
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		14 11.90				14 11.496													

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15

1879 Aug-19 L.C.

0.158554
8.367732 m
8.525286 m

6.173660
8.367732 m
5.103932 m

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1879 Aug 19

0,15 854
8,36732
8,52586

6,73660
8,36732
5,10992

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1879 Aug. 20 L.C. X

0.15854
8.36732
8.52586

6.73660
8.36732
5.10392

Identical

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1879 Aug. 22 P.C.

ex

0,15854
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6,73660
8,36723
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