1880phme.proj.1856.

KG
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1880

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Re-readings of Chronograph Sheets

from Jan 1 1880 —

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1880 Book 3 – Record Book page 72 – May 20.
γ Cass d.C. 11h 47m Comet found. bet γ Urs. Maj 11h 47m
corresponds very well with it

Record Book Page 74. sheets from May 27 – June 2 missing

" " " 93 – see new work in book – for 5h 7m & Ann.

" " " 93 – γ Leo. 10h 13m corresponds with μ Urs. Maj 10h 15m

" " " 131 at minute of all the stars in Sept – 1

" " " 139 see new work in book S Ario 5h 25m

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1880.

January 1st

	α Arietis	α Ceti	ε Erid.	δ Erid.	η Tauri.	γ Aquil.
	2h 0m	2 55	3 27	3 37	3 40	19 40
0		0 56 11.80				
1						
2						
3	3 0 43.34		3 27 ~~35.90~~ 33.85		3 40 37.95	3 39 11.95
4		4 19.96			4 40.04	
5			5 39.90			
6						6 20.20
7						
8		8 30.02				
9	9 ~~57.60~~ 56.96	9 32.20				
10						
11				11 38 6.00	11 58.00	11 30.84
12	12 1 3.75			12 8.15		
13						
14						
15						15 41.00
16						
17				17 20.50		17 45.30
18						

Feb. 29th

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Mar 1st

β Orio.			α Can. Maj			α Virg.			α Boot.			η Ophi			Mar. 2 α Taiti			β Erid		
5	8		6	39		13	18		14	10		17	? 3		4	28		5	1	
						1	18	29.68				1	3	6.02	1	28	39.70			
						2		31.88				2		8.45	2		41.85	2	1	36.85
3	8	26.45										3		10.70						
												4		12.80						
												5		16.65	5		50.25			
			6	39	40.14															
															7		54.82			
			8		44.32															
9		41.00	9		46.30	9		48.30				9		25.25						
			10		48.74				10	10	10.20				10	29	1.00*			
11		45.20	11		50.74										11		3.18			
									13		16.48									
14		53.24	14		59.50							14		38.15	14		11.70			
15		55.45																15	2	7.84
			16	40	3.80										16		16.00			
18	9	1.85				18	19	9.40												

* Doubtful

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Mar. 2d

	β Orio.			γ Orio.			δ Orio.			α Columb.			α Can. Maj.			ξ Ophi.		
	5			5	18		5	25		5	35		6	39		16	30	
0							0	25	28.75	0	34	48.95	0					
1										1		51.68						
2							2		32.98									
3	3	8	28.18															
4																		
5							5		41.22				5	39	39.88	5	30	22.32
6	6		36.30							6		6.66						
7													7		44.00	7		26.78
8													8		46.18	8		28.82
9				9	18	38.70							9		48.30			
10							10		51.28									
11							11		53.55									
12										12		21.36				12		37.00
13	13		51.08	13		46.80										13		39.10
14	14		55.00	14		51.00												
15										15		31.28 30						
16	16		59.20															
17							17	26	7.80									
18										18		38.98						

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Mar 3d Mar 4

α Ophi.	λ Aquil.	η Ophi.	β Cau. Min	α Gem.	α Cau. Min.	β Gem.
17 29	18 59	17 [illegible] 3	7 20	7 26	7 32	7 37
	0 59 29.46					
	1 31.46					1 37 39.88
	2 33.28					
	3 35.40					
4 29 6.98	4 37.72		4 20 ~~27.90~~ 27.86			4 46.90
		5 3 20.75		5 26 49.70		
					6 32 56.70	
			7 36.02	7 54.42		
		8 27.04				
		10 31.50		10 27 1.90		
				12 6.55		
	14 0 2.58	14 42.00				
15 34.20						15 38 15.00
16 36.22						
				17 21.20		
	18 10.86					

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Mar 4th

15 Arg. (1)

8 2

Mar. 8th

	β Orio.	γ Orio	δ Orio.	α Columb.	κ Orio.
	5h 8m	5 18	5 25	5 35	5 41
0	0 8 31.45				
1	1 33.45	1 18 29.40		1 35 1.40	
2	2 35.82				
3					
4			4 25 46.75	4 8.90	
5	5 44.25		5 not obs. —	5 13.75	
6			6 52.85		
7		7 18 44.02			
8		8 46.00			
9		9 48.40	9 59.00		9 42 10.55
10	10 54.35		10 not obs. —	10 26.15	10 12.40
11 11 2 31.65			11 26 3.00	11 28.55	11 14.52
12		12 54.55		12 31.15	12 16.55
13				13 33.65	13 18.66
14					
15	15 9 7.10	15 3.00	15 13.70		15 25.00
16	16 9.28	16 19 5.00			
17					
18			18 19.90	18 48.66	

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Max. 10.

	α Can. Maj		δ Can. Maj		β Can. Min		α Can. Min		α Virg.		α Bootes		α Leo.	
	6	39	7	3	7	20	7	32	13	18	14	10	10	1
0	38	36.35	0		0	19	25.50	0 31	48.18					
1								1	50.10					
2		40.90			2		29.72			2 18[7]	43.36	2 9	2.00	
3								3	54.25					
4		45.00[×]	4	2 23.28	4		33.52			4	47.65	4	6.00	
5					5		37.95	5 32	0.50					
6		51.70?	6	30.65						6	53.86	6	12.90	
7		53.70?	7	32.70								7	14.92	
9		cannot read[+]	9	37.35	9		46.35	9	8.62	9	59.80			
10										10 18	2.00	10	21.72	
11					11		50.48					11	23.90	
12			12	43.88						12	6.30			
13			13	46.34										
14	39	10.80						14	21.00			14	32.34	
15			15	53.46	15	20	0.65	15	23.02					15 1 22.55
16								16	25.04	16	16.60			
17		17.60						17	27.18					17 26.80
18		19.90			18		6.85	18	29.30					

[+] Blotted from 4th wire to 13th badly blotted

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Mar. 10th

ζ Leo.				ζ Leo.				ζ Virg.				ε Virg.				β Orio				γ Orio.			
10		9		11		7		12		49		12		56		5		8		5		18	
0	0	8	47.94									0	55	0.80						0	17	29.88	
1				1	6	33.10		1	48	24.00		1		2.50						1		31.98	
2												2		4.50						2		38.00	
3	3		54.42																				
4			56.80																				
5	9		1.20									5		13.00									
6			3.65	6		46.00										6	7	48.35		6		44.42	
7			5.86	7		48.65																	
8												8		19.00		8		52.45					
9																							
10	10		12.65																				
11																							
12																				12		56.58	
13												13		29.78									
																1							
14												14		33.85		14	8	7.00					
15	15		26.00																				
16																				16	18	7.00	
17	17		30.60									17		40.02						17		9.10	
18																18		15.70					

Mar. 15th

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Mar 17

	κ Ori.	μ Gem.	β Eri.	α Ori.	χ Can. Min.	β Gem.	b Aq (c)
	5 41	6 15	5 1	5 48	7 32	7 37	8 2 (9 13 Aq)
0				48 27.12			
1	40 53.70				1 32 50.55	1 37 46.12	1 2 13.12
3	57.76		3 1 49.35				
4	59.95		4 51.45			4 53.15	
5		14 42.80					
6				39.65	6 33 2.75		
7					4.90		
8							31.10
9					9.00 ~~11.20~~		
10						38 9.45	
11						11.80	
12					15.58		
13							42.25
14		15 5.00		14 56.36	14 21.70		
16	41 29.00			16 49 4.75			
17						28.50	17 53.48
18						30.75	

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Mar 17th

	α Hydrae			ε Leo.			ζ Leo.			γ Leo.			ζ Leo.			β Leo.		
	9		21	9		38	10		9	10		13	11		7	11		42
0	0	21	28.96							0	13	8.44						
1													1	7	32.98			
2																		
3																		
4	4		37.00							4		17.50				4	42	57.95
5	5		41.20															
6				6	39	4.90							6		46.00			
7																7	43	0.48
8	8		47.36													8		2.65
9	9		49.85				9	10	10.10	9		30.72						
10	10		51.90				10		12.35									
11	11		53.94															
12																12		11.30
13				13		20.55										13		13.45
14	14	22	2.02							14		43.85						
15				15		27.25							15	8	8.40	14		18.30
16				16		29.60										15		20.02
17	17		8.35				17		30.80	17		50.48				16		22.28
18	18		10.44													17		24.35
																18		26.45

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Mar. 18.

δ Virg.		ε Virg.		α Virg.		α Aquil.		ξ Cyg.		β Crid.		α Aquil.	
12	49	12	56	13	18	19	44	21	7	5	1	19	44
0	49	21.55		0	18	39.90							
1	49	23.56	1 56	2.35	1	41.94	1 44	43.80				1 44	43.20
2		25.60	2	4.45									
							3	47.75					
					4	48.00				4	1 51.30		
					5	52.18			5 7	46.80			
					6	54.35			6	49.00			
							8	45 0.35					
			9	21.32	9 19	0.90					9 2 3.68	9 45	2.00
					10	3.00	10	4.45				10	4.00
			11	25.35									
					12	7.00							
13		50.75											
					16	17.68							
17	50	1.12	17	40.00	17	19.75			17 8	17.48			
			18	42.28	18	21.95						18	22.98

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Mar. 21st

	ε Can. Maj.		δ Can. Maj.		β Can. Min.		α Gem.		β Gem.		15 Arg. (c)	
	6	53	7	3	7	20	7	26	7	37	8	2
0			0	3	14.95							
1						1	20	28.00				
2	2	53	42.62									
3				3	21.80							
4												
5	5		52.00									
6												
7						7		42.85				
8												
9											9	2 33.66
10												
11												
12												
13				13	46.96							
14											14	46.98
15												
16	16	54	20.44									
17						17	21	5.80				
18								18 27 30.35		18 38 31.00		

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β Libr.			α Cor. Bor.			α Serp.			δ Scorp.			β Scorp			δ Ophi.			α Scorp.		
15	10		15	29		15	38		15	53		15	58		16	7		16	21	
			0	29	22.00															
						1	38	11.28	1	53	2.75				1	7	53.15			
			2		26.96										2		55.10	2	21	52.96
									3		7.00	3	58	20.80	3		57.30			
			4		31.65				4		9.26				4		59.50			
6	10	35.40	6		38.20							6		29.40	6	8	5.80			
												8		33.68						
			9		45.34	9		30.00							9		11.96			
10		43.44																		
												11		40.36						
						12		36.50												
			13		54.75	13		38.54	13		31.84									
																		15		27.24
			16	30	3.96							16		53.70						
			18		8.30															

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Mar. 21st

	ζ Ophii.	η Herc.	η Ophii. ?	α' Herc.	α Ophii.	β Aquil.
	16 30	16 38	17 ?3	17 9	17 29	19 49
0		0 38 29.00				0 49 11.75
1		1 31.95		1 8 59.75		1 13.88
2						2 15.98
3					3 29 45.15	
4						
5						
6				6 9 12.35		
7		7 50.60				
8	8 30 39.45		8 3 35.68			8 30.36
9					9 30.00	9 32.40
10		10 58.36				
11						
12		12 39 3.60				
13					13 38.68	
14				14 31.70		
15				15 33.85		
16	16 58.00			16 36.00		
17						
18			18 59.40	18 40.00		

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Mar. 22.

	γ Cyg.		ε Cyg.		ζ Cyg.		δ Can. Maj.		β Can. Min		α Can. Min		β Gem	
	20	17	20	41	21	7	7	3	7	20	7	32	7	37
0	17	35.76			0 7	32.90								
1									1 20	28.00				
4		46.36							4	34.50				
5											5 33	1.00	5 37	58.04
7									7	42.65*				
8					8	54.10			8	44.65	8	7.48		
9							9 3	37.70						
12					12 8	3.60								
13					13	5.50								
15			15 41	45.73										
18							18 4	0.95	18	21 7.85			18 38	31.00

Note: no sec onds reads for the sidereal Clock, Can only set approximately other clock only at this point.

* other clock mixed in.

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Mar. 22 d

	.15 Arg. (1) 8 2	η Serp. 18 15	σ Sagitt. 18 47	γ Aquil. 19 40	β Aquil. 19 49	θ Aquil 20 4
0		0 14 53.15				
1		1 54.98	1 47 35.75			
2			2 38.00			
3				3 40 25.70		3 4 59.10
4						
5		5 15 5.10				
6		6 7.30				
7						
8				8 38.22	8 49 29.98	
9			9 56.70			
10		10 15.44	10 59.00			
11		11 17.50	11			
12	12 2 40.25					
13			13			
14	14 47.20			14 52.95		
15			15			
16						
17	17 54.00	17 32.24			17 50.96	
18		18 34.30	18			

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Mar. 23d

λ Aquil.			γ Aquil		
18	59		19	40	
0	59	41.50			
1		43.54			
			2	40	23.76
			3		25.80
			7		36.25
			8		38.30
			18	41	1.50

Mar. 24th

γ Aquil.			ε Cau. Maj.		
19	40		6	53	
0	40	20.00			
4		28.75			
6		55.02			
7		57.30			
8		39.00			
13		49.70			
14		53.80			
15		55.95	15		18.86

Mar. 25th

δ Cau. Maj.			β Cau. Min.			α Gem.		
7	3		7	20		7	26	
1	3	17.90				1	26	44.38
2		20.20						
3		22.45						
5		29.25				5		56.75
6		—						
7		33.72						
8		36.00						
9		38.55						
10	54	4.78						
12		45.26	12	20	53.70*			
13						13	27	16.10
14		52.50						
						16		25.85
						17		28.40
						18		30.88

* Other Clock noted in. Great error in seconds-

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Mar 25th

	α Can. Min.			β Gem.			15 Arg. (1)			α Hydræ			Σ Leo.			α Leo.		
	7	32		7	37		8	2		9	21		9	38		10	1	
							9	13 Aug										
0	0	32	49.35										0	38	50.00			
1										1	21	31.75						
2							2	2	16.00									
3	3		55.54	3	37	51.75				3		35.92						
4													4		58.90			
5							5		25.28	5		42.00						
6																		
7										7		46.18						
8																		
9							9		34.00									
10	10	33	11.90															
11							11		38.80									
12																		
13																13	2	17.04
14				14	38	22.00				14	22	2.88						
15				15		24.38							15	39	28.25			
16																		
17				17		29.00												
18	18		30.78															

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1999phac.proj.1999

δ Leo. 10 9			δ Leo. 11 7			β Leo. 11 42			ε Corv. 12 3			δ Corv. 12 23			β Corv. 12 28			γ Virg. 12 38		
0	9	48.92										0	23	27.50	0	27	52.30	0	35	23.95
			1	7	33.98	1	42	46.98	1	3	46.75									
2		53.00	2		36.02				2		48.98	2		31.60						
3		55.28	3		38.22															
4		57.50							4		53.24	4		36.18	4	28	1.00	4		32.00
5	10	2.30				5		59.92							5		5.70	5		36.18
																		6		38.20
7		6.55																7		40.30
															8		12.00			
9		11.00																		
									10	4	9.00									
11		15.95							11		11.24	11		53.30				11		48.60
									12		13.25				12		21.30	12		50.60
			13	8	2.80										13		23.45			
			14		7.00															
									15		22.18	15	24	3.80						
						16	43	23.44												
			17		13.80							17		8.00						
									18		28.76									

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	Mar. 25th								Mar. 28th			Mar. 29th		
	δ Virg.			ε Virg.			α Virg.		α Aquil.			α Can. Min.			δ Sagitt		
	12	49		12	56		13	18	19	44		7	32		18	47	
0												0	32	50.40	0	47	36.60
1	1	49	24.90				1	18	43.16								
2	2		26.94				2		45.20								
3							3		47.30	3	44	48.98					
4												4		58.78			
5																	
6				6	56	15.98											
7															7		54.94
8				8		20.00											
9												9	33	11.24			
10																	
11							11	19	6.00			11		15.30			
12	12		49.66												12	48	6.56
13				13		30.75	13		10.30								
14	14		55.64				14		14.66			14		23.20			
15																	
16				16		39.20									16		17.86
17										17	45	22.68					
18																	

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1880phae.proj.1836.

Mar. 30th

λ Aquil. 18 59	γ Aquil. 19 40	α Aquil. 19 44	β Aquil. 19 49	α² Capric 20 11	β Eri. 5 1	β Ori. 5 8
		1 44 46.88	1 49 16.40			
		2 48.94		2 11 16.48		
	3 40 28.60		3 20.50	3 18.65	3 1 52.24	3 8 41.00
			4 22.45	4 20.78	4 54.12	
	5 34.88			5 24.95		5 47.50
6 59 56.50			6 28.66			
	8 41.00					
				12 39.70		
	14 55.84					
			17 53.80	17 52.56		
						18 9 16.70

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1880phae.proj.1836.

Mar. 30 Ltt

	χ Orio.			δ Orio.			ε Orio.			κ Orio.			α Orio.			μ Gem.		
	5	18		5	25		5	30		5	41		5	48		6	15	
0				0	25	41.82	0	29	56.80							0	15	30.55
1																		
2				2		45.98				2	41	56.75 54.68						
3	3	18	37.08 4							3		58.92 56.75						
4																		
5																		
6													6	1,8	44.40			
7																		
8										8	42	11.50						
9																		
10																		
11																		
12																		
13																		
14				14	26	14.88 2				14		26.02						
15																		
16																		
17										17		32.45						
18	18	19	12.56															

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1886phmr.proj.1000

γ Gem.	α Can. Maj.	ε Can. Maj.	ε Leo.	α Serp.	δ Scorp.	β' Scorp.
6 30	6 39	6 53	9 38	15 38	15 53	15 58
		0 53 40.55			0 53 3.10	
	1 39 41.98				1 5.30	
		2 45.25			2 7.80	2 58 21.02
					3 9.76	
					4 12.30	
		5 54.66	5 39 5.42		5 16.70	
	6 55.02		6 7.72		6 18.98	
		7 59.34				
			8 12.02	8 38 30.90		
	9 40 1.26	9 54 4.80				
	11 5.55	11 9.00	11 18.95			
				12 38.98	12 32.04	12 45.16
						13 47.60
		14 18.50	14 27.60			14 51.92
					15 41.02	
	16 18.46				16 43.50	
17 31 16.94			17 34.90		17 45.70	
		18 27.75				18 59 0.88

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Mar. 30th

α Scorp.			ζ Ophi.			η Herc.			α' Herc.			α Ophi.			η Serp.		
15	6	~~53~~ 21	16	30		16	38		17	9		17	29		18	15	
0	0	21 50.98															
1									"			1	29	13.90			
2									2	9	4.70						
3																	
4																	
5																	
6																	
7																	
8																	
9	9	22 14.02	9	30	44.00	9	38	58.50									
10	10	16.50															
11			11		48.28							11		36.96			
12						12	39	6.48 ~~9.25~~									
13	13	23.40															
14						14		14.68									
15			15		58.94										15	15	31.03
16			16	31	0.95	16		20.00				16		49.90			
17																	
18																	

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1880phae.proj.1836.

Mar. 31.

σ Sagitt	λ Aquil.	β Cyg.	γ Aquil.	β Aquil.	θ Aquil.	α Hydrae
18 47	18 59	19 25	19 40	19 49	20 4	9 21
0 47 37.62						
1 38.98			1 40 24.75			
			3 28.94	3 49 20.92		
		5 25 54.95				
6 53.00				6 29.12		
	7 59 59.00					
	9 3.18					
			10 45.58 46.68			
11 48 4.30						
					12 6 v 23.00	
						13 22 1.02
			14 56.02	14 47.92		
		15 26 19.80				15 7.52
16 18.14						
		18 26.78			18 37.68	

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Mar. 31 SN

	ε Leo.	α Leo.	ζ Leo.	γ Leo.	δ Crv.	β Crv.
	9 38	10 1	10 9	10 13	12 23	12 28
0	0 38 52.04	1 49.80				
1		51.94				
2		54.00		2 13 16.15		
3	3 58.98	3 55.80*				
4		58.25		4 20.64		
5					5 23 42.85	
6						
7		7 2 6.90		7 29.35		7 28 12.70
8						
9						
10			10 10 15.78			10 19.00 4Q
11						
12						
13						
14	14 39 28.45					
15		15 25.85		15 13 49.28		
16						
17						
18		18 32.02				

δ

52.60
54.30
55.80*
57.40
58.70

*cannot tell whether this top is α or δ

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1880phys.proj.1926

Apr. 1

δ Virg.	ε Virg.	α Virg.	β Ori.	γ Ori.	δ Ori.	ι Ori.
12 49	12 56	13 18	5 8	5 18	5 25	5 29
			0 8 35.65			
	1 56 5.75					
		2 18 43.45				
		3 49.70				
4 49 33.24						
				5 18 44.40		
					10 26 5.25	
			11 9 07.5	11 56.62		
				14 19 4.85	14 15.76	14 29 56.92
		15 19 19.00			15 17.74	
16 50 2.36				16 9.00		
		17 23.45				

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1880phae.proj.1836.

Apr. 1st

	κ Orio.	α Orio.	μ Gem.	γ Gem.	α Can. Maj.	ε Can. Maj.
	5 41	5 48	6 15	6 30	6 39	6 53
0						0 53 41.00*
1		1 48 32.69				
2					2 39 45.00	2 45.95
3			3 15 38.18			
4			4 40.30			
5			5 44.83	5 30 49.84		
6			6 46.96		6 55.70	
7	7 42 10.00					
8				8 56.00	8 59.94	
9						
10						
11		11 55.75			11 40 6.50	11 54 9.28
12			12 16 0.55			
13						13 14.02
14						14 18.70
15		15 49 5.94				
16					16 19.30	
17					17 21.40	
18	18 35.40				18 23.52	

* Second observation at 41.40

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δ Can Maj.			β Can. Min.			α Gem.			α Can. Min.			β Gem.			α Hydræ			ε Leo.		
7	3		7	20		7	26		7	32		7	37		9	21		9	38	
						1	26	47.02												
						4		54.52				4	37	56.75				4	39	1.70 .54
																		5		6.02
6	3	57.18				6	27	1.86												
7		59.40	7	20	45.75	7		4.20				7	38	3.66				7		10.78 4
												8		5.92						
						9		9.00												
			10		52.38	10		11.40				10		13.00						
						12		16.30 4				12		17.92						
												13		20.02						
						14		23.90	14	33	25.00							14		28.85
						15		26.28				15		27.00						
			17	21	8.78				17		31.44	17		31.90						
						18		33.54	18		33.55				18	22	14.04			

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Apr. 1st

	α Leo			ζ Leo.			γ Leo.			λ Aquil.			β Cyg.			γ Aquil.		
	10		1	10		9	10		13	18		59	19		25	19		40
0																		
1	1	1″	52.30															
2													2	25	46.50			
3	3		56.65				3	13	18.86							3	40	29.90
4	4		58.80										4		50.50			
5				5	10	4.90												
6																		
7																7		40.30
8													8	26	1.80			
9													9		4.30	9		44.50
10																		
11													11		8.90			
12																		
13																		
14							14		47.50	14	19h	0m 16.70						
15				15		29.70												
16	16	2.	28.28															
17																		
18							18		56.00	18		25.00						

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Apr. 4th

β Aquil.	η Serp.	σ Sagitt.	λ Aquil.	β Aq.	γ Aquil.	α Aquil.
19 49	18 15	18 47	18 59	19 25	19 40	19 44
		4 47 48.00				
				5 25 56.30	5 40 37.50	
6 49 30.10						
	11 15 23.00					11 45 12.35
12 42.75					12 52.00	
			13 19h 0m 13.68			
	14 31.25	14 48 15.85		14 26 19.70		14 20.84
	15 33.50					
17 54.98						
18 57.02					18 41 6.90	

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Apr 4th

	β Aquil.		Θ Aquil.		α² Capric.		Apr. 5th α Hydrae			ε Leo.			α Leo.		
	19	49	20	4	20	11	9	21		9	38		10	1	
0													0	1	23.40
1															
2															
3															
4										4	38	34.94			
5							5	21	17.86						
6	6.	49	31.34				6		20.00						
7															
8			8	5	17.00										
9			9		19.02										
10							10	11	38.02						
11															
12							12		32.75						
13							13		34.85						
14							14		48.80						
15							15		50.86						
16							16		43.02						
17							17		55.01						
18							18		47.25						

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1880phae.proj.1836.

γ Leo.	δ Leo.	β Leo.	ε Corv.	β Corv.	γ Virg.	ε Virg.
10 13	11 7	11 42	12 3	12 27	12 35	12 56
		1 42 23.02				
	2 7 12.04					
						3 55 43.60 56.02
4 12 55.62	4 16.65					
			5 3 33.75			
6 13 0.92			6 35.90			6 52.00
7 3.02		7 38.02 40.28				
						8 56.02
					11 35 24.70	
12 14.00				12 27 57.02		
			14 56.00			
		15 57.50				
						16 56 15.00
	17 49.80					

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	Apr. 5th			Apr. 6th									Apr. 7th		
	α Virg.			λ Aquil.			α Aquil.			β Aquil.			θ Aquil.		
	13	18		18	59		19	44		19	49		20	4	
0															
1													1	1	47.02
2				2	59	19.28				2	48	50.98			
3	3	18	23.02	3		21.38				3		52.98	3		
4															
5															
6				6		29.30	6	44	32.02						
7	7		33.70										7	4	45.00
8	8		35.88												
9	9		37.98										9		49.18
10															
N.															
12															
13															
14	14		50.40				14		50.98	14	49	20.32			
15										15		22.36			
16													16		
17													17		
18															

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ε Leo.	γ' Leo	δ Leo.	β Leo.	δ Crv.	β Crv.	γ Virg.
9 38	10 13	11 7	11 42	12 23	12.28	12 38
		0 7 5.00			0 27 25.38	0 34 57.01
				2 23 5.00		
	4 12 51.70			4 9.50		
5 38 36.90				5 13.78	5 ~~32.28~~ 39.00	
				8 20.00		
					9 48.00	
10 48.00						
						11 35 21.90
			12 42 46.28			
	13 13 13.62		13 48.32		13 56.98	
				14 35.00	14 28 1.15	
			15 54.92			
				16 39.34		
17 39 6.45	17 24.80					
	18 26.96					

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Apr. 7th			Apr. 8th											
ε Virg.			α Orio			γ Gem.			ε Can. Maj.			β Can. Min.			α Can. Min.		
12	56		5	48		6	30		6	53		7	20		7	32	
															0	32	21.04
			1	48	1.04												
															4		29.32
			6		14.51	6	30	21.04 ~~28.30~~	6	53	26.84						
												7	20	15.28			
									8		31.72						
10	55	57.83							10		36.40	10		21.52			
14	56	8.16															
															15		56.45
						18		49.02							18	33	2.73

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15 Arg (i)			β Libr.			α Cor. Bor.			α Serp.			β' Scorp.			δ Ophi.			α Scorp.		
8	2		15	10		15	29		15	38		15	58		16	7		16	21	
																		1	21	23.50
																		2		25.70
3	1	50.05							3	37	48.28	3	57	53.45	3	7	30.24			
									4		50.32	4		55.75						
						5	29	9.06							5		36.40	5		34.98
																		8		41.66
									9	38	2.63							9		43.85
												10	58	10.94				10		46.15
									11		6.70							11		48.60
												13		17.40						
			14	10	27.00	14		32.15				14		21.94						
												16		26.02	16	8	0.94	16	22	2.70
						17		38.85				17		28.30	17		3.05			
												18		30.53						

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Apr. 8th			?			Apr. 9th						Apr. 10th		
η Herc.			η Ophi.			α' Herc.			β Tauri.			δ Orio.			a Hydrae		
16	38		17	53		17	9		5	18		5	25		9	21	
0	0 38	1.74	0	2	49.45	0	8	30.30									
1			1		51.58												
2	2	7.02															
3			3		55.80												
4			4		57.95												
5	5	18.00															
6			6	3	4.41	6		45.00									
7						7		47.00	7	18	17.03						
8						8		49.32				8	25	28.98			
9															9	21	19.44
10			10		12.90												
11																	
12			12		16.90												
13			13		19.05												
14			14		23.40												
15						15	9	6.50	15		38.35	15		45.74			
16	16	50.00				16		8.65									
17																	
18	18	55.36															

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ε Leo.	α Leo.	ζ Leo.	γ' Leo	δ Leo.	β Leo.	ε Com.
9 38	10 1	10 9	10 13	11 7	11 42	12 3
0 38 19.00						
2 23.49						
3 25.75	3 1 23.00		3 12 45.02			4 3 22.23
4 28.00						
5 32.58		5 9 31.02				
6 34.80			6 53.98			
7 36.00	7 33.40		7 56.02		7 42 31.28	7 31.02
9 41.55						
10 43.95				10 7 25.05		
11 46.05				11 27.28		
12 48.36						
				14 36.00		
	16 54.75					

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Apr. 10th

	δ Corv.		β Corv.		δ Virg.	ε Virg.	α Virg.	Apr. 11th γ Gem.	
	12	23	12	27	12 49	12 56	13 18	6	30
0			0	27 21.00					
1									
2									
3	3	23 5.00							
4			4	30.00					
5						5 55 42.90			
6	6	11.35					6 18 24.75		
7									
8									
9								9 30	23.20
10			10	45.76					
11	11	22.04					11 34.98		
12									
13									
14									
15									
16							16 47.80		
17									
18					18 49	33.05			

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	α Lyrae		σ Sagitt		ζ Aquil.		β Cyg.		γ Aquil.		α Aquil.		θ Aquil	
	18	32	18	47	18	59	19	25	19	40	19	44	20	4
0	32	2.30												
1		5.05	1	4.74	1	10.76			1	50.25				
					2	12.85								
			3	9.38					3	54.38	3	44 16.98		
									4	56.61				
			5	16.38										
			6	18.53	6	23.30			6	40 2.60				
									7	4.60			7	4 38.24
											8	29.50		
			9	25.40									9	42.30
					11	33.88			11	13.30	11	35.70	11	46.62
			12	32.02	12	36.00								
13		39.65									13	39.94	13	50.82
			14	39.30	14	42.65			14	21.78			14	54.84
													15	56.98
							16	25 47.50						
			17	45.95			17	50.15	17	27.98	17	50.00		
							18	52.40			18	52.23		

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Apr. 11th

	α^2 Capric.		α Peg.	
	20	11	22	58
0				
1				
2				
3				
4				
5	5	10 50.82		
6	6	52.86		
7				
8				
9			9	58 21.96
10				
11	11	11 3.36		
12	12	5.45		
13				
14	14	11.9½		
15	15	14.02		
16				
17				
18				

Apr. 12th

	β Eri.		γ Ori.		δ Ori.		ι Ori.	
	5	1	5	18	5	25	5	29
0	0	1 10.64						
1								
2	2	14.28	2	17 59.80				
3	3	16.56					3	28 53.75
4	4	18.90					4	55.76
5							5	59.88
6								
7								
8	8	29.02						
9								
10			10	18 18.60	10	25 29.04		
11								
12								
13	13	39.35					13	29 16.30
14							14	20.38
15	15	45.85			15	41.54		
16								
17					17	45.70		
18								

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α Orio.	μ Gem.	γ Gem.	α Can. Maj.	ε Can. Maj.	α Hyd.	ε Leo.
5 48	6 15	6 30	6 39	6 53	9 21	9 38
0 47 54.55			0 39 4.30			
		1 30 2.78				
3 48 0.70	3 15 1.88					
			7 21.32			
			8 23.50			8 38 36.44
			11 29.98			11 43.40
	12 24.02		12 32.04		12 21 22.96	
					14 29.20	
	15 33.04				15 31.26	
	16 35.22			16 53 47.04		
						17 59.08
	18 39.85			18 51.98		

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Apr. 12th

	α Leo. 10 1	ξ Leo. 10 9	γ Leo. 10 13	β Leo. 11 42	ε Corv. 12 3	δ Corv. 12 23
0		0 9 14.80				0 22 53.90
1		1 17.02	1 12 37.96	1 42 13.54		
2						2 58.02
3					3 3 17.48	
4						
5						
6			6 51.08			
7						
8	8 1 32.88					8 23 13.00
9						
10						
11						
12						
13						
14						14 28.28
15						15 30.40
16					16 50.70	
17						
18			18 13 22.00			

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Apr. 13th

β Corv.	γ Virg.	δ Virg.	ε Virg.	α Gem.	β Gem.	ε Argo
12 27	12 35	12 49	12 56	7 26	7 37	8 2
0 27 18.60						
			1 55 29.74		1 37 12.25	1 1 *39.00 ~~36.98~~
	2 34 54.31					
6 27.50						
				7 26 26.75 ~~12.15~~	7	
	9 35 10.78					
	11 14.98					
	12 17.00					
	13 19.26					
	15 25.24					15 2 15.30
				16 51.28		
		17 49 28.36				17 19.88
				18 56.10	18 56.82	

* Somewhat doubtful on account of Moon.

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Apr. 13th			13th			Apr. 14th			Apr. 18th					
ε Leo.			ϑ Leo.			α Ori.			γ Gem.			β Eri.			β Ori.		
9	38		10	9		5	48		6	30		5	1		5	8	
0			0	9	13.78										0	7	56.25
1												1	1	9.30	1		58.45
2									2	30	3.16	2		11.40	2	8	0.48
3																	
4	4	38	24.20														
5	5		28.7½						5		11.80 78						
6																	
7									7		16.30						
8															8		15.30
9				9	36.40												
10												10		30.02			
11	11		41.90*									11		32.02			
12																	
13	13		46.70						13		29.24						
14															14		30.00
15												15		43.02	15		32.00
16															16		33.94
17																	
18						18	48	34.63	18		42.18						

* clamp here.

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β Tauri.	ζ Ori.	α Ori.	μ Gem.	γ Gem.	α Can. Maj.	α Hyd.
5 18 ·	5 35 ?	5 48	6 15	6 30	6 39	9 21
			0 14 52.00			
3 17 58.02	3 33 - 59.18	3 47 57.58	3 14 58.75			
	4 34 1.30					
5 18 5.38	5 5.40					
6 7.70		6 48 5.85	6 15 7.70		6 39 16.12	
	7 9.68					
					8 20.30	
		9 11.02				
13 2 13.90			13 23.18			
					14 35.52	14 21 26.02
					15 37.44	
	16 30.16			16 30 36.00		
		17 31.00			17 41.82	
18 38.04	18 34.30		18 36.82		18 44.02	

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Apr. 18th

α Leo.	ζ Leo.	γ' Leo	Apr. 20th α Hyd.	γ Leo.	δ Leo.
10 1	10 9	10 13	9 21	10 13	11 7
0				0 12 32.69	
1			1 20 54.98		1 6 57.40
2	2 9 16.54				2 59.62
3		3 12 39.44			3 7 1.80
4					4 4.00
5	5 25.35				
6				6 48.21	
7		7 50.35			
8					
9					9 17.00
10			10 21 15.86		
11					
12	12 41.18				
13	13 43.64				
14					
15		15 13 10.32			
16 16 1 48.78		16 12.50			
17		17 14.65			
18		18 17.00			

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β Leo.	ε Corv.	δ Corv.	β Corv.	γ Virg. *	α Virg.	ε Peg.
11 42	12 3	12 23	12 28	12 38.5	13 18	21 38
		1 22 53.15			1 18 6.80	
				3 34 53.85		
		4 59.61		4 55.97		
						5 37 40.92
	6 3 23.32			6 35 1.96		6 43.00
	7 25.50					
	8 28.00		8 27 35.68			
10 42 32.10						
11 34.00				11 12.27		
12 36.28						
	13 39.00					
	14 43.70		14 51.58			
			15 53.82			
						16 38 6.18
17 49.23						

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Apr. 21st.

	γ Leo.		α Lyrae		δ Sagitt		ζ Aquil.		β Aqg.		γ Aquil.	
	10	13	18	32	18	47	18	59	19	25	19	40
0			0	31 59.52	0	46 59.27			0	25 2.54	0	39 44.95
1			1	32 1.90								
2	2	12 37.26	2	4.57								
3									3	9.32		
4												
5												
6												
7			7	20.88	7	47 17.35						
8	8	52.50 ~~54.82~~										
9												
10											10	40 7.88
11												
12												
13	13	13 3.52	13	36.58					13	35.11		
14	14	8.15	14	41.85	14	36.01					14	18.50
15			15	44.55			15	59 41.22 41.55				
16												
17												
18					18	45.30						

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α Aquil.	β Aquil.	θ Aquil.	γ Cyg.	ε Cyg.	β Aquar.	ε Peg.
19 44	19 49	20 4	20 17	20 41	21 25	21 38
	0 48 36.98	0 4 18.41	0 17 1.18	0 40 29.00		
1 44 9.60		1 20.40				
					3 24 31.87	
					4 33.88	
5 19.98		5 33.18				
		6 35.16		6 46.48		
8 26.02		8 39.21				
	11 49 1.70					
12 34.48	12 3.73		12 54.90			
					13 54.68	
			15 18 5.77	15 41 11.00		
						16 38 6.00
17 47.14						

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Apr. 21st		Apr. 22d											
α Peg.		β Tauri.		ε Ori.		κ Ori.		α Ori.		μ Gem.			
22	58	5	18	5	30	5	41	5	48	6	15		
0	0			0	29	17.98			0	47	{51.44 51.76}	0	14 51.80
1	1			1		20.38						1	54.30
2	2						2	41 18.15					
3	3			3		24.53			3	57.63		3	58.34
4	4												
5	5						5	26.38	5	48 3.82		5	15 5.48
6	6			6	18	7.46			6	{5.79 6.06}			
7	7	58	14.31				7	30.62					
8	8			8		12.38							
9	9												
10	10								10	{14.00 14.35}			
11	11			11		42.78							
12	12			12		21.50	12	41.00					
13	13			13		24.17							
14	14		31.56										
15	15											15	30.30
16	16												
17	17						17	53.80				17	34.56
18	18			18		38.00						18	36.77

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γ Gem.	ε Can. Maj.	α Gem.	α Can. Min.	β Gem.	β Aquar.	α Aquar.
6 30	6 53	7 26	7 32	7 37	21 25	21 59
	2 53 6.00					
					3 24 31.86	
4 30 6.28 / 6.20						
						5 59 0.79
				7 37 26.38		
	8 22.48	8 26 27.16				8 6.95
			9 32 32.94			
			10 35.02			
11 23.00						
					12 52.40	
		14 44.15				
15 34.02 / 34.20			15 47.60			
17 38.00 / 38.40					17 25 4.83	
		18 53.88	18 53.88			

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	Apr. 22d		Apr 23d			Apr. 24th		
	α Peg.		β Ori.	γ Ori.	α Ori.	ℓ Cor.		β Cor.
	22	58	5	8	5	48	12	23	12	28
0			0	7	56.50	0	47 51.56	0	22 50.85	0	27 15.34
1	1	57 59.40				1	53.51	1	53.00		
2								2	55.10		
3											
4	4	58 5.78	4	8	4.48	4	59.48				
5								5	23 3.38		
6			6		10.85			6	5.50		
7								7	7.68		
8											
9	9	18.60									
10	10	20.91				10	48 14.40				
11											
12			12		23.28	12	18.25			12	44.70
13						13	20.32			13	46.94
14				14	34 25.71						
15	15	33.80									
16											
17	17	—	17		36.00	17	30.70	17	31.60		
18				18	34.10			18	33.70		

Both clocks here

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Apr. 25th

	γ Virg.	δ Virg.	α Aquar.	η Peg.	α Peg.	α Aurig.	β Tauri.
	12 38.5	13 18	21 59	22 37	22 58	5 7	5 18
0	34 47.38						17 50.89
2							55.39
3	53.60						57.80
4	55.68						
5	59.59	18 17.00	59 0.56				
6	35 1.70						
7			4.58				
9						7 21.89	
10				36 56.92			
11	12.00	~~11 29.84~~				27.79	
12		31.57			58 24.78		18 21.50
13	16.28						
14		38.02			31.40		28.59
15							30.88
16		42.18		37 13.36			
17		44.44					
18						51.88	

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Apr. 25th

	δ Orio.		κ Orio.		α Orio.		γ Gem.		α Can. Maj.		Apr 26th β Leo.	
	5	35?	5	41	5	48	6	30	6	39	11	42
0												
1											1	42 10.50
2	2	33 56.90	2	41 18.00								
3			3	19.95								
4									4	39 9.18		
5									5	13.74	5	21.00
6									6	15.86		
7					7	48 7.60						
8												
9	9	34 13.00										
10												
11												
12											12	36.00
13												
14											14	42.43
15												
16									16	39.35		
17							17	30 38.02				
18									18	43.68		

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δ Corvi.	γ Aquil.	α Aquil.	θ Aquil.	α² Capric.	γ Cyg.	α Cyg.
12 23	19 40	19 44	20 4	20 11	20 17	20 37
	0 39 44.98				0 17 1.28	0 36 24.00
2 22 55.00						
				3 10 41.40		
				4 43.39		
				6 49.72		
					9 28.00	
					10 30.68	
			12 4 45.23			
						13 37 4.85
		15 44 42.95		15 11 10.80		
	17 40 24.69					17 19.50
		18 49.24				

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Apr. 26th

	ε Cyg.	ζ Cyg.	α Aquat.	η Peg.	γ Peg.	γ Cyg.
	20 41	21 7	21 59	22 37	0 7	20 17
					am. Eph. 79	
0				0 36 31.00		
1						
2		2 7 3.18		2 35.52		2 17 6.52
3						3 9.00
4	4 40 39.00	4 7.96				4 12.11
5						
6						6 20.25
7					7 6 30.68	7 22.58
8						8 25.62
9					9 35.20	
10		10 24.40			10 37.30	
11			11 59 13.00		11 39.00	
12		12 29.20				12 36.40
13	13 41 3.93				13 43.70	
14						
15					15 50.02	
16					16 52.00	
17						
18						18 55.00

Apr. 27th

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Apr. 28th

	α Cyg.	ε Cyg.	ζ Cyg.	α Cephi. MC.	ε Peg.	α Lyrae	α Aquil
	20 37	20 41	21 7	21 ~~40~~ 15	21 38	18 32	19 44
0	36 24.38	0 40 29.11			0 37 28.73		0 44 7.58
1	27.19	1 31.69	1 7 0.801	14 36.30			
3			5.60			3 32 7.86	
4			7.94				
5			12.64				
6		46.85	6 15.00				
7		49.14	7 17.44				
10			24.55	10 15 20.82	10 51.62		
11	59.00				11 53.72		
12			29.37			12 34.00	
13			31.76				
14		41 9.00					
15	37 13.79		15 38.83	15 47.28			
17		16.46	17 43.85				
18			46.02			18 52.80	

* Uncertain
probably clock

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Apr. 28th

Apr. 30th

α Cyg.		ε Cyg.		γ Gem.		α Can. Maj.		β Can. Min.		α Gem.	
20	37	20	41	6	30	6	39	7	20	7	26
						1	19 52.02				
		2	40 34.50								
		3	36.79								
				4	30 6.30					4	26 15.32
6	36 44.72										
						8	39 20.57				
						9	22.68			9	29.82
11	59.28	11	59.00								
										12	37.00
		13	41 4.14								
15	37 13.96										
						17	42.00				
										18	54.30

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May 2, 1880

	β Cas. L.C.	γ Cas L.C.	δ Leo.	γ Urs. Maj. U.C.	β Corv.	γ Virg.	ε Virg.
	0 2	0 49	11 7	11 47	12 27	12 35	12 56
	12h	12h					
0		48 15.48			27 16.60		
1		19.63	1 6 58.12			1 34 50.43	
3						54.63	
4							55 34.08
5		40.88					
6	2 3.60		6 7 11.20				
7	7.34						
8						35 6.80	
9			17.84	9 47 7.22			
10			20.00 ~~19~~				48.80
11			22.22			13.00	
12	27.78	12 49 9.62				15.00	12 53.12
13	31.70		13 26.90				13 55.30
15	43.00						
16		29.98					
18		38.35	18 40.15				

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May 2d

	α Aquil.	α² Capric.	ε Cyg.	ζ Cyg.	α Ceph. MC.	ε Peg.
	20 4	20 11	20 41	21 7	21 15	21 38
0			0 40 30.40		0 14 33.35	
1	2 4 23.98				1 37.80	
2					2 42.15	
3		3 10 42.60				
4		4 44.62				
5						
6						
7						
8					8 15 12.78	
9						
10						
11						
12		12 11 3.62		12 7 30.48		
13			13 41 5.11	13 32.83		
14						
15						
16						
17			17 17.40			
18						18 38 11.77

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May 3d

	γ Cass. LC.	δ Leo.	β Leo.	ε Virg.	α Peg.	May 4 α Cyg.	γ Cyg.
	0 49	11 7	11 42	12 56	22 58	20 37	21 7
	12h						
1	48 22.46	1 6 56.98					
2		59.18					
5	43.60		5 42 20.89	5 55 37.22			
9	49 0.20						
11				49.74			
12	12,02		12 35.97				12 7 30.35
16		7 34.42			16 58 35.63	16 37 17.89	
17			49.00				
18							47.00

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May 4th

α Ceph. U.C.			ε Peg.		
21	15		21	38	
2	14	42.00	2	37	33.98
5	59.99				

May 5th

ε Cyg.			ζ Cyg.		
20	41		21	7	
1	40	33.18			
4		40.48			
12	41	2.68	12	7	30.68

α Ceph. U.C.			ε Peg.		
21	15		21	38	
			0	37	30.10
2	14	42.58			
3		46.84			
4		50.98			
			5		42.48

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May 6th

η Peg.	β Cass. LC. / β Cam. Min	α Gem. / α Cam. Min	ε Peg.	α Aquar.
22 37	0 2	7 20 / 7 26	7 32	21 38 / 21 59
	12 R			
	0 1 36.32			
	1 40.70		1 32 15.53	
	2 44.30	2 26 11.22		
	3 48.22		3 19.72	
	6 24.00		6 28.00	
		7 25.68		
	8 20 9.68	8 28.00		
		9 30.53 9	34.00	
10 36 58.50				
			11 37 55.37	
	13 32.00		13 42.39	
	14 24.00	14 45.29 14	46.45	14 59 23.18
	15 43.90		15 38 6.00	
17 37 17.55	17 51.70			
		18 54.98 18	54.88	

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1880.

May 8th

γ Virg.			ε Ursæ Maj. U.C.		ε Virg.		α Virg.		May 9th α Gem.		α Can. Min.	
12	35.		12	48	12	56	13	18	7	26	7	32
0			0	47 45.28			0	18 6.58	0	26 7.27		
1	1	34 51.53									1	32 16.30
2							2	10.88				
3									3	14.35 ~~16.98~~		
4			4	48 0.78	4	55 35.00			4	16.98		
5							5	19.30	5	21.80	5	27.00
6							6	21.40			6	28.99
7	7	35 5.98					7	23.48	7	26.50	7	30.83
8					8	45.82.						
9									9	31.48	9	34.99
10												
11												
12	12	16.02	12	34.02			12	33.79				
13					13	54.12						
14											14	47.45
15												
16	16	26.38										
17	17	28.43									17	54.00
18							18	48.50	18	55.98	18	55.90

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May 10th

β Gem.	γ Urs. Maj.	γ Virg.	ε Urs. Maj	ε Virg.	α Cyg.	α Can. Min
7 37	11 47	12 35	12 48	12 56	20 37	7 32
0 37 9.72	0 46 33.44					
1 12.00						
					2 36 32.90	
					3 36.11	3 32 20.78
4 16.64				4 55 35.42		
		5 35 2.00		5 39.80	5 44.90	
					6 47.94	
8 30.81		8 8.158	48 19.14		8 53.60	
				9 48.00	9 56.20	
					10 58.10	
					11 37 2.28	
12 40.22		12 16.42			12 4.86	12 41.40
13 42.60			13 38.00		13 7.87	
					14 13.64	
15 49.30					15 16.52	
		16 26.89				
17 54.20					17 22.88	17 53.98

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	May 10th				May 11th	
	β Gem.	γ Urs. Maj. UC.	γ Virg.	ε Virg.	β Cass. U.C.	β Cass. LC.
	7 37	11 47	12 35	12 56	0 2	0 2 12 4
0			0 34 50.90			
1		1 46 37.29				
2	2 37 14.52					
3						
4				4 55 35.54		
5			5 35 2.025	39.87		
6						6 21 5.98
7						
8					8 2 18.90	8 13.87
9						
10						
11	11 37.95		11 14.48			11 25.83
12						
13				13 56.73		
14						
15						
16	16 52.18		16 27.00		16 54.56	16 49.00
17	17 54.54					
18						

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γ Cass. LC.	δ Cass. LC.	γ Virg.	ε Virg.	α Cyg.	ε Cyg.	β Cyg.
0 49	1 17	12 35	12 56	20 37	20 41	21 7
12h	13					

	γ Cass. LC.	δ Cass. LC.	γ Virg.	ε Virg.	α Cyg.	ε Cyg.	β Cyg.
0	48 17.48		0 34 49.72		0 36 27.90		
			1 52.15		1 30.70		
			2 54.30				
		3 17 0.50	3 56.33				
		5 12.60	5 55 40.00*		5 44.93	5 40 47.47	
6	46.58	6 16.79				6 49.99	6 7 18.58
7	50.54				7 51.16	7 52.54	
				8 46.40	8 53.83		
					9 56.68		
10	49 2.88					10 59.86	
			11 35 14.78		11 37 2.52		
		12 40.90	12 16.80			12 41 4.79	12 32.68
						13 7.26	
14	23.68					14 12.33	14 39.70
				15 56 3.00		15 14.72	15 42.30
						16 17.20	
						18 22.11	

* uncertain on edge of sheet

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"Ex. minute"

May 12th May 15th

	γ Cygni.		γ Virg.		α Virg.		ε Peg.		α Pisc. Aust.		α Peg.	
	21	7	12	35	13	18	21	38	22	50	22	58
0												
1	1	7 4.74										
2												
3												
4												
5	5	16.52	5	35 3.37								
6			6	5.38								
7			7	7.47					7	50 31.67		
8												
9											9	58 22.98
10					10	18 31.38						
11			11	15.86								
12												
13			13	20.01	13	37.57	13	38 2.37				
14							14	6.48				
15							15	8.60				
16												
17												
18	18	49.64										

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May 16th				May 17th				May 20	
				u.c.		u.c.			
β Cass. L.C.		δ Cass. L.C.		γ Urs. Maj.	γ Virg.	ε Urs. Maj.		α Andr.	γ Peg.
0	2	1	17	11 47	12 35	12 48		0 2	0 6
12h		13h							
		0	16 49.42					0 1 24.85	
		1	53.75			1 47 51.00		1 27.18	
2	1 47.63								2 6 23.16
3	51.60								3 25.34
					4 34 59.20				
				5 46 56.13					
		6	17 18.20						6 33.91
8	2 14.90								
									9 40.00
10	23.20								
					11 35 15.80				
13	34.57/8							13 57.50	
		14	54.92		14 24.18			14 2 2.23	
15	46.88				15 26.00				
									16 57.00
17	54.34	17	18 7.33			17 58.50			17 57.20
		18	11.00						

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May 20th

γ Cass. U.C.		ψ Ursæ Maj.		γ Virg.		ε Ursæ Maj.		May 21st γ Virg.		ε Ursæ Maj.	
				U.C.				U.C.			
11	47	11	2	12	35	12	48	12	35	12	48
0	46 35.22			0	34 51.97	0	47 48.18				
1	38.65					1	51.97				
2											
3				3	58.18						
4				4	35 0.30						
5											
6	59.88										
7		7	2 27.98								
8		8	30.92					8	35 10.30		
9											
10											
11				11	16.68			11	16.55		
12		12	42.83								
13										13	48 47.90
14											
15											
16	16 47 38.96	16	57.57								
17											
18								18	33.28		

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τ Virg 13h 55m

May 22

UC.

δ Cass. L.C.	γ Urs Maj.	γ Virg.	ε Virg.	η Urs. Maj.	η Boot.	α Boot.
1 17	11 47	12 35	12 56	13 42	13 48	14 10
13h						
		0 34 51.54		0 41 56.30	0 48 14.47	
			1 55 30.90		1 16.64	
2 16 57.80	2 46 41.87					
		3 57.72		3 42 6.00	3 20.98	
4 17 6.37				4 9.12	4 23.15	
					5 27.62	
6 18.18						
7 22.67						
8 26.88				8 25.13		
		9 35 12.00			9 36.33	
10 34.63		10 14.00		10 31.29	10 38.52	
		11 16.18		11 34.50	11 40.58	
			12 55.98			
				13 40.92		
					14 49.47	14 55 22.50
	15 47 35.36	15 26.40			15 51.56	
		16 28.70	16 56 6.58			16 26.68
					17 55.90	
					18 58.13	

Not α B.
read
Star at 13h 55m
read
only star
between 13h 48m
& 14h 27m

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	May 22d			May 23d												
	γ Boot.			β Cass. U.C.			β Cass. L.C.			Hass. L.C.			γ Urs. Maj.			γ Virg.		
	14	27	+	0	2		0	2		0 ~~11~~ 12h ~~23~~	49 ~~47~~		11	2		12	35	
0	0	26	27.22							0	48	18.90				0	34	51.28
1																		
2										2		27.68						
3				3	1	56.76												
4				4	2	0.72												
5										5		43.69				5	35	3.52
6																		
7				7		16.69	7	2	11.38									
8																		
9										9	49	0.50						
10										10		4.38						
11																11		15.92
12																		
13	13	27	4.32															
14													14	2	50.88 ~~84~~			
15	15		12.03															
16																		
17																		
18				18	3	3.98				18		41.78						

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1000phot.proj.1006.

Do not find a capella uc on this date U.C.

May 24th

ε Virg.	β Cass. L.C.	α Ariet.	β Urs. Maj. U.C.	ε Urs. Maj	ε Virg.	α Aquil.
12 56	0 2	2 0	10 54/47	12 48	12 56	21 15
	12h					
			1 47 50.78	1 55 30.37		
			2 53 44.35			
	3 1 50.98				3	
5 55 41.24/6		5 1 51.14			5 24 14.00	
		6 53.80				
		7 55.96				
					8 24.25	
					10 30.90	
11 53.76	11 ~~0 27.42~~	11 2 4.86				
		14 13.55				
		16 17.99				
18 56 10.70		18 22.59				

α Aquil not ds on May 24 ~~do not~~ find

θ Urs Maj 9h 24m on this date which read

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1880phae.proj.1836.

May 24th "Examinute" — May 25th

	β Aquarii	ε Peg.	η Peg.	α Peg.	β Cass. LC.	γ Cass. UC.
	21 25	21 38	22 37	22 58	0 2	0 49
					12h	12h
0		0 ~~39~~ 40 32.40				
1		—	1 38 37.82			
2	2 26 33.97					
3		3 39.27			3 0 50.96	
4					4 55.15	
5						
6					6 1 7.27	
7						
8						8 49 1.42
9						
10	10 52.70			23 10 ~~059~~ 25.10		
11	11 54.76					
12						
13					13 3430	13 22.28
14						
15						
16	16 27 7.00					
17	17 9.00					17 43.27
18		18 40 14.86				

~~do not~~
find

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	γ Cass. d C.	μ Urs. Maj.	β Urs. Maj. U.C.	ψ Urs. Maj.	η Urs. Maj.	η Boot.	ι Dra.
D	49	10 15	10 54	11 2	13 42	13 48	13 55
12h							
0	48 18.61						
1		13 23.12	1 52 40.39			1 48 15.90	
2			44.18		2 42 1.92		
4				1 15.00		4 22.49	
5		36.98					
6		39.85					
7		42.64			7 21.00		
8						8 33.30	
9	59.68						
11		53.72	11 53 22.12			11 39.90	
12							55 15.29
14		14 4.89		14 50.40			
15	49 28.98				15 49.97		
16				56.16			
17	37.25	17 13.00					

[Minutes on Sheet 228
Smaller than R.A. by 2
Minutes - No Note on Sheet]

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May 25th

May 26

	η Peg.	α Peg.	β Cass.	U.C.	μ Urs. Maj	α Ceph.	U.C.	β Aquar.
	22 37	22 58	0 2		10 15	21 15		21 25
0			0 1 44.72		0 13 20.00 ~~22.77~~	0 14 37.16		
1		1 58 3.62			1 22.77			
2								
3								
4		4 10.30						
5		5 14.49	5 2 8.00					
6								
7								
8								
9								9 24 50.00
10	10 37 1.48		a rattle precedes 10th wire					
11								
12								
13								
14								14 56.38
15								
16		16 39.95	16 55.52					
17								
18			7					

[For minute see note on previous page

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May 27th

β Ursæ Maj.	α Ursæ Maj.	ψ Ursæ Maj.	α Andr.	γ Peg.	ψ Ursæ Maj.	June 2d β Ariet
10 54	10 56	11 2	0 2	0 6	11 2	1 47

0 54 13.65 — 0 — 0

1 52 40.00 — 1

8

11 53 21.72

15 1 52.68

18

"Sheets Nos. 236 to 251 - Missing"

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1880phae.proj.1836.

June 9th

June 2d 1880

	γ Androm.	α Andr.	γ Peg.	γ Cass. U.C.	δ Cass. U.C.	ε Virg.
	1 56	0 2	0 7[6]	0 49	1 17	12 56
0						
1			1 6 22.00			
2					2 17 5.50	
3	3					
4	4					
5	5	5 1 40.00				
6						
7	7		7 37.22	7 50 0.82		7 55 46.32
8		8 47.28				
9			9 41.30			
10						
11						
12						
13						13 59.20
14						
15				15 37.20		
16						
17	17		17 7 0.73			
18						18 56 11.70

" Sheets 236 to 251 missing "

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	η Ursæ Maj.		η Boot.		τ Virg.		α Boot.		γ Boot.		ε Boot.		α² Lib.	
	13	42	13	48	13	55	14	10	14	27	14	39	14	44
1	42	0.72					1	9 30.38						
2		3.34												
3		6.60									3	39 7.79	3	43 38.08
4													4	40.16
5													5	44.70
6		19.20												
8							8	48.18						
9			48	37.32					9	26 54.68				
10					55	12.90	10	52.30						
12									12	27 2.40				
13						19.32	13	59.22	13	— *				
14		48.30												
15									15	13.21				
16		54.70							16	15.80				
17		57.96							17	18.57	17	45.00	17	44 12.42
18	43	0.50									18	47.35		

* Cloud

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June 9th

	β Bootis	δ Bootis
	14 57	15 10
0		
1		9 57.00
2	56 43.70	59.90
3		10 2.28
4		4.59
5	54.82	
6	57.68	12.35
7	57 0.40	14.82
8	3.02	
9		
10	8.82	22.27
11		
12	13.60	
13	16.48	
14		
15		
16		
17	30.01	41.80
18	32.54	

June 10th

	β Cassiopeiae U.C.	γ Pegasi	α Persei	γ Virginis
	0 2	0 6	3 15	12 35
0		6 22.32		
1				
2				
3			15 2.04	
4				
5				
6				
7				
8	2 22.99			
9				
10			27.80	
11				35 17.12
12	38.98 ~~38.88~~			
13				21.30
14				
15				
16	58.67	58.50		
17				
18	3 6.53			

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1880phac..proj.1836.

	δ Virg.	η Ursæ Maj.	η Boot.	α Boot.	γ Boot.	β Ursæ Min. U.C.	β Boot.
	12 49	13 42	13 48	14 10	14 27	14 50	14 57
0	48 51.34					0 49 31.50	
1			1 48 17.68		1 26 30.63	1 39.98	
2		2 42 3.48					2 56 43.72
3						3 55.00	3 46.46
5		5 16.35				5 50 18.40	
7			7 32.83			7 ~~26.52~~ 34.35	7 57 0.30
8	49 9.70	8 25.73	8 35.00				
10		10 ~~32.42~~	10 39.39				
11							11 11.00
12		12 38.55					
13				13 9 59.27			
14		14 48.46			14 27 10.64	14 51 36.33	
15						15 44.61	15 24.80
16	28.36					16 51.86	16 27.62
17						17 52 0.08	
18		18 43 1.00	18 59.00	18 10 12.52			

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June 10th	June 11th U.C.		June 12th		June 13th	
δ Boot.	β Urs. Maj.	ψ Urs. Maj.	α Andr.	γ Peg.	γ Peg	
15 10	10 54	11 2	0 2	0 7.6	0 7.6	
	2 53 45.61					
		3 2 13.72				
	7 54 8.11					
	8 12.00					
	11 23.52	11 40.28		11 6 45.99		
12 10 27.28		12 43.00				
					14 6 54.88	
		15 54.89			15 56.92	
			16 2 8.49			

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δ Cass. U.C.	η Urs. Maj.	η Boot.	τ Virg.	α Boot.	γ Boot.	ε Boot.
1 17	13 42	13 48	13 55	14 10	14 27	14 39
	0 41 57.30					0 39 1.00
		1 48 17.87		1 9 30.78		
2 17 6.56						
				5 41.78		5 14.98
	7 42 22.95					7 19.72
				8 48.34		
	9 29.19					
10 42.98				10 52.75		
	11 35.50					
	12 38.99		12 55 17.32		12 27 2.62	
					13 5.56	
15 18 7.52		15 52.70	15 25.78			
	16 54.98		16 27.93	16 10 8.24	16 16.00	
	17 58.20					

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1880phae.proj.1856.

June 13th

	α² Lib.		β Urs. Min. (U.C.)		β Boot.		β Libr.		June 15th α Andr.		γ Peg.	
	14	44	14	50	14	57	15	10	0	2	0	7
0												
1			1	49 39.79								
2	2	43 24.92										2
3			3	55.29							3 6	27.83
4												
5												
6							6	10 5.69			6	36.26
7							7	7.77				
8									8	1 48.50		
9					9	57 6.00	9	12.13	9	50.84		9
10											10	44.60
11												
12					12	14.12						
13			13	51 21.52								
14									14	2 4.70	14	55.15
15			15	44.32					15	7.00		
16												
17	17	44 0.98	17	52 0.27								
18									18	14.15		

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June 16th

	γ Pers.		α Tauri.		β Cas. U.C.		γ Cas. U.C.		δ Cas. U.C.		γ Pers.		δ Pers.	
	2	55	4	28	0	2	0	49	1	17	2	55	3	34
0											55	13.13		
1					1	53.21						16.58	1	33 35.70
2	55	19.67	2	28	23.43									
3							48	40.98						
5			+	32.10	5	2	12.98							
6				34.27	6		16.84				6	37.13	6	54.02
7				—							7	40.54		
8				38.06	8		24.58				8	43.96		
9		46.84			9		28.50							
10							32.55							
11														34 9.50
12				47.00	12		40.30				12	57.52	12	12.68
13							44.22		13	17 56.28				
14	56	7.67							14	18 4.79			14	21.68
15		11.14									15	56 11.21	15	24.52
16													16	27.62
17		17.94	17		59.70	17		34.40						

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1880phae.proj.1836.

Read E Bootis.
There is
an obs
at 14h 39m
= ε Bootis
& has
same
name

June 16th

	η Tauri.	γ Bootis	β Urs. Min. U.C.	β Boot.	α Andr.	γ Peg.
	3 40	14 27	14 50	14 57	0 2	0 7
		No obs at 14h 27m on sheet 275 & sheet begins at 14h 21m				
0	0 39 37.43					0 6 21.27
1						
2			2 49 48.68			
3		3 39 8.96	3 56.02	3 56 47.42		3 27.79
4						
5		5 16.00	5 50 20.04			
6		6 18.50		6 58.44		
7			7 35.00	7 57 1.35		7 38.50
8		8 23.00	8 43.50			8 40.70
9				9 6.80	9 1 50.98	
10		10 27.70	10 58.50	10 9.58	10 53.38	
11		11 30.00				
12				12 15.00		
13	13 40 9.26			13 17.76		
14		14 39.50				14 55.31
15		15 42.00	15 51 45.52		15 2 7.38	
16		16 44.00	16 53.46			
17		17 46.66	17 52 1.04	17 31.02		
18		18 48.68		18 33.80	18 14.30	

June 17th

No obs at 14h 27m
do not find

~~do not find~~

Read off of Sheet 281

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1880phae.proj.1836.

June 18

	η Ursa Maj.	τ Virg.	α Boot.	γ Boot.	ε Boot.	β Boot.	β Aquil.
	13 42	13 55	14 10	14 27	14 39	14 57	1 47
0	41 57.85					56 39.31	47 17.80
1	42 1.00			26 31.72		42.00	19.98
2				34.37		44.79	
3				36.98		47.72	
4	10.72		9 38.30	39.70			
5			42.49			55.98	
6		55 5.82					
7					39 20.81		
8						57 3.92	
9						6.90	
10	33.34						
12	39.89			27 3.80			
14							53.22
15			10 6.66		41.52		55.47
16						28.60	
17			11.02				
18						33.43	

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June 18th

	γ Androm.	α Ariet.	ε Ursa. Maj. U.C.	η Ursa. Maj.	η Boot.	β Ariet.
	1 56	2 0	12 48	13 42	13 48	1 47
0		0 1 59 41.29				0 47 17.64
1				1 42 1.00		
2						2 22.00
3						3 24.25
4						
5 5	56 1.18					
6 6	3.82	6 57.17				6
7				7 23.55		
8		8 2 1.66			8 48 36.00	
9						
10					10 40.40	10
11						
12 12	20.80				12 44.98	
13						
14			14 48 49.18			14 52.99
15 15	31.83	15 19.64				15
16					16 55.85	16 57.47
17						17
18			18 49 3.93			

June 19th

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1880phae.proj.1836.

June 21st

γ Andr.	α Ariet.	ε Virg.	η Ursæ Maj.	η Boot.	γ Boot.	ε Boot.
1 56	2 0	12 56	13 42	13 48	14 27	14 39

0 55 30.70 — 0 48 16.29

1 42 1.20

2 20.90

6 56 3.93

7 39 20.80

8 36.02

10 15.00

11 56.20 — 11 36.29 — 11 42.82

12 39.80

14 28.82 — 14 49.30 — 14 27 11.62

15 31.60

17 34.30 — 17 0 23.98 — 17 57.98 — 17 19.47

18 43 1.86 — 18 22.50

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June 21 St

	β Urs. Min. U.C.		β Boot.		δ Boot.		α Cor. Br.		α Serp.		α Pers.	
	14	50	14	57	15	10	15	29	15	38	3	15
0												
1			1	56	42.44							
2												
3	3	49	56.36									
4							4	29	3.46			
5												
6												
7							7	12.82	7	37	57.72	
8			8	57	4.00							
9	9	50	50.55						9	38	1.88	
10	10		58.91									
11	11	51	6.28	11	12.38							
12												
13				13	10	30.80 35.75						
14			14	23.49	14	35.75						
15	15	51	45.42						15	16.59	15	15 49.33
16											16	52.40
17									17	20.52		
18											18	58.96

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"Ex Minute"

	α Tauri.	α Aurig.	θ Urs. Maj.	γ Leo.	U.C. x Urs. Maj.	U.C. ξ Urs. Maj	η Urs. Maj
	4 28	5 17	9 24	10 13	10 56	12 48	13 42

(2.96) Page 92 Recd

5138 5434
54.40 5440
5732 54.36
5486
4) 21796
54.49

54.40 57.36
57.32 5732
0.30 57.34
5720
4) 22922
57.31

5732 0.28
0.30 0.30
8.40 0.44
0.83
4) 1.85
0.46

24.80 27.76
27.75 27.75
30.55 27.59

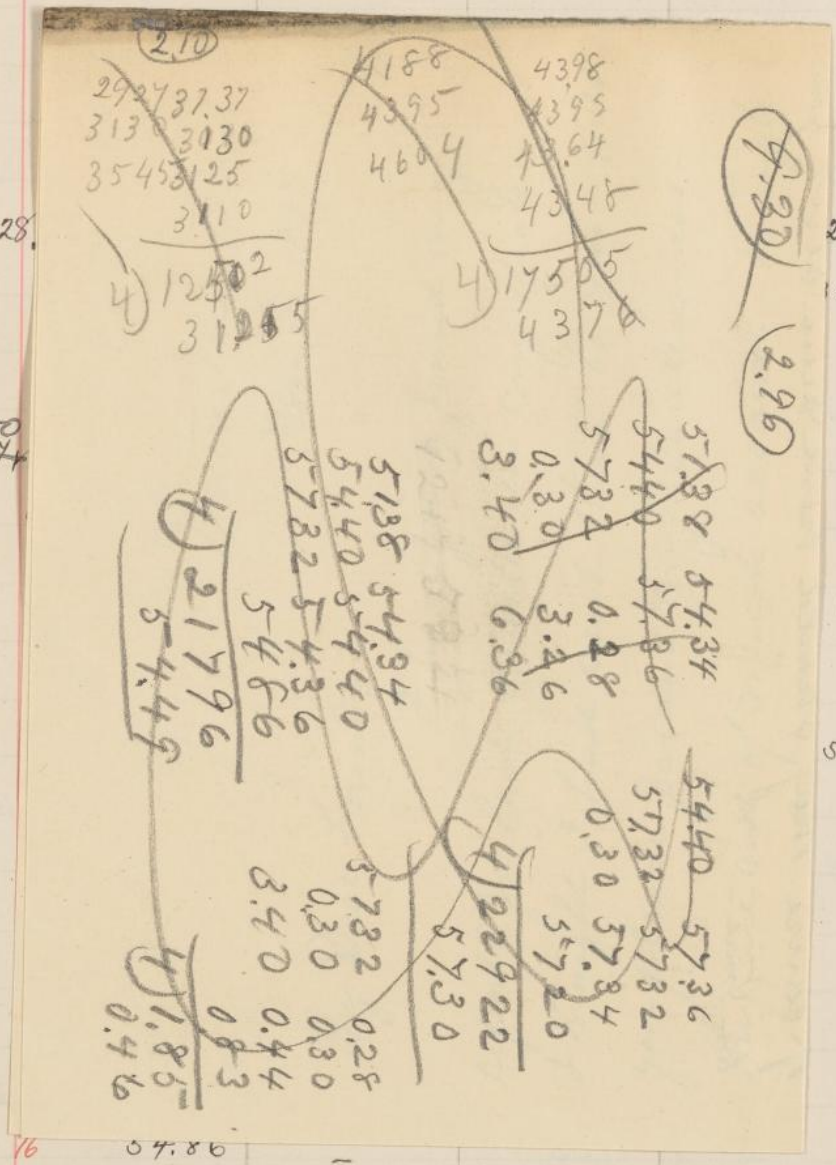
2 28 24.28.
5 33.27
25.95
0.29
8 42 27.60
9 48 27.00
5.62
10 38.98
17 57.20
17 41.34
18 8 0.83

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1880phae.proj.1836.

"Ex Minute"

	α Tauri.	α aurig.	θ Urs. Maj.	γ Leo.	κ Urs. Maj.	ε Urs. Maj	η Urs. Maj
	4 28	5. 27	9 24	10 13	10 16	12 48	13 42



2 28 24.28

25.95

10.29

5 33.27

8 42 27.60

9 48 27.00

5.62

10 33.98

16 04.86

17 5.20

17 41.34

18 8 0.83

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1880phae.proj.1836.

"Ex Minute"

	α Tauri.	α aurig.	Θ Urs. Maj.	γ Leo.	x Urs. Maj. U.C.	ε Urs. Maj U.C.	η Urs. Maj
	4 28	5. 47	9 24	10 13	10 56	12 48	13 42
0			23 57.13				
1				14 26.38			
2	28 24.28				55 25.95		
3					30.29		
5	33.00						
6		7 21.36					
8							42 27.60
9						48 27.00	
10				54.13	56 5.62		33.98
16		54.86					
17		57.20			41.34		
18		8 0.83					

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1880phae.proj.1836.

June 22d

	τ Virg.	α Bost.	γ Bost.	α² Lib.	β Urs. Min.	β Bost.
	13 55	14 10	14 27	14 44	14 50	14 57
0	0 54 52.00		0 26 29.98			
1						
2				2 43 37.68	2 49 48.50	
3			3 37.97			
4						
5						
6						
7					7 50 35.82	
8					8 43.65	
9					9 50.97	
10			10 58.94		10 58.70	
11						11 57 12.70
12		12 9 58.70				
13						
14						
15					15 51 45.83	15 26.50
16			16 27 17.62			16 29.21
17						17 31.98 34.69
18						18 34.69

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June 23d June 24th

β Libr.	α Cor. Bor.	α Serp.	η Urs. Maj.	α Ariet.	α Boot.	γ Boot
15 10	15 29	15 38	13 42	2 0	14 10	14 27

1 9 54.69

1 45.00
1 59 ~~47.45~~
2 47.45

5 37 54.00 5 42 17.99

7 24.48

12 27 4.97

13 10 1.36

14 29 31.89 14 38 14.82

14 12.80

16 9.98 16 18.19

17 59.97

17 12.28
18 14.45

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June 24th June 26th

	ε Boot.	β Ariet.	γ Andr.	α Ariet.	γ Pers.	α Cor. Bor.
	14 39	1 47	1 56	2 0	2 55	15 29
0						
1		0 1 47 21.00			1 55 17.40	1 28 56.98
2						2 59.49
3			3 55 54.17			
4					4 28.00	
5		5 32.02	5 56 2.50			
6				6 59 58.00		
7					7 41.70	
8				8 2.66		
9						
10		10 43.20				
11	11 39 31.00					
12						
13				13 13.72	13 56 2.00	
14		14 54.02				14 29 31.98
15			15 32.72			
16	16 47.00		16 35.52			
17			17 38.30			
18						

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"Ex minute"

June 27th

α Serp.			δ Scorp.			α Tauri.			α Aurig.			γ Ursa. Maj			η Ursa. Maj.			η Boot		
15	38		15	53		4	28		5	7		11	2		13	42		13	48	
0	37	41.72	0	52	33.97							0	2	6.30						
			2		37.34															
4		50.02										4		18.29	4	42	11.10			
									5	7	18.00									
			6		48.40															
						7	27	36.76							7		24.00			
						8		38.93										8	48	36.40
						10		43.00												
												14		53.15						
15	38	17.27							15		50.47	15		56.00						
									16		53.42									
			18	53	17.32										18	43	2.40	18	49	0.48

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June 27th

June 28th

	τ Virg.	δ Bootis	β Arietis	γ Andr.	α Arietis	γ Persei
	13 55	15 10	1 47	1 56	2 0	2 55
0	0 54 51.92					0 55 12.85
1						
2						
3						
4			4 47 26.60			
5			5 30.33			
6				6 56 3.98		
7					7 59 59.00	
8		8 10 18.59				
9						
10						
11						
12						
13						13 56 1.17
14						
15						15 11.60
16						
17				17 36.98		
18	18 55 33.00					

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June 29.

δ Boot.	α Serp.	β Scorp.	δ Ophi.	α Scorp.	ξ Ophi	α Boot
15 10	15 38	15 58	16 7	16 21	16 30	14 10
1 37 42.77				1 21 22.10		
	2 57 49.74					
3 46.90						
	4 54.004		7 31.00			
	5 58.62					
		6 37.00				
9 38 1.35				9 42.87		
				14 56.46		14 10 3.65
					16 30 29.86	
17 10 42.77						

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June 29th June 30th

	β Bootis	δ Pers.	γ Bootis	ε Bootis	β Urs. Min U.C.	β Bootis
	14 57	3 34	14 27	14 39	14 50	14 57
0			0 26 26.99		0 49 31.00	0 56 37.55
1						
2					2 46.02	
3					3 54.29	
4					4 50 1.62	
5		5 33 48.59				
6		6 52.00	6 45.80			6 56.40
7					7 33.25	
88						
9				9 39 23.17		9 57 4.80
10					10 56.82	10 7.30
11	11 57 11.00					11 10.00
12						12 13.00
13		13 34 13.30			13 51 19.69	13 15.84
14		14 19.40			14 35.79	
15	15 24.83				15 43.40	
16					16 50.92	
17					17 58.50	
18						

α Cor. Bοτ.
$15^h\ 29^m$

12 29 23.85

~~do not find~~

Not obs on 29th
Read on 28th

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July 3d

	β Ariet.	γ Andr.	α Ariet.
	1 47	1 56	2 0
0	47 11.32		0 59 34.72
1			36.98
5	24.78	5 55 54.76	
7		56 0.52	
8			55.15
11		11.60	
12		14.34	
16		28.00	

July 4th

	γ Pers.	α Pers.	ε Boot.	ζ Boot.
	2 55	3 15	14 39	15 10
4	55 18.78			
7				10 7.40
10		15 21.00		
11	46.40		39 21.56	
12	49.90			
13	53.30			
14	56 0.12			
15	3.37			
16				32.48
18		49.65		

Read off sheet 332

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July 6th

α Ariet.					
2	0				
		1h			
1	1	59	33.26		
2					
3					
4					
5					
6					
7					
8	8		51.18		
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

July 7th

β Ariet.				γ Andr.				α Ariet.				α Pers.				η Tauri.			
1	47			1	56			2	0			3	15			3	40		
								1h											
								1	59	31.32									
2	47	10.31						2		33.80									
5		18.80																	
				6	56	52.24													
				7		54.99	7			47.32									
										~~49.50~~									
										49.50									
				8		57.80	8			~~47.68~~									
9		27.88																	
				10	57	3.30													
								11		56.00									
				12		8.86													
15		42.98										15	15	36.37					
																16	40	5.90	
				17		25.10		17	0	11.62									
				18		28.00		18		13.98									

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α Tauri.	β Libr.	α Cor. Bor.	α Serp.	δ Scorp.	β Scorp.	δ Ophi.
4 28	15 10	15 29	15 38	15 53	15 58	16 7
						0 7 10.60
					1 57 35.72	
			3 37 34.80			
	5 9 52.12					
	6 54.25					6 25.00
					7 50.98	
9 28 28.32						
		10 29 7.30				
			11 53.50			
12 34.64	12 10 7.00					12 37.71
	13 9.12	13 14.22	13 57.73			
						14 43.88
			16 38 6.20			
			17 8.24	17 53 2.02		

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Have put all wires
α Scorpii together

July 7th

α Scorp.	α Scorp.	ζ Ophi.	η Herc.	July 8th β Boot.	β Libr.
16 21	16 21	16 30	16 38	14 57	15 10
0 0 21 7.92					
1 1 10.12					
2 12.32 ← 21 12.~~12~~ 3					
3 3 14.52 ~~3~~					
4					
5					
6		6 29 54.62			6 9 52.72
7 7 26.30			7 38 10.64	7 56 47.14	
8					
9					
10 33.11	10 ← ~~33.11~~	10 30 3.02			
11					
12		12 7.20			12 10 5.00
13					
14 14 44.38					
15		15 15.84			
16		16 17.88			
17 17 51.38		17 19.99			17 17.76
18					

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July 9th

α Cor. Bor.	α Serp.	δ Scorp.	δ Ophi.	γ Andr.	α Ariet.	α Serp.
15 29	15 38	15 53	16 7	1 56	2 0	15 38

not on list for July 9

1	28	42.00	1	37	28.97	1	52	20.00			
2		44.58	2		31.11				1h 2	59	31.30
						3		24.70			
4		49.17									
						5	7	21.40	5		40.01
						7	55	52.40			
						8		55.28			
9	29	3.00									
						10	56	0.70			
						11		3.30			
						13		49.00			
						15		17.15			
						16		58.12	16		46.00
						18		25.68	18	0	11.43

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"Ex. Minutes"

July 9th

δ Scorp. 15 53

δ Ophi. 16 37

not on list for July 9

"Ex. Minutes"

July 13th

α Cor. Bor. 15 29

δ Scorp. 15 53

β Scorp. 15 58

α Scorp. 16 21

0						0	28	36.100	52	14.00				
1	1										1	57	30.221	
2														
3	3								3	20.70				
4														
5			5										5	22 16.21
6														
7											7	45.49		
8														
9														
10						10	29	1.43						
11	N													
12														
13	13					13		8.58						
14											14	58 2.86	14	38.98
15														
16	16		16										16	43.55
17						17		20.00						
18														

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July 14th

ζ Ophi.	η Herc.	η Ophi.	α Herc.	γ Drac.	δ Boot.	α Serp.
16 30	16 38	17 3?	17 9	17 53	15 10	15 38
		0 2 ~~37.42~~ 30.98				
				1 52 43.83		1 37 24.55
				2 46.92		
	6 38 2.60					
				7 53 6.99		
			9 8 33.45	9 13.55		
					10 10 4.84	
11 29 59.88			~~37.94~~ 11 ~~40.02~~	11 20.48		
			12 40.02	12 23.86		12 49.50
13 30 3.82				13 27.14		
	14 26.32					14 55.96
						15 57.99
16 12.20						16 38 0.13
						18 4.30

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July 14th

	B' Scrp.		ξ Ophi.		η Herc.	
	15	58	16	30	16	38
0					ξ 45.86	
1					37 ~~43.40~~	
2						
3					51.47	
4						
5			5	29 46.80		
6	6	57 42.68				
7						
8						
9						
10			10	57.00		
11	11	53.84				
12						
13						
14			14	30 7.52		
15					15 38 28.70	
16						
17					17 34.02	
18					18 36.47	

July 16th

	δ Bootis		α Serp.		B' Scrp.	
	15	10	15	38	15	58
0			0	37 21.95		
1			1	23.95		
2						
3						
4						
5						
6						
7	7	9 56.66				
8						
9						
10						
11						
12					12	57 48.64
13						
14						
15						
16						
17						
18						

~~No obs of~~
~~δ 10 as~~
~~this table~~

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July 17th

ξ Ophi.	α Scorp.	β Herc.	ζ Ophi	η Herc.	α Aquil	γ Pers.
16 7	16 21	16 24	16 30	16 38	2 0	~~0 7~~ 2 56

1 7 5.87

1

1h
4 59 32.00

*

8 43.37

9 — 9 45.70

10 47.94

11 29 58.45

*
13 21 33.32 13 38 ~~25.12~~ 19.98?

14 ~~27.83~~ 25.12 14 55 ~~50~~.02

15 ~~26.42~~ 27.83 15 53.52

16 24 42.98 16 30 11.16

18 47.48 18 0 7.92

* doubtful, perhaps clock

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July 17th

	α Pers.	δ Pers.	η Tauri.	ξ Pers.	η Herc.	β Drac.
	3 15	3 34	3 40	3 46	16 38	17 27
0						
1					1 37 44.95	
2		2 33 20.78				
3						
4						
5		5 33.00			5 58.10	5 26 52.40
6	6 14 58.68					
7	7 15 1.70				7 38 3.69	
8		8 42.00				8 27 2.88
9		9 45.10	9 39 41.72			
10		10 48.10		10 45 58.65		10 9.70
11		11 51.36		11 46 1.00		
12						
13						
14			14 55.00			
15	15 29.99 ~~33.32~~					
16						
17		17 34 12.48				
18						

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July 18th

α Ariet.	α Pers.	η Tauri.	ι Aurig.	η Boot.	τ Virg.	β Here.
2 0	3 15	3 40	4 49	13 48	13 55	16 24

0 48 6.66

3 48 3.08 ✓ 3 24 9.29

4 39 28.12 4 16.76

5 14 55.22

6 34.82 6 54 46.00

7 14.08 ✓

9 31.50

10 34.05 10 26.90

11 22.95 11 29.14

12 1h 59 52.00 12 58.60

13 41.06

15 48.75

16 42.43

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July 18th

	β Drac.		γ Drac.		α Scorp.		η Urs. Maj.		η Boot.		α Boot.	
	17	27	17	53	16	21	13	42	13	48	14	10
0	0	26 32.00	0	52 38.80							0	9 7.42
1	1	35.40										
2												
3			3	48.79								
4												
5					5	21 14.35						
6	6	55.96									6	22.95
7												
8					8	21.00			8	48 14.00		
9			9	53 11.~~75~~ 77								
10	10	27 9.53										
11							11	42 ~~1.42~~ 14.37	11	20.76	11	33.95
12												
13												
14												
15			15	~~31.84~~ 34.98								
16			16	38.37	16	41.94	16	33.53	16	33.90		
17					17	44.00						
18			18	45.00			18	39.69	18	38.00		

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July 27th

	α Ceti	α Pers.	δ Erid.	η Tauri.	γ Erid.	ζ Pers.	ι Aurig
	2 55	3 15	3 37	3 40	3 52	3 46	4 49
0		14 34.34			51 20.94	45 30.26	
1			36 27.74	39 18.99		32.50	
2							48 9.96
3							12.12
4	55 5.59					40.05	
5				30.37	33.83		
6							22.00
7		59.68		34.87			
8		15 2.88					
9					42.00		
11	22.10						
12		15.28 ~~18.62~~			52.82		
15	32.30						
16		31.20		57.43			
17	36.40			59.74		46 16.00	
18							54.14

July 28th

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July 28th

	α Herc	α Ophi.	γ Drac.	α Arict.	α Cete	β Pers.
	17 9	17 29	17 53	2 0	2 55	3 34
0		0 28 19.32				
1			1 52 39.69	1 59 22.37		
2	2 8 12.00				2 55 1.20	
3			3 46.46			3 33 20.54
4	4 16.39					
5	5 20.59	5 32.50	5 56.40			
6		6 34.58		6 ~~38.12~~ 36.13		6 33.14
7		7 36.80		7 38.12		
8		8 38.86	8 53 6.00	8 40.63		
9						9 42.28
10						
11			11 16.28			
12			12 19.62	12 49.33		12 51.20
13						
14			14 29.68			
15						15 3.34
16					16 55 34.00	
17	17 48.58		17 38.97	17 0 2.93		17 9.70
18		18 29 1.68	18 42.40			18 12.80

July 29th

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"doubl. record"

July 30th

η Tauri.		α Aurig.		β Tauri		ι Ori.		η Urs. Maj.		η Bootis		July 31st α Ceti	
3	40	5	7	5	18	5	29	13	42	13	48	2	55
		0	6 38.30					0	41 36.50				
		1	41.30	1	38.82								
						2	28 33.00						
3	39 23.00					3	35.00						
						4	37.30						
		5	56.00									5	55 11.39
				7	55.26	7	45.45						
										8	48 15.00		
10	41.28	10	7 11.20					10	42 11.98				
		11	14.00							11	21.62	11	23.94
		12	17.00	12	18 7.16							12	26.02
		14	25.96	14	14.00							14	32.00
								15	31.20				
										17	36.90		
						18	10.40						

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July 31st

	α Pers.		η Ursa Maj.		η Bootis		β Draconis		γ Draconis		Aug. 1. α Ceti	
	3	15	13	42	13	48	17	27	17	53	2	55
0					0	47 55.950		26 30.986	0	52 37.60		
1					1	58.14	1	34.18	1	40.90		
2							2	37.62				
3							3	41.15.				
4												
5												
6									6	530.70		
7			7	42 2.59								
8	8	15 4.55			8	48 15.50						
9							9	27 4.88				
10												
11									11	17.23		
12												
13	13	20.60									13	55 28.36
14							14	24.75				
15												
16												
17												
18					18	39.50						

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η Tauri.	ξ Pers.	ε aurig.	δ Ori.	α' Herc.	α Ophi.	γ Drac.
3 40	3 46	4 49	5 25	17 9	17 29	17 53
		0 48 6.92			0 28 21.00	
			1 24 52.60		1 23.20	
			3 56.723	8 16.22		3 52 47.83
					5 33.98	
6 39 34.82			6 25 5.00			
	7 45 51.55					7 53 4.16
		9 31.60				9 11.00
						10 14.00
11 46.17			11 15.41			
12 48.45			12 17.64			12 17.60
13 50.70			13 19.68			
	15 46 13.05					
					16 59.30	
18 40 4.12		18 56.00		18 52.30	18 29 3.60	

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Ex. Minute"

Aug 5th

	α Pers.	γ Erid.	α Aurig.	Aug 9 β Drac.	γ Drac.	α Lyrae.
	3 15	3 52	5 7	17 27	17 53	18 32
0		0 ~~7~~ 9 51 18.63				0 31 39.70
1	1 14 35.88			1 26 26.48	1 52 ~~32~~ 33.10	
2					2 36.41	
3					3 40.00	
4						
5	5 51.92	5 32.225	6 55.71		5 49.74	
6						
7						
8					8 59.98	
9				9 57.00	9 53 0.20	
10						
11					11 9.85	
12						
13						
14						
15	15 15 26.63					
16						
17	17 32.98			17 27 27.65		
18			18 7 37.00			

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Aug 10th

	β Drac.	γ Drac.	η Serp.	α Lyrae
	17 27	17 53	18 15	18 32
0	26 22.00	0 52 28.88		
1	25.17	1 32.33		
2	28.40	2 35.52		
5		48.40		
6	45.50			
7		55.13		
9	55.84			
11	27 2.60	11 53 8.36	11 14 21.78	
12		11.70		
13			25.86	
14		21.82	14 32 20.35	
15		24.87	15 31.72	
16		28.20	16 25.96	
17		31.55	17 28.14	
18			38.00	

Aug. 11th Aug 12th

	γ Drac.	η Tauri.	ζ Pers.
	17 53	3 40	3 46
0	52 27.50		0 ~~45~~ 21.53
1	30.62		1 23.75
2			2 26.20
5	47.79		
6	51.38	6 39 ~~24~~.10	
9	53 1.22	9 3.01	
10			10 48.00
12	10.74	12 37.60	

~~Probably~~. Not obs. on this date

Probably date wrong -

Do not find.

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	Aug. 12th					Aug. 13th		Aug. 15th	
	γ Drac.		η Serp.	α Lyrae	σ Sagitt.	α Pers.		β Aurig.	
	17	53	18	15	18 32	18	47	3	15	1	47
60	0	52 26.87	0	13 55.28				0	14 25.80 ~~44.70~~ 28.98 ~~47.68~~		
1								1			
2	2	33.58									
3						3	46 43.29	3	34.98		
4										4	46 55.37
5											
6	6	49.95						6	47.62	6	47 1.91
7											
8					8 32 0.65						
9								9	57.53		
10						10	47 1.50				
11			11	14 19.84							
12			12	21.86							
13								13	15 10.29	13	16.98
14	14	53 19.98 20						14	16.66		
15	15	~~23.80~~			15 21.48	15	15.52			15	23.84
16	16	26.50			16 24.02						
17										17	27.89
18			18	36.58						18	30.50

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γ Andr.	α Ariet.	α Ceti	ι Aurig.	β Eurid.	β Orio.	β Tauri
1 56	2 0	2 55	4 49	5 1	5 8	5 18
	1R 0 59 10.18	0 53 46.37			0 7 30.20	
1 55 15.98		1 48.22				
2 18.70		2 50.20				
3 21.22	3 16.40					
5 30.40		5 58.85				
	6 25.38					
7 35.89						
9 40.98						
				10 1 4.02	10 53.27	
11 46.95	11 36.70					
12 49.88	12 38.73					
13 52.40		13 54 14.98				
14 57.93	14 45.85		14 48 32.95			
			15 35.37	15 16.45		
16 56 3.00	16 50.36					
	17 52.69					
				18 22.71		18 18 12.78

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Aug. 15th

	ε Oris.	α' Herc	β Drac.	α Ophi.	γ Drac.	η Serp.
	5 30	17 9	17 27	17 29	17 53	18 15
0						0 13 53.12
1						
2				2 28 12.80	2 52 31.46	
3						3 59.60
4						4 14 1.67
5				5 21.22		
6						
7				7 25.68		
8			8 26 48.98			8 11.93
9				9 29.95	9 58.13	
10					10 53 1.50	
11				11 34.02	11 4.70	11 17.92
12		12 8 24.70	12 27 2.56	12 36.29		
13			13 5.94	13 38.39	13 11.52	
14			14 12.47		14 18.29	
15	15 29 26.90	15 33.50				15 28.60
16				16 46.80	16 24.92	
17					17 28.40	
18					18 31.70	

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Aug 16th

	α Lyrae.	α' Herc.	β Drac.	α Ophi.	γ Drac.	Aug 17th α Cet.	ε Eri.
	18 32	17 9	17 27	17 29	17 53	2 55	3 27
0				28 6.62	52 22.00	54 41.28	25 56.53
1				8.44	25.24		
2		7 59.10			28.86		
3			26 26.00		32.00		
4	31 45.18		29.00				
5				18.94	42.00	53.92 [illegible]	26 9.00
6						55.98	
7			42.60			58.00	
8			46.00	24.98	51.89		15.12
9					54.99		
10		8 18.00	52.64				
12			59.82		53 5.43		
13					9.10	55 10.22	
14		28.60	27 10.13	39.82	15.34		
15			13.30	41.89			
16				43.99	22.21		
17			20.00		25.68		38.42
18	32 27.51					22.60	

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Aug 17th

	ν Pers.	ψ Pers.	ι Aurig.	β Drac.	α Lyrae.	σ Sagitt.
	3 34	3 46	4 49	17 27	18 32	18 47
0					0 31 29.70	
1						1 46 32.00
2		2 45 18.78			2 34.98	
3		3 21.20			3 37.70	3 36.60
4						4 38.98
5		5 28.78		5 26 33.60		
6	6 33 18.30			6 37.24		
7			7 48 8.47			
8	8 24.59	8 36.02				
9	9 27.68				9 56.10	
10						
11						
12						
13	13 39.53				13 32 6.98	
14	14 45.60				14 12.28	
15	15 48.95				15 14.82	
16						16 47 10.95
17		17 46 0.22			17 20.25	17 13.26
18	18 58.22			18 27 20.99		18 15.56

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Aug 18th

	ζ Aquil.	α Ceti	α Pers.	η Tauri.	ζ Pers.	α Tauri	η Bootis
	18 59	2 55	3 15	3 40	3 46	4 28	13 48
0			14 17.23	38 59.52			
1	—	54 41.98	20.22				
2		44.00				27 44.70	47 40.76
3			26.43				43.00
4		48.21		39 8.36		49.14	45.25
5				12.84			
6				15.31		55.46	
9		55 0.41					
10	58 58.98				45 39.37		
11	59 1.18		55.41				
12	3.28		58.60			28 8.48	48 4.56
13						10.67	6.96
14				35.72			
15	12.02			37.92			
16					56.24	19.00	
17			15 17.56	42.20	58.68		
18		20.98					

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Aug 18, 1880. Aug 21st

	η Bootis.		ε Bootis		α Cor Bor.		δ Scorp.		β Orio.		β Tauri.	
	14	27	14	39	15	29	15	53	5	8	5	18
0												
1	1	25 51.30			1	28 15.80					1	17 ~~59.98~~ 15.23
2												
3					3	20.40						
4									4	7 25.88		
5			5	38 35.50	5	27.33						
6												
7												
8	8	26 12.50					8	52 11.98			8	34.20
9					9	36.76					9	36.57
10												
11												
12												
13												
14												
15												
16												
17			17	39 5.78								
18			18	8.00								

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Aug. 22d

δ Orio.	ε Orio.	ζ Orio.	α Lyrae	ε Erid.	δ Pers.	δ Erid.
5 25	5 30	5 35?	18 32	3 27	3 34	3 37
0 24 24.42	0 28 38.99				0 32 45.62	
2 28.54						
			3 31 29.89			
					4 57.83	
				7 26 1.80		
				8 3.88	8 33 12.79	
					9 15.91	
			10 51.28			
12 50.95						
		14 33 46.70	14 32 4.47		14 34.24	
	15 29 14.29					15 39 34.00
16 25 1.30				16 22.55		16 36.02
				17 24.64		

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Aug 22d

	ζ Pers.		β Urs. Min. U.C.		γ Drac.		η Serp.		α Lyrae.		Aug. 23d α Pers.	
	3	46	14	50	17	53	18	15	18	32	3	15
			~~26~~									
0			0	26.37 / 27.88	0	52 8.72			0	31/2 18.32		
1			1	29.33			1	13 38.92				
2			2	31.82								
3			3	34.15								
4			4	37.00								
5			5	39.40								
6	6	45 19.48	6	42.20							6	14 26.29
7			7	44.70			7	53.70				
8			8	47.60			8	55.83	8	42.18		
9			9	50.28					9	44.80		
10			10	52.60								
11			11	55.50								
12			12	58.00								
13			13	0.78							13	48.80
14			14	3.00					14	32 0.90		
15			15	5.45			15	14 12.00				
16			16	8.30								
17			17	11.00			17	16.22				
18			18	13.32	18	53 14.84					18	15 7.90
				15.90								
				18.38								
				21.00								
				23.61								
				26.28								
				28.92								

Read arc (25) Dark J arcs on hours column of sheet 4 Aug 27

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ε Erid.	ζ Pers.	δ Erid.	η Tauri.	γ Erid.	β Tauri.	β Drac.
3 27	3 34	3 37	3 40	3 52	5 18.	17 27
0 25 ~~11.40~~ 42.00					0 17 6.72	
	3 32 51.68					
4 50.38						
						5 26 18.97
7 58.87						
8 26 0.87	8 33 10.29					
		9 36 16.36				
		10 18.42				10 35.88
	11 19.18			11 51 16.30		
	14 31.32					14 52.60
	16 37.82		16 39 27.00			
	17 40.74					17 27 2.89
18 23.95						

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Aug. 23d

	γ Drac.	α Lyrae.	ζ Ors.	η Serp.	α Lyrae.	ζ Aquil.
	17 53	18 32	5h 35?	18 15	18 32	18 59
0	52 5.29			0 13 16.68		0 58 4.00 * ?
1						1 6.14
2						
3	15.00	3 31 22.90				
4						
5		30.93				
6	28.35				6 31 16.72	
7						
8						
9						
10						
11						
12						
13					13 34.99	
14		14 57.40	14 33 23.3			
15		15 32 0.10				
16				16 53.98	16 45.82	
17	53 8.15				17 48.42	
18	11.68			18 ~~58.82~~		

Aug. 28th.

* Possibly second beat.

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Aug. 31st Sept. 1st

	γ Aquil.	β Aquil.	α Can. Maj.	β Drac.	α Ophi.	γ Drac.	η Serp.
	19 40	19 49	6 39	17 27	17 29	17 53	18 15
0				25 29.35			
1						51 39.82	
2			37 56.62				
3							13 11.20
4						49.90	
5	38 56.42			49.98			
6		47 50.82		53.15	27 35.00	520.88	
7				56.60	37.00		
8		54.95	38 11.64			6.45	
10			16.00	26 6.97		12.90	
11			18.19				
12			20.14			19.48	
13						22.90	
16			30.88		58.52		
17	39 23.98		33.13				
18		48 17.53					

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Sept 1st

Sept 2d

	α Lyrae	τ Sagitt.	ε Eriid.	η Tauri.	ζ Pers	α Tauri.
	18 32	18 47	3 27	3 40	3 46	4 28
0						
1						
2		2 45 50.84				
3					3 44 37.35	
4		4 55.18	4 25 20.62			
5	5 31 2.10					5 27 10.98
6						
7						
8	8 10.29		8 31.00		8 51.72	
9						
10						
11	11 18.00		11 37.60			
12	12 20.90					
13			13 41.80			
14	14 28.77		14 45.86			
15	15 31.38					
16			16 50.13			
17						17 39.13
18				18 39 2.16		18 41.29

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"Found the first numbering incorrect"
R.J.R.

ι Aurig.	β Ori.	δ Ori.	ε Ori.	ζ Ori.	α Gem.	β Gem
4 49	$5^h\ 8^m$	5 25	5 30	5^h 30 2	7 26	7 37

0 24 49.60
1 51.97
2 23 52.37
3 47 12.13
8 32 56.22
12 36 22.34
13 39.24
13 —
14 24 21.00
18 7 23.17

* Clouds

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Sept 2d

	η Ursæ Majoris		α Serpentis		ζ Ophiuchi		η Herculis		η Ophiuchi		γ Draconis	
	13	42	16	21	16	30	16	38	17	3 ?	17	53
0					0	28 29.86			0	1 26.03	0	51 34.59
1			1	19 59.84	1	31.91					1	37.89
2												
3												
4							4	36 49.16				
5											5	54.88
6												
7												
8											8	52 4.80
9												
10												
11												
12												
13	13	41 19.52									13	21.16
14												
15												
16												
17												
18												

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Sept 3d

η Serp.	α Lyrae	σ Sagitt	ξ Aquil	η Boot.	α Cr. Bor.	β Scorp.
18 15	18 32	18 47	18 59	13 48	15 29	15 58
	0 30 44.86					
3 13 9.79					3 27 35.52 ~~33.28~~	
				5 47 4.83		
	6 31 3.17					
	9 11.32		9 58 12.02			
				11 17.87		
	12 19.00	12 46 14.41				
						14 56 55.90
	18 37.55			18 35.22		

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	Sept 3d	Sept 4th				
	η Ophi.	δ Orio.	ι Orio.	ζ Orio.	α Orio.	μ Gem.
	17 $9^{\frac{3}{4}}$	5 25	5 29	5 35 ?	5 48	6 15
0						0 13 29.50
1	1 1 26.00	1 23 42.80				
2				2 32 34.32		
3					3 46 35.12	
4			4 28 3.87			
5						
6				6 44.63		
7						
8						
9						
10						
11						
12						
13						13 14 5.14
14					14 47 2.00	14 7.40
15					15 4.13	15 9.69
16						
17						
18		18 24 21.98				

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γ Gem.	α Cau. Maj.	γ Drac.	η Serp.	α Lyrae.	β Cyg.	γ Aquil
6 30	6 39	17 53	18 15	18 32	19 25	19 40
		0 51 38.13				
					2 23 46.42	
		3 38.18	3 15 2.98	3 2 46.34		
		4 41.46		4 48.88		
						5 38 36.87
8 28 53.92	8 37 56.70					
	11 38 3.22		11 21.86			11 49.24
			13 26.00			
				14 3 20.40		14 57.63
15 29 10.98				15 23.00		15 59.90
18 17.52						

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Sept 4th

	α ² Capric.			γ Cyg.		
	20	11		20	17	
0						
1						
2				2	16	46.32
3						
4	4	10	22.88			
5						
6				6	17	0.02
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17				17	32	15
18						

Sept. 5th

	α Pers.			ε Eri.			δ Pers.			η Tauri.		
	3	15		3	27		3	34		3	40	
0	0	13	22.65									
1							1	32	3.98			
2	2		29.19				2		6.99	2	38	9.40
3	3		32.45				3		10.45	3		~~11.92~~ ~~14.20~~
4	4		35.57	4	2	5 8.92	4		13.43	4		14.20
5							5		19.70	5		18.73
6												
7				7		16.99						
8	8		51.44							8		25.22
9												
10												
11												
12							12		40.71			
13										13		36.48
14	14	14	13.43							14		41.35
15				15		36.00						
16												
17	17		22.83							17		48.02
18				18		42.16						

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have changed the numbers R.J.R.

	δ Pers.	α Tauri.	ι Aurig.	α Aurig.	f Orio.	α Lepo.	κ Orio.
	3 46	4 28	4 49	5 7	5 25	5 27	5 41
0	44 18.00	0 26 46.00					
2						25 11.90	
3		52.50	3	5 36.00		14.00	
4	27.95	4 54.62	4	39.13			
5		58.90	5	45.00			
6		27 1.38				23.00	
7							40 3.20
9			47 17.22				
10			19.70	10 59.87			
11			22.00			33.93	11 11.74
12			24.62		12 25 35.87		
13			27.00	13 6 ~~9.28~~ ~~2.88~~	13 38.02		
14					42.28		
15	59.14		15 34.40	15 18.00			
16		24.90				16 46.62	
17					48.88		
18	45 6.39		18 41.82	18 26.90		18 51.18	

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I have changed the numbering R.S.R.

Sept 5th

	α Orio.	η Urs. Maj.	α Boot.	γ Boot.	ε Boot.	β Boot.
	5 48	13 42	14 10	14 27	14 39	14 57
0					0 37 28.48	
1						
2						
3				3 25 3.11		
4				4 5.99		
5						
6		6 40 46.57		6 13.88		
7						7 55 26.95
8						
9	9 46 44.93			9 21.88		9 32.45
10						
11		11 41 2.36	11 8 22.36			
12	12 50.96			12 29.60	12 58.57	
13						
14						
15	15 59.56			15 42.89		
16						
17					17 38 14.93	17 57.00
18						

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Sept. 6th Sept. 11th

	α Serp.		β Scrp.		η Boot.		κ Ori.		α Can Maj		α Gem.		α Can. Min
	15	38	15	58	13	48	5	41	6	39	7	26	7 32
0													30 17.80
1					47	40.00	39	22.30	37	8.72			
2						42.11				10.98			21.89
3													23.79
5	36	19.77					5	32.98	5	19.62			
6						53.27							6 32.38
8								39.00					
10											24	37.71	
12								47.69	12	34.40			12 44.60
13								49.80					
14		40.38	14	.56	46.97		14	53.70	14	40.83	14	~~49.03~~	
15								55.80	15	43.00			
16										45.20			
17												57.18	
18												59.79	18 54.93

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Sept 11th

η Serp.	α Lyrae.	σ Sagitt.	δ Aquil.	β Cyg.	γ Aquil.
18 15	18 32	18 47	18 59	19 25	19 40
0					
1					
2	2 31 11.78			2 24 14.50	
3					3 38 58.71
4		4 46 15.56			
5					
6			6 58 26.91		
7			7 29.10	28.80	
8					
9					
10			10 35.53		
11					
12			12 39.56		
13					
14					
15			15 47.95		15 39 7.28
16 16 14 2.40	16 53.80				16 9.42
17					
18	18 59.20				

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1900phae.proj.1996

	α Aquil. 19 44	β Aquil. 19 49	θ Aquil. 20 4	α² Capric 20 11	γ Cyg. 20 17	α Cyg. 20 37	ε Cyg. 20 41
0					16 9.18		40 37.38
1	43 16.98	47 46.56			12.18		
2	19.01					36 38.70	
3				9 48.98		41.68	44.74
4			3 34.80				47.50
5		56.69			25.42		52.38
6							57.30
7	31.89			59.82		55.87	59.70
8				10 1.90			
9	36.01						
10			48.99				
13		48 13.78					
14						37 19.05	
15			4 1.30				
18							44 26.82

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Sept 12th

	η Urs. Maj.	α Scorp.	η Herc.	η Ophi.	α' Herc.	α Leo.
	13 42	16 21	16 38	17 3?	17 9	10 1
0						0
1						
2		2 19 20.40			2 6 29.81	2
3	3 40 2.62					
4				4 0 52.98		
5			5 36 12.87			5
6	6 15.80					
7			7 17.98			
8						
9						
10						10
11	11 31.89					
12						
13						
14						
15					15 7 1.92	15
16	16 51.00			16 1 23.00		
17						
18		18 20 2.00				

no such date

✓ R.T.R

do not find

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Sept 15 ~~Sept~~ 16th

μ Gem.	S Ori.	α Hydrae	O Urs. Maj.	O Aquil.	α^2 Capric.	γ Aq.
6 15	5 35?	9 21	9 24	20 4	20 11	20 17

0	15 43.16	0	21 37.25	0 24 35.00		0 17 49.88
		1	39.32	1 38.50		
		2	41.40	2 41.80		
				3	5 13.00	
				4 48.80		
				5 55.40		
						6 18 8.55
		7	53.93		7 11 40.22	
	8 34 58.60					8 13.84
				10 25 12.45		
		11	22 2.00			
				13	~~36.44~~	
	14 35 12.89	14	10.35			
15	16 20.92	15	12.44			
		16	14.50			
		17	16.60			

Probably δ 36.44

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"This sheet numbered twice & 9 there read obs. to correspond with stars on other Sheets R.J.R."

Sept 16th		Sept 17th											
ε Cyg.			α Boot.		γ Boot.		ε Boot.		β Ursa. Min.		β Libr.		
20	41		14	10	14	27	14	39	14	50	15	10	
0													
1													
2									2	50	18.50		
3												3 10	34.36
4													
5							5	39	51.9⅞	5	49.20		
6													
7													
8					8	27	28.78						
9												9	49.00
10					10		33.82			10	28.42		
11													
12					12		39.13⅝	12	40	8.00			
13													
14	14	41	57.90							14	52	7.75	
15					15		49.90						
16													
17								17	22.05	17	30.80		
18				18	9 49.62 ~~12 37.54~~			18	24.38				

Sheet 476

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1880phae.proj.1836

~~and d~~
~~shots~~ ~~A.M.~~

Sept 21st

α Serp.	α Scorp.	β Aq-	ε Erid.	ζ Pers.	ζ Erid.	η Pers.
15 38	16 21	19 25	3 27	3 34	3 37	3 46
	0 21 56.08	0 25 43.53				
					1 37 11.60	
				2 34 ~~9.32~~ 3.00		
			5 —			5 46 28.50
		6 59.63				
		9 26 6.90				
		10 9.16				
11 38 42.00			11 27 21.20		11 34.50	
		12 13.60				
			13 25.32	13 39.91	13 38.92	
			15 31.72			
					16 47.00	
	17 22 39.93				17 49.43	
18 58.70				18 ~~45.99~~ 58.00		

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Sept 21st

	α Tauri.		ι Aurig.		β Eri.		α Aurig.		γ Ori.		δ Ori.	
	4	28	4	49	5	1	5	7	5	18	5	25
0					0	1 36.30	0	7 23.46				
1									1	18 23.43		
2												
3												
4			4	48 58.48	4	44.80						
5											5	25 44.22
6												
7												
8			8	49 11.08	8	55.13					8	50.80
9			9	13.53								
10					10	59.30						
11												
12												
13	13	29 12.00					13	8 5.00 ~~44.48~~				
14							14	11.00				
15									15	56.59		
16		23.00										
17	17	~~24.98~~									17	26 11.32
18	18	25.25	18	38.28	18	2 17.67						

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α Leporis.	ι Orio.	α Columb.	κ Orio.	α Orio.	μ Gem.	γ Gem.
5 27	5 29	5 35	5 41	5 48	6 15	6 30
0 27 3.50	0 29 13.00					
	1 15.00	1 34 53.70		1 48 22.20		1 30 27.32
2 7.92	2 17.15					
		3 —		3 26.00		
			4 41 50.89			
5 16.86						
	6 27.42				6 15 36.30	6 40.98
	7 29.50			7 36.78		
8 23.35					8 40.75	
			9 42 3.25			
	10 35.41	10 35 18.70				
		11 21.15				
					12 49.93	
	13 ~~42 1.02~~			13 48.97	13 52.20	13 55.79
						14 31 0.30
			15 17.84			15 2.28
			16 19.99			
						17 6.54
		18 41.08				18 8.67

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Sept. 21st

	α Can. Maj.		δ Can. Maj		α Gem.		α Can. Min	β Libr.		α Cor. Bor.	
	6	39	7	3	7	26	7 32	15	10	15	29
0			0	3 5.38	0	26 33.00					
1											
2										2	29 19.70
3			3	12.25				3	10 19.76		
4											
5					5	47.90					
6					6	50.30					
7	7	39 45.76									
8											
9											
10	10	52.34									
11	11	54.35						11	38.80	11	42.70
12											
13											
14											
15											
16			16	46.72							
17					17	27 19.34					
18							18 33 21.25				

Sheet 483 is 15h to 18h not 3 - 5

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1880phae.proj.1836.

Sept 22

	α Serp.	δ Ophi.	η Herc.	η Ophi.	α Herc.	γ Drac.	δ Ord.
	15 38	16 30	16 38	17 $5\frac{3}{2}$	17 9	17 53	5 25
0				3 9.90			25 27.50
1	38 4.22				8 53.00		
2		30 17.94					
3			38 29.98				
4				18.48			
5				22.90			40.30
6					9 6.00		
7				27.00			44.42
9	23.00					53 51.52	
10						54.83	
11							52.30
12	29.48						54.47
13			59.60			54 4.79	
14				44.38			
15				46.70	27.10		
16				48.78			26 4.98
17				50.90			
18							9.18

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Sept 22d

	α Lepo. 5 27	α Columb. 5 35	κ Ori. 5 41	α Ori. 5 48	μ Gem. 6 15	γ Gem. 6 30
0			0 41 38.20	0 48 16.00		0 30 21.60
1			1 40.60	1 18.00	1 15 18.48	
2	2 27 3.85	2 34 52.20			2 20.69	2 25.54
3	3 6.00		3 44.41			3 27.94
4			4 46.52	4 ~~28.48~~ 24.00	4 25.48	4 29.90
5	5 12.25			5 ~~30.40~~ 28.48	5 29.92	5 34.22
6	6 14.42					
7						
8		8 35 7.62	8 ~~57.24~~	8 34.30		8 40.90
9			9 59.38	9 36.48	9 38.68	
10	10 23.38					10 45.00
11				11 40.60		
12	12 27.72					
13		13 21.81	13 42 7.60		13 47.89	
14			14 12.02	14 48.95	14 51.98	14 56.00
15	15 36.02				15 54.60	15 58.18
16			16 16.30	16 53.42		
17						
18	18 42.64		18 ~~20.00~~		18 16 1.30	

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α Can. Maj.		δ Can. Maj.		α Gem.		α Can. Min		β Gem.		α Hydrae		γ Leo.	
6	39	7	3	7	26	7	32	7	37	9	21	10	13
				0	26 28.96	0	32 35.48	0	37 31.18			0	—
		1	3 3.90					1	33.48				
		2	6.02	2	33.92			2	35.90				
4	39 32.99												
								5	45.28				
		6	17.40										
		8	22.00										
9	46.30							9	55.00				
10	48.31			10	55.63			10	57.40	10	21 37.00		
								11	59.85				
12	52.17	12	31.50					12	38 2.00				
		13	33.80			13	33 48.82	13	4.34				
				14	27 7.98								
								15	10.98				
				16	12.62			16	13.32				
17	40 5.43	17	44.98			17	15.02	17	15.70				
		18	47.30					18	18.00				

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Sept. 22d Sept. 23d

	μ Ursæ Maj.		γ Orionis		δ Orionis.		α Columbæ		κ Orionis.		α Orionis.	
	10	15	5	18	5	25	5	35	5	41	5	48
0			0	18 13.92	20 25	24.55					0 48	12.58
1			1	15.83	1	26.62			1 41	37.17	1	14.80
2			2	18.00	2	28.90	2 34	48.80	2	39.22		
3	3 14	46.62										
4			4	22.65	4	32.82	4	53.96	4	43.42	4	21.35
5							5	58.98	5	47.90	5	25.00
6			6	28.92	6	39.30			6	50.01		
7					7	41.42						
8	8 15	3.38							8	53.90		
9			9	34.65			9 35	8.78				
10			10	36.73	10	47.32					10	35.66
11			11	39.20			11	13.98			11	37.92
12			12	40.90							12	40.00
13											13	42.22
14					14	57.80			14 42	8.62	14	46.33
15	15	25.78	15	49.61					15	11.00		
16			16	51.68	16 26	1.74						
17												
18									18	17.27		

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	μ Gem.		α Can. Maj.		α Hydræ		θ. Ursæ Maj.		ε Leo.		γ' Leo		μ Ursæ Maj.	
	6	15	6	39	9	21	9	24	9	38	10	13	10	15
0	—												14	35.00
1	15	15.67	39	23.63			24	13.02	38	33.90				37.88
2		17.88		25.84										40.67
4								22.97		40.52				
5		26.35												
6				36.30										54.81
7		31.43												
8								40.06			13	10.62		
9					21	~~19.54~~ 32.20		43.24		54.33				
10		38.05		45.18		34.02								15 5.93
11				47.00		36.02								
12								53.18						11.31
13		44.83						56.59						
14		49.38				44.53		25 3.21		39 7.87				
15				57.90										
16			40	0.10				9.98		12.30				
17		55.64		2.36		50.95						32.78		
18		57.74		4.33				16.61						

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Sept. 23d

	β Herc.	η Herc.	α Ophi.	ο Sagitt.	β Cyg.	γ Aquil.
	16 24	16 38	17 29	18 47	19 25	19 40
0			0 28 54.57			
1				1 47' ~~23.00~~ ±		
2				2 24.94*		2 40 10.82
3						
4						4 15.00
5		5 38 30.00				
6	6 24 50.86					
7						
8		8 38.05				8 25.53
9						
10		10 43.62				
11		11 46.27		11 48.00		11 32.03
12				12 50.62		
13				13 52.91		
14						
15		15 59.48			15 26 3.52	
16		16 39 1.92			16 5.82	
17	17 25 17.34					
18				18 48 6.52		18 48.88

Doubtful *

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Sept 24th

	α Aquil.		β Aquil.		θ Aquil.		γ Boot.		Σ Boot.		β Boot		β Libr.	
	19	44	19	49	20	4	14	27	14	39	14	57	15	10
0							26	38.68	39	12.12				
1	44	31.18	49	0.90				41.26						
2										16.60				
3													10	8.52
4		37.50			4	48.62								
7											57	10.40		
8						59.18						13.20		
9										35.40				
10		52.37	10	21.62			10	27	8.15					
11		54.37						11	10.69					
13					5	9.42	13		15.85					
14						13.33	14		21.37					
15										51.52	15			
16								26.50					16	39.95
17				38.00			17		28.98	17		56.16		
18				40.16										

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Sept. 24th

	α Cor. Brr.				δ Scorp.				δ Ophi.				α Scorp.				β Herc.				Sept 25th α aurig.			
	15		29		15		53		16		~~30~~ 7		16		21		16		24		5		7	
0																	0	24	31.97	0	7	10.88		
1																				1		13.95		
2																								
3																				3		19.72		
4									4	7	41.39									4		22.72		
5													5	21	44.00									
6	6	29	20.00																	6		31.33		
7																								
8																				8		37.24		
9																				9		40.60		
10																								
11																								
12																								
13																								
14									14	8	6.00													
15																								
16																								
17																	17	25	14.00	17	8	7.05		
18					18	53	26.60										18		16.29					

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ζ Orio.	α Lepo	ι Orio.	α Columb	κ Orio.	α Orio.	γ Gem.
5 25	5 27	5 29	5 35.	5 42'	5 48	6 30

	0 26 51.28		0 34 38.75			
1 25 21.28	1 53.50					
				2 41 38.22		
		3 29 6.27	3 46.22	3 40.02		
		4 8.32				
	5 27 4.20					5 30 26.0
		6 14.60				
			7 58.98			
	8 10.46		8 351.13			
	10 14.84					
	11 17.00					
		12 27.29				
		13 29.43				
		14 33.42				
		15 35.55				
						17 53.98
					18 48 49.17	

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Sept. 25th

	α Can Maj.		ε Can Maj.		δ Can. Maj.		α Gem.		γ Leo,		η Urs. Maj.	
	6	39	6	53	7	3	7	26	10	13	13	42
0			0	53	16.00				0	12	45.86	0
1			1		18.42				1		47.62	1
2			2		20.73							2
3						3	30.00	3	26	27.97		
4			4		25.48							4
5			5		30.16							5
6												
7	7	39 33.42										7
8												
9						9	16.00					
10												
11						11	20.42					11
12												12
13												
14												
15												
16	16	54.72				16	34.40					16
17	17	56.96										17
18												

not obs. on Sept 25

There is a complete reading in Book 6 for this star R.S.R.

do not find

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σ Sagitt	λ Aquil	β Aq.	γ Aquil.	β Aquil.	θ Aquil.	α² Capric
18 47	18 59	19 25	19 40	19 49	20 4	20 11
				1 48 55.00		
3 47 21.583	59 26.72					
				4 49 1.48		
				6 7.80		
7 33.13						
9 37.87						
		14 25 55.72				
				15 28.25		
	17 59.90		17 40 40.97			
					18 5 16.02	18 11 33.51

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Sept 25th

	ζ Cyg.	α Cyg.	ε Cyg.	Sept. 26th ζ Cyg.	δ Ophi.	α Scorp.
	20 17	20 37	20 41	21 7	16 7	16 21
0						0 21 25.13
1						
2	2 17 23.00	2 36 46.71				
3			3 40 53.50			
4						
5	5 34.00			5 7 29.78		
6						
7		7 37 4.21			7 7 44.56	
8						8 46.00
9						
10						
11						
12			12 41 18.00			12 55.00
13						
14						
15						15 22 4.42
16		16 33.47				
17						
18		18 39.44				

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Sept. 28th.

	β Herc.	δ Ophi.	η Herc.	β Ariet.	α Cau. Maj.	ε Cau. Maj.	β Cau Min.
	16 24	16 30	16 38	1 47	6 39	6 53	7 20
0					39 4.48		0 19 53.22
1	24 28.98			1 47 ~~38.00~~ 19.78		1 53 6.80	
2				~~35.28~~ 22.00	8.70	9.20	
3				~~37.38~~ 24.16		11.51	
4	35.87						
5				~~44.20~~ 31.12			
6		30 12.00		~~46.34~~ 32.97		21.00	20 7.94
7					21.82		
8				~~50.96~~ 37.38			
9				~~52.98~~ 39.88			13.98
10				~~55.00~~ 42.04		30.30	
12					32.70	35.44	
13		38 42.98				37.98	22.68
14				~~57.24~~ 52.92	39.18		
15		32.98			41.43		
16		53.84			43.60	47.18	
17	25 ~~8.98~~ 9.00			59.60	45.62		

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note on sheet 511

"Probably $22^h\ 16^m$" (B)

Sept. 28th

	α Gem.		α Can. Min.		β Gem.		ε Leo.		α Leo.		γ Leo.	
	7	26	7	32	7	37	9	38	10	1	10	13
0												
1												
2			2	32 19.92	2	37 16.00						
3												
4	4	26 19.00			4	20.89						
5											5	12 46.98
6			6	30.00	6	28.02						
7			7	32.18								
8			8	34.30								
9												
10									10	1 35.30		
11	11	38.24			11	39.50						
12					12	41.80	12	38 44.00				
13												
14			14	48.98								
15									15	48.00		
16			16	53.12								
17			17	55.20							17	13 15.85
18			18	57.00								

Brown's note above probably wrong should be $10^h\ 16^m$ as it claims and $9^h\ 12^m$ at other end of sheet 511 not $21^h\ 12^m$ G.C.D.

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Sept 29 m

δ Cass.	γ Andr.	α Ariet.	α Cete.	α Pers.	α Gr. Bor.	β Eri
1 17	1 56	2 0	2 55	3 15	15 29	5 1
	0		0		0	1 9.23
1				1	1	11.20
			2		2 28 56.38	
3					3	15.48
4					4 29 0.90	
				5	5	21.98
			6		6	24.00
			7		7	26.00
		8			8 12.40 8	27.92
			9			
10						
					11	34.00
13						
		15			15 31.12	15 44.78
16			16			16 46.72
			17	17		
	18		18	18		

α Serp. 15h 38m

Cannot find these 5 stars on Sept 28 sheets 507, 508, 509, 570, 571. all of date except 512 sent to Waterville in Sept 1897 + is Oct sheet. Is not the date wrong on list?

13 38 8.20

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Sept. 29th

	β Tauri		δ Ori.		α Lepo.		ε Ori.		α Columb.		κ Ori.	
	5	18	5	25	5	27	5	29	5	35	5	41
0			0	25 5.46			0	28 46.00	0	34 24.87		
1											1	41 17.88
2			2	9.47							2	19.70
3			3	11.65			3	52.40			3	21.78
4	4 18	3.40	4	13.70					4	34.30		
5			5	17.83	5	26 49.50	5	58.36			5	28.00
6							6	29 0.76	6	41.81	6	30.00
7	7	12.90							7	44.28		
8			8	23.59								
9			9	25.50	9	58.40	9	7.00				
10					10	27 0.88					10	38.82
11			11	29.72			11	11.17	11	54.60		
12												
13							13	15.00	13	59.70	13	45.12
14			14	38.02							14	49.43
15	15	33.53	15	40.52	15	13.80	15	21.14				
16	16	35.88	16	42.48								
17											17	55.32
18	18	40.69	18	46.26	18	20.28						

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1880phae.proj.1926

	α Ori.	μ Gem.	γ Gem.	ε Can Maj.	α Gem.	α Can. Min.	β Gem
	5 48	6 15	6 30	6 53	7 26	7 32	7 37
0	47 53.38						37 9.17
1		14 56.00		53 4.39			
2		58.30					
3					26 13.90		15.86
4		15 3.00	30 7.79				
5	48 5.78					32 25.48	22.92
6	7.90	9.76					
7	9.60			21.00		29.50	
8		14.20				31.54	
9					—		32.05
10				28.02			
11					35.83		
12		22.84					
13		25.22		34.97	40.48		41.79
15				42.32	47.93		
16	30.58					50.40	
17					52.60		53.15
18				49.00	54.70		

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1880phae.proj.1836.

Probably
Wright
wires see
notes below

Sept 29th

	α Hydrae		θ Urs. Maj.		ε Leo.		α Leo.		L Cass. L.C.		β Boot.	
	9	21	9	24	9	38	10	1	1	17	14	57
									13h			
0									0	11		
1									1	12		
2												
3												
4	4	21 0.20					4	1 18.00	4	13		
5									5	14		
6			6	24 13.80					6			
7					7	38 30.50			7	15	7	56 53.90
8	8	10.80			8	32.84	8	28.80	8			
9									9	16	9	59.42
10									10			
11		*	11	30.90								
12									12	17		
13									13			
14					14	48.40			14	18		
15							15	45.75	15	19		
16					16	53.00						
17	17	34.39					17	49.95	17			
18	18	33.52							18	20		

38.50
47.65
54.80

12.52
17.55
24.00

41.70
47.72
51.82

11.30
16.35
22.00

37.40
42.45
49.00

9.80
14.52
19.25

41.94
46.00
50.50

9.00?
14.20
20.32

39.15
43.95

39.00
45.45
50.30

9.58
16.00
22.40

40.65
44.28
51.38

8.25
13.26
20.70

7.65
13.00
18.96

31.40

There were
24 Granks
took 14 Granks
for δ's + did
not read here.

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1880phae..proj..1836.

ε Boot	α Cr. Bor.	δ Ophi.	α Scrp.	η Herc.	β Drac.	α Ophi
15 10	15 29	16 7	16 21	16 38	17 27	17 29

0 21 13.37

1 37 56.47

3 20.02 3 26 53.43

4 28 56.00

6 29 3.00

7 7 32.70

9 36.40

11 ~~41.00~~

12 42.98

13 29 ~~30.70~~ 4.00

15 38 39.10

16 10 33.14

17 56.88 17 14.58

18 27 50.80

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1880phae.proj.1836.

	Sept 29th			Sept 30th		
	γ Drac.	o Sagitt.	λ Aquil.	γ Gem.	α Can. Maj.	ε Can. Maj.
	17 53	18 47	18 59	6 30	6 39	6 53
0				0 29 57.30		0 53 0.96
1		1 47 2.50	1 59 8.10	1 59.85		1 3.25
2				2 30 2.02		
3	3 53 0.02			3 4.30		
4						4 10.30
5					5 39 13.36	
6						6 17.45
7			7 22.90			7 19.50
8	8 19.68				8 20.31	
9						9 24.16
10					10 23.95	10 26.46
11	11 29.85		11 30.79	11 23.62 ~~21.32~~		
12		12 30.38			12 28.65	12 31.20
13		13 32.68		13 27.50		13 33.65
14				14 31.80	14 35.20	14 38.56
15	15 4~~5~~6.27			15 33.80		
16		16 41.62	16 43.34		16? 39.35	
17		17 44.16		17 38.84		17 45.42
18	18 56.54				18 43.83	18 48.02

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Sheet no 522.

~~(9?)~~

	δ Can. Maj. 7 3	α Hydrae. 9 21	θ Urs. Maj. 9 24	ε Leo. 9 38	α Leo. 10 1	γ Leo. 10 13	μ Urs. Maj. 10 15
0	2 37.52	20 51.05	23 49.35		1 8.80		14 14.53
1						12 32.62	
2	42.05						
3			59.30				
4		59.05					
5	51.63		9.60				
6		21 5.38					
7	55.80						
10	3 3.05	13.88	24 26.00	38 ~~38.40~~ 36.02			
11	5.38			~~40.56~~ 38.40			
15	16.52			50.00			15 2.30
16				52.28			
17	21.14		53.00				
18			56.47	56.70			10.65

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1880phae.proj.1836.

1880phae.proj.1836.

Sept. 30th

	δ Cass. U.C.		β Ariet.		γ Andr.		ν Ceti.		α Cor. Bor.		α Serp.	
	1	17	1	47	1	56	2	55	15	29	15	38
0	0		0		0							
1					1							
2	2								2	28 48.97		
3			3		3		3				3	37 38.05
4	4				4		4					
5					5							
6	6								6	29 0.95		
7	7											
8			8									
9	9				9						9	52.94
10	10										10	54.96
11	11				11							
12					12		12					
13	13				13						13	38 1.00
14												
15											15	7.13
16					16							
17			17		17							
18							18				18	13.50

not formed on Sheets 519 520
521 522 = all the sheets of Sept 30
except ⊙ sheet 578 & dated on list.

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1880phae.proj.1836.

δ Scorp.	λ Aquil.	β Cyg.	γ Aquil.	α Aquil.	β Aquil.	θ Aquil.
15 53	18 59	19 25	19 40	19 44	19 49	20 4
		0 25 1.96				
1 52 25.25						
2 27.67			2 39 48.86			
3 29.90						
	4 59 12.46			4 44 15.58		
	5 16.70			5 19.50		
	6 18.77					6 4 32.95
	7 20.66			7 23.62	7 48 53.16	
	8 22.86					
	10 27.00	10 27.44				
	11 29.00					
	12 30.90					
				13 36.43		
	14 36.98		14 40 18.00			
	15 39.20	15 41.63				15 53.33
		16 43.92				
				17 46.88		
				18 48.90	18 49 18.27	18 59.82

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Sept 30th — Oct 1st 1880

	α² Capric.		α Cyg.		α Serp.		δ Ophi.		β Here.		ζ Ophi.		η Her.
	20	11	20	37	15	38	16	7	16	24	16 5h	30 55	
0					0	37 31.00							
1							1	7 ~~15.40~~ ~~14.~~ 15.44			1	29 44.58	
2					2	35.36							
3									3	24 18.50			
4	4	10 43.32	4	36 36.00									
5			5	41.87			5	25.50					
6	6	49.55							6	27.50			
7									7	29.67			
8							8	31.80					
9									9	34.46			
10	10	58.29					10	—					
11									11	38.90			
12					12	58.00							
13							13	39.94	13	42.98			
14	14	11 8.57											
15							15	48.00					
16									16	52.19			
17	17	15.24						—	17	54.40			
18					18	38 12.60	18	54.60	18	56.65			

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Oct. 2d

	η Herc.	ε Can. Maj.	δ Can. Maj.	β Can. Min.	α Gem.	α Can. Min.	β Gem.
	16 38	6 53	7 3	7 20	7 26	7 32	7 37
0			2 36.60	19 48.00			37 6.42
1							8.66
2				52.23			
3					26 11.00		
4		53 9.00	45.67			32 16.82	15.76
5			50.00	20 0.48			
6	38 9.37	16.00			20.92		
8						29.32	
9		23.27					
10	20.00	25.64					
12		30.40			35.42		36.80
13				17.45			
14			13.18			43.87	
15			15.34	23.70			
16	38.97		17.90			47.75	
17		44.30	20.00				
18		46.68			52.62		52.98

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1880phae.proj.1836.

"Add one

Oct. 2d

	β Cyg. 19 25	γ Aquil. 19 40	α Aquil. 19 44	β Aquil. 19 49	θ Aquil. 20 4	γ Cyg. 20 17
0			0 43 5.95			0 15 59.93
1	1 24 2.68 ~~0.40~~	1 38 45.42	1 8.00		1 3 19.00	1 16 2.43
2					2 21.15	
3	3 7.60				3 23.20	3 7.90
4	4 9.90					
5			5 18.24			
6			6 20.30	6 47 49.72		
7						
8					8 35.88	
9						
10					10 39.96	
11						
12	12 30.87				12 44.02	
13						
14						
15						
16						
17						
18		18 39 24.95		18 48 16.86		

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1880phae.proj.1836.

minute "

Oct. 3d

	α Cyg.	ε Cyg.	γ Cyg.	δ Boot.	δ Scorp.	δ Ophi.	η Herc.
	20 37	20 41	21 7	15 10	15 53	16 7	16 38
0		39 28.18				8 12.02	
1				9 46.60			37 52.30
2		33.00	6 2.40	49.00			
3						18.05	
4		38.02			52 29.98		
5				59.20			
6		45.63					
7				10 4.20			38 10.97
8				6.70			
9				8.89			
10	35 55.00			11.68			
12			28.68	16.40			24.00
17							40.05
18	36 21.30						

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Oct 3d

Oct. 4th

	η Ophi.	β Draco.	σ Sagitt.	λ Aquil.	δ Aquil.	γ Cyg.
	17 [illegible]	17 27	18 47	18 59	18 59	20 17
0						
1			1 46 58.42			
2				2 59 6.02		2 17 2.90
3		3 26 48.98				
4						4 8.00
5	5 2 50.36					5 13.40
6			6 47 12.20			
7						
8						
9						
10						
11					11 59 26.40	
12						
13						13 34.95 ~~35.90~~
14						
15						
16				16 39.43		
17						
18						

Probably 18h 20m instead of 6h 20m as numbered on sheet

~~Probably 18h not~~

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Oct. 5

	α Cyg.	ε Cyg.	ζ Cyg.	α Cephi. a.c.	β Aquar.	β Aquil.	γ Cyg.
	20 37	20 41	21 7	21 15	21 25	1 47	20 17
0				14 29.60			
1				33.98			
2	36 26.40			38.05		47 9.90	
3			7 2.00			12.03	
4						14.32	
5							17 10.58
6	41.15			150.42			
7						23.35	
9	49.90			13.30	24 42.98	27.76	21.57
10					45.30		24.00
11			23.66	22.20		31.89	
12							29.42
13						36.66	
14			33.18		55.60		
15				44.54	57.55	43.18	
17	37 15.90			53.05		47.27	
18		41 15.00		57.80		49.80	

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Oct. 5th

	α Cyg.	ε Cyg.	δ Cyg.	α Ceph. u.c.	β Aquar.	ε Peg.
	20 37	20 41	21 7	21 15	21 25	21 38
0	0 36 17.90		0 6 52.18	0 14 27.00		
1						
2				2 35.56		
3	3 26.60	3 40 30.00				
4	4 29.47					
5						
6						
7	7 40.89			7 15 1.88		
8				8 6.35	8 24 38.23	
9		9 47.48		9 11.14		
10						
11						
12		12 54.80		12 24.02		12 37 49.96
13						
14	14 37 3.98					
15		15 41 5.00		15 41.72	15 54.95	15 58.15
16		16 7.58		16 46.44		
17	17 13.17					
18						

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1880phae.proj.1836.

Oct. 6th

	ε Can. Maj.	δ Can. Maj.	β Can. Min	α Gem.	α Can. Min.	β Gem.	ξ Leo.
	6 53	7 3	7 20	7 26	7 32	7 37	10 9
0		2 28.05	0 19 39.85				
1	52 53.80	30.27					
2	56.20					2 37 2.80	
4			48.00	4 26 5.15			
5		42.27		5 10.12			
6				12.88	6 32 16.75		
7						16.92	7 9 18.00
8						19.00	
9		50.97		9 19.97	9 23.25		
10					25.00		
11	53 19.38		11 20 5.00				
13		3 0.32					
15						38.00	
16				39.37	16 39.87	16 40.40	
17			19.70	17 42.16			

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Oct. 6, 1880.

	γ' Leo	μ Urs. Maj.	δ Leo.	β Scorp.	α² Capric.	γ Cyg.
	10 13	10 15	11 7	15 58	20 11	20 17
0						
1				1 57 29.80	1 10 27.60	
2						
3						
4						
5						
6			6 6 57.92			
7	7 12 38.42			7 45.10		
8						
9						
10						
11					11 51.18	
12						
13						
14						14 17 34.84
15		15 14 52.69				
16						
17	17 13 2.60	17 58.98				
18						

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Oct. 7th

α Cyg.	ε Cyg.	γ Cyg.	α Ceph. U.C.	δ Can. Maj.	β Can. Min.	θ Urs. Maj.
20 37	20 41	21 7	21 15	7 3	7 20	9 24
0 36 15.00			0 14 24.00	0 2 25.90*		
						1 23 40.50
				2 30.00	2 19 41.50	
3 23.80		3 6 56.96	3 37.57		3 43.60	3 46.92
				4 34.80		
	5 40 35.00				5 49.80	
					6 52.14	
						7 24 3.85 ~~7.00~~
				8 46.60	8 56.38	8 7.00
				9 48.54		9 10.40
						10 13.83
		12 7 20.60				
			13 15 25.82	13 58.00	13 20 6.50	
					14 10.90	
		14 27.65				
15 37 13.46						
			16 39.27		16 15.10	
		17 34.92				
				18 3 11.62	18 19.25	

δ = 26.16*

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Oct. 7th

μ Urs. Maj.			ϑ Cyg.			α Cph. UC.			β Aquar.			ε Peg.			α Aquar.		
10	15		21	7		21	15		21	25		21	38		21	59	
0	0	14	2.38	0	6	47.40				0	24	15.00					
1													1	37	20.37	1	58	40.30
2				2		52.18				2		19.05	2		22.20			
3							3	14	37.00									
4				4		56.48	4		36.50	4		23.50						
5				5	7	1.20							5		30.62	5		50.23
6																6		52.30
7										7		31.50				7		54.52
8																		
9				9		10.60	9	15	37.32	9		35.70				9		58.60
10																10	59	0.96
11	11		36.03															
12																		
13				13		20.60												
14							14		32.77									
15				15		27.38	15		37.28	15		50.50				15		13.00
16										16		52.60						
17													17		57.80	17		17.22
18	18		57.98	18		34.80	18		—	18		56.68						

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1880phae.proj.1836.

Oct. 9th

	ε Cau. Maj.	δ Cau. Maj.	β Cau. Min	α Gem.	α Cau. Min	β Gem.	α Ursa Maj
	6 53	7 3	7 20	7 26	~~6~~ 7 32 3	7 37	10 56 22
0	52 36.25		0 19 24.50			0 36 42.72	
2			28.65				
3	43.33						
4	45.90			4 2550.17	4 31 55.30		
5		2 26.65	5 37.40	5 54.98	5 59.66		5 55 4.67
6		28.98	6 39.38				
7	55.13	7 31.33	7 41.42				
8					8 32 5.89		
9				26 5.20			
10				7.60		10 37 8.52	
11							31.98
13				14.86			
14		49.98	14 58.20	14 19.45	14 20.18		14 49.20
15					15 22.15	15 22.84	
16				24.52			
17	53 21.25	17 56.82			17 26.37		17 56 3.20
18		59.18	18 20 6.30		18 28.65	18 29.85	

Read off
Shut 550

These stars read from Sheet 550

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Oct. 9th

	δ Leo.	λ aquil.	θ aquil.	γ Cyg.	ϑ Cyg.	α Ceph. UC.
	11 7	18 59	20 4	20 17	21 7	21 ~~70~~ 15
0					0 ~~16 54.85~~ 6 36.42 38.70	
1					1 ~~57.50~~	
2		2 58 46.15				
3						
4						
5				5 16 54.85		5 14 37.55
6				6 57.50		
7					7 55.65	
8	8 6 46.60		8 4 14.69			
9					9 7 0.38	
10						10 59.45
11						
12					12 7.40	
13		13 59 11.14	13 25.00		13 9.07	
14	14 7 2.00					
15						15 15 25.60
16						
17	~~No obs.~~					
18	~~at 11h on that date~~					

On sheet 551 numbered wrong.

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1880phae.proj.1826

Oct 10th Oct 11th

β aquar	ε Peg.	α aquar.	η Peg.	α Psc. Aust.	γ Aquil	β ariet
21 25	21 38	21 59	22 37	22 50	18 59	1 47

0 37 ~~45.70~~ 6.90

1 49 49.25

2 24 8.00 ?*

3 36 16.75

3 58 42.35

3 45 42.18

4 44.00

5 58 ~~49.27~~ 48.70

9 57 30

9 ~~59.67~~

10 ~~61.75~~ 59.67

10 33.55

11 35.97

12 50 17.62

14 37.00

15 39.16

15 27.42

15 59 12.38

15 12.98

~~16 44.40~~ 16 59 ~~4.00~~ 12.35

17 17.00

18 57.18

18 19.23

Read off
shar 549
or — ?*
doubtful

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1880phae.proj.1836.

Oct 11th

	α Ursæ Maj. u.c.	ψ Ursæ Maj.	δ Leo.	θ Aquil.	α² Capric.	γ Cyg.
	10 56	11 2	11 7	20 4	20 11	20 17
0						
1		1 1 19.00		1 3 43.97		
2						
3		3 25.25				
4						
5						5 16 40.37
6						
7		7 39.90	7 6 29.10			
8						
9				9 4 2.42		
10	10 55 15.52					
11					11 10 23.52	
12			12 40.02			
13						
14						
15						
16						
17						
18		18 2 14.80		18 23.27		

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Oct. 12th

δ Leo.	ε Cyg.	α Aph. UC.	β Aquar.	ε Peg.	α Aquar	α Hydr.
11 7	21 7	21 15	21 25	21 38	21 59	9 21

Oct 13th

						1	58	34.57	1	22	5.30		
				2	37	16.90	2		36.68				
		4	14	34.09	4		20.80			4		11.57	
		5		42.92	5		25.00						
		8		56.08				8		51.18			
										10		26.27	
11	6	27.40											
	12	7		12.80				12		59.08			
										13		32.70	
		15	15	30.97	15		24	44.50					
16		40.88			16		46.62		16	59	9.50		
	17			27.30									
					18		50.82					18	45.26

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1880phae.proj.1836.

Oct. 13th

	ε Leo.	α Leo.	ϑ Leo.	μ Urs. Maj.	β Urs. Maj.	β Urs. Maj.
	9 38	10 1	10 9	10 15	10 54	10 54
						22
0		0 2 21.42	0 10 22.25			0 54 35.98
1		1 23.67	1 24.40		1 53 46.58	
2		2 25.72	2 26.87			
3	3 39 30.38	3 27.69		3 15 35.90		
4			4 31.20			
5						5 58.68
6			6 37.94			
7		7 38.02				
8	8 44.00		8 42.50		8 54 16.83	
9						9 55 13.37
10	10 48.80					10 17.02
11			11 49.63			11 20.98
12			12 51.80	12 16 3.80		
13						13 28.50
14			14 58.60	14 11.89		
15	15 40 2.20	15 57.10				15 40.32
16	16 4.44					16 44.02
17			17 11 5.40		17 (54.00? This is probably a 5 wire, and 55.00 is the clock.	17 48.00
18						

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1880phae.proj.1836.

ψ Urs. Maj.	δ Leo.	β aquil.	α Cyg.	Σ Cyg.	α Ceph. Uc.	β Aquar
11 2	11 7	19 49	20 37	20 41	21 15	21 25
					0 15 42.52	
			1 37 36.40			
			3 42.25			3 25 42.02
				4 41 48.92		
					5 16 9.05	
				6 56.00	6 13.72	
					7 18.18	
			8 38 0.8		8 22.60	
		9 50 ~~6.44~~ 7.44				
			10 5.50			10 58.90
	11 7 31.50					
14 2 56.70				14 42 18.28		
			15 23.22			
				16 23.48		
	18 49.36					

Read 44 short 569.

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1880phae.proj.1836.

Oct 13th

	ε Peg.		η Peg.		α Psc. Aust.		α Peg.		Oct 14th β Cau. Min.		α Gem.	
	21	38	22	37	22	50	22	58	7	20	7	26
0									0	21 5.73		
1									1	7.92	1	27 23.80
2												
3											3	28.82
4												
5			5	37 56.82							5	36.02
6	6	38 53.92			6	51 36.02						
7					7	38.50						
8											8	43.40
9											9	45.80
10											10	48.60
11			11	38 10.80							11	50.98
12					12	50.38					12	53.43
13			13	15.70					13	35.15		
14	14	39 12.45	14	20.26	14	57.58	14	57 22.80	14	39.00		
15												
16			16	25.00	16	52 2.70						
17									17	45.22	17	28 8.02
18											18	10.67

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	α Can. Min	β Gem.	c Arg.	ε Ursæ Maj.	η Ursæ Maj.	η Boot	α Aph. UC.
	7 32	7 37	15 Arg (i)	10 54	13 42	13 48	21 15
			8 2 ~~9 15~~ Arg 22				
0			0 2 49.92		0 42 59.95		0 15 46.08
1		1 38 26.32		1 54 44.04		1 49 22.04	
2	33 32.27	2 28.56			2 43 6.35		
3						3 ~~28.76~~ 26.40	3 59.61
4	36.51	4 33.02					4 16 4.60
5		5 37.92	5 3 3.18	5 55 2.70		5 33.38	
6			6 5.70	6 6.42	6 22.45		
7		7 ~~40.44~~	7 7.92		7 26.00		7 22.17
9		9 47.56			9 32.50	9 41.85	
10	51.27			10 22.02	10 35.30	10 44.00	
12	55.48		12 19.00	12 29.58	12 ~~42.00~~		
13	57.60					13 50.84	
14	34 1.27				14 51.58		
15	3.32		15 28.00				
16	5.42						
17			17 32.60				17 17 10.86
18		18 39 11.00				18 50 3.86	18 14.70

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Oct. 14, 1880. Oct. 16th

	β Aquar.	ε Peg.	α Aquar.	η Peg.	α Psc. Aust.	ε Leo.
	21 25	21 38	21 59	22 37	22 50	9 38
0		0 38 43.00	0 22 0 3.00			
1				1 37 48.92	1 51 26.07	
2					2 28.40	
3						3 39 37.28
4						
5			5 15.65			
6					6 40.55	
7						
8						
9	9 25 ~~36~~ 0.92		9 23.92			
10		10 39 6.30				
11						11 57.68
12		12 10.28				
13			13 32.20	13 38 19.80		13 40 2.18
14			14 36.30	14 24.36		
15			15 38.40	15 26.60		
16			16 40.42			
17			17 42.54			
18			18 44.72			

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Oct. 17th

α Leo	ι Arg. (L)	μ Ursa Maj.	α Ursa Maj. UC.	γ Ursa Maj	β Leo.	γ Ursa Maj. UC
10 1	15 8 2 ~~9 13 Lan~~	10 15	10 56	11 2	11 42	11 47
						1 46 47.61
				2 2 22.30	~~10 16.18~~	
			3 55 39.50			
						5 47 7.30
	6 3 8.00					
	7 10.28					7 14.45
8 2 46.92			8 14 58.97	8 43.00		
				9 45.90	9 42 46.18	9 21.90
	11 19.36		11 15 7.28			
	12 21.90			12 54.68	12 52.45	
	13 24.18					
				14 3 3.25	14 58.80	
	16 33.33			16 9.00		
	17 35.60		17 56 51.30			
			18 29.80	18 15.00		

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Oct 18th

	β Ursæ Maj. L.C.		γ Ursæ Maj.		δ Leo.		β Leo.		γ Ursæ Maj. U.C.		γ Ursæ Maj. L.C.	
	10	54	11	2	11	7	11	42	11	47	11	47
	22										23	
0												
1												
2	2	54 52.30					2	43 29.52	2	47 53.80		
3	3	55.53										
4											4	47 56.25
5											5	48 3.00
6	6	55 10.92					6	40.30				
7												
8	8	18.85							8	48 18.88 ~~47 53.80~~		
9											9	17.67
10			10	3 49.50	10	8 36.50					10	21.00
11									11	29.53	11	24.70
12			12	55.30								
13			13	58.28			13	55.40			13	31.30
14												
15	15	49.26	15	4 7.00					15	46.92		
16			16	9.90								
17	17	57.02										
18												

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Oct. 19th U.C.

	α Ceph. U.C.	ε Peg.	α Aquar.	η Peg.	α Psc. Aust.	β Urs. Maj	γ Urs. Maj
	21 15	21 38	21 59	22 37	22 50	10 54	11 2
0	15 51.00			0 37 51.45	0 51 28.27	0 54 50.45	
1				53.00	1 30.60		
2		38 52.35			2 32.92		
3							3 26.65
5				38 5.68			5 35.47
6							38.39
7		39 ~~5.66~~ 0.66				7 55 20.82	
8	16 31.38			8 12.50		8 24.68	
9	35.82			9 14.90		9 28.80	
10		10.90				10 32.48	
11			22 0 32.70		11 57.02		
13		17.42			13 52 1.87		13 58.87
14		21.60			14 6.65		
15	17 11.0	15 23.74					
16		25.82			16 11.25	16 58.78	
17						17 56 2.80	17 4 13.00

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Oct. 19th

	δ Leo.	β Leo.	γ Urs. Maj. U.C.	α Boot.	β Urs. Maj. L.C.	α Urs. Maj. U.C.	η Peg.
	11 7	11 42	11 47	14 10	10 54	10 56	22 37
					22		
0				0 10 39.90		0 56 27.78	0 37 52.48
1				1 42.15	1 54 50.02		
2							2 57.00
3		3 43 32.30				3 41.50	3 59.37
4	4 8 21.75	4 34.62		4 48.45	4 55 1.05		4 38 2.12
5		5 38.66					
6		6 40.97	6 48 12.00	6 55.00		6 59.40	
7		7 43.18					7 11.58
8				8 59.42			
9	9 34.85	9 ~~45.29~~					
10		10 ~~49~~.38		10 11 3.84			
11	11 39.48					11 57 21.30	
12		12 54.14					12 23.16
13							13 25.48
14		14 44 0.43					
15	15 50.35				15 56.67		
16		16 4.42					16 35.30
17							
18					18 56 1.74	18 57.00	

Oct. 20th

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see page 200 for α Psc Aust on this date also.

Oct. 22 – ~~23~~

Oct. 24th

"Subtract one Minute "R" H C

ψ Ursa Maj.		δ Leo.		η Ursa Maj.		α Aquar.		α Hydræ		θ Ursa Maj.		β Ursa Maj.	
11	2	11	7	13	42	21	59	9	21	9	24	10	54
										0	25 12.10		
		1	8 15.50 ✓										
2	3 24.00							2	22 18.15				
		3	19.88 ✓							3	22.03		
4	29.76												
						5	59 22.98						
										6	35.96	6	56 19.97
		8	33.48	8	42 37.85								
		9	35.66										
								11	38.92				
12	56.38												
				13	53.88								
				14	43 0.06			14	47.38	14	26 6.30		
				15	3.15								
16	4 11.00			16	6.40	16	31.12	16	51.28				
								17	53.38				
		18	57.48	18	13.36					18	19.77		

Sheet 589
Dated Oct. 22d
comp
Sun on ~~Oct~~ 13 50 +54
then for ~~22~~ 23
= 22 before
13h 50m

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"Subtract one minute R"

Oct. 24th										Oct. 25th										Oct 20
ψ Urs. Maj.			β Leo.			α Ceph. U.C.			η Peg.			α Peg.			β Urs. Maj. L.C.			α Pisc. Aust		
11		2	11	42		21	15		22	37		22	58		10	54		22	50	
															22					
0																				
1	1	4 23.00																		
2																				
3															3	54	59.53	3	51	36.65
4												4	59	29.00	4	55	3.02			
5	5	37.95				5	16	14.55												
6						6		18.90							6		14.42			
7						7		23.35	7	38	12.90									
8															8		22.00			
9	9	49.60	9	44	49.85	9		32.40												
10			10		51.70	10		37.94												
11						11		41.32							11		34.00			
12	12	58.42													12		37.58			
13																				
14																		14	52	7.82
15	15	5 9.83				15	17	13.36	15		34.50									
16	16	12.82																16		12.60
17																				
18	18	18.70										17	23 0	1.00						
						Read this at 9h 0m 5.593												18		17.22

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	β Leo.	γ Urs. Maj. UC.	γ Urs. Maj. LC.	α Ceph. UC.	β Aquar.	ε Peg.	α Aquar.
	11 42	11 47	11 47	21 15	21 25	21 38	21 59
			23 h				
0				15 54.38			
1	43 30.00		47 49.23			38 53.08	
2	32.30						22 0 15.00
3		48 0.20					
5		10.98					23.52
6	43.18						
9	49.40						
10				16 42.42			
11		32.30					
12		35.90					
13			48 34.98				
15		49.64					
16			49.00				
17			52.58	17 17 17.88		39 30.92	
18					26 29.63		

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	Oct. 25th		Oct. 28th		Oct. 31	
	η Peg.	α Pisc. Aust.	15 α Arg. (L)	α Hyd.	α Hyd.	Θ Urs. Maj.
	22 37	22 50	18 2 ~~9 13 Day~~	9 21	9 21	9 24
0						0 25 11.00
1			1 2 57.98		1 22 14.54	
2			2 3 0.28		2 16.90	
3			3 2.62			
4			4 4.84			4 24.24
5		5 51 45.60	5 9.28			
6		6 47.90	6 11.50			
7					7 29.18	7 37.52
8			8 16.40			8 41.40
9		9 55.20	9 18.39		9 33.37	
10						10 48.15
11				11 22 38.35		
12			12 25.45	12 40.30		
13						13 26 7.98
14			14 32.20			
15						
16		16 52 14.30	16 36.70			
17				17 53.00		17 14.78
18	18 38 41.90		18 41.20			

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Nov. 1st

ε Leo.	ε Peg.	η Peg.	α Pisc Aust	α Hyd.	ε Leo.	δ Leo.
9 38	21 38	22 37	22 50	9 21	9 38	11 7
0 39 32.80		0 37 52.60		0 22 12.04	0 39 32.30	
					1 34.65	1 8 15.72
			3 51 37.00			
					5 46.22	
			6 46.52		6 48.48	
						7 31.00
11 40 0.15						
14 9.02	14 39 23.00					
16 14.00						
17 16.12						

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Nov. 2, 1880

	α Andr.	γ Peg.	γ Cass. U.C.	α Hyd.	β Ursa Maj. U.C.	α Cephi L.C.
	0 2	0 76	0 49	9 21	10 54	21 15
						9h
0		0 7 35.42			0 54 51.00	
1	1 2 43.80					
2	2 46.20				2 59.92	22 15 54.98
3						
4					4 55 6.20	
5			5 50 9.29			5 16 12.70
6			6 13.68			6 17.27
7		7 52.64				7 21.55
8						
9						
10			10 29.82			
11	11 3 9.84	11 8 1.00			11 36.82	
12						
13						13 47.65
14				14 22 45.47	14 51.80	14 56.45
15						
16	16 24.00	16 13.75				16 17 5.35
17			17 51 3.35			
18	18 28.50					

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Nov. 3d

LC.

Σ Peg.	α Aquar.	Blue. Maj.	γ Aquil.	α Aquil.	β Aquil.	α Cyg.
21 38	21 59	10 54	19 40	19 44	19 49	20 37
		22				
					1 49 57.38	
		2 54 54.02				
			3 41 9.43		3 50 1.50	
	22					
	4 0 17.00					
5 39 1.52		5 55 8.98		5 45 38.62		5 38 0.38
7 5.50						
			8 22.42			
			9 24.52			
10 11.94	10 31.50					
	12 35.88	12 35.72				
13 18.00				13 55.28		
						14 29.43
15 24.46		15 47.15				
	16 46.15	16 54.30		16 46 3.42		
17 28.40				17 5.50		
	18 50.00			18 7.62		

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This Star is probably δ Cas at 13h 15m and not α Vir

Nov. 3d

Nov. 7th

	ε Cyg.	α Pisc. Aust.	α Hyd.	α Leo.	δ Leo.	α Virg.
	20 41	22 50	9 21	10 1	10 9	13 18
0	0 41 48.30					0
1			1 21 58.63			
2						2
3						3
4		4 51 38.40 ~~55 7.44~~				
5		5 43.27 ~~8.98~~				
6		6 45.60 ~~12.87~~	6 22 11.22			
7						
8						
9	9 42 13.00				9 10 38.20	
10						
11		11 57.00 ~~31.70~~				
12		12 59.96 ~~35.70~~		12 2 42.00		
13						
14		14 52 6.80 ~~11.15~~				14
15	15 30.00		15 32.00			
16	16 32.42	16 11.68 ~~54.30~~				
17					17 58.25	
18	18 37.77				18 11 0.50	18

There are 25 groups 93 stars

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	γ Drac.	η Serp.	λ Aquil.	β Aq.	β Aquil.	α Aph.	α Aph.	
	17 53	18 15	18 59	19 25	19 49	21 15	21 15	
0			19 0 21.40			9 15 49.80		
1	54 7.80 ~~14.48~~							
2				26 23.87				
3		15 41.00	27.90	26.05	50 0.38	—		
4			29.77			16 7.70		
5			33.87	33.00		16.51		
8		53.22						
9							16 13.70	
10							18.20	
11				47.00			22.37	
12						46 47.30		
13							31.82	
14						17 0.90	40.82	
15					29.28	4.94	45.34	
16	55 4.00	16 11.87	56.90				49.70	

other clock.
difficulty in
setting scale

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Nov 8th

α Andr.			γ Peg.			α Urs. Maj. (R.C.)		γ Urs. Maj. (R.C.)			α Ceph.			Nov 9th δ Bootis	
0	2		0	x6		10	56	11	47		21	15		15	10
						22		23							
0	0	2	—	0		4	19.95			0	47	28.52			
1			28.18												
2			30.62												
3	3		—							3	39.55	3	15	49.18	
4			35.35			4	56	25.00							
5															
6	6		42.00												
7												7	16	10.98	
8															
9															
10						10	56.55✓								
11						11	57	0.43✓							
12															
13														13	
14						14	18.86								
15												15	51.10	15	
16	16	3	7.94											16	
17										17	48	35.74			
18												18	17	3.80	

Probably on sheet 625 which contains the hours & minutes marked on sheet ∴ Cannot read

~~25.18~~
~~30.62~~

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Nov. 11th

	α Andr.	γ Cass. UC.	ζ Leo.	γ Leo.	β Ursa Maj. UC.	β Ursa Maj. LC.	γ Ursa Maj. LC.
	0 2	0 49	10 9	10 13	10 54	10 54	11 47
						22	23 4
0	2 24.95			0 —		0 54 30.80	
1		49 31.63	1 10 16.70	1 13 37.60			
2					2 54 42.46	2 38.38	
5		52.40				5 53.20	
6	43.73				6 55 1.50		
8							47 59.40
9				57.25			
11				14 1.90			
12					24.70 60	12 55 19.62	
13		50 25.96		13 6.33			
14			50.43		14 35.68		
17				17.00			

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Nov. 11th		Nov. 13		Nov 14th		Nov 15th	
α Virg.	α Pisc. Aust.	μ Ursæ Maj.	γ Peg.	ζ Leo.	γ Leo.		
13 18	22 50	10 15	0 6	10 9	10 13		
0				0 10 13.80	0 13 34.94		
1			1 7 ~~31.24~~ 33.59 35.70	1 16.00			
2			2 ~~33.59~~		2 38.94		
3							
4				4 23.00			
5 5							
6		6 15 51.28					
7			7 48.05				
8			8 50.32				
9			9 52.74				
10					10 59.20		
11 11				11 41.14			
12				12 43.36			
13 13	13 51 46.00		13 8 0.84		13 14 5.60		
14				14 49.90			
15	15 53.38						
16	16 55.86			16 54.70	16 14.48		
17							
18 18							

no obs at 13h on Nov 11

α Peq. 22h 58m

1 59 4.00

16 40.34

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Nov. 16th

	U.C.		U.C.						L.C.		L.C.		U.C.	
	B Mrs.	Maj.	ε Mrs.	Maj.	α Andr.		γ Peg.		B Mrs.	Maj.	γ Mrs.	Maj.	α Cph.	
	10	54	12	48	0	2	0	6	10	54	11	47	21	15
									22		23			
0					2	24.18					0	47 26.80		
1	54	38.20					1	7 20.00			1	30.33		
2		42.32					2	22 42	2	54 37.62				
			3	48 53.12	3	30.98								
4		50.00												
7	55	4.92							7	550.00				
			9	49 19.80	9	47.67					9	48 2.22		
			11	27.28			11	43.70	11	15.85				
											12	13.13	12	16 31.28
									13	22.76				
14		35.30												
15		38.90			15	3 3.82	15	54.13						
					16.	6.23								
					17	8.42			17	41.66				
18		50.32					18	8 0.70	18	45.62	18	38.02		

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Nov. 18th 1880.

	α Andr.				δ Leo.				β Urs. Maj. U.C.				β Urs. Maj. L.C.				γ Urs. Maj. U.C.				ε Urs. Maj. L.C.				ε Urs Maj			
	0		2			10		9		10		54		10		54		11		47		12		48		12		48
														22								24				0		
0	0		2	23.50*					0		54	34.56	0		54	30.18												
1	1			26.33																								
2					2		10	18.30					2			37.22	2		47	37.65								
3													3			41.38					3		48	52.78				
4																					4			56.53				
5									5			57.33																
6									6		55	0.70													6		49	3.47½
7					7			31.67																				
8																					8		49	15.82				
9																					9			19.44				
10									10			16.00	10		55	11.56												
11					11			40.72					11			15.70					11			26.90				
12					12			42.90	12			23.48	12			19.00					12			30.32				
13					13			45.20	13			27.22									13			34.37				
14	14		3	1.30	14			49.95																				
15																	15		48	30.72								
16	16			6.27	16			54.40									16			34.69	16			49.08				
17					17			56.77									17			38.45								
18													18			46.03												

*Think this δ Ursæ Majoris wire missing

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Nov. 21 St

ε Virg.	α Peg.	β Ursa Maj U.C.	ε Ursa Maj U.C.	ε Virg.	α Virg.	Nov 22 β Ariet
12 56	22 58	10 54	12 48	12 56	13 18	1 47
			~~24~~			
			0 48 40.40	0 56 23.67	0 19 3.77	
			1 44.16	1 25.75	1 5.80	1 48 ~~40.00~~ 16.00
2 56 29.00		2 54 40.00				2 ~~43.90~~ 18.45
					3 9.98	
		4 48.00				4 51.25 22.82
		5 55.52		5 36.23		
6 39.52	6 59 15.57					
			7 49 10.73			
		8 55 7.52		8 42.84		
		9 10.70				
	10 24.47	10 15.00				
		11 18.00				
12 52.42		12 22.50				
		13 26.52				
			14 40.42			
				15 59.78		
				16 57 1.82		
					17 43.30	
				18 5.80	18 45.47	

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Nov 22d L.C. Nov. 23d

	γ Andr.	Ellro. Maj.	α Virg.	η Bootes	α Virg.	η Bootes
	1 56	12 48	13 18	13 48	13 18	13 48
		0 24				
0	0 56 41.32					
1			1 19 5.50			
2						
3					3 19 9.00	
4		4 48 51.25				
5		5 58.70			5 15.60	5 49 21.02
6		6 49 2.92				
7				7 49 26.18	7 19.90	7 25.40
8						
9			9 24.15			9 29.93
10	10 57 11.50					
11	11 14.32					
12				12 36.97		
13						
14			14 36.93			
15					15 38.50	
16		16 44.02				16 47.42
17		17 48.00			17 42.90	17 49.53
18						

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Nov 25th

α Andr.	γ Peg.
0 2	0 6
	1 7 17.32
3 2 28.00	
5 35.20	
6 37.54	
7 39.97	7 32.02
9 44.70	9 7 36.00
	16 53.57
18 3 5.70	

Nov 27th Nov. 29

γ Peg.	β Ariet.	γ Andr.	α Ariet.	ε Cass.
0 6	1 47	1 56	2 0	12 3
			0 0 34.98	
	7 48 29.00			
	8 31.42			
		10 58 9.00		
	11 37.95			11 31.51
		28.45		
		16 ~~31.37~~		
	17 53.37			
				18 49.66

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Nov. 29th

δ Corv.			β Corv.			α Virg.			η Boot			Nov. 30th α Aude.			δ Cass. UC.		
12	23		12	27		13	18		13	48		0	2		1	17	
0			0	27	12.45	0	18	1.00				0	2	19.54	0	17	52.89
1 1	22	50.20				1		3.21							1		57.00
2						2		5.20									
3																	
4																	
5 5	23	0.69													5	18	17.30
6			6		28.46							6		35.95 ~~21.84~~			
7 7		5.00															
8																	
9 9		9.52										9		42.79	9		33.70
10 10		11.70										10		45.18			
11									11	49	32.35						
12 12		15.72 ~~13.60~~															
13						13		30.70	13		36.80						
14 14		22.40				14		34.93	14		41.38	14		56.92			
15																	
16									16		45.50				16	19	6.90
17									17		47.67						
18												18	3	6.34	18		14.97

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	Dec 7th		Dec. 8		UC.	Dec 9th	
	γ Andr.	ε Corv.	δ Corv.	γ Virg.	ε Ursæ Maj.	γ Peg.	β Aquet
	1 56	12 3	12 23	12 38	12 48	0 7	1 47
0			23 46.73				
1						7 13.90	48 11.98
2				35 47.00			13.90
3						18.16	
4			54.86				
5		4 17.15	59.60	55.34	48 57.52		
6				57.40			
7				59.80	49 7.08		27.34
8	57 2.18			36 1.86			
9		26.10		3.88		33.33	
10			24 10.08				
11		30.87	12.12	7.80	21.64		
12	13.40						
13		34.98					
14				16.20	37.10		
15					40.40		
16					44.22		48.98
17		46.40	27.43				
18		48.68					

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Dec. 9, 1880

	γ Aurigæ	α Arietis	β Ursæ Majoris L.C.	α Ursæ Majoris L.C.	γ Ursæ Majoris U.C.	Dec. 12th ζ Ursæ Majoris U.C.
	1 56	2 0	10 54	10 56	11 47	12 48
			22	22		
0		0 0 33.00	0 54 25.50			0 48 35.57
1			1 29.30			1 39.34
2		2 37.51	2 32.97			
3						
4	4 56 47.62	4 42.00	4 40.96			
5						5 58.20
6		6 48.98				
7						7 49 5.77
8		8 53.11				
9						
10		10 57.70	10 55 7.20			
11		11 1 0.25		11 56 55.32		11 20.84
12		12 2.51				
13						
14	14 57 20.72				14 48 21.70	14 35.75
15	15 23.83	15 11.30				15 39.63
16						16 43.38
17						
18	18 32.20		18 ~~56~~ 41.82			

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Dec. 13th

	ζ Ursæ Maj.	ε Corvi	δ Corvi.	β Corvi.
	11 47	12 3	12 23	12 27
0	47 24.79	0 4 2.52		0 28 10.34
2			2 23 49.92	
3		3 9.33		
4		4 11.50	4 54.20	
5			5 58.33	
10			10 24 9.15 9.30	
11				11 36.96 37.20
12				12 39.30 39.65
14			14 19.70	

Dec. 14th

	β Ursæ Maj.	β Bootis	β Leonis.
	10 54	14 57	11 42
	22		
1	54 28.95		
5		57 40.70	
6		43.80	6 43 17.40
10	55 3.00		
11	6.93		
12	10.40		12 30.20
14		58 8.00	
15	28.98		

Dec 15th

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Dec. 15th 1880.

Dec 16

	α Cor.	β Cor.	γ Vir.	ε Vir.	γ Cas Alt	γ Cas L.C.
	12 23	12 27	12 35	12 56	~~0 49 11 47~~	~~0 49 11 47~~ ~~23~~ 12 L R
0						
1			1 35 43.10			
2		2 28 13.66				
3	3 23 51.16					~~18 45.62~~ 3 49 25.43 ✓
4		4 18.20				
5			5 53.30			
6						
7		7 27.33				
8		8 29.50				
9					9 49 59.30	
10			10 36 3.82	10 56 40.98		
11	11 24 10.42					
12					12 50 11.72	
13			13 9.90	13 47.52	13 15.50	
14			14 13.85			
15	15 20.97					
16						
17			17 20.05		17 36.20	
18						

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Dec 16 1880.

	γ Andr.	γ Pers.	β Leo.	γ Ursa Maj	γ Virg.	ε Virg.	β Ursa Min.
	1 56	2 55	11 42	11 47	12 35	12 56	~~11~~ 2 50
0							50 0.90
1							8.02 ~~0.90~~
2						56 21.60	
3				47 34.55			
4							
5				45.12			47.22
6		56 28.17	43 16.54				55.00
7							51 2.98
8							10.50
9	57 1.89		23.37	59.00			
10							
11					36 5.23		
12							41.82
13					9.60	47.00	
14				48 20.53			
15							52 13.34
16	16 24.00						20.68
17	17 26.82				19.89		
18							

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Dec 16th Dec 17th Dec. 18th

ζ Boot.	β Lyr.	γ Audr.	α Aurr.	β Urs. Maj. L.C.	α Urs. Maj. L.C.	β Leo.
15 10	12 27	1 56	2 0	10 54	10 56	11 42
				22h	22h	
						43 26.77
						28.75
0						30.62
1						35.13
2 2 10 45.32						37.26
						39.30
						41.52
3					3 56 12.42	43.58
4						
5 5 55.05			5 0 43.00	5 54 45.80	5 26.00	
6						
7						7
		8 56 58.00	8 49.92	8 56.92		
9			9 52.22			9
10					10 47.82	
11			11 56.70		11 52.15	11
12	Nothing but O sheet on this date at 17h					incomplete Observation
13						Do not know which taps these are SAV.
14 15	15 16	15 57 20.12		15 55 27.28		
16	17			17 34.54	17 57 23.40	
17				18 38.48		
18						

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Dec 19th

	γ Urs. Maj. (cc.)	δ Corv.	β Corv.	γ Virg.	ε Virg.	γ Urs Maj. (cc)	ε Corv.
	11 47	12 23	12 27	12 35	12 56	11 47	12 3
0				0 35 39.62		0 47 22.00	
0 0	47 22.53				1 56 18.43		
1					2 20.77	29.60	
2					3 22.89	3	2 42.35
3 3	32.93 ~~33.40~~						
4 4	36.58	4 23 51.74				4 43.28	
5			5 28 21.00			5	54.30
5		5 55.95				6	58.40
6		6 58.17				7 50.70	
7							
8			8 27.90	8 58.00			
					37.35 ~~2.50~~		
9 9	57.93				9		
10				10 36 2.12			
11				11 4.22			
12		12 24 10.82				12	3 22.30
13		13 13.05				13	26.23
14			14 43.60				
15 15	48 22.83						
16 16	26.30					16	—
17 17	29.90					17	—
18						18	— ✓

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Dec. 19th

	δ Corv.		γ Virg.		γ Ursæ Maj.		ε Corv.	
	12	23	12	35	11	47	12	3
0			0	35 38.98				
1								
2			2	43.42				
3					3	47 32.84	3	4 6.05
4	4	23 51.38						
5					5	43.15	5	12.70
6								
7	7	59.72	7	55.80				
8								
9								
10								
11								
12								
13								
14								
15								
16							16	39.70
17			17	36 18.27	17	48 29.20		
18								

Dec. 21st

	δ Corv.		β Corv.		γ Virg.	
	12	23	12	27	12	35
0	0	23 42.42			1	35 40.80
1						
2	2	46.43	2	28 11.62		
3			3	13.90		
4	4	51.00				
5						
6	6	57.76				
7	24 7	0.98	7	24.98	7	55.2
8						
9						
10						
11			11	34.02	11	36 3.62
12	12	10.74				
13			13	38.76		
14			14	42.98		
15						
16			16	47.89		
17			17	50.00		
18	18	25.38	18	52.30		

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Dec 22

	ε Virg.	δ Boot.	α Andr.	δ Cass. uc.	γ Andr.	α Ariet.	δ Corv.
	12 56	15 10	0 2	1 17	1 56	2 0	12 23
0					0 56 32.00		
1							
2							2 23 46.32
3							
4							
5	5 56 28.30						5 54.92
6			6 2 29.53				
7		7 11 3.45	7 32.04				
8							
9							
10							
11							
12			12 43.47	12 18 39.80			
13	13 45.60					13 2 0.8	13 24 12.40
14			14 50.87			14 4.37	
15					15 57 19.23	15 6.80	
16							
17						17 11.30	
18							

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Dec. 22d

	γ Virg.	ε Virg.	δ Boot.
	12 35	12 56	15 10
0		0 56 15.78	
1		1 17.86	1 10 41.00
2			
3			
4	4 35 46.83		
5			
6			
7		7 32.63	
8			
9			
10			10 11 5.82
11	11 36 3.20		
12	12 5.22		
13	13 7.22	13 45.00	
14			14 18.00
15			15 20.48
16			
17			
18		18 57.78	

Dec. 23d

	γ Peg.	β Ariet.	γ Andr.	α Ariet.
	0 7	1 47	1. 56	2 0
0			0 56 31.77	
1				
2				
3				
4	4 7 15.45			
5				
6				
7				
8				
9	9 28.04			
10				
11				11 0 55.00
12		12 48 32.98		
13				
14			14 57 18.60	
15				
16				
17			17 27.00	17 1 10.85
18	18 49.65			

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Dec. 27th Dec 28th

	LC.	ε Ura. Maj	β Boot.	ζ Cass	γ Andr.	α Arieb.	α Ceti	α Pers.
		12 48	14 57	1 17	1 56	2 0	2 55	3 15
		0 2						
0					0 56 30.63		0 56 3.85	
1				1 17 48.70				1 15 45.00
2							2 8.00	
3				3 56.82				
4				4 18 1.33				
5	5	48 51.72						5 16 0.48
6							6 18.32	
7							7 20.56	
8						8 0 47.00		
9							9 24.90	
10				10 29.94				
11								
12								
13				13 38.00				
14								
15			15 58 6.80			15 1 4.89		
16	16	49 28.88		16 58.18			16 41.47	
17							17 43.47	17 42.24
18					18 57 25.70		18 45.63	18 45.37

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Dec. 28th		Dec. 29th			Dec 30				
		LC.				UC.			
β Uro. Min.		ζ Cass.		ε Virg.	ζ Cass.		β Ariet.	γ Andr.	α Cele
14 50		1 17		12 56	1 17		1 47	1 56	
2h		13h			13h				
							55.53		
		32.70					47 53.47	0 56 22.21	
	0	17 36.26			0 17 36.70	0		1 24.90	
0									
1	1	36.26			44.75	2		30.62	
2 2 50 12.70						3	48 1.63	3	
3					52.73	4		4 33.62	
4 4 28.70	4	48.30							
5	5	56.32						5 38.90	
6 6 52.23	6	18 0.83			6 18 5.00				
7	7	4.70	7	56 23.00	7 9.48				
8	8	9.00					8 14.90		
9 9 51 14.61	9	13.70			9 17.88	6		9 50.37	
10 10 22.77	10	17.78			10 21.40			11 55.80	
11			11	31.80	11 25.48			12 58.10	
12 12 38.60	12	25.80						13 57 0.98	
13	13	29.26			13 33.56				
14 14 52 2.53	14	37.33							
15	15	42.13							
16			16	44.15				16 12.60	
17	17	49.97					17 36.90	17 15.22	
18 18 33.22	18	54.30	18	48.76					

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Dec. 30, 1880.

	α Cati	γ Boot	L.C.					
	~~γ Boot~~	~~Ursa Min~~	β Ursa Min		α Serp.			
	2 55	14 27	14 50		15 38			
0		0 27 2.40	2 49					
1		1 5.00	0	48.50	0	38	14.77	
2		2 7.68	1	57.72				
3	3 56 2.00				3		21.22	
4	4 4.02		4	50 20.00				
		5 18.48	5	35.58				
5								
6								
7			7	51.32				
8			8	59.85	9		35.62	
9			10	51 15.40	10		37.87	
10								
11		11 34.22		31.23				
12	12 22.68		12	~~51 15.40~~	12		41.92	
13								
14			14	53.69				
15								
16			16	52 10.04				
17		17 52.98	18	25.67				
18	18 37.50							

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