

KG
11366
V.442

Fundamental Stars
Observations and Reductions
Final values
B4 1872 - 1873 h m
from 9^h 8^m to 13 19

1872	phae	proj. 144																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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$$\frac{dS}{dt}$$
[illegible]
$$+ 103^{\circ} 31' 21.13''$$

[illegible]

$11 + \log \text{ core } z = 1.67690n$
 $\frac{11}{m} - \frac{1}{n}$
 $\log \text{ core } z = 1.14980$
 $\frac{1}{n} \text{ core } z = 11804m$

[illegible]

#			T_m	T_{m+K}	$R.A.$	$T_m - R.A.$	$P.P.$	$T_m - R.A. + P.P.$	$\tan \delta$	$\sin Z$		
1872	β Capricorn	$a = 21^\circ 1'$			27°	$K = +0.48$	110°	$+78$	$0.1 \tan \delta = -2.75$	2.92	$\sin Z = .92$	
Mar	28+35-.05		26 42.55	42.59	26 57.00	-14.41	+08	-14.49	+15.32	-.96	+15	+3.00
Apr	1+26		26 43.49	43.53	57.23	-13.70		-13.78	+14.47	-.71	+2.76	
	2+24		26 43.41	43.51	57.28	-13.77		-13.85	+14.44	-.66	+2.70	26 59.99
	6+19		26 43.62	43.66	57.51	-13.85		-13.93	+14.21	-.52	+2.47	59.82
	17+19-.04		26 46.99	47.03	58.16	-11.13		-11.21	+11.68	-.52	+1.82	27 2.13
	19+26-.08		26 47.69	47.73	58.31	-10.58		-10.66	+11.14	-.72	+2.3	+1.67
	21+13-.08		26 47.72	47.76	58.43	-10.67		-10.75	+10.90	-.36	+2.3	+1.55
	29+14-.08		26 50.08	50.12	58.97	-8.85		-8.93	+9.00	-.38	+2.3	+1.01
73 Mar	27+24	25 59.10	26 57.08	57.12					+1.17	-.66	+3.38	27 0.77
	30+21	26 6.53	26 55.90	55.94					+2.19	-.58	+3.22	27 0.77
Apr	16+14-.05	26 21.00	26 53.30	53.34					+5.49	-.38	+1.5	+2.22
	27+06	26 53.80	26 52.36	52.40					+7.08	-.16	+1.51	27 0.83

#			T_m	T_{m+K}	$R.A.$	$T_m - R.A.$	$P.P.$	$T_m - R.A. + P.P.$	$\tan \delta$	$\sin Z$		
1873	γ 1564				31°	$K =$			$\tan \delta = +2.72$	2.90	$\sin Z = .46$	
Mar	27+24	30 38.90	31 21.76	21.71					+1.17	+6.5	-309	9 31 20.44
Apr	30+21	31 21.60	31 20.57	20.53					+2.19	+5.7	-298	20.51
	1+16	30 53.57	31 19.91	19.87					+2.85	+4.4	-291	20.25
	10+10	30 57.53	31 18.19	18.15					+4.42	+2.7	-254	20.30
	15+14	30 38.70	31 17.19	17.15					+5.06	+3.8	-231	20.28
	16+14-.05											
	23+09	30 47.27	31 15.33	15.29					+6.72	+2.4	-192	20.33
	26+11	31 35.50	31 14.81	14.77					+6.96	+3.0	-177	20.26
	27+06	30 57.60	31 14.86	14.82					+7.08	+1.6	-172	20.34

#			T_m	T_{m+K}	$R.A.$	$T_m - R.A.$	$P.P.$	$T_m - R.A. + P.P.$	$\tan \delta$	$\sin Z$		
1872	α Leonis				34°	$K = -0.16$			$\tan \delta = +1.19$	1.02	$\sin Z = +.53$	
Apr	1+26		34 5.09	5.07	34 19.59	-14.52	+03	-14.55	+14.47	+0.5	-56	9 34.34 19.05
	6+19		34 5.40	5.39	19.54	-14.15		-14.18	+14.22	+0.4	-51	19.14
	17+19-.04		34 7.77	7.75	19.40	-11.65		-11.68	+11.68	+0.4	-04	19.06
	18+22-.07		34 7.88	7.87	19.39	-11.52		-11.55	+11.61	+0.4	-07	19.09
73 Mar	27+24	34 3.90	34 21.80	21.78					+1.17	+0.5	-51	22.19
Apr	15+14	33 54.30	34 17.77	17.75					+5.06	+0.3	-59	22.28
	16+14-.05	33 58.57	34 17.42	17.40					+5.48	+0.3	-05	22.27
	21+11	34 28.5	34 16.53	16.51					+6.20	+0.2	-50	22.23
	23+09	33 57.93	34 16.01	15.99					+6.72	+0.2	-49	22.24
	26+11	33 56.43	34 15.74	15.72					+6.96	+0.2	-45	22.25
	27+06	33 53.20	34 15.66	15.64					+7.08	+0.1	-44	22.29

#			T_m	T_{m+K}	$R.A.$	$T_m - R.A.$	$P.P.$	$T_m - R.A. + P.P.$	$\tan \delta$	$\sin Z$		
1872	ϵ Leonis				38°	$K = -0.17$			$\tan \delta = +1.45$	1.10	$\sin Z = +.31$	
Mar	28+35-.05		38 20.29	20.27	38 35.63	-15.36	+03	-15.39	+15.32	+1.6	-05	-72
Apr	1+26		38 21.06	21.04	35.58	-14.54		-14.57	+14.47	+1.2	-67	9 38 34.96
	2+24		38 21.08	21.07	35.57	-14.50		-14.53	+14.44	+1.1	-66	34.96
	6+19		38 21.32	21.30	35.52	-14.22		-14.25	+14.22	+0.9	-61	35.00
	17+19-.04		38 23.74	23.72	35.37	-11.65		-11.68	+11.68	+0.9	-04	-46
	18+22-.07		38 23.78	23.77	35.36	-11.59		-11.62	+11.61	+1.0	-08	-45
	21+13-.08		38 24.51	24.49	35.31	-10.82		-10.85	+10.90	+1.0	-09	-40
	29+14-.08		38 26.31	26.29	35.20	-8.91		-8.94	+8.99	+0.6	-09	-29
73 Mar	27+24	38 11.73	38 35.63	35.61					+1.17	+1.1	-96	38.33
Apr	15+18	38 9.67	38 33.93	33.91					+5.06	+0.6	-74	38.29
	16+14-.05	38 11.07	38 33.53	33.51					+5.48	+0.6	-05	-72
	23+09	38 12.77	38 32.18	32.16					+6.72	+0.4	-63	38.29
	26+11	38 13.47	38 31.72	31.70					+6.96	+0.5	-58	38.33
	27+06	38 11.20	38 31.85	31.83					+7.08	+0.3	-57	38.37
May	4-.08	38 12.05	38 31.10	31.08					+7.52	-0.4	-51	38.35

[illegible]

1872phae.proj.1446

#			T_m	$T_m + K$	$R.A.$	$T_m - R.A.$	$R.A. - P.P. (P.L.P.)$	$T_m - R.A.$	109°	$16' \tan \delta = -2864.301$	$\sin 2 - .92$		
1872	11 Cepheus L.C. 2	21	40	$K = +0.44$	$S = +70^\circ 48'$								
Mar 28 ³⁵	28 ³⁵	39	44.42	44.46	39	59.11	-1465.02	-14.63	+15.32	-1.00 +.15	+3.24	21 ⁴⁰	2.17
Apr. 1 ²⁶	1 ²⁶	39	45.47	45.51	39	59.33	-1382	-13.80	+14.47	-.74	+3.02	2.16	
18 ²²	18 ²²	39	49.34	49.38	39	0.33	-1095	-10.93	+11.60	-.63 +.21	+2.02	2.58	2.08
21 ¹³	21 ¹³	39	49.68	49.72	39	0.53	-10.81	-10.79	+10.90	-.37 +.24	+1.82	2.31	
29 ¹⁴	29 ¹⁴	39	52.22	52.26	39	1.07	89.81	-89.79	+9.00	-.40 +.24	+1.26	2.38	
73 Mar 27 ²⁴	27 ²⁴	39	59.02	59.07	39				+1.17	-.69	+3.69	3.24	x
Apr. 1 ¹⁶	1 ¹⁶	39	57.23	57.28	39				+2.85	-.46	+3.43	3.10	x
10 ¹⁰	10 ¹⁰												
13 ¹⁴	13 ¹⁴	39	55.71	55.76	39				+5.05	-.40	+2.60	3.21	x
16 ¹⁴	16 ¹⁴	39	55.30	55.34	39				+5.48	-.40 +.15	+2.54	3.11	x
23 ⁰⁴	23 ⁰⁴	39	51.64	51.69	39				+6.72	-.26	+2.09	3.24	x
26 ¹¹	26 ¹¹	39	54.63	54.68	39				+6.96	-.31	+1.89	3.22	x
27 ⁰⁶	27 ⁰⁶	39	54.39	54.43	39				+7.08	-.17	+1.82	3.16	x
May 1 ⁰⁸	1 ⁰⁸												

#			h	m	$K = -0.30$	$\tan \delta = +1.70$	1.98	$\sin 2 = .30$						
1872	v Urs. Maj.		9	42		$+59^\circ 38'$								
Mar 28 ³⁵		41	38.92	38.99	41	53.73	-1584 +.05	-15.89	+15.32	+1.60 - .10	-1.62	9 41	52.09	-
Apr. 1 ²⁶		41	38.80	38.77	41	53.63	-1486	-14.91	+14.47	+1.44	-1.52		52.10	-
2 ²⁴		41	38.98	38.75	41	53.61	-1486	-14.91	+14.44	+1.41	-1.50	52 ¹⁰	52.10	+
6 ¹⁹		41	39.05	39.02	41	53.57	-1449	-14.54	+14.22	+1.32	-1.40	52 ¹⁰	52.16	+
73 Mar 27 ²⁴		41	56.99	56.96					+1.17	+1.41	-2.14		56.40	x
Apr. 16 ¹⁴		41	52.44	52.41					+5.48	+2.41 - .10	-1.62		56.40	+
May 1 ⁰⁸		41	49.89	49.86					+7.83	-.14	-1.17		56.40	x

#			T_m	$T_m + K$	$R.A.$	$T_m - R.A.$	$R.A. - P.P. (P.L.P.)$	$T_m - R.A.$	109°	$16' \tan \delta = +1.50$	$\sin 2 + .27$		
1872	u Leonis	9	46	$K = -0.17$	$+26^\circ 36'$								
Apr. 1 ²⁶	1 ²⁶	45	14.94	14.92	45	29.47	-14.55 +.08	-14.63	+14.47	+1.13	-1.73	9 45	28.79
2 ²⁴	2 ²⁴	45	14.98	14.96	45	29.46	-14.50	-14.58	+14.44	+1.12	-1.72	28.80	28.80
6 ¹⁹	6 ¹⁹	45	15.22	15.21	45	29.41	-14.20	-14.28	+14.23	+1.09	-1.67	28.80	28.80
17 ¹⁴	17 ¹⁴	45	17.65	17.63	45	29.25	-11.62	-11.70	+11.69	+1.09 - .04	-1.51	28.80	28.80
18 ²²	18 ²²	45	17.74	17.74	45	29.24	-11.50	-11.58	+11.60	+1.11 - .08	-1.50	28.80	28.80
29 ¹⁴	29 ¹⁴	45	20.17	20.16	45	29.08	-9.92	-9.00	+9.00	+1.07 - .09	-1.34	28.80	28.80

#			T_m	$T_m + K$	$R.A.$	$T_m - R.A.$	$R.A. - P.P. (P.L.P.)$	$T_m - R.A.$	109°	$16' \tan \delta = +3.37$	$\sin 2 - .52$		
1872	Dr. 15-86	9	47	$K = -0.53$	$+73^\circ 29'$								
Apr. 1 ²⁶		46	40.90	40.85	46	56.04	-1519 +.17	-15.36	+14.47	+1.88	-3.05	9 46	53.15
6 ¹⁹		46	41.27	41.22	46	55.80	-1458	-14.75	+14.23	+1.64	-2.81		53.28
17 ¹⁴		46	43.28	43.23	46	55.20	-11.97	-12.14	+11.69	+1.64 - .14	-2.21		53.21
18 ²²		46	43.30	43.25	46	55.14	-11.89	-12.06	+11.60	+1.74 - .25	-2.15		53.17
19 ²⁶		46	43.38	43.33	46	55.08	-11.75	-11.92	+11.15	+1.88 - .28	-2.09		52.97
31 ¹³		46	44.14	44.09	46	54.97	-10.88	-11.05	+10.89	+1.41 - .28	-1.98		53.16
26 ⁰⁵		46	45.22	45.17	46	54.67	-9.50	-9.67	+9.86	+1.17 - .28	-1.68		53.24
27 ¹²		46	45.31	45.26	46	54.61	-9.65	-9.82	+9.71	+1.40 - .28	-1.62		53.17
73 Mar 27 ²⁴		46	0.70	0.65	46				+1.18	+1.81	-4.10		58.54
Apr. 16 ¹⁴		46	55.81	55.76	46				+5.48	+1.47 - .16	-3.09	58.44	58.44
30													
May 1 ⁰⁸		46	53.34	53.29	46				+7.83	-.27	-2.19		58.66

-19.5	8 44.50	+109	14	1200	+2	20.11	+7	-4	+2	20.14	16	32.14	+14	+0	25.10	-18.3	+109	16	40.84
-25.0	8 47.20			11.98	+2	19.14	+11	-4	+19.21	31.19	+13	24.72	-1.20						38.21
+17.6	8 33.60			7.12	+2	15.74	+6	+4	+15.84	22.96	+14	33.49	-2.13						36.55
-21.7	8 49.60			8.15	+2	13.66	+8	+4	+13.78	21.93	+13	34.52	-2.15						36.25
-21.2	8 42.70			7.84	+2	17.07	+8	+11	+17.26	25.10	+12	34.93	-2.18						39.43
+24.99	5 52.20									19	7.87	+20	-2	28.63	-18.9				22.34
-6.94	5 1.70										9.43	+20	29.22	-19.7					22.51
+34.84	5 39.10										11.89	+21	29.14	-21.9					22.95
+28.85	5 42.05										12.42	+21	28.29	-21.9					24.33
+16.74	5 44.00										12.69	+21	28.28	-22.9					24.11
+32.56	5 37.65										12.18	+21	28.37	-22.4					24.51
+14.39	5 44.21										12.74	+22	28.14	-22.5					24.30
-14.7	44 51.45	+59	37	47.15	+18.71	-5	-5	+18.61	38	5.76	+5	+0	25.10	-10.4	+59	38	20.96		20.10
-11.4	44 53.30			47.49	+18.57	-3	-5	+18.49		5.48	+5		24.72	-11.1		20.10	20.10		
+23.9	45 16.20			48.01	+18.68	-14	-0	+18.54		6.55	+5		24.76	-11.3			20.57		
+35.1	45 21.55			50.09	+18.44	-29	-0	+18.15		8.24	+5		25.31	-12.0			22.05		
+34.14	42 45.40									40	44.05	+7	-2	28.63	-10.8		5.32		
-1.11	42 11.40	13.83									46.29	+6	28.29	-14.2			4.40		
+33.56	42 41.50										46.19	+5	27.09	-15.8			3.80		
+18.2	46 43.70	+26	36	26.00	-16.89	-7	-2	-16.98	36	9.02	-4	+0	24.72	-2.1	+26	36	31.24		
+19.3	46 45.95			25.04	-16.78	-8	-2	-17.08		7.96	-5		24.76	-2.2			30.02		
+18.8	46 45.30			25.11	-16.77	-8	-2	-16.87		8.24	-4		25.31	-2.6			30.55		
+19.1	46 53.45			17.31	-16.61	-8	+2	-16.67		0.64	-5		33.59	-3.7			30.03		
+18.2	46 51.85			17.85	-16.49	-7	+2	-16.54		1.31	-4		33.49	-3.8			30.68		
+20.2	46 54.30			17.75	-16.65	-8	+6	-16.67		1.08	-5		34.93	-4.6			30.91		
+27.5	54 33.75	+73	28	24.63	+35.81	-12	-5	+35.64	29	0.27	+8	+0	25.31	-14.9	+73	29	11.48		
+17.8	54 37.65			17.34	+35.50	-5	+5	+35.50	28	52.44	+8		33.59	-16.8			10.43		
+25.1	54 39.55			18.16	+35.20	-9	+5	+35.16		54.32	+8		33.49	-16.9			11.71		
+21.6	54 40.55			15.87	+35.20	-7	+5	+35.18		51.05	+8		34.91	-17.1			9.66		
-26.3	54 (21.95)			16.61	+34.66	-12	+4	+34.58		57.19	+8		34.52	-17.8			8.71		
+68.1	54 53.65			20.16	+33.55	-69	+14	+33.00		53.16	+8		35.58	-17.9			11.64		
+58.0	54 50.85			19.14	+34.86	-50	+14	+34.50		53.64	+8		35.79	-18.4			12.23		
+56.20	52 11.85									31	33.65	+11	-2	28.63	-13.5		28	52.62	
+35.98	51 58.45										37.99	+9	28.29	-17.3			53.30	53.30	33.0
+53.29	52 1.40										40.43	+10	27.09	-18.9			55.44		

#	19 Leo. Min.	T_m	$T_m + K$	R.A. T_m	R.A.P.P. (P.P.)	$T - R.A.$	$\tan \delta$	$\sin Z$	$\sin Z + .01$
1873	Apr. 21.11	50.057	49.4872	48.70			+6.20	+10	-98
	May 1-.08	49.1743	47.4697	46.95			+7.83	-07	-80
									41 49 54.02
									53.91

#	TT Leonis	h	m	$\tan \delta$	$\sin Z$	$\sin Z + .01$
1873	Apr. 16.14					
	May 1-.08					

#	η Leonis	h	m	$\tan \delta$	$\sin Z$	$\sin Z + .01$
1872	Apr. 17.19-.04	0	9.77	10	0	0
	18.22-.07	0	10.06	10.04	21.62	-11.66 +07 -11.73
	23.16-.08	0	11.36	11.35	21.61	-11.57 -11.64
	26.05-.08	0	11.77	11.75	21.55	-10.20 -10.27
	27.12-.08	0	11.92	11.91	21.50	-9.59 -9.66
	29.14-.08	0	12.56	12.54	21.47	-8.93 -9.00
	30.14-.08	0	12.72	12.71	21.46	-8.75 -8.82
	16.14-.05	0	12.74	12.72	21.47	-8.76 -8.83
	21.11	0	15.76	15.75	21.48	-8.48 -8.55
	May 1-.08	0	17.23	17.21	21.43	-8.23 -8.30

#	α Leonis	h	m	$\tan \delta$	$\sin Z$	$\sin Z + .01$
1872	Apr. 17.19-.04	1	22.07	22.05	33.69	-11.64 +02 -11.66
	18.22-.07	1	22.15	22.14	33.68	-11.54 -11.56
	23.16-.08	1	23.47	23.45	33.62	-10.17 -10.19
	25.08	1	23.54	23.53	33.60	-10.07 -10.09
	26.05-.08	1	23.50	23.48	33.59	-9.81 -9.83
	27.12-.08	1	23.99	23.98	33.57	-9.59 -9.61
	29.14-.08	1	24.68	24.66	33.55	-8.91 -8.93
	30.14-.08	1	24.80	24.79	33.54	-8.75 -8.77
	17.19	1	34.43	34.41	33.54	-8.75 -8.77
	10.10	1	32.81	32.79	33.54	-8.75 -8.77
	16.14-.05	1	31.76	31.74	33.54	-8.75 -8.77
	21.11	1	30.89	30.88	33.54	-8.75 -8.77

#	β Cephei	h	m	$\tan \delta$	$\sin Z$	$\sin Z + .01$
1873	Apr. 1.16	7	29.00	29.00	34.44	34.49
	10.10	7	32.77	32.77	32.79	32.83
	16.14-.05	7	31.04	31.04	31.04	31.09
	May 1-.08	7	28.69	28.69	28.69	28.69
	14.06-.06	7	28.52	28.52	28.52	28.52

1873 22 7 39.662 40.354

- 11.85
+ 27.54

40 25.05
41 3.70

42 1096.0 -2 29.36 -9.3 +41⁰ 33.80
1052.0 27.09 -10.4 33.0 ~~30.02~~

39

+ 17.3
+ 19.3
+ 14.4

60 5.85
60 9.20
59 59.20

+17 23 4.17
3.32
3.43

-27.44 - 5 + 0 -27.44 27 36.68 -7 +0 33.59 -4 +17 23 9.17
-27.23 - 6 + 0 -27.29 36.03 -7 33.49 -5 8.32
-27.55 - 2 + 15 -27.42 36.01 -7 34.59 -9 9.00

+ 23.3
+ 19.1
- 7.4

60 18.00
60 10.50
59 31.85

22 59.53
22 1.77
23 7.23

-25.96 - 9 + 1 -26.04 33.49 -7 35.58 -1.1 7.27
-26.95 - 6 + 1 -27.00 34.77 -7 35.79 -1.1 8.76
-27.49 - 1 + 13 -27.37 39.86 -7 34.93 -1.3 12.79

+ 29.04
+ 19.73
+ 19.66

57 25.90
57 23.70
57 25.20

25 19.46 -8 -2 26.29 -0.9 22 49.47
21.62 -8 29.36 -1.2 50.26
20.13 -7 27.09 -1.9 50.44 ~~49.50.44~~

+ 14.5
+ 14.1
+ 2.2
+ 16.1
+ 18.3
+ 16.1

47 36.55
47 36.85
47 23.30
47 39.90
47 46.55
47 41.90

+12 35 30.37
29.56
27.87
29.07
26.24
27.07

-33.69 - 3 + 3 -33.69 34 56.68 -8 +0 33.59 +1.1 +12 35 30.57
-33.43 - 3 + 3 -33.40 56.16 -8 33.49 +1.0 29.85
-33.82 - 0 + 7 -33.75 54.12 -8 34.59 +.7 28.61
-33.18 - 3 + 8 -33.15 55.42 -8 34.09 +.6 29.83
-31.86 - 4 + 8 -31.82 53.42 -8 35.58 +.5 28.70
-33.09 - 3 + 8 -33.04 54.03 -8 35.79 +.5 27.52

+ 18.8

47 44.35

28.08

-33.44 - 5 + 8 -33.44 54.67 -8 35.53 +.3 29.70

+ 17.26
+ 21.71
+ 19.46
+ 21.36

44 54.90
45 0.30
44 56.75
44 58.95

37 40.85 -12 -2 29.22 +1.5 13.33
41.69 -1.1 29.29 +1.1 12.40
42.00 -1.0 38.29 +0.6 13.31
43.08 -9 29.36 +0.4 13.22

+ 50.04
+ 53.02
+ 32.34
+ 19.36
+ 33.19

+ 6.38
+ 9.08
+ 37.64
- 7.69

39 25.75
39 24.05
38 0.85
39 32.60
39 44.50

+20 -2 29.22 17.7 71.0 18
+20 29.29 17.5 108
+21 28.29 -20.3
+21 27.09 -21.5
+21 38.16 -21.6

+ 41

[illegible]

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$\Pi - \Pi P$	Circle Readings	Low Circ Read	S''	$B+T+R$	P_1	P_2	R_3	Sum	Low	Appo	P_2	
$\frac{\Pi}{2}$	"	"	"	"	"	"	"	"	"	"	"	
+21.8	1 49.10		+87 21 2199	- 5.14	-12	+ 2	-5.24	21 16.75	-2.0	33.49	-6.9	+37 21 43.14
+22.7	1 51.65		2038	- 5.15	-14	+ 6	-5.23	15.15	-2	34.77	-6.6	43.12
+16.2	1 42.65		2260	- 5.20	-7	+ 5	-5.22	17.38	-2	34.59	-6.7	45.07
+25.8	1 52.95		2231	- 5.09	-17	+ 6	-5.20	17.11	-2	34.69	-7.0	44.00
+27.2	1 54.45		2227	- 4.90	-19	+ 6	-5.03	17.14	-2	35.58	-7.1	45.52
+20.3	1 48.15		2137	- 5.08	-11	+ 5	-5.14	16.23	-2	35.79	-7.2	44.62
+14.4	1 41.90		2147	- 5.19	-5	+ 5	-5.19	16.28	-2	34.93	-7.4	43.61
+21.8	1 50.10		2099	- 5.14	-12	+ 6	-5.20	15.79	-2	35.53	-7.6	43.52
+18.61	59 6.30							24 1.73	-1-2	39.29	-5.4	26.94
+20.86	59 4.45							0.25	-2	38.29	-6.2	25.36
+20.05	59 2.15							1.54	-1	39.36	-6.9	25.18
+20.15	59 3.35							0.51	-2	37.09	-8.0	25.22
+18.00	59 0.45							1.11	-1	38.16	-8.2	24.65
+15.65	58 5.45							1.73	-2	37.71	-8.3	25.52

Approx $z = -14^\circ 15' 35''$ $n + \log \sin z = 1.16540$ $P' - P = +6$
 $\log \cos P = 9.74055$
 $\log \sec P = 11.8044$

+29.24 -25.06 45 16.49 +56 37 31.86 +15.56 +15.17 -21 +01 +14.97 37 46.83 38 19.0 32.2 -10.1 +56 38 7.38
+4.40 32.25

+84.78 49 14.25
+97.11 49 14.75
-8.56 49 22.90
+89.77 49 10.45
+79.73 49 11.00
+84.18 49 10.10
+92.43 49 13.40

34 41.94 +1.6 -2 29.29 -17.10 94 57.15
40.69 +1.7 28.29 -18.21 80 31 55.89
41.96 +1.7 29.30 -16.00 55.30
41.97 +1.7 27.09 -20.15 56.43
43.71 +1.7 26.16 -20.38 56.87
43.27 +1.7 27.71 -20.44 56.82
41.08 +1.8 27.80 -20.55 54.53

+ 94° 32' 56.14

+73.3 1 52.65
+64.8 1 50.80
+65.6 1 51.50
+71.5 1 52.95
+83.8 1 56.80
-52.0 1 14.00
-12.6 1 26.25
+65.3 1 46.10
+63.0 1 49.50
+64.2 1 49.90

+76 21 18.19 +39.93 -67 +2 +39.08 21 57.27 +8.10 33.59 -164 +76 22 16.26
17.59 +39.42 -53 +2 +38.91 56.50 +8 33.49 -15.6 15.19
17.18 +37.92 -55 +2 +38.89 56.07 +8 34.91 -15.8 15.98
17.52 +39.53 -64 +6 +38.95 56.47 +8 34.77 -16.3 15.74
17.47 +37.92 -87 +6 +39.11 56.58 +8 34.59 -16.4 15.57
18.31 +37.15 -34 +4 +38.85 57.16 +8 34.22 -16.6 15.58
18.22 +37.09 -02 +4 +39.11 57.33 +8 34.09 -16.7 15.52
22.45 +37.60 -53 +5 +37.12 59.57 +8 35.58 -16.9 15.05
18.34 +37.00 -50 +5 +38.55 56.89 +8 35.79 -17.0 16.48
18.31 +37.46 -53 +5 +38.98 57.29 +8 35.53 -17.4 16.22

+16.69 58 53.70
-38.61 58 36.60
+25.20 58 53.75
-38.08 58 33.00
-18.75 58 39.25
-32.56 58 34.60
-44.79 58 32.55

24 39.72 +11-2 29.39 -14.4 21 57.13
40.34 +10 28.29 -15.5 57.55
41.49 +10 28.28 -16.7 57.51
41.35 +10 27.09 -17.7 57.56
42.17 +10 28.16 -18.0 57.01
41.99 +10 27.71 -18.1 57.18
41.87 +10 27.80 -18.3 56.07

1872phae proj. 144

#				Π_m	$\Pi_m + h$	R_{rel}	$\Pi_m - 10^4 \text{ P.P.} - (\Pi - \Pi)$	$\Pi_m - R.A.$											
1872	172																		

1872phae. Proj. 1446

TP	TP	Circle Readings	Loon. Arc Read	P'	B+T+R	M ₂	R ₂	R ₃	Sum	Corr	App'd	R _{eq}			
+16.5		25 14.85		+9 57 54.83	-37.42	-2 + 0	-37.44	57 17.39	-9 + 0	33.59	+2.9	+9 57	52.45		
+20.4		25 20.45		54.27	-37.13	-4 + 0	-37.17	17.10	-9	33.49	+2.3		51.99		
+15.8		25 16.05		52.72	-37.11	-2 + 0	-37.13	15.59	-9	34.41	+2.2		51.80		
+19.5		25 19.50		54.05	-37.23	-4 + 1	-37.26	16.79	-9	34.77	+2.1		52.76		
+18.2		25 18.50		53.38	-37.60	-3 + 1	-37.62	15.76	-9	34.59	+2.0		51.45		
+16.6		25 16.65		53.16	-36.87	-3 + 1	-36.89	16.27	-9	34.22	+1.9		51.49		
+16.9		25 17.00		53.19	-36.81	-3 + 1	-36.83	16.36	-9	34.09	+1.9		51.45		
+18.3		24 35.00		49.70	-35.42	-3 + 14	-35.31	14.39	-9	35.58	+1.8		50.87		
+17.4		25 19.85		50.99	-36.73	-3 + 1	-36.75	14.24	-9	35.79	+1.7	50.83	50.84 50.83		
+15.7		25 15.15		53.99	-37.16	-2 + 1	-37.17	16.32	-9	35.53	+1.6		52.71		
													52.71		
+17.38		22 31.75						0 1.08	-12 -2	29.29	+2.5		33.09		
+18.91		22 33.75						0.83	-1.1	28.79	+2.2		33.64		
+16.63		22 30.85						1.32	-1.0	29.36	+1.9		32.86		
		22 29.60													
+17.547		22 32.00						2.48	-1.0	27.80	+0.9		34.58		
$\text{Approp} z = -15^{\circ} 21' 50'' \text{ m} + \log \tan z = 1.19920 \quad P-P = +1.4$ $\log \cos P = 9.72743$ $\text{cor.} = .11804$															
-30-10+9+8+35.08-19.8539 24.95 38 47.40 39 0.88 +57 43 47.47 +15.68 +16.40 -20 +0.8 +16.28 44 3.75 +4 +0 36.3 32.5 +8.3 +57 44 44.70															
+16.26		55 50.35						28 25.60	-1.18	-2 29.29	-12.47	104.25	40.64		
-12.93		56 18.95						25.86	+2.0	28.29	-18.52		41.05		
+65.14		55 48.60						26.16	+2.0	27.09	-20.30		41.77 40.77		
+33.79		55 54.30						27.17	+2.0	28.16	-20.50		40.51		
$+ 104^{\circ} 23' 40.74$															
+54.01		20 50.30						3 40.69 +20 -2 29.29	-17.3 +72	0	56.10				
+6.38		20 50.15						40.83 +2.0	28.29	-18.4	56.14				
+56.87		20 46.35						43.19 +2.1	28.28	-19.4	57.61				
+20.52		20 59.15						43.24 +2.1	28.14	-19.9	57.30				
+56.27		20 43.35						43.65 +2.1	27.09	-20.2	58.46 57.46 58.46				
+58.64		20 44.10						44.21 +2.2	26.16	-20.9	57.85				
+21.24		21 0.15						40.48 +2.2	27.71	-20.5	54.47				
+65.91		20 38.75						48.45 +2.2	27.83	-20.6	57.72 57.72 57.72				
+10.86		29 57.0						53 36.09 -6 -2 29.29	-7	51 55.0					
+18.23		29 13.60						36.25 -6	28.29	-1.3	6.06				
+20.30		29 12.60						37.99 -6	29.36	-1.8	8.23				
+14.09		29 5.60						37.83 -6	28.28	-2.0	8.95				
+18.29		29 10.35						39.92 -6	26.37	-2.3	8.65				
+19.51		29 12.70						40.07 -6	28.14	-2.4	8.93				
+23.64		29 18.00						39.02 -6	27.09	-2.8	8.53				
+20.16		29 4.95						42.48 -6	27.70	-3.2	10.58				
+14.12		29 9.95						36.23 -6	27.83	-3.7	4.10				

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#			π_m	$\pi_m + K$	RA.	$\pi - RA.P.P.P.P.P.P.$	$\pi_m - RA.$													
1872	42 Leo. Min.				$\alpha = 10$	$39.11 = -0.18$	$\beta = 81^\circ 22'$													
Apr.	17+19-04		38	33.72	33.70	384546	-11.76-02	-11.74	+11.69	+12	-05	-87	10 38	44.59					+13.7	
	18+22-07		38	33.86	33.84	4545	-11.61	-11.59	+11.57	+13	-08	-86	44.60	44.64					+19.1	
	19+26-08		38	34.19	34.17	4544	-11.27	-11.25	+11.17	+16	-09	-85		44.56					+23.1	
	21+13-08		38	34.52	34.51	4542	-10.91	-10.89	+10.88	+08	-09	-83		44.55					+19.7	
	22+15-08		38	34.83	34.81	4541	-10.60	-10.58	+10.56	+09	-09	-82		44.55					+16.6	
	23+16-08		38	35.07	35.05	4539	-10.34	-10.32	+10.28	+10	-09	-80		44.54					+15.1	
	24+17-08		38	35.21	35.19	4538	-10.19	-10.17	+10.17	+10	-09	-79		44.58					+19.3	
	25+08		38	35.33	35.32	4537	-10.05	-10.03	+10.08	+05	-09	-78		44.67					+21.1	
	26+05-08		38	35.62	35.60	4536	-9.76	-9.74	+9.85	+03	-09	-77		44.62					+22.2	
	27+12-08		38	35.73	35.71	4534	-9.63	-9.61	+9.68	+07	-09	-75		44.64					+14.7	
73 Apr.	10+10	38 29.37	38	44.76	44.74				+4.37	+06	-12	3	47.94						+15.3	
	16+14-05	38 22.57	38	43.63	43.61				+5.47	+09	-06	-1.07	47.94						+21.0	
	21+11																			
	23+09	38 21.70	38	42.23	42.21				+6.72	+05	-10	8	47.90						+20.5	
	26+11	38 23.63	38	42.04	42.02				+6.92	+07	-10		47.96						+18.4	
May	27+06	38 18.77	38	43.84	43.83				+7.06	+04	-10		47.89						+25.0	
	1-08	38 18.47	38	41.14	41.13				+7.83	-05	-98		47.98						+21.8	
	6-09	38 16.57	38	40.76	40.68				+8.25	-05	-91		47.94						+23.8	
	12-05	38 19.70	38	39.76	39.75				+9.02	-03	-83		47.91						+20.6	
	15-09	38 27.93	38	36.04	36.02				+12.77	-05	-79		47.95						+8.1	

#						h	m													
1872	42 Leo. Min.					10	$12.16 = -0.16$	$+11^\circ 14'$												
Apr.	17+19-04		42	20.76	20.74	42	3238	-11.64+02	-11.66	+11.69	+04	-04	-72	10 42	31.71					+16.3
	18+22-07		42	20.90	20.89		3237	-11.48	-11.50	+11.57	+04	-07	-71		31.72					+15.5
	19+26-08		42	21.31	21.29		3236	-11.07	-11.09	+11.17	+05	-08	-70		31.73					+18.7
	21+13-08		42	21.51	21.50		3234	-10.84	-10.86	+10.88	+03	-08	-68		31.65					+17.4
	22+15-08		42	21.84	21.82		3233	-10.51	-10.53	+10.56	+03	-08	-67		31.66					+19.6
	24+17-08		42	22.22	22.21		3232	-10.11	-10.13	+10.17	+03	-08	-66		31.67					+18.3
	25+08		42	22.26	22.24		3230	-10.06	-10.08	+10.08	+02	-08	-64		31.70					+15.8
	26+05-08		42	22.52	22.51		3229	-9.78	-9.80	+9.85	+01	-08	-63		31.66					+19.1
	27+12-08		42	22.67	22.65		3228	-9.63	-9.65	+9.68	+02	-08	-62		31.65					+16.0
73 Apr.	10+10	42 47.92	42	31.48	31.47				+4.37	+02	-96		34.90							+16.4
	16+14-05	42 10.50	42	30.26	30.24				+5.47	+03	-95	-92	34.77							+19.7
	23+09	42 11.07	42	28.88	28.87				+6.72	+02	-85		34.76							+17.8
	26+11	42 11.00	42	28.84	28.82				+6.91	+02	-82		34.73							+17.8
	27+06	42 10.33	42	28.57	28.58				+7.06	+01	-81		34.84							+18.2
May	1-08	42 8.53	42	27.84	27.82				+7.84	-02	-77		34.87							+19.3
	5-06	42 6.16	42	27.62	27.60				+7.99	-01	-73		34.85							+21.4
	6-07																			
	7-06	42 12.57	42	27.10	27.08				+8.54	-01	-71		34.90							+14.5
	12-05	42 9.73	42	26.47	26.46				+9.02	-01	-64		34.83							

#						h	m													
1873	46 Leo. Min.					10	46													
Apr.	10+10	45 48.50	46	9.17	9.15				+4.37	+07	-135	10 46	12.24							+20.6
	21+11	45 43.87	46	7.24	7.23				+6.21	+08	-123		12.29							+23.3
	23+09	45 45.03	46	6.66	6.65				+6.72	+06	-120		12.23							+21.6
	26+11	45 40.73	46	6.44	6.43				+6.91	+08	-117		12.25							+26.3
	27+06	45 46.57	46	6.32	6.30				+7.05	+04	-115		12.24							+19.7
May	1-08	45 43.93	46	5.59	5.57				+7.84	-06	-109		12.26							+21.6
	6-09	45 57.47	46	5.04	5.03				+8.26	-06	-102		12.21							+7.5
	12-05	45 48.67	46	4.21	4.19				+9.02	-04	-94		12.23							+15.8
	14-09	45 39.47	46	4.26	4.24				+9.01	-06	-91		12.28							

[illegible]

[illegible]

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+32.11 54 39.00
 +26.30 54 34.30
 +28.84 54 35.35
 +28.60 54 34.90
 +26.30 55 51.15
 +11.73 55 44.00

28 49.13 +6.2 27.71 -13.5 +62° 26 44 8.52
 52.29 +6 27.70 -13.7 652 7.49
 50.61 +6 27.83 -14.9 8.98
 50.79 +6 27.63 -14.5 9.46
 27 33.79 +6.1 8.73 -14.6 11.06
 27 32.79 +6 9.10 -14.9 9.39

+18.6 21 29.40
 +19.5 21 30.45
 +16.6 21 26.55
 +15.4 21 25.40
 +20.3 21 32.30
 +17.8 21 32.00
 +16.6 21 28.20
 +17.73 18 47.05
 +23.88 18 53.40
 +17.96 18 32.50
 +16.27 18 43.00
 +24.25 18 51.50
 +19.21 18 47.15
 +17.16 18 44.70
 -6.53 18 14.45
 +13.49 19 58.55
 +16.27 20 1.20

+8 1 43.12 -40.06 -3 +1 -40.08 1 3.04 // -9.10 33.49 +3.4 +8 1 19.03
 43.24 -40.23 -4 +5 -40.22 3.02 -9 34.77 +3.2 40.09
 43.37 -40.63 -3 +5 -40.61 2.76 -9 34.59 +3.1 39.55
 42.96 -39.82 -2 +5 -39.79 3.17 -9 34.22 +3.0 39.49
 42.43 -39.67 -3 +5 -39.65 2.78 -9 34.09 +3.0 38.97
 39.48 -38.25 -2 +5 -38.22 1.26 -9 35.58 +2.9 38.84
 41.72 -39.60 -2 +5 -39.57 2.45 -9 35.79 +2.8 39.84
 3 46.60 -10 -2 29.36 +3.4 19.64
 45.62 -10 28.37 +3.1 19.35
 46.06 -10 28.14 +3.1 20.02
 45.80 -10 27.09 +2.8 19.71
 44.76 -10 27.71 +2.6 18.65
 45.69 -10 27.70 +2.5 19.49
 46.69 -10 27.83 +2.2 20.06
 46.21 -10 27.63 +2.0 19.58
 2 27.81 -10 -1 8.73 +2.0 20.88
 2 28.65 -10 9.10 +1.8 20.85

+24.5 12 9.05
 +24.5 12 7.50
 +20.5 12 5.95
 +25.7 12 10.00
 +22.8 12 8.65
 +24.1 12 7.80
 +23.0 12 6.50
 +24.6 12 7.85
 +26.4 12 9.60
 +19.8 12 5.25

+45 11 1.96 +2.90 -17 +2 +2.75 11 4.71 // +.1 +33.59 -6.2 +45 11 38.60
 3.51 +2.88 -17 +2 +2.73 6.24 +.1 33.49 -6.4 38.43
 1.96 +2.88 -12 +2 +2.78 4.14 +.1 34.91 -6.6 32.85
 2.11 +2.83 -18 +2 +2.67 4.78 +.1 34.52 -6.9 34.50
 0.78 +2.89 -14 +6 +2.81 3.59 +.1 34.77 -7.1 31.36
 2.83 +2.92 -16 +6 +2.82 5.65 +.1 34.59 -7.2 33.14
 3.12 +2.86 -14 +6 +2.78 5.90 +.1 34.22 -7.4 32.82
 3.25 +2.85 -17 +6 +2.74 5.99 +.1 34.09 -7.5 32.68
 3.17 +2.78 -18 +6 +2.63 5.80 +.1 35.58 -7.7 33.78
 1.41 +2.84 -11 +6 +2.79 4.20 // +.1 35.79 -7.9 32.19

+26.33 9 27.55
 +27.81 9 27.15
 +27.60 9 23.85
 +28.57 9 27.20
 +23.30 9 22.95
 +24.89 9 23.50
 +21.58 9 20.00
 +22.36 10 39.50
 +22.16 10 37.60

13 47.58 +.1 -2 26.28 -6.9 12.50
 48.53 +.1 26.37 -7.4 12.86
 47.65 +.1 27.09 -8.2 12.46
 49.02 +.0 27.70 -8.8 12.52
 49.25 +.1 27.80 -9.0 12.55
 50.01 +.0 27.83 -9.6 12.58
 50.53 +.1 27.63 -9.8 13.20
 12 32.04 +.0 -1 8.73 -9.9 13.41
 12 32.01 +.1 9.10 -10.7 12.81

[illegible]

1875 [#]	Sp.	1757	h m	11 ^g	+50° 11'	Lat $\delta = +120$ 156	Dir 2 -14		
Apr. 21411	9 120	9 24.33	24.31	+6.21	+13	-182	31.83	x	+2
23409	8 5843	9 24.84	26.85	+6.72	+11	-179	31.89	x	+2
26411	8 5847	9 26.01	26.59	+6.89	+13	-174	31.87	x	+2
May 27406	8 5460	9 26.50	26.48	+7.04	+07	-172	31.87	x	+3
1-08	8 59.03	9 25.50	25.78	+7.84	-10	-165	31.87	x	+2
5-06	9 1770	9 25.00	25.58	+7.97	-07	-157	31.91	x	+1
6-09	8 52.93	9 25.34	25.31	+8.27	-12	-155	31.92	x	+3
7-06	8 57.00	9 25.03	25.00	+8.53	-07	-153	31.93	x	+2
14-09	9 13.34	9 24.36	24.33	+9.01	-11	-139	31.84	x	+1
15-09	8 64.60	9 20.56	20.53	+12.78	-11	-137	31.83	x	+2
18-13	8 49.73	9 19.14	19.11	+14.23	-16	-130	31.88	x	+2

+ 34.13	3 51.05
+ 25.00	3 50.40
+ 52.72	3 41.85
+ 30.22	2 54.15
+ 32.93	3 47.15
+ 29.47	5 7.95
+ 20.26	5 11.50

20	3740 +20 -2	28.28	-17.2	10.0	17	55.92
	4055 +2.1	27.09	-18.3			57.26
	4185 +2.1	28.16	-18.6			57.19
	3788 +2.2	27.80	-18.8			53.45
	4031 +22 -2	27.63	-19.2			55.68
19	21.73 +22 -1	8.73	-19.2			56.00
	2334 +22	9.10	-19.3			57.14

+ 18.9	9 53.05
+ 19.4	9 55.45
+ 14.8	9 49.25
+ 160	9 50.15
+ 20.1	9 55.60
+ 17.4	9 51.95
+ 19.0	9 56.95
+ 17.2	9 52.55

+21	13	1842	-22.71 - 6 + 5	-22.72	12	55.70 - 6 + 0	33.49	+2	+21	13	28.79
		16.64	-22.69 - 6 + 5	-22.70		53.44 - 6	34.91	+1			28.55
		17.21	-22.80 - 4 + 14	-22.70		54.51 - 6	34.77	-2			28.88
		17.77	-23.03 - 4 + 14	-22.93		54.84 - 6	34.59	-3			28.53
		17.34	-22.56 - 7 + 14	-22.49		54.85 - 6	34.82	-4			28.07
		17.68	-22.47 - 5 + 14	-22.38		55.30 - 6	34.09	-5	28.29		28.29
		14.65	-21.68 - 6 + 14	-21.60		53.05 - 6	35.88	-6	28.43		27.13
		16.85	-22.44 - 5 + 14	-22.35		54.50 - 6	35.79	-7			28.99

+ 23.25	7 15.00
+ 14.46	7 6.60
	7 10.75

15	3862 - 7 - 2	29.36	+0.3	28.13	8.86
	36.62 - 6	28.28	+0.0		7.74

+ 15.63	7 8.70
+ 21.69	7 14.90
+ 14.38	7 4.55
+ 18.59	7 10.45
+ 18.51	8 25.70

	36.33 - 6	27.09	-8	7.85	7.84
	37.36 - 6	27.71	-12		7.85
	38.25 - 6	27.80	-14		8.45
	38.20 - 6	27.63	-21		7.87
14	1990 - 6 - 1	8.73	-22		8.57
	2045 - 6	9.10	-25		8.25

+ 20.2	9 55.40
--------	---------

1766	-22.32 - 07 + 5	-22.34	12	55.32 - 6 + 0	33.22	-1	29.14
					34.52		

+ 26.13	10 33.20
+ 27.44	10 34.40
+ 28.14	10 34.20
+ 31.90	10 34.45
+ 26.77	10 34.05
+ 7.90	10 17.85
+ 32.41	10 37.95
+ 27.83	10 34.45
+ 10.78	10 19.15
+ 25.95	11 50.25
+ 28.41	11 51.80

12	4490 + 3 - 2	29.36	-7.1	+50	10	8.44
	4467 + 3	28.28	-78			8.84
	4542 + 2	28.37	-83			8.05
	4524 + 2	28.14	-85			8.80
	4428 + 2	27.09	-91			8.29
	4491 + 2	27.71	-96	7.80		7.80
	4579 + 2	27.70	-98			7.89
	4528 + 2	27.80	-99			7.58
	4614 + 2	27.63	-108	7.91		7.91
11	2936 + 2 - 1	8.73	-109			7.93
	2879 + 2	9.10	-113			8.59

#			P_m	$P_m + K$	Q_1	$P_m - R_1$	$P_m - R_1 - (P_1 - P)$	$\tan \delta$	$\sin Z$				
73		<i>Dr. Mrs. Maj</i>						$+67^\circ 12'$	$+15$				
Apr. 26.11	11 8.37	11	31.17	31.15				$+6.89$	$+07$	-127	11 11	36.84	x
May 1-08	11 8.93	11	30.26	30.35				$+7.84$	-05	-122		36.92	x
5-06	11 13.57	11	30.13	30.11				$+7.97$	-04	-117		36.87	x
6-09	11 9.77	11	29.90	29.88				$+8.27$	-06	-116		36.93	x
7-06	11 11.47	11	29.89	29.87				$+8.53$	-04	-115		36.91	x
13-14	11 7.43	11	29.04	29.03				$+9.07$	-09	-106		36.95	x
14-09	11 11.43	11	29.00	28.98				$+9.01$	-06	-105	3200	36.88	x
15-09	11 3.90	11	25.22	25.20				$+12.78$	-06	-104		36.88	+
18-13	11 2.30	11	23.78	23.76				$+14.23$	-05	-100		36.90	+
19-13	11 7.80	11	23.88	23.86				$+14.04$	-09	-99		36.82	+

#		#	m	$15 = -019$	$\tan \delta = +63^\circ 18'$	$\sin Z + 18$									
1872		Dr. Mrs. Majord.	11	12	+32°	14									
Apr. 17 4.19-04	11 10.31	10.29	11 21.83	-11.64	+1.3	-11.77	+11.69	+12	-05	-109	11 11	21.01		+4	
18 4.22-07	11 10.51	10.49	21.92	-11.43		-11.56	+11.55	+14	-08	-103		21.07		+19	
19 4.26-08	11 10.81	10.79	21.91	-11.12		-11.25	+11.18	+16	-09	-102		21.02		+22	
21 4.13-08	11 11.24	11.22	21.89	-10.67		-10.80	+10.88	+18	-09	-100		21.09		+19	
22 4.15-08	11 11.53	11.52	21.88	-10.36		-10.49	+10.53	+19	-09	-99		21.06		+10	
23 4.16-08	11 11.83	11.81	21.87	-10.06		-10.19	+10.28	+10	-09	-98		21.12		+21	
24 4.17-08	11 11.85	11.83	21.86	-10.03		-10.16	+10.18	+11	-09	-97		21.06		+22	
25 7.08	11 11.92	11.90	21.85	-9.95		-10.08	+10.07	+10	-05	-96		21.06		+19	
26 4.05-08	11 12.29	12.27	21.84	-9.57		-9.70	+9.84	+13	-09	-95		21.10		+20	
27 4.12-08	11 12.36	12.35	21.83	-9.48		-9.61	+9.67	+13	-09	-94		21.07		+19	

#				h	m	$K = -016$	$\tan \delta = +12$	1.01	$\sin Z = +58$						
1872		<i>Ostionis</i>		11	15		+6	43							
Apr.	23.7.16	14	22.70	2268	14	32.89	-10.21	+03	-10.24	+10.28	+02	-78	11 14	32.20	+1%
	23.7.08	14	22.81	2280	32.87	-10.07	-10.10	+10.07	+01	-76		32.20	32.12		+1%
	26.7.05	14	23.10	2308	32.86	-9.78	-9.81	+9.84	+01	-75			32.18		+1%
	27.7.12	14	23.24	2323	32.85	-9.62	-9.65	+9.67	+01	-74			32.17		+1%

#		Gr.			h	m	$\tan \delta = +215$	2.37	$\sin Z = .38$						
1873			1771		11	15	$+65$	$\frac{2}{2}$							
Apr.	27.06	14 37.53		15	13.09	13.05	$+7.04$	$+13$	-277	11	15	17.45	\times		$+32$
May	1-08	14 38.27		15	12.29	12.25	$+7.84$	-17	-263			17.27	\downarrow		$+14$
	5-06	14 37.30		15	12.14	12.11	$+7.97$	-13	-250			17.77	$+$		$+34$
	7-06	14 45.93		15	11.37	11.33	$+8.53$	-13	-242			17.65	\times		$+28$
	13-14	14 27.80		15	11.00	10.96	$+9.07$	-30	-223			17.50	$+$		$+43$
	14-09	14 56.83		15	10.80	10.76	$+9.01$	-19	-219			17.37	\times		$+13$
	15-09	14 35.23		15	7.00	6.96	$+12.78$	-19	-217			17.38	\times		$+31$
	18-13	14 43.83		15	5.58	5.54	$+14.23$	-28	-206			17.45	\times		$+21$
	19-13	14 40.47		15	5.63	5.60	$+14.04$	-28	-207			17.35	\times		$+23$
	20-10	14 43.23		15	5.36	5.32	$+14.11$	-22	-197			17.24	\times		$+22$

1872	Dr. Mrs. Maj	^h on 11 16	+54° 23'
June 9-14			

+22.80
+21.93
+14.56
+20.63
+18.12
+21.61
+17.57
+21.32
+21.48
+16.08

33 19.20
33 19.15
33 10.85
33 17.15
33 13.45
33 15.75
33 13.05
34 35.00
34 35.10
34 31.35

49 44.69 -2 -2 28.37 -38 +33 47 12.32
43.46 -3 27.09 -44 11.67
44.30 -2 27.71 -45 11.49
43.82 -3 27.70 -50 10.82
45.29 -2 27.80 -52 12.09
47.07 -2 28.13 -59 12.84
45.39 -2 27.63 -60 11.56
48 27.43 -2 1 6.73 -61 12.40
27.05 -2 9.10 -64 11.35
25.35 -2 8.86 -65 9.79

+4.8
+19.5
+22.0
+19.7
+16.4
+21.2
+22.6
+19.3
+20.9
+19.5

8 17.25
8 34.80
8 37.95
8 35.55
8 31.80
8 35.80
8 37.40
8 33.70
8 37.20
8 35.30

+32 14 36.43 -10.58 -1 +3 -10.56 +11 25.87 -3 +0 33.59 -2.3 +32 14 56.86 56.46
35.19 -10.49 -9 +4 -10.54 24.65 -3 33.49 -2.5 55.34
34.81 -10.48 -11 +4 -10.55 24.26 -3 34.91 -2.4 56.27
34.66 -10.30 -9 +4 -10.35 24.31 -3 34.45 -2.9 55.63
34.78 -10.54 -7 +11 -10.50 24.25 -3 34.77 -3.0 55.72
36.07 -10.64 -11 +11 -10.64 25.43 -3 34.59 -3.1 56.62
36.03 -10.42 -13 +11 -10.44 25.59 -3 34.22 -3.3 56.21
36.06 -10.38 -9 +11 -10.36 25.70 -3 34.09 -3.4 56.09
34.34 -10.02 -10 +11 -10.01 24.33 -3 35.58 -3.6 56.01
34.69 -10.36 -9 +11 -10.34 24.35 -3 35.79 -3.7 56.14

+17.2
+17.7
+16.5
-18.0

39 15.70
39 17.30
39 18.65
39 31.90

+6 43 55.07 -42.69 -1 +13 -42.57 43 12.50 -10 +0 34.59 +3.8 +6 43 49.89
54.11 -41.63 -1 +13 -41.51 12.60 -10 34.09 +3.7 49.39 49.39
56.20 -40.99 -1 +13 -40.07 11.13 -9 35.58 +3.6 49.41
52.99 -41.58 -1 +13 -41.46 11.53 -9 35.79 +3.5 49.92

+35.56
+14.02
+34.84
+25.44
+43.20
+13.97
+31.77
+21.45
+25.16
+22.12

19 22.65
19 11.40
19 21.90
19 16.30
19 23.60
19 9.05
20 37.00
20 30.65
20 32.55
20 32.05

4 9.07 +.7 -2 28.14 -116 +65 1 27.05 28.03
8.22 +.7 27.09 -129 30.05 29.43
9.03 +.7 27.71 -129 29.12
10.27 +.7 27.80 -132 29.97
11.55 +.7 28.13 -140 30.12
10.45 +.7 27.63 -141 29.42
2 52.53 +.7 -1 6.73 -142 30.30
53.77 +.7 9.10 -144 30.77
53.70 +.7 8.86 -147 30.84
52.73 +.7 8.64 -148 29.99

[illegible]

+16.91	6 25.60
+20.47	6 31.00
+21.29	6 36.15
+15.00	6 23.05
+12.24	7 38.20
+16.29	7 42.05
+20.63	7 48.00
+18.58	7 46.45

16	9.01 - 1.0	-28.14	+2.9	+11 ⁰ 13	42.77
	8.72 - .9	27.71	+2.3		42.41
	7.59 - .9	27.80	+2.1	42.99	42.85
	7.86 - .9	27.63	+1.6		42.93
14	50.12 - .9	-1	8.73	+1.5	41.99
	51.83 - .9	9.10	+1.3		43.13
	50.53 - .9	8.86	+1.2	41.97	41.97
	50.24 - .9	8.64	+1.2		41.90

+49.2	21 48.80	+70	1	20.52	+30.27 + 42 + 2 + 30.71	1	51.23 + .7 + 0	34.52	-11.9	+70 2	15.05
+47.7	21 52.95			18.94	+30.94 + 39 + 5 + 31.38		50.32 + .7	34.77	-11.6		14.89
+48.5	21 47.95			20.76	+30.61 + 36 + 5 + 31.02		51.78 + .7	34.22	-12.0		14.70
+45.6	21 47.90			20.85	+30.45 + 36 + 5 + 30.86		51.71 + .7	34.09	-12.3		14.20
+47.4	21 48.75			20.81	+30.42 + 39 + 5 + 29.86		50.67 + .7	35.58	-12.4		14.55
+45.6	21 48.05			20.70	+31.07 + 36 + 5 + 31.48		52.18 + .7	34.93	-13.1		14.71

0.44	+40.13	19 2.70				4	32.97 + .8	-2	27.09	-12.8	1	53.55
	+35.75	18 52.25					34.83 + .8		28.16	-13.2		54.27
X	-35.63	18 32.50					34.12 + .8		27.71	-13.4		53.81
X	+17.17	18 53.05					33.36 + .8		27.70	-13.5	52.96	53.52.44
X	+15.25	18 51.70					34.08 + .8		27.50	-13.7		53.38
+15.5	+42.55	19 10.5					35.44 + .8		27.83	-14.4	54.01	54.01
X	+38.84	18 52.30					35.68 + .8		28.13	-14.6		53.65
X	+33.72	18 56.90					35.92 + .8		27.63	-14.6		54.49
X	+40.00	20 20.35				3	16.01 + .8	-1	8.73	-14.8	53.28	53.28
	+40.50	20 19.45					17.19 + .8		9.10	-15.1		53.79
	+32.01	20 14.95					17.88 + .8		8.86	-15.3		54.49
	+30.00	20 15.90					16.23 + .8		8.64	-15.3		53.09



Urs. Min L.C.

T_m

$T_m + K$

$R.A.$

$T - R.A.$

$P.P.$

$T - R.A.$

$P.P.$

$T - R.A.$

$P.P.$

$T - R.A.$

$P.P.$

$T - R.A.$

$P.P.$

$T - R.A.$

$P.P.$

1873
May
1-08
5-06
6-09
7-06
13-14
14-09
15-09
18-13
19-13
20-10

25 24.10
24 57.10
25 15.67
25 54.73
24 30.73
24 53.57
24 20.03
24 36.57
26 45.00

27 21.53
27 22.41
27 22.26
27 23.04
27 23.77
27 23.89
27 20.54
27 19.67
27 20.69
27 22.74

21.79
22.67
22.52
23.30
24.05
24.15
20.60
19.93
20.85
23.00

$q = X^{23} 28$

$L = +93^\circ 24'$

$\tan \delta = -16.88$

$\sin Z = .78$

$23 27$

50.51

49.98

50.35

50.57

51.30

50.18

50.06

1873
23 28
50.672

h m $12 = -.015$

$\tan \delta = .00$

$12 = 1.00$

$\sin Z = .68$

11 30

23.74

23.75

23.72

23.71

23.73

23.72

23.72

26.79

26.80

26.80

1872
Apr.

V Leonis

h m $12 = -.015$

$\tan \delta = .00$

$12 = 1.00$

$\sin Z = .68$

11 30

23.74

23.75

23.72

23.71

23.73

23.72

23.72

26.79

26.80

May
73 May
1-08
5-06
6-09
7-06
13-14
14-09
15-09
18-13
19-13
20-10
25-31

30 13.79
30 14.47
30 14.48
30 14.75
30 14.75
30 15.56
30 18.07
30 19.57
30 19.94
30 19.91
30 19.09
30 18.50
30 18.67
30 16.54
30 13.48
30 13.47
30 13.47
30 4.22

13.77
14.46
14.46
14.74
14.93
15.55
18.05
19.86
19.72
19.39
19.08
18.55
18.60
14.82
13.47
13.46
4.20

20 24.51
20 24.50
24.49
24.48
24.47
24.46
24.28

$-10.74 + .03$
 -10.04
 -10.03
 -9.74
 -9.74
 -8.91
 -6.23

-10.77
 -10.07
 -10.06
 -9.74
 -9.74
 -8.94
 -6.26

$+10.84$
 $+10.18$
 $+10.06$
 $+9.84$
 $+9.66$
 $+9.02$
 $+6.26$

$.00$
 $.00$
 $.00$
 $.00$
 $.00$
 $.00$
 $.00$

$-.82$
 $-.81$
 $-.80$
 $-.79$
 $-.78$
 $-.77$
 $-.59$

11 30

23.74

23.75

23.72

23.71

23.73

23.72

1872
Apr.

γ Cygni S.C.

h m $12 = +0.68$

$\tan \delta = 4.31$

103

$\sin Z = .87$

23 34

6.92

6.97

6.92

6.91

6.90

6.92

9.28

9.27

9.08

May
73 May
1-08
5-06
6-09
7-06
13-14
14-09
15-09
18-13
19-13
20-10
25-31

33 51.04
33 51.95
33 52.26
33 52.07
33 52.43
33 53.34
33 57.27
33 55.77
33 56.31
33 56.02
33 55.61
33 55.70
33 50.97
33 51.20
33 41.67

51.11
52.02
52.32
52.14
52.50
53.41
57.33
55.99
56.38
56.09
55.68
55.77
51.03
51.27
41.73

34 1.51
34 1.71
34 1.78
34 1.86
34 1.94
34 2.08
34 3.98
34 6.59

$-10.40 + .13$
 -9.69
 -9.46
 -9.72
 -9.44
 -8.67
 -6.59

-10.53
 -9.82
 -9.59
 -9.85
 -9.57
 -8.80
 -6.72

$+10.87$
 $+10.18$
 $+10.06$
 $+9.84$
 $+9.65$
 $+9.02$
 $+6.26$

$-.56 + .36$
 $-.73 + .36$
 $-.34$
 $-.22 + .36$
 $-.52 + .36$
 $-.60 + .36$
 $+.39$

$+5.15$
 $+4.95$
 $+4.88$
 $+4.80$
 $+4.72$
 $+4.58$
 $+2.74$

23 34

6.92

6.97

6.92

6.91

6.90

6.92

1872
Apr.

χ Uds. Maj.

h m $12 = -.023$

$\tan \delta = +1.13$

157

$\sin Z = .11$

11 39

17.08

16.97

16.99

16.91

16.98

20.19

20.20

20.21

20.20

May
73 May
1-08
5-06
6-09
7-06
13-14
14-09
15-09
18-13
19-13
20-10

39 7.54
39 8.35
39 8.73
39 8.74
39 11.30
39 14.26
39 14.24
39 12.87
39 7.81
39 7.66

7.52
8.33
8.71
8.72
11.28
14.23
14.22
12.85
7.79
7.63

39 18.57
39 18.57
39 18.50
39 18.48
39 18.05
39 14.26
39 14.22
39 12.85
39 7.81
39 7.63

$-11.05 + .03$
 -10.18
 -9.79
 -9.76
 -6.77
 -6.77
 -6.77
 -6.77
 -6.77
 -6.77

-11.08
 -10.21
 -9.82
 -9.79
 -6.80
 -6.77
 -6.77
 -6.77
 -6.77
 -6.77

$+11.01$
 $+10.06$
 $+9.84$
 $+9.65$
 $+6.81$
 $+7.84$
 $+7.74$
 $+9.02$
 $+14.03$
 $+14.13$

$+1.12$
 $+1.09$
 $+1.06$
 $+1.12$
 $-.06$
 $-.09$
 $-.09$
 $-.15$
 $-.11$

-157
 -151
 -150
 -148
 -105
 -179
 -174
 -156
 -147
 -146

11 39

17.08

16.97

16.99

16.91

16.98

20.19

1872phae.proj.1446

#			π_m	$\pi_m + 16$	Rd.	π_m	R.A.P.P.	π_m -Rd.	π_m -P.P.	$\tan \delta =$	$\delta =$	$\sin 2 + 46$				
1872	Apr.	20 + 11	42	21.68	21.67	42	3269	-11.02 + 02	-11.04	+11.00	+ .03	- .08	- .94	11 42	31.68	+
		24 + 17 - 08	42	22.61	22.59		3267	-10.08	-10.10	+10.18	+ .05		- .91		31.91	+
		25 + 08	42	22.65	22.64		3266	-10.02	-10.04	+10.06	+ .02		- .91		31.81	+
		26 + 05 - 08	42	22.91	22.89		3265	-9.76	-9.78	+9.84	+ .01	- .05	- .90		31.76	+
		27 + 12 - 08	42	23.06	23.05		3265	-9.60	-9.62	+9.65	+ .03	- .08	- .90		31.75	+
May		20 - 09	42	26.22	26.20		3245	-6.25	-6.27	+6.26	- .02		- .70		31.74	+
		22 - 05	42	25.67	25.66		3243	-6.77	-6.79	+6.81	- .01		- .68		31.78	+
73 May		1 - 08	42	28.14	28.12					+7.85	- .02		- .09		34.86	+
		4 + 06 - 06	42	28.25	28.24					+7.73	+ .02	- .06	- .07		34.86	+
		5 - 06	42	27.96	27.95					+7.95	- .02		- .06		34.82	+
		14 - 09	42	26.54	26.53					+9.02	- .02		- .99		34.84	+
		19 - 13	42	21.85	21.83					+14.03	- .04		- .94		34.88	+
		20 - 10	42	21.67	21.66					+14.13	- .03		- .93		34.83	+
		25 - 31	42	12.54	12.48					+23.31	- .08		- .88		34.83	+
		29 - 27 - 08	42	13.51	13.49					+23.43	- .07	- .05	- .84		34.93	+
June		7 - 20 - 07	42	14.19	14.18					+21.60	- .85	- .07	- .82		34.84	+
		2 - 26 - 07	42	14.39	14.38					+21.43	- .07	- .07	- .81		34.86	+

#							$\tan \delta = +.04$	1.00	$\sin 2 + 64$						
1872	Apr.	20 + 11	43	51.55	51.53	44	2.57	-10.98 + 04	-11.02	+11.00	+ .00		- .90	11 44	1.63
		25 + 08	43	52.54	52.53		2.49	-9.96	-10.00	+10.06	+ .00		- .88		1.71
		26 + 05 - 08	43	52.78	52.76		2.49	-9.73	-9.77	+9.84	+ .00	- .05	- .88		1.64
		27 + 12 - 08	43	52.97	52.98		2.48	-9.50	-9.54	+9.65	+ .00	- .08	- .87		1.68
		20									+ .00				
May		22 - 05	43	55.55	55.53		2.28	-6.75	-6.79	+6.81	+ .00		- .67		1.67
73 May		1 - 08	43	55.05	55.04					+7.85	+ .00		- .07		4.91
		4 + 06 - 06	43	55.22	55.19					+7.73	+ .00	- .06	- .07	4.86	4.92 4.86
		5 - 06	43	57.84	57.83					+7.95	+ .00		- .99		4.79
		14 - 09	43	56.76	56.74					+9.02	+ .00		- .92		4.84
		19 - 13	43	51.72	51.71					+14.03	- .01		- .88		4.85
		20 - 10	43	51.53	51.51					+14.13	- .00		- .87		4.77
		25 - 31	43	42.30	42.32					+23.31	- .01		- .83		4.79
		29 - 27 - 08	43	43.18	43.17					+22.43	- .01	- .05	- .79		4.72
June		7 - 20 - 07	43	44.01	44.03					+21.60	- .01	- .07	- .76		4.79

#				π	π_m	$\tan \delta = +1.40$	$\delta = 1.72$	$\sin 2 - 21$						
1872				11	47	12 = -0.26	+5.4	2.4						
Apr.	20 + 11	46	56.05	56.03	47	7.20	-11.17 - 02	-11.15	+11.00	+ 15	-189	11 47	5.29	+
	24 + 17 - 08	46	56.80	56.77		7.13	-10.36	-10.34	+10.18	+ 24 - .14	-182		5.23	+
	25 + 08	46	56.90	56.88		7.12	-10.24	-10.22	+10.06	+ 11	-181		5.24	+
	26 + 05 - 08	46	57.39	57.36		7.10	-9.74	-9.72	+9.84	+ .07 - .14	-179		5.34	+
May	27 + 12 - 08	46	57.34	57.32		7.09	-9.77	-9.75	+9.65	+ .17 - .14	-178		5.22	+
	20 - 09	47	65.44	65.41		6.63	-6.12	-6.10	+6.26	- .13	-132		5.32	-
	22 - 05	46	59.83	59.81		6.58	-6.77	-6.75	+6.82	- .07	-127		5.29	+
73 May	1 - 08	46	32.97	32.94	47	2.86	2.83		+7.85	- .11	-213		8.44	+
	4 + 06 - 06	46	33.12	33.09	47	2.89	2.84		+7.73	+ .08 - .10	-207		8.51	+
	5 - 06	46	26.33	26.30	47	2.68	2.66		+7.95	- .08	-205		8.48	+
	14 - 09	46	38.27	38.24	47	1.49	1.47		+9.02	- .13	-186		8.50	+
	19 - 13	46	25.14	25.11	46	56.46	56.43		+14.03	- .18	-176		8.52	+
	20 - 10	46	18.67	18.64	46	56.22	56.19		+14.13	- .14	-173		8.45	+
	25 = 31	46	26.97	26.94	46	47.20	47.17		+23.31	- .13	-162		8.43	+
	27 - 20	46	4.93	4.90	46	47.53	47.50		+22.86	- .49	-157		8.30	+
	29 - 27 - 08	46	18.84	18.81	46	48.12	48.09		+22.43	- .38 - .14	-153		8.47	+
June	7 - 20 - 07	46	48.80	48.82	46	48.80	48.82		+21.60	- .28 - .12	-146		8.56	+
	2 - 26 - 07	46	33.50	33.47	46	49.09	49.07		+21.43	- .36 - .12	-143		8.59	+

72 Apr. 30

+16.9	5 1.10	+15 17	864 -	-29.31 - 4 + 0	-29.35	16	39.29 - 8 + 0	39.22	+2.5	+15 17	14.21
+12.2	4 54.35		944 -	-29.92 - 2 + 14	-29.80		39.64 - 8	34.22	+2.1		15.16
+16.7	5 59.50		999 -	-29.73 - 4 + 3	-29.74		40.25 - 8	34.09	+2.0		15.54
+16.7	6 3.50		599 -	-28.76 - 4 + 3	-28.77		37.22 - 8	35.58	+1.9		13.90
+17.2	6 2.55		757 -	-29.70 - 4 + 3	-29.71		37.86 - 8	35.79	+1.8		14.65
+16.2	5 17.65		5120	-28.64 - 3 + 1	-28.66	17	22.54 - 7 - 0	6.34	- .3		15.20
+16.6	5 17.30		5206	-29.23 - 3 + 1	-29.25		22.51 - 7	7.02	- .5	14.59	14.59
+19.64	3 23.60					19	19.90 - 8 - 2	27.09	+2.3	16	54.37
+17.32	3 14.40						20.65 - 8	28.16	+2.0		53.69
+17.90	3 19.20						22.02 - 8	27.71	+1.9		55.41
+18.38	3 19.95						21.95 - 8	27.63	+1.1		54.62
+23.25	4 44.80					18	2.77 - 8 - 1	8.86	+ .7		53.81
+18.97	4 39.20						2.28 - 8	8.64	+ .6		53.44
+18.84	4 40.40						2.69 - 8	8.58	+ .2		53.51
+19.48	4 42.85						1.42 - 8	6.76	- .1		53.76
+19.26	4 43.00						0.84 - 8	6.88	- .4		52.76
+17.56	4 40.65						0.52 - 8	6.08	- .5		53.14

+1.2	53 30.00	+2 29	19.91	-47.86 - 0 + 4	-47.82	28	32.09 - 10 + 0	33.22	+5.3	+2 29	9.61
+15.6	53 48.70		20.10	-48.55 - 0 + 11	-48.44	28	31.66 - 10	34.09	+5.2	9.61	9.95
-9.2	53 20.50		15.79	-48.97 - 0 + 10	-48.87	28	28.92 - 10	35.58	+5.2		8.70
+16.7	53 57.05		19.19	-48.57 - 0 + 11	-48.40	28	30.79 - 10	35.79	+5.2		10.78
-11.5	52 30.70		30 2.57	-47.73 - 0 + 7	-47.66	29	14.91	7.02	+3.8		10.69
+19.21	51 14.55		30 2.57	-47.73 - 0 + 7	-47.66	29	14.91 - 10 - 0	7.02	+3.8		48.53
+5.8	50 54.85					31	10.92 - 12 - 2	27.09	+5.9	28	48.61
+18.91	51 13.65						12.27 - 12	28.16	+5.7		48.06
+20.36	51 14.35						11.27 - 12	27.71	+5.7		49.17
+16.62	52 26.75					29	12.60 - 11	27.63	+5.3		49.67
+13.73	52 23.20						54.63 - 11.1	8.86	+5.0		49.41
+15.41	52 27.60						54.15 - 11	8.64	+5.0		48.82
-14.15	51 57.25						53.80 - 11	8.58	+4.7	48.82	48.82
+13.84							51.96 - 11	6.76	+4.5		48.10

+0.6	59 5.30	+54 23	45.31	+12.21 - 0 + 4	+12.25	23	55.76 + 3 + 0	33.22	-6.5	+54 23	22.78
+28.9	59 26.30		43.35	+12.47 - 20 + 13	+12.40		55.75 + 3	34.22	-7.4		22.27
+5.7	59 7.65		45.06	+12.38 - 0 + 12	+12.50		57.56 + 3	34.09	-7.6		24.35
+28.6	59 26.15		44.03	+11.99 - 22 + 13	+11.90		55.93 + 3	35.58	-7.8		24.01
+28.4	59 27.05		42.98	+12.37 - 21 + 13	+12.29		55.27 + 3	35.79	-8.0		23.36
-0.3	58 19.05	24	29.07	+11.93 - 0 + 10	+12.03	24	41.10 + 4 - 0	6.34	-11.8		23.36
+25.0	59 37.10		29.73	+12.17 - 16 + 14	+12.15	24	41.84 + 3 - 0	7.02	-12.1		23.06
+29.89	56 45.40					26	37.51 + 3 - 2	27.09	-7.6		22.12
+29.14	56 43.95						39.15 + 4	28.16	-8.2		3.19
+36.35	56 48.00						39.71 + 3	27.71	-8.4		3.90
+23.22	56 36.95						40.77 + 4	27.63	-10.0		3.74
+37.18	58 1.65					25	22.33 + 3 - 1	8.86	-10.7		3.07
+37.53	58 1.53						22.11 + 4	8.58	-11.9		2.53
+20.23	57 53.35						23.35 + 3	8.46	-11.6		3.59
+42.60	58 8.70						20.27 + 4	6.76	-11.8		2.11
+29.25	58 1.70						21.42 + 4	6.88	-12.1		2.84
+29.18	58 0.60										

1873		Gr. 4168 J.C.		Π_m		$\Pi_m + K$		R.A.		$\Pi_m - R.A.$		P.D.		$\Pi_m - P.D.$		$\Pi_m - R.A. - P.D.$		$\tan \delta$		$\sin z$	
May		4 +06-06	47 52.30	48	2872	2867	18 23 19											106 19		$\delta = -3.33$	Pin 2 = -90
		14-09	48 1.30	48	2772	2767												+7.73	-20	+2.1	40.52
		19-13	48 407	48	2269	2264												+9.02	+31	+3.40	40.49
		20-10	48 770	48	2297	2291												+14.03	+44	+3.02	40.18
																		+14.15	+84	+2.94	40.33

$$1873 \quad 23 \quad 48 \quad 40.345$$

1873		Gr. 1848		Π_m		$\Pi_m + K$		R.A.		$\Pi_m - R.A.$		P.D.		$\Pi_m - P.D.$		$\tan \delta$		$\sin z$			
May		4 +06-06	52 2047	53	3841	3831	11 54											+81	85	+39	37.6059
		14-09	52 3880	53	3856	3845												+7.73	+48	-40	37.52
		19-13	52 2752	53	3824	3815												+9.02	-608	-7.37	37.75
		20-10	52 2752	53	3106	3095												+14.03	-87	-6.67	37.4656
		25-31	52 823	53	2240	2230												+14.14	-67	-6.07	37.4460
		27-31	54 2423	53	2291	2281												+23.32	-209	-5.82	37.4851
		29-31	53 1623	53	2302	2292												+22.66	-225	-5.57	
																		+22.43	-53	-5.57	

$$1873 \quad 11 \quad 53 \quad 37.546$$

#	Gr.	h	m	sec	tan δ	sin z
1873	1852	11	59		+4.558	-4.66
May					+77	38'
4 +06-06	58 1260	58	4410	4403	+7.73	+27-28
14-09	58 427	58	4259	4252	+9.02	-41
19-13	57 4213	58	3713	3706	+14.15	-46
20-10	57 2490	58	2833	2826	+23.33	-43.7
25-31					-1.41	
27-31						

$$\tan \delta = +4.55 \quad \sin z = .58$$

#		h m		$\tan \delta = +17.101$		$\sin z + 54$								
1873		11 59		+ 9		26								
Apr. 13		13 = -016												
	20-11	58	3126	3124	58	4227	-11.03 +02 -11.05	+11.00	+02	-97	11	58	41.29	+
	24-11	58	3224	3223		4225	-10.02 -10.04	+10.05	+01	-95			41.34	+
	25-11	58	3244	3244		4224	-9.80 -9.82	+9.84	+01-08	-94			41.27	+
	26-11	58	3269	3268		4224	-9.56 -9.58	+9.64	+02-08	-94			41.32	+
	27-11	58	3528	3526		4204	-6.78 -6.80	+6.82	-01	-74			41.33	+
	28-11	58	2248	2246	58	45.30 A		+22.86	-06	-90			45.26 44.36	
	29-11	58	2272	2270		45.29 A		+22.68	-05-08	-89			45.25 44.36	
	30-11	58	2292	2290		45.28 A		+22.43	-05-08	-89			45.25 44.31	
	1-12	58	2378	2376		45.25 A		+21.60	-03-07	-85			45.26 44.41	
	2-12	58	2404	2402		45.24 A		+21.43	-04-07	-85			45.24 44.49	
	1873													
	44.3974													
	May 14													
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+ 36.42
+ 26.42
+ 18.62
+ 15.27

3 3.45
3 6.20
5 3105
5 34.35

20 30.17 +2.0 -2 28.16 -15.4 106 171 48.61
21 26.85 +2.0 27.63 76.6 46.62
19 8.46 +2.0 -1 8.86 -16.9 17 44.70
7.01 2.0 8.64 -17.0 43.37

+ 106° 17' 45.82"

+ 77.94
+ 61.76
+ 63.53
+ 74.17
- 66.82
+ 13.46

47 26.50
47 23.50
48 4180
48 4240
48 1540
48 28.55

36 23.61 +1.1 -2 28.16 -1301 81 33 43.57
22.88 +1.1 27.63 -14.68 41.67
+ -1 8.86 -15.33
35 5.74 +1.1 -1 8.64 -15.44 42.76
5.33 +1.1 8.58 -15.92 41.43
6.62 +1.1 8.16 -16.04 43.22
7.16 +1.1 6.76 -16.16 45.34

+ 81 33 43.08

+ 31.50
+ 38.32
+ 48.00
+ 63.43

44 0.60
44 0.55
45 2150
45 2425

39 37.37 +10.2 28.16 -120 +77 36 58.21
38.55 +10 27.63 -137 58.22
38 21.21 +10.1 8.64 -14.5 59.07
21.14 +10 8.58 -150 58.86

+ 13.0
+ 17.1
+ 16.2
+ 15.8
+ 15.0

56 26.15
56 31.25
56 32.55
56 31.90
55 47.15

+9 26 39.03 -37.15 -1 +1 -37.15 26 1.88 -9 +0 33.22 +12 +9 26 38.40
39.23 -37.65 -3 +5 -37.63 26 1.60 -9 34.09 +39 38.69
36.77 -36.47 -2 +5 -36.44 26 0.33 -9 35.58 +38 38.81
36.90 -37.62 -2 +5 -37.59 25 59.31 -9 35.79 +37 37.90
20.62 -37.03 -2 +5 -37.00 25 43.62 -9 -0 7.02 +17 25 37.40

#			T_m	$T_m + K$	$R.A.$	$T_m - R.A.$	$P.P.$	$T_m - P.P.$	$\tan \delta$	$\sin z$			
1872	4 H. Draco.												
Apr. 20th	11		6	5.11	5.03	6	16.61	-11.58	-0.7	-11.51	+11.00	+ .53	-619
23rd	708		6	5.99	5.92	6	16.35	-10.43	-0.7	-10.36	+10.05	+ .39	-588
26th	05-08		6	6.70	6.62	6	16.30	-9.68	-0.7	-9.61	+9.83	+ .24	-39
30th	06		6	6.96	6.89	6	16.05	-9.16	-0.7	-9.09	+8.74	+ .29	-558
May 1st	05		6	7.84	7.76	6	14.44	-6.68	-0.7	-6.61	+6.82	- .22	-397
Oct 14th	05												
21st	04												
28th													
29th													
Nov 2nd													
Dec 4th	03												
73 May	4th	06	6	11.96	11.88						+7.72	+ .29	-30
	12-05	52273	6	10.38	10.30						+9.04	- .24	-30
	14-09	5440	6	10.52	8.45						+9.02	- .44	-566
	19-13	4433	6	5.33	5.26						+14.02	- .63	-526
	20-10	51373	6	5.07	4.99						+14.15	- .48	-518
	23-31	52643	5	56.38	56.30						+23.33	- .50	-477
	27-35	52763	5	56.72	56.66						+22.86	- .69	-460
	28-27-08	51.60	5	56.89	56.81						+22.68	- .39	-457
	29-27-08	5580	5	57.02	56.95						+22.43	- .39	-442
June 1-20	-07	413527	5	57.21	57.14						+21.60	- .35	-417
2-26	-07	43847	5	57.77	57.69						+21.43	- .35	-408
Nov 10th	09												
Dec 1st	05												
1873	Gr. 29 L.C.												
May 14-09	7	4213	8	49.92	49.99						+9.042	+ .37	+443
19-13	7	4610	8	45.35	45.41						+14.02	+ .53	+401
28-27-08	8	1313	8	36.22	36.28						+22.68	+ .110	+34
29-27-08											+1.10	+34	
1873	3 Can. Ven.												
May 4th	06	9	9	32.93	32.91						+7.72	+ .05	-08
12-05	9	11.27	9	38.04	38.03						+9.04	- .04	-160
27-35	9	515	9	24.28	24.26						+22.86	- .31	-139
28-27-08	9	2210	9	24.44	24.43						+22.68	- .11	-137
29-27-08	9	440	9	24.64	24.63						+22.43	- .11	-135
June 1-20	-07	9	9	25.47	25.45						+21.60	- .09	-131
2-26	-07	20.40	9	25.51	25.55						+21.43	- .09	-129
74 May	24												
1872	7 Virginis												
Apr. 13													
May 21													
73 May	4th	06	13	17.94	17.93						+7.72	+ .00	-06
12-05	13	3.80	13	16.56	16.55						+9.04	00	-104
20-10	12	3047	13	11.29	11.38						+14.16	00	-98
27-35	12	4045	13	2.67	2.68						+22.86	00	-92
28-27-08	13	2.86	13	2.84	2.84						+22.68	00	-91
29-27-08													
31-09	-10	13	13	3.72	3.70						+21.84	00	-10
1-20	-07	12	13	3.93	3.91						+21.60	00	-07
2-26	-07	12	13	4.09	4.08						+21.43	00	-07
1873													
24548													

8	+6.31 +9.40 -3.45 +8.25	4 31.05 4 38.85 4 4.50 4 37.40	+78 18 34.04 34.43 34.70 32.64	+41.58 -43 +5 +42.14 -121 +5 +40.83 -13 +12 +42.85 -77 +14	+41.20 19 +40.98 +40.82 +42.22	19 15.24 +.9 +0 15.41 +.8 15.32 +.9 15.66 +.10	33.22 -9.3 34.09 -10.5 35.58 -10.7 35.53 -11.7	+75 19 40.06 39.80 41.30 39.59
1 x	-29.78 +48.15 +62.12 +81.50 +51.34 +35.95 +29.10 +55.29 +48.22 +81.94 +59.30	1 23.20 1 42.20 1 46.70 3 2.25 3 2.10 2 55.75 2 55.00 3 2.35 2 59.50 3 8.85 3 4.05				21 59.37 +11-2 59.85 +10 59.11 +1.1 20 41.88 +10-1 41.69 +10 42.42 +10 41.64 +10 39.94 +10 41.24 +10 40.72 +10 40.65 +10	28.16 -11.4 27.83 -13.0 27.63 -13.3 8.66 -14.1 8.64 -14.2 8.58 -14.8 8.66 -15.0 7.23 -15.1 6.76 -15.2 6.88 -15.5 6.08 -15.6	20.91 20.02 19.28 19.92 19.85 20.04 19.18 18.61 20.28 18.34 19.97
	-7.20	116 11.05						
	+63.79 +64.25 +23.09	36 13.55 37 34.75 37 41.75				48 0.15 +21-2 46 40.18 +22-1 46 39.61 +22	27.63 -15.2 8.86 -15.7 7.23 -16.2	183 +76 145 19.44 17.52 18.38
	+19.90 +26.74 +19.13 +2.34 -19.46 +22.57 +5.17	58 32.85 58 39.10 59 49.20 59 30.95 59 12.60 59 52.95 59 34.10				24 33.61 -0-2 33.96 0 23 16.55 0-1 18.49 0 15.41 0 16.13 0 15.07 0	28.16 -3.6 27.83 -4.9 8.46 -7.1 7.23 -7.2 6.76 -7.3 6.88 -7.6 6.08 -7.7	+41 22 1.85 1.23 0.99 4.06 1.35 1.65 1.29
37 x	+14.24 +12.76 +20.92 +22.24	17 31.65 17 30.00 18 55.90 19 3.00				4 41.97 -12-2 41.82 -12 3 23.43 -12-1 22.83 -11	28.16 +6.9 +0 27.83 +6.6 8.64 +6.2 8.46 +6.8	2 19.51 20.39 19.07
	+17.02 +20.00 +18.96	18 56.10 19 1.90 19 0.45				21.41 -12 21.53 -11 20.66 -12	6.69 +5.6 6.88 +5.6 6.08 +5.5	19.12 19.15 16.86 18.88

+ 61.90
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+ 88° 25' 13.03"
 24 16

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 - 11.19
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- 13.10
 - 14.23
 - 15.04
 - 15.68
 - 15.87

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+ 108° 53' 48.69"

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		Π_m	$\Pi_m + \frac{h}{m}$	$\Pi_m R.H.$	$\Pi_m R.H.$			$\sin Z$		
1873	Dr. 19 09	$q = 12$	12	30	30	$\delta = +80^\circ 5' 7''$	$\tan \delta = +6.27$	6.30	$\sin Z = -62$	
May	12-05	30	14.45	14.34		+9.04	-3.1	-8.04	12 30	15.03
	28-27-08	29	1.21	1.10		+22.68	-1.69	-6.41		15.17
	29-27-08	29	0.89	0.78		+22.42	-1.69	-6.30		14.70
	31-09-10	29	0.83	0.72		+21.84	-0.56	-6.07		15.29
June	1-20-07					+21.60	-1.25	-7.05		

1873 $h m s$
12 30 15.048

		$h m$	$\tan \delta$	$\sin Z$		
1873	r Virginis	12 35	$\tan \delta = -0.1$	$\sin Z = +68$		
May	12-05		-0.14			
	13-14					
	28-27-08	34 28.43	52.01	52.20	12 35	13.59
	29-27-08	34 37.57	52.24	52.44		13.77
June	1-20-07	35 0.60	53.02	53.00		13.56
	2-26-07	34 31.40	53.16	53.37		13.76

		$h m$	$\tan \delta$	$\sin Z$		
1872	76 Urs. Maj.	12 36	$+63^\circ 24'$			
Jan 3						

		$h m$	$\tan \delta$	$\sin Z$		
1873	21 Cassiopeia	12 37	$+105^\circ 50'$	$\sin Z = -89$		
May	12-05	36 1.33	+74 17			
	13-14					
	28-27-08	36 36.60	+9.04	+18	12 37	18.14
	29-27-08	36 12.20	+22.68	+50		18.08
	31-09-10	37 4.90	+22.42	+96		18.05
June	1-20-07	36 36.93	+21.84	+32		18.07
	2-26-07	36 4.77	+21.60	+93		18.13

		$h m$	$\tan \delta$	$\sin Z$		
1873	23 Cassiopeia	12 39	$+105^\circ 50'$	$\sin Z = -89$		
May	12-05	37 49.12	+74 10			
	13-14					
	28-27-08	38 32.27	+9.04	+46	12 39	19.83
	29-27-08	37 53.23	+9.06	+43		19.77
	31-09-10	38 25.40	+22.68	+32		19.81
June	1-20-07	38 11.33	+22.42	+95		19.70
	2-26-07	37 55.03	+21.84	+91		19.48

1873 $h m s$
12 39 19.746

+26.71
+23.69
+23.63

25 2.90
24 58.75
25 14.35

58 48.47 +1.1 -1 7.23 -14.34 80 57 20.30
43.61 +1.1 6.76 -14.15 23.80
30.62 +1.1 6.49 -14.36 10.67

+ 80° 57' 18.26
22.05

9 +2228 -0.13
77 +1967 +16.11
+7.58
76 +2176 +18.37

6 32.30
6 28.30
5 51.15
6 29.00

44 6.44 -12 -1 7.23 +6.7 -0 4.5 8.17
6.20 -12 6.76 +6.6 7.56 7.56
5.11 -12 6.88 +6.4 6.79
5.71 -12 6.08 +6.3 6.69

+63.14
+14.30
+38.98
-12.20
+15.64
+48.01

39 16.05
40 33.70
40 38.95
41 5.70
40 49.05
40 42.05

45 35.6 +22 -2 27.83 -12.7 +74 42 15.23

43 48.53 +1.8 -1 6.76 -14.5 26.07
42.23 +1.7 6.69 -14.7 22.52
44.66 +1.7 6.88 -14.7 24.75
42.61 +1.6 6.08 -14.8 23.33

+77.04
+26.24
+57.61
+28.45
+42.88
+79.46

30 48.70
30 53.90
31 9.45
32 10.45
32 29.50
32 17.05
32 8.50

53 27.05 +2.2 -2 27.83 -12.60 105 50 48.62

52 8.22 +2.0 -1 7.23 15.13
8.22 +2.0 -1 6.76 -14.43 47.03
4.89 +1.9 6.69 -14.54 45.56
7.90 +1.9 6.88 -14.59 48.33
6.11 +1.9 6.08 -14.64 47.29

+ 105° 50' 47.81

[illegible]

3
0
15

1872phae. proj. 1.1446	#				T_m	$T_m + h$	$R.A.$	$T_m - R.A.P.P.$	$T_m - R.A.$	$\log S + 2.26$	$\sin z$	1872	50	22.456
	1872	8 Draconis	$\alpha = 12.50$	$12 = -0.37$	$1 = +66$	7	$+23.94$	$+9.5$	$-12 + 0.75$	12	50	22.40		
	Jan	1+42-05	49	56.92	56.88	50	21.71	24.83	-08-24.75					
	#													
	1873	43 H Cephei Lb.	$\tan \delta = -12.91$	$\sin z = -79$										
	May	13-14	50.57.80	51	19.51	19.71	+9.06	+1.81	+16.55	12	51	47.19		+19.71
		28-27-08	50.52.27	51	6.92	7.12	+22.68	+3.49	+1.03	+13.3		47.45		+14.60
	June	9-27	50.53.80	51	15.58	15.78	+18.49	+3.74	+10.00			48.01		+21.75
		10-31	49.54.35	51	15.61	15.81	+18.04	+4.00	+9.73			47.58		+18.20

+19.77
+14.65
~~+21.78~~
~~+15.26~~

55 50.95
57 6.00
57 1.80
56 60.50

28 8.71 + 1.72 28.13 - 11.2 + ~~9.8~~ 25 31.08
26 51.22 + 15.1 7.23 - 13.5 31.99
~~50.97~~
~~54.86~~ + 1.4 6.46 - 14.5 ~~37.50~~ 31.41
~~51.59~~ + 1.4 6.33 - 14.6 32.06

+ 94° 25' 31.63"

+18.46
+18.41
+18.66
+18.68
22.15
+17.12
+20.10
+14.15
+15.34

48 28.55 47 42.95
41 41.70
43 0.25
43 0.00
43 2.90
42 7.55
43 0.95
43 3.50
42 56.75
42 58.25

40 56.00 - 9 - 2 28.13 + 4.8 + 11 38 31.77
39 37.17 - 9 - 1 8.86 + 4.2 31.61
35.47 - 8 7.23 + 3.3 30.74
36.18 - 9 6.76 + 3.2 31.72
37.35 - 8 6.69 + 3.0 32.86
35.63 - 8 6.08 + 2.8 31.55
36.61 - 8 6.46 + 2.2 31.55
36.22 - 8 6.33 + 2.1 31.49
36.93 - 8 5.84 + 2.0 37.79

+92.61
+94.11
+29.67
+39.17
+27.48
+10.94

21 12.50
22 24.20
22 47.95
22 18.10
22 43.10
22 43.60
22 47.50

2 50.26 + 20.2 28.13 - 10.8 + 7.8 0 13.33
1 29.17 + 16.1 6.76 - 13.1 10.91
28.34 + 16 6.69 - 13.3 9.95
28.97 + 15 6.08 - 13.4 ~~7.45~~
29.45 + 15 6.33 - 13.9 10.72
28.74 + 15 5.84 - 14.0 10.40

+16.75 18 23.85

+16.65
+18.06
- 7.98
+16.19
+26.37
+21.38
+20.24
+19.14
+22.57
+19.56
+11.44
+14.64

11 24.25
12 44.90
12 11.75
12 45.50
13 1.15
12 49.25
12 52.95
12 48.35
12 52.15
12 44.30
12 45.05

49 16.43 - 13 - 2 28.13 + 8.8 - 4 51 37.06
50 34.17 - 13 - 1 8.86 + 8.5 35.83
35.14 - 12 8.46 + 8.2 36.60
38.70 - 13 7.23 + 8.2 39.03
38.55 - 12 6.76 + 8.1 38.41
36.25 - 13 6.69 + 8.1 36.14
39.02 - 12 6.88 + 8.0 39.10
38.80 - 13 6.08 + 8.0 37.38
39.02 - 12 6.33 + 7.7 38.85
38.30 - 13 5.84 + 7.7 37.74
39.26 - 12 5.62 + 7.6 38.48

#	17 Can. Ven.	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta + 0.6$	$Z = +3$	$\sin Z + 0.6$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
1872	3-07	3 59.13	4 18.6	3 39.67	39.65	11.71	10.75	-0.4	-10.18	-1.26	13 4	9.88	10.48
	9-14	3 55.83	4 5.93	3 58.70	58.68	11.63	12.95	-12.91	+13.00	-1.19			
	11-20												

#	13 Bernae	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta + 0.54$	$Z = +13$	$\sin Z = +24$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
1872	9-14	5 22.80	6 2.20	(5) 4.20	4.20	5 54.98	12.92	+0.2	+13.00	-1.08	13 5	53.92	
	11-27												

#	Polaris S.C.	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta - 4.76$	$Z = -49$	$\sin Z = -75$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
1873	13-14	11 8.04	8.68	11 8.68	8.68	11 8.68	8.68	+9.06	+5.85	+56.16	12	19.75	
	19-13	7 15.55	4.14	4.78	4.14	4.78	4.14	+14.00	+5.43	+52.69		16.90	
	24-35	6 54.13	53.32	53.96	53.32	53.96	53.32	+22.86	+14.63	+253		20.80	
	24-27-08	6 20.97	53.77	53.81	53.77	53.81	53.77	+22.41	+11.29	+418		19.00	
	31-09-10	6 14.60	1.84	2.51	1.84	2.51	1.84	+21.84	+3.76	+292		14.97	
	1-20-076	3.460	1.15	1.19	1.15	1.19	1.15	+21.60	+8.35	+292		17.94	
	2-26-07	6 22.67	59.37	0.00	59.37	0.00	59.37	+21.43	+10.86	+42.60		14.89	
	5-37	6 28.55	8.23	3.87	8.23	3.87	8.23	+20.20	+15.45	+40.30		19.82	
	9-29	8 1.00	12.02	12.66	12.02	12.66	12.02	+18.49	+12.11	+36.65		19.91	
	10-31	6 24.57	10.38	11.02	10.38	11.02	10.38	+18.04	+12.55	+35.75		17.76	
	11-34	6 20.87	11.93	12.57	11.93	12.57	11.93	+17.60	+14.20	+34.88		19.25	
	12-35	6 15.85	9.93	10.57	9.93	10.57	9.93	+17.12	+19.62	+34.06		16.37	
	15-30	4 43.70	18.97	19.59	18.97	19.59	18.97	+15.87	+12.53	+31.79		19.78	
	17-37	10 57.60	20.60	21.24	20.60	21.24	20.60	+14.52	+15.44	+30.20		20.70	

#	1872 June	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta + 1.46$	$Z = -13$	$\sin Z = -23$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
	1+42-05	11 47.15	47.78	11 56.04	8.22	-10.8	8.12	+23.93	-17.57	+209		58.46	
	9+47	6 12.2	14 59.7	11 38.12	38.74	49.13	-10.39	+30.17	-19.66	+9.10		57.35	
	10+42	6 16.3	14 45.6	11 33.65	34.28	48.15	-13.87	+31.02	-17.57	+10.28		57.81	
	11+38	6 44.3	14 39.8	11 32.44	33.06	47.16	-14.10	+31.77	-15.90	+11.07		0.00	
	3-07	13 45.0	9.04	9.67	9.04	9.67	9.04	+10.18	+2.91	+35.25	12	58.01	
	9-14	9 9.0	13 49.0	11 9.26	9.88	28.03	-18.15	+13.00	+5.83	+30.20	11	58.91	
	11-20												
	22	11 58.76	59.87	12 62.8A	-6.89	-6.79	-6.79	-3.42	+10.82	-8.05		58.87	
	24-26	11 59.70	0.32	7.06A	-6.74	-6.64	-6.64	-7.02	+11.24	-15.75		59.04	
	1-27	12 10.14	10.72	14.19A	-3.42	-3.32	-3.32	-14.43	+7.08	-18.18	57.32	57.32	
	4-17	12 22.22	22.85	16.41A	+6.44	+6.54	+6.54	-19.62	+10.00	-19.54	11	57.23	
	6-24	12 27.76	28.38	17.77A	+10.62	+10.72	+10.72	-22.31	+9.57	-20.27		57.16	
	7-23	12 29.54	30.17	18.50A	+11.67	+11.77	+11.77			-21.82			
	7	12 36.48	37.11	20.25A	+17.06	+17.16	+17.16			-23.01			
	18	12 47.70	48.32	21.24A	-2.92	-2.82	-2.82						

#	1873 May	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta + 1.46$	$Z = -13$	$\sin Z = -23$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
	4+06	11 8.30	8.93	11 17.66A				+7.70	-2.50	+6.10	12	15.20	
	15.7												
	15.7												

#	3 Mes. Maj.	Π_m	$\Pi_m + K$	RA	$\Pi_m - RA$	P.P. (P)	$\Pi_m - P.P.$	$\tan \delta + 1.46$	$Z = -13$	$\sin Z = -23$	$1872 \text{ m } 2$	$1872 \text{ m } 2$	$1872 \text{ m } 2$
1872	3-07	18 18.40	19 9.93	18 37.78	37.75	18 47.91	-9.16	-0.3	+10.18	-1.0	13 18	46.02	

53868

$mz = +3$ $4 + 11 = 15$ $4/16$	11.35 $mz = 0.50690$ $4/16$	7.18 $Log cos P$ 11.804 11.804	9.88948 11.804	$P' - P = 6"$ 11.804	P' 11.804	$B + 7 + 8$ 11.804	P_1 11.804	P_2 11.804	P_3 11.804	Sum 11.804	$Board$ 11.804	$App'd$ 11.804	Key 11.804								
$-14 - 3 + 20 + 14$ 22.89	17.638 10231 16.3255	34.30 57.65 11.690	8 11	32.42 28.04	$+39$ 11	14 20.31	15.93 20.31	-50 -1185	-3.21 -3.13	-0.00 -0.08	$+32$ $+17$	-2.89 -3.04	14 11	13.04 17.24	54.3 55.1	-1 -1	-0 -1	24.90 24.51	-6.9 -7.6	$+39$ 10	13.41 45.04

39.61 Approp $z = +13^{\circ} 50' 33''$ $n + \log \tan z = 1.15200$ $P' - P = -.6''$
 $\log \cos \delta = 9.94397$
 $" \text{const} = .11804m$

-8-9+0₂₁ 1927-20.13 50 47.50 50 3.40 50 25.94 +28 32 22.41 -1183-1381-.08+.05-1384 32 8.57 44.6 24.0 -4-0 24.51 -5.0 +28 32 36.66

$\Delta p_{\text{m}02} = 48.58 \text{ mm Hg}$ $\Delta + \log \text{Lanz} = 4.82010 \text{ m}$ $\phi'_{\text{NA}} = +.0''$
 $\log \text{const} = 8.38796$
 $\log \text{const} = 12.669$ Hans Lanz, 11
 $" "$ 11.804 m after " "

[illegible][illegible]

538.68
 $Approx = -1.13120u$
 $\log_{10} P = 9.75221$
 $Const. = 11.824u$
 $-9.26 + 18.13 + 19.38 - 22.45 + 24.70.80462240464634 + 55.362.01 - 12 + 13.52 - 18 + 16 + 13.50361551$
 $35 - 0$
 48826.7
 $+4-02490-10.1$
 $-0.2+55.56^540.91$

1872	n c	Gr. 32 41-	$\alpha = 20^h 30^m$	$\delta = +72^\circ 6'$	$\tan \delta = +3.10$	32.5	$\sin z = -50$	
Oct	3-04	31 59.77	30 25.77	25.72	+8.16	-1.2	-1.12	20 ^h 30 ^m 32.64
	12 +04	29 1.30	30 25.41	25.36	+7.27	+1.2	-0.49	32.26 32.26
Nov.	4 +09	29 45.83	30 14.76	14.71	+16.89	+1.28	+1.30	32.68
Oct.	5-19	29 46.27	30 43.86	43.80	-9.90	-1.58	-0.67	32.65
	21-19	30 21.20	30 50.41	50.36	-17.69	-1.88	+0.47	32.56
	23-07 -16		30 51.21	51.16	-18.79	-2.22	-0.32	32.45
Nov.	1-03		30 53.48	53.38	-22.08	-1.09	+1.29	32.36 50
	2+03		30 53.04	52.99	-22.07	+1.09	+1.37	32.34

1872	B.A.C. 5140		P.C. $\alpha = 15^h 19^m$		$\delta = +92^\circ 17'$		$\tan \delta = -25.31$		$\sin z = -76$	
Dec.	23+42	17 51.15	18 35.68	36.26	+22.94	-10.63	+36.43	15 ^h 19 ^m 25.00		
Jan X	1+51	16 49.95	18 39.60	40.18	+25.06	-12.91	+10.80	3.13		
	6+39	17 48.70	18 37.30	37.68	+26.63	-9.87	+8.80	3.24		
								1872 3 ^h 19 ^m 25.00		
								1873 19 3.185		

Sal. 4309 $\alpha = 10^h 48^m$ $\delta = +100^\circ 18'$ $\tan \delta = -5.50$ $\sin z = -.85$									
1873									
Apr.	10+10		47	52.56	52.64	+4.37	+5.55	+7.31	10 48 3.77
	23+09	47	51.18	51.26		+6.72	+5.50	+6.10	3.58
	26+11	47	51.53	51.62		+6.91	-6.0	+5.80	3.73
						+7			
May	1-08	47	50.09	50.17		+7.84	+1.44	+5.25	3.70

Tm - Td

Circle Reading

94.02	25 29.70	26.01	
+ 50.02	24 12.60	58 27.07 +0.7 +7	45.87 - 20.44 72 5 53.20 52.19
+ 84.11	24 23.10	25.48 +0.7 +7	47.62 - 21.87 51.93
+ 28.93	22 13.05	21.07 +1.0 +4	52.69 - 23.29 57.17
+ 57.58	16 10.20	32.67 +1.2 -1	8.54 - 18.63 5.70
+ 29.21	14 48.95	43.14 +1.2 -2	19.47 - 21.61 3.26

1872 + 72° 5' 51.86
1873 6 4.48

+ 44.73
+ 109.85
+ 52.60

4 21.55
4 16.50
4 11.65

18 31.40 +1.7 -2 30.02 - 25.66 15 37.42
18 33.52 +1.4 30.74 - 15.29 15 48.87 157
18 40.97 +1.4 31.44 - 16.55 15 54.38

1872 + 92 15 37.42
1873 15 48.87

+ 25.35
+ 34.53
+ 9.09

3 10.55
3 8.15
3 11.50

21 4.78 +1.8 -2 28.28 - 18.06 100 18 20.24
4.84 +1.9 28.37 - 18.48 17.89
5.46 +1.9 27.09 - 19.11 21.16

+ 100° 18' 20.43

1822 plate photo 17445

Notes 131 for Sect of these stars. Non-Fundamental Stars Observed between										1871
Mar 7 1871		Mar 22 1871		Mar 19		Mar 29		Mar 29		
+14		log const = 0.08794m		-02		+23		+23		
11 ^h 18 ^m 16 ^s		11 ^h 18 ^m 16 ^s		10 ^h 19 ^m		10 ^h 5 ^m 40 ^s		10 ^h 11 ^m 0 ^s		
+9 ^h 3 ^m 40.12 ^s						+7 ^h 18 ^m +13 ^s		+7 ^h 18 ^m +13 ^s		
+35 ^h 5 ^m +58 ^s						+35 ^h 5 ^m +58 ^s		+35 ^h 5 ^m +58 ^s		
11 1 482		2 2206		19 10.4 19 20.07		5 16.0		5 2783		11 20.7 10 4762
+29.88		596		+31.09				+13.29		-0.04
+0.02		2 414						+0.03		+13.29
-0.81								-0.66		+13.29
17 6.24						5 40.47		10 54.46		11 0.25
+9 3 40.12						+7 18 14.70		+70 35 16.70		+7 3 34.65
-0 0.53						-0 4.93		-0 4.93		-0 4.93
-1.1						-1.1		-1.1		-1.1
+5.2						+4.7		+4.7		+4.7
3 43.69						18 13.37		35 27.47		3 33.32
18 51.75		34 8.50		4 6.40		4 6.40		47 51.10		47 51.10
+17.37		+9.67		+11.83		+11.83		+20.70		-33.08
1.23980		0.98543		1.07298		1.07298		1.45008		1.61957
9.99446				9.99647		9.99647		9.99647		9.99628
1.32220				1.15739		1.15739		1.04716		1.60576
-21.00				-14.37		-14.37		-14.37		+40.34
18 50.75				3 52.03		3 52.03		47 40.11		48 31.44
+9 4 17.60				+7 18 56.32		+7 18 56.32		+70 35 8.24		34 16.91
+33 19 8				+35 4 22		+35 4 22		+35 18 8		28 11.53
1.55790				1.60650		1.60650		1.45008		1.60830
+26.53				+22.01		+22.01		+22.01		+32.01
1.58443				1.62851		1.62851		1.51151		1.62431
-38.41				-43.51		-43.51		+32.49		-42.7089
-0.02				-0.01		-0.01		-0.01		-0.09
+9.5				+9.0		+9.0		+6.2		+6.2
-37.18				-41.62		-41.62		+32.98		-44.6742
+9 3 40.12				+7 18 14.70		+7 18 14.70		+70 35 17.53		17.33 35.84
								55-16.70		+7 3 24.65
Apr 5		Apr 5		Apr 5		Apr 5		Apr 5		
+23		log const = 0.08794m								
8 47 18		10 5 40		10 42 45		11 17 6		11 19 47		11 20 40
+10 47 +19		+4 18 +13		+4 52		+9 4 +16		+8 49 +15		+8 53 +16
+31 36 +52		+35 5 +58				+33 19 +55		+33 34 +55		+33 30 +55
46 44.6		4 59.3		5 22.82		41 48.3		16 17.0		16 48.60
-0.02		-0.02		-0.02		-0.02		-0.02		19 11.6
+18.21		+18.15		+18.15		+18.43		+18.43		19 32.76
+0.04		+0.03		+0.03		+0.04		+0.03		20 48.0
-0.23		-0.60		-0.60		-0.84		-0.84		20 21.65
47 17.91		5 40.38		5 40.38		17 6.21		19 50.36		20 37.26
+7 18 15.49		+7 18 15.49		+7 18 15.49		+9 3 45.14		+8 48 16.54		+8 54 43.79
-0 5.65		-0 5.65		-0 5.65		-0 5.65		-0 5.65		-0 5.65
+1.1		+1.0		+1.0		+1.1		+1.1		+1.1
+3.4		+4.6		+4.6		+4.6		+4.6		+4.6
47 21.13		18 13.50		3 43.05		3 43.05		48 14.45		54 41.70
35 5.65		4 20.40		29 58.65		19 23.0		18 34.30		34 18.53
+15.31		+23.52				+31.0		+7.50		+21.16
1.18498		1.37144				1.49969		0.87506		1.32552
9.99226		9.99647				9.99454		9.99454		9.99484
1.26518		1.45585				1.58217		0.95754		1.40830
-18.42		-28.59				-38.21		-9.07		-25.60
34 47.23		3 57.83				18 24.09		25.23		33 52.95
+10 48 1.12		+7 18 56.52				+9 4 24.26		4 23.12		+8 48 55.40
+31 35 22		+35 4 36				+33 19 18		+33 18 50		+33 34 35
1.54907		1.60650				1.57802		1.57480		1.58210
+14.92		+16.26				+17.51		+17.51		+17.51
1.56392		1.62276				1.59551		1.59531		1.59961
-36.64		-41.95				-39.40		-39.38		-39.77
-0.02		-0.03				-0.09		-0.01		-0.04
+0.02		+9.5				+9.0		+7.9		+9.5
-36.64		-41.03				-38.50		-38.60		-38.86
47 24.18		18 15.49				3 45.76		3 44.52		48 16.54
						3 45.14				

1871 + June Mar 29 +23	1872 (Mar 29 +23)	Mar 29 +23	Mar 29 +23	Apr. 2 +15	Apr. 2 +15					
11 17 6 +9 4 +16 +33 19 +55	11 20 40 +8 53 +16 +34 1530 +577	11 25 1 +8 35 +15 +33 7548 +567	8 47 18 +10 47 +19 +31 36 +52	10 5 40 +4 18 +13 +35 5 +58						
16 32.6 - .02 + 13.32 + .04 - 0.86 17 6.06	20 158 - .02 + 13.32 + .04 - 0.86 20 3937	24 31.0 - .02 + 13.32 + .03 - 0.87 25 0.57	8 46 503 - .02 + 15.62 + .03 - 0.27 47 18.19	5 9.7 - .02 + 15.64 + .02 - 0.62 5 40.56						
34.65 4.93 1.1 4.7 332	+9 3 4422 -0 4.93 - 1.1 + 4.9 3 43.09	+8 54 4522 -0 4.93 - 12 + 4.9 54 43.99	+8 34 2960 -0 4.93 - 12 + 5.0 35 2092 34 28.57	+10 47 17.94 -0 2.10 - 11 + 3.6 47 18.34	+7 18 9.94 -0 2.10 - 12 + 4.6 18 11.24					
18 50.50 + 20.98 1.32181 9.99454 1.40429 - 25.37 18 25.13 +9 4 23.22 +23 19 7 1.57790 + 22.01 1.57991 - 39.80 - .04 + 84 - 39.80 3 44.22	27 35.55 + 11.09 1.041493 9.99476 1.12762 - 13.42 27 22.13 +8 55 26.22 +34 27 52 1.59670 + 22.01 1.61871 - 41.56 - .01 + .57 - 41.00 54 45.22	47 59.40 +17.11 1.23325 9.99511 1.31630 - 20.72 46 46.23 +8 34 27.2 +33 47 23 1.58560 + 22.01 1.60761 - 40.51 - .02 + .46 - 40.07 35 22.05 34 29.60	35 8.90 +12.53 1.09795 9.99226 1.17815 - 15.07 34 53.83 +10 47 54.52 +31 35 25 1.54900 + 14.41 1.56341 - 36.59 - .01 + .02 - 36.58 47 17.94	4 16.85 +15.84 1.19976 9.99647 1.28417 - 19.24 3 57.61 +7 18 50.74 +35 3 33 1.60630 + 14.41 1.62071 - 41.78 - .02 + .97 - 40.80 18 9.94						
Apr 5	Apr 6 +19	Apr 6	Apr 6	Apr 6	Apr 6					
11 25 1 +8 35 +15 +33 48 +56	10 42 46 +4 52 +09 +37 31 +61	11 17 3 +9 4 +16 +33 19 +35	11 19 47 +8 49 +15 +33 34 +55	11 21 8 +8 36 +15 +33 47 +56	11 25 1 +8 35 +15 +33 48 +56					
24 9.3 - .02 25 4.5 + 18.43 + .03 - 0.86 25 0.57	42 24.3 - .02 - 3.6 + .02 - 0.72 42 44.75	42 49.13 - .02 - 3.6 + .02 - 0.83 17 5.92	19 17.6 - .02 - 3.63 + .03 - 0.84 19 52.12	20 51.8 - .02 - 3.63 + .03 - 0.84 21 7.18	21 11.61 - .02 - 3.63 + .03 - 0.84 21 7.18					
+8 34 32.81 -0 5.59 + 4.7 34 30.82	+4 52 24.80 -0 6.62 - 1.1 + 5.2 52 22.28	+9 3 47.04 -0 6.62 - 1.1 + 4.5 3 43.84	+8 48 14.26 -0 6.62 - 1.1 + 4.6 48 11.14	+8 35 28.84 -0 6.62 - 1.1 + 4.6 35 26.72	+8 34 31.76 -0 6.62 - 1.1 + 4.7 34 28.74					
48 17.05 + 33.69 1.52750 9.99511 1.61055 - 40.79 47 36.26 +8 35 12.09 +33 48 33 1.58602 + 17.62 1.60362 - 40.14 - .09 + 73 - 39.50 34 32.59 34 32.81	47 9.60 - 21.51 1.33264 9.99511 1.48569 + 26.04 35.64 35 12.71 +33 47 26 1.58560 + 17.62 1.60322 - 40.11 - .03 + 46 - 39.68 34 33.83	30 8.35 + 24.83 1.39495 9.99843 1.48135 - 30.29 29 38.06 +4 53 10.29 +37 30 24 1.64510 + 12.70 1.65780 - 45.48 - .03 + .02 - 45.49 52 24.80	19 9.40 + 38.77 1.58850 9.99454 1.67098 - 46.88 18 22.52 +9 4 25.83 +33 19 25 1.57800 + 11.18 1.58918 - 38.83 - .13 + .90 - 38.06 3 47.76 3 47.06	18 37.70 + 11.37 1.05576 9.99484 1.13824 - 13.75 33 56.20 4 24.40 +33 18 54 1.57790 + 11.18 1.58908 - 38.82 - .01 + .79 - 38.04 3 46.36 48 14.26	34 40.85 + 36.98 1.56797 9.99484 1.65075 - 44.75 33 56.20 +8 48 52.15 +33 34 57 1.58220 + 11.18 1.59338 - 39.21 - .12 + 1.03 - 38.30 48 13.85 48 14.26	54 11.35 + 13.18 1.11992 9.99589 1.20270 - 15.95 55.40 48 52.98 +33 34 27 1.58210 + 11.23 1.59683 - 39.21 - .01 + .03 - 38.21 48 14.66 35 28.84	47 3.25 + 19.84 1.29784 9.99589 1.38057 - 24.02 46 39.23 +8 36 9.12 +33 47 19 1.58560 + 11.23 1.59653 - 39.49 - .12 + .20 - 39.41 35 27.66 34 31.76	45 56.65 - 36.86 1.56656 9.99511 1.64959 + 44.63 41.28 36 7.07 +33 46 13 1.57530 + 11.29 1.59729 - 39.56 - .09 + .73 - 39.42 34 31.76 34 31.76	48 17.60 + 32.98 1.51825 9.99511 1.60130 - 39.93 47 37.67 +8 35 10.18 +33 48 34 1.58602 + 11.29 1.59729 - 39.56 - .09 + .73 - 39.42 34 31.76 34 31.76	48 12.0 - 39.82 1.60010 9.99511 1.68315 + 48.21 (48 49.40)

Apr 17	1871	Apr 17	Apr 17	Apr 17	Apr 17	Apr 17	Apr 17
-02	log const = 0.08794u						
12 10 54	12 12 31	12 14 22	12 21 50	10 42 46	11 17 3		
-1 20	-1 19	-1 42	-2 3	+4 52	+9 4		
+43 43	+43 42	+44 5	+44 26	+37 31	+33 19		
10 25.1	10 59.78	12 12.0	20 32.0	21 53.90	42 17.1	42 49.60	16 44.4
10 57.7	-02	-02	-02	-02	-02	-02	-02
11 34.0	-3.95	-3.95	-3.95	-3.94	-4.01	-4.01	-3.98
	+0	+0	+0	+0	+0	+0	+0
	-0.93	-0.93	-0.94	-0.96	-0.96	-0.96	-0.96
10 54.88	12 31.08	20 56.26	21 48.98	42 44.44	17 10.82		
-1 20 25.44	-1 19 54.2	-1 42 11.76	-2 2 12.12	+4 52 24.08	+9 3 45.24		
-0 7.14	-0 7.14	-0 7.14	-0 7.14	-0 7.14	-0 7.14		
13	13	13	13	11	10		
+6.1	+6.1	+6.1	+6.1	+4.8	+3.9		
20 27.78	19 4.46	42 14.10	2 14.46	52 20.60	3 41.00		
42 53.78	42 26.45	41 36.53	41 27.10	4 39.60	24 30.46	30 15.65	18 57.00
+3468	+8.08	-34.22	+23.98	+27.17	+21.90	+32.50	+26.42
1.54028	0.90741	1.53428	1.37985	1.46494	1.34044	1.51188	1.42193
9.99988	9.99988	9.99989	9.99989	9.99981	9.99972	9.99843	9.99454
1.62780	0.99523	1.62011	1.46768	1.55269	1.42810	1.59820	1.50441
-42.44	-9.89	+41.89	-29.35	-35.70	-26.80	-39.60	-31.90
(42 13.31)	42 17.26	42 18.44	40 57.05	4 3.95	24 3.60	29 39.00	18 25.05
-1 19 28.91	19 30.09	-1 18 9.40	-1 41 15.60	-2 1 15.25	+44 24.46	+4 53 9.35	+9 4 23.30
+43 42 40	+43 41 52	+43 41 43	+44 41 56	+44 24.46	+44 24.46	-37 30 35	+33 19 13
1.74030	1.74010	1.741000	1.74590	1.75090	1.75090	1.64520	1.57790
+10.71	+10.71	+10.71	+10.71	+10.71	+10.71	+10.71	+10.71
1.75101	1.75081	1.75071	1.75661	1.76161	1.76161	1.65591	1.58861
-56.36	-56.34	-56.33	-57.0	-57.0	-57.0	-45.28	-38.78
+0	+0	+0	+0	+0	+0	-0.05	-0.06
+48	+32	+30	+42	+42	+42	+0.06	+0.06
-55.88	-56.01	-56.02	-56.06	-56.87	-56.87	-45.27	-38.06
-1 20 24.79	20 26.10	-1 19 5.42	-1 42 11.76	-2 2 12.12	+4 52 24.08	+4 52 24.08	+9 3 45.24
20 25.44							
Apr 18	Apr 18	Apr 24	Apr 24	Apr 24	Apr 24	Apr 24	Apr 24
-04	log const = 0.08794u	-08					
12 22 32	12 38 40	11 11 26	11 56 15	12 10 54			
-1 42	-3 11	-19 20	-0 42	-1 20			
+44 5	+45 34	+33 3	+43 5	+43 43			
21 57.2	22 36.57	11 11.0	11 25.17	56 7.0	56 12.75	10 39.7	10 52.54
22 23.3	-02	12 38.8	-02	-01	-01	-01	-01
	-2.64		+3.12	+3.11	+3.11	+3.11	+3.11
	+0		+0.01	+0	+0	+0	+0
	-0.96		-0.69	-0.86	-0.86	-0.91	-0.91
22 32.95	38 39.31	11 27.59	56 14.94	10 54.73			
-1 41 55.00	-3 10 55.94	+9 19 29.60	-0 42 43.50	-1 20 23.40			
-0 6.60	-0 6.60	-0 6.94	-0 6.94	-0 6.94			
13	13	09	12	12			
+6.1	+6.2	+3.4	+5.9	+5.9			
41 56.80	10 57.67	19 25.16	42 45.74	20 25.64			
4 34.95	4 63.45	2 58.90	4 44.45	42 31.00			
+39.37	+13.27	+14.17	+13.63	+12.84			
1.59517	1.12287	1.15137	1.13450	1.10857			
9.99981	9.99981	9.99421	9.99421	9.99988			
1.68292	1.21062	1.23352	1.21665	1.19639			
-48.19	-16.24	-17.12	-16.47	-15.72			
3 46.70	4 47.21	2 38.78	4 37.41	42 15.68			
-1 40 58.40	40 58.80	+9 20 9.57	-0 41 49.06	-1 19 27.23			
+44 4 51	44 5 20	+33 3 12	+43 5 0	+43 42 47			
1.74540	1.74600	1.57350	1.57340	1.74030			
+12.57	+12.57	+12.14	+12.14	+12.14			
1.75847	1.75857	1.58564	1.58554	1.74294			
-57.34	-57.35	-38.52	-38.51	-55.33			
+0.03	+0.03	-0.02	-0.02	+0.00			
+92	+102	+55	+46	+89			
-56.39	-56.33	-37.99	-38.07	-54.44			
-1 41 54.80	40 55.19	+9 19 31.58	19 27.61	-0 42 43.50			
41 55.00	3 10 55.97	19 29.60		-1 20 23.40			

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Mar 17	Mar 17	Mar 17	Mar 18	Mar 18	Mar 18
11 19	11 20	11 24	11 21 8	11 56 15	12 12 31
+8 36 +15			+33 47 +56	-0 42 -.01	-1 19 -.02
19 22.0	19 55.09	20 58.4	21 17.2	21 10.99	25 5.46
19 41.5	21 49.3	25 27.2	55 46.3	56 18.60	11 52.4
			-02	-01	-01
			-269	56 7.4	-266
			-1.01	+ 0	+ 0
			+ 0.78	-0.89	-0.92
			21 7.50	56 15.04	12 31.20
			+8 35 2914	-0 42 5687	-1 19 2566
			-0 660	-0 660	-0 660
			-1.0	-1.3	-1.3
			+ 4.0	+ 6.0	+ 6.0
			35 25.54	42 58.77	19 27.56
34 33.15	34 9.75	46 54.15	46 32.35	5 29.00	5 28.0
			-6.21	+ 31.30	+11.20
			0.79307m	1.49554	1.04922
			9.99509	9.99497	9.99497
			0.87612	1.58245	1.13713
			+ 7.52	-3832	-13.71
			46 39.87	4 50.68	49.09
			+8 36 848	-0 42 233	42 0.74
			+33 46 48	+43 5 45	+43 5 19
			1.58550	1.73090	1.73090
			+ 12.57	+ 12.57	+ 12.57
			1.59807	1.74347	1.74347
			- 39.63	- 55.39	- 55.39
			- .01	+ .01	+ .02
			+ 30	+ 10	+ 44
			-3934	-3528	-5539
			+8 35 2914	-0 42 5761	42 52.13
				42 56.87	19 25.66
Apr. 24	Apr. 24	Apr. 30	Apr. 30	Apr. 30	Apr. 30
12 12 31	12 22 32	11 11 26	11 12 51	11 56 15	11 58 59
-1 19 -.02	-1 42 -.03	+9 20 +16	+9 21 +16	-0 42 -.01	-0 35 -.01
+43 42 +69	+44 5 +70	+33 3 +55	+33 2 +55	+43 5 +68	+42 58 +68
12 5.0	12 28.87	22 5.0	10 4.55	11 24.94	12 37.4
	-01	22 30.58		-02	12 48.63
	+ 3.11	-01	11 38.8	+ 3.35	55 57.8
	+ 0	+ 3.10		- .02	56 12.32
	-0.91	- .094		- .02	-01
12 31.06	22 32.73		-0.64	-0.64	+ 3.32
			11 27.61	12 51.30	+ 0
					-0.83
					56 14.80
					-0.84
-1 19 2405	-1 42 5618	+9 20 167	+9 21 5166564	-0 42 5452	-0 35 1293
-0 6.94	-0 6.94	-0 7.58	-0 7.58	-0 7.58	-0 7.58
-12	-12	-0.9	-0.9	-1.1	-1.1
+ 5.9	+ 6.0	+ 2.9	+ 2.9	+ 5.7	+ 5.6
19 26.29	42 58.32	19 56.09	21 46.08 5106	42 57.50	35 16.01
41 45.45	5 1.40	2 56.25	1 52.60	0 32.55	5 6.30
+ 23.87	+ 11.58	+ 39.44	-13.86	+ 11.23	-40.07
1.37785	1.06371	1.59574	1.14176	1.05038	1.60282
9.99989	9.99981	9.99421	9.99419	9.99419	9.99979
1.46568	1.15146	1.67809	1.22391	1.13251	1.68495
-29.22	-14.17	-47.65	+16.75	-13.57	+48.41
41 16.23	4 47.23	2 8.60	2 9.35	0 18.48	14.56
-1 18 27.88	-1 41 58.88	+9 20 39.75	+9 22 29.37	22 33.77	-0 42 0.17
+43 42 1	+44 5 17	+33 3 12	+33 2 9	+33 0 48	+31.59 42
1.74010	1.74607	1.57350	1.57330	1.57280	1.57250
+ 12.14	+ 12.14	+ 44.9	+ 44.9	+ 44.9	+ 44.9
1.75224	1.75814	1.57799	1.57779	1.57729	1.57699
- 56.52	- 57.30	- 37.84	- 37.82	- 37.78	- 37.76
+ .01	- .00	- .13	- .02	- .01	- .13
+ 34	+ 20	+ 31	+ 20	+ 08	+ 74
-5617	-5733	-37.66	-37.85	-37.71	-37.15
-1 19 24.05	-1 42 5618	+9 20 209	20 1.15	+9 21 51.66	21 56.64
		20 1.67			0 42 54.52
					-53.71
					-0 35 12.93

Apr 30 1871 -12 double log const = 0.08794m				May 10 -11				May 10				May 10			
12 38 40				11 56 15				11 58 59				12 12 48			
-3 11	-06			-0 42	-01			-0 35	-01			-1 31	-03		
+45 34	+71			+43 5	+68			+42 58	+68			+43 54	+69		
38 140	38 36.75	38 27.3	38 36.95	56 0.2	56 12.81	58 21.3	57 55.00	12 20.0	12 46.00			12 20.0	12 46.00		
38 54.9	+3.30	39 7.8	+3.30		-02	57 55.8	+2.97	13 0.3	+2.97				+2.97		
	+01		+01		+0		+0		+0				+0		
	-0.98		-0.98		-0.76		-0.77		-0.84				-0.84		
38 39.00		38 30.26		56 15.00			57 58.08		12 48.11						
-3 10 37.72	-3 10 53.98		-0 42 47.28	-0 35 6.57			-1 32 44.83								
-0 7.58	-0 7.58		-0 14.40	-0 14.40			-0 14.40								
-12	-12		-11	-11			-11								
+60	+60		+5.3	+5.3			+5.4								
10 40.50	10 56.76		42 57.54	35 16.87			32 51.99								
32 55.40	32 5.75	32 55.40	32 5.75	4 56.65	56 29.20	54 8.20	52 20.20								
+22.75	-18.15	+9.65	-5.885	+12.61	-25.40	+26.00	-14.30								
1.35698	1.258882	0.98453	1.48926	1.10072	1.40483	1.41497	1.15534								
9.99983	9.99933	9.99933	9.99933	9.99997	9.99998	9.99985	9.99985								
1.44425	1.34615	1.07180	1.57653	1.18863	1.49275	1.50276	1.24313								
-27.81	+22.19	-11.80	+37.72	-15.44	+32.10	-31.82	+17.50								
32 27.59	27.94	32 43.60	48.47	4 41.21	57 0.30	53 36.38	52 37.70								
-3 9 39.24	9 39.59	9 55.25	9 55.12	-0 41 52.86	-0 34 11.95	-1 31 48.03	30 49.35								
+45 33.11	45 32.22	+45 33.11	+45 32.22	+43 5.13	+42 56.45	+43 54.24	+43 52.36								
1.76820	1.76800	1.76820	1.76800	1.73080	1.72870	1.74230	1.74280								
+44.9	+44.9	+44.9	+44.9	+9.97	+9.97	+9.97	+9.97								
1.77269	1.77249	1.77269	1.77249	1.74077	1.73867	1.75327	1.75277								
-57.25	-57.25	-57.25	-57.25	-55.05	-54.79	-56.66	-56.59								
+01	+01	+01	+01	+01	+01	+01	+01								
+4.9	+3.6	+4.9	+3.6	+6.3	+2.2	+6.2	+3.4								
-58.75	-58.85	-58.76	-58.83	-54.42	-54.56	-56.03	-56.25								
-3 10 37.72	10 37.44	10 54.01	10 53.96	-0 42 47.28	-0 35 6.57	-1 32 44.06	32 45.63								
10 37.72		10 53.98				32 44.83									
May 11				May 11				May 12				May 12			
-12				-17				-18							
12 21 50	double star 12 38 40			12 21 50				12 38 40							
-2 3	-3 11	-06		-2 3	-03			-3 11	-06			-3 11	-06		
+44 26	+45 34	+71		+44 26	+70			+45 34	+71			+45 34	+71		
21 25.8	21 46.98	38 57.3	38 37.25	21 34.1	21 47.08	38 20.0	38 37.44	38 18.7	38 37.62	38	37.82	38 18.7	38 37.62	38	37.82
	-0.02		-0.02		-0.02		-0.02		-0.02				-0.02		
	+2.99		+3.00		+2.90		+2.90		+2.54				+2.54		
	+0		+0.01		+0.01		+0.01		+0.01				+0.01		
	-0.87				-0.86										
	-0.87		-0.94		-0.86		-0.93		-0.92				-0.92		
	21 47.08	38 37.30		21 47.11	38 37.40		38 37.40		38 37.23		38 39.43		38 37.23		38 39.43
-2 2 36.57	-3 9 47.03		-2 2 34.20	-3 10 44.17			-3 10 29.09		-3 10 44.99		-3 10 44.99		-3 10 44.99		-3 10 44.99
-0 14.90	-0 14.90		-0 16.95	-0 16.95			-0 16.14		-0 16.84		-0 16.84		-0 16.84		-0 16.84
-1.1	-1.1		-1.1	-1.1			-1.1		-1.1		-1.1		-1.1		-1.1
+5.5	+5.7		+5.5	+5.7			+5.5		+5.5		+5.5		+5.5		+5.5
2 47.07	9 57.33		2 46.75	10 56.52			10 40.83		10 56.73		10 56.73		10 56.73		10 56.73
24 54.85	31 9.65		24 43.50	32 56.40			32 42.60	32 42.60	32 42.60		32 42.60		32 42.60		32 42.60
+21.18	-22.05		+12.98	+17.44			+18.92	+18.92	+18.92		+18.92		+18.92		+18.92
1.32593	1.343416		1.11327	1.24155			1.27692	1.27692	1.27692		1.27692		1.27692		1.27692
9.99972	9.99933		9.99972	9.99933			9.99933	9.99933	9.99933		9.99933		9.99933		9.99933
1.41359	1.43068		1.20093	1.32882			1.36419	1.36419	1.36419		1.36419		1.36419		1.36419
-25.92	+26.96		-15.88	-21.32			-23.13	-23.13	-23.13		-23.13		-23.13		-23.13
24 28.93	31 36.61		24 27.62	32 35.08			32 19.47	32 35.36	32 35.36		32 35.36		32 35.36		32 35.36
-2 1 40.88	-3 8 48.26		-2 1 39.27	-3 9 46.73			-3 9 31.12	9 47.01	9 47.01		9 47.01		9 47.01		9 47.01
+44.25 11	+45 31.26		+44.24 59	+45 33.12			+45 32.59	+45 32.59	+45 32.59		+45 32.59		+45 32.59		+45 32.59
1.75100	1.76770		1.75100	1.76820			1.76810	1.76810	1.76810		1.76810		1.76810		1.76810
+28.9	+28.9		+5.62	+5.62			-1.81	-1.81	-1.81		-1.81		-1.81		-1.81
1.75389	1.77059		1.74538	1.76258			1.76629	1.76629	1.76629		1.76629		1.76629		1.76629
-56.74	-58.96		-55.64	-57.89			-53.38	-53.38	-53.38		-53.38		-53.38		-53.38
+0.01	+0.01		+0.01	+0.01			+0.01	+0.01	+0.01		+0.01		+0.01		+0.01
+7.4	+1.8		+0.71	+0.44			+4.0	+4.0	+4.0		+4.0		+4.0		+4.0
-53.99	-58.77		-54.93	-54.44			-5.97	-5.97	-5.97		-5.97		-5.97		-5.97
-2 2 36.57	-3 9 47.03		-2 2 34.20	-3 10 44.17			10 29.09	10 44.99	10 44.99		10 44.99		10 44.99		10 44.99

May 7 -08				May 7				May 7				May 7				May 11 -12				May 11			
11 11 26				11 20 40				11 56 15				12 38 40				11 56 15				12 12 48			
+9 20	+16			+8 55	+16			-0 42	-01			-3 11	-06			-0 42	-01			-1 31	-03		
+33 3	+54			+33 28	+55			+43 5	+68			+45 34	+71			+43 5	+68			+43 54	+69		
11 484	11 2543	20 18.7	20 3720	55 544	56 15.77	38 226	38 4002					55 473	56 1279	12 253	12 4609								
	-02		-02		-02		-02						-01		-02								
	+276		+276		+276		+276						+279		+279								
	-01		-01		-01		+0						+1		+1								
	-057		-075		-075		-078						-075		-078								
	11 2758	20 3918	56 1774	38 4183								56 1502			12 4824								
+9 20	2.69			+8 54	4538			-0 42	5324			-3 9	5132			-0 42	4614			-1 30	4644		
-0	706			-0	706			-0	706			-0	706			-0	1490			-0	1490		
-	0.9			-	0.9			-	1.1			-	1.2			-	1.1			-	1.1		
+ 24				+ 34				+ 54				+ 58				+ 52				+ 54			
19	57.13			54	4082			42	5600			9	5378			42	5694			30	57.04		
1 40.45				27 4745				5 9.95				32 230				55 1125	3 5095	53 470	52 15.90				
-2297				+1850				+1837				+1742				+2549	-41.11	+2079	-1957				
1.36 11.6				1.26 717				1.26 411				1.24 105				1.40 637	1.61 785	1.61 785	1.29 026				
9.99 421				9.99 472				9.99 997				9.99 933				9.99 997	9.99 997	9.99 985	9.99 985				
1.44331				1.34983				1.35202				1.32832				1.49428	1.70176	1.40564	1.37805				
+2775				-2238				-2249				-2130				-31.21	+5032	-2545	+2388				
2 8.20				27 25.07				4 4746				31 4100				4 4004	4 4124	52 3925	3778				
+9 20	40.15			+8 55	23.28			-0 41	59.11			-3 8	5265			-0 41	5169	41 5292	-1 29	5090	29 5743		
+33 1 56				+33 28 3				+43 5 26				+45 32 18				+43 5 27	+43 4 7	+43 53 21	43 52 32				
1.57320				1.58030				1.73090				1.76800				1.73090	1.73050	1.74300	1.74300				
+276				+276				+276				+276				+289	+289	+289	+289				
1.57596				1.58306				1.73366				1.77076				1.73379	1.73339	1.74589	1.74569				
-3767				-3829				-5416				-5899				-5417	-5412	-5570	-5568				
-04				-03				+0				+01				+01	+02	+01	+01				
+25				+42				+03				+31				+03	+57	+47	+39				
-3746				-3790				-5413				-5867				-5413	-5353	-5522	-5533				
+9 20	2.69			+8 54	4538			-0 42	5324			-3 9	5132			-0 42	4614	42 4645	-1 30	4612	30 4676		
																42 4614		30 4644					
May 15				May 15				May 15				May 24				June 25				June 25			
12 12 48				11 56 15				12 21 50				12 12 48				12 12 48				12 12 48			
-1 31	-03			-0 42	-01			-2 3	-03			12 7 33				12 7 33				12 7 33			
+43 54	+69			+43 5	+68			+44 26	+70			-0 52	-01			-0 52	-01			-19 20	-35		
												+43 15	+69							+61 43	+88		
3782	12 30.7	12 4648	56 9.5	56 2200				21 4743				7 1435	7 3339	49 9.0	49 3356	49 11.5	49 3386						
	-02			-02				-02					-01				-02						
	+254			+253				+254				7 55.43	+0.85	59.0	-2.78	50	1.7	-2.78					
	+01			+0				+1					+0				+0.15		+0.15				
	-080			-072				-084					-0.70				-1.85		-1.85				
38	39.43	12 4821	56 23.79	21 4912								7 33.53		49 2900									
3 10	4499	-1 30	4420	-0 42	3501			-0 50	3026			-0 50	3026	-19 20	5356	-19 20	5355						
-0	1684	-0	1614	-0	1614			-1	3880			-1	3880	+0	5823	+0	5823						
	1.1			-	1.1				1.1				1.1				1.5		1.5				
	5.5	+ 8.2		+ 5.1				+ 4.6					4.6				2.3		2.3				
10	5673	30 56.24		42 4715				52 2556				52 2556		20 2.73				19 59.72					
52 5725				4 4825				11 5945	12 5405	41 2490	42 3005	41 2490	42 3005										
+1578				+14.50				+19.04	-2204	+2456	-2541	+2236	-2784										
1.19811				1.16137				1.27967	1.34321	1.39023	1.40552	1.34947	1.44462										
9.99 985				9.99 997				9.99 995	9.99 995	9.97 479	9.97 479	9.97 479	9.97 479										
1.28690				1.24928				1.40915	1.47269	1.49455	1.50984	1.46499	1.56019										
-1936				-17.75				+2565	-2969	+31.23	-3235	+29.17	-3632										
52 3789				4 30.50				12 2510	2436	41 5613	41 5710	41 5407	41 5373										
-1 29	4454			-0 41	42.15			-0 49	3675	49 3601	1919 778	935	19 572										
+43 53 13				+43 5 4				+43 12 15	+43 13 10	+61 40 37	+61 41 42	+61 40 37	+61 41 42										
1.74300				1.73080				1.73260	1.73290	2.02702	2.02735	2.02702	2.02735										
-181				-181				+168	-376	-376	-376	-376	-376										
1.74119				1.72899				1.73428	1.73488	2.02326	2.02359	2.02326	2.02359										
-55.10				-5358				-5423	-5427	-10555	-10558	-10555	-10558										
+00				+00				+00	+00	+00	+00	+00	+00										
+049				+72				+30	+44	+35	+58	+35	+58										
-5466				-5280				-5373	-5383	-1 45.80	-1 4470	-1 4572	-1 4488										
-1 30	4420			-0 42	3501			-0 50	3068	50 2984	1920 5288	20 5425	20 5084										
								50 3026		20 5356		20 5055											

June 26 1871 June 26
-41 Log const = 0.14073

16 15 12 16 49 24
-34 22 -68 -19 20 -35
+76 43 +97 +61 43 +88

16 12.97 15 18.70 49 18.20 49 33.96

- .02 - .02
- 2.88 49 58.70 - 2.88
+ .28 + .14

- 2.00 - 1.86

15 14.08 49 29.38

-34 22 4.50 -19 20 50.38
+0 48.80 +0 48.80
- 1.7 - 1.5
+ 6.1 + 2.3
21 11.30 20 0.78

42 3.50 41 34.95 42 26.05
- 54.27 + 15.76 - 24.74
1.73456 1.19756 1.39340
9.91651 9.97479 9.97479

1.79180 1.31308 1.50892
- 61.91 + 20.56 - 32.28
41 1.59 41 55.51 53.77

-34 18 13.24 -19 19 7.16 19 5.42
+76 41 15 +61 40 47 +61 41 38
2.37765 2.02708 2.02732

- 11.26 - 9.68 - 9.68
2.36639 2.01740 2.01764

- 232.48 - 104.09 - 104.15
+ .74 + .14 + .10
+ .48 + .37 + .35

-3 51.26 -1 44.68 -1 43.50
-34 22 4.50 -19 20 51.84 20 48.92

20 50.38

June 29
-41

16 49 29
-19 20 -35
+61 43 +88

49 19.70 49 34.64

- .02 - .02
50 14.93 - 3.63
+ .14 + .14

- 1.86 - 1.86

49 29.27

-19 20 49.86
+0 49.85
- 1.5 - 1.5
+ 2.3 + 2.3
19 59.18

41 36.10 42 44.95
+ 14.94 - 40.29
1.17435 1.60520
9.97479 9.97479

1.28987 1.72072
+ 19.49 - 52.57
41 55.59 52.88

-19 19 7.24 19 4.03
+61 40 48 +61 41 57
2.02708 2.02744

- 6.50 - 6.50
2.02058 2.02094

- 104.85 - 104.94
+ .03 + .27
+ .38 + .65

-1 44.44 -1 44.02
-19 20 51.68 20 48.05

20 49.86

July 20
-52 Log const = 0.12669
Mach. Star.

16 15 12
-34 22 -68
+76 43 +97

15 2.10 15 23.05

- .02 - .02
- 12.65 - 12.65
+ .35 + .35

- 1.88 - 1.88

15 8.85

-34 22 21.14
+0 47.36
- 2.0 - 2.0
+ 7.7 + 7.7
21 28.08

40 54.00
+ 20.96
1.32118
9.91651

1.36438
+ 23.14
41 17.14

-34 18 28.79
+76 40 6
2.03701

- 102.6
2.36678

- 232.69
+ .11
+ .23

-3 52.35
-34 22 21.14

Aug. 2 1871
-48 +.0718 25 50
-34 53 -78 127
+80 16 +98

25 38.2 26 0.35

-02

26 30.8 -15.48

+ .37

+ .09

-252

25 4279

-37 59 3208

+2 4668

- 2.1

+ 1.8

58 45.70

16 4540 17 38.95

+ 22.15 -30.45

1.34537 1.48359

9.89722 9.89722

1.36928 1.56750

+ 23.40 -32.18

17 8.80 6.77

-37 54 2045 54 18.42

+80 15 57 +80 16 51

2.51018 2.51075

-1433 -1433

2.49585 2.49642

-313.22 -313.63

+ .13 + .24

+ 49 + .70

-5 5260 -5 1269

-37 59 3305 59 31.11

59 32.08

Nov. 7 1871
+27

0 14 30

-3 47 -07

+46 10 +72

14 2133 14 3923

-02

15 5.50 -8.94

- .02

-243

14 2782

-3 47 4864

+1 373

- 1.5

- 14.6

47 3.01

9 10.70 10 10.10

+17.90 -26.27

1.25285 1.41946

9.99905 9.99905

1.37859 1.54520

+ 23.91 -35.09

9 34.61 35.01

-3 46 4626 46 46.66

+46 8 20 +46 9 19

1.77700 1.77730

+16.17 +16.17

1.79317 1.79347

-62.11 -62.15

+ .01 + .03

- 12 - .02

-1 2.22 -1 2.14

-3 47 4848 47 48.80

47 48.64

Nov. 9 1871
+20

0 14 30

-3 47 -07

+46 70 +72

14 3360 14 3889

-02

15 10.87 -8.65

- .01

-242

14 2879

-3 47 5216

+1 301

- 1.5

- 14.5

47 4.16

9 26.15 12 20.30

+ 6.29 -30.98

0.79865 1.41910

9.99905 9.99905

0.02439 1.61772

+ 10.58 -41.47

9 36.73 38.83

-3 46 4838 46 50.48

+46 8 35 +46 11 29

1.77710 1.77780

+17.65 +17.65

1.79475 1.79545

-62.34 -62.44

+ .00 + .04

- 48 - 2.5

-1 2.82 -1 2.65

-3 47 51.20 47 53.13

47 52.16

Observations for Personal
Equation.

Sept 9. 10. 12. 18. 19 1872

and

Absolute Personal Equations
Oct. 28. 30. 1872

See B. 6. 7. Fund. Stars for Zones.

Non. Fundamental. Mark. $\frac{4}{5}$
 Mar 4 1871 Feb 20 1871
 $+1.14$ $+0.33$
 31st Mag. $\log \text{const} = 0.08794$
 $\frac{4}{5}$ $\frac{4}{5}$
 59 72
 $+68.50$ $+2.58$ -26.11 -4.9
 -26.27 -4.4

59 2.5 27.68

-0.2

$+29.85$

$+36$

-1.49

59 56.38

$+68.51$ 15.65

-0 5.71

$+0.9$

-10.8

51 50.4

32 14.45

$+25.18$

1.40106

9.55761

1.04661

-11.13

32 3.32

$+68.50$ 45.03

-26.27 30

1.45710

$+22.97$

1.48007

$+30.70$

-11

$+5.3$

$+30.62$

$+68.51$ 15.65

$\frac{4}{5}$

Mar 2 1871

$+1.5$

$\frac{4}{5}$ Crateris

11 12

-14 6 -25

12 38.91

-0.2

$+15.65$

-0.4

-0.88

12 53.62

$\frac{4}{5}$
 Apr 8 1871
 $+0.6$ -1.5
 $\frac{4}{5}$ Crateris
 11 12
 -14 6 -25 1.03

12 32.82

-0.2

$+21.60$

-0.1

-1.5

12 53.39

$\frac{4}{5}$
 Mar 28 1871
 $+1.5$
 $\frac{4}{5}$ Cr 1308
 7 16
 $+68.43$ $+2.56$
 -26.40 -4.4

16 35.2 17 12.36

-0.2

16 42.41 $+13.26$

$+38$

$+7.25$

17 26.03

$+68.43$ 49.22

-0 5.64

$+0.9$

-14.7

43 29.78

39 50.45 39 43.70

$+47.16$ $+29.76$

1.67357 1.47654

9.55988 9.55988

1.32138 1.12436

-20.96 -13.32

39 29.49 30.38

$+68.43$ 18.84 43 17.77

-26.19 54 -26 20 0

1.45480 1.45480

$+22.38$ $+22.38$

1.47718 1.47718

$+30.20$ $+30.20$

-40 -16

$+110$ $+1.08$

$+30.70$ $+30.92$

$+68.43$ 49.56 43 48.89

43 49.22

$\frac{4}{5}$ May 15 1871

$+1.8$

$\frac{4}{5}$ Crateris

11 12

-14 6 -25

12 57.62

-0.2

$+2.53$

$+0.4$

-0.52

12 53.65

$\frac{4}{5}$
 Mar 5 1871
 $+1.9$
 $\frac{4}{5}$ Crateris
 7 57 17.45

57 56.8 58 15.78

Mar 7 1871
 $+1.4$
 $\frac{4}{5}$ Crateris
 11 12
 $+3$ 33 $+0.6$
 $+38.50$ $+63$

21 7.8 20 49.07

-0.2

$+29.88$

$+0.1$

-0.80

21 18.14

$+3.33$ 53.72

-0 0.53

-1.3

$+5.2$

33 57.09

47 43.00

-18.73

1.27254

9.99917

1.35965

$+22.89$

48 6.07

$+3.34$ 42.26

$+38$ 47.59

16.6 53.0

$+26.53$

1.69183

-49.18

-0.1

$+6.5$

-48.54

$+3.33$ 53.72

Mar 1 1871

+30

32 Wrs 9 Maj.

10 8

+65 45

-23 22

+2.22

-40

8 15.3

8 11.12

-02

9 6.3

+2867

+ .67

-227

8 38.17

+65 45 8.10

-0 508

+ 08

- 1.6

45 222

May 2 1871

-16

γ Leonis

10 12

+20 29

+21 53

+37

+37

12 18.8

12 48.57

-02

13 3.8

+3.19

- .06

-033

12 51.35

+20 29 44.19

-0 778

- 06

- 1.2

29 34.61

May 7 1871

-08

226 B Cephei

10 29

+75 34

-83 11

+389

-55

29 55.03

-06

+2.74

- .31

+1.53

(29 58.93)

Sept 29 1871

-14+08

226 B Cephei L.C.

22 29

+75 34

-33 11

+389

-55

30 41.24

-06

-37.25

+ .34

-4.48

29 59.25

Nov 2 1871

+17

226 B Cephei L.C.

22 29

+75 34

-33 11

+389

-55

28 56.85

-06

-9.50

+ .66

-2.41

(30 02.4)

(29 58.8)

38 4.75

-4.18

0.62 11.8

9.61 35.4

0.32 26.6

+2.10

38 6.85

+65 44 41.50

-23 21 39

1.39 56.0

+24.14

1.41 97.4

+26.29

- .01

+77

+27.05

+65 45 8.55

45 8.10

37 39.30

-55.18

1.74 17.8

9.61 35.4

1.44 32.6

+27.75

38 7.05

44 41.30

-23 22 5

1.39 58.0

+24.14

1.41 99.4

+26.30

- .61

+65

+26.34

45 7.64

53 152.0

+27.77

1.47 37.8

9.97 16.3

1.53 33.5

-84.15

52 41.05

+20 30 7.30

+21 53 31

1.36 43.0

+92

1.36 52.2

-23.19

- .16

+53

-2282

+20 29 44.48

29 44.19

52 24.15

-15.23

1.18 27.0

9.97 16.3

1.24 22.7

+17.47

41.62

30 6.73

+21 52 40

1.36 40.0

+92

1.36 49.2

-23.17

- .04

+38

-2283

29 43.90

May 16 1871

-15

γ Leonis

11 21

+3 33

21 16.46

-02

+2.39

- .01

-0.53

21 18.29

Mar 25 1871

+11

γ Leonis

11 32

+1 39

33 46.30

-02

+13.16

+ .02

-0.88

33 58.56

May 25 1871

-22

B Comae

12 17

+26 48

+15 35

May 25 1871

-22

B Comae

12 20

+28 58

+13 25

May 25 1871

-22

B Comae

12 20

+28 58

+13 25

June 9 1871

-42

2 Virgini

13 18

-10 29

-19

15 25.48

-02

-0.74

+ .08

-0.97

-0.97

18 23.83

+26 49 38.66

-0 45.58

- 05

- 4.2

48 48.88

+28 59 57.82

-0 45.58

- 04

- 4.8

59 70.4

32 27.00

+20.76

1.32 13.9

9.95 06.5

1.40 15.9

+25.21

32 52.21

+26 49 56.14

+15 32 43

1.20 46.0

+22.00

1.22 60

-16.85

- .10

+38

-16.57

+26 49 39.57

49 38.66

33 19.65

-21.19

1.32 61.3

9.95 06.5

1.40 63.1

-25.49

54.16

49 54.19

+15 33 36

1.20 50.0

+22.00

1.22 70.0

-16.87

- .10

+53

-16.44

49 37.75

49 38.66

22 9.45

+22.33

1.34 88.9

9.94 19.6

1.42 03.8

+26.33

22 35.78

49 12.57

+13 22 25

1.13 64.0

+22.00

1.15 84.0

-14.40

- .11

+35

-14.16

49 57.41

49 57.82

23 3.25

-22.21

1.34 65.5

9.94 19.6

1.41 80.4

-26.18

37.07

0 11.28

+13 23 19

1.13 69.0

+22.00

1.15 89.0

-14.42

- .11

+48

-14.05

59 57.23

59 57.82

9 m. Fund.

June 19 1871
~~-35~~
 14 Boötis Cat. Star
 14 7
 +13 33 +.24

7 420 7 5668
~~-.02~~
 8 1607 -2.51
~~-.08~~
~~-1.12~~
 7 5295

May 24 1871

5 Virg Min.
 14 27

26 927 27 5449

29 5287

4 3860 5 4700

¹³²
~~Dec 28 1871~~

5 Virg Min.
 2 27

26 2870

4 1190

May 29 1871

E Boötis
 14 29

29 150 29 2233

29 5093

44 1215 45 970

June 19 1871

~~-35~~
 B.A.C 4497
 14 22
 +36 46 +.75

22 3160 23 0.10
~~-.02~~
 23 2743 -2.51
~~-.26~~
~~-1.31~~
 22 56.00

June 21 1871

~~-40~~
 B.A.C 4497
 14 22
 +36 46 +.75

22 3873 23 0.13
~~-.02~~
 23 2370 -2.52
~~-.30~~

~~-1.29~~
 22 56.00

June 9 1871

2 Scorpi
 16 21

21 3235

June 14 1871

Ursina 2320
 16 5

7 11.15 6 4.98

12 59.50

~~June 30 1871~~~~E Bootis~~~~14 39?~~~~39 15.0 39 26.22~~~~39 39.68~~~~July 3 1871~~~~E Bootis~~~~14 39~~~~39 2.5 39 26.50~~~~49.3~~~~July 5 1871~~~~E Bootis~~~~14 39~~~~39 10.10 39 27.66~~~~39 52.27~~~~Nov 18 1871~~~~E Bootis~~~~14 39~~~~— 39 26.64~~~~May 29 1871~~ ~~α^2 Librae~~~~14 33~~~~33 45.38~~

45 44.55 46 36.50

~~June 17 1871~~~~Procyon~~~~16 5~~~~4 45.6 4 5.28~~~~7 2.2~~~~July 20 1871~~~~E Bootis~~~~15 1~~~~1. 36.5 1 52.14~~~~Aug 5 1871~~ ~~η Herculis~~~~17 16~~~~15 50.37 16 8.26~~~~16 28.30~~~~Aug 17 1871~~ ~~η Herculis~~~~17 16~~~~cannot find~~~~star.~~~~Sept 17 1871~~ ~~α Sagittae~~~~18 47~~~~47 41.62~~

11 50.50 12 57.15

0 27.95

on. ~~fund.~~
~~Sept. 14 1871~~
~~o Cygni~~
~~21 10~~

10 334

~~Sept. 22 1871~~

~~79 Dra co~~
~~21 50~~

50 4583 50 4290

~~Sept 23 1871~~

~~79 Dra co~~
~~21 50~~

50 3140 51 4286

3990

~~Apr 2. 1871~~

~~Apr 21 63~~
~~11 48~~
~~11 48~~

48 1505

31 3215

18 9.10

18 5280 19 1140

~~Sept 10 1871~~

~~BAC 6318~~
~~18 25~~

25 4187 26 1905

26 5020

~~Sept. 11 1871~~

~~o Capricorni~~
~~21 21~~

21 4650

~~Sept 29 1871~~

~~14 +.08~~
~~2 Pisc. Auct~~
~~22 50~~
~~- 30 17 -58 116~~

50 1090

- .02

- 37.07

+ .08

+ .09

- 2.67

50 3131

~~Oct 27~~

~~+ .10~~
~~2 Pisc. Auct~~
~~22 50~~
~~- 30 17 -58~~

50 4242

- .02

- 8.83

- .06

- 2.42

50 31.09

55 2030 56 725

Nov. 17 1871

 $+22$
 $9r. 216.3$
 $23^{\circ} 48'$
 $+73^{\circ} 42' +3.42$

48 44.04

 $- .05$
 $- 7.95$
 $+ .75$
 $- 3.57$
 $48 \quad 32.22$
 34.81

Nov 18 1871

 $+26$
 $4r. 216.3$
 $23^{\circ} 48'$
 $+73^{\circ} 42' +3.42$

48 43.42

 $- .05$
 $- 5.83$
 $+ .89$
 $- 3.51$

34.92

Sept 3 1871 *avg*
 μ Sagittarii
 $18^{\circ} 6'$

6 453 6 24.49

Sept 7 1871 *avg*
 $B.A. C 6062$
 $17^{\circ} 47'$

47 49.96 47 15.59

Sept 9 1871 *avg*
 $B.A. C 6419$
 $18^{\circ} 43'$

43 38.53 43 13.59

44 36.60

32 12.15 32 58.15

 μ
 Oct 16 1871

 $+0.4$
 15 Argus
 $8^{\circ} 1'$
 $-23^{\circ} 56' -4.4$

1 12.11

 $- .02$
 $- 7.93$
 $- .02$
 $- 0.96$
 $1 \quad 3.18$
 μ
 Nov 12 1871

 $+2.4$
 17 Draco
 $21^{\circ} 7'$
 $+77^{\circ} 37' +4.55$

5 4.55

Dec. 18 1871

 $+26$
 3 Ursa
 $3^{\circ} 7'$
 $+20^{\circ} 34' +3.8$

7 38.23

 $- .02$
 $- 5.80$
 $+ .10$
 $- 8.15$
 $7 \quad 29.36$
 $B_2 C$
 Dec 12 1871

 $+3.8$
 1 Cass.
 $1^{\circ} 21'$
 $+69^{\circ} 37'$

21 2.47 21 36.44

- .02

 $B_2 C$
 Dec 24 1871

 $+3.6$
 1 Cass.
 $1^{\circ} 21'$
 $+69^{\circ} 37'$

20 47.88 20 29.15

- .02

47 32.46

47 37.10

on. Fund. B2 Y.C.
Dec 28 1871
+46
39 feet
1 21

22.87 21 22.87

B2 Y.C.
Jan 2 1872
+46
39 feet
1 21

21 18.00

Dec 28 1871
+46
39 feet
1 9
-3 9 -05

9 46.19

-02
+ 19.64
- .02

- 228
10 3.48

Jan 2 1872
+46
39 feet
1 9
-3 9 -05

9 41.35

-02
+ 24.34
- .02

+ 0.82
10 6.47

47 41.75 48 6.50

48 6.50

B2 Y.C.
Dec 28 1871
+46
39 feet
1 32

82 41.20

B2 Y.C.
Jan 1 1872
+42
39 feet
1 32

32 37.25

B2 Y.C.
Dec 28 1871
+46
39 feet
1 40

40 45.19

Jan 1 '72
+46
39 feet
2 39
+28 44 +55

39 53.45

-02
+ 47.65 23.49
+ .25

- 3.173
40 10.17
14.04

27 43.05 28 25.15 27 43.55 28 32.15

11 23.90 5 5.35

~~Dec 28 1871~~~~4 Cast~~~~1 11~~~~Jan 2 1872~~~~+46~~~~4 Cast~~~~1 11~~~~+57 35 +1.58~~~~Dec 28 1871~~~~+46~~~~4 Androm.~~~~1 14~~~~+44 53 +1.00~~~~Jan 2 1872~~~~+46~~~~4 Androm.~~~~1 14~~~~+44 53 +1.00~~~~Dec 28 1871~~~~+46~~~~13. J. C. 466~~~~1 26~~~~-37 31 -77~~

log cond = 0.12669

~~+46.64~~~~11 36.69~~~~- .02~~~~+ 24.34~~~~+ .73~~~~+ 1.00~~~~12 2.74~~~~14 27.85~~~~- .02~~~~+ 19.61~~~~+ .46~~~~- 2.66~~~~14 45.24~~~~14 23.01~~~~- .02~~~~+ 24.34~~~~+ .46~~~~- 2.55~~~~14 45.26~~~~26~~~~26 52.81~~~~- .02~~~~+ 19.62~~~~- .35~~~~- 2.69~~~~27 9.37~~~~149 26.58 -10 20.76~~

Time only.

~~Sept 29 1871~~~~-14 +0.8~~~~0 Cephei~~~~23 13~~~~+67 24 +2.40 2.60~~~~(24) 14 0.97~~~~- .04~~~~- 37.07~~~~- .33~~~~+ 2.1~~~~- 3.84~~~~13 19.90~~~~Dec 31 1870~~~~5 Wrs Min~~~~14 26~~~~27 49.58~~~~Jan 9 1872~~~~5 Wrs Min~~~~14 26~~~~27 15.76~~~~Jan 10-11 1872~~~~5 Wrs Min~~~~14 26~~~~27 15.09~~~~Dec 29 1871~~~~+44~~~~4 Ceti~~~~3 36~~~~- 10 11 -18~~~~36 46.65~~~~- .02~~~~+ 20.62~~~~- .08~~~~- 2.93~~~~37 42.11~~

Non. Tunc.	Dec 29 1871	Dec 29 1871	Jan 1 1872	Dec 28 1871	Jan 1 1872
	$+44$	$+44$	$+42$	$+46$	$+42$
	Δ Eridani.	Δ Persi.	Δ Persi.	Δ Tauri.	Δ Tauri.
	3 41	3 56	3 56	3 58	3 58
	-24 16 -45	+50 0 +1.19	+50 0 +1.19	+28 40 +55	+28 40 +55
	41 48.29	56 42.34	56 39.44	58 45.89	58 42.01
	- .02	- .02	- .02	- .02	- .02
	+ 20.62	+ 20.63	+ 24.33	+ 19.71	+ 24.33 23.54
	- .20	+ .52	+ 23.54	+ .25	+ .23
	- 28.4	- 4.57	- 4.55	- 3.67	- 3.66
	42 6.85	56 58.54 90	56 58.40 58.91	59 2.10	59 2.84 2.10

Dec 29 1871	Jan 1 1872	Dec 28 1871	Dec 29 1871	Jan 1 1872
$+44$	$+42$	$+46$	$+44$	$+42$
Δ Persi.	Δ Persi.	Δ Eridani.	Δ Eridani.	Δ Eridani.
41 41	41 41	4 7	4 7	4 7
+48 5 +1.11	+1.11	-10 34 -19	-10 34 -19	-10 34 -19
4 9.43	4 6.47	7 59.01	7 58.11	7 55.11
- .02	- .02	- .02	- .02	- .02
+ 20.63	+ 24.33 23.54	+ 19.72	+ 20.63	+ 24.33 23.54
+ .49	+ .47	- .09	- .08	- .08
- 4.51	- 4.50	- 3.03	- 3.03	- 3.02
4 26.02	4 26.75 25.96	8 15.59	8 15.61	8 15.52 15.53

Dec 28 1871
+46
B.A.C. 1272
4 0
+17 0 +.31

Jan 1 1872
+42
B.A.C. 1272
4 0
+17 0 +.31

Dec 28 1871
+46
P. Tauri
4 2
+26 8 +49

Dec 29 1871
+44
P. Tauri
4 2
+26 8 +49

Jan 1 1872
+42
P. Tauri
4 2
+26 8 +49

Dec 28 1871
+46
P. Persi
4 4
+48 5 +1.11

0 19.90
- .82
+19.71
+ .14

- 3.40
0 36.33

0 16.05
- .82
+24.33 23.54
+ .13

- 3.39
0 36.31

2 42.36
- .02
+19.71
+ .23

- 3.62
2 58.66

2 41.47
- .02
+ 20.63
+ .22

- 3.62
2 58.68

2 38.47
- .02
+24.33 23.54
+ .21

- 3.61
2 58.59

4 10.30
- .02
+19.71
+ .51

- 4.52
4 25.98

Dec 28 1871
+46
B.A.C. 1313
4 9
+60 26 +1.76

9 20.62
- .02
+19.72
+ .81

- 5.64
9 35.49

Jan 1 1872
+42
B.A.C. 1313
4 9
+60 26 +1.76

9 16.74
- .02
+24.33 23.54
+ .74

- 5.61
9 35.37

Dec 28 1871
+46
P. Tauri
4 14
+22 0 +40

14 27.82
- .02
+19.72
+ .18

- 3.57
14 44.13

Dec 29 1871
+44
P. Tauri
4 14
+22 0 +40

14 26.97
- .02
+ 20.63
+ .18

- 3.57
14 44.21

Jan 1 1872
+42
P. Tauri
4 14
+22 0 +40

14 23.96
- .02
+23.55 24.33
+ .17

- 3.57
14 44.67
2.09

non. Lyncol

Dec 28 1871

+46

85 Tauri

4 24
+15 34 +.28

24 1340

- .02

+ 19.73

+ .13

- 347

24 29.77

Dec 28 1871

+46

p Tauri

4 26
+14 34 +.26

26 16.41

- .02

+ 19.73

+ .12

- 345

26 31.79

Dec 29 1871

+44

p Tauri

4 26
+14 34 +.26

26 14.48

- .02

+ 20.64

+ .11

- 345

26 31.76

Jan 1 1872

+42

p Tauri

4 26
+14 34 +.26

26 11.55

- .02

+ 24.53

+ .11

- 345

26 31.75

L. Dec 28 1871

+46

53 Endani.

4 31
-14 33 -26

31 59.93

- .02

+ 19.73

- .12

- 3.06

32 16.46

Dec 28 1871

+46

13 Moncl.

6 25
+7 25 +.13

25 39.50

- .02

+ 19.80

+ .06

- 352

25 55.82

Dec 29 1871

+44

13 Moncl.

6 25
+7 25 +.13

25 38.60

- .02

+ 20.70

+ .06

- 353

25 55.81

Jan 1 1872

+42

E Bootis

14 38
+27 36 +.52

38 58.20

- .02

+ 23.88

+ .22

+ 1.58

39 23.86

morn.

Jan 9

+47

E Bootis

14 38
+27 36 +.52

38 52.04

- .02

+ 30.22

+ .24

+ 1.32

39 23.80

Jan 10 - 11

+42

E Bootis

14 38
+27 36 +.52

38 51.30

- .02

+ 31.04

+ .22

+ 1.29

39 23.83

4.
Dec 29 1871
+44

53 Enidani

4 31
-14 83 -26

31 5897

- .02

+20.64

- .11

- 3.06

32 16.42

Dec 28 1871

+46

0 Orionis

4 44
+14 2 +25

44 5783

- .02

+19.74

+ .11

- 3.50

45 14.16

Dec 29 1871

+44

0 Orionis

4 44
+14 2 +25

44 5696

- .02

+20.65

+ .11

- 3.51

45 14.19

Jan 1 1872

+42

0 Orionis

4 44
+14 2 +25

44 5400

- .02

+24.33 23.67

+ .10

- 3.51

45 14.96
14

Dec 29 1871

+44

0 Orionis

6 20
+20 17 +37

20 118

- .02

+20.64

+ .16

- 3.82

20 18.19

Jan 11-12

+38

ε Bootis

14-38

+27 36 +52

38 5861

- .02

+34.76

+ .20

+ 1.25

39 23.80

Jan 9 1872

2 Librae

14 43

43 16.41

Jan 10-11

2 Librae

14 43

43 15.66

Jan 11-12 1872

2 Librae

14 43

43 15.00

Nov. ~~Found.~~
~~Jan 24 1872~~
~~v7 Eridani~~
~~4 30~~

30 29.71

~~Jan 31 1872~~
~~v7 Eridani~~
~~4 30~~

30 28.28

~~Jan 31 1872~~
~~+ .52~~
~~E Leporis.~~
~~4 59~~
~~- 22 32 - .41~~

59 56.33

- .02

+ 6.88

- .21

- 0.28

0 2.70

~~Feb 16 1872~~
~~+ .39~~
~~v8 Aurigae~~
~~6 15~~

14 23.37 14 50.95

2 53.85

July 28 1872
~~- 24~~
~~440 ph.~~
~~17 18~~
~~- 24 3 - .45~~

18 3819
 - .02
 - 292
 + .11

- 204
 18 33.32

July 29 1872
~~- 22~~
~~440 ph.~~
~~17 18~~
~~- 24 3 - .45~~

18 3847
 - .02
 - 318
 + .10

- 204
 18 33.33

July 30 1872
~~- 29~~
~~440 ph.~~
~~17 18~~
~~- 24 3 - .45~~

18 39.56
 - .02
 - 422
 + .13

- 203
 18 33.42

Aug 6 1872
~~- 24~~
~~440 ph.~~
~~17 18~~
~~- 24 3 - .45~~

18 5518
 - .02
 - 2001
 + .11

- 197
 18 33.29

Aug 7 1872
~~- 23~~
~~440 ph.~~
~~17 18~~
~~- 24 3 - .45~~

18 5800
 - .02
 - 2286
 + .10

- 196
 18 33.26

Aug 8
~~- 26~~

Feb 17 1872
 $+41$
 44 Aurigae
 6 14

14 2520 14 5050

Mar 18 1872
 $+43$ $\log \cos \alpha = 0.11804$
 45 Aurigae
 6 41
 $+41.55$ $+90$
 $+0.28$ $+0.01$

41 273 41 2807

-0.02

$+14.19$

$+0.39$

$+0.12$

41 4275

$+41.55$ 2598
 $+0$ 2661
 $-$ 0
 $-$ 9.4
 $-$ 55 4319

2 5195

27 2250

$+0.77$

9.88649

9.87164

9.87617

-0.75

27 2195

$+41.55$ 2660

$+0$ 2237

9.57800

$+25.10$

9.60310

-0.40

-0

-22

-0.62

$+41.55$ 2598

Aug 8 1872
 Aug 10 1872
 -27
 44 Ophi
 14 18
 -24.3 -45

19 1.00

-0.02

-25.90

$+0.12$

-19.5

18 3325

July 20 1872
 -25.07
 72 Sagittari
 17 57
 -30.25 -59.116

19 5.78

-0.02

-30.71

$+0.12$

-19.3

18 3324

July 24 1872
 -26
 72 Sagittari
 17 57
 -30.25 -59

57 4173

-0.02

-4.20

$+0.15$

-0.08

-237

57 3529

July 30 1872
 -29
 72 Sagittari
 17 57
 -30.25 -59

57 4086

-0.02

-3.49

$+0.15$

-235

57 3515

Aug 5 1872
 -18
 72 Sagittari
 17 57
 -30.25 -59

57 4175

-0.02

-4.26

$+0.17$

-233

57 3531

Aug 7 1872
 -23
 72 Sagittari
 17 57
 -30.25 -59

57 5489

-0.02

-17.56

$+0.11$

-229

57 3513

June Stars from S. Ab. Long
 July 20 1872
 -25.07
 44 Ophi
 17 18
 -24.3 -45.109

18 3957

-0.02

-4.22

$+0.11$

-0.08

-2.09

18 3327

July 27 1872
 -23
 44 Ophi
 17 18
 -24.3 -45

18 3850

-0.02

-3.27

$+0.10$

-2.05

18 3326

July 20 1872
 α Aquilae
 -25.07
 18.28
 $-8.19 -15.101$

July 24
 α Aquilae
 -26
 18.28
 $-8.19 -15$

July 27
 α Aquilae
 -23
 18.28
 $-8.19 -15$

Aug 10 1872
 α Aquilae
 -27
 18.28
 $-8.19 -15$

July 20 1872
 α Sagittae
 -25.07
 18.46
 $-26.47 -50.112$

28 20.99
 $- .02$
 $- 4.19$
 $+ .04$
 $- .07$
 $- 2.12$
 28.1463

28 20.11
 $- .02$
 $- 3.49$
 $+ .04$
 $- 2.11$
 28.1453

28 19.91
 $- .02$
 $- 3.27$
 $+ .03$
 $- 2.11$
 28.1454

28 47.30
 $- .02$
 $- 30.85$
 $+ .04$
 $- 206$
 $28.14.41$

46 26.26
 $47 - .02$
 $- 4.18$
 $+ .12$
 $- .08$
 $- 2.42$
 $47.19.68$

11 44.15

Aug 8 1872
 α Sagittae
 -26
 18.47
 $-26.27 -50$

47 47.99
 $- .02$
 $- 26.08$
 $+ .13$
 $- 2.41$
 $47.19.61$

July 22
 α Herculis
 -27
 16.56
 $+ 33.45 +67$

56 58.74
 $- .02$
 $- 3.94$
 $- .18$
 $- 1.76$
 $56.52.84$

July 23

~~56 58.60~~
 ~~$- .02$~~

July 24
 -26

56 58.31
 $- .02$
 $- 3.47$
 $- .17$
 $- 1.74$
 $56.52.91$

July 25
 -26

56 58.24
 $- .02$
 $- 3.43$
 $- .17$
 $- 1.73$
 $56.52.89$

<i>F.</i> July 22 -27 o Sagitt	<i>F.</i> July 24 -26 o Sagitt	<i>F.</i> July 27 -23 o Sagitt	<i>F.</i> Aug 1 1872 -27 o Sagitt	<i>F.</i> Aug 6 -24 o Sagitt	<i>F.</i> Aug 7 -23 o Sagitt
18 47 -26 27 -50	18 47 -26 27 -50	18 47 -26 27 -50	18 47 -26 27 -50	18 47 -26 27 -50	18 47 -26 27 -50

47 25.93 - .02 - 3.93 + .14 - 242 47 19.70	47 25.49 - .02 - 3.50 + .13 - 242 47 19.68	47 25.25 - .02 - 3.26 + .12 - 243 47 19.66	47 29.54 - .02 - 7.43 + .14 - 243 47 19.80	47 42.26 - .02 - 20.15 + .12 - 242 47 19.79	47 45.02 - .02 - 23.06 + .12 - 241 47 19.65
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<i>F.</i> July 28 -24	<i>F.</i> July 29 -22	<i>F.</i> Aug 1 -27	<i>F.</i> Aug 4 -17	<i>F.</i> Aug 5 -18	<i>F.</i> Aug 6 -24 d. Hercules 16 57 + 33 45 +67
56 57.72 - .02 - 2.91 - .16 - 168 56 52.95	56 57.96 - .02 - 3.17 - .15 - 167 56 52.95	57 2.01 - .02 - 7.29 - .18 - 163 56 52.89	57 9.50 - .02 - 14.86 + .11 - 158 56 52.93	57 12.04 - .02 - 17.44 - .12 - 156 56 52.90	57 14.60 - .02 - 19.98 - .16 - 154 56 52.90

W. L. L. L.
Aug 7 1872
-23
d. Herculis
16 57
+33 45 +67

Aug 10 1872
-27
d. Herculis
16 57
+33 45 +67

~~July 23~~
~~d. Scorpii~~
~~16 21~~
~~-26 8 -49~~

July 24
-26
d. Scorpii
16 21
-26 8 -49

July 25
-26

57 17.42
- .02
-22.82
- .15

- 153
56 52.90

57 25.27
- .02
-30.66
- .18

- 148
56 52.93

21 39.20
- .02

21 38.84
- .02
-34.6
+ .13

- 179
21 33.70

21 38.88
- .02
-34.4
+ .13

- 178
21 33.75

July 28 1872
-24
d. Ophiuchi
16 29
-10 18 -18

30 11.35
- .02
-29.1
+ .04

- 165
30 6.82

Aug 1
-27
d. Ophiuchi
16 29
-10 18 -18

30 15.68
- .02
-7.26
+ .05

- 161
30 6.84

Aug 4 1872
-17
d. Ophiuchi
16 30
-10 18 -18

30 23.11
- .02
-14.81
+ .03

- 158
30 6.73

July 24 1872
-26
d. Sagittarii
19 10
-19 10 -35

10 14.43
- .02
-35.0
+ .09

- 233
10 8.67

July 27
-23

10 14.29
- .02
-32.6
+ .08

- 234
10 8.75

F.
July 27
-23

F.
July 28
-24

F.
July 29
-22

F.
Aug 5
-18
α Scorpii
16 21
-26 8 -49

F.
Aug 9. 1872
α Scorpii
16 21
-26 8 -49

F.
July 24 1872
-26
α Ophiuchi
16 29
-10 18 -18

21 3873
-02
-328
+ .11

21 3832
-02
-290
+ .12

21 3856
-02
-316
+ .11

21 5270
-02
-1736
+ .09

22 336
-02

30 1185
-02
-347
+ .05
#

-1.76
21 33.78

-1.75
21 33.77

-1.74
21 33.75

-1.66
21 33.75

-1.68
30 6.73

F.
Aug 1.
-27

F.
Aug 6
-24
α Sagittarii
17 10
-19 10 -35

F.
July 27
-23
α Sagittarii
18 6
-21 5 -39

F.
Aug 5
-18

F.
Aug 7
-23

F.
Aug 8
-26
α Sagittarii
18 6
-21 5 -39

10 1855
-02
-746
+ .09

10 3134
-02
-2619
+ .08

6 12.01
-02
-3.27
+ .09

6 2620
-02
-17.57
+ .07

6 3154
-02
-2297
+ .09

6 3455
-02
-2600
+ .10

-236
10 8.90

-235
10 8.86

-220
6 6.61

-216
6 6.52

-215
6 6.49

-214
6 6.49

1872phae.proj.1486

H. and

Aug 10

-27

 μ Sagittarii

18 6

-21 5 -39

Aug 6 1872

-24

 μ Capricorni

20 20

-18 37 -34

Aug 7

-23

 ϵ Bootis

14 39

+27 36 +52

Aug 9

 ϵ Bootis

14 39

+27 36 +3

6 39.34

- .02

- 30.80

+ .11

- 2.13

6 6.50

20 22.41

- .02

- 20.29

+ .08

- 2.46

19 59.72

39 47.36

- .02

- 22.50

- .12

- 2.47

39 22.25

39 52.57

- .02

Oct 19 1872

 ϵ Aquarii

21 30

- 8 25

29 38.57

- .02

Oct. 14 1872

+ .05

 μ Capricorni

21 46

- 14 9 -25

46 14.65

- .02

+ 6.55

- .01

- 2.26

46 18.91

Oct. 15

46 14.81

- .02

Oct. 19

46 13.45

- .02

Oct. 21

+ .09

 μ Capricorni

21 46

- 14 9 -25

46 12.17

- .02

+ 8.80

- .02

- 2.17

46 18.46

Aug 7
+23
K Aquarii
19 30
- 7 18 -13

30 26.34
- .02
- 23.16
+ .03
- 2.24
30 0.95

Aug 9
B. Scorpui
18 58

58 30.37
- .02

Oct 3 1872
Sp 3241
20 30

30 25.66

Oct 14 1872
+05
E. Aquarii
21 30
- 8 25 -15

30 51.71
- .02
+ 6.56
- .01
- 2.14
30 56.12

Oct 16 1872
E. Aquarii
21 30
- 8 25

30 51.89
- .02

Oct 14
+05
H. Aquarii
22 18
+0 43 +.01

18 40.07
- .01
+ 6.55
+ .00
- 2.23
18 44.38

Oct 21
+09
H. Aquarii
22 18
+0 43 +.01

18 37.53
- .01
+ 8.81
+ 0
- 2.16
18 44.47

Oct 28

18 34.59
- .01

Oct 29

H. Aquarii
22 18
+0 43

18 33.76
- .01

Oct 14
+05
D. Piscium
23 21
+5 40 +10

21 24.54
- .02
+ 6.53
+ .01
- 2.43
21 28.63

Oct 16
D. Piscium
23 21
+5 40

21 24.32
- .02

Nov. Fund
Oct 21 1872
+ .09
P. Leonis.

23 21
+5 40 +.10

~~Oct 28~~

~~Oct 29~~

Nov. 2 1872

P. Leonis

23 21
+5 40 +.10

Nov 14 1872

P. Leonis

10 12
+20 29 +.37

21 22.06
- .02
+ 8.83
+ .01

- 2.39
21 28.49

21 15.96
- .02

21 15.10
- .02

21 15.62
- .02

12 35.14
- .02

May 18 1873

- .13
P. Leonis.
11 21
+ 3 33 +.06

21 10.94
- .02
+ 14.24
- .01

- 0.74
21 24.41

May 19

- .13

21 10.96
- .02
+ 14.04
- .01

- 0.73
21 24.24

May 20 1873

- .10
P. Leonis.
11 21
+ 3 33 +.06

21 10.96
- .02
+ 14.12
- .01

- 0.72
21 24.33

May 28 1873

- .27-.08
P. Leonis.
20 30
+ 72 6 +3.10 3.25

30 12.78
- .05
+ 22.70
- .84
- .26
- 1.63
30 32.70

May 28

- .27-.08
u. Ag. Leonis
20 45
- 9 27 -.17 1.01

45 26.72
- .02
+ 22.70
+ .05
- .08
- 1.07
45 48.30

~~Nov 14~~~~24 W. Maj.
10 23~~~~P.m.~~~~23 49.96
- .02~~~~Dec 2 1872~~~~+23
J. Crutcher~~~~11 12
- 14 5 -25~~~~12 39.98
- .02~~~~Dec 17 1872~~~~+22
1371 Cass.~~~~1 25~~~~25 38.84
- .02
+ 22.79~~~~Dec 17 1872~~~~+22
J. Crutcher~~~~2 36
+ 2 42~~~~P.m.~~~~30 22.38~~~~Jan 1 1873~~~~+31
2 Russell~~~~22 14~~~~P.m.~~~~14 30.24~~~~May 28 1873~~~~+27 -08
J. C. 1879 - 23 + 2749
20.52~~~~52 58.16~~~~Nov 22 1873~~~~+27 -08
J. C. 1879 - 23 + 2749~~~~22 50
- 30 17 -58~~~~50 58.23~~

Comparison Stars for Neptune's Planet.
 Jan 9 1873 Jan 9 1873
 $+35$ Log Const = 0.11571m

Jan 9 1873

Jan 9 1873

3 57 50
 $+19 47 +36$
 $+22 36 +38$
 $\overline{10}$

4 9 22
 $+19 38 +36$
 $+22 45 +39$

4 11 28
 $+19 36 +36$
 $+22 47 +39$
 $\overline{10}$

4 12 1
 $+19 38 +36$
 $+22 45 +39$

58 420 37 2296
 -02
 58 4303 $+27.44$
 $+ .13$

X8 4393 X8 5862
 -02
 X 2137 $+27.44$
 9 $+ .13$

1X0 5073 1X1 463
 -02
 $+27.44$
 $+ .13$

132 1477 11 3749
 -02
 $+27.44$
 $+ .13$

-0.01
 57 50.50

-0.02
 10 26.11

-0.07
 11 32.11

-0.08
 12 49.6

$+19 49 47.74$
 $-2 31.50$
 -0.8
 -3.5
 $46 36.45 1173.53$
 $47 11.94$

$+19 40 20.14$
 $-2 31.50$
 -0.8
 -3.6
 $37 44.24$

$+19 38 19.58$
 $-2 31.50$
 -0.8
 -3.6
 $35 43.68$

$+19 40 50.74$
 $-2 31.50$
 -0.8
 -3.6
 $38 14.84$

32 4545 31 5990
 $-41.24 -22.07$
 $1.61532 1.34380$
 $9.97358 9.97358$
 $1.70461 1.53309$
 $+50.65 +34.12$
 $33 36.10 32 34.02$
 $+19 49 12.25 50 14.33$
 $+22 35.8 +22 34.23$
 $1.27920 1.37900$
 $+27.12 +27.12$
 $1.40632 1.40612$
 $-25.49 -25.48$
 $- .30 - .08$
 $+ .14 + .10$
 $-25.65 -25.46$
 $+19 48 46.60 49 48.87$
 $49 47.74$

42 2020 41 3565
 $+14.69 -22.75$
 $1.16702 1.35698$
 $9.97399 9.97399$
 $1.25672 1.44668$
 $-18.06 +27.97$
 $42 214 3.02$
 $+19 40 46.21 40 45.33$
 $+22 44.43 +22 43.58$
 $1.38270 1.38240$
 $+27.35 +27.35$
 $1.41005 1.40975$
 $-25.71 -25.69$
 $- .04 - .09$
 $+ .12 + .06$
 $-25.63 -25.62$
 $+19 40 20.58 40 19.71$
 $40 20.14$

44 2020
 $+13.90$
 1.14301
 9.97408
 1.23280
 -17.09
 $44 3.11$
 $+19 38 45.24$
 $+22 46.43$
 1.38340
 $+27.35$
 1.41075
 -25.75
 $- .03$
 $+ .12$
 -25.66
 $+19 38 19.58$

41 3865 40 4690
 -37.28
 1.57148
 9.97399
 1.66118
 $+45.83$
 $41 31.73$
 $+19 41 16.62$
 $+22 43.10$
 1.38220
 $+27.35$
 1.40955
 -25.68
 $- .24$
 $+ .04$
 -25.88
 $+19 40 50.74$

Jan 12 1873
 4.38
 $2 54$
 $+3 35 +0.6$
 $\overline{10}$

Jan 12
 48 Ceph
 3 3
 $\overline{10}$

Jan 12
 3 Oct
 $\overline{10}$

Jan 12
 39 Jauri
 $\overline{10}$

Jan 12 1873
 1 Polaris
 $\overline{10}$

54 3433 54 10.16
 $+02$
 $+27.87$
 $+ .02$

3 2630
 $+02$
 $+27.87$
 $+ .02$

4760 6 4560 7 8.02 39 1133 39 28.19

11 10.41

Jan 12 1873
+383 57 50
+19 47 +36
+22 36 +3857 2.47 57 22.48
57 30.60 +27.84
+ .14+0.22
57 50.46+19 50 0.67 7.55
-2 32.02
- 0.8
- 3.5
47 50.46 57.86
23.35 31.23

Jan 12

4 9 22
+19 38 +36
+22 45 +388 35.40 8 58.13
* +27.83
+ .14-0.05
26.03
9+19 40 18.96
-2 32.02
- 0.8
- 3.6
37 42.54

Jan 12

4 10 28
+19 36 +36
+22 47 +3910 44.13 11 4.11
-0.2
+27.83
+ .14-0.06
11 32.00+19 38 23.57
-2 32.02
- 0.8
- 3.6
35 47.15

Jan 12

4 12 1
+19 38 +36
+22 45 +3911 45.10 11 57.14
-0.2
+27.83
+ .14-0.06
12 50.3+19 40 48.28
-2 32.02
- 0.8
- 3.6
38 11.8632 45.65 32 42.5
+20.01 -8.12
1.30125 0.90956m
9.97358 9.97358
1.39054m 0.99885-24.58 +9.97
32 21.07 14.22
+19 50 27.28 50 34.13
+22 35 9 +22 34 27
1.37920 1.37900
+46.92 +46.92
1.42612 1.42592
-26.68 -26.66
- .07 - .02
+ .14 + .16-26.61 -26.38
49 53 0.67 50 7.55Comparison Start for (112)
June 17 1873B Mrs Men
14 50

50 16.7 50 56.98

B Bothe
13 48

48 46 24.93

B Bothe
14 56

56 32.10 56 57.30

-37 log const = 0.11571m

15 33 40
-23 58 -24
+66 21 +9253 0.1 33 14.80
-0.2
+14.76
+ .16-23 53 36.33
-1 5.50
- 1.7
+ 11.4
54 32.13

41 58.20

19 38.65

28 29.95

14 36.60
+14.70
1.16732
9.96084
1.24387m
-17.53
14 19.07
-23 51 30.72
+66 15 45
2.11452
-13.89
2.10063
-126.07
+ .05
+ 41
-2 56.1
-23 53 36.33

comp. Stars (112)
June 17 1873
-37

log error = 0.11571 m

June 17 1873
-37

15 34 25 - 23 55 -44 + 66 18 +92	15 35 25 - 23 51 -44 + 66 14 +92	15 36 43 - 23 59 -45 + 66 22 +92	15 38 18 - 24 19 -45 + 66 42 +92
33 58.6 63 1322 - .02 + 14.76 + .16	35 1.4 35 14.41 - .02 + 14.76 + .16	36 19.5 36 32.33 - .02 + 14.76 + .17	37 41.9 37 36.0 - .02 + 14.76 + .17
- 1.83 33 26.29	- 1.84 35 27.47	- 1.84 36 45.46	- 1.86 38 16.65
-23 53 34.88 - 1 5.50 - 1.7 + 11.4 54 30.68	-23 50 30.11 - 1 5.50 - 1.7 + 11.4 51 25.91	-23 58 30.57 - 1 5.50 - 1.7 + 11.3 59 26.41	-24 17 53.92 - 1 5.50 - 1.7 + 11.3 18 49.82
13 23.85 - 45.38 1.65 68.6 9.96 101 1.73 35.8 + 54.15 14 18.00 -23 51 29.65 + 66 14 32 2.11 41.1	11 28.40 + 13.01 1.11 42.8 9.96 123 1.19 122.2 - 15.53 11 12.87 -23 48 24.52 + 66 12 36 2.11 34.6	19 28.05 + 12.83 1.10 82.3 9.96 079 1.18 47.3 - 15.30 19 12.75 -23 56 24.40 + 66 20 36 2.11 61.8	39 00.0 + 21.70 1.33 64.6 9.95 96.5 1.41 18.2 - 25.81 38 34.19 -24 15 45.84 + 66 40 8 2.12 28.3
- 13.89 2.10 22.2 - 125.95 + .41 + 31 - 2 52.3 -23 53 34.88	- 13.89 2.09 95.7 - 125.74 + .03 + 14 - 2 55.9 -23 50 30.11	- 13.89 2.10 22.9 - 126.55 + .03 + 41 - 2 61.1 -23 58 30.51	- 13.89 2.10 89.4 - 128.51 + .10 + 36 - 2 80.4 -24 17 53.92

June 25 1873

Alphidhi.

-35 log error = 0.11571 m

16 7 y 14.4 7 32.89	15 28 18 - 17 16 -31 + 59 39 +86	15 33 40 - 23 58 -45 + 66 21 +92	15 34 25 - 23 55 -44 + 66 18 +92
28 21.4 28 10.92 - .02 + 10.44 + .11 - 1.75 28 19.70	33 13.3 33 34.46 - .02 + 10.44 + .16 - 1.83 33 43.21	34 22.6 34 17.39 - .02 + 10.44 + .15 - 1.83 34 26.13	35 17.39 - .02 + 10.44 + .15 - 1.83 35 26.13
- 17.7 52.87 - 1 44.4 - 1.5 + 10.3 8 48.51	- 23 58 19.34 - 1 44.4 - 1.7 + 11.6 59 13.88	- 23 52 23.99 - 1 44.4 - 1.7 + 11.6 53 18.53	- 23 50 30.11 - 1 44.4 - 1.7 + 11.6 51 25.91
43 12.35 - 10.48 1.02 036 9.97 997 1.11 60.4 + 13.06 29 4.70 - 17 6 16.41 + 59 30 0 1.98 57.2 - 29.4 1.98 57.8 - 96.78 + .02 + 30 - 1 36.46 - 17 7 52.87	28 56.70 - 10.48 1.02 036 9.97 997 1.11 60.4 + 13.06 29 4.70 - 17 6 16.41 + 59 30 0 1.98 57.2 - 29.4 1.98 57.8 - 96.78 + .02 + 30 - 1 36.46 - 17 7 52.87	19 23.55 + 21.16 1.32 55.2 9.96 084 1.40 20.7 - 25.24 18 58.31 - 23 56 9.96 + 66 20 31 2.11 61.5 - 28.2 2.11 33.3 - 129.82 + .09 + 35 - 2 93.8 - 23 58 19.34	12 58.35 - 4.21 0.62 42.8 9.96 101 0.70 10.0 + 50.2 13 3.37 - 23 50 15.02 + 66 14 6 2.11 39.7 - 26.8 2.11 12.9 - 129.21 + .00 + 24 - 2 89.7 - 23 52 23.99

Comp. Stars. (112)

June 25

i. Cass

14 18

D. Booth's

14 20

54 hrs 9 Min.

14 25

 α Libral

14 43

17 44.0 18 25.28

20 15.6 44.27

27 12.5 44.07

43 17.4 43 42.36

13 43.35

50 50.55

6 45.20

51 39.30

15 35 25

-23 51-44
+66 14 +92

35 12.7 35 18.60

-02
+10.44
+ .15-1.84
35 27.33

15 36 43

-23 59 -45
+66 22 +92

36 13.8 36 36.53

-02
+10.44
+ .16-1.84
36 45.27

15 38 18

-24 19 -45
+66 42 +92

37 49.4 38 7.53

-02
+10.44
+ .16-1.85
38 16.56

15 51 0

-24 28 -46
+66 51 +92

50 27.3 50 49.51

-02
+10.44
+ .16-1.92
50 58.16

-23 50 32.09

-1 4.44 -1 4.44

-1.7
+ 11.6
51 26.63

-23 58 32.39

-1 4.44

-1.7
+ 11.5
59 27.03

-24 17 57.47

-1 4.44

-1.7
+ 11.6
18 52.01

-24 26 52.03

-1 4.44

-1.7
+ 11.2
27 46.97

11 18.55

+ 5.90

0.77 08.5

9.96 12.3

0.84 77.9

- 7.04

11 11.51

-23 48 23.16

+66 12 26

-2.11 34.0

- 26.8

211 07.2

-129.04

+ .01

+ .10

-2 8.98

-23 50 32.09

19 38 45

+ 22.73

1.35 66.0

9.96 07.9

1.43 31.0

- 27.11

19 11.34

-23 56 22.99

+66 20 46

2.11 62.5

- 26.8

2.11 35.7

-129.88

+ .11

+ 37

-2 9.40

-23 58 32.39

38 56 25

+ 18.43

1.26 55.3

9.95 96.5

1.34 08.9

- 21.92

38 34.33

-24 15 45.98

+66 40 4

2.12 28.3

- 26.8

2.12 01.5

-131.87

+ .07

+ 31

-2 11.49

-24 17 57.47

47 53 55

+ 22.21

1.54 65.5

9.95 91.4

1.42 14.0

- 26.39

47 27.16

-24 24 38.81

+66 49 1

2.12 59.0

- 21.9

2.12 37.1

-132.96

+ .10

+ 23

-2 12.63

-24 26 51.44

46 57.25

-26.29

1.41 97.9

9.95 91.4

1.49 46.4

+ 31.23

28.43

24 40.13

+66 48 5

2.12 55.9

- 21.9

2.12 34.0

-132.86

+ .14

+ 23

-2 12.49

26 52.62

June 26 1873

log const = 0.115712

15 28 10
-16 58
+59 21-31
+8615 29 14
~~17 9~~
-17 15
+59 38-31
+8615 33 40
-23 58
+66 21-45
+9215 35 25
-23 51
+66 14-44
+9215
-2
+6627 45.0 28 7.81
-02
+10.09
+ .1428 59.5 29 8.82
-02
+10.08
+ .1433 18.3 33 34.83
-02
+10.08
+ .2034 58.90 35 19.00
-02
+10.08
+ .19

36

-1.74
28 16.28-1.75
29 17.27-1.83
33 48.26-1.83
35 27.42-16 57 55.82
-1 4.01
-15
+10.2
58 51.13-17 15 22.58
-1 4.01
-15
+10.2
16 17.89-23 58 14.4
-1 4.01
-17
+11.7
59 13.14
13.-23 50 34.37
-1 4.01
-17
+11.6
51 28.48-23 58
-1
+5919 38.45
+22.81
1.35813
9.98067
1.4545136 47.00
+9.32
0.96942
9.98001
1.0651419 38.25
+16.00
1.20412
9.96084
1.2806711 39.95
+20.10
1.30320
9.96123
1.3801419
+
1.28
9.96
1.38-28.48
19 9.97
-16 56 21.62
+59 20 46
1.98609
-10.02
1.97607
-94.64
+ .07
+ .37
-1 34.20
-16 57 55.82-11.62
36 35.88
-17 13 47.03
+59 37 55
1.99096
-10.02
1.98094
-95.71
+ .02
+ .14
-1 35.55
-17 15 22.58-19.08
19 8.17
-23 56 8.82
+66 20 12.22
2.11612
-9.90
2.00622
-127.71
+ .05
+ .34
-2 73.2
-23 58 14.4
19-24.00
11 15.95
-23 48 27.60
+66 12 48
2.11353
-9.77
2.10376
-126.98
+ .08
+ .13
-2 67.7
-23 50 34.37-23 56
+66
2.1
-
2.1
-
+
+
-2
-23 58

Comp. Stars for (109)

Sept. 1 1873

log const = 0.115712

20 41.2 28
-27 50 -53 1.1320 48 57
-27 43 -52 1.1320 58 2
-27 45 -53 1.1320 59 53
-27 48 -53 1.1343 0.26
-02
-28.92
+ .20
- .07
-29.8
42 28.4744 29.52
-02
-28.92
+ .20
- .07
-29.8
43 57.9358 34.99
-02
-28.94
+ .20
- .07
-30.1
58 32.20 22.45
-02
-28.94
+ .20
- .07
-30.2
59 52.60

- .44

15 36 43
 - 23 59 -45
 +66 22 +.92

15 38 22
 - 24 12 -45
 +66 31 +.92

15 50 0
 - 24 28 -46
 +66 57 +.92

36 19.7 36 36.95
 - .02
 + 10.08
 + .20

37 52.4 38 12.35
 - .02
 + 10.08
 + .20

50 30.5 50 49.91
 - .02
 + 10.08
 + .20

- 1.84
 36 45.37

- 1.85
 38 20.76

- 1.92
 50 58.25

- 23 58 33.63
 - 1 4.01 - 1.1
 + 1.7
 + 11.5
 59 27.84

- 24 8 36.73
 - 1 4.01 - 1.1
 + 1.7
 + 11.5
 9 30.94

- 24 26 52.40
 - 1 4.01
 + 1.7
 + 11.2
 27 46.91

19 37.60
 + 19.25
 1.28443
 9.96079
 136093

29 40.50
 + 19.95
 1.29994
 9.96028
 137593

47 53.30
 + 19.41
 1.28803
 9.95914
 136288

- 22.96
 19 14.64
 - 23 56 26.29
 + 66 20 46
 2.11625

- 23.76
 29 16.71
 - 24 6 28.39
 + 66 30 49
 2.11965

- 23.06
 47 30.24
 - 24 24 41.89
 + 66 49 1
 2.12590

- 9.77
 2.10648
 - 127.78
 + .07
 + .37

- 9.77
 2.10988
 - 128.78
 + .08
 + .36

- 9.27
 2.11663
 - 130.81
 + .07
 + .23

- 2 7.34
 - 23 58 33.63

- 2 8.34
 - 24 8 36.73

- 2 10.51
 - 24 26 52.40

