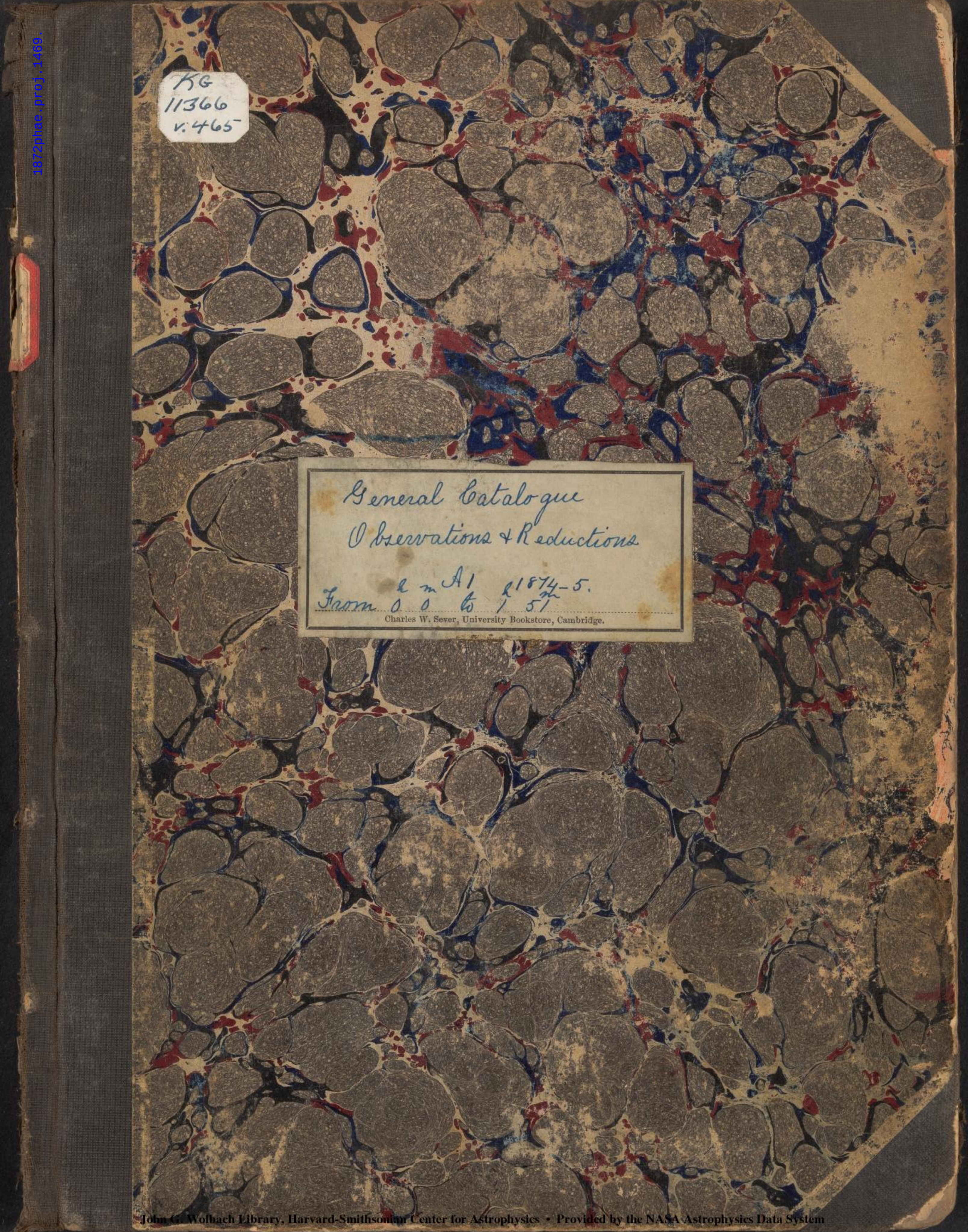
KG
11366
v.465



General Catalogue
Observations & Reductions
A1 1874-5.
From $0^h 0^m$ to $1^h 51^m$

Charles W. Sever, University Bookstore, Cambridge.

GZ. C. 1874–5

Observations & Reductions

A1

From $0^h 0^m$ to $1^h 51^m$

1874	i	log tang i	Const 15 tang i
From Jan 15 to Apr. 12	4° 59' 8"	8.94069	0.11678
,, Apr 13 ,, May 28	4 54 28	8.93383	.10992
,, May 29 ,, Sept. 10	4 51 50	8.92991	.10600
,, Sept. 11 ,, Oct. 28	4 50 54	8.92851	.10460
,, Oct. 29 ,, Dec. 10	4 48 44	8.92525	.10134
,, Dec. 11 ,, Dec. 31	4 43 22	8.91706	.09315

1875			
From Jan 1 to Dec 31	5° 5' 11"	8.94943	0.12552
,, except Aug. 5 ,, Aug. 10	5 9 22	8.95537	.13146

α Andromedae
h m s
0 1 56
° ′
+28 24
= +13 59
smg = +.24

1874	m	s		°	″	
Oct. 27	1	55.52		23	65.4	
Nov. 1		55.49	−.03		66.0	+.6
6		55.46	.03		66.5	.5
11		55.42	.04		66.9	.4
16		55.37	.05		67.3	.4
21		55.32	.05		67.5	.2
26		55.27	.05		67.7	.2
Dec. 1		55.21	.06		67.8	.1
6		55.15	.06		67.9	.1

1875	m	s		′	″	
Nov. 16	1	58.77	−5	+24	29.3	
21		.72			29.6	+.3
26		.66	6		29.8	.2
Dec. 1		.61	5		29.9	.1
6		58.55	6		30.0	+.1
11		49	6		29.9	−.1
16		43	6		29.8	.1
21		37	6		29.6	.2
26		58.30	7		29.4	−.2

−18 −08 −13 −10 −18 −10 −16
1874 Oct. 28 Oct. 30 Nov. 2 Nov. 3 Nov 7 Nov 9
−213 −~~2??~~271 −162
0 1 47.7 1 33.8 −.305
50.0 36.6 1 42.3 1 27.6 1 40.3 1 26.0 1 40.7 1 32.1
52.3 38.7 44.6 30.1 42.6 27.6 43.0 34.2
57.0 46.9 32.3 45.0 29.6 45.3 35.8
59.3 51.6 49.6 50.0
2 1.6 2 19.4 53.9 52.0 52.3
4.0 21.8 56.3 54.4 54.6
6.4 23. 58.6 2 13.6 56.6 2 8.9 57.1 2 13.7
11.1 2 1.0 16.1 58.9 10.8 59.5 16.5
13.4 5.7 18.4 2 3.7 13.0 2 4.1 18.5
15.8 8.0 6.0 6.4
10.4 8.5 8.7

3186 3793 4176 4217
300 240 −0.58 180 180
18.6 1 36.37 619 3 1 30.00 5976 1 27.73 6017 1 34.03
2 1.691 2 21.50 1 56.300 2 16.031 54.327 2 10.90 1 54.700 2 16.23
2 1.673 2 −5.92 56.282 ~~56.36~~ 0.58 54.309 ~~14.31~~ ~~10.883~~ 54682 ~~52.65~~
1 55.52 −.10 1 55.47 −.87 1 55.45 +1.31 1 55.43 + .88
+ 6.15 −.09 + 0.81 −.11~~07~~ − 1.14 −1.10 − 0.75 −.89
2.88 −2.83 −.11 ~~−.07~~
−2.81 −2.79
− 5.98 1 .5268 − 0.68 1 52.69 + 1.~~15~~29 1 ~~52.65~~.66 + 0.84 1 52.68
− .16 − .11 − .15 52.66 − .09
− 2.88 + 0.21 − 2.83 +.26 − 2.81 +.28 − 2.79 +.36
− 9.02 − 3.62 − 1.81 67 − 2.04
2 1.67 21 54.94 1 56.28 21 58.50 1 54.31 21 56.06 1 54.68 21 57.18
+2 10.33 +2 8.71 +2 10.22 +2 9.98
1 52.65 −.7 1 52.66 −7 53.50 64 −7 52.64 −7
55.74 −24.40 55.55 −25.30 55.73 −25.50 55.73 −25.70
+2.18 23 ~~40.80~~17 7 23 41.~~84~~21 23 ~~40.71~~08 23 ~~41.39~~40.76
% = ± 2.55 ± 2.63 ± 2.65 ± 2.69
5
T−U + 25.32 −19.81 + 26.30 −19.93 +26.60 −16.57 + 20.67 −21.53
0 55 0 0 0 0 0

′ ″ ′
0 45 0 55.1 4 58.2 0 52.7 0 8.2 0 49.7 0 2.1 0 53.1 0 2.4 0 50.9 0 8.2 0 56.2
16.8 6.6 6.0 1.5 16.2 56.6 10.5 0.8 13.3 0.1 18.4 5.8
′ 21.3″ ′ 121.7 124.2 114.2 24.4 106.3 12.6 113.8 15.7 111.0 26.6 122.0
0 10.65 1 0.85 0 2.10 0 57.10 0 12.20 0 53.15 0 6.30 0 56.95 0 7.85 0 55.50 0 13.30 1 1.00

1.40346 1.29688 1.41996 1.29513n 1.42488 1.21932n 1.31534 1.33304n
1.45337 1.34575 1.46561 1.34078n 1.47053 1.26497n 1.36099 1.37869n
+ 28.40″ − 22.17 + 29.22 −21.92 +29.55 −18.41 +22.96 −23.92
0 39.05 0 38.68 0 35.52 0 35.03 0 37.40 0 37.09 0 36.26 0 37.08
+28°
22 9.30 22 9.67 22 13.03 22 13.32 22 10.95 22 11.26 22 12.09 22 11.27
4.48 12.83 22 13.07 11.10 11.68
+13 58 4 58 54 57 55 58 50 58 5 58 46 57 59 58 50 58 1 58 48 58 6 58 54
1.15600 1.15640
+ 233 +358 +358 +1774 +1774 +168
1.15833 1.15880 1.15958 1.15998 1.17374 1.17414 1.15768 1.15808
Rg −14.40 −14.41 − 14.44 − 14.45 − 14.92 − 14.93 − 14.38 − 14.39
λY−Y
Rmd −.14 −.27 −.09 −.15 −.36 −.08 −.15 −.24 −.06 −.09 −.22 −.10
Rns −.01 −13 −.03 −.00 −13 −.03 −.00 −12 −.03 −.01 −11 −.02
Sum −14.55 −14.53 −14.59 −14.56 −15.07 −15.02 −14.48 −14.52
√U 54.75″ 55.14 21 58.44 58.76 55.88 56.24 57.61 56.75
√24 24 55 24 6.4 6.6 6.8
+2 10.8 10.4 +2 8.0 +2 7.6 10.7 10.4 +2 9.2 10.0
+ 2 10.6 7.9 10.5 9.6
+2 10.01 9.40 +2 8.55 +2 10.10 +2 10.13
* .64 ~~+1 45.00~~ * .63 7.92 23 40.16 * .64 9.46 39.84 * .65 9.48 41.39
− 2 4.40 4.49 3.95 − 25.30 5.39 41.38 − 25.50 5.59 40.20 − 25.70 5.79 40.53
23. 40.14 43.96 43.78
+0 45.00 23 39.94 59.85 +1 42.62 41.12 40.72 +1 0.63 1.03 40.02 +1 59.93 40.96 0.87

1874 1875 Cor α cor. δ A, A A_1

s
α 52.638 55.726
δ +23 41.06 +24 0.97 Tang δ +.54 1.14
dα +3.087 +3.088 s
dδ/dt +19.907 +19.907 minimit. -T- 2.30
l. cos δ 9.94431 9.94431 K - -.018
l. b .10260 .12552
l. b' .04891 0.06983
l. b' .04565
l b'
sin δ 9.67726

+3
.2
.1
+1
-1
.1
.2
-.2

-.26 Nov. 11 -.10 Nov 19 -.06 1874 Dec 10 -.28 1875 + Apr 11 X -.11 Apr 17 -.26 + Apr 21

-.267 -.115 -.090 -275 -.118 -235

0 1 36.4 1 26.1 1 31.7 1 18.7 1 31.5 1 26.8 2 47.6 2 41.0 2 50.4 2 31.6 1 51.1 1 56.7
38.7 28.2 34.0 22.9 33.7 29.1 49.9 42.7 52.8 33.5 53.6 58.6
41.1 29.7 36.5 24.4 36.0 30.5 52.2 44.8 55.2 35.7 56.0 0.9
45.7 41.4 40.9 57.0 59.8 2 0.6
48.1 44.0 43.1 59.3 3 2.2 3.0
50.4 46.0 45.6 1.6 4.5 5.1
52.8 2 4.9 48.2 2 6.1 47.9 2 6.1 4.0 3 25.1 6.9 3 15.6 7.5 2 28.2
55.1 7.8 50.7 8.1 50.3 7.9 6.3 26.8 9.2 17.3 10.0 30.1
59.9 9.8 55.4 11.0 55.0 9.9 11.0 29.4 14.1 19.3 14.6 32.2
2 2.2 57.9 57.4 13.3 16.4 16.9
4.5 2 0.2 59.9 15.7 18.8 19.3

4349 4460 5013 3179 2908 2377
120 60 300 240 180
5549 1 28.00 5060 1 22.00 1 28.80 179 2 42.83 503 2 33.60 577 1 58.73
1 50.445 2 7.501 46.000 2 8.401 45.572 2 7.97 3 1.627 3 27.10 3 4.573 3 17.40 2 5.245 2 30.17
50.427 +5.15 45982 +9.52 45.554 +9.65 1.609 -T *2.68 4555 -T *5.70 5.227 -*6.37
1 55.42 -.14 1 55.34 -.05 1 55.09 -.03 1 58.82 -.15 1 58.76 -.06 1 58.72 -.14
- 4.99 - 9.36 - 9.54 + 62.79 + 65.99 + 6.51
-2.78 -2.70 -2.45 -3.09 -3.03 -2.99
+ 5.12 1 52.66 + 9.51 1 52.75 + 9.59 1 52.72 - 62.71 +X1 55.68 69 - 65.12 55.77 - 6.41 55.73
- .14 - .06 - .05 - .15 55.69 - .06 - .13
- 2.78 +.31 - 2.70 +.39 - 2.45 +.64 - 3.09 - 3.03 - 2.99
+ 2.20 84 + 6.75 + 7.09 - 65.95 - 68.81 - 9.53
1 50.43 21 57.48 1 45.98 21 57.03 1 45.55 21 53.66 3 1.63 40 43.96 3 4.55 48.60 2 5.23 43.67
+2 10.77 +2 10.59 +2 15.64 -16 14.11 -16 14.05 -16 13.64
52.63 -.7 52.73 -.7 52.64 -.8 55.66 -.8 55.74 -.8 55.70 -.8
55.72 -25.80 55.82 -26.40 52.673 56 -26.80 -28.10 -28.40 -28.60
23 43 ~~27~~ 411 23 40 ~~75~~ 52 55.6 54 ~~24~~ 41.70 24 ~~36.89 29.17~~ - ~~29.15~~ 28.65
±2.71 -*2.78 ±2.93 .638 +.035 +0.17 73 24 ~~*0.95~~ 24 0.85 24 ~~0.79~~ 0.65
s
+ 22.44 - 17.06 + 24.00 - 22.40 + 16.77 - 22.40 + 18.80 - 25.47 + 30.97 - 12.83 + 6.52 - 24.92
0 0 0 40 40 40
-*3.03 -*3.11 -*3.12

0 5.8 0 50.7 0 7.4 0 59.8 0 16.9 0 59.7 1 21.6 2 14.0 1 10.3 2 1.9 1 38.2 2 16.1
15.9 58.9 10.9 1.9 25.9 7.2 33.0 24.7 16.0 6.4 44.0 23.0
21.7 109.6 18.3 121.7 42.8 26.5 54.6 38.7 6.3 8.3 82.2 39.1
0 10.85 0 54.80 0 9.15 1 0.85 11 21.44 1 3.45 41 27.30 42 19.35 41 13.15 42 4.15 41 41.10 42 19.56

1.35102 1.23198n 1.38021 1.35025n 1.22453 1.35025n 1.27416 1.40603n 1.49094 1.10823n 0.81425 1.37655n
1.39667 1.27763n 1.42586 1.39590n 1.27018 1.39590n 1.34399 1.47586n 1.56077 1.17806n 0.88408 1.46638
+24.93 -18.95 +26.66 -24.88 +18.63 -24.88 +22.08 -29.91 +36.37 -10.07 +7.66 -29.29
0 35.78 0 35.85 0 35.81 0 35.97 0 40.03 0 38.57 41 49.38 41 49.44 41 49.52 41 49.68 41 48.76 41 50.28

22 12.57 22 12.50 22 13.54 22 12.38 22 8.32 22 9.78 40 58.97 40 58.91 40 58.83 40 59.27 40 59.59 40 58.07
12.53 2 12.46 9.05 58.44 59.05 5.883
58 4 58 48 58 2 58 54 58 14 58 56 57 39 58 31 57 25 58 16 57 53 58 31
+ 781 + 2688 + 2633 1.15580 1.15620 + 2505 + 1669
+1291
1.16381 1.16421 1.18288 1.18328 1.18233 1.18273 1.16871 1.16911 1.18085 1.18125 1.17249 1.17289
- 14.58 - 14.59 - 15.24 - 15.25 15.22 - 15.23 - 14.75 - 14.76 - 15.16 - 15.18 - 14.87 - 14.89

-.11 -.07 -.13 -.11 -.06 -.11 -.08 -.14 -.21 -.03 - .02 -.18
-.01 -23 -.03 -.01 -36 ~~.03~~ .11 -.04 -33 -.12 .08 -44 -.14 -.12 -56 -.20 -.18 56 -.23
-11 -18 -16 -22 -28 -28
- 14.70 - 14.69 - 15.38 - 15.47 - 15.32 - 15.46 - 14.91 - 15.04 - 15.49 - 15.41 - 15.07 - 15.25
21 57.87 21 57.81 58.16 56.91 53.00 64.32 40 44.06 43.87 43.34 43.86 44.62 42.82
6.9 7.8 7.9 24 29.1 29.4 29.6
+2 9.0 9.81 9.3 10.6 14.9 13.6 -16 15.0 14.8 13.9 13.5 14.9 13.2
9.0 10 10.4 +2 14.2 -16 ~~15.9~~ 14.9 14.2 4 14.1
+2 10.61 +2 10.46 +2 15.54 -16 14.22 -16 14.02 -16 13.81
*- .66 9.95 42.02 *- .61 9.79 40.55 *- .67 14.87 41.07 - .72 14.94 1.12 - .74 14.76 0.18 - .74 16.55 1.37
- 25.80 6.89 41.96 - 26.40 6.49 40.30 - 26.80 6.89 42.39 - 28.10 8.19 0.93 - 28.40 8.49 0.70 - 28.60 8.49 57.67
+1 44.15 41.99 +1 1.80 43.39 40.42 +1 0.33 48.07 41.73 1.64 -16 42.54 24 1.02 -16 43.16 0.44 43.15 0.52

α	1874.0 δ	α	1875.0 δ
52.65		55.66	
.66		.74	
~~.56~~ .64		.70	
.64		.63	
.63		.67	
.73		.79	
.64		.72	
52.636		55.701	
.638	41.06	.726	0.97
+.0~~1~~8		-.025	

-.09 +		+.00 +		-.06 X		-.02	
Nov 29		Nov 30		Dec 14		Dec 18	
-.088		-.050		-.080		-.050	
1 49.0	1 37.1	1 48.6	1 36.1	1 40.0	1 30.5	1 38.0	1 32.1
51.3	39.3	51.0	38.7	42.3	32.6	40.4	34.2
53.8	42.0	53.4	40.8	44.6	34.9	42.7	36.3
58.3		58.1		49.2		47.3	
2 0.8		2 0.3		51.7		49.6	
3.0		2.7		54.1		52.1	
5.3	2 33.0	5.0	2 17.8	56.4	2 4.0	54.3	2 12.0
7.7	35.0	7.3	19.6	58.8	6.5	56.8	14.2
12.2	37.2	12.1	21.8	3.4	8.9	1.4	15.1
14.7		14.4		5.9		3.7	
17.1		16.8		8.2		6.1	
2732		2697		4146		3924	
240		240		180		180	
332	1 39.47	297	1 38.53	5946	1 32.67	5724	1 34.20
2 3.018	2 35.07	2 2.700	2 19.73	1 54.055	2 6.47	1 52.036	2 13.77
3.000	-*4.39	2.682	-*4.10	54.037	+14.53	52.018	+6.481
1 58.63	-.085	1 58.62	+.000	1 58.46	-.083	1 58.480	-.081
+ 4.37		+ 4.06		- 4.42		- 6.44 38	
	-2.90		-2.89		-2.73		-2.67
- 4.42	1 55.66	- 4.09	55.69	+ 4.52	55.81	+ 6.40	55.75
- .05		- .03		- .04		- .03	
- 2.90		- 2.89		- 2.73		- 2.67	
- 7.37		- 7.01		+ 1.75		+ 3.70	
2 3.00	40 45.77	2 2.68	41.92	1 54.04	45.69	1 52.02	42.17
	-16 14.22		-16 12.52		-16 14.50		-16 12.07
1 55.63	- .8	∴ 55.67	- .8	55.79	- .8	∴ 56.72	- .9
	-28.90		-28.90		-28.80	55.701	-28.70
	24 ~~31.11~~ 0.29		~~24 25.16~~ 4.74		24 ~~30.81~~ 0.09	726	24 ~~25.45~~ 4.62
	1.85		23 57.70		2.09	-.025	0.50
40 +23.55	-32.05	40 +24.17	-17.03	40 +21.39	-12.41	40 +17.84	-21.73
-* 3.13		-* 3.13		-* 3.22		-* 3.23	
1 17.5	2 22.4	1 22.5	2 10.9	1 21.5	2 1.8	1 29.8	2 16.1
20.9	25.4	21.1	8.5	22.0	2.0	28.7	15.3
38.4	78	36	19.4	35	3.8	18.5	11.4
41 19.20	42 23.90	41 21.80	42 9.70	41 21.75	42 1.90	41 29.25	42 15.70
1.37199	1.50583n	1.38328	1.23121n	1.33021	1.09377n	1.25139	1.33706n
1.44182	1.57566n	1.45311	1.30104n	1.40004	1.16360n	1.32122	1.40689n
+27.66	-37.64	+28.38	-20.00	+25.12	-14.58	+20.95	-25.52
41 46.86	41 46.26	41 +50.18	41 49.70	41 46.87	41 47.32	41 50.20	41 50.18
41 1.49	41 2.09	40 58.17	40 58.65	41 1.48	41 1.03	40 58.15	40 58.17
~~40 46.86~~		58.41		1.25		58.16	
1.79						57 2	58 2
						1.15540	1.15600
+3617		+5138		+2701		+3865	
1.19197	1.19237	1.20718	1.20758	1.18281	1.18321	1.19405	1.19465
-15.56	-15.57	-16.11	-16.13	-15.23	-15.25	-15.63	-15.61
-.12	-.23	-.13	-.07	-.10	-.03	-.07 -.70	-.09
-.19 -.90 -.45	-.36	-.29 -.74 -.37	.33	-.21 -.64 -.22	-.30	-.22 -.31	-.32
-15.87	-16.16	-16.45	-16.53	-15.54	-15.58	-15.92	-16.06
40 45.62	40 45.93	41.72	42.12	45.94	45.45	42.23	42.11
24 29.9		29.9		29.8		29.7	
-16 15.7	16.0	11.8	12.2	16.1	15.6	12.5	12.4
-16 15.9		12.0		15.8		12.5	
-16 14.43		- 12.77		- 14.27		- 12.37	
- .75 15.18	1.54	- .75 13.52	59.30	- .77 15.04	2.10	- .77 13.14	0.39
- 28.90 8.99	1.85	- 28.90 8.99	59.70	- 28.80 8.89	1.61	- 28.70 8.79	0.29
-16 44.08		42.42		43.84		41.84	
24 1.69			59.50		1.85		0.33

1874

22 Andromedae

			m s		′ ″	
h m s	Oct.	27	3 49.66		22 41.2	
0 3 50		32	49.61	-.05	42.2	+1.0
	Nov.	6	49.56	.05	43.1	.9
° ′		11	49.50	.06	43.9	.8
+ 45 23		16	49.44	.06	44.7	.8
		21	49.37	.07	45.3	.6
z = - 3 0		26	49.29	.08	45.8	.5
sin z = -.05	Dec	1	49.21	.08	46.2	.4
		6	49.12	.09	46.6	.4

α 1874 46.725 s
δ +22.1526 ″
dα/dt +3.096 s
dδ/dt +20.051

log cos δ ~~9.65543~~ 9.84656
log k ·10434
log C′ ~~9.75677~~ 9.95116

log C′ 9.94790

sin δ 9.85237

corr α — .057 s
corr δ — .45″

Läng δ +1.01 1.42

mic int = I = 2.91 s

K -.022

	-.18 1874 Oct. 28 -.08		-.13 Nov. 3 -.10		-.18 Nov. 7 -.10		-.16 Nov. 9		-.26 Nov. 11		-.10 Nov. 19	
	-.305		-.213		-.~~266~~ -.271		-.162		-.267		-.115	
0	3 38.2	3 21.3	3 32.8	3 13.3	3 30.8	3 21.0	3 31.2	3 19.4	3 27.0	3 15.1	3 22.4	3 2.0
	41.2	23.9	35.8	16.7	33.7	24.8	34.1	22.0	29.8	18.6	25.3	5.9
	44.0	26.1	38.7	18.8	36.7	27.0	37.0	23.9	32.9	20.7	28.3	7.9
	50.0		44.5		42.6		42.9		38.7		34.0	
	53.0		47.4		45.5		45.8		41.6		36.9	
	56.0	4 7.0	50.3		48.4		48.8		44.6		39.9	
	58.9	10.1	53.3	4 13.5	51.4	3 53.5	51.7	4 0.0	47.6	4 12.1	43.0	4 12.6
	4 1.9	12.4	56.2	16.7	54.4	56.0	54.6	1.7	50.5	15.0	45.8	15.9
	7.6		4 2.0	18.8	0.2	59.1	0.7	4.0	56.3	17.0	51.6	18.0
	10.5		5.0		3.0		3.6		59.2		54.6	
	13.5		8.0		5.8		6.3		4 2.3		57.6	
	3748		3740		3525		3567		4305		4394	
	240		180		180		180	3 2177	60			
	6148	3 23.77	5540	3 16.27	5325	3 24.27	5367	3 ~~21.83~~	490.5	3 18.13		3 5.27
3	~~54.073~~	4 9.833	3 50.364	4 16.333	48.409	3 56.203	48.791	4 1.903	44.591	4 14.703	39.945	4 15.50
	55.891 55.865	-5.92	50.342	-0.58	48.387	+1.37	48.769	+0.88	44.569	+5.15	39.923	+9.52
3	49.65	-.18	3 49.57	-.13	49.56	-.18	49.52	-.16	49.50	-.26	49.40	-.10
+	6.22	-.11	+ 0.77	-.14	- 1.16	-.14	- 0.75		- 4.93		- 9.48	
+	6.28	-2.93	+ 0.83	-2.85	- 1.10	-2.83	- 0.69	-2.80	- 4.87	-2.78	- 9.42	-2.68
		3 46.73		46.64		46.61		46.~~x~~.69 46.69		46.68		.4666 46.76 46.66
-	5.98		- 0.68		+ 1.74		+ 0.84		+ 5.12		+ 9.51	
-	.31		- .21		- .27		- .16		- .27		- .12	
-	2.93	+17	- 2.85	+24	- 2.83	+27	- 2.80	+30	- 2.78	+31	- 2.68	+42
	~~+ 2.74~~	-9.22 3075	- 3.74	3425	- 1.96	3256	- 2.12	3355	+ 2.07	3268	+ 6.71	3397
3	55.87	20 1033	3 50.34	+2 8.71	3 48.39	+2 10.22	3 48.77	+2 9.98	3 44.57	+2 10.77	3 39.92	+2 10.59
		+ .1		+ .1		+ .1		+ .1		+ .1		+ .1
0	3 ~~58.51~~ 46.65	- 26.10	46.60	- 27.70	46.43	- 28.00	46.65	- 28.30	46.64	- 28.60	46.63	- 29.90
		49.75		49.70		49.69		49.75		49.74		49.73
+45		22 15.08		22 15.36		22 14.88		22 15.33		22 14.95		22 14.76
36/d =	± 255		± 263		± 265		± 269		± 271		± 278	
	s + ~~30.30~~ 32.12	- ~~15.76~~ 13.94	+ 34.09	- 25.97	+ 24.14	- 7.79	+ ~~26.46~~ 27.02	- 13.11	+ 26.46	- 30.11	+ 34.67	- 25.56
	0		0		0		0		0		0	
	1 45.7	2 27.4	1 43.0	2 35.9	1 53.0	2 22.0	1 48.7	2 14.8	1 50.4	2 41.1	1 45.3	2 48.9
	57.2	38.8	50.1	43.9	1.7	29.4	57.7	34.7	48.9	49.9	46.9	48.4
	102.9	66.2	93.1	79.8	114.7	51.4	106.4	49.5	99.3	91.0	92.2	97.3
	1 51.45	2 33.10	1 46.55	2 39.90	1 57.35	2 25.70	1 53.20	2 24.75	1 49.65	2 45.50	1 46.10	2 48.65
	1.50678	1.14426n	1.53263	1.41447n	1.38274	0.89154n	1.43169	1.11760n	1.42259	1.47871n	1.53995	1.55096n
	1.45794	1.09542n	1.48053	1.36237n	1.33064	0.83944n	1.37959	1.06550n	1.37049	1.42661n	1.48785	1.49886n
	+28.70	-12.46	+30.24	-23.04	+21.41	-6.91	+23.97	-11.63	+23.47	-26.71	+30.75	-31.54
	2 20.15	2 20.64	2 16.79	2 16.86	2 18.76	2 18.79	2 17.17	2 18.12	2 13.12	2 18.79	2 16.85	2 17.11
+45	20 28.20	20 27.71	20 31.56	20 31.49	20 29.59	20 29.56	20 31.18	20 38.23	20 38.23	20 29.56	20 31.50	20 31.24
	29.95		31.52		29.57		30.70		29.89		31.37	
-3	30	16	59	34								
	0.48040n	0.47870n										
	+237	.48107	+359		+1777		+171		+783		+2691	
	0.48277	~~.45740~~	.48399	.48229	.49817	.49648	.48211	.48041	.48823	.48653	.50781	.50561
	+ 3.03	+ 3.03	+ 3.05	+ 3.04	+ 3.15	+ 3.14	+ 3.03	+ 3.02	+ 3.08	+ 3.07	+ 3.22	+ 3.20
	-.28 -.47	-.05	-.32 -.63	-.18	-.17 -.33	-.02	-.20 -.35	-.05	-.19 -.57	-.25	-.85 -1.22	-.36
	-.06 -.23	-.08	-.05 -.31	-.08	-.06 -.16	-.07	-.03 -.17	-.07	-.05 -.28	-.08	-.20	-.31 -.25
	+ 2.69	+ 2.90	+ 2.68	+ 2.78	+ 2.92	+ 3.05	+ 2.80	+ 2.90	+ 2.84	+ 2.74	+ 2.67 -.61	+ 2.53
20	30.89	30.61	34.24	34.27	32.57	32.61	33.98	33.18	33.07	32.30	34.17	29.77
22	41.4		43.0		43.3		43.6		43.9		45.2	
+2	10.5	10.8	+2 8.8	8.7	+2 10.8	10.7	+2 9.6	10.5	+2 10.8	11.6	+2 11.0	11.4
+2	10.65		8.75		10.75		10.05		11.20		11.20	
+2	10.2		8.3		10.3		9.6		10.8		10.8	
+2	10.01	22 14.93	+2 8.55	15.22	+2 10.10	14.74	+2 10.13	15.94	+2 10.61	15.21 14.44	+2 10.46	14.87
+	.13 10.14	14.65	+ .13 8.68	15.25	+ .13 10.23	14.84	+ .13 10.26	15.09	+ .13 10.74		+ .14 10.60	14.47
-	26.10 +0.05		- 27.70 7.65		- 28.00 7.95		- 28.30 8.25		- 28.60 7.55		- 29.90 9.85	
+1	44.04 3484	14.79	+1 44.98 3528	15.23	+1 42.23 3484	14.79	+1 41.96 3558	16.53	+1 42.14 3488	14.83	+ 40.70 3472	14.67

1875 1875 ♃

α	s 49.822	Nov. 16	3m 52.82		22'	66.9		l cos δ	9.84656
δ	+22 35.31	21	52.75	-.07		67.5	+.6	l ℓ	.12552
dα/dt	+3.097	26	52.67	.08		68.1	.6	ℓ ℓ'	9.97208
dδ/dt	+20.050	Dec 1	52.59	.08		68.5	.4		
		6	52.51	.08		68.8	.3		
		11	52.42	.09		69.0	.2		
		16	52.33	.09		69.1	1		
		21	52.24	.09		69.1	+0		
		26	52.14	.10		69.0	-1		

~~-20~~ -06 1874 Dec 10 -.090		-.11 1875 Nov 17 -.118		-.26 Nov 21 -.235		-.09 Nov 29 -.088		+.00 Nov 30 -.050		-.06 Dec 14 -.080		-.02 Dec 18 -.050
6 3 21.9	3 19.9	4 41.0	4 31.4	3 41.7	3 25.4	3 39.5	3 35.9	3 38.9	3 29.9	3 30.2	3 28.0	3 28.4
24.7	23.0	43.8	34.0	44.7	28.2	42.4	38.2	42.1	33.2	33.3	29.5	31.4
27.6	25.0	46.8	36.0	47.5	30.6	45.3	40.6	45.0	36.2	36.0	31.5	34.1
33.6		52.8		53.5		51.0		50.5		41.7		40.1
36.4		55.8		56.4		54.0		53.5		44.7		42.8
39.3		58.6		59.3		56.9		56.5		47.7		45.8
42.3	4 13	1.6	5 2.8	2.1	4 11.7	0.0	4 13.4	59.3	4 16.0	50.4	3 58.7	48.9
45.2	4.2	4.5	5.6	5.2	14.4	3.0	15.9	2.5	17.7	53.7	0.4	51.7
51.0	6.4	10.3	8.2	11.1	17.1	8.7	19.2	8.5	20.5	59.5	2.8	57.5
54.0		13.5		14.0		11.8		11.4		2.6		0.5
57.0		16.2		16.8		14.9		14.4		5.4		3.4
4330		3449 300		3523 300		3275 300		3832 240		4057 120		3846 120

3 22.63 6449 4 33.80 652 3 3 28.07 6275 3 38.23 6232 3 33.10 5257 3 29.67 3046

3 39.364 4 3.97 4 58.627 5 5.53 3 59.300 4 14.40 3 57.045 4 16.17 3 56.654 4 18.07 3 47.791 4 0.633 45.873

39.342 + 9.65 58.605 -1 ~~+5.70~~ 59.298 -~~+6.37~~ 57.023 -~~+4.39~~ 56.632 -~~+4.10~~ 47.768 +4.53 45.851

3 49.04 -.06 ~~+.27~~ 3 52.80 -.11 ~~+.53~~ 3 52.75 -.26 ~~+.16~~ 3 52.62 -.09 ~~+.43~~ 3 52.680 +.00 ~~-.05~~ 3 52.376 -.06 ~~+.29~~ 3 52.298

- 9.70 + 65.80 + 6.53 + 4.40 + 4.033 - 4.859 - 6.483

- 9.64 -2.82 + 65.86 -2.98 + 6.59 -2.93 + 4.46 -2.80 + 4.089 -2.78 - 4.543 -2.54 - 6.387

3 46.61 3 49.81 49.72 49.74 49.75 49.70

+ 9.69 - 65.72 - 6.41 - 4.42 - 4.09 + 4.52 + 4.40

- .09 - .12 - .24 - .09 - .05 - .08 - .05

- 2.32 +0.77 - 2.98 - 2.93 - 2.80 - 2.78 - 2.54 - 2.46

+ 7.18 20 30.31 - 68.82 39 40.81 - 9.58 21.36 - 7.31 21.50 - 6.92 22.01 + 1.90 21.00 3.89

3 39.34 +2 15.64 4 58.60 -16 14.05 3 59.28 -16 13.64 3 57.02 -16 14.22 3 56.63 -16 12.52 3 47.77 -16 13.00 3 45.85

+ 2 + .1 + .1 + .0 + .1 + .0

3 46.52 49.61 -31.60 49.78 -31.80 49.70 -32.20 49.71 -33.00 49.71 -33.00 49.67 -33.80 49.74

46.~~580~~ 20 14.55 ~~23~~ ~~2.75~~ 2.70 2.72 1.63 .120 49.718

46.723 22 34.65 22 36.62 22 34.28 22 36.59 22 33.20 122

s -.142 -104

+ 16.73 - 24.61 +24.83 - 6.90 +31.23 -15.10 + 18.81 - 19.13 +23.55 - 21.42 +18.12 -12.84 +19.00 -12.620

0 40 40 40 40 40 40

" = *2.93 -* 3.11 -* 3.12 -* 3.13 -* 3.13 -* 3.22 -* 3.23 + ~~3.23~~

+2 2.1 2 38.3 3 48 3 34.9 2 57.4 3 40.5 3 10.1 3 45.2 3 ~~8.5~~ 3 50.8 3 11.0 3 39.9 3 13.9 3 55.3

9.9 47.0 90 40.5 40 46.4 13.9 49.4 8.9 47.2 12.0 39.9 13.4 54.0

12.0 85.3 13.8 75.4 12.4 69 40 14.6 14.4 98.0 30 13 9.3

2 6.00 2 42.65 43 6.90 43 37.70 43 0.70 43 43.45 43 12.00 43 47.30 43 9.70 (9.20) 43 49.00 43 11.50 43 39.90 43 13.65 43 54.65

1.22350 1.39111n 1.39498 0.83885n 1.49457 1.17898n 1.27439 1.28171n 1.37199 1.33082n 1.25816 1.10857n 1.27878 1.49929n

1.17140 1.33901n 1.36706 0.81093n 1.46665 1.15106n 1.24647 1.25370n 1.34407 1.30290n 1.23024 1.08065n 1.25083 1.39137n

+14.84 -21.83 +23.29 -6.47 +29.29 -14.16 +17.64 -17.94 +22.08 -20.09 +16.99 -12.04 +17.82 -24.63

2 20.84 2 20.82 43 30.19 43 31.23 43 29.99 43 29.29 43 29.64 43 29.36 43 ~~31.78~~ 29.28 43 28.91 43 28.49 43 27.86 43 31.47 43 30.02

20 27.51 (27.52) 20 27.53 39 18.16 (17.64) 39 17.12 39 18.36 (17.71) 39 19.06 39 18.71 (18.85) 39 18.99 39 16.57 (19.07) (17.25) 39 19.44 39 19.86 (20.17) 39 20.49 39 16.88 (17.60) 39 18.33

0 1 59 25 0 42 0 11 0 34 59 53

0.47970n 0.47830 0.48140n 0.48020n 0.48110n 0.47950

42635 +2508 +1669 +3623 +5094 +2706 +3865

.50605 .50465 .50648 .50528 .49809 .49689 .51763 .51643 .53234 .53114 .50846 .50728 .51975

+ 3.21 + 3.20 +3.19 + 3.20 + 3.15 + 3.14 + 3.29 + 3.28 + 3.41 + 3.40 + 3.22 +3.22 + 3.31

-.08 -.17 -.17 -.02 -.26 -.06 -.10 -.10 -.14 -.12 -.09 -.05 -.10 -.18

-.25 -.82 .41 -.32 -.31 -.86 .43 -.36 -.30 -.99 .49 -.37 -.48 -1.25 .62 -.57 -.47 -1.30 .65 -.57 -.48 -11.7 .58 -.55 -.48 -.58

+ 2.88 + 2.71 + 2.41 + 2.82 + 2.59 + 2.71 + 2.70 + 2.61 + 2.88 + 2.71 + 2.65 +2.65 +2.62 +2.73 +2.55

20 30.39 20 30.24 39 20.87 39 19.94 39 20.95 39 21.77 39 21.41 39 21.60 21.87 22.15 22.51 22.14 19.50 20.88

22 46.9 23 7.1 7.5 8.3 8.3 9.1 9.1

+2 16.5 16.7 -16 13.8 12.8 -16 13.4 14.3 13.1 13.3 13.6 13.9 13.4 14.0 10.4 11.8

+2 16.60 13.50 13.65 13.20 13.75 13.70 11.10

+2 16.2 -16 13.9 14.3 13.6 14.2 14.1 11.6

+2 15.54 14.47 -16 14.02 35.70 - 13.81 35.92 - 14.43 34.33 - 12.77 36.26 - 14.27 34.40 - 12.37 12.87

+ .14 15.68 14.32 + .15 38.57 34.17 + .16 13.65 35.56 + .16 14.27 34.60 + .16 12.61 36.54 + .16 14.13 35.23 + .16 12.28

- 31.6 11.55 - 31.80 11.75 - 32.20 12.15 - 33.00 12.95 - 33.00 12.95 - 33.80 13.75 - 33.80 13.75

44.08 34.45 4.46 45.77 34.63 45.85 35.74 45.23 36.46 45.61 36.40 47.61 34.51 46.01

1874 1875

476 Draconis L.C.

		m s		′ ″			m s		′ ″	
Oct. 27	6	15.70	18	36.4		Nov. 16	6 20.70		17 67.6	
32		16.03	+.33	34.6	−1.8	21	21.17	+.47	66.2	−1.4
Nov. 6		16.40	.37	32.9	1.7	26	21.67	.50	64.8	1.4
11		16.80	.40	31.3	1.6	Dec. 1	22.20	.53	63.6	1.2
16		17.25	.45	29.7	1.6	6	22.76	.56	62.4	1.2
21										
26										

17h 6m 19s

101° 41′ ζ = − 58 18

7.8 1875 ring = −.85

1874

α 16,281 19.184

δ +18.3 59.35 = 41 0.65 + 18 39.32 = 41 26.68

dα/dt +2.904 +2.903

dδ/dt −20.034 −20.034

corr α =

corr δ =

l cos δ 9.30643n 9.30643n

l b .10134 .12582

l b′ 9.40777n 9.43195n

1874

sin δ 9.99091 Oct. 28

tang δ −4.83 .. 4.92

K = +.0786

−.18 −.10 wire int = I = 10.18

1874.0 α	δ	1875.0 α	δ
16.36		18.96	
.32		19.21	
16.340		19.085	
.281	59.35	.184	39.32
+.059		−.099	
−.09			

1874 Nov. 7		Nov. 9		1875 Nov 17		Nov 29	
−.18 −.10		−.16		−.11		−.09	
~~−.265~~ −.271		−.162		−.118		−.088	
5 53.5	5 26.2	5 54.3	5 24.5	7	6 27.5		5 28.8
58.3	30.2	59.9	36.2	5.4	33.5	5.5	35.8
6 4.1	39.0	6 4.9	45.6	10.2	47.1	10.6	47.5
9.0		10.2		15.8		15.7	
13.9		15.3		20.3		20.3	
19.0		19.6		26.0		25.5	
24.7	6 37.3	25.0	6 25.7	30.8	7 17.0	31.2	6 21.0
29.0		29.9	32.5	35.7	26.6	35.9	32.9
34.5		35.6	38.0	41.1	36.9	41.6	46.0
				45.3		46.9	
24.60		25.47					
12.0		12.0		23.06		23.32	
12.6.0	5 31.80	13.47	5 35.43		6 36.03?		5 37.27?
6 ~~13.022~~ 14.000	6 37.306	14.967	6 32.07	7 25.622	7 26.83	6 25.911	6 33.30
14.076	+1.38	15.043	+0.88	25.698	−1m ~~45.70~~	23.987	~~−4.39~~
6 16.486	+.87	6 16.~~58~~62	+.77	6 20.73	+.53	6 21.936	+.43
− 2.348	+.49	− 1.~~54~~58		+ ~~64.9~~ 65.07		+ 4.083	
	−.018		−.034		−.159		−.278
+ 1.75	6 16.63	+ 0.84	6 16.35	− 65.72	6 15.94	− 4.42	19.25
+ 1.31		+ .78		+ .57		+ .42	
− 0.18	+2.92	− 0.34	2.56	− 1.59		− 2.78	
+ 2.2843	~~5.33~~	+ 1.28	~~+4.18~~	− 66.724		− 6.78	
6 14.08	39 12.86	6 15.04	41.30	7 25.70	58 27.6	6 25.99	43.7
	+2 10.22		+2 ~~14.32~~ 8.98		−16 14.05		−16 14.22
6 16.36	+ 2.2	16.32	19.2 +2.2	18.986	+ 2.66	19.21	+ .28
.51	19.41 −26.80	16.340	−27.40		−31.90	19.095	−35.20
+ 1.01	40 58.48	.281	40 59.08		41 ~~33.40~~ 19.41	19.184	41 ~~31.97~~ 31.97
		+.059			19.41	−.089	17.75
+ ~~41.22~~ 42.20	− 24.28 23.30	+ 39.54	− 17.10	+ 49.59	− 1.21	+ 48.64	− 7.39

3 24.6
26.8
29.2
4 8.6
12.7
15.1

3 26.87
4 12.13
+6.40
~~+.10~~ .02
−2.46
49.78

20.19
−16 12.07
+ .1
−33.80
~~22 14.4 59.56~~
22 34.42

−26.26

H_l = 40
4 1.9
7.4
9.3
44′ 4.65″

1.41929n
1.35237n

.10′

45		45		25		25	
± 2.65		± 2.69		− 3.11		− 3.13	
0 25.5	0 8.1	0 19.1	0 3.7	1 37.2	1 23.2	1 39.1	1 22.9
28.7	12.4	22.9	7.7	44.9	22.8	46.6	29.9
54.2	20.5	42.0	11.4	82.1	56.0	85.7	12.8
45 27.10	45 10.25	45 21.00	45 5.70	26 41.05	26 28.00	26 42.85	26 26.40
1.62531	1.36736n	1.59704	1.23300n	1.69539	0.08279n	1.68699	0.86864n
1.03308n	0.77513	1.00481n	0.64077	1.12734n	9.51474	1.11894n	0.30059
−10.79	+ 5.96	−10.11	+ 4.87	− 13.41	+ 0.33	− 13.15	+ 2.00
45 16.31	45 − 16.21	45 10.89	45 10.07	26 27.64	26 28.33	26 29.70	26 28.40
37 32.04	37 32.11	37 37.46	37 38.28	56 20.71	56 20.02	56 18.65	56 19.95
1.98441 32.07	98524	37.57		20.36		19.30	
−58 16 40	17 57	16 46	17 1	17 7	17 20	17 5	17 22
~~1.96792n~~	~~1.96825~~	~~1.96792n~~	~~1.96800n~~	~~1.96803~~	~~1.96808~~	~~1.96803n~~	~~1.96811n~~
+17.83	+17.83	+1.76	+ 1.76	+25.13	+25.13	+36.32	+36.32
~~1.98575~~	~~1.98608~~	~~1.96968~~	~~1.96976~~	~~1.99316~~	~~1.99321~~	~~2.00435~~	~~2.00443~~
~~+ 96.77~~ 100.46	~~+96.85~~ 100.66	~~+ 93.26~~ 96.34	~~+93.27~~ 96.34	~~+98.44~~ 102.46	~~+98.45~~ 102.40	~~+101.00~~ 105.15	~~+101.09~~ 105.15
+.01	+.01	+.00	+.00	+ .02	+ .02	+ .02	+ .02
+.19	+.06 +.23	+.16	+.03 +.18	+.26	+.01 +.05	+.25	+.01 −.20
−.01	−.01 −.11	−.01	−.00 −.09	−.17	−.15 +.02	−.25	−.21 −.10
+1 ~~36.96~~	+1 ~~36.91~~	+1 ~~33.41~~	+1 ~~33.30~~	+1 ~~38.55~~	+1 ~~38.33~~	+1 ~~41.02~~	+1 ~~40.82~~

39 7.00 12.89 9.02 12.83 39 10.89 13.95 14.58 14.65 57 59.16 3.22 57 58.55 2.30 57 58.64 58 0.77
18 326 320 18 68 18 41 3.82 4.92
41 27.4 28.0 41 52.6 40 55.9
+2 ~~18.4~~ 14.5 18.4 +2 ~~17.1~~ 14.1 ~~16.4~~ 13.4 −16 ~~67~~ 10.6 58.97 16 38.79 ~~4.9~~ 9.0
+2 18.4 +2 ~~14.7~~ 13.7 −16 ~~6.2~~ 10.2 9.4 8.4
+2 10.10 +2 10.73 12.41 −16 14.02 19.94 − 14.43 16.85
+ 2.25 12.35 49 58.39 + 2.28 58.96 + 2.64 11.38 18.82 19.02 + 2.66 11.77 17.95
− 26.80 46.77 58.38 − 27.40 7.37 59.66 − 31.90 11.87 − 35.20 15.17
+1 45.55 18.39 58.36 −1 45.01 19.34 59.81 31 −16 43.58 41 ~~19.48~~ 19.48 46.97 17.40

J Pegasi
0h 16m 48s
+14° 29'
δ = +27 54
Ring = +.47

1874

Oct 27	6m 47.88s		28' 80.6"	
Nov 1	47.86	-.02	80.8	+.2
6	47.83	.03	81.0	.2
11	47.80	.03	81.1	.1
16	47.77	.03	81.2	1
21	47.73	.04	81.2	+0
26	47.69	.04	81.1	-0
Dec 1	47.65	.04	81.1	0
6	47.60	.05	81.0	-1

1875

Nov 6	6m	51.28		29' 43.2"	
11		51.21	.02	43.3	-.1
Nov. 16	6m	51.18s	.03	29' 43.4	.1
21		51.14	-.04	43.4	-0
26		51.09	.05	43.4	.0
Dec. 1		51.05	.04	43.3	.1
6		51.00	.05	43.2	.1
11		50.95	.05	43.0	.2
16		50.90	.05	42.8	.2
21		50.85	.05	42.5	.3
26		50.80	.05	42.2	.3

-.13 1874 -.10	-.26	-.13	-.06 1874	1875 + -.23 -.12	+ -.26
Nov. 3	Nov. 11	Nov. 19	Dec 10	Nov 9	Nov 21
-.213	-.267	-.115	-.090	-.352	-.235
0 6 35.7 6 24.0	6 30.0 6 19.2	6 25.7 6 12.7	6 25.3 6 14.6	7 — 7 55.9	6 44.96 38.3
38.0 25.9	32.1 22.2	27.7 15.0	27.3 17.2	— 57.8	47.0 39.8
40.0 ? 27.9	34.2 24.0	29.6 16.5	29.4 18.8	— 59.3	49.2 41.7
44.3	38.5	33.8	33.8	49.0	53.4
46.5	40.5	36.1	36.0	51.3	55.5
48.6	42.8	38.3	38.0	53.4	57.6
50.8 6 58.5	44.9 6 59.0	40.6 6 56.0	40.3 6 58.6	55.5 8 28.4	59.7 7 20.5
52.9 7 0.6	47.0 7 1.0	42.7 58.0	42.3 7 0.6	57.4 30.3	2.0 23.0
57.2 2.4	51.3 3.0	46.9 7 0.3	46.5 2.6	— 31.8	6.1 25.0
59.3	53.5	49.0	48.6	—	8.2
7 1.3	55.6	51.0	50.8	—	10.4
4748 9 80	470.4	4214	4183	2666	3940 240
5348 9 6 25.93	6 21.80	38.309 6 14.73	6 16.87	7 57.67	6340 6 39.93
6 48.627 7 0.50	6 42.764 7 1.00	6 ~~37.400~~ 6 58.10	6 38.027 7 0.60	7 53.320 8 30.17	6 57.636 7 22.83
48.611 -0.58	42.748 +5.15	38.293 +9.52	38.011 +9.65	53.304 -1m *1.78	57.620 -*6.34
6 47.83 -.03	6 47.80 -.07	6 47.75 -.03	6 47.56 -.02	6 51.22 -.06	6 51.14 -.07
+0.78 -.10	-5.05	-9.46	-9.55	+62.08 -.12	+6.48
-2.89	-2.86	-2.81	-2.62	-3.20	-3.12
- 0.68 6 45.02	+ 5.12 4497	+ 9.51 4497	+ 9.59 6 45.03	- 62.07 6 47.93	- 6.41 48.06
- .05	- .07	- .03	- .02	- .09	- .06
- 2.89 +.19	- 2.86 +22	- 2.81 +27	- 2.62 +46	- 3.20 8	- 3.12
- 3.62	+ 2.19	+ 6.67	+ 6.95	- 65.36	- 9.59
6 48.61 27 12.92	6 42.75 12.02	6 38.29 10.37	6 38.01 6.05	7 53.30 45 59.92	6 57.62 58.60 ~~31.83~~
+2 8.71	+2 10.77	+2 10.59	+2 15.64	-16 13.86	-16 13.64
6 44.99 48.07 -1.3	44.94 48.02 -1.3	44.96 48.04 -1.4	44.96 48.04 -1.5	47.94 - 1.4	48.03 -.14
-22.90	-23.00	-23.00	44.962 -22.80	-25.20	4 -25.30
+14 28 57.43	28 58.49	28 56.56	9.41 28 57.39 6.021	29 ~~47.18~~ 19.46	29 ~~45.54~~ 18.26
s 70 +22.69 -11.88 7	+20.96 -18.24	+23.58 -19.79	+21.16 -22.57	-4.35 -36.85	+17.71 -25.19
50	50	50	50	35	35
δ = *2.63"	*2.71	*2.78	*2.93	*3.02	*3.12
+4 30.9 0 13.7	4 32.4 0 20.8	4 32.2 0 25.4	4 37.9 0 29.9	1 19.9 2 1.2	0 54.0 1 49.5
42.2 25.1	45.9 35.0	40.0 34.0	49.8 44.1	23.7 5.9	56.4 51.1
73.1 38.8	78.3 55.8	72.2 59.4	87.7 74.0	43.6 7.1	10.4 10.06
54 36.55 55 19.40	54 39.15 55 27.90	54 36.10 55 29.70	54 43.85 55 37.00	36 21.80 37 3.55	35 55.20 36 50.30
1.35603 1.07445n	1.32189 1.26102n	1.37254 1.29645n	1.32552 1.35353n	0.63849n 1.56644n	1.24822 1.40123n
1.44334 1.16176n	1.40870 1.34833n	1.45985 1.38376n	1.41283 1.44084n	0.74998n 1.67793n	1.35971 1.51272n
+27.76 -14.51	+25.63 -22.30	+28.83 -24.20	+25.87 -27.60	-5.62 -47.64	+22.89 -32.56
55 4.31 55 4.89	55 4.78 55 5.60	55 4.93 55 5.50	55 9.72 55 9.40	36 16.18 36 15.91	36 18.09 36 17.74
+14° 27 44.04 27 43.46 43.75	27 43.57 27 42.75 43.16	27 43.42 27 42.85 43.13	27 38.63 27 38.95 38.79	46 32.17 46 32.44 32.30	46 30.26 46 30.61 30.43
+27 52 29 53 12			52 37 53 30	52 34 53 16	
1.48360 1.48380				1.48360 1.48380	
+ 361	+786	+2694	+2639	+ 2393	+1669 ~~50044~~
1.48721 1.48741	1.49146 1.49166	1.51054 1.51074	1.50999 1.51019	1.50753 1.50773	1.50029 1.50029
- 30.71 - 30.72	-31.01 -31.02	-32.40 -32.41	-32.36 -32.37	-32.18 -32.19	-31.64 -31.64
-.06 -.02	-.05 -.04	-.06 -.04	-.05 -.06	-.01 -.18	-.04 -.08
-.14 -.23 .11 -.01	-.14 -.24 .12 -.01	-.55 -.71 .35 -.06	-.56 -.74 .37 -.07	-.08 -.39 .19 -.12	-.09 -.39 .20 -.18
-30.91 -30.75	-31.20 -31.07	-33.01 -32.51	-32.97 -32.50	-32.27 -32.49	-31.77 -31.90
29 21.0	~~21.1~~ 21.1	21.1	20.9	29 43.3	43.4
27 13.13 12.81	22.30 11.68	10.41 10.34	5.66 6.45	46 59.90 59.95	58.49 58.71
+2 7.9 8.3	+2 1.98 ~~10.4~~ 9.4	+2 10.7 10.8	+2 15.2 +2 14.4	-16 1.66 16.6	-16 15.1 15.3
+2 8.1	8.7	10.7	14.8	-16 16.6	15.2
+2 8.55	+2 +2 10.81	+2 10.96	+2 15.54	-16 13.91	- 13.81
- 1.23 7.32 57.55	- 1.27 9.34 58.71	- 1.30 9.16 56.57	- 1.37 14.17 57.03	- 1.41 15.32 19.38	- 1.45 15.27 17.92
- 22.90 2.37 57.13	- 23.00 2.97 58.02	- 23.00 2.97 56.50	- 22.80 2.77 57.82	- 25.20 5.17 19.43	- 25.30 5.27 18.14
+1 44.42	46.34 ~~9.71~~	46.16	51.37	-18 40.52	- 40.57
28 57.34 57.27	56.36 18.29	56.53 16.56	57.42 17.45	19.41	18.03

1874 1875 corr α = corr δ =

α 44.941 48.024 Längeδ = +.26 1.03
δ +28 58.12 +29 18.15
$\frac{d\alpha}{dt}$ +3.083 + 3.083 weisind=I= 2.13
$\frac{d\delta}{dt}$ +20.031 +20.031 K= −.016

1874.0 α δ 1875.0 α δ
44.99 47.94
.94 48.03
.96 .03
.96 .04
.05
44.963 48.018
.941 58.12 .024 18.15
+.022 −.006

log cos δ 9.98597 9.98597
log 6 .10134 .12552
log 6' 0.08731 0.11149

sin δ 9.39811

+.00 Nov 30 −.06 Dec 14 −.02 Dec 18
−.050 −.080 −.050
6 42.46 6 36.66 6 38.7 6 23.4 6 32.0 6 28.4
44.6 38.7 35.8 25.9 33.9 30.5
46.6 40.8 38.0 28.0 36.0 32.4
50.9 42.2 40.4
53.2 44.2 42.4
55.1 46.3 44.6
57.4 7 14.1 48.6 46.7 7 11.8
59.4 15.5 50.7 48.8 13.8
3.6 17.8 54.9 52.9 15.4
5.8 57.3 55.0
8.0 59.3 57.2

4270 5110 4899
180
6070 6 38.70 6 25.77 6 30.43
6 55.182 7 15.80 6 46.455 6 44.536 7 13.67
55.166 −~~+~~4.10 46.439 +4.53 44.520 +6.48
6 51.06 +.00 6 50.92 −.02 6 50.88 −.01
+4.11 − 4.48 − 6.36
−8.04 −2.90 −2.86
− 4.09 48.03 + 4.52 48.05 + 6.40 48.06
− .01 − .02 − .01
− 3.04 − 2.90 − 2.86
− 7.14 + 1.60 + 3.53
6 55.17 45 56.99 6 46.44 5923 ~~57.56~~ 6 44.52 57.85
−16 12.52 −16 14.00 −16 12.07
48.03 −1.5 .48.04 −1.6 48.05 −1.7
−25.20 −24.80 48.018 −24.60
29 ~~42.81~~ 29 ~~46.83~~ .024 29 ~~43.62~~
17.77 18.83 −.006 19.48

35 +16.48 −20.62 35 +20.68 35 +14.11 −29.13
−→ 3.13 −→ 3.22 −→ 3.23
0 57.9 1 46.9 0 50.8 1 1.2 1 57.5
51.2 42.0 48.8 56.0 51.9
9.1 8.9 99.6 117.2 9.4
35 54.55 36 44.45 35 49.80 35 58.60 36 54.70

1.21698 1.31429n 1.31656 1.14953 1.46434n
1.33845 1.42578n 1.42704 1.26102 1.57583n
+21.30 −26.65 +26.73 +18.24 −37.66
36 16.85 36 17.80 36 16.53 36 16.84 36 17.04

46 32.50 46 30.55 46 31.82 46 31.51 46 31.31
31.52 31.82 31.41
52 43 53 7

+5142 +2717 +3865
1.53502 1.53502 1.51097 1.51097 1.52225 1.52245
−34.28 −34.30 −32.42 −32.43 −33.29 −33.30

Krs. −13 −27 −12 −13 −27
Red −.03 −.48 −.05 −.05 −.17 −.03 −.53 −.10
.24 .26
−34.44 −34.62 −32.59 −33.45 −33.67
45 58.06 55.93 59.23 58.06 57.64
29 43.3 42.9 42.7
−16 14.8 12.6 16.8 15.4 14.9
13.7 16.3 15.1
−16 12.77 14.24 − 14.27 15.78 − 12.37 13.88
− 1.47 18.62 − 1.51 4.77 18.65 − 1.51 19.58
− 25.20 5.17 16.49 − 24.80 − 24.60 4.57 19.16
39.44 17.55 − 40.58 18.65 38.48 19.37

35 Piscium

	1874		1875		
	α		8 32.62	corr α =	
	δ		7 38.38	corr δ =	
	dα/dτ		+ 3.085	Long δ =	+ .14
	dδ/dτ		+ 20.04		
h m s 0 8 32				I =	s 2.08
° ′ + 8 07	l cos δ	9.99563	9.99563	k =	s -.016
	l. 6	.10460	.12552		
δ + 33 16	l. 6′	0.10023	0.12115	a₀	
sin g = + .56					
	l. 6″	0.09697		δ₀	
	sin δ	9.14980		dα/dτ	s + 3.085
				dδ/dτ	″ + 20.038

1874 Oct. 28	Nov. 5	Nov. 7	Nov. 9	Nov. 11	1874 Dec. 10
-.305	-.213	~~-.265~~ -.271	-.162	-.267	-.090
0 8 26.0 8 11.0	8 (20.7)	8 18.6 8 13.1	8 19.1 8 10.4	8 14.8 8 3.5	8 9.9 8 1.8
28.1 13.0	22.8	20.7 15.4	21.2 12.4	16.9 5.9	12.3 3.3
30.2 15.0	24.8	22.7 16.6	23.3 14.0	18.0 7.5	14.3 6.4
34.4	29.0	26.9	27.4	23.2	18.5
36.4	31.2	29.2	29.5	25.3	20.7
38.5 8 58.7	33.2 9 3.7	31.3	31.5	27.4	22.7
40.6 9 1.0	35.4 5.6	33.4	33.7	29.4	24.7
42.6 3.0	37.4 7.5	35.5	35.7	31.5	26.9
46.8	41.6	39.5	39.4	35.6	31.1
48.8	43.6	41.5	42.0	37.7	33.2
51.0	45.7	43.5	44.0	40.0	35.2
42.34 8 13.00		34.28 8 15.03	34.73 8 12.27	30.08 8 5.63	8 22.682 8 3.83
8 38.491 9 0.90	8 33.218 9 5.60	8 31.164	8 31.573	8 27.345	
38.475	33.202	31.148	31.557	27.329	22.666
		30			
- 5.98	- 0.68	+ 1.74	+ 0.84	+ 5.12	+ 9.59
- .04	- .03	- .04	- .02	- .04	- .01
- 2.98 +10	- 2.95 +14	- 2.94 +14	- 2.93 +15	- 2.92 +17	- 2.67 +41
- 9.00	- 3.66	- 1.88	- 2.11 ~~78~~	+ 2.16	+ 6.91
8 38.47	8 33.20	8 31.15	8 31.56	8 27.33	8 22.67
8 29.47 32.55	8 29.54 32.63	8 29.47 32.55	8 29.45 32.53	8 29.49 32.58	8 29.58 32.66 29.473

Oct. 28		Nov. 5		Nov. 7		Nov. 9		Nov. 11		Dec. 10	
s + 25.49	- 22.41	- 32.39		+ 16.13		+ 19.30		+ 21.71		+ 18.85	
15		15		15		15		15		15	
[illegible] = ★255		★263		★265		★269		★271		★2.93	
10 59.1	2 0.3	2 12.3		1 11.4		1 8.8		1 5.8		1 14.2	
15.4	16.7	25.4		25.0		22.9		18.8		28.1	
13.45	17.0	- 37.7		36.4		31.7		24.6		42.3	
16 7.25	17 8.50	16 18.85		16 18.20		16 15.85		16 12.30		16 21.15	
1.40637	1.35044n	1.51041		1.20763		1.28556		1.33666		1.27531	
1.50660	1.45067n	1.61664		1.30460		1.38253		1.43363		1.37665	
+ 32.11	- 28.23	- 40.80		+ 20.17		+ 24.13		+ 27.14		+ 23.80	
16 39.36	16 (3) 40.27	16 38.05		16 38.37		16 39.78		16 39.44		16 44.95	
18° 6 8.99	7 (6) 8.08	6 16.30		6 9.98		6 8.37		6 8.91		6 3.40	
+34 14 0	14 1									14 14	
1.59290	1.59290										
+ 248		+ 362		+ 1788		+ 181		+ 788		+ 2643	
1.59538	1.59578	1.59652	1.59632	1.61078	1.61058	1.59471	1.59451	1.60078	1.60058	1.61933	1.61913
- 39.39	- 39.37	- 39.50	- 39.48	- 40.81	- 40.79	- 39.33	- 39.31	- 39.88	- 39.86	- 41.62	- 41.60
-.04	-.03	- .02	-.07	-.01		-.02		-.03		-.02	
-.03 -13	-.03	-.07 -14		-.04 -.05		-.04 -.06		-.05 -.08		-.16 -.18	
- 39.46	- 39.43	- 39.59		- 40.86		- 39.39		- 39.96		- 41.80	
18 5 29.53	5 28.65	5 30.71		5 29.12		5 28.98		5 28.95		5 21.60	
+ 2 10.01		+ 2 8.55		+ 2 10.10		+ 2 10.13		+ 2 10.61		+ 2 15.54	
- 1.42 8.59		- 1.47 7.08		- 1.48 8.62		- 1.50 8.63		- 1.51 9.10		- 1.64 13.90	
- 21.54 1.50		- 21.57 1.53		- 21.58 1.54		- 21.57 1.53		- 21.55 1.51		- 20.66 0.62	
+ 1 47.05		+ 1 45.49		+ 1 47.04		+ 1 47.06		+ 1 47.55		+ 1 53.24	
16.58	15.70	16.20		16.16		16.04		16.50		14.84	
7 16.14											
36.2		36.2		36.2		36.1		36.5		34.9	

1875										
-.23 Apr 9	-.12	-.26 Apr 21		-.09 Apr 29		-.06 Dec 14		-.02 Dec 18		
-.352		-.235		-.088		-.080		-.050		
9 25.6	9 47.7	8 29.7	8 22.0	8 27.6	8 21.8	8 18.4	8 5.3	8 16.7	8 8.2	
27.7	49.7	31.8	24.1	29.6	23.6	20.5	7.3	18.7	11.0	
29.8	51.7	33.8	25.6	31.6	25.8	22.7	9.1	20.9	12.9	
34.3		38.0		35.9		26.8		25.0		
36.2		40.0		38.0		29.0		27.2		
38.2		42.2		40.0		31.0		29.1		
40.4		44.4		42.2		33.2	8 40.8	31.3		
42.5		46.4		44.3		35.2	43.2	33.7		
46.6		50.5		48.4		39.3	44.8	37.8		
48.6		52.6		50.4		41.5		39.8		
50.6		54.8		52.5		43.5		41.7		
38.23	9 49.70	46.42	8 23.90	44.05	8 23.73	34.11	8 7.23	32.19	8 10.70	
		8 42.200		8 40.045		8 31.009	8 42.93	8 29.264		
9 38.21		42.184		40.029		30.993		29.248		
- 62.07		- 6.41		- 4.42		+ 4.52		+ 6.40		
- .05		- .03		- .01		- .01		- .01		
-3.26		-3.17		- 3.11		- 2.97		- 2.53		
5.38		- 9.61		- 7.54		+ 1.54		+ 3.46		
9 38.21		8 42.18		8 40.03		8 30.99		8 29.25		
~~32.84~~										
37.8~~4~~3		8 32.57		8 32.49		8 32.53		8 32.71		32.628
55 11.49		55 +18.30		55 +16.31		55 +23.78	-11.92	55 +18.56		
- * 3.04		- * 3.12		- * 3.13		- * 3.22		- * 3.23		
3 2.6		2 26.6		2 27.2		2 19.8	3 7.9	2 29.3		
9.1		30.9		29.0		18.6	7.1	25.9		
11.7		57.5		16.2		18.4	10	15.2		
58 5.85		57 28.75		57 28.10		57 19.20	58 7.50	57 27.60		
1.06032		1.26240		1.21245		1.37621	1.07628n	1.26858		
1.18147		1.38360		1.33360		1.49736	1.19743n	1.38973		
-15.19		+24.19		+21.56		+31.43	-15.76	+21.53		
57 50.66		57 52.94		57 49.66		57 50.63	57 51.74	57 52.13		
24 57.69		24 55.41		24 58.69		24 57.72	24 56.61	24 56.32		
						57.16				
		13 41				13 31	14 19	13 40		
		1.59280					1.59300			
+2397		+1669		+3641		+2723		+3865		
1.61687	1.61667	1.60949	1.60939	1.62921		1.62003	1.62023	1.63145		
-41.39	-41.37	-40.69	-40.68	-42.58		-41.69	-41.71	-42.80		
-.02		-.02		-.01		-.04 -.36	-.01	-.02		
-.26		-.25 -.27		-.37 -.38		-.34 -.43	-.47	-.36 -.38		
-41.66		-40.96		-42.96		-42.07	-42.19	-43.18		
24 16.03	+8	24 14.45		24 15.73		24 15.65	24 14.42	24 13.04		
- 13.91		-16 13.81		- 14.43		- 14.27		- 12.37		
- 1.70	1221	- 1.74	1207	- 1.75	1268	- 1.80	1247	- 1.80	1057	
-23.79	3.75	-23.59	3.55	-23.36	3.32	-22.67	2.63	-22.44	2.40	
~~16 13.91~~		-16 39.14		39.54		38.74		36.61		
16 39.40										
7 36.63		7 35.31		36.19		36.91	35.68	36.43		
7 36.6		35.3		36.2		~~36.95~~	~~35.72~~ 36.29	36.4		

Groom. 29

h	m	s
0	9	10
°	′	
+ 76	15	

g = − 33 52

sing = − 56

1874

Nov.	6	8	70.54		14	89.6
	11		70.29	−.25		91.0 + 1.4
	16		70.01	.28		92.3 1.3
	21		69.71	.30		93.5 1.2
	26		69.39	.32		94.6 1.1
Dec.	1		69.05	.34		95.5 .9
	6		68.68	.37		96.4 .9
	11		68.29	39		97.3 .9

1874 +288
α 6.649
δ +15 0.93
dα/dt + 3.279
dδ/dt + 20.018

l cos δ 9.37600
9.66 0.10134
9.66′ 9.47734
l sin δ 9.98737

1875 +279
9.929
+15 20.95
+ 3.281
+ 20.018

9.37600
0.12552
9.50152

corr α = +.390
corr δ = +.45
long δ = +4.09 4.20
I = 8.71
K = −.065

0.	0
8.67	4.33
17.34	8.66
34.68	17.99
43.35	.32
53.02	

−.13 −.10
1874
Nov. 3
−.213
0 9 — 9 53.9
— 10 2.3
— 11.5
—
—
—
47.2 12.5
55.8 12.5
10 4.7 12.7
10 2.57
9 12.567
12.502
9 10.60 58
+ 1.90 2
+ 1.51 + 1.53 −0.57 −.53 −.42 −3.93
− 0.68
− .87 9 7.05
− 3.93 − .651
− 5.48
9 12.50 13 20.77 +0 +4.1
9 7.02 +2 8.71
10.299 + 1.5
− 28.50
+ ~~76~~ ~~13~~ ~~26.52~~
+76 15 24.8

−.18 −.10
Nov. 7
~~−.205~~ −.271
8 53.6 9 18.3
57.4 24.4
9 1.7 34.8
6.3 ~~47.7~~
10.7
15.4
19.5
23.2
27.8
21.56
95.6
10.622 9 25.83
9 10.622
10.557
9 10.50 48
+ 0.068
− 0.33 −.31 +1.37 −.74 −.42
+ 1.30
− 1.11 6.94 −3.83
− 3.83 − .551
− 3.64
9 10.56
6.92 +2 10.27
10.199 + 1.5

−.16
Nov. 9
−.162
8 — 9 20.6
— 28.8
9 1.8 10.5 34.4
6.6 .9
10.5 .8
14.7 .9
19.4 .7
23.8 .8
28.0 .9
9 27.93
9 10.643
10.578
9 10.40 38
+ 0.18 20 + 0.88
− 0.21 −.19 .65
+ 0.84 −3.73
− .66 7.08
− 3.73 − .451
− 3.55
9 10.58
13 19.87
7.03 +2 9.98
10.309 + 1.5
− 29.60
15 1.75

−.26
Nov. 11
−.262
8 — 9 17.3
— 24.7
— 31.5
9 2.0 6.3
6.9 .9
11.0 .7
15.4 .7
19.8 .8
24.2 .9
9 24.50
9 6.717
6.652
9 10.30 28
− 3.653 + 5.15
− 4.054 4.02 −1.06
+ 5.12 −3.63
− 1.09 7.11
− 3.63 − .351
+ 0.40
9 6.65
13 19.22
7.05 +2 10.77
10.329 + 16
− 30.20
15 1.39

−.06
1874
Dec. 10
−.090
8
55.4 59.75
9 0.0 60.00
4.0 59.65
8.0 59.38 10.2
12.9 59.84 18.5
17.1 59.70 24.1
239.2
539.2
8 59.911 9 17.60
59.846
9 8.40 34
− ~~10.55~~ 8.55 +9.65
− ~~+0.96~~ 8.94 9.69 .25
+ 9.59 −1.69
− .37 7.35
− 1.649 ~~+.41~~ +1.59
+ 7.53
8 59.85 64
13 20.54
7.17 +2 15.64
~~10.449~~ + 1.8
7.006 − 36.30
6.649
+ .357 15 16.8

1875
−.26
Apr 21
−.235
9 9 28.0
3.7 36.4
8.0 44.6
12.5
16.4
21.2
25.4
29.8
34.5
38.7
190.2
9 36.33
9 21.133
21.068
9 13.24 15
+ ~~4.83~~ 7.892 − 6.37
+ 7.44 7.50 7.53 −1.06
− 6.41 −8.22
− .96 10.42
− 3.22 + .059
− 10.59
9 21.07
32 9.68
10.48 −16 13.64
~~17.159~~ + 1.7
− 34.80
~~50.32~~
− − 22.94

− 60.00
10
76 = ∗ 2.63
0 18.6
23.9
42.5
10 21.25
1.69897
1.80031
1.17631
− 15.01
10 6.24
12 42.11
−33 51 46
1.58680
+ 362
1.59042
+ 38.94
−.32 −.76 −.33
−.01
+ 38.61
10 44.81 13 20.77
15 29.4
+4 44.6
+2 8.6
+2 9.0
+ 2 8.55 10.02
+ 1.47
− 28.50 .05 2.29
+1 41.52 −8.48 ~~2.25~~ 22.31

− 9.41
10
∗ 2.65
0 13.9 0 22.4
18.7 27.9
32.6 50.3
10 14.30 10 25.15
0.98272
1.08406
0.46006
− 2.89 −2.89
13.41
+ 1790
1.60470
+ 40.25
− .11 −.01 −.11 −.01
− .01
+ 40.14
10 53.54
13
26.9
+4 36.4
+ 2 10.10 11.58
+ 1.48
− 29.00 −8.98
+2 42.58

− 17.29
10
∗ 2.69
0 9.3
15.5
24.8
10 12.40
1.23780
1.33914
0.71510
− 5.19
7.21
12 41.14
+ 182
1.58862
+ 38.78
−.04 ~~−.07~~ −.05
− .01
+ 38.73
~~10 45.94~~ 13 19.87
30.5
~~+4 44.6~~
+2 10.7
11.2
+2 10.13 11.63
+ 1.50
− 29.60 −9.58 1.40
42.03 ~~2.21~~ 21.92

− 17.78
10
∗ 2.71
0 10.5
17.0
27.5
10 13.75
1.24993
1.35127
0.72727
− 5.34
8.41
39.94
+ 789
1.59469
+ 39.33
−04 ~~−.07~~ −.05
−.01
+ 39.28
10 ~~47.69~~ 13 19.22
31.1
+4 43.4
+2 11.9
12.3
+2 10.61 12.12
+ 1.51
− 30.20 −10.18 1.14
41.52 21.36

− 17.69
10
∗ 2.93
0 11.1
17.1
28.2
10 14.10
1.24773
1.34907
0.72507
− 5.31
8.79
39.56
51 53
1.58690
+ 2644
1.61324
+ 41.04
−.04 ~~−.03~~ −.06
− .02
+ 40.98
10 49.77 20.54
~~36.6~~ 37.2
+4 47.4
+2 16.8
17.2
+2 15.54 17.18
+ 1.64
− ~~35.7~~ 36.3 0.88
+1 ~~41.4~~ −16.28 ~~2.04~~ 21.40

50 − 15.20
− 3.12
1 20.4
26.5
6.9
51 23.45
−1.18184
1.30736
.68336
− 4.82
51 18.63
38, 29.12
52 .25
1.58700
+ 1669
1.60349
+ 40.13
−.03 ~~−.08~~ −.11
− .14
+ 39.96
~~59~~ 58.59 32 9.68
15 55.7
−35 2.9
−16 14.0
− 16 13.6 13.81
− 16 ~~16.31~~ ~~16.51~~
+ 1.74 12.07 ~~14.78~~ 22.81
− 34.80
−16 ~~41.37~~ 15 ~~14.31~~ 46.87 22.81

1875

Nov. 16	9m	13s 47		15′	54″5	
21		13.17	-.30		55.7	+1.2
26		12.85	.32		56.8	1.1
Dec. 1		12.51	.34		57.7	.9
6		12.15	.36		58.6	.9

+

-.09 Nov 29

-.088

9 9 40.0
45.5
55.0

17.8 13.5
6 17.6
6 21.9 10 24.1
10 26.7 30.6
10 31.0 40.4
6 34.9

9 46.83
9 17.767 10 31.70
17.702
9 12.663
+ 5.047 - ~~+~~4.39
+ ~~4.65~~ +4.68 -.87

- 4.42 -2.70
- .36 1024
- 2.70 +.579
- 7.48
9 17.70
32 6.63
10.22 -16 14.22
10.350 + 17
9.929 - 36.50
+.421
15 17.61

- 29.66 - 73.93
50
+ 3.13
1 29.7 1 43.2
31.4 46.1
61.1 9.3
51 30.55 51 44.65

-1.46330 1.86882
1.~~5888~~2 1.9~~94~~34
.96482 1.37034
- 9.22 -23.46
51 21.33 21.19
27.02 27.16 27.09
52 18 52 3
1.58700 1.58690
+1763
1.60403 1.60393
+40.18 +40.17

-10 ~~63~~ - 69
-22 ~~37~~ -25
+39.86 +39.23
~~51 61~~.19 ~~51 60.~~52
57.4 6.88 6.39

~~35~~ 3.8 ~~3.0~~
16 9.5 9.25 9.0
-16 88
16 14.43 12.48 17.70
1.75 17.21
36.50 16.48
49.18 17.45 Ep.

θ Andromedae

h	m	s
0	10	34
+ 37°	59′	

z = + ~~3~~ 4 24

sin z = + .08

	1874	1875
α		10 33.97
δ		59 15.58
dα/dt	~~2.00~~ 3.116	+ 3.116
dδ/dt	20.02	+ 20.02
l cos δ	9.89663	9.89663
l b	.10460	.12552
l b′	0.00123	0.02215
l c′	9.99797	
l sin δ	9.78918	

corr α =
corr δ =
tang δ = +.78
I = 2.62 s
K = −.020

1874 Oct. 28		Nov. 9		Nov. 11		1874 Dec. 10		−26 1875 Nov. 21	
−.305		−.162		−.267		−.090		−2.35	
0 10 24.3	10 9.6	10 17.4	10 14.0	10 13.0	9 57.7	10 8.1	10 1.3	10 28.0	10 21.7
26.8	12.5	20.0	16.1	15.5	10 0.4	10.6	3.4	30.6	23.9
29.5	14.6	22.5	18.4	18.2	2.4	13.2	5.6	33.1	26.5
34.7		27.7		23.4		18.6		38.3	
37.3		30.3		26.0		21.1		41.1	
39.9		32.9		28.8		23.7		43.7	
42.5	10 54.7	35.5	11 0.1	31.3	10 42.4	26.3	10 34.9	46.2	11 10.1
45.3	57.1	38.1	2.7	34.0		29.0	38.5	49.0	13.1
50.5	59.0	43.4	4.8	39.3		34.2	40.9	54.0	15.9
53.1		46.0		41.8		36.8		56.6	
55.7		48.7		44.4		39.4		59.3	
439.6	10 12.23	362.5	10 16.17	315.7	10 0.17	261.0	10 3.43	479.9	10 24.03
10 39.964	10 56.93	10 32.955	11 2.53	10 28.700	10 42.40	10 23.727	10 38.10	10 43.627	11 13.03
39.944		32.935		28.680		23.707		43.607	
− 5.98		+ 0.84		+ 5.12		+ 9.59		− 6.41	
− .24		− .13		− .21		− .07		− .18	
− 2.93 +.186		− 2.84 +.276		− 2.83 +.286		− 2.46 +.656		− 3.02	
− 9.13		− 2.13		+ 2.08		+ 7.06		− 9.61	
10 39.94		10 32.93		10 28.68		10 23.71		10 43.61	
10 30.79		10 30.80		10 30.76		10 30.77		10 34.00	
33.906		33.916		33.876		33.886			

10 30.780
10 34.00

+ 27.73	− 16.97	+ 16.78	− 29.86	+ 28.53	− 13.78	+ 20.30	− 14.37	+ 19.60	− 29.40
20		25		20		25		5	
76 = ∗ 2.55		∗ 2.69		∗ 2.71		∗ 2.93		− 3.12	
4 0.1	0 43.8	0 8.6	0 55.1	4 58.5	0 40.1	0 10.0	0 44.9	1 19.8	2 11.1
12.0	54.9	18.6	6.9	8.9	51.3	20.2	55.1	25.5	16.7
12.1	98.7	27.2	122.0	127.4	91.4	30.2	100.0	45.3	7.8
24 (25) 6.05	25 49.35	25 13.60	26 1.00	25 3.70	25 45.70	25 15.10	25 50.00	6 22.65	7 13.90
1.44295	1.22968n	1.22479	1.47100n	1.45530	1.13672n	1.30750	1.15746n	1.29226	1.46835
1.44418	1.23091n	1.22602	1.47223	1.45327	1.13469n	1.30547	1.15543n	1.31441	1.49050
+ 27.81	− 17.02	+ 16.83	− 29.66	+ 28.40	− 13.63	+ 20.20	− 14.30	+ 20.63	− 30.94
25 33.86	25 32.33	25 30.43	31.34	25 32.10	25 32.07	25 35.30	25 35.70	6 ~~2.02~~ 43.78	6 42.56
+37° 57 14.49 15.25	57 16.02	17.92 17.47	17.01	57 16.25 16.27	57 16.28	57 13.05 12.85	57 12.65	16 ~~57.5~~ 50.7 5.22	16 5.38
+4 22 59	23 42					23 8	23 43	22 35	23 25
0.64490	0.64590							0.64420	0.64550
+ 254		+ 196		+ 791		+ 2647		+ 1669	
.64744	.64844	.64686	.64786	.65281	.65381	.67137	.67237	.66089	.66219
− 4.44	− 4.45	− 4.43	− 4.44	− 4.50	− 4.51	− 4.69	− 4.70	− 4.58	− 4.59
− .20	− .17 − .08	− .07	− .17 − .23	− .21	− .14 − .05	− .11	− .15 − .05	− .11	− .35 − .23
− ~~.12~~ .00	− .02	− .01	− .03	.00	− .02	− .04	− .10	− .14	− .22
− 4.69	− 4.55	− 4.51	− 4.70	− 4.71	− 4.58	− 4.84	− 4.85	− 4.83	− 5.04
+37 57 9.80	57 11.47	57 13.41	57 12.31	57 11.54	57 11.70	57 8.21	57 7.80	16 0.19 24	16 0.35
+ 2 10.01		+ 2 10.13		+ 2 10.61		+ 2 15.54		− 16 ~~16.31~~ 13.81	
− .20	9.81	− .21	9.92	− .21	10.40	− .23	15.31	− .24	~~10.05~~ 14.05
− 25.58	− 5.67	− 27.39	7.87	− 27.64	7.62	− 29.83	9.81	− 30.94	~~10.42~~
+ 1 44.28		+ 1 42.53		+ 1 42.76		+ 1 45.48			59 ~~10.75~~ 15.25
58 54.08	~~55.05~~ 55.75	58 53.94	54.84	58 54.30	54.46	58 53.69	53.28	16 ~~45.64~~ 44.99	~~10.86~~ 15.36
58 ~~55.06~~ 54.91		55.39		54.38		53.48			~~59 10.10~~ 15.30
59 ~~15.1~~ 14.9		15.4		14.4		13.5			

i Ceti
h m s
0 13 4
° ′
−9 31
+51 ~~45~~ 54
sin g = +.79

	1874					1875			
Oct. 27	12m 63.64		31′ 3″8		Nov. 16	13m 6.94		30′ 43″2	
Nov 1	63.62	−.02	4.2	+.4	21	6.90	−.04	43.7	+.5
6	63.59	.03	4.6	.4	26	6.86	.04	44.1	.4
11	63.56	.03	5.0	.4	Dec. 1	6.82	.04	44.5	.4
16	63.53	.03	5.4	.4	6	6.77	.05	44.9	.4
21	63.49	.04	5.8	.4	11	6.72	.05	45.3	.4
26	63.45	.04	6.2	.4	16	6.67	.05	45.6	.3
Dec. 1	63.41	.04	6.6	.4	21	6.62	.05	46.0	.4
6	63.37	.04	7.1	.5	26	6.57	.05	46.3	.3

−.18 −.08		−.13 −.10		−.16		−.26		−.06		−.26	
1874 Oct. 28		Nov. 5		Nov. 9		Nov. 11		1874 Dec 10.		1875 Nov 21	
−.305		−.213		−.162		−.267		−.090		−.235	
0 12 57.0	12 47.7	12 51.8	12 45.7	12 50.2	12 56.6	12 45.8	12 37.0	12 41.3	12 37.1	13 0.7	12 53.9
59.1	49.5	54.0	48.1	52.3		48.0	39.3	43.3	38.5	2.8	56.0
13 1.2	51.6	56.0	50.6	54.3		50.1	40.7	45.5	40.6	4.9	57.6
5.4		13 0.1		58.4		54.2		49.6		9.1	
7.5		2.2		13 0.6		56.3		51.7		11.1	
9.6		4.4		2.8		58.4		53.8		13.2	
11.7	13 27.4	6.4	13 34.1	4.8	13 36.6	13 0.5	13 25.4	56.0	13 15.5	15.4	13 33.6
13.7	29.6	8.6	36.4	6.9	38.5	2.7	28.0	58.1	18.0	17.5	35.4
18.0	31.5	12.7	38.4	11.0	40.4	6.7	29.9	13 2.2	21.3	21.8	37.5
28.1		14.8		13.1		8.9		4.3		23.8	
22.2		16.9		15.3		11.0		6.5		25.9	
2255		2279		2697		3426		4123		1462	
120		180		240		300		180			
1055	12 49.60	47.9	12 48.13	29.7	12 56.60	6426	12 39.00	5923	12 38.73		12 55.83
13 9.571	13 29.50	13 4.355	13 ~~36.13~~ 30	13 2.700	13 38.50	12 58.418	13 27.77	12 53.845	13 18.27	13 13.291	13 35.50
9.575	−5.9×2	4.339	−0.57	2.684	+0.88	58.402	+5.15	53.829	+9.65	13.275	−6.37
13 3.64	+.03	13 3.59	+.02	13 3.58	+.03	13 3.56	+.04	13 3.33	+.01	13 6.90	+.04
+ 5.93	−.08	+ 0.75	−.10	− 0.90		− 5.16		− 9.50		+ 6.37	
	−3.17		−3.12		−3.11		−3.09		−2.86		−3.37
− 5.98	13 0.44	− 0.68	0.57	+ 0.84	0.48	+ 5.12	0.50	+ 9.59	0.63	− 6.41	4.58
+ .05		+ .04		+ .03		+ .04		+ .01		+ .04	3
− 3.17 −0.111		− 3.12 0.061		− 3.11 −0.051		− 3.09 −0.031		− 2.86 +0.199		− 3.37	
− 9.10		− 3.76		− 2.24		+ 2.07		+ 6.74		− 9.74	
13 9.57	33 11.02	13 4.34	11.59	13 2.68	12.09	12 58.40	13.19	12 53.83	20.21	13 13.27	14 29.07
	+2 10.33		+2 8.71		+2 ~~11.30~~ 9.98		+2 10.77		+2 15.64		−16 13.64
13 0.47	− 2.0	0.58	− 2.1	0.44	− 2.1	0.47	− 2.1	0.87	− 2.4	3.53	− 2.4
3.529	−18.20	3.639	−17.60	3.499	−17.20	3.529	−17.10	0.526	−14.60		−18.50
	~~35 1.15~~		~~0.60~~		~~2.77~~		4.76	469	3.629 ~~+.885~~		~~−2 27.81~~
−9	31 ~~19.19~~ 20.89		31 22.58		31 21.41		31 21.62	+0.57	31 21.57		31 3.61
	20.89										
+ 19.99	− 19.91	+ 16.22	− 31.78 95	+ 6.10	− 35.80	+ 19.42	− 29.35	+ 15.11	− 24.43	+ 17.46	− 22.21
50		50		50		50		50		35	
20 = ∓2.55		∓2.63		∓2.69		∓2.71		∓2.93		− 3.12	
4 12.0	4 1.6	4 18.8	0 18.1	4 30.7	0 23.5	4 14.5	0 15.1	4 22.8	0 12.0	0 36.8	1 35.0
29.7	19.1	32.4	34.1	47.2	40.0	31.1	31.7	40.1	30.1	38.8	31.9
41.7	20.7	51.2	52.2	77.9	63.5	45.6	46.8	62.9	42.1	15.6	1.9
54 20.85	54 10.35	54 25.60	55 26.10	54 38.95	55 31.75	54 22.80	55 23.40	54 31.45	55 24.05	35 37.80	36 30.95
1.30081	1.29907n	1.21005	1.50447n	0.78533	1.55388n	1.28825	1.46764n	1.17926	1.38792n	1.24204	1.34655n
1.39939	1.39765n	1.30537	1.59979n	0.88065	1.64920n	1.38357	1.56298n	1.27458	1.48324n	1.36154	1.46605n
+ 25.08	− 24.98	+ 20.20	− 39.79	+ 7.60	− 44.59	+ 24.19	− 36.56	+ 18.82	− 30.43	+ 22.99	− 29.25
54 45.93	54 45.37	54 45.80	54 46.31	54 46.55	54 47.16	54 46.99	54 46.84	54 50.27	54 50.62	36 0.79	36 1.70
9 31 57.58	31 57.02	31 57.45	31 57.96	31 58.20	31 58.81	31 58.64	31 58.49	32 1.92	32 2.27	13 12.44	13 13.35
57.30		57.70		58.50		58.56		2.09		12.89	
+51 52 14	53 3							52 24	53 14	51 50	52 43
1.86470	1.86490									1.86460	1.86480
+258		+365		+190		+793		+2649		+1669	
1.86728	1.86748	1.86835	1.86855	1.86660	1.86680	1.87263	1.87283	1.89119	1.89139	1.88129	1.88149
−73.67	−73.70	−73.85	−73.88	−73.55	−73.59	−74.58	−74.61	−77.84	−77.87	−76.08	−76.12
.00	00	.00	00	00	00	00	00	.01	.01	.00	00
+.04	+.03	+.02	+.08	+.01	+.11	+.03	+.06	+.02	+.05	+.02	+.03
−.13	−.03 −.01	−.13	−.02 −.01	−.14	−.02 −.01	−.14	−.03 −.01	−.54	−.25 −.04	−.00	−.08 −.15
−1 13.76	−1 13.68	−1 13.96	−1 13.81	−1 13.68	−1 13.49	−1 14.69	−1 14.56	−1 18.37	−1 17.87	−1 16.12	−1 16.24
33 11.34	10.70	33 11.41	11.77	33 11.88	12.30	33 13.33	13.05	33 20.29	20.14	14 28.56	29.59
31 3.9		4.5		4.9		5.0		7.5		30 43.7	
+2 7.4	6.8	+2 6.9	7.3	+2 7.0	7.4	+2 8.3	8.0	+2 12.8	12.6	−16 15.1	14.1
4.1		7.1		7.2		8.1		+2 12.7		−16 14.6	
+2 10.01	8.00	+2 8.55	6.48	+2 10.13	8.01	+2 10.61	8.47	+2 15.54	13.23	−16 13.89	16.27
− 2.01	31 21.54	− 2.07	22.58	− 2.12	21.07	− 2.14	21.56	− 2.31	21.66	− 2.46	53.79 3.32
− 18.20	+1.76 20.90	− 17.60	2.36 22.89	− 17.20	2.76 21.49	− 17.10	2.86 21.68	− 14.60	5.36 21.51	18.50	1.46 ~~54.92~~ 4.36
+ 49.80	41.3	48.88	2.8	50.11	1.3	51.37	1.9	58.63	1.7	−16 34.77	3.84
	21.22		22.71		21.26		21.82		21.58		

1874 1875

α +0.469 3.528

δ −31 22.12 −31 2.16

+3.059 +3.059

+19.956 +19.956

corr. α =

corr. δ =

tang δ = −.17 1.01

I = 2.89

K = −.016

+.5
.4
.4
.4
.4
.3
.4
.3

log cos δ 9.99398 9.99398

l.b. .10460 0.12552

l.b′ 0.09858 0.11960

l.b′ 0.09532

sin δ 9.21836 n

−.09 Dec 13 −.06 Dec 14

−.110 −.080

12 50.1 13 9.2 12 | 49.6 12 46.9
52.2 10.7 | 51.8 48.7
54.3 12.1 | 53.8 50.7
58.5 | 58.0
13 0.5 | 0.1
2.6 | 2.1
4.8 13 33.0 | 4.1 13 20.3
7.0 34.6 | 6.3 22.3
11.2 36.3 | 10.6 23.7
13.3 | 12.7
15.2 | 14.8

26.39
2.40

2.697

13 2.700 13 10.67 | 2.39 12 48.77

13 2.700 13 34.63 13 2.173 13 22.10

2.684 +4.03 2.157 +4.53

13 6.70 +.02 13 6.69 +.01

−4.02 −4.53

−3.17 −3.16

+ 3.96 3.56 + 4.52 3.54

+ .02 + .01

− 3.17 − 3.16

+ 0.82 + 1.37

13 2.70 68 14 29.56 13 2.16 30.14

−16 14.10 −16 14.00

~~3.520~~ 3.49 −2.6 3.53 −2.8

−16.70 3.527 −16.60

~~24.36~~ 3.528 ~~24.74~~

31 2.96 −.001 31 3.54

35 −7.77 −31.73 35 +13.40 −19.93

−3.21 −3.22

1 14.1 1 46.2 0 45.4 1 29.1

13.1 44.9 40.0 24.1

7.2 11.1 5.4 13.2

36 13.75 36 45.55 35 42.70 36 26.60

13.60

0.90446 n 1.50420 n 1.12710 1.29951 n

1.02396 n 1.62370 1.24660 1.41901 n

+10.57 −42.04 +17.65 −26.25

36 3.08 3.51 36 0.35 36 0.35

13 14.68 15.16 13 12.00 13 12.00

14.92 12.00

51 55 52 39

+729 +2738

1.87189 1.87208 1.89198 1.89218

−74.45 −74.49 −77.98 −78.01

+ .00 − .00 + .01 + .01

+.07 −.17 +.08 +.01 −.13 +.03

−.18 −.25 −.10 −.21

−1 14.62 1 14.66 1 18.08 1 18.20

14 29.30 29.82 14 30.08 30.20

30 45.5 45.6

−16 16.2 15.7 −16 15.5 15.4

15.9 15.5

−16 14.33 16.86 − 14.27 16.81

2 − 2.53 2.80 − 2.54 3.45

6 − 16.70 3.26 3.38 − 16.60 3.36 3.61

4 33.56 3.12 33.41 3.55

i Sculptoris

h	m	s
0	15	15
	°	′
	−29	41

g = +72 4

sin g = +.95

	1874	1875
		h m
α		15 14.27
δ	40′ 21″.05	40 21.05
dα/dT		+ 3.023
dδ/dT	+19.99	+ 19.99
l cos δ	9.93891	9.93891
l b	.10460	0.12552
l b′	.04351	0.06443
l b′	0.04025	
sin δ	9.69479n	

corr α =

corr δ =

long. = −.57

I = 2.37 s

K = −.018 s

1874 Oct. 28		1874 Nov. 9		1875 Nov 17		Nov 21		Dec 1		Dec 13		Dec 14	
				−.11		−.26		+.00	−.01	−.09		−.06	
−.305		−.162		−.118		−.235		−.035		−.110		−.080	
0 15 6.3	14 56.9	14 59.4	14 52.3	16 9.4	16 7.6	15 10.2	14 57.1	15 7.3	14 57.9	14 59.3	15 6.3	14 58.8	14 5
8.8	59.4	15 1.9	34.3	11.8	10.1	12.4	59.3	9.6	0.3	15 1.7		15 1.3	
11.2	15 1.8	4.2	56.1	14.1	12.1	15.0	1.5	12.0	3.2	4.1		3.7	
15.8		8.8		18.8		19.7		16.6		8.7		8.3	
18.2		11.3		21.2		22.0		19.0		11.2		10.7	
20.6		13.6		23.6		24.4		21.6		13.5		13.0	
23.0	15 36.1	16.1	15 32.2	25.9	16 48.1	26.7	15 42.6	23.8	15 40.0	15.9	16 (33.5	15.4	15 1
25.4	38.5	18.4	35.0	28.3	50.3	29.2	44.7	26.4	43.0	18.2	34.7	17.8	
30.2	41.0	23.3	37.0	33.1	52.3	33.8	47.3	31.0	45.0	23.0	44.4)	22.6	
32.5		25.5		35.4		36.3		33.5		25.5		25.0	
34.9		28.1		37.7		38.7		35.8		27.8		27.3	
2269		2106 60		2593		2684		2366		2089		2039 60	
	59.53 14 59.57	15 06	14 54.23		16 9.93		14 59.30		14 0.47	14 59	15 6.30	14 39	15 0.
15 20.627	15 38.53	15 13.691	15 34.73	16 23.573	16 50.23	15 24.400	15 44.87	15 21.509	15 42.67	15 13.536	16 37.53	15 13.082	15 4
20.609		13.673		23.555		24.382		21.491		13.518		13.064	
− 5.98		+ 0.84		− 65.42		− 6.41		− 3.67		+ 3.96		+ 4.52	
+ 17		+ 09		+ .07		+ .13		+ .02		+ .06		+ .05	
− 3.52	−.497	− 3.43	−.407	− 3.72	~~−.697~~	− 3.68	~~−.657~~	− 3.56		− 3.41		− 3.40	
− 9.83		− 2.50		− 69.34		− 9.96		− 7.21		+ 0.61		+ 1.17	
15 20.61		15 13.64		16 23.55		15 24.38		15 21.49		15 13.52		15 13.66	
15 11.28		15 11.17		15 14.18		15 14.42		15 14.28		15 14.13		15 14.23	
14.303		14.193 15 11.225										15 14.248	

+ 21.68	− 17.90	+ 19.46	− 21.04	+ 13.64	− 26.66	+ 25.10	− 20.47	+ 21.04	− 21.16	+ 7.24	{−88.9 / 40	+ 12.98	−34
0		0		40		40		40		40			
= ∓2.55		∓2.69		− 3.11		− 3.12		− 3.14		− 3.21		− 3.22	
1 54.1	2 38.0	1 57.9	2 43.1	3 16.6	4 3.7	3 8.0	4 1.9	3 6.9	3 53.6	3 35.8	4 19.8	3 19.5	4 15
11.1	53.4	14.0	56.8	19.8	6.4	12.8	6.4	1.9	49.3	38.9	21.7	17.7	13
1252	914	1319	999	164	101	208	83	88	1029	147	41.5	172	8
2.60	2 45.70	2 5.95	2 49.95	43 18.20	44 5.05	43 10.40	44 4.15	43 4.40	43 51.45	43 37.35	44 20.75	43 15.73 18.60	44 14.
1.32428	1.25285n	1.28914	1.32305n	1.13481	1.42586n	1.39967	1.31112n	1.52305	1.32552n	0.85974	1.~~92423~~n	1.81327	1.53
1.36779	1.29636n	1.32739	1.36330n	1.19924	1.49029n	1.46410	1.37555n	1.38748	1.38996n	~~.89999~~	1.96448n	1.17770	1.60
+ 23.32	− 19.79	+ 21.35	− 23.08	+ 15.82	− 30.92	+ 29.11	− 23.74	+ 24.40	− 24.54	+ 7.95 8.40	−	+ 15.06	−3
25.92	2 25.91	2 27.30	2 26.87	43 34.02	43 34.13	43 +39.51	43 40.41	43 28.80	43 26.91	43 45.75	——	43 33.66	43 34
−29° ′ ″ 39 37.57 37.57	39 37.56	39 38.95 38.74	39 38.52	20 45.67 45.72	20 45.78	20 51.16 51.61	20 52.06	20 39.45 40.55 39.55	38.56	20 57.40		20 45.31 45.73	20 4
−71 59 56	0 39	59 59	0 43	59 30	0 17							59 31	0
2.24386	2.24411			2.24365	2.24399								
+263		+194		+2532		+1669		+4437		+732		+2744	2.27
2.24649	2.24674	2.24580	2.24605	2.26897	2.26931	2.26034	2.26068	2.28802	2.28836	2.25097	2.25131	2.27109	54
− 176.40	− 176.50	− 176.10	− 176.20	− 185.70	− 185.90	− 182.10	− 182.20	− 194.10	− 194.20	− 178.20	− 178.40	− 186.70	−186
− 00	00	00	00	− .10	− .10	− .05	− .05	− 20	− 20	− 08	− 08	− 16	−
+.10	+.02 +.08	+.08	+.02 +.10	+.04	−.27 +.16	+.15	∓.25 +.09	+.10	−.42 +.10	+.01	−.27	+.03	−3.41
−.06	−.08	−.08	−.08	−.83	−.41	−.32	−.41	−.47	−.57	−.54	−.64	−.49 .54	
− 2 56.36	− 2 56.50	− 2 56.08	− 2 56.18	− 3 6.09	− 3 6.25	− 3 2.32	− 3 2.57	− 3 14.67	− 3 14.87	− 2 55.81		−3 7.32	3 7.
−29 42 33.93	34.06	42 35.03	34.70	23 51.76	23 52.03	23 53.48	23 54.63	23 55.22	23 53.43	23 56.21		23 52.63	3 5
+2 10.01		+2 10.13		−16 14.02		− 13.81		− 12.67		− 14.33		− 14.27	7.32
− 2.42	7.59	− 2.55	7.58	− 2.95	16.97	− 2.96	11.77	− 2.98	15.66	− 3.04	17.37	− 3.05	
− 14.00	+8.90 40 40.34	− 12.05	7.94 39.50	− 13.07	6.92 21.80	− 12.51	7.48 22.7	− 11.25	8.74 22.12	− 18.06	+5.93 23.64	− 9.98	19 18
+1 53.59	40.47	+1 55.53	39.17	−16 30.04	22.07	− 29.8 2	23.81 9	− 16.90	20.33	− 27.43	—	− 27.30	20.7
	40.40		39.33		21.93		23.33		21.22		23.64		

1872phae.proj.1469.

1874 ~~1875~~ 1875

corr α =
corr δ =

12 Cars. α 17 54.49
δ 8 16.61
h m s $\frac{d\alpha}{dT}$ + 3.261
0 17 54 $\frac{d\delta}{dT}$ 19.99 + 19.99
° ′
+61 08

tang δ = +1.81
I = 4.26 s
k = −.032 s

l cos δ 9.68374 9.68374
x = −18 45 l.b .10460 .12552
l.b′ 9.78834 9.80926
sin g = −.32
l.b′ 9.78508
sin δ 9.94238

See C. 12

-06 -.11 -.26 +.00 -.01

1874 1874 1875

Dec 14 | Oct. 28 | Nov. 5 | Nov. 9 | Nov. 17 | Nov 21 | Dec 1

-.080 -.305 -.213 -.162 -.118 -.235 -.035

4 58.8 44 57.9 | 0 17 52.4 18 11.2 | 17 46.8 17 6.2 | 17 45.4 17 16.3 | 18 18 32.4 | 17 17 21.2 | 17 17 20.4
1.3 8.3 | 54.6 14.4 | 49.1 10.5 | 47.4 20.5 | 55.2 36.1 | 56.0 23.8 | 52.4 25.7
3.7 2.1 | 56.7 19.3 | 51.2 13.5 | 49.5 23.6 | 57.5 39.4 | 58.1 28.7 | 54.7 29.0
8.3 | 58.9 | 53.3 | 51.6 | 59.6 | 18 0.4 | 57.2
10.7 | 18 1.0 | 55.5 | 53.9 | 19 1.6 | 2.3 | 59.0
13.0 | 3.2 | 57.7 | 56.0 | 3.7 | 4.6 | 18 1.4
15.4 15 45.4 | 5.4 | 59.7 18 9.7 | 58.2 18 3.8 | 5.9 19 9.3 | 6.6 18 5.3 | 3.3 17 57.7
17.8 47.3 | 7.5 | 18 1.9 14.0 | 18 0.3 7.2 | 8.2 11.6 | 9.0 8.3 | 5.4 57.2
22.6 49.7 | 9.7 | 4.0 18.0 | 2.5 10.1 | 10.4 15.0 | 11.1 11.5 | 7.9 7.8
25.0 | | | | 12.4 | 13.2 | 9.9
27.3

2474 | 3792 | 3648 | 2145 | 1613 | 2510
240 | 120 | 120 | 180 | 120 | 240
20.39 | 7.4 18 14.97 | 4992 17 10.07 | 4848 17 20.13 | 345 18 35.97 | 413 17 24.57 | 110 17 24.80
60 | 18 0.822 | 17 55.484 18 13.90 | 17 53.867 18 7.03 | 19 3.833 19 11.30 | 18 4.589 18 8.37 | 18 1.222 17 57.07
14.39 15 0.10
13.082 15 47.47
13.064 | 0.790 | 55.452 | 53.835 | 3.801 | 4.557 | 1.190

+ 4.52 | − 5.88 | − 0.66 | + 0.84 | − 65.43 | − 6.41 | − 3.67
1 .05 | − .55 | − .38 | − .29 | − .21 | − .42 | − .06
− 3.40 | − 3.84 − .079 | − 3.23 + .031 | − 3.16 + .101 | − 3.25 | − 3.16 | − 2.91
+ 1.17 | − 9.87 | − 4.27 | − 2.61 | − 69.19 | − 9.99 | − 6.64
5 13.66 | 18 0.79 | 17 55.45 | 17 53.83 | 19 3.80 | 18 4.56 | 18 1.19

14.23 | 17 50.92 | 17 51.18 | 17 51.22 | 17 54.61 | 17 54.57 | 17 54.55
54.181 | 54.441 | 54.481
14.248 | 17 51.107 | 54.577

+12.98 −34.39 − 14.15 | + 45.41 − 18.42 | + 33.74 − 13.16 | + 27.86 − 7.47 | + 41.02 − 3.78 | + 36.42 + 4.15
15 | 15 | 15 | 55 | 55 | 55
−3.22 x = ∓ 2.55 | ∓ 2.63 | ∓ 2.69 | −3.11 | −3.12 | −3.14
95 4 15.5 ∓ 1 0.3 | 1 21.2 2 1.0 | 1 28.5 1 56.9 | 2 44.3 3 7.1 | 2 33.4 3 2.6 | 2 42.5 3 2.1
47 13.3 9.9 | 26.5 5.9 | 36.1 4.1 | 49.5 13.1 | 41.9 10.8 | 40.7 1.1
172 88 10.2 | 47.7 6.9 | 64.6 121.0 | 13.8 20.2 | 75.3 13.4 | 3.2 3.2
54.3 44 14.40 16 5.10 | 16 23.85 17 3.45 | 16 32.30 17 0.50 | 57 46.90 58 10.10 | 57 37.65 58 6.70 | 57 41.60 58 1.60
81.60

81.3229 1.53643n 1.15076n | 1.65715 1.26529n | 1.52815 1.11926n | 1.44498 0.87332n | 1.60228 0.57749n | 1.56134 0.618032
177.20 1.60086n 0.93910n | 1.44323 1.05037n | 1.31323 0.90434 | 1.25424 0.68358n | 1.41154 0.38675n | 1.37060 0.42731
+15.06 −39.89 − 8.69 | +27.75 −11.23 | + 20.57 − 8.02 | + 17.96 − 4.81 | + 25.80 − 2.44 | + 23.47 + 2.67
33.66 48 34.51 15 56.41 | 16 51.60 16 52.22 | 16 53.87 16 52.48 | 58 4.86 58 5.29 | 58 3.45 58 4.26 | 58 5.07 58 4.27

45.31 20 46.16 +61° 6′ 5 51.94″ | 5 56.75 56.13 | 5 55.48 55.87 | 24 43.49 43.06 | 24 44.90 44.09 | 24 43.28 24 44.08
45.78 5 51.94 | 56.44 | 55.67 | 43.27 | 44.50 | 43.68
9 31 0 26 | −18 45 43 45 4 | 45 35 45 57 | 46 1 45 38 | | 46 6 45 46
1.29130n 1.29102n | | 1.29150n 1.29130n
+ 2744 2.27143 +269 | +368 | +199 | +2538 | +1669 | +4445
27109 51508 1.29399 1.29369 | 1.29498 1.29468 | 1.29329 1.29299 | 1.31688 1.31668 | 1.30819 1.30799 | 1.33595 1.33575
−18670 −18680 +19.68 +19.66 | +19.72 + 19.71 | + 19.65 + 19.63 | + 20.74 + 20.73 | + 20.33 + 20.32 | + 21.67 + 21.66
− 16 − .16

+.03 3.41 +.26 −.05 | −.47 −.08 | −.25 −.04 | −16 .02 | −.37 −.01 | −.30 .01
49.54 −.63 −.03 −.04 | −.04 −.32 −.06 | −.04 −.20 −.06 | −.28 −.39 −.32 | −.26 −.47 −.31 | ~~−.47~~ .40 −.58 −.45
7.32 3 7.33 + 19.60 | + 19.21 + 19.57 | + 19.36 + 19.53 | + 20.30 + 20.39 | + 19.70 + 20.00 | + 20.97 + 21.20
52.63 3 53.49 +61 6 11.54 | 6 15.96 15.70 | 6 14.84 15.40 | 25 3.79 3.45 | 25 4.60 4.09 | 25 4.25 25 5.28
14.27 7.32 +2 10.01 | +2 8.55 | +2 10.13 | − 16 14.02 | − 13.81 | − 12.67 11.67
3.05 + .81 10.82 | + .84 9.37 | + .86 10.99 | + .99 13.03 | + .99 12.82 | + 1.00
1993 − 26.20 − 6.21 | − 28.35 8.36 | − 29.33 9.34 | − 33.31 13.32 | − 34.10 14.11 | − 35.75 15.76
− 9.98 ~~18.4~~ + 1 44.62 | + 1 41.04 | + 1 41.66 | − 16 46.34 | − 16 46.92 | 47.40
+20.05 20.79 7 56.16 | 7 57.00 56.74 | + 7 56.50 57.00 | 8 17.45 17.11 | 8 17.65 17.17 | 8 16.83 ~~17.86~~ 17.86
27.34 7 56.16 | 7 56.87 | 7 56.75 | 8 17.28 | 8 17.42 | 8 17.34
~~19.16~~ 8 16.15 | 16.86 | 16.74
2036

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Paris 0-79

~~B.A.C. 103~~

h	m	s		1874	1875	corr α =
0	21	44	α		21 43.67	corr δ =
	°	′	δ		41 50.47	longd = −.67
−	33	42	dα/dT		+29.32	s
			dδ/dT	+	+19.91	I = 2.49
						s
						K = −.019
			l cos δ	9.92010	9.92010	
76	+ 76	5	l b	.10460	.12552	
	sin z = +.97		l b′	0.02470	0.04562	
			l b′	0.02144		
			sin δ	9.74417n		

1874 Oct. 28		Nov. 3		Nov. 9		Nov. 16		1874 Nov. 18		−.11 1875 Nov 17	
−.305		−.134		−.162		−.183		−.154		−.118	
0 21 35.4	21 22.0	21 32.8	21 21.4	21 28.5	21 16.7	21 —	21 16.3	21 19.5	21 12.4	22 38.3	22 23.5
37.8	24.2	35.0	24.4	30.9	19.1	—	21.2	21.9	15.6	40.8	25.0
40.4	26.7	37.5	26.7	33.4	21.2	—	23.4	24.5	17.6	43.2	26.4
45.0		42.5		38.4		29.8		29.4		48.2	
47.8		45.1		40.7		32.3		31.8		50.7	
50.2		47.4		43.2		34.6		34.3		53.2	
52.6	22 7.8	49.9	22 23.3	45.7	21 54.3	37.2	21 42.5	36.8	21 53.8	55.6	23 6.9
55.1	9.8	52.3	25.0	48.4	57.0	39.8	44.3	39.3	56.1	58.1	9.6
22 0.2	13.7	57.7	27.3	53.0	59.7	—	47.0	44.3	58.1	3.1	11.4
2.6		22 0.0		55.7		—		46.8		5.5	
4.9		2.3		58.2		—		49.4		8.1	
3720		4025		4761		1737		3780		4048	
180		120								180	
5520	21 24.30	522.5	21 24.17		21 19.00		21 20.30		21 15.27	5848	22 24.97
21 50.182	22 10.43	21 47.500	22 25.20	21 43.282	21 57.00	21 34.740	21 44.60	21 34.364	21 56.00	22 53.164	23 9.30
50.163		47.481		43.263		34.721		34.345		53.145	
− 5.98		− 3.11		+ 0.84		+ 9.67		+ 9.70		− 65.43	
+ .20		+ .09		+ .11		+ .12		+ .10		+ .08	
− 3.63	− .698	− 3.59	− .658	− 3.54	− .608	− 3.47	− .538	− 3.45	− .518	− 3.82	
− 9.41		− 6.61		− 2.59		+ 6.32		+ 6.35		− 69.47	
21 50.16		21 47.48		21 43.26		21 34.72		21 34.34		22 53.14	
21 40.75		21 40.87		21 40.67		[21 41.04]		21 40.69		21 43.67	
43.682		43.802		43.602		43.972		43.622			

+ 25.88	− 20.25	+ 23.33	− 37.70	+ 24.28	− 13.72	+ 14.44	− 9.86	+ 19.09	− 21.64	+ 28.19	− 16.14
0		0		0		0		0	40		
δ = ∓2.55″		∓2.62		∓2.69		∓2.74		∓2.77		−3.11	
2 28.3	3 17.1	2 26.4	3 30.8	2 32.1	3 11.7	2 33.9	3 0.4	2 32.3	3 14.7	3 36.4	4 25.4
44.5	33.9	39.9	42.8	47.4	27.0	45.5	11.4	49.2	32.0	40.8	28.5
72.8	51.0	66.3	73.6	79.5	38.7	79.4	11.8	81.5	46.7	77.2	13.9
2′ 36.40″	3 25.50	2 33.15	3 36.80	2 39.75	3 19.35	2 39.70	3 5.90	2 40.75	3 23.35	43 38.60	44 26.95
1.41296	1.30643n	1.36791	1.57634n	1.38525	1.13735n	1.15957	0.99388n	1.28081	1.33526n	1.45010	1.20790n
1.43766	1.33113n	1.38935	1.59778n	1.40669	1.15879n	1.18101	1.01532n	1.30225	1.35670n	1.49572	1.25352n
+27.39	−21.43	+24.51	−39.61	+25.51	−14.41	+15.17	−10.36	+20.06	−22.74	+31.31	−17.93
3 3.79	3 4.07	2 57.66	2 57.19	3 5.26	3 4.94	2 54.87	2 55.54	3 0.81	3 0.61	44 9.91	44 9.02
−33° 40 15.44″ 15.38	15.72	40 9.31 9.07	8.84	40 16.91 16.75	40 16.59	40 6.52 6.85	40 7.19	40 12.46 12.36	12.26	21 21.56 21.12	20.67
+76 0 29	1 18							0 34	1 16	59 51	0 39
2.35602	2.35644									2.35571	2.35607
+277		+1649		+207		+2518	~~35162~~	+1158		+2546	
2.35879	2.35921	2.37251	2.37293	2.35809	2.35851	2.38120	2.38162	2.37060	2.37102	2.38117	2.38153
−22840	−22870	−23580	−23600	−22810	−22830	−24050	−24080	−23470	−23500	−24050	−24070
− .01	− .01	− .07	− .07	− .01	.01	− 14	14	− 07	− 07	− 23	− 23
+16	+.04 +10	+14	+.14 +35	+15	+.01 +05	+05	−.44 +03	+07	~~+.18~~ −23 +11	+19	−.27 +.07
−.08	−.10	−.09	−.11	−.08	−.10	−.08	−.09	−.30	−.37	−.36	−.44
−3 48.43	−3 48.71	−3 55.82	−3 55.83	−3 48.04	−3 48.36	−4 0.67	−4 1.00	−3 54.98	−3 55.33	−4 0.90	−4 1.30
−33 44 3.67	4.43	44 5.13	4.67	44 4.95	4.95	44 7.19	8.19	44 7.4	7.59	25 22.46	21.97
+2 10.01		+2 10.00		+2 10.13		+2 10.81		+2 10.92		−16 14.02	
− 2.47	7.54	− 2.54	7.46	− 2.60	7.53	− 2.65	8.16	− 2.68	8.24	− 3.01	17.03
−13.58	6.33	−12.47	7.44	−11.41	8.50	−10.2	4 9.67	− 9.98	3 9.98	−16 −12.34	7.54
+1 53.96	−42 9.81 10.47	+1 54.99		+1 56.12		+1 57.92		+1 58.31		−16 28.40	51.86 ~~48.86~~ 51.37 ~~48.37~~
42 ~~9.57~~	10.47	10.14	9.68	8.83	8.83	9.27	10.27	10.13	10.28	21 ~~34.83~~	~~34.34~~
10.17	42 10.14	9.91		8.83		9.77		10.20	~~50.37~~	34.88	
30.0	41 50.28	29.8	50.50 ~~49.77~~	28.8	48.92	29.68	49.86 ~~50.26~~	30.11	49.29		51.62

-.23 -26 +.00 -.01 -.09

Nov 20 Nov 21 Dec 1 Dec 13

	-.215				-.235				-.035				-.110		
21	38.8	21	34.8	21	38.9	21	31.6	21	36.0	21	28.7	21	28.2	21	14.4
	41.3		37.0		41.4		33.6		38.5		30.2		30.7		16.3
	44.0		40.7		43.9		35.3		40.9		32.4		33.1		19.0
	48.8				48.9				46.0				38.1		
	51.4				51.3				48.4				40.6		
	53.7				53.9				50.8				43.1		
	56.3	22	13.9		56.3	22	16.2		53.5				45.5	21	57.3
	58.8		16.8		58.8		18.5		56.0				48.0		0.5
	3.7		19.6		3.7		20.7		0.9				53.0		2.4
	6.1				6.1				3.1				55.5		
	8.7				8.7				5.8				58.0		
	4116				4119				3799				4738		
	180				180				180						
	5916	21	37.50		5919	21	33.50		5595	21	30.43			21	16.57
21	53.782	22	16.77	21	53.809	22	18.47	21	50.900			21	43.073	22	0.07
	53.763				53.790				50.881				43.054		
−	6.43			−	6.41			−	3.64			+	3.94		
+	.14			+	.16			+	.02			+	.07		
−	3.79			−	3.78			−	3.66			−	3.49		
−	10.08			−	10.03			−	7.31			+	0.55		
21	53.76			21	53.79			21	50.88			21	43.05		
21	43.68			21	43.76			21	43.57			21	43.60		
													43.656		

	+16.28		−22.99		+20.31		−24.66		−20.47				+26.50		−17.00
40				40				40				40			
	−3.12				−3.12				−3.14				−3.21		
3	52.4	4	32.4	3	51.2	4	40.9	3	40.2			3	48.6	4	36.9
	57.4		37.9		55.5		46.0		37.9				51.8		39.9
	9.8		10.3		6.7		6.9		48.1				100.4		16.8
43	54.90	44	35.15	43	53.35	44	43.45	43	39.05			43	50.20	44	38.40
	1.21165		1.36154n		1.30771		1.39197n		1.31112n				1.42325		1.23045n
	1.25727		1.40716n		1.35333		1.43761n		1.35674n				1.46887		1.27607n
	+18.08		−25.54		+22.56		−27.39		−22.74				+29.43		−18.88
44	12.98	44	9.61	44	15.91	44	16.06	44	16.31			44	19.63	44	19.52
21	24.63		21.26	21	27.56	21	27.71	21	27.96			21	31.28		31.17
	22.94				27.63				27.96				31.23		
												0	2	0	50
	+2147				+1669				+4455				+744		
	2.37718		2.37754		2.37240		2.37276		2.40026		2.40062		2.36315		2.36351
	−23830		−23850		−23570		−23590		−25130		−25160		−23080		−23090
−	17	−	17	−	.12	−	.12	−	43			−	17	−	17
	+07	−37	+14		+.10	−30	+.15		+.10	−27	+		+.18	~~45~~ −50	+.07
	−39		−46		−~~43~~ 39		−47		−55				−67		−69
3	58.79	−3	58.99	−3	56.11	−3	56.34	−4	12.18			−3	51.36	−3	51.69
25	23.42		20.25	25	23.67		24.05	25	40.14			25	22.64		22.86
−16	15.12			−16	13.81			−	12.67			−	14.33		
−	3.02	18.14		−	3.02	16.83		−	3.04	15.71		−	3.11	17.44	
−	11.90	8.01		−	11.43	8.18		−	10.36	9.55		−	9.19	20 10.71	
−16	30.04	5346	~~5346~~	−16	28.56	5223			26.07	26	~~+4.07~~ 6.21		26.64		
41	5346	5029	5865			52.61								49.28	
	~~35.32~~		~~32.15~~		~~35.40~~		~~36.98~~		~~30.50~~				~~31.80~~	49.58	~~8.206~~
	~~33.73~~	51.83	~~53.55~~		35.59	52.42			30.50				31.93	49.59	
	~~51.84~~														

12 Ceti
h m s
0 23 40
° ′
− 4 39
g = + 47 2
ε sin g = +.73

1874

		s	s	′	″
Oct 27	23	39.67		38	54.2
Nov. 1		39.66	−.01	+.3	54.5
6		39.64	.02	.3	54.8
11		39.62	.02	.3	55.1
16		39.59	.03	.3	55.4
21		39.56	.03	.3	55.7
26		39.52	.04	.4	56.1
Dec 1		39.48	.04	.4	56.5
6		39.44	.04	.4	56.9

	1874	1875
α	s 36.529	39.590
δ	− 39 13.97″	− 38 54.05
dα/dτ	+ 3.061	+ 3.061
dδ/dτ	+ 19.922	+ 19.922
l cos δ	999857	999857
l b	0.10460	0.12552
l b′	0.10317	0.12409
l b′	0.09991	
sin δ	8.90885n	

corr α = −.016 s
corr δ = +.07″
Long l −.08 1.00
I = 2.07 s
K = −.015 s

−.18 −.08 1874 | −.15 | −.16 | −.26 | −.13 | −.13 1874
Oct. 28 | Nov. 3 | Nov. 9 | Nov. 11 | Nov. 16 | Nov. 18.
−.305 | −.134 | −.162 | −.267 | −.183 23 13.4 | −.154

0 23 33.3 23 21.6 | 23 30.5 23 19.0 | 23 26.4 23 14.2 | 23 22.2 23 17.4 | 23 17.6 15.4 | 23 17.5 23 6.3
35.3 23.3 | 32.5 21.0 | 28.5 16.2 | 24.2 19.0 | 19.7 17.0 | 19.5 9.2
37.4 25.3 | 34.6 22.8 | 30.5 18.4 | 26.2 20.9 | 21.7 | 21.7 10.7
41.4 | 38.5 | 34.6 | 30.4 | 25.9 | 25.8
43.7 | 40.6 | 36.6 | 32.5 | 27.9 | 27.8
45.7 | 42.8 | 38.8 | 34.6 | 30.2 | 29.8
47.7 23 53.0 | 45.0 24 5.4 | 40.9 24 2.4 | 36.6 24 1.4 | 32.2 23 46.8 | 31.9 23 48.5
49.8 55.2 | 47.0 7.7 | 42.9 4.4 | 38.6 3.2 | 34.3 49.8 | 33.9 50.6
54.0 57.0 | 51.0 9.8 | 47.1 6.3 | 42.7 5.0 | 38.3 | 38.1 52.7
56.0 | 53.2 | 49.2 | 44.8 | 40.5 | 40.2
58.0 | 55.3 | 51.2 | 46.9 | 42.4 | 42.2

50.23 23 23.40 | 47.10 23 20.93 | 42.67 23 16.27 | 37.97 23 19.10 | 33.07 23 15.27 | 32.84 23 8.73
23 45.664 23 55.07 | 23 42.727 24 7.63 | 23 38.791 24 4.37 | 23 34.518 24 3.20 | 23 30.064 23 48.30 | 23 29.855 23 50.60

45.649 −5.92 | 42.803 −3.08 | 38.776 +0.89 | 34.503 +5.15 | 30.049 +9.64 | 29.840 +9.72
23 39.67 +.01 | 23 39.65 +.01 | 23 39.63 +.01 | 23 39.62 +.02 | 23 39.59 +.01 | 23 39.58 +.01
+ 5.98 −.08 | + 3.15 | − 0.85 | − 5.12 | − 9.54 | − 9.74
+ 6.00 −3.14 | + 3.17 −3.12 | − 0.83 −3.10 | − 5.10 −3.09 | − 9.52 −3.06 | − 9.72 −3.06
23 36.52 | 36.61 | 36.58 | 36.58 | 36.64 | 23 36.52
− 5.98 | − 3.11 | + 0.84 | + 5.12 | + 9.67 | + 9.70
+ .02 | + .01 | + .01 | + .02 | + .01 | + .01
− 3.14 −.079 | − 3.12 −.059 | − 3.10 −.039 | − 3.09 −.029 | − 3.06 +.001 | − 3.05 +.011
− 9.10 41 3.48 | − 6.22 41 2.67 | − 2.25 3.62 | + 2.05 4.08 | + 6.62 3.90 | + 6.66 4.97
23 45.65 +2 10.33 | 23 42.80 +2 10.44 | 23 38.78 +2 9.98 | 23 34.50 +2 10.77 | 23 30.05 +2 10.71 | 23 29.84 +2 10.99
− 1.9 | − 1.9 | − 2.0 | − 2.0 | − 2.0 | − 2.1
23 36.55 39.611 −19.70 | 36.58 39.641 −19.40 | 36.53 39.591 −19.00 | 36.55 39.611 −18.90 | 36.67 39.731 −18.60 | 36.50 39.561 36.563 −18.40
~~42 52.27~~ | ~~51.81~~ | ~~52.60~~ | ~~53.95~~ | ~~54.01~~ | 5.29 55.46
−4 39 14.78 75 | 39 13.53 | 39 14.64 | 39 14.21 | 39 13.79 | +0.34 39 14.48

s
+ 22.26 − 9.41 | + 21.89 − 24.81 | + 22.52 − 25.58 | + 15.42 − 28.68 | + 14.79 − 18.24 | + 21.12 − 20.75
0 | 0 | 0 | 0 | 0 | 0
″
V₀ = ★ 2.55 | ★ 2.62 | ★ 2.64 | ★ 2.71 | ★ 2.74 | ★ 2.77

2 12.9 2 53.0 | 2 13.4 3 11.2 | 2 13.1 3 14.0 | 2 22.6 3 16.9 | 2 23.5 3 3.7 | 2 14.9 3 7.5
30.1 10.1 | 25.7 24.6 | 30.4 29.9 | 38.1 33.9 | 34.4 14.3 | 30.3 23.3
43.0 12.31 | 39.1 35.8 | 43.5 43.9 | 60.7 50.8 | 57.9 18.0 | 45.2 30.8
2 21.50 3 1.55 | 2 19.55 3 17.90 | 2 21.75 3 21.95 | 2 30.35 3 25.40 | 2 28.95 3 9.00 | 2 22.60 3 15.40

1.34753 0.97359n | 1.34025 1.39463n | 1.35257 1.40790n | 1.18808 1.45758n | 1.16997 1.26102n | 1.32469 1.31702n
1.45070 1.07676n | 1.44016 1.49454n | 1.45248 1.50781n | 1.28799 1.55749n | 1.26988 1.36093n | 1.42460 1.41693n
+28.23 −11.93 | +27.55 −31.23 | +28.34 −32.20 | +19.41 −36.11 | +18.61 −22.96 | +26.58 −26.12
2 49.73 2 ~~1.36~~ 49.62 | 2 47.10 2 46.67 | 2 50.09 2 49.75 | 2 49.76 2 49.29 | 2 47.56 2 46.04 | 2 49.18 2 49.28

−4°40 1.38″ 1.82 | 12.01 1.27 | 39 58.75 58.53 | 58.32 | 40 1.74 1.57 | 1.40 | 40 1.41 1.17 | 0.94 | 39 59.21 58.45 | 57.69 | 40 0.83 0.88 | 0.93
+47 0 14 0 55 | 0 16 1 8
1.79010 1.79030
+283 | +1649 | +211 | +806 | +2524 | +1467
1.79293 1.79313 | 1.80659 1.80899 | 1.79221 1.79241 | 1.79816 1.79836 | 1.81534 1.81554 | 1.80477 1.80497
−62.08 −62.10 | −64.06 −64.09 | −61.98 −62.00 | −62.83 −62.86 | −65.36 −65.39 | −63.79 −63.82
00 00 | 00 | 00 00 | 00 | 00 | 00
+.07 2 +.07 | +.02 +.03 | +.02 +.03 | +.01 +.04 | +.01 +.01 | +.02 +.02
−.07 −.06 −.09 | −.07 −.06 −.10 | −.07 −.06 −.10 | −.07 −.06 −.10 | −.07 −.07 −.10 | ~~−.48~~ −.26 −.29 −.36
−1 2.13 −1 2.18 | −1 4.11 −1 4.16 | −1 2.03 −1 2.07 | −1 2.89 −1 2.92 | −1 5.42 −1 5.48 | −1 4.03 −1 4.16
−41 3.57 3.45 | 41 2.86 2.48 | 41 3.77 3.47 | 41 4.30 3.86 | 41 4.63 3.17 | 41 4.86 5.09
38 5.43 | 5.46 | 5.30 | 5.51 | 5.54 | 5.56
+2 9.2 9.1 | +2 8.3 7.9 | +2 8.8 8.5 | +2 9.2 8.8 | +2 9.2 7.8 | +2 9.3 9.5
−2 9.15 | 8.10 | 8.65 | 9.00 | 8.50 | +2 9.40
+2 9.2 39 15.06 | 8.2 39 14.17 | 8.7 39 14.60 | 9.1 39 14.56 | 8.6 39 14.42 | +2 9.6 39 14.36
+2 10.31 8.15 15.00 | +2 10.80 8.09 13.79 | +2 10.13 8.17 14.30 | +2 10.61 8.64 14.12 | +2 10.81 8.81 12.96 | +2 10.92 8.90 14.59
1.86 +.22 | 1.91 +.52 | 1.96 +.92 | 1.97 +1.02 | 2.00 +1.32 | 2.02 +1.52
− 19.70 39 15.03 | − 19.40 39 13.98 | − 19.00 39 14.45 | − 18.90 39 14.34 | − 18.60 39 13.69 | − 18.40 39 14.47
+1 48.35 5611 | 1 48.69 5406 | 1 49.17 5453 | 1 49.74 5442 | 1 50.21 5399 | 1 50.50 5455

1875

	m s				
Nov. 16	23 42.99		38	33.3	
21	42.96	−.03		33.6	+.3
26	42.92	.04		34.0	.4
Dec. 1	42.88	.04		34.3	.3
6	42.84	.04		34.7	.4
11	42.80	.04		35.0	.3
16	42.75	.05		35.4	.4
21	42.70	.05		35.7	.3
26	42.65	.05		36.1	.4

−.11
1875

Nov 17	+	−.23 Nov 20	+	−.26 + Nov 21		+ +00 Dec 1	−.01	−.09 Dec 13	+
−.118		−.215		−.235		−.035		−110	
24 36.3	24 23.9	23 36.9	23 27.7	23 37.0	23 29.4	23 34.1	23 29.7	23 26.4	23 19.3
38.3	25.8	39.0	29.5	39.1	31.6	36.3		28.8	20.9
40.4	27.8	41.1	31.8	41.2	33.1	38.4		30.4	22.5
44.5		45.3		45.2		42.4		34.6	
46.6		47.3		47.3		44.6		36.8	
48.7		49.4		49.4		46.7		38.8	
50.7	25 13.9	51.5	24 11.2	51.4	24 6.8	48.6	24 19.2	40.9	23 51.5
52.8	16.4	53.5	13.4	53.5		50.8	21.3	42.9	1 53.3
56.9	18.2	57.7	15.2	57.6		54.9	23.5	47.0	55.4
58.9		59.7		59.7		56.9		49.1	
1.1		1.8		1.9		59.0		51.2	
4752		4832		4833		5127		4264	
60		60		60					
5352	24 25.83	5432	23 29.67	5433	23 31.37		23 29.70		23 20.90
24 48.655	25 16.17	23 49.382	24 13.27	23 49.391	24 6.80	23 46.609	24 21.33	23 38.764	23 53.40
48.640	−17 5.70	49.367	− 6.41	49.376	− 6.37	46.594	− 3.68	38.749	+ 4.03
23 42.98	+.01	23 42.96	+.02	23 42.96	+.02	23 42.89	+.00	23 42.79	+.01
+5.66		+ 6.41		+ 6.42		+ 3.70	−.01	− 4.04	
+5.68	−3.39	+ 6.43	−3.37	+6.44	−3.37	+3.72	−3.30	− 4.02	−3.20
	23 39.55		39.61		39~~76~~.66 .66		~~3690~~		39.59
− 65.73		− 6.43		− 6.41		− 3.67	39.60	+ 3.94	
+ .01		+ .02		+ .02		+ .00	39.60	+ .01	
− 3.39		− 3.37		− 3.37		− 3.30		− 3.20	
− 69.11	22 17.95	− 9.78	15.48	− 9.76	18.28	− 6.97	20.65	+ 0.78	18.97
24 48.64	−16 14.05	23 49.37	−16 14.54	23 49.38	−16 13.64	23 46.59	−16 13.50	23 38.75	−16 14.10
	− 2.2		− 2.2		− 2.3		− 2.3		− 2.4
39.53	−20.60	39.59	−20.50	39.62	−20.40	39.62	−19.70	39.53	−18.80
	6 ~~9.20~~		~~7.32~~		~~9.22~~		~~11.15~~	39.578	~~17.87~~
	38 54.80		38 52.72		38 54.62		38 55.15	3.90	38 54.37
								−.012	
+22.82	− 27.52	+19.71	− 23.89	+18.02	−17.41	+16.91	−34.72	+17.86	−14.64
40	40			40		40		40	
−3.11		−3.12		−3.12		−3.14		−3.21	
3 29.4	4 35.8	3 32.9	4 29.9	3 37.1	4 23.7	3 39.6	4 48.2	3 40.1	4 23.1
30.7	38.7	36.0	32.0	40.6	25.6	35.9	43.9	41.2	22.9
6.81	14.5	8.9	61.9	77.7	9.3	15.5	12.1	1.3	6.0
43 30.05	44 37.25	43 34.45	44 30.95	43 38.85	44 24.65	43 37.75	44 46.05	43 40.65	44 23.00
1.35832	1.43965n	1.24969	1.37822n	1.25575	1.24080n	1.22814	1.54058n	1.25188	1.16554n
1.48241	1.56374n	1.37378	1.50231n	1.37984	1.36489n	1.35223	1.66467n	1.37597	1.28963n
+30.37	−36.62	+23.65	−31.79	+23.98	−23.17	+22.50	−46.20	+23.77	−19.48
44 0.42	44 0.63	43 58.10	43 59.16	44 2.83	44 1.48	44 0.25	43 59.85	44 4.42	44 3.52
21 12.07 12.17	12.28	21 9.75 10.28	10.81	21 14.48 13.80	13.13	21 11.90 11.70	11.50	21 16.07 15.62	15.17
59 42	0 49							59 53	0 35
1.78990	1.79030								
42550		+2158		+1669		+4462		+748	
1.81540	1.81580	1.81148	1.81188	1.80659	1.80699	1.83452	1.83492	1.79738	1.79778
−65.37	−65.43	−64.79	−64.84	−64.06	−64.12	−68.32	−68.38	−62.72	−62.77
−.01	−.01	−.01	−.01	00	00	−.01	−01	−.01	−.01
+.03	−.37 +.04	+.02	−.38 +.03	+.01	−.39 +.01	+.01	−.59 +.06	+.01	−.60 +.01
−.35	−.46	−.36	−.45	−.36	−.44	−.54	−.72	−.55	−.66
−1 5.70	−1 5.86	−1 5.14	−1 5.27	−1 4.41	−1 4.55	−1 8.86	−1 9.05	−1 3.27	−1 3.43
22 17.77	18.14	22 14.89	16.08	22 18.89	17.68	22 20.76	20.55	22 19.34	18.60
38 33.4		33.5		33.6		38 34.3	~~+38~~	35.2	
−16 15.6	15.3	−16 18.6	17.4	−16 14.7	15.9	−16 13.5	13.8	−16 15.9	−16 16.6
−16 15.45		18.00		15.30		13.65		16.25	
−16 15.4	38 54.66	17.9	38 52.78	15.2	38 55.37	13.6	38 55.42	16.2	38 54.81
−16 14.02	16.29 55.03	− 15.12	17.39 53.97	− 13.81	14.08 54.16	− 12.67	14.96 55.21	− 14.33	16.67 54.07
− 2.27	0.68	− 2.27	0.55	− 2.27	0.48	− 2.29	+0.22	− 2.34	1.12
− 2360	38 54.85	− 2650	53.37	− 2040	38 54.76	− 19.70	38 55.31	− 18.80	54.44
16 3.689		− 3789		− 3648		− 3466		− 3547	

K Cass

		1874				1874	1875	corr. const.
h m s	Oct. 27	25 54.65		14′ 35.7″		α 51.139	54.498	tang δ +1.90 2.14
0 25 34	Nov. 1	54.58	-.07	37.1	+14	δ +14 10.02	+14 29.96	I = 4.42
+62 14	6	54.51	.07	38.5	14	dα/dt +3.359	+3.360	K = -.033
z = -19 51	11	54.42	.09	39.7	12	dδ/dt +19.938	+19.937	
sin z = -.34	16	54.33	.09	40.9	12			
	21	54.22	.11	41.9	10	cos δ 9.66827	9.66827	
	26	54.11	.11	42.9	10	b .10460	.12552	
	Dec. 1	53.97	.14	43.7	8	f 6′ 9.77287	9.79379	
	6	53.81	.16	44.4	7			
						16′ 9.76961		
						sin δ 9.94687		

-18 1874 -08		-15		-13	-10	-16		-.26		-13	
Oct. 28		Nov. 3		Nov. 5		Nov. 9		Nov. 11		Nov. 16	
-.308		-.137		-.213		-.162		-.267		-.183	
0 25 52.4	25 16.8	25 49.3	25 24.1	25 46.7	25 7.6	25 45.3	25 7.1	25 40.8	25 17.4	25 36.2	25 2.7
54.8	20.7	51.6	28.9	49.0	12.1	47.5	10.5	42.0	21.4	38.3	6.0
57.0	24.3	53.6	32.3	51.2	16.8	49.6	16.4	45.3	24.0	40.7	9.3
59.3		55.8		53.5		51.7		47.7		42.8	
26 1.2		58.0		55.7		53.8		49.7		45.0	
3.4	26 22.4	26 0.1	26 11.4	57.9	26 13.0	56.1	25 50.8	52.0	26 12.7	47.3	25 29.9
5.5	25.6	2.3	17.3	26 0.1	17.1	58.4		54.3	16.8	49.5	34.8
7.8	29.6	4.4	20.7	2.2	21.5	26 0.6		56.5	20.1	51.5	38.9
10.0		6.6		4.4		2.8		58.6		53.9	
2514		2817		3207		3658		4469		4052	
240		240		180		120					
114	25 20.60	521 7	25 28.43	500 7	25 12.17	485 8	25 11.33		25 20.93		25 6.00
26 1.267	26 25.87	25 57.967	26 16.47	25 55.633	26 17.20	25 53.978	25 50.80	25 49.656	26 16.53	25 45.022	25 34.53
1.234		57.934		55.600		53.945		49.623		44.989	
25 54.643	-5.9×2	25 54.55	-3.08	25 54.52	6 -0.5~~7~~	25 54.465	9 +0.8~~8~~	25 54.42	+5.15	25 54.342	+9.64
+6.5960	-.34	+3.38	-.28	+1.08	-.25	-0.520	-.30	-4.80	-.49	-9.357	-.25
	-.17				-.21						
- 5.98	-3.49	- 3.11	-3.41	- 0.66	-3.38	+ 0.84	-3.31	+ 5.12	-3.28	+ 9.64	-3.18
- .58	25 51.31	- 26	51.16	- .41	51.20	- .31	51.22	- .51	51.00	- .35	51.20
- 3.49	-.031	- 3.41	-.051	- 3.38	-.021	- 3.31	+.049	- 3.28	+.079	- 3.18	+.179
- 10.05		- 6.78		- 4.45		- 2.78		+ 1.33		+ 6.14	
26 1.23		25 57.93		25 55.60		25 53.94		25 49.62		25 44.99	
	12 23.52		26.40		27.61		27.75		21 27.~~39~~		27.53
25 51.18	+2 18.33	51.15	+2 10.44	51.15	+2 8.71	51.16	+2 9.98	50.95	+2 10.77	51.13	+2 10.71
54.539	+ 0.9	54.509	+ .9	54.509	+ 1.0	54.519	+ 1.0	54.309	+ 1.0	54.489	+ 1.0
	-26.00		-27.70		-28.30		-29.30		-29.80		-31.00
+62 14	8.75	14	10.04	14	9.02	14	9.43	14	9.18	14	8.24
+ 40.67	- 24.60	+ 29.54	- 18.50	+ 13.46	- 21.57	+ 42.65	+ 3.18	+ 28.73	- 26.87	+ 89.02	+ 10.49
10		10		10		10		10		10	
= ✱2.55		✱2.62		✱2.63		✱2.69		✱2.71		✱2.74	
8 0 16.9	0 55.7	0 23.6	0 53.6	0 12.5	0 52.0	0 11.9	0 35.8	0 21.9	0 55.0	0 18.6	0 34.5
25.9	4.4	26.9	56.5	19.1	56.4	19.6	43.9	28.4	1.1	21.5	37.5
42.8	120.1	50.5	110.1	31.6	108.4	31.5	79.7	50.3	116.1	40.1	72.0
10′ 21.40	11 0.05	10 25.25	10 55.05	10 15.80	10 54.20	10 15.75	10 39.85	10 25.15	10 58.05	10 ~~20.10~~ 20.05	10 36.00
1.60927	1.39091n	1.47041	1.26717n	1.63809	1.33385n	1.62995	0.50243	1.45834	1.42927n	1.59129	1.02078
1.38214	1.16381n	1.24002	1.03678n	1.40770	1.10346n	1.39956	0.27204	1.22795	1.19888n	1.36090	0.80039
+24.11	-14.58	+17.38	-10.89	+25.57	-12.69	+25.09	+1.87	+16.90	-15.81	+22.96	+6.31
10 45.51	10 45.47	10 42.63	10 44.16	10 41.37	10 41.57	10 40.84	10 41.72	10 42.05	10 42.24	10 43.01	10 42.31
+62°											
12′ 2.84	2.88	12 5.72	12 4.19	12 6.98	6.84	12 7.51	6.63	12 6.30	6.11	12 5.34	6.04
2.86		4.95		6.91		7.07		6.20		5.69	
-19 51 46	51 7										
1.31810	1.31780n										
+289		+1649		+373		+217		+809		+2529	
1.32099	1.32069	1.33459	1.33429	1.32183	1.32153	1.32027	1.31997	1.32619	1.32589	1.34339	1.34309
+20.94	+20.93	+21.61	+21.59	+20.98	+20.97	+20.91	+20.89	+21.19	+21.18	+ ~~21.55~~ 22.05	+22.03
-.0437	-.13	-.19	-.08	-.41	-.10	-.39	-.01	-.17	-.15	-.34	-.02
-.01 -.27	-.03	-.01	-.10 -.03	-.01	-.27 -.03	-.01	-.22 -.02	-.02	-.18 -.02	-.02	-.20 -.02
+ 20.56	+ 20.77	+ 21.41	+ 21.48	+ 20.56	+ 20.84	+ 20.51	+ 20.86	+ 21.60	+ 21.01	+ 21.69	+ 21.99
12 23.40	23.65	12	27.13 25.67	12 27.54	27.68	12 28.02	27.49	12 27.30	27.12	12 27.03	28.03
14 36.0		~~38.0~~ 37.7		38.3		39.3		39.8		41.0	
+2 12.6	12.4	+2 10.6	12.0	+2 10.8	10.6	+2 11.3	11.8	+2 12.5	12.7	+2 14.0	13.0
+2 12.5		11.3		10.7		11.5		12.6		13.5	
+2 10.81	14 8.27	+2 10.00	14 10.32	+2 8.55	14 8.68	+2 10.13	14 9.76	+2 10.61	14 9.03	+2 10.81	14 7.77
+ .86	10.87 8.52 +	.89	10.89 8.86 +	.89	9.44 8.82 +	.91	11.04 9.23 +	.92	11.53 8.85 +	.93	11.74 8.77
− 26.00	6.06	27.70	7.76 −	28.30	8.36 −	29.30	9.36 −	29.80	9.86 −	31.00	11.06
+1 44.87	+14 8.39	1 43.19	9.59	1 41.14	8.75	1 41.74	9.49	1 41.73	8.94	1 37.74	8.27
	28.33		29.53		28.69		28.43		28.88	10	28.21

1875

		m	s		'	"	
Nov.	16	25	57.96		14	63.0	
	21		57.84	−.12		64.1	+1.1
	26		57.71	.13		65.1	1.0
Dec.	1		57.58	.13		65.9	.8
	6		57.44	.14		66.6	.7
	11		57.29	.15		67.1	.5
	16		57.14	15		67.6	.5
	21		56.97	17		67.9	.3
	26		56.80	17		68.1	.2

1874.0 α	δ	1875.0 α	δ
51.18		54.51	
.15		.58	
.15		.65	
.16		.55	
50.95		.53	
51.13			
51.10			
51.117		54.564	
.139	10.02	.498	29.96
−.022		+.066	

−.13
1874
Nov. 18

−.154	
25 36.0	25 25
38.3	6.0
40.4	9.2
42.6	
44.9	
47.1	25 50.1
49.3	33.0
51.5	38.5
53.7	
40.38	
	25 5.90
25 44.867	25 54.53
44.834	
25 54.30 28	+9.72
−9.47 5	−.25
+ 9.70	25 −3.14
− .29	51.16
− 3.14	+.219
+ 6.27	
25 44.83	
	~~29.67~~ 95
51.10	+2 10.99
51.117	54.459 + 10
.139	−31.40
−.022	14 10.54
+38.97	− 9.66
10	
∓2.77	
0 14.5	0 43.8
20.6	49.3
35.1	93.1
1.0 17.55	10 46.55
1.59073	0.98498n
1.36034	0.75459n
+22.93	−5.68
10 40.48	10 40.87
12. 7.87 7.68	7.48
51 49	51 20
+14.76	
1.33286	1.33256
+21.52	+21.51
−.34	−.24 −.02
−.03	−.09
+21.15	+21.40
12 29.02	28.88
41.4	
+2 12.4	12.5 −16
+2 12.5	−16
+2 10.72 14	9.48 −16
− .94 11.86	9.34 +
− 31.40 11.46	−
+1 40.46 +14	9.41 −16
	29.35

−.11
1875 +
Nov 17

−.118	
26	26 25.6
55.0	29.4
57.1	32.9
59.5	
27 1.8	
3.9	
6.1	27 14.0
8.3	16.8
10.6	21.0
13.0	
21.53	
18.0	
35.3	26 29.30
27 3.922	27 17.50
3.889	
25 57.953	−~~9~~ 5.71
+6.5946	−.21
−. 65.43	−3.43
− .22	25 54.54
− 3.43	
− 69.38	
27 3.89	
	31 15.56
54.51	−16 14.05
	+ 1.0
	−33.30
	~~+4 57.31~~
	14 ~~28.31~~
	29.21 29.21
+34.62	−13.58
50	
−3.11	
1 31.0	2 0.8
35.0	5.1
6.0	5.9
51 33.00	52 2.95
1.53933	1.13290n
1.33312	0.92669n
+21.53	−8.45
51 54.53	51 54.50
30 53.82 53.83	53.85
52 15	51 45
1.31830	1.31810
+25.55	
1.34385	1.34365
+22.07	+22.06
−.26	−.34 −.04
−.19	−.19
+21.62	+21.83
31 15.44	15.68
15 8.3	
12.1	12.4 −16
12.3	
14.02 14	29.17
1.05 12.97	29.41
33.30 13.36	
46.27 14	29.29

−.23 +
Nov 20

−.215	
25	25 24.5
55.9	28.8
58.2	32.5
26 0.4	
2.7	
4.8	
7.0	26 18.0
9.2	21.7
11.5	25.6
13.6	
16.33	
12.0	
43.3	25 28.60
26 4.811	26 21.77
4.778	
25 57.876	−~~2.64~~ 2
+ 6.912	−.44
− 6.43	−3.36
− .41	25 54.56
− 3.36	
− 10.20	
26 4.78	
	16.55 ~~17.49~~
54.58	−16 14.54
	+ 1.0
	−33.90
	~~58.19~~
	14 ~~28.21~~
	29.11 29.11
+36.21	−16.96
50	
−3.12	
1 26.5	1 59.9
33.9	8.9
60.4	12.88
51 30.20	52 4.40
1.55883	1.22943n
1.35262	1.02322n
+22.52	−10.55
51 52.72	51 53.85
30 55.63 55.06	54.50
+21.66	
1.33996	1.33976
+21.87	+21.86
−.29	−.38 −.07
−.19	−.21
+21.39	+21.58
31 17.02	16.08
3.9	
13.1	12.2 −16
12.6	
− 15.12 14	29.06
+ 1.06 14.06	28.12
− 33.90 13.96	
47.96	28.59

−.26 ×
Nov 21

−.235	
25	25 23.1
56.3	27.0
58.5	31.6
26 0.8	
2.8	
4.8	
6.9	25 51.9
9.0	57.2
11.3	59.9
13.5	
16.39	
12.0	
43.9	25 27.23
26 4.878	25 56.33
4.845	
25 57.853	−~~6.37~~
+7.001	−.49
− 6.41	−3.33
− .45	54.65
− 3.33	
− 10.19	
26 4.84	
	16.50
54.65	−16 13.64
	+ 1.0
	−34.22
	~~56.94~~
	14 ~~28.70~~
	29.66 29.66
+37.65	+8.53
50	
−3.12	
1 26.1	1 44.1
33.8	51.1
59.9	95.2
51 29.95	51 47.60
1.57576	0.93197
1.36955	0.72576
+23.42	+5.32
51 53.37	51 52.92
30 54.98 55.20	55.43
+16.69	
1.33449	1.33474
+21.63	+21.62
−.30	−.32 −.02
−.15	−.18
+21.18	+21.42
31 16.16	16.85
4.2	
−16 12.0	12.6
12.3	
− 13.81 14	29.21
+ 1.06 12.75	29.90
− 34.20 14.26	
46.95	29.55

+.00 −.01 +
Dec 1

~~+1.035~~ −.035	
25	25 21.1
52.6	25.6
54.7	29.4
57.0	
59.2	
26 1.4	
3.5	26 18.2
5.8	
8.0	
10.3	
25.25	
24.0	
12.5	25 25.47
26 1.389	26 18.20
1.356	
25 57.597	−~~3.67~~ 8
+ 3.779	+.010
	−.02
− 3.61	−3.07
− .07	54.59
− 3.07	
− 6.81	
26 1.36	
	16.26
54.55	−16 12.50
	+ 1.0
	−35.90
	~~53.86~~
	14 27.96
	28.86 28.86
+35.92	−16.81
50	
−3.14	
1 33.2	2 7.1
30.4	4.5
3.6	11.6
51 31.80	52 5.80
1.55634	1.22557n
1.34916	1.01936n
+22.34	−10.46
51 54.14	51 55.34
30 54.21 53.61	53.01
+44.67	
1.36297	1.36277
+23.07	+23.06
−.27	−.42 −.06
−.22	−.28
+22.58	+22.72
31 16.79	15.73
5.9	
−16 10.9	9.8
10.2	
− 12.67 14	29.28
+ 1.06 11.61	28.22
− 35.90 15.96	
47.51	28.75

−.09
× Dec 13

−.110	
25	25 9.3
44.6	13.0
47.0	16.4
49.3	
51.3	
53.4	
55.7	26 9.7
58.0	13.0
0.1	16.9
2.3	
36.17	
12.0	
48.17	25 12.90
25 53.522	26 13.20
53.489	
57.24 2	+4.02
− 3.957	−.17
+ 3.94	−2.72
− .21	54.62
− 2.72	
+ 1.04	
25 53.29 49	
	~~19.77~~
54.53	−16 14.10
54.640	+ 1.1
.498	−37.30
+.142	~~57.67~~
	14 28.48
	~~29.49~~
+40.62	−19.68
50	
−3.21	
1 21.6	1 59.8
25.7	3.9
7.3	12.37
51 23.65	52 1.85
1.60874	1.29403n
1.40253	1.08782n
+25.27	−12.22
51 48.92	51 49.63
30 59.43 59.07	30 58.92
52 24	51 46
+7.51	
1.32581	1.32561
+21.17	+21.16
−.35	−.47 −.08
−.271	−.30
+20.61	+20.78
31 20.04	19.50
7.3	
−16 12.7	12.2
12.4	
− 14.33 14	29.50
+ 1.09 13.24	28.96
− 37.30 17.86	
50.54	29.23

1874 1874 1875

K Draconis L.C.

	h	m	s
α	12	28	8
δ	+ 70	29	
		109	31

ζ = − 67 08

ζ sin z = −.92

	m	s		′	″	
Oct. 27	28	3.46		28	37.2	
Nov. 1		5.85	+.19		35.3	−1.9
6		5.86	.21		33.5	1.8
11		6.10	.24		31.7	1.8
16		6.36	.26		30.0	1.7
21						

	1874	1875
α	s 5.547	8.143
δ	+28 58.11 31 1.89	+28 38.19 31 21.81
dα/dτ	+2.596	+2.595
dδ/dτ	−19.919	−19.918
l cos δ	9.52385n	9.52385n
l b	.10460	.12552
l b′	9.62845n	9.64937n
l b′	9.62519n	
sin δ	9.97430	

−18 −98 1874 Oct. 28 −.306		−15 Nov. 3 −.137		−16 Nov. 9 −.162		−26 Nov. 11 −.267		−13 Nov. 16 −.183		−13 1874 Nov. 18 −.154	
0 28 —	28 30.0	27 56.1	27 25.5	27 52.5	27 31.8	27 48.0	27 33.3	27 44.0	27 57.0 ?	27 43.9	27 16.8
—	36.8	59.2	31.7	55.5	37.5	50.7	36.6	47.3		47.3	22.5
—	43.6	28 2.2	38.7	58.6	43.4	53.7	41.9	50.3		50.2	27.1
10.8 7.7		5.4		28 1.5		57.0		53.3		53.3	
.5 10.5		8.4		4.4		28 0.2		56.3		56.4	
.6 13.7	29 5.8	11.4	28 31.6	7.7	28 39.1	3.3	28 13.3	59.6	28 3.3	59.4	28 3.6
.7 16.4	10.7	14.5	36.4	10.7	46.7	6.4	16.8	28 2.4	7.2	2.5	10.4
.8 20.0	17.0	17.4	41.0	13.8	52.2	9.5	19.9	5.6	14.0	5.9	16.0
.7 23.0		21.0		17.2		12.4		8.8		8.9	
		1956 120		2219 180		241 2 240		3276 180		3278 180	
	28 36.80	75 6	27 31.97	41.9	27 37.33	1 2	27 37.27	50 7 6	27 57.00	50 7.8	27 22.13
28 10.683	29 11.17	28 8.400	28 36.33	28 ~~4.767~~ 656	28 46.00	28 0.133	28 16.67	27 56.400	28 8.17	27 56.422	28 10.00
10.726		8.443		4.699		0.176		56.443		56.465	
28 5.499	−5.92	28 5.702	−3.07	28 5.979	+0.89	28 6.029	+5.15	28 6.325	+9.64	28 6.436	+9.72
+5.24	+.51	+ 2.742	+.42	−1.27	+.45	− 5.91	+.73	− 9.891	+.37	− 9.94 10.06	+.37
	+.24										
− 5.98	+0.06	− 3.11	−0.17	+ 0.84	−0.44	+ 5.13	−0.54	+ 9.64	−0.80	+ 9.70	−0.91
+ .86	28 5.62	+ .29	5.62	+ .46	5.60	+ .75	5.62	+ .52	5.65	+ .43	28 5.64
+ 0.06	+2.656	− 0.17	+2.426	− 0.44	+2.156	− 0.54	+2.056	− 0.80	+1.796	− 0.91	+1.686 .64
− 5.06		− 2.89		+ 0.86		+ 5.34		+ 9.39		+ 9.22	
28 10.73		28 8.44		28 4.70		28 0.18		27 56.44		27 56.46	
	29 8.60		11.73		13.30		12.25		14.24		14.96 26.26
28 5.67	+2 10.33	5.55	+2 10.44	5.56	+2 9.98	5.52	+2 10.77	5.83	+2 10.71	5.68 5.618	8.276 +2 10.99
8.266	+ 2.4	8.146	+ 24	8.156	+ 24	8.116	+ 2.5	8.426	+ 2.5	5.547	+ 26
	−2120		−2350		−2560		−2650		−2820	+.071	−2870
~~+70~~ 109	31 0.13		31 1.09		31 0.08		30 57.02		30 59.25		30 59.85
+26.12	−60.49	s + 36.43	−27.93	+ 27.33	−41.34	+ 22.86	−16.54	− 0.60	−11.70	+ 34.29	−13.58
55 ″ ζ = +2.55		55 +2.62		55 +2.69		55 +2.71		55 +2.74		55 +2.77	
0 42.2	0 28.5	1 12.9	0 45.9	1 1.9	0 32.2	1 3.1	0 45.2	0 58.7	0 54.2	1 6.9	0 46.6
47.8	33.9	12.7	45.9	4.3	35.5	5.2	48.8	55.7	52.1	8.1	48.5
90.0	62.4	25.6	91.8	6.2	67.7	8.3	94.0	114.4	106.3	15.0	95.1
55 45.00	55 31.20	56 12.80	55 45.90	56 3.10	55 33.85	56 4.15	55 47.00	55 57.20	55 53.15	56 7.50	55 47.55
1.41697	1.78168	1.56146	1.44607n	1.43664	1.61637n	1.35908	1.21854n	9.77815n	1.06819n	1.58517	1.13290n
1.04542	1.41013	1.18665n	1.07126	1.06183n	1.24156	0.98427	0.84373	9.40334	0.69338	1.16036n	0.75809
+ 11.10	+ 25.71	−15.37	+11.78	−11.53	+17.44	− 9.64	+6.98	+ 0.25	+4.94	−14.47	+5.73
55 56.10	55 56.91	55 57.43	55 57.68	55 51.57	55 51.29	55 54.57	55 53.98	55 57.45	55 58.09	55 53.03	55 53.28
26 ~~57.25~~ 52.2 51.84	(+10.9° 51.84	26 50.92 50.79	50.67	26 56.78 56.92	57.06	26 53.84 54.10	54.37	26 50.90 50.58	26 50.26	26 54.42 54.74	55.07
−67 6 22	6 36									6 0	6 19
2.13193n	2.13199n									2.13179n	2.13189n
+293		+1649		+220		+811		+2535		+1484	
2.13486	2.13492	2.14842	2.14848	2.13413	2.13419	2.14004	2.14010	2.15728	2.15734	2.14667	2.14673
+136.40	+136.40	+140.80	+140.80	+136.20	+136.20	+138.10	+138.10	+143.60	+143.70 66	+140.20	+140.20
00	00	+ .01	+ .01	00	00	+ .01	+ .01	+ .03 4	+ .03	+ .01	+ .01
+.11 +.35	+.63	+.22 +.14	+.13	+.13 +.18	+.29	+.09 +.04	+.04	−.00 −.02	+.02	+.20 00	+.03
−.02	−.01	−.04	−.02	−.03	−.02	−.03	−.02	−.03	−.03	−.12	−.10
+2 16.49	+2 17.02	+2 20.99	+2 20.92	+2 16.30	+2 16.47	+2 18.17	+2 18.13	+2 23.64	+2 23.68	+2 20.29	+2 20.14
29 8.74	29 8.46	29 11.91	11.59	29 13.08	13.53	29 12.01	12.50	29 14.54	13.94	29 14.71	15.21
88 3.69		3.46		~~33.0~~ 32.5		3.16		2.99		2.94	
391 23.1		31 2.54		31 27.5		31 28.4		31 30.1		31 30.6	
+2 16.4	14.6	+2 13.5	13.8	+2 14.4	14.0	+2 16.4	15.9	+2 15.6	16.2	+2 15.9	+2 15.4
+2 14.5	30 59.89	13.7	31 0.82	14.2	31 0.08	16.1	30 58.61	15.9	30 59.07	+2 15.7	30 59.47
+2 10.81	12.35 59.61	+2 10.00	12.41 0.50	+2 10.13	12.60 0.53	+2 10.61	13.10 59.10	+2 10.81	13.33 59.07	+2 10.92	13.46 59.97
+ 2.34	1.28	+ 2.41	3.58	+ 2.47	5.68	+ 2.49	6.58	+ 2.52	8.28	+ 2.54	8.78
21.20	+30 59.75	23.50	31 0.66	25.60	31 0.30	26.50	30 58.85	28.20	30 59.37	28.70	30 59.72
+1 51.15	31 19.67	− 1 48.91	20.58	− 47.00	20.22	− 1 46.60	18.78	− 1 45.13	19.29	− 44.76	19.64

1875

	m	s		′	″	
Nov 16	28	9.37		27	67.9	
21		9.65	+.28		66.3	−1.6
26		9.95	.30		64.8	1.5
Dec. 1		10.27	.32		63.4	1.4
6		10.61	.34		62.1	1.3
11		10.97	.36		61.0	1.1
16		11.34	.37		59.9	1.1

corr α =
corr δ =

tang δ = −2.82 3.00
I = 6.18 s
K = +.043 s

1874.0 α	δ	1875.0 α	δ
5.67		8.36	
.55		.15	
.56		.30	
.52		.31	
.83		.14	
.68			
5.635		8.252	
.547	58.11	.143	58.19
+.088		+.109	

−.11 1875	−.23	−.26	+00 −.01	−.09
Nov 17	Nov 20	Nov 21	Dec 1	Dec 13
−.118	−.215	−.235	−.035	−.110
29 2.6 28 34.1	28 3.0 27 48.6	28 3.0 27 32.7	28 1.6 27 53.7	27 27 19.4
5.6 38.8	6.1 53.0	6.3 36.5	4.8 57.4	54.5 26.1
8.6 44.9	9.0 58.3	9.4 40.1	7.9 2.3	57.6 32.8
11.7	12.2	12.3	10.8	28 06
15.1	15.4	15.6	14.0	3.8
18.2 29	18.4	18.7	16.6	6.8
21.1 15.8	21.5 28 20.7	21.5 28 16.0	20.2 28 33.9	10.0 28 11.3
24.5 20.4	24.8 25.6	24.8 22.0	23.2 41.2	12.6 19.5
27.5 24.9	27.9 29.5	27.9 21.6	26.4 46.6	16.0 25.3
				19.1
1349	1383	1395	1255	1810
				120
28 39.27	27 53.30	27 36.43	27 58.47	
29 14.989 29 20.37	28 15.367 28 25.27	28 15.500 28 21.53	28 13.944 28 40.57	6 1 0 27 26.10
				28 6.778 28 18.70
15.032	15.410	15.543	13.987	6.821
28 9.394 − 5.71	28 9.568 − 6.42	28 9.613 − 6.37	28 10.235 − 3.68	11.070 + 4.02
+5.642 +.31	+ 5.843 +.65	+ 5.931 +.73	+ 3.783 −.030	− 4.258 +.25
			+.03	
− 65.43 −1.27	− 6.43 −1.44	− 6.41 −1.49	− 3.64 −2.11	+ 3.94 −2.96
+ .33 28 8.86	+ .61 8.20	+ .66 8.41	+ .10 8.23	+ .31 8.13
− 1.27	− 1.44	− 1.49	− 2.11	− 2.96
− 66.67	− 7.26	− 7.24	− 5.68	+ 1.32
29 15.03	28 15.41	28 15.54	28 13.99	28 6.82
48 077	266	274	386	964
8.36 −16 1405	8.15 −16 14.54	8.30 −16 1364	8.31 −16 1250	8.14 −16 1410
+ 28	+ 28	+ 28	+ 30	8.252 + 31
−3050	−3150	−3180	−3470	8.143 −3760
31 19.02	31 19.42	31 20.10	31 19.40	+.109 31 21.04
+35.72 − 5.38	+22.07 − 9.90	+37.07 − 6.03	+15.47 − 26.63	+40.68 −11.92
35	35	35	35	35
− 3.14	− 3.12	− 3.12	− 3.14	− 3.21
2 23.2 2 4.8	2 13.0 1 57.7	2 19.4 1 58.1	2 22.1 2 2.6	2 11.7 1 46.5
31.2 12.9	23.4 8.8	28.8 8.6	21.7 2.8	19.5 53.9
54.4 17.7	36.4 126.5	48.2 126.7	38 14	11.2 100.4
37 17.20 37 8.85	37 18.20 37 3.25	37 24.10 37 3.35	37 21.90 37 2.70	37 15.60 36 50.20
27.				
1.55291 0.73078n	1.34380 0.99564n	1.59184 0.78032n	1.18949 1.42637n	1.60938 1.07628n
1.20228n 0.38015	0.99317n 0.64501	1.24121n 0.42969	0.88886n 1.07474	1.25875n 0.72565
−15.93 +2.40	−9.84 +4.42	−17.43 +2.69	−6.90 +11.88	−18.15 +5.32
37 ~~56.27~~ 11.27 37 11.25	37 8.36 37 57.67	37 6.69 37 6.04	37 15.00 37 14.58	36 57.45 36 55.52
45 ~~52.08~~ 37.08 45 37.10	45 39.99 40.68	45 41.68 42.31	45 33.35 33.77	45 50.90 52.83
37.09	40.33	41.99	33.56	51.86
6 21 6 39				6 32 6 58
2.13189n 2.13203n				2.13196n 2.13213n
+2559	+2176	+1669	+4474	+755
2.15748 2.15762	2.15365 2.15379	2.14858 2.14872	2.17663 2.17677	2.13951 2.13968
+14370 +14380	+14240 +14250	+14080 +14080	+15020 +15020	+13790 +13790
+ .05 + .05	+ .04 + .04	+ .03 + .03	+ .09 + .09	+ .04 + .04
+.21 −.12 +.01	+.08 −.16 +.02	+.26 −.08 +.02	+.04 −.25 +.12	+.27 −.16 +.02
−.25 −.21	−.21 −.21	−.24 −.21	−.36 −.30	−.34 −.27
+2 23.71 +2 23.65	+2 22.31 +2 22.35	+2 20.85 +2 20.64	+2 29.97 +2 30.11	+2 17.87 +2 17.69
48 0.79 0.75	48 2.30 3.03	48 2.53 2.95	48 3.32 3.88	48 8.47 10.52
25 77	6.57	6.0	35	0.86
31 52.3	31 53.3	31 53.6	31 56.5	31 59.4
−16 8.5 8.4	−16 9.0 9.7	−16 8.9 9.3	−16 6.8 7.4	−16 9.4 11.1
−16 8.5 31 19.13	9.3 31 18.55	9.1 31 19.79	7.1 31 18.83	10.2 31 19.79
−16 14.02 11.86 19.09	− 15.12 12.25 19.28	− 13.81 10.94 20.21	−16 12.67 9.79 19.39	− 14.33 11.38 21.54
+ 2.86 10.58	+ 2.87 11.58	+ 2.87 11.88	+ 2.88 14.78	+ 2.95 17.68
30.50 31 19.11	− 31.50 18.91	− 31.80 20.00	− 34.70 19.11	− 37.60 20.66
−16 41.66	43.75	42.74	44.49	48.98

1874 1875

B.A.C 160

h	m	s
0	30	53
	°	'
	−25	27
ζ =	+67	50

dist ζ = +.93

	1874	1875
		h m s
α		30 55.35
δ		27 18.94
		+30.86
		+19.87
cos δ	9.95567	9.95567
l c	.10460	.12552
l c'	.06027	.08119
l c'	.05701	
l c'	.04882	
sin δ	9.63319n	

corr =
Comb =

tang δ −.47

I = 2.36 s

k = −.017 s

1874 Oct. 28		Nov. 3		Nov. 11		Nov. 18		Dec. 9		1874 Dec. 16	
−.305		−.187		−.267		−.151		−.008		+.163	
0 30 48.1	30 34.1	30 45.3	30 33.1	30 36.8	30 24.4	30 32.2	30 21.1	30 32.6	30 21.7	30 30.3	30 15.7
50.3	36.5	47.5	35.0	39.2	26.5	34.5	23.7	34.8	23.7	32.6	18.1
52.5	38.4	49.7	36.9	41.4	28.9	36.9	26.0	37.2	26.4	34.8	20.0
57.2		54.4		46.0		41.3		41.8		39.5	
59.4		56.6		48.3		43.6		44.3		41.7	
31 1.5		58.9		50.6		46.0		46.4		43.8	
3.8	31 25.4	31 1.2	31 19.7	52.9	31 14.2	48.2	31 7.9	48.6	31 5.7	46.3	30 56.7
6.2	28.7	3.5	22.0	55.1	16.0	50.5	10.0	50.8	7.4	48.5	58.6
10.7	31.0	8.0	24.0	57.6	18.0	55.1	12.3	53.4	10.3	53.1	31 0.6
13.0		10.3		31 2.0		57.3		57.7		55.5	
15.3		12.4		4.3		59.6		31 0.0		57.6	
318.0		348.0		436.2		505.2		449.6		483.7	
300		300		120				60			
18.0	30 36.33	648.0	30 35.00	556.2	30 26.60		30 23.60	509.6	30 23.93		30 17.93
31 1.636	31 28.37	30 58.909	31 21.90	30 50.564	31 16.07	30 45.927	31 10.07	30 46.327	31 7.80	30 43.973	30 58.63
1.619		58.892		50.547		45.910		46.310		43.956	
− 5.98		− 3.11		+ 5.13		+ 9.70		+ 9.26		+ 11.45	
+ .14		+ .06		+ .12		+ .07		+ .00		+− .08	
− 3.44	−.354	− 3.42	−.334	− 3.37	−.284	− 3.32	−.234	− 3.10	−.014	− 3.02	+.066
− 9.28		− 6.47		+ 1.88		+ 6.45		+ 6.16		+ 8.35	
31 1.62		30 58.89		30 50.55		30 45.91		30 46.31		30 43.96	
30 52.84		30 52.42		30 52.43		30 52.36		30 52.47		30 52.391	
55.426		55.506		55.516		55.446		55.556		55.396	
										52.389	

+ 25.31	− 25.73 (26)	+ 23.91	− 22.99	+ 23.96	− 25.51	+ 22.33	− 24.14	+ 22.40	− 21.47	+ 26.04	− 14.66
45		45		45		45		45		45	
74 = ∓2.55		∓2.62		∓2.71		∓2.77		∓2.93		∓2.98	
44 19.6	0 18.9	4 18.6	0 12.9	4 21.9	0 17.5	4 22.3	0 14.9	4 31.6	0 22.5	4 23.9	0 9.7
38.9	38.1	32.7	27.0	40.8	35.5	42.0	33.0	47.4	36.7	35.1	21.8
58.5	57.0	51.3	39.9	62.7	53.0	64.3	47.9	79.0	59.2	69.0	31.5
49 29.25	50 28.50	49 25.65	50 19.95	49 31.35	50 26.50	49 32.15	50 23.95	49 39.50	50 29.60	49 29.50	50 15.75
1.40329	1.42766n	1.37858	1.36154n	1.37949	1.40671n	1.34889	1.38274n	1.35025	1.33183n	1.41564	1.16613n
1.46356	1.48727n	1.43559	1.41855n	1.43650	1.46372n	1.40590	1.43975n	1.40726	1.38884n	1.46446	1.21995n
+29.08	−30.71	+27.26	−26.21	+27.32	−29.09	+25.46	−27.53	+25.54	−24.48	+29.14	−16.40
49 58.33	49 58.79	49 52.91	49 53.74	49 58.67	49 57.41	49 57.61	49 56.42	50 5.04	50 5.12	49 58.64	49 59.35
° ' " −25 27 9.98	10.44	27 4.56	5.39	27 10.32	9.06	27 9.26	8.07	27 16.69	16.77	27 10.29	11.00
10.21		4.97		9.69		8.66		16.73		10.64	
+67 47 22	48 21									47 22	48 9
2,14636	2,14668										
+298		+1649		+813		+1504		+1164		+3071	
2.14934	2.14966	2.16285	2.16317	2.15449	2.15481	2.16140	2.16172	2.15800	2.15832	2.17707	2.17739
−141.10	−141.10	−145.50	−145.60	−142.70	−142.80	−145.00	−145.10	−143.90	−144.00	−150.30	−150.40
.02	.02	− .01	.01	− .01	− .01	− .01	− .01	− .03	− .03	− .05	− .05
+.13 +.07	+.15	+.12 +.04	+.11	+.12 +.05	+.13	+.10 −.16	+.12	+.50 −.21	+.09	+.14 −.16	+.05
−.13	−.01	−.13	−.01	−.13	−.01	−.49	−.04	−.56	−.06	−.49	−.50 .03
−2 21.10	−2 20.96	−2 25.52	−2 25.51	−2 22.72	−2 22.69	−2 25.40	−2 25.03	−2 24.39	−2 24.00	−2 30.70	−2 30.43
−25 29 31.08	31.40	29 30.08	30.90	29 33.04	31.75	29 34.66	33.10	29 41.08	40.77	29 40.99	41.43
+2 10.01	7.64	+2 10.00	7.57	+2 10.61	8.09	+2 10.92	8.35	+2 14.38	11.66	+2 14.80	12.03
− 2.37		− 2.43		− 2.52		− 2.57		− 2.72		− 2.77	
− 15.90	+3.97	−14.96	4.91	−13.74	6.13	−12.70	7.17	−10.10	9.77	−9.44	10.43
+1 51.44		+1 52.61		+1 54.35		+1 55.65		+2 1.56		+2 2.59	
−27 39.34	39.66	−27 37.47	38.29	27 38.69	37.40	27 39.01	37.45	27 39.52	39.21	27 38.40	38.84
27 39.50		37.88		38.04		27 38.23		39.36		38.62	
12.63	~~20.72~~	18.01	~~19.35~~	18.17	~~18.46~~	18.36	~~18.51~~	19.49	~~20.27~~	18.73	~~19.50~~

	.33				-26				+.00		-.01		-.09		
	1875														
	Nov 20				Nov 21				Dec 1				Dec 13		
	-.215				-.235				-.035				-.110		
30	51.8	30	45.0	30	51.9	30	39.6	30	48.8	30	41.6	30	41.0	30	34.5
	54.1		46.8		54.0		41.2		51.2		43.1		43.4		36.1
	56.3		49.0		56.3		43.0		53.6		44.7		45.7		38.0
31	1.0			31	0.9				58.1				50.2		
	3.3				3.2			31	0.7				52.7		
	5.6				5.5				2.7				54.9		
	7.8	31	32.6		7.7	31	18.0		5.0	31	27.0		57.0	31	10.5
	10.1		35.5		10.0		20.0		7.2		29.5		59.4		12.3
	14.6		37.4		14.7		21.4		11.8		31.8		4.0		15.1
	16.9				17.0				14.0				6.2		
	19.1				19.3				16.5				8.6		
	2406				2405				2698				4231		
	180				180				240				180		
	606	30	46.93		605	30	41.27		298	30	43.13		6031	30	36.20
31	5.509	31	35.17	31	5.500	31	19.80	31	2.709	31	29.43	30	54.827	31	12.63
	5.492				5.483				2.692				54.810		
-	6.43			-	6.41			-	3.67			+	3.94		
+	.10			+	.11			+	.02			+	.05		
-	3.65			-	3.64			-	3.55			-	3.41		
-	9.98			-	9.94			-	7.20			+	0.61		
31	5.49			31	5.48			31	2.69			30	54.81		
30	55.51			30	55.54			30	55.49			30	55.42		
													55.490		

	+18.68		-29.66		+24.23		-14.30		+19.58		-26.72		+18.63		-17.80
30				30				30				30			
	-3.12				-3.12				-3.14				-3.21		
0	44.1	1	41.1	0	39.6	1	25.1	0	42.9	1	37.1	0	51.3	1	36.0
	46.7		44.9		41.9		27.3		38.7		30.9		53.2		37.0
	10.8		6.0		8.09		12.4		81.8		8.0		4.5		13.0
30.	45.40	31	43.00	30	40.45	31	26.20	30	40.90	31	34.00	30	52.25	31	36.50
	1.26905		1.47217n		1.38435		1.15534n		1.29181		1.42684n		1.27021		1.25042n
	1.35024		1.55336n		1.46554		1.23653n		1.37300		1.50803n		1.35740		1.33161n
	+22.40		-35.76		+29.21		-17.24		+23.61		-37.21 ~~-25.59~~		+22.46		-21.46
31	7.80	31	7.24	31	7.66	31	8.96	31	4.51	31	~~8.41~~ 1.79	31	14.71	31	15.04
8	19.45		18.89	8	21.31		20.61	8	16.16	8	~~20.06~~ 13.44	8	26.36		26.69
	19.17				20.96				14.80				26.52		
46	57	47	55									47	4	47	48
	2.14622		2.14653												
	+2188				+1669				+4481				+759		
	2.16810		2.16841		2.16291		2.16322		2.19103		2.19134		2.15381		2.15412
	-147.30		-147.40		-145.40		-145.66		-155.20		-155.40		-142.50		-142.60
-	04	-	04	-	03	-	03	-	09	-	09	-	04	-	04
	+07	.00	+19		+12	-.02	+04		+08	-05	+15		+08	-.11	+07
	-08		-.17		-.07		-.14		-.10		-.24		-.13		-.24
-2	27.35	-2	27.42	-2	25.38	-2	25.79	-2	35.31	-2	35.58	-2	22.59	-2	22.81
10	46.80		46.31	10	46.69		46.40	10	51.47	10	49.02	10	48.95		49.50
-16	15.12	18.02		-	13.81	16.71		-	12.67	15.59		-	14.33	17.31	
-	2.90			-	2.90	5.28		-	2.92			-	2.98	7.86	
	-14.78	2.515			-14.59				-13.29	6.58		-	12.01		
-16	32.74			16	31.30			16	28.88			16	29.32		~~8.82~~
27	19.54		19.05	27	17.99		17.70	27	20.35		17.90	27	18.27		18.82
	19.29				17.84				19.12				18.54		

ζ Cass.

h m s
0 38 25
° '
+ 55 51
z = −13 28
cin z = −.23

1874							1874	1875
Oct. 27	33m 20s.48		50	70″.1		α	22.100	25.465
Nov. 1	25.45	−.03		71.4	+13	δ	+50 44.73	+51 4.52
6	25.40	.05		72.7	13	dα/dt	+3.364	+3.364
11	25.34	.06		73.8	11	dδ/dt	+19.786	+19.785
16	20.27	.07		74.9	11			
21	25.19	.08		75.8	.9	l cos δ	9.74924	9.74924
26	25.10	.09		76.7	.9	l b	.10460	.12552
Dec. 1	25.00	.10		77.4	.7	l b′	9.85384	9.87476
6	24.89	.11		78.1	.7			
11	24.78	.11		78.6	.5	l b′	9.85058	
16	24.67	.11		79.0	.4			
21						l b′	9.84239	
						sin δ	9.91781	

corr α =
corr δ =
long δ = + ~~1.34~~ +1.47 1.78
I = 3.67 s
K = −.027 s

−.18 −.08 −.15 −.13 −.10 −.26 −.13 −.13

1874 Oct. 28		Nov. 3		Nov. 5		Nov. 11		Nov. 16		Nov. 18	
−.305		−.137		−.213		−.267		−.183		−.154	
0 33 9.9	32 51.4	33 6.7 .289	32 52.1	33 —	33 19.7	32 58.5	32 41.5	32 ~~53.6~~	33 2.7	32 53.6	32 33.3
13.6	55.4	10.5 .8	56.5	—		33 2.4	45.4	32 57.3	5.6	57.5	36.8
17.1	57.9	14.1 .8	58.8	—		5.9	47.9	1.0	9.7	33 1.0	39.7
24.4		21.4 .7		19.1 .5		13.2		8.3		8.4	
28.3		25.2 .7		22.6 .3		17.0		12.2		11.9	
31.8	33 41.2	28.7 .7	33 45.0	26.3 .3	34 4.8	20.5	33 53.0	15.8		15.8	33 33.5
35.5	45.5	32.4 .7	47.9	30.0 .3	8.8	24.3	56.3	19.5		19.3	38.5
39.2	48.1	36.0 .3	51.9	33.7 .4	12.1	28.0	59.6	23.2		23.0	41.6
40.4		—		41.0 .3		35.5		30.6		30.6	
50.3		—		44.7 .4		38.9		34.3		34.0	
53.9		—		48.4 .4		42.6		38.0		37.8	
35 04						2868		2938		2929	
						60	4493	120		120	
	32 54.90		32 55.80		33 19.70	2268	32 ~~44.80~~	1738	33 6.00	1729	32 36.60
33 31.855	33 44.93	33 28.725	33 48.27	33 26.362	34 8.57	33 20.618	33 56.30	33 15.800		33 15.718	33 37.87
31.828	−5.91×2	28.698	−3.07	26.335	−0.56	20.591	+5.15	15.773	+9.634	15.691	+9.71×2
33 25.47	−.26	33 25.43	−.22	33 25.41	−.19	33 25.34	−.38	33 25.27	−.19	33 25.243	−.19
+6.36	−.14	+3.27		+0.92	−.18	−4.75		−9.50		−9.554	
	−337		−333		−331		−324		−317		−313
− 5.98	33 22.14	− 3.10	22.08	− 0.65	22.10	+ 5.13	22.12	+ 9.67	22.05	+ 9.70	22.09
− .45		− .20		− .31		− .39		− .27		− .23	
− 3.37	−.006	− 3.33	+.034	− 3.31	+.054	− 3.24	+.124	− 3.17	+.194	− 3.103	+.234
− 9.80		− 6.63		− 4.27		+ 1.50		+ 6.23		+ 6.34	
33 31.83	49 0.26	33 28.70	2.93	33 26.33	4.34	33 20.59	3.34	33 15.77	5.04	33 15.69	5.27
	+2 10.33		+2 10.44		+2 8.71		+2 10.77		+2 10.71		+2 10.99
33 22.03	+ .6	22.07	+ .6	22.06	+ .6	22.09	+ .7	22.00	+ .7	22.03	+ .7
25.39	−25.70	25.43	−27.30	25.42	−27.80	25.45	−29.20	25.36	−30.20	25.39	−30.60
+ 55	50 45.49		50 46.~~63~~67 .67		50 45.85		50 45.64		50 46.25		50 46.36
+36.95	−13.08	+32.93	−19.54	+6.66	−42.21	+ 35.~~82~~69	−35.68	+9.80		+39.12	−22.15
30		30		30		30		30		30	
Ho = ★ 2.55		★ 2.62		★ 2.63		★ 2.71		★ 2.74		★ 2.77	
3 30.1	4 6.4	3 33.9	4 11.6	3 50.5	4 24.1	3 30.2	4 19.8	3 50.1	4 ~~14.9~~	3 25.7	4 9.7
40.0	16.0	37.7	15.5	55.7	30.5	37.1	27.3	51.6	~~16.9~~	32.0	15.3
70.1	22.4	71.6	27.1	106.2	54.6	67.3	47.1	101.7	~~31.8~~	57.7	25.0
33 35.05	34 11.20	33 35.80	34 13.55	33 53.10	34 27.30	33 33.65	34 23.55	33 50.85	34 ~~15.90~~	33 28.85	34 12.50
1.56761	1.11661n	1.51759	1.29092n	0.82347	1.62541n	1.55255	1.55242n	0.99123		1.59240	1.34537n
1.42145	0.97045n	1.37148	1.14476n	0.67405	1.47599n	1.40313	1.40300n	0.84181		1.44298	1.19595n
+26.40	−9.34	+23.52	−13.76	+4.72	−29.92	+25.30	−25.30	+6.95		+27.73	−15.70
34 1.45	34 1.86	33 59.32	59.59	57.82	57.31	33 58.95	33 58.25	33 57.80		33 56.58	33 56.80
+55° 48′ 46″.90	46.49	49.03	48.76	50.53	51.04	48 49.40	50.10	50.55		48 51.77	51.55
46.69		48.89		50.78		49.75				51.66	
−13 28 32	27 56										
1.13980n	1.13950n										
+307		+1649		+378		+818		+2550		+1507	
1.14287	1.14257	1.15629	1.15595	1.14358	1.14325	1.14798	1.14768	1.16530	1.16500	1.15487	1.15457
+13.89	+13.88	+14.33	+14.32	+13.92	+13.91	+14.06	+14.05	+14.63	+14.62	+14.28	+14.27
−.35 −.31	−.04	−.25 −.29	−.09	−.02 −.36	−.45	−.32 −.44	−.32	−.03 ~~−.07~~		−.38 −.66	−.12
−.11	−.13	−.11	−.13	−.12	−.13	−.11	−.13	−.11 −.14		−.36	−.46
+13.43	+13.71	+13.97	+14.10	+13.48	+13.43	+13.63	+13.60	+14.49		+13.54	+13.69
49 0.83	6.20	3.00	49 2.86	4.31	4.37	3.03	3.70	5.04		49 5.31	5.24
51 10.4	[illegible]	12.0		12.5		13.9	[illegible]	14.9		51 15.3	
+2 10.1	10.2	+2 9.0	9.1	8.2	8.1	10.9	10.2	9.9		+2 10.0	10.1
+2 10.1		9.1		8.9		10.5		9.9		10.0	
+2 10.01	10.59 50 45.22	+2 10.50	10.60 50 46.30	+2 8.55	9.15 50 45.66	+2 10.21	11.23 50 45.06	+2 10.81	11.44 46.28	+2 10.92	11.55 50 46.26
+ .58	−5.91 45.09	+ .60	7.51 46.16	+ .60	8.01 45.72	+ .62	9.41 45.73	+ .63	10.41	+ .63	10.81 46.19
− 25.70		− 27.30		− 27.80		− 29.20		− 30.20		− 30.30	
+1 44.89	+50 45.15	1 43.30	46.23	1 41.35	45.69	1 42.03	45.39	1 41.24		1 40.95	50 46.22
	51 4.93		6.01		5.48		5.17		6.06		6.00

1875

Nov.	16	33 28.92		57	36.9	
	21	28.84	.08		37.8	+.9
	26	28.75	.09		38.7	.9
Dec.	1	28.65	.10		39.4	.7
	6	28.55	.10		40.1	.7
	11	28.44	.11		40.6	.5
	16	28.32	.12		41.0	.4
	21	28.19	.13		41.2	.2
	26	28.06	.13		41.4	.2

-.08	+.01	-.03	+.18	-.23	-26
			1874	1875 +	×
Nov. 21	Dec. 9	Dec. 14	Dec 16	Nov 20	Nov 21
-.095	-.008	-.035	+.163	-.215	-.235
32 54.4 32 45.2	32 53.6 32 34.5	32 52.1 33 0.9	32 57.0 32 30.6	33 13.6 33 3.9	33 13.6 32 56.3
58.0 49.0	57.3 38.0	56.0 4.6	54.8 34.3	17.3 7.4	17.2 59.3
33 1.8 52.4	33 0.8 41.5	33 0.0 8.0	58.3 37.0	21.0 10.3	21.0 2.6
9.0	8.2	6.8	33 5.6	28.2	28.2
12.8	12.0	10.8	9.3	31.9	32.0
16.3 33 44.0	15.5 33 43.2	14.3 33 41.0	12.9 33 21.6	35.6	35.6
20.1 48.4	19.2 46.2	18.1 44.3	16.7 24.5	39.3 34 1.7	39.2 33 56.4
23.7 51.7	22.9 49.8	21.7 49.4	20.3 28.0	43.1 4.6	43.1 58.9
31.1	30.3	28.9	27.7	50.4 8.3	50.2 3.2
34.7	34.0	32.9	31.4	54.0	54.1
38.4	37.8	36.6	35.0	57.7	57.8
					39 20
3003	2916	2782	3230	3921	3919
120	120	120	180 33.97		
180.3 32 48.87	171.6 32 38.00	158.2 33 4.50	143.0 32 ~~34.30~~	33 7.20	35.676 32 59.40
33 16.391 33 48.03	33 15.600 33 46.40	33 14.382 33 44.90	33 13.000 33 24.70	33 35.645 34 4.87	33 35.636 33 59.50
16.364 +8.88	15.573 +9.28	14.355 +10.48	12.973 +11.48	35.618 -+6.42	35.609 -+6.37
33 25.19 -.12	33 24.82 +.01	33 24.740 -.04	33 24.676 +.26	33 28.865 -.34	33 28.84 -.38
- 8.83	- 9.25	- 10.385	- 11.7069	+ 6.767	+ 6.77
-3.09	-2.72	-2.60	-2.56	-3.39	-3.38
+ 8.90 22.03	+ 9.26 22.14	+ 10.49 22.19	+ 11.45 33 22.17 15	- 6.43 33 25.47	- 6.41 25.48 ~~28~~
- .14	- .01	- .05	+ .24 .15	- .32	- .34
∓ 3.09 -.005+.274	∓ 2.72 ~~+.365~~ +.644	∓ 2.60 ~~+.485~~ +.764	- 2.56 ~~+.525~~ +.804	- 3.39	- 3.38
+ 5.64	+ 6.53	+ 7.84	+ 9.13	- 10.14	- 10.13
33 16.36 49 5.33	33 15.57 5.23	33 14.35 41.46	33 12.97 49 4.81	33 35.62 7 52.80	33 35.61 52.00
+2 10.89	+3 14.49	+2 14.99	+2 15.03	-16 14.54	-16 13.64
22.03 + .7	22.10 + .4	22.19 + .8	22.10 + .8	25.48 + .6	25.48 + .7
25.39 -31.10	25.46 -33.80	25.55 34.20	25.46 22.070 34.30	-9 -33.10	-33.30
50 45.82	50 46.62	50 45.75	100 -.030 50 46.34	~~34.84~~	~~33.04~~
				54° 51 5.76	51 5.76
+27.52 -31.64	+37.60 -30.80	+9.97 -30.43	+ ~~38.70~~ 39.03 -11.70	+28.44 -29.23	+36.24 -23.86
30	30	30	30	10	10
∓2.79	∓2.93	∓2.97	∓2.98	-3.12	-3.12
3 37.2 4 19.0	3 27.9 4 16.1	3 51.3 4 16.7	3 29.7 4 5.8	4 44.6 0 28.1	4 40.8 0 24.6
38.5 18.1	32.2 20.3	53.5 21.2	31.1 6.1	50.9 36.0	45.9 31.7
75.7 37.1	60.1 36.4	104.8 37.9	60.8 11.9	95.5 64.1	59 56.3
33 37.85 34 18.55	33 30.05 34 18.20	33 52.40 34 18.95	33 30.40 34 5.95	14 47.75 15 32.05	14 42.95 15 28.15
1.43965 1.50024n	1.57519 1.48855n	0.99870 1.48330n	1.59140 1.06819n	1.45393 1.46583n	1.55919 1.57767n
1.29023 1.35082n	1.42577 1.33913n	0.84109 1.32569n	1.43379 0.91038n	1.32869 1.34059n	1.43395 1.25243n
+19.51 -22.43	+26.65 -21.83	+6.93 -21.17	+27.15 -8.14	+21.32 -21.91	+27.16 -17.88
33 57.36 33 56.12	33 56.70 33 56.37	33 59.33 33 57.78	33 57.55 33 57.81	15 9.07 15 10.14	15 10.11 15 10.27
48 50.99 52.23	48 51.65 51.98	48 49.02 ′ 50.57	48 50.80 50.54	7 39.28 38.21	7 38.24 38.08
51.61	51.81	49.79	50.67	38.74	38.16
			28 37 28 1	29 0 28 16	
				1.14010n 1.13970n	
+1742	+1173	+3603	+3073	+2203	+1669
1.15722 1.15692	1.15133 1.15123	1.17583 1.17553	1.17053 1.17023	1.16213 1.16173	1.15679 1.15639
+14.36 +14.35	+14.18 +14.16	+14.99 +14.98	+14.81 +14.80	+14.53 +14.51	+14.35 +14.33
-.18 -.63 -.24	-.35 -.75 -.22	-.03 -.62 -.22	-.38 -.66 -.03	-.19 -.46 -.21	-.33 -.49 -.14
-.37 -.47	-.42 -.52	-.47 -.52	-.42 -.49	-.48 -.05	-.47 -.05
+13.81 +13.64	+13.41 +13.42	+14.49 +14.24	+14.01 +14.28	+13.86 +14.25	+13.55 +14.14
9.80 5.87	5.06 5.40	3.57 4.81	4.81 29.08 4.82	7 ~~28.39~~ 53.14 52.46	51.79 52.92
15.8	18.5	18.9	14.0	51 37.6	37.8
10.0 9.9	13.4 13.1	15.4 14.1	14.2 14.2 -16	13.5 14.9 -16	14.0 14.4
10.0	13.2	14.7	+2 14.2	-16 14.2	14.2
+2 10.46 50 45.10	+2 14.38 50 46.31	+2 14.80 50 44.79	+2 14.80 50 45.99	-16 15.12 51 5.63	- 13.81 51 5.39
+ .64 11.40 46.17	+ .67 15.05 46.65	+ .68 15.48 46.09	+ .68 15.48 46.00	+ .71 14.41 4.95	+ .71 13.10 5.82
11.31	14.01	14.41	14.51	13.31	13.51
31.10	- 33.80	- 34.20	- 34.30	- 33.10	- 33.30
71 40.30 +50 45.63	1 41.25 46.48	41.28 45.44	41.18 45.99 -16	48.51 51 ~~4.29~~ 5.29	46.40 5.60
5.41	6.26	5.22			

1874.0 α	δ	1875.0 α	δ
22.03		25.48	
.07		48	
.06		.44	
.09		-	
.00			
.03			
.03			
.10			
.19			
.10			
22.070		25.467	
.100	44.73	.465	4.52
−.030		+.002	

+.00 -.01 +

Dec 1 Dec 16

-.035

33 10.4 32 50.8
14.0 53.0
17.8 55.4
25.0
28.6
32.3
36.1 33 21.5
39.6 25.5
46.9 29.0
50.8
54.2

25.57 32 53.07
33 32.336 33 25.33

32.309 − ~~*~~3.68
33 28.65 +.0×0
+ 3.66 −.02
−3.19

− 3.67 33 25.42
− .01
− 3.19
6.87
33 32.31 7 54.12
−16 12.50
33 25.44 + .6
25.467 −34.90
25.465 ~~+ 32.32~~
+.002 51 7.32

+ 39.27 + 7.01
10 10
− 3.14
4 4.20 0 6.5 4 2.64
37.1 05.9 4.91
7.91 +7.4 1.85
14 39.55 15 ~~6.20~~ 14 ~~47.5~~
3.70

1.594.06 0.845.72
1.468.82 0.720.48
+ 29.43 + 5.25
15 8.98 15 ~~11.45~~
8.95

7 39.37 ~~36.90~~
39.38 39.40
29 8 28 44

+ 4489
1.18499 1.18459
+15.31 +15.30

−.38 −.56 −.03
−.71 −.01
+ 14.22 15.26
7 53.59 54.66
3.94
−16 14.2 15.9
−16 14.7
−16 12.67 56 6.74
+ .72 11.95 7.81
− 34.90 15.11
−16 46.85 51 7.27

1874 1875 cos α = cos δ =

ξ Cass. α 35 3 35 5.77

α δ δ 49 35.36

0 35 05 dα/dt +3.312

+ 49 49 dδ/dt +19.80

tang δ = + 1.18

I = 3.20 s

K = -.024 s

ζ = - 7° 26' log cos δ 9.80972 9.80972

log b .10134 .12552

log b' 9.91106 9.93524

sin ζ = - .13

log b' 9.90287

sin δ 9.88308

1874

Nov. 3 Nov. 16 Nov. 18 Nov. 21 Dec 4 Dec. 9

-.134 -.183 -.154 -.095 -.035

0 34 56.0 34 33.7 34 37.0 34 37.1 34 20.1 34 37.9 34 36.6 34 48.6 35 14.1

53.1 38.0 40.3 40.4 23.4 41.0 39.3 30.1 17.7

56.3 40.2 43.7 43.5 25.6 44.1 41.7 37.7 20.5

35 2.8 50.0 49.9 50.5 53.3

6.1 53.2 53.0 53.7 55.0

9.2 56.4 56.2 57.0 56.4

12.5 35 25.5 59.6 35 27.1 59.3 35 30.8 35 0.1 35 18.2 58.3

15.6 28.0 35 2.8 29.4 2.5 34.1 8.3 21.8 59.7

22.1 31.0 9.2 32.3 8.9 37.1 9.7 24.5 1.3

25.0 12.3 12.2 13.0 —

28.2 15.5 15.3 16.1

27.09 38.00 37.83 32.64 43.44

18.0 24.0 24.0 30.0 6.0

10.09 34 37.30 62.00 61.83 34 23.03 62.64 34 39.20 49.44 35 17.43

35 ~~8.355~~ 9.173 35 28.17 34 56.364 35 29.60 34 56.209 35 34.00 34 56.945 35 21.50 34 54.983

9.149 56.340 56.185 56.921 54.909

- 3.10 + 9.64 + 9.70 + 8.90 + 10.49

- .16 - .21 - .18 - .11 - .04

- 3.21 +.102 - 3.09 +.222 - 3.07 +.242 - 3.03 +.282 - 2.64 +.672

- 6.47 + 6.37 + 6.45 + 5.76 + 7.81

35 9.15 34 56.34 34 56.18 34 56.92 34 54.91

35 2.68 35 2.71 35 2.63 35 2.68 35 2.72 2.68

5.992 6.022 5.942 5.992 6.032 5.992

2.683

5.87
+31.65 -19.58 -33.24 +33.18 -37.79 +17.74 -24.56 -25.50

30 35 30 35 35 35

H ∓ ★2.62 ∓ ★2.74 ∓ ★2.77 ∓ ★2.79 ∓ ★2.97

4 54.9 0 35.3 0 12.8 0 47.1 4 51.0 0 48.6 0 6.5 0 40.5 0 38.9 0 51.4 0 35.2 0 59.8

58.4 40.5 15.3 49.1 56.8 55.7 5.3 39.8 42.3 54.5 41.5 4.9

113.3 75.8 28.1 96.2 107.8 104.3 11.8 80.3 81.2 105.9 76.7 124.7

34 56.65 35 37.90 35 14.05 35 48.10 34 53.90 35 52.15 35 5.90 35 40.15 35 40.60 35 52.95 35 38.35 36 2.35

1.50338 1.27875n 1.52166n 1.52088 1.57738n 1.24895 1.39023n 1.40654n

1.41444 1.18981n 1.43272n 1.43194 1.48844n 1.16001 1.30129n 1.30941n

+25.97 -15.48 -27.08 +27.03 -30.79 +14.46 -20.01 -20.39

35 22.62 35 22.42 35 21.02 35 20.93 35 21.36 35 20.36 35 20.14 35 20.21

22.52 21.14 20.75

+49° 47' 25.73 25.93 47 27.33 47 27.42 26.99 47 27.79 28.21 47 28.14

25.83 27.20 28.05

- 7 27 10 26 29 27 1 26 27

0.87700n 0.87630n 0.87680n 0.87630n

+1649 +2553 +1509 +1743 +3609

0.89349 .89279 .90253 .90183 .89209 .89139 .89423 .89353 .91289 .91239

+7.82 + 7.81 +7.99 + 7.98 + 7.80 + 7.79 + 7.84 + 7.83 +8.18 +8.17

-.27 -.27 -.10 ~~-.16~~ -.32 -.30 -.30 -.66 -.39 -.04 -.11 -.09 -.09 -.17 -.11

-.15 -.02 -.01 -.02 -.54 -.10 -.01 -.08 -.08

+ 7.40 + 7.69 + 7.66 + ~~7.26~~ 6.96 + 7.30 + 7.79 + 7.68 + 8.01

+49 47 33.13 33.62 47 34.99 47 34.38 34.29 47 35.78 35.87 47 36.15

+ 2 10.00 10.34 + 2 10.81 ~~+2 10.81~~ + 2 10.92 11.28 + 2 10.76 11.12 + 2 14.80 15.18

+ .34 + .35 +4.16 + .36 + .36 + .38

- 27.06 7.26 - 29.65 9.85 - 30.00 10.20 - 30.50 10.70 - 33.02 13.22

+ 1 43.28 + 1 41.51 + 1 41.28 + 1 40.62 + 1 42.16

+ 49 16.41 16.90 49 16.50 49 15.66 15.57 49 16.40 16.29 49 18.31

49 16.65 15.61 16.44

36.45 ~~49 36.50~~ 36.30 ~~36.30~~ 35.41 ~~35.37~~ 36.24 ~~36.29~~ ~~38.11~~

38.11

	1874 Dec. 16				-23 1875 Apr 20		
	+.163				-.215		
34	34.5	34	26.6	34	57.0	35	0.8
	37.7		29.4	35	0.1		3.6
	40.8		31.6		3.3		6.5
	47.3				9.5		
	50.6				12.9		
	53.7				16.0		
	56.8	35	11.9		19.2	35	41.0
35	0.1		16.0		22.4		44.2
	6.4		18.8		28.8		46.6
	9.5				32.0		
	12.8				35.3		
	35 0 2				236 5		
	24 0				6 0		
	59 0 2	34	29.20		176 5	35	3.63
34	53.655	35	15.57	35	16.045	36 35	43.93
	53.631				16.021		
+	11.46			−	6.43		
+	.19			−	.25		
−	2.60 +.712			−	3.2234		
+	9.05			−	10.02		
34	53.63			35	16.02		
34	53.63						
35	2.68			35	6.00		
	5.992				6.00		
	+24.45		-21.95 2		+12.41		-27.89
30				15			
	-2.98				-3.12		
4	2.0	—	—	1	17.8	1	53.2
	2.1		42.3		27.2		1.5
	41				45.0		11.47
34 (35)	2.05		42.30	16	22.50	16	57.35
	1.38828		1.34084n		1.09377		1.44545n
	1.29115		1.24371n		1.02901		1.38069n
	+19.55		-17.53		+10.69		-24.08
35	21.60	35	24.77	16	33.19	16	33.32
47	26.75		23.58	6	15.16		15.03
					15.09		
				27	26	26	51
					0.87720n		0.87670n
	+30.74				+22.07		
	.90752		.90704		.89927		0.89877
	+8.08		+8.07		+7.93		+7.92
	-.15	-.20	-.12		-.04	-.28	-.20
	-.05				-.14		-.19
	+7.88				+7.75		+7.53
47	34.63			6	22.91		22.56
+2	14.80			−16	15.12	14.72	
+	.38	15.18		+	.40		
	-33.15	13.35			-14.64	-32.61 12.81	
+1	42.03			−16	47.33		
		49	16.66	+49	35.58		35.23
					35.40		
			36.46				

1874 . 1875

cos α =
cos δ =

β Ceti

h	m	s
0	37	18
−18°	40′	

ζ = + 61° 3′

sin ζ = +.87

	1875
α	37 18.77
δ	40 22.82
[illegible]	+3.014
[illegible]	+19.81

tang δ = −.34

I = 2.17 s

K = −.016 s

	1874	1875
cos δ	9.97653	9.97653
ℓ 6,	.10134	.12552
ℓ 6′	0.07787	0.10205
ℓ 6′	0.06968	
sin δ	9.50523n	

1874 Nov. 3		Nov. 18	Dec. 14		1874 Dec. 16		−.23 1875 Apr 20	
−.137			−.035		+.163		−.215	
0 37 9.3	37 2.5		36 55.4	36 53.0	36 54.4	36 41.8	37 15.8	37 5.2
11.5	4.2		57.8	55.9	56.6	43.7	18.0	7.3
13.7	6.4		59.9	58.2	58.7	45.6	20.2	9.4
18.0	1		37 4.1		37 3.0		24.4	
20.2			6.3		5.2		26.7	
22.2			8.7		7.1		28.9	
24.4	37 28.2		10.9	37 38.5	9.6	37 18.9	31.0	37 46.3
26.7	30.2		12.9	40.3	11.9	21.0	33.2	
31.0	31.8		17.3	42.7	16.3	23.4	37.6	
33.2			19.5		18.5		39.7	
35.3			21.7		20.6		42.0	
245 5			274 5		262 2		317 5	
			180		180			
	37 4.37		94 5	36 55.70	82 2	36 43.70		37 7.30
37 22.318	37 30.07		37 8.591	37 40.50	37 7.473	37 21.10	37 28.864	37 46.30
22.302			8.575		7.457		28.848	
− 3.10			+ 10.49		+ 11.46		− 6.48	
+ .05			+ .01		− .05		+ .07	
− 3.32 −.306			− 3.00 +.014		− 2.98 +.034		− 3.57	
− 6.37			+ 7.50		+ 8.43		− 9.93	
37 22.30			37 8.57		37 7.46		37 28.85	
					3			
37 15.93			37 16.07		37 15.89		37 18.92	
18.944			19.084		15.963 18.904		18.92	

	Nov. 3		Nov. 18	Dec. 14		Dec. 16		Apr 20	
	+17.95	−7.75		+12.89	−31.91	+23.77	−13.63	+21.56	−17.44
H_{fl} =	0 ″ ∓2.62		0	0 ∓2.97		0 ∓2.98		40 −3.12	
	3 5.1	3 36.9	3 2.2	3 16.6	4 8.2	3 6.5	3 51.4	4 18.5	0 8.1
	19.2	50.3	19.6	29.7	21.9	18.9	2.3	20.5	11.1
	24.3	87.2	21.8	46.3	30.1	25.4	113.7	39.0	19.2
	3′ 12.15	3 43.60	3 10.90	3 23.15	4 15.05	3 12.70	3 56.85	44 19.50	45 9.60
	1.25406	0.88930n		1.11025	1.50393n	1.37603	1.13450n	1.33365	1.24155n
	1.33193	0.96717n		1.17993	1.57361n	1.44571	1.20418n	1.43570	1.34360
	+21.47	−9.27		+15.13	−37.47	+27.91	−16.00	+27.27	−22.06
	3 +33.62	3 34.33		3 38.28	3 37.58	3 40.61	3 40.85	44 46.77	44 47.54
−18°	40′ 45.27″	45.98		40 49.93	49.23	40 52.26	52.50	21 58.42	59.19
	45.62			49.58		52.38		58.80	
+61	1 5	1 37				1 6	1 50	0 31	1 22
	2.01526	2.01540						2.01511	2.01535
	+1649			+3618		+3075		+2217	
	2.03175	2.03189		2.05144	2.05158	2.04601	2.04615	2.03728	2.03752
	−107.60	−107.60		−112.60	−112.60	−111.20	−111.20	−109.00	−109.00
	− .07	− .07		− .03	− .03	− .02	− .02	− .02	− .02
	+.05 −.07	+.01		+.02 ~~−.43~~ −.56	+.15	+.08 −.37	+.03	+.07 −.17	+.04
	−.10	−.11		−.41	−.52	−.38 8	−.39 47	−.43	−.02
	−1 47.66	−1 47.71		−1 53.02	−1 53.00	−1 51.52	−1 51.66	−1 49.38	−1 49.00
−18	42 32.93	33.69		42 42.95	42.23	42 43.78	44.16	23 47.80	48.19
	+2 10.00			+2 11.80		+2 14.80		−16 15.12	
	− 2.27 7.73			− 2.58 12.22		− 2.59 12.21		− 2.71 17.83	
	−16.82 +2.99			−12.01 7.80		−11.82 7.99		−16.93 2.88	
	+1 50.91			+2 0.21		~~+2 0.39~~		−16 34.76	
	−40 42.02	42.78		−40 42.74	42.02	40 43.39	43.77	40 22.56	22.95
	42.40			42.38		43.58		22.75	
	22.59	~~22.97~~		22.57	~~22.21~~	23.77	~~23.91~~	~~22.94~~	~~22.14~~

1874

21 Cass
h m s
0 37 26
° ′
+74 18

z = − 31 $\frac{5}{5}$
sin z = −,53

		m s		′ ″	
Nov.	6	37 26.26		17 82.5	
	11	26.09	−.17	84.0	+1.5
	16	25.90	.19	85.4	1.4
	21	25.69	.21	86.7	1.3
	26	25.45	.24	87.9	1.2
Dec.	1	25.19	.26	88.9	1.0
	6	24.91	.28	89.9	1.0
	11				

	1874	1875
	s	s
α	21.762	25.598
δ	+17′ 54.68″	+18 14.42
	s	
$\frac{d\alpha}{dt}$	+3.835	+3.837
$\frac{d\delta}{dt}$	+19.742″	+19.741

l. cos δ 9.43283
l C .10134
l C′ 9.53367

l sin δ 9.98349

Corr α = +.137 s
Corr δ = +.64″

tang δ = +3.563 3.70

I = +9.62 s

K = −.056 s

−.13 1874 −.10 Nov. 5 −.213

0 37 12.5 36 26.7
16.3 33.1
20.3 37.8
24.2
27.8
31.8
35.5 37 44.0
39.5 51.6
43.2 58.3

251 36 32.53
37 27.922 37 51.30
27.900
27.844
37 26.50 29
+1.545
+1.41 −0.586
−.46
− 0.66 −.37
− 76 −4.53
− 4.53 −.695 2192
− 5.95 37m
37 27.84

.37 21.89 16 1325 ~~33.81~~
25.725 +2 8.71
+ 14
−2760
+74 17 55.76

5537
+45.39 −23.38 40
Q5
$\mathfrak{k}_\varphi$ = ∓ 263

−.13 Nov. 16 −.183

37 1.6 36 53.1
5.8 37 2.3
9.6 8.3
13.4
17.0
20.7
24.4 37 38.2
28.5 45.0
32.6 52.0

153 6 37 1.23
37 17.067 37 45.07
17.011
37 25.41 89
− 8.98 66
− 9.02 +9.634
−.46
+ 9.64
− .65 −4.13
− 4.13 −.295 22.06
+ 4.89
37 17.01

21.90 13.96
25.735 +2 10.71
+ 14
−3080
17 55.27

+15.84 −28.00
5
∓ 274

−.13 Nov. 18

−.08 Nov. 21 −.095

37 1.7 36 31.8
5.9 37.0
9.5 43.0
13.2
17.5
21.5
25.1 38 26.9
28.7
32.5

155 6 36 37.27
37 17.289 38 26.90
17.233
37 25.70 68
− 8.475
− 8.59 +8.88
−.28
+ 8.90
− .34 −3.92
− 3.92 −.085 21.91
+ 4.64
37 17.23

21.87 15.58
25.705 +2 10.89
+ 15
−3210
17 55.87

+40.02 −69.61
5
∓ 2.79

+.01 1874 Dec. 9 −.008

37 0.3 36 44.4
4.2 49.5
8.2 55.4
11.9
15.6
19.5
23.3 37 42.3
26.7 49.5
30.8 55.5

140 5 36 49.77
37 15.611 37 49.10
15.555
37 24.75 2
− 9.217
− 9.31 +9.28
+.04
+ 9.27
− .03 −2.96
− 2.96 +.875 21.92
+ 6.28
37 15.55

21.83 25.665
21.872
21.762
+.110

+25.84 −33.49
5
∓ 293

1875 Dec. 16

16 16.85
+2 14.49
+ 1.7
−3580
17 56.74

45

1	49.0	2	17.4	2	7.2	2	20.9	2	16.5	2	26.4	1	57.0	2	34.0	1	58.1	2	16.8	3	11.5
	53.8		21.6		7.9		21.4		22.8		32.7		54.8		31.9		2.2		21.9		13.9
	102.8		39.0		15.1		42.3		30.3		59.1		111.8		65.9		120.3		38.7		5.4
6	51.40	7	19.50	7	7.55	7	21.15	7	15.15	7	29.55	6	55.90	7	32.95	7	0.15	7	19.35	48	12.70

1.74327	1.36922n	1.19976	1.44716n	1.60228	1.84267n	1.41229	1.52492n
1.27694	0.90289n	0.73343	0.98083n	1.13595	1.37634n	0.94596	1.05859n
+18.92	−8.00	+5.41	−9.57	+13.68	−23.79	+8.83	−11.44
7 10.32	7 11.50	7 12.96	7 11.58	7 9.58	7 9.16	7 8.98	7 7.91

+74° 15′ 38.03″ 36.85 15 35.39 36.77 15 38.77 15 39.16 15 39.37 40.44
37.44 36.08 38.96 39.90

−31 55 16 54 48 55 7 54 48

1.55460n 1.55440n
+380 +2559 +1745 +1184
1.55840 1.55820 1.58019 1.57999 1.57205 1.57185 1.56644 1.56620
+36.17 +36.16 +38.04 +38.01 +37.33 +37.31 +36.85 +36.83

−.46 −.33 −.08 −.03 −.14 −.12 −.22 −.70 −.69 −.10 −.39 −.16
−.06 −.07 −.06 −.07 −.21 −.60 28 −.24 −.28
+35.62 +36.01 +37.95 +37.82 +36.90 +36.34 +36.51 +36.39
16 13.65 12.86 16 13.34 14.59 16 15.67 15.50 16 15.88 16.83
18 22.3 25.5 26.8 30.5
+2 8.7 9.4 +2 12.2 10.9 +2 11.1 11.3 +2 14.6 13.7
+2 9.05 11.55 11.20 14.15
+2 9.7 17 55.99 12.2 17 54.80 11.8 17 55.80 14.8 17 56.01
+2 8.55 9.94 55.20 +2 10.81 12.26 56.05 +2 10.76 12.23 55.63 +2 14.38 15.93 56.96
+ 1.39 −7.86 + 1.45 −11.06 + 1.49 −12.36 + 1.55 −14.06
− 27.60 +17 55.59 − 30.80 55.42 − 32.10 55.72 − 35.80 56.48
+1 42.34 18 16.33 + 41.46 15.16 + 40.13 15.46 + 40.13 16.33

ζ Androm.
0h 40m 43s
+23° 35'
z = + 18° 48'
sin z = +.32

1874

		α		δ	
Oct.	27	40m 42.85s		34' 76.6"	
Nov.	1	42.84	-.01	77.1	+.5
	6	42.83	.01	77.5	.4
	11	42.81	.02	77.9	.4
	16	42.79	.02	78.2	.3
	21	42.76	.03	78.4	.2
	26	42.73	.03	78.6	.2
Dec.	1	42.69	.04	78.8	.2
	6	42.65	.04	78.9	.1
	11	42.60	.05	78.8	.1
	16	42.55	.05	78.7	.1

1874
α 39.778s
δ +34° 52.71"
dα/dτ +3.169
dδ/dτ +19.657

l sec δ 9.96212
l.6 .10134
l6' .06346
l6' .05527
l sin δ 9.60215

Corr α =
Corr δ =
tang δ = +.44 1.09
I = 2.24s
K = -.017s

-.15
1874
Nov. 3
-.137

0 40 32.5 | 40 19.7
34.7 | 22.0
37.0 | 24.2
41.6
43.8
46.0
48.3 | 41 4.8
50.5 | 7.3
53.0 | 9.4
57.2
59.4

506.0 40 21.97
40 46.000 41 7.17
45.983
40 42.84
+ 3.14 -3.07
-.07
- 3.10
- .06 40m -3.06
- 3.06 +.109 39.78
- 6.22
40 45.98

40 39.76 33 7.05
42.929 +2 10.44
- .9
-24.60
+23 34 51.99

+ 24.03 -21.17
45
Hg fl = ∓ 26.2"
3 49.0 | 4 41.9
55.9 | 48.7
104.9 | 90.6
48 52.45 | 49 45.30
1.38705 | 1.82572m
1.45051 | 1.38918m
+28.22 | -24.50
49 20.67 | 49 20.80
+23° 33' 27.68" | 27.55
27.61
+18 46 45 | 47 38
1.29180 | 1.29210
+1649
1.30829 | 1.30859
-20.33 | -20.35

-.11 -.22 | -.08
-.12 | -.14
-20.56 | -20.57
33 7.12 | 6.98
35 17.3
+2 10.2 | 10.3
+2 10.2
+2 10.00 34 51.69
- .83 9.17 51.55
24.60 -4.94
+1 44.57 +34 51.62
35 11.28

-.13 -.10
Nov. 5
-.213

40 30.0 | 40 29.3
32.3 | 31.6
34.5 | 33.6
39.1
41.3
43.5
45.8
47.9
~~52.4~~
54.6
56.9

478.3 40 31.50
44 43.482
43.465
40 42.83
+ 0.63 -0.53
-.06
- 0.65 -.11
- .09 -3.05
- 3.05 +.119 39.70 .69
.69
- 3.79
40 43.46

39.67
42.839 +2 8.71
- 1.0

~~+11.98~~
45
3 ~~1.9~~
~~10.8~~
~~12.7~~
~~48 6.35~~
~~1.07846~~
~~1.14192~~
~~+ 13.86~~
+382
1.29562 1.29592
-19.75 -19.77

17.4

-.13
Nov. 16
-.183

40 19.7 No deltas
22.0
24.2
28.7
31.0
33.2
35.5
37.7
42.2
44.5
46.7

365.4
40 33.218
33.201
40 42.79
- 9.59 +9.63
-.06
+ 9.64
- .08 -3.01
- 3.01 +.159 39.76
+ 6.58
40 33.20

39.78
42.949 +2 10.71
- 1.0

45
3 52.7
57.7
110.4
48 55.20

-.12

-.13
Nov. 18
-.164

40 19.6 | 40 10.4
21.8 | 12.5
24.1 | 14.6
28.6
30.8
33.2
35.2
37.6
42.0
44.2
46.6

363.7 40 12.50
40 33.064
33.047
40 42.78
- 9.73 +9.72
-.06
+ 9.70
- .07 -3.00
- 3.00 +.169 39.71
+ 6.63
40 33.05

39.68 7.71
42.849 +2 10.99
- 1.0
34 -25.60
~~40 32.12~~
52.10

+ 20.56
45
∓ 27.7
3 51.2
0.9
112.1
48 56.05
1.81302
1.37648
+23.80
49 19.85
33 28.50
+1532
1.30712 | 1.30742
-20.28 | -20.30

-.08 ~~-.25~~
-.43 -.51
-20.79
33 7.71
18.3
+2 10.6
10.6
+2 10.92 10.04
- .88 34 52.15
- 25.60 5.94
+1 44.44
11.81

-.08
Nov. 21
-.095

40 20.5 | 40 9.7
22.6 | 11.6
24.9 | 13.7
29.4
31.7
33.8
36.1
38.4
43.0
45.1
47.5

11.67
373.0 40 11.33
40 33.909
33.892
40 42.76
- 8.87 +8.88
-.04
+ 8.90
- .04 -2.98
- 2.98 +.189 39.75
+ 5.88
40 33.89

39.77 8.81
42.939 +2 10.89
- 1.0
-25.70
34 53.00

+ 22.58 24
45
∓ 27.9
3 52.0
53.8
105.8
48 52.90
1.34713
1.41059
+25.74
49 18.64
33 29.71
+1747
1.30927 | 1.30957
-20.38 | -20.40

-.09 ~~-.26~~
-.43 -.52
-20.90
33 8.81
18.4
+2 9.6
9.6
+2 10.76 34 52.98
- .89 9.87
- 25.70 6.04
1 44.17
12.64

+.01
Dec. 9
-.008

40 19.9 | 40 10.0
22.1 | 12.4
24.4 | 14.7
28.8
31.0
33.3
35.6 | 40 51.1
37.8 | 53.5
42.3 | 56.1
44.7
46.9

366.8 40 12.37
40 33.345 40 53.57
33.328
42.62
- 9.29 +9.28
+.00
+ 9.27
- .00 -2.84
- 2.84 +.329 39.77
+ 6.43
40 33.33

39.76 4.64
42.929 +2 14.49
- 1.0
-26.10
34 52.03

+ 20.97 -20.23
45
∓ 29.3
3 54.7
2.8
117.5
48 58.75
1.32160 | 1.30680
1.38506 | 1.36946
+24.27 | +28.41
49 23.02
33 25.33
+1193
1.30373 | 1.30403
-20.13 | -20.14

-.08 ~~-.28~~
-.48 -.56
-20.69
33 4.64
18.1
+2 14.2
14.2
+2 14.38 34 51.99
- .93 13.40
- 26.10 6.44
1 47.35
11.65

187

1875

Nov. 16	40ᵐ	46.29ˢ		35′	40.2″	
21		46.26	-.03		40.5	+.3
26		46.22	.04		40.7	.2
Dec. 1		46.18	.04		40.8	.1
6		46.14	.04		40.9	.1
11		46.09	.05		40.9	+0
16		46.04	.05		40.8	-1
21		45.99	.05		40.7	1
26		45.93	.06		40.6	-2

1875

α 42.947
δ + 35 12.37
$\frac{d\alpha}{dt}$ + 3.169
$\frac{d\delta}{dt}$ + 19.656

l cos δ 9.96212
l.6 .12552
l.6′ 0.08764

-.01 Dec. 12 +.003		-.03 Dec. 14 -.035		+.18 1874 Dec. 16 +.163		-.23 1875 + Nov 20 -.215		-.27 + Nov 22 -.220	
40 18.8	40 10.4	40 18.5	40 7.6	40 17.5	40 7.2	40 39.3	40 38.0	40 38.8	40 38.4
21.1	12.0	20.9	9.7	19.7	9.6	41.6	40.2	41.4	40.6
23.2	14.0	23.0	11.9	22.0	11.5	43.7	42.4	43.3	43.0
27.9		27.5		26.6		48.3		48.0	
30.2		30.0		28.7		50.4		50.2	
32.4		32.0		31.0		52.8		52.4	
34.6		34.2		33.3		55.0	41 15.2	54.7	41 26.5
36.7		36.6		35.6		57.3	17.2	57.0	29.0
41.2		41.1		39.9		1.8	19.4	1.5	30.1
43.6		43.2		42.2		4.1		3.7	
45.9		45.6		44.5		6.3		5.9	
3556	40 12.13	3526	40 9.73	3410	40 9.43	5806	40 40.20	5769	40 40.67
40 32.327		40 32.055		40 31.000		40 52.782	41 17.27	40 52.445	41 28.53
32.310		32.038		30.983		52.765		52.427	
40 42.59		40 42.57		40 42.55		40 46.20		40 46.25	
-10.28	+10.30	-10.55	+10.48	-11.57	+11.47	+6.49	-+6.42	+6.18	-+6.05
	-.00		-.01		+.08		-.10		-.12
+ 10.23		+ 10.49		+ 11.46		- 6.43		- 6.09	
+ .00	-2.81	- .01	-2.79	+ .07	-2.77	- .09	-3.32	- .10	-3.30
- 2.81	+.359 3980	- 2.79	+.379 3972	- 2.77	+.399 3976	- 3.32	-.15 42~~93~~92 .92	- 3.30	4296
+ 7.42		+ 7.69		+ 8.76		- 9.84		- 9.49	
40 32.31		40 32.04		40 30.98		40 52.76		40 52.43	
40 39.73	33 4.95	39.73	4.75	33 39.74 42.909	5.11	42.92	51 55.29	42.94	53.98
42.899	+2 14.94	42.899	+2 14.99	39.735	+2 15.03		-16 14.54	42.930	-16 13.27
	- 1.0		- 1.0	39.778	- 1.0		- 1.0	947	- 1.0
	-26.10		-26.10	-.043	-26.00		-28.00	-.017	-28.20
	34 52.79		34 52.64		34 53.14		35 11.75		35 11.51
+ 20.20		+ 22.32		+ 21.57		+12.58	-24.49	+11.77	-36.09
45 -		45 -		45 -		30		30	
* 2.94		* 2.97		* 2.98		-3.12		-3.12	
3 55.5		3 53.9		3 55.1		0 12.9	0 59.1	0 16.5	1 15.2
2.0		58.9		59.4		20.5	5.9	20.5	17.9
117.5		112.8		114.5		32.4	125.0	37.0	13.1
48 58.75		48 56.40		48 57.25		30 16.70	31 2.50	30 18.50	31 16.55
1.30535		1.34869		1.33385		1.09968	1.38899n	1.07078	1.55739n
1.36062		1.40396		1.38912		1.18732	1.47663n	1.15842	1.64503n
+22.94		+25.35		+24.50		+15.39	-29.97	+14.40	-44.16
49 21.69		49 21.75		49 21.75		30 32.09	30 32.53	30 32.90	30 32.39
33 26.66		33 26.60		33 26.60		52, 16.26	15.82	52 15.45	15.96
						16.04		15.70	
				46 50		46 29	47 14	46 30	47 28
						1.29170	1.29200		
+ 3346		+ 3633		+ 3077		+ 2234		+ 4062	
1.32526	1.32556	1.32813	1.32843	1.32257	1.32287	1.31404	1.31434	1.32232	1.33262
- 21.15	- 21.16	- 21.29	- 21.30	- 21.02	- 21.03	-20.61	-20.62	- 21.49	- 21.51
-.08	~~-.28~~	-.09	~~-.28~~	-.08	~~-.23~~	-.03	~~-.13~~ -.11	-.02	-.22 -.26
-.48	-.56	-.47	-.56	-.39	-.47	-.03	-.13 -.10	-.03	-.13
- 21.71		- 21.85		- 21.49		- 20.67	- 20.83	- 21.54	- 21.90
33 4.95		33 4.75		33 5.11		51 55.59	54.99	51 53.91	54.06
1.88		1.88		1.87		35 4.04		4.06	
+2 1.39		+2 1.41		+2 1.36		-16 1.52	14.6	+16 1.33	13.5
+2 13.9		14.1		13.6		14.9		13.4	
+2 14.71	34 52.62	+2 14.80	34 52.50	+2 14.80	34 52.96	-16 15.12	35 11.48	- 13.43	35 11.29
- 94	13.77 6.44	- 95	13.88 6.44	- 95	13.85 6.34	- 99	16.11 10.88	- 99	14.42 11.44
- 26.10		- 26.10		- 26.00		- 28.00	8.34	- 28.20	8.54
+1 47.57 6	2 12.78	+1 47.75	12.16	+1 47.85	12.62	-16 44.11	35 11.18	- 42.62	11.36

η Cas.
h m s
0 41 33
° '
+57 9
δ = − 14° 46
sin z = −.26

1874

		m s		' "	
Oct.	27	41 32.79		8 72.9	
Nov.	1	32.76	−.03	74.3	+1.4
	6	32.72	.04	75.6	13
	11	32.66	.06	76.8	12
	16	32.60	.06	77.9	11
	21	32.52	.08	78.9	10
	26	32.44	.08	79.8	.9
Dec.	1	32.34	.10	80.6	.8
	6	32.23	.11	81.3	.7
	11	32.12	.11	81.8	.5
	16	32.01	.11	82.3	.5

1874
s 99
α 29.169
δ +8 48.19
dα/dt +3.581
dδ/dt +19.242
29.268

l cos δ 9.73435
l b .10134
l b' 9.83569
l b' 9.82750
l sin δ 9.92433

cos α =
cos δ =
tang δ = + 1.55 1.84
I = 3.79
k = −.028

−.15 1874
Nov. 3
−.137
0 41 —
—
—
36.2 34.3
.1 36.1
.0 37.9 41 48.2
.2 40.0 51.4
.3 42.0 54.0
.4 44.0

41 36.200 41 51.20
36.172
41 32.74
+ 3.43 −3.08 −.23
− 3.10
− .21 −354
− 3.57 41 29.30
− 6.88
41 36.17

41 29.29 7 3.09
32.871 +2 10.44
+ .7
− 26.70
+57 8 47.53

15 −15.0°
= ∓26.2
1 7.9
14.5
22.4
16 11.20

1,17609n
1,01178n
− 10.28
16 0.92

6 47.43

−14 45 56
1,18120n
+ 1649
1,19769
+ 16.76

−.06 ~~−.05~~
−.04 −.10
+15.66
7 3.09
9 14.9
+2 11.8
+2 10.00
+ .68 10.68 8 47.07
− 26.70 7.46
+1 43.98
9 6.31

−.13 −.10
Nov. 5
−.213
41 11.0 41 27.3
14.8
18.7
26.4
30.1
34.0
37.7
41.4
49.1
52.9
56.8

41 27.30
41 33.900
33.872
41 32.73
+ 1.14 −0.55 −.20
− 0.65 −.188
− .33 −356
− 3.56 +.021 29.38
− 4.54
41 33.87

29.33 7.30
32.911 +2 8.71
+ .7
−27.20
8 49.51
.51

+6.60
15
∓26.3
0 48.7
54.9
103.6
15 51.80

0.81984
0.65523
+ 4.52
15 56.32

6 52.03

46 15
1,18140n
+ 383
1,18503
+ 15.31

− .01 ~~−.02~~
− .03 −.04
+15.27
7 7.30
15.4
+2 8.1
+2 8.55
+ .68 9.23 8 49.33
− 27.20 7.96
+1 42.03
8.57

−.13
Nov. 16
−.183
41 0.5 41 9.1
4.2 13.0
8.0 16.5
15.9
19.4
23.4
27.2
30.9
38.6
42.3
46.1

25.65 41 12.87
41 23.318
23.290
41 32.60
− 9.31 +9.63 −.20
+ 9.67
− .28 −343
− 3.43 +.151 29.29
+ 5.96
41 23.29

29.25 8.25
32.831 +2 10.71
+ .7
−29.80
8 49.86

+ 10.465
15
∓27.4
0 48.1
49.9
98.0
15 49.00

1.01912
0.85481
+7.16
15 56.16

+57° 6 52.19

+ 2572
1,20692
+16.11

−.03 ~~−.02~~
− .02 −.05
+16.06
7 8.25
18.0
+2 9.8
+2 10.81
+ .71 11.52 8 49.97
− 29.80 10.56
+1 41.72
9.21

−.13
Nov. 18
−.154
41 15.7 41 10.6
17.5 14.3
19.3 16.8
21.5
23.2
25.2
27.0
29.0
30.8

20.92 41 13.90
41 23.244
23.216
41 32.576
− 9.384 +9.72 −.20
+ 9.70
− .24 −339
− 3.39 +.191 29.35
+ 6.07
41 23.22

29.29 7.56
32.871 +2 10.99
+ .7
−30.20
8 49.05

+ 9.34
15
∓27.7
0 46.8
53.2
100.0
15 50.00

0.97035
0.80604
+ 6.40
15 56.40

6 51.95

+ 1537
1,19659
+15.72

− .112 ~~−.05~~
−.09 −.11
+15.61
7 7.56
18.4
+2 10.8
+2 10.92
+ .72 11.64 8 49.00
− 30.20 10.96
+1 41.44
8.24

−.08
Nov. 21
−.095
41 16.4 41 12.0
18.3
20.0
22.2
24.0
25.9
27.9
29.8
31.6

21.61 41 12.00
41 24.011
23.983
41 32.52
− 8.54 + 8.878 −.12
+ 8.90
− .15 −335
− 3.35 +.231 29.39
+ 5.40
41 23.98

29.38 7.95
32.961 +2 10.89
+ .8
− 30.80
8 48.84

+12.01
15
∓27.7
0 48.5
47.2
95.7
15 47.85

1.07954
0.91523
+ 8.23
15 56.08

6 52.27

+1748
1,19868
+ 15.80

−.03 ~~−.06~~
−.09 −.12
+15.68
7 7.95
19.0
+2 11.1
+2 10.76
+ .72 11.48 8 48.63
− 30.80 11.56
+1 40.68
7.87

Dec. 9
15
1 8.6
14.9
23.5
16 11.75

1874.0		1875.0	
α	δ	α	δ
29.29			
33			
25			
29			
38			
22			
24			
35			
29.294			
.169			
+.125	48.19		

-.01		-.03		+.18 1874	
Dec.12		Dec14		Dec 16	
+.003		-.035		+.163	
41 41	40.8	41 41	8.9	41	41 2.5
—	46.5	14.1		12.8	6.5
—	49.5	15.9		14.9	9.1
18.2 22.0		17.8		16.7	
19.9 18		19.7		18.6	
21.8 18		21.7		20.5	
23.8 19		23.6		22.5	
25.9 21		25.6		24.2	
27.7 10		27.6		26.2	
29.6 10		29.5		28.1	
41	45.60	1955 41	8.90	1845 41	6.03
41 21.943		41 ~~21.833~~		41 20.500	
		~~21.722~~			
21.915		21.694		20.472	
41 3210.09		3205		3200	
-10.188	+10.30	-10.36	+10.48	-11.573	+11.47
	-.02		-.05		+.28
+ 10.23		+ 10.49		+ 11.46	
+ .00	-2.92	- .05	-2.88	+ .25	-2.83
- 2.92 +.661	29.28	- 2.88 +.701	29.24	- 2.83 +.751	29.~~35~~ .39
+ 7.31		+ 7.56		+ 8.88	.39
41 21.91		41 21.69		41 20.47	
29.22	7 8.31	29.245	3.73	29.35	7.93
32801	+2 14.94	32881 3	+2 14.99	29.294 32931	+2 15.03
	+ .8		+ .8	.169	+ .8
	-33.70		-33.80	+.125	-34.10
	8 50.~~37~~.35		8 45.72		8 49.66
	.35				
		82			
-23.66		+12.98		+ 14.47	
15		15		15	
*294		*297		*298	
1 9.7		0 50.9		0 45.6	
14.4		53.8		48.1	
241		1047		937	
16 12.05		15 52.35		15 46.85	
1.37401		1.10789		1.16047	
1.20151		0.93539		0.98797	
-15.90		+8.62		+9.73	
15 56.15		16 0.97		15 56.58	
6 52.20		6 47.38 ✓		6 51.77	
				46 20	
+3348		+3639		+3078	
1.21468		1.21756		1.21198	
+16.39		+16.50		+16.29	
-.14	~~-.14~~	-.04	~~-.07~~	-.05	~~-.06~~
-.14	-.28	-.11	-.15	-.08	-.13
+16.11		+16.35		+16.16	
7 8.31		7 3.73		7 7.93	
2.19		2.20		2.23	
+2 1.36		+2 1.83		+2 1.44	
+2 14.71		+2 14.80		+2 14.80	
+ .76 15.47	8 50.08	+ .77 15.57	8 45.50	+ .77 15.57	49.40
- 33.70 14.46		- 33.80 14.56		- 34.10 14.86	
+1 41.77	9.32	+1 41.77	9.74	+1 40.47	8.64

1875

α
δ
dα/dt
dδ/dt

l cos δ 9.88169
l C .12552
l C′ 0.00721

Dec.12		Dec.14		1874 Dec.16		-23 1875 Nov 20		-27 Nov 22	
+.003		-.035		+.163		-.215		-.220	
42 28.5	42 22.3	42 28.4	42 23.8	42 27.2	42 7.4	42 49.3	42 33.1	42 49.0	42 41.6
31.1	25.6	31.0	26.4	29.9	10.4	52.1	36.0	51.6	44.2
34.0	28.2	33.8	29.3	32.7	12.3	54.9	38.3	54.5	47.3
39.4		39.2		37.9		43 0.2		59.7	
42.1		42.0		40.7		3.0		43 2.4	
44.7		44.7		43.3		5.6		5.1	
47.6	43 12.2	47.3	43 5.1	46.1	43 4.0	8.3	43 26.2	7.7	
50.1	15.7	50.0	7.8	48.8	5.5	11.1	28.2	10.6	
55.4	18.7	55.4	10.3	54.3	7.7	16.4	30.8	16.0	
58.4		58.2		56.9		19.1		18.6	
43 1.4		43 0.8		59.7		21.9		21.3	
4327		4308		4775		2419		2965	
60		60				180		240	
4927	42 25.37	4908	42 26.50		42 10.03	619	42 35.80	565	42 44.37
42 44.791	43 15.53	42 44.618	43 7.73	42 43.409	43 5.73	43 5.627	43 28.40	43 5.136	
44.771		44.598		43.389		5.607		5.116	
+ 10.24		+ 10.60		+ 11.46		- 6.43		- 6.09	
+ .00		— .11 03		+ .14		— .18		— .18	
— 2.79	+.494	— 2.76	+.524	— 2.73	+.554	— 3.37		— 3.33	
+ 7.45		+ 7.71		+ 8.87		— 9.98		— 9.62	
42 44.77		42 44.60		42 43.39		43 5.61		43 5.12	
42 52.22		42 52.31		42 52.26		42 55.63		42 55.50	
55.504		55.594		52.205	55.544			55.565	
+ 19.42	- 30.74	+ 18.12	- 23.11	+ 33.38	- 22.32	+ 29.83	- 22.77	+ 6.99	
0		0		0		40		40	
* 2.94		— * 2.97		— * 2.98		— 3.12		— 3.12	
0 35.5	1 22.5	0 39.7	1 16.8	0 23.8	1 16.5	1 34.5	2 28.5	1 48.2	2 33.7
45.5	31.8	45.1	23.2	29.7	22.4	41.9	35.6	51.9	36.5
81.0	54.3	84.8	40.0	53.5	38.9	76.4	64.1	100.1	102
0 40.50	1 27.15	0 42.40	1 20.00	0 26.75	1 19.45	41 38.20	42 32.05	41 50.05	42 35.10
1.28825	1.48770n	1.25816	1.36380n	1.52349	1.34869n	1.47465	1.35736n	0.844788	
1.26309	1.46254n	1.23300	1.33864n	1.49833	1.32353n	1.~~44747~~ 48986	1.36457n	0.85169	
+18.33	-29.01	+17.10	-21.81	+31.50	-21.06	+~~28.15~~ 30.33	-23.15	+7.71	~~+7.11~~
0 58.83	0 58.14	0. 59.50	0 58.19	0 58.25	0 58.39	42 ~~6.55~~ 8.53	42 8.90	41 57.16	~~42.21~~
21 49.52 49.86	50.21	21 48.85 49.50	50.16	21 50.10 50.03	49.96	40 ~~40.00~~ ~~39.80~~ 39.82	40 39.45 39.63	~~40 51.19~~	~~40 42.21~~
				58 20	59 12	57 50	58 44		58 47
						0.29540	0.29870		
+3349		+3643		+3079		+2242		+4066	
.33149	.33399	.33443	.33693	.32879	.33129	.31782	.32112	.33606	.33936
-2.14	-2.16	-2.16	-2.17	-2.13	-2.14	-2.08	-2.09	-2.17	-2.18
-.10 -.30	-.24	-.09 -.23	-.14	-.30 -.30	-.13	-.24 -.39	-.13	-.07 -.24	-.07
-.08	-.18	-.08	-.16	-.05	-.13	-.16	-.25	-.18	-.26
- 2.32	- 2.58	- 2.33	- 2.47	- 2.48	- 2.40	- 2.48	- 2.47	- 2.37	- 2.46
21 47.20	47.63	21 46.52	47.69	21 47.62	47.56	40 37.34	36.98		
+2 14.71		+2 14.80		+2 14.80		-16 15.12		- 13.43	
- .09	14.62	- .09	14.71	- .09	14.71	- .09	15.21	- .09	
- - 30.80	11.12	- 30.88	11.20	- 30.95	11.27	- 31.22	11.54	- 31.44	
+1 43.82		+1 43.83		+1 43.76		-16 46.43		-16 44.96	
+23 31.02	31.45	23 30.35	31.52	23 31.38	31.32	23 54.91	50.55		
31.23		~~30.93~~		31.35		50.73			
50.91	~~51.13~~	50.61	~~51.20~~	51.03	~~51.00~~				

Pramin 0. 207
~~B. A. C. 237~~

h	m	s
0	44	52
	+ 2°	43′

δ = + 39° 40′
sin δ = +.64

	1874	1875
α		
δ		1
dα/dt		+ 30834
dδ/dt		+ 19.669
l cos δ	9.99951	9.99951
l b	.10134	.12552
l b′	.10085	0.12503
l b′	.09266	
l sin δ	8.67515	

corr α =
corr δ =
tang δ = +.05
I = 2.07 s
K = −.015 s

1874 Nov. 18		Nov 21		Dec. 9		Dec. 12		Dec. 14		Dec. 16	
−.154				−.008		+.003		−.035		+.163	
0 44 ~~30~~1	44 21.1	Ch. f.		44 30.4	44 23.7	44 29.4	44 23.6	44 29.2	44 22.0	44 28.1	44 16.0
32.2	23.0			32.5	25.7	31.5		31.3	23.8	30.2	18.3
34.2	24.8			34.5	28.0	33.6		33.4	26.0	32.2	20.2
38.3				38.7		37.6		37.4		36.4	
40.4				40.8		39.7		39.6		38.4	
42.4				42.8		41.7		41.6		40.4	
44.6	45 3.7			44.9	45 2.5	43.9	44 58.4	43.7	45 0.4	42.5	45 1.1
46.6	6.5			47.0	4.2	46.3		45.8	8.1	44.6	3.0
50.9	8.7			51.0	6.4	50.3		49.9	4.8	48.8	5.0
52.8				53.2		52.0		52.0		50.8	
54.9				55.2		54.2		54.0		52.9	
4674	44 2297			4740	44 2580	4602	44 2360	4579	44 23.93	4453	44 18.17
44 42.491	45 6.30			44 42.~~909~~ 818	45 4.37	44 41.836	44 58.40	44 41.627	45 2.77	44 40.482	45 3.03
42.476				42.783		41.821		41.612		40.467	
42.476											
42.476				42.~~793~~ 803		41.821		41.612		40.467	
+ 9.~~87~~ 70				+ 9.24		+ 10.24		+ 10.50		+ 11.46	
− .01				− .00		+ .00		− .00		+ .01	
− 3.15	−0.067			− 2.93	+0.153	− 2.91	+0.173	− 2.90	+0.183	− 2.88	+0.203
+ 6.54				+ 6.34		+ 7.33		+ 7.60		+ 8.59	
44 42.48				44 42.80		44 41.82		44 41.61		44 40.47	
44 49.02				44 49.14		44 49.15		44 49.21		44 49.06	49.116
52.103				52.223		52.233		52.293		52.143	

+19.52	−23.81			+ ~~23.11~~ 17.07	− 21.~~46~~ 56	+18.24	−16.56	+ 17.70	− 21.14	+ 22.31	− 22.55
40	40			40		40		40		40	
26 = ✱ 2.77				✱ 2.93		✱ 2.94		✱ 2.97		✱ 2.98	
1 10.3	2 5.9	1 8.4	2 4.5	1 20.0	2 9.9	1 16.9	1 59.8	1 17.6	2 6.6	1 15.2	2 11.4
22.5	18.0	13.5	9.9	30.2	6.8 15	27.1	9.9	26.2	15.0	23.2	19.2
328	239	219	144	502	167	440	1297	438	216	384	306
41 16.40	42 11.95	41 10.95	42 7.20	41 25.10	42 5.85 12	41 22.00	42 4.85	41 21.90	42 10.80	41 19.20	42 15.30
1.29048	1.37676n			1.23096	1.33345n	1.26102	1.21906n	1.24797	1.32510n	1.34850	1.35315n
1.39133	1.47761n			1.33181	1.43430n	1.35368	1.31172n	1.34063	1.41776n	1.44116	1.44581n
+24.62	−30.03			+21.47	−27.18	+22.58	−20.50	+21.91	−26.17	+27.62	−27.92
41 41.02	41 41.92			41 46.37	41 38.17 46.67	41 44.58	41 44.35	41 43.81	41 44.63	41 46.82	41 47.38
+2° 41 7.33	6.43			41 1.78	1.68	41 3.77	4.00	41 4.54	3.72	41 1.53	0.97
6.88				1.73		3.88		4.13		1.25	
+39 39 9	40 5									39 12	40 8
1.67840	1.67860										
+1548				+1204		+3358		+3651		+3080	
1.69388	1.69408			1.69044	1.69064	1.71193	1.71213	1.71491	1.71511	1.70928	1.70940
−49.42	−49.44			−49.03	−49.05	−51.51	−51.54	−51.87	−51.89	−51.32	−51.21
−.02 −.22	−.03			−.01 −.23	−.02	−.01 −.22	−.01	−.01 −.23	−.02	−.02 −.20	−.02
−.14	−.24			−.17	−.26	−.17	−.25	−.17	−.26	−.13	−.23
−49.58	−49.71			−49.21	−49.33	−51.69	−51.80	−52.05	−52.17	−51.47	−51.46
+2 40 17.75	36.72			40 12.57	12.35	40 12.08	12.20	40 12.49	11.55	40 10.06	9.51
+2 10.92				+2 14.38		+2 14.71		+2 14.80		+2 14.80	
− 1.77	9.15			− 1.87	12.57	− 1.88	12.83	− 1.90	12.90	− 1.90	12.90
−20.85	−1.18			−19.75	−0.08	−19.57	+0.10	−19.45	+0.22	−19.33	+0.34
+1 48.30	5			+1 52.76		+1 53.26		+1 53.45	5.00	+1 53.57	
+42 6.05	4.02			+42 5.33	5.11	42 5.34	5.46	42 5.94	5.00	42 3.63	3.08
5.53				5.22		5.40		5.47		3.35	
~~24.92~~				24.89		25.07		25.14		23.02	
25.20											

-23 1875		-27		-13		-09	
Nov 20		Nov 22		Dec 6		Dec 13	
-.215		-.220		-.136		-.110	
44 49.8	44 47.4	44 49.3	44 45.3	44 43.1	44 56.9	44 39.0	44 29.5
51.7	48.9	51.3	48.3	45.4	58.9	41.1	31.2
53.8	57.0	53.6	50.4	47.2	1.3	43.2	33.0
57.9		57.6		51.3		47.3	
45 0.0		59.8		53.5		49.3	
2.0		1.7		55.5		51.4	
4.1	45 18.8	3.7	45 19.8	57.7	45 14.1	53.5	45 13.4
6.2	20.9	5.8	21.7	59.7	16.5	55.6	15.1
10.2	22.6	10.0	23.8	3.7	18.0	59.6	17.1
12.3		11.8		5.9		1.7	
14.4		14.1		8.0		3.8	
2624		3187		4310		4455	
240		300		180		120	
224	44 49.10	187	44 48.00	611 0	44 59.03	5655	44 31.23
45 2.036	45 20.77	45 1.700	45 21.77	44 55.545	45 16.20	44 51.409	45 15.20
2.021		1.685		55.530		51.394	
− 6.43		− 6.09		− 0.06		+ 3.98	
− .01		− .01		− .01		− .00	
− 3.41		− 3.40		− 3.30		− 3.24	
− 9.85		− 9.50		− 3.37		+ 0.74	
45 2.02		45 1.68		44 55.53		44 51.39	
44 52.17		44 52.18		44 52.16		44 52.13	
						52.160	

20 +31.26	−0.41	20 +13.70	−20.07	20 ~~+6.51~~ 3.49	−20.66	20 +20.18	−23.79
−3.12		−3.12		3.16		3.21	
2 36.1	3 16.1	2 34.7	3 20.3	2 1.5	3 24.7	2 30.8	3 28.4
40.2	21.3	35.9	20.1	1.8	23.3	33.1	29.4
76.3	38.0	10.6	4	1.3	8.0	39	17.8
22 38.15	23 19.00	22 35.30	23 20.20	23 1.65	23 24.00	22 31.95	23 ~~29.40~~ 28.90
1.49499	9.61278n	1.13672	1.30255n	~~0.81308~~ 54282	1.31513n	1.30492	1.37639n
1.62002	9.73781n	1.26175	1.42758n	~~0.93867~~ 66885	1.44016n	1.42995	1.60142n
+41.69	−0.55	+18.27	−26.77	~~+8.68~~	−27.55	+26.91	−31.73
23 19.84	23 18.45	22 53.57	22 53.43	23 ~~18.33~~ 4.63 22 57.00	22 56.45	22 58.86	22 57.17
59 28.51 29.20	29.90	59 54.78 54.85	55.92 4	51.35 51.62	51.90	59 49.49 50.33	51.18
		38 47	39 32			38 44	39 41
1.67830	1.67850						
+2250		+4069		+1997		+783	
1.70080	1.70100	1.71899	1.71919	1.69827	1.69847	1.68613	1.68633
−50.21	−50.24	−52.36	−52.38	−49.92	−49.94	−48.54	−48.57
−.04	−.31 −.00	−.01	−.31 −.02	−.00	−.49 −.02	−.02	−.47 −.03
−.26	−.33	−.26	−.33	−.45	−.51	−.37	−.53
−50.51	−50.57	−52.63	−52.73	−50.37	−50.47	−48.93	−49.13
58 38.00	39.33	59 2.15	2.19	59 0.98	1.43	59 0.56	2.05
−16 15.12		− 13.43		− 13.77		− 14.33	
− 1.99	17.11	− 1.99	15.42	− 2.02	15.79	− 2.05	16.38
−23.06		−22.97		−22.23		−21.82	
−16 40.17		−16 38.39		−16 38.02		−16 38.20	
41 57.83	54.16	42 23.76	23.80	42 22.96	23.41	42 22.36	23.85
41 58.60		23.78		23.18		23.10	

20 Ceti
h m s
0 46 37
° ′
− 1 51
δ = + 44 14
x rig = +.70

	1874	1875
α		
δ		
$\frac{d\alpha}{dt}$		+3.062
$\frac{d\delta}{dt}$		+19.64
l cos δ	99997	99997
l b	.10184	.12552
l b′	.10111	0.12529
l b′	.09292	
l sin δ	8.50987n	

cos α =
cos δ =
tang δ = −.03
I = 2.06 s
k = −.015 s

1874
Nov. 3 −.137

0 46 28.0, 30.1, 32.1, 36.3, 38.3, 40.4, 42.4, 44.5, 48.7, 50.8, 52.8
46 15.0, 17.0, 18.5
46 58.3; 47 0.2, 1.7
44 44 · 46 16.83 · 47 0.07
46 40.400
40.385
− 3.10
+ 00
− 3.16 − 0.10
− 6.26
46 40.38
−2
46 34.12
37.18

Nov. 21 −.095

46 16.1, 18.1, 20.2, 24.4, 26.5, 28.5, 30.6, 32.6, 36.7, 38.8, 40.9
46 6.9, 8.6, 10.4
31 34 · 46 8.63
46 28.491
28.476
+ 8.89
+ 00
− 3.10 − 0.04
+ 5.79
46 28.48
46 34.27
37.33

Dec. 9 −.008

46 15.6, 17.8, 19.6, 23.8, 25.9, 27.9, 30.0, 32.0, 36.1, 38.2, 40.3
46 4.7, 6.8
46 52.8, 54.8
30 72 · 46 5.75
46 27.927 · 46 53.80
27.912
+ 9.27
+ 00
− 2.97 +0.09
+ 6.30
46 27.91
46 34.21
37.27

Dec. 12 +.003

46 14.5, 16.5, 18.7, 22.5, 24.7, 26.7, 28.9, 31.0, 35.0, 37.1, 39.3
46 2.2, 5.3, 7.5
47 8.0
29 49 · 46 5.00
46 26.809 · 47 8.00
26.794
+ 10.24
− 00
− 2.95 +0.11
+ 7.29
46 26.79
46 34.08
37.14

Dec. 14 −.035

46 14.1, 16.3, 18.4, 22.6, 24.7, 26.6, 28.8, 30.9, 34.8, 37.0, 39.0
46 5.3, 8.0, 10.3
46 35.5
29 32 · 46 7.87
46 26.655 · 46 35.50
26.640
+ 10.50
+ .00
− 2.93 +0.13
+ 7.57
46 26.64
46 34.21
37.27

1874
Dec. 16 +.163

46 13.2, 15.3, 17.5, 21.4, 23.6, 25.7, 27.7, 29.8, 33.8, 36.0, 38.0
46 5.0, 6.5, 8.1
46 43.0, 44.5, 46.3
28 20 · 46 6.53
46 25.636 · 46 44.60
25.621
+ 11.46
− 00
− 2.91 +0.17
+ 8.55
46 25.62
46 34.17
37.23

Nov. 3 (lower block)
+ 23.57 · − ~~20.34~~ 19.67
10
Cl = ✱ 262
2 46.3 · 3 40.6
58.1 · 53.7
1044 · 943
12 52.20 · 13 47.15
1.37236 · 1.29380n
1.47347 · 1.39491n
+ 27.75 · −24.83
13 21.95 · 13 22.32
° ′ ″
−1 50 33.60 · 33.97
33.78
+44 10 45 · 11 40
1.74730 · 1.74760
+ 1649
1.76379 · 1.76409
−58.05 · −58.09
+.031 −.09 +.021
−.09 · −.11
− 58.13 · − 58.19
−1 51 31.73 · 32.16
+2 10.00
− 1.83 8.17
−20.09 −0.95
+1 47.58
−49 44.15 · 44.58
−49 44.36
24.72

Nov. 21 (lower block)
+ 19.86
10
✱ 279
2 54.4 · 3 48.1
2.3 · 58.2
1167 · 1063
12 58.35 · 13 53.15
1.29798
1.39509
+25.07
13 23.42
50 35.07
+ 17.51
1.76481 · 1.76511
−58.19 · −58.22
+.021 −32
− .33 · −.43
− 58.51
51 33.58
+2 10.76
− 1.95 8.81
−19.62 +0.12
+1 49.29
49 44.29
24.65

Dec. 9 (lower block)
+ 22.18 · − 25.87
10
✱ 293
2 56.3 · 3 53.9
8.9 · 6.3
1252 · 120 2
13 2.60 · 14 0.10
1.34596 · 1.41280n
1.44707 · 1.51391n
+ 27.99 · −32.65
13 30.59 · 13 27.45
50 · 39.10
+ 1206
1.75936 · 1.75966
−57.46 · −57.50
+.021 −.47 +.031
− .38 · −.48
− 57.83 · − 57.97
37.07
+2 14.38
− 2.05 12.33
−18.29 + 1.35
+1 54.04
49 43.03
23.39

Dec. 12 (lower block)
+ 21.81 · −41.19
10
✱ 294
2 54.0 · 4 13.8
6.5 · 25.9
1205 · 397
13 ~~0.25~~ 0.25 · 14 19.85
1.33866 · 1.61479n
1.43158 · 1.70771n
+ 27.01 · −31.01
13 27.26 · 13 28.84
50 38.91 · 50 40.49
37.70
+ 3356
1.78086 · 1.78116
− 60.38 · −60.42
+.021 −42 +.033
−.36 · −.52
− 1 0.73 · − 1 0.91
51 39.64 · 41.40
+2 14.71
− 2.06 12.65
−18.08 1.56
+1 54.57
49 45.07 · 46.83
45.95
26.31

Dec. 14 (lower block)
+ 18.78 · − 8.85
10
✱ 297
2 58.9 · 3 31.3
10.0 · 43.7
1289 · 750
13 4.45 · 13 37.50
1.27370 · 0.94694n
1.36662 · 1.03986n
+23.26 · −10.96
13 27.71 · 13 26.54
50 39.36 · 38.19
38.77
+ 3659
1.78389 · 1.78419
−60.80 · −60.84
+.021 −.40 +.021
−.37 · −.43
− 1 1.16 · − 1 1.27
51 40.52 · 39.46
+2 14.80
− 2.08 12.72
−17.92 +1.72
+1 54.80
49 45.72 · 44.66
45.19
25.55

Dec. 16 (lower block)
+ 19.11 · − 18.96
10
✱ 298
3 0.1 · 3 47.0
9.9 · 57.1
100 · 1041
13 5.00 · 13 52.05
1.28126 · 1.27784n
1.37418 · 1.37076n
+23.67 · −23.48
13 28.67 · 13 28.57
50 40.32 · 40.22
40.27
10 58 · 11 45
+ 3081
1.77811 · 1.77841
−59.99 · −60.04
+.021 −34 +.021
−.39 · −.39
− 1 0.29 · − 1 0.42
51 40.61 · 40.64
+2 14.80
− 2.09 12.71
−17.76 +1.88
+1 54.95
49 45.66 · 45.69
45.67
26.03

-.23		-.13		-.09		-.02	
1875 Nov 20		Dec 6		Dec 13		Dec 15	
-.215		-.136		-.110		-.030	
46 —	46 52,6	46 28,3	46 19,1	46 24,1	46 13,3	46 23,2	46 15,1
—	54,5	30,3	20,8	26,2	15,1	25,2	17,4
—	56,0	32,3	22,9	28,2	17,0	27,3	18,9
43,0		36,6		32,4		31,4	
45,0		38,6		34,4		33,4	
47,1		40,6		36,4		35,5	
49,1	47 18,2	42,7	46 53,5	38,5	46 53,4	37,6	46 54,5
51,2	21,3	44,7	56,0	40,6	55,1	39,7	56,8
—	22,0	48,9	57,7	44,7	56,8	43,7	58,6
—		51,1		46,7		45,8	
—		53,1		48,9		48,0	
23 54	46 54.37	44 72	46 20.93	40 11	46 15.13	39 08	46 17.13
46 47.080	47 20.17	46 40.655	46 55.73	46 36.464	46 55.10	46 35.527	46 56.63
47.065		40.640		36.449		35.512	
- 6.43		- 0.06		+ 3.98		+ 4.97	
+ .01		+ .00		+ .00		+ .00	
- 3.44		- 3.34		- 3.28		- 3.26	
- 9.86		- 3.40		+ 0.70		+ 1.71	
46 47.06		46 40.64		46 36.45		46 35.51	
46 37.20		46 37.24		46 37.15		46 37.22	

50 -7.29	-33.09	50 +19.72	-15.08	50 +21.33	-18.64	50 +18.40	-21.10
-3.12		-3.16		-3.21		-3.22	
4 43.3	0 18.0	4 12.9	4 0.0	4 10.4	0 3.6	4 13.8	0 7.9
46.5	21.6	11.9	56.4	11.1	5.0	11.2	5.0
9.8	39.6	48	64	15	86	50	12.9
54 44.90	55 19.80	54 12.40	54 53.20	54 10.75	55 4.30	54 12.50	55 6.45
0.86273n	1.51970n	1.29491	1.17840n	1.32899	1.27045n	1.26482	1.32428n
0.98802n	1.64499n	1.42020	1.30369n	1.45428	1.39574n	1.39011	1.44957n
-9.73	-44.15	+26.31	-20.12	+28.46	-24.87	+24.55	-28.15
54 35.17	54 35.65	54 38.71	54 33.08	54 39.21	54 39.43	54 37.05	54 38.30
31 46.82	47.30	50.36	49.73	31 50.86	51.08	31 48.70	31 49.95
47.06		50.04		50.97		49.32	
10 57	11 32					10 24	11 18
1.74740	1.74750						
+2261		+1995		+788		+2483	
1.77001	1.77011	1.76735	1.76745	1.75528	1.75538	1.77223	1.77233
-58.89	-58.90	-58.53	-58.54	-56.92	-56.93	-59.19	-59.20
+ a	-.24 +.052	+.020	-.69 +.010	+.020	-.32 +.010	+.01	-.30 +.021
-.47	~~-.46~~ .03	-.63	-.75	-.63	-.061	-.63	-.01
-59.36	-58.91	-59.16	-59.29	-57.55	-56.94	-59.81	-59.280
32 46.12	46.21	32 49.52	49.02	32 48.41	48.02	32 48.51	49.15
-16 15.12		-13.77		-14.33		-14.40	
2.18	17.30	-2.21	15.98	-2.25	16.58	-2.25	16.65
-21.90		-20.80		-20.31		-20.15	
16 39.20		-16 36.78		-16 36.89		-16 36.80	
49 25.38	25.41	49 26.30	25.80	49 25.30	24.91	49 25.31	25.95
25.36 39		26.05		25.10		25.63	

32 Camelop (76) Lo. 6

	h	m	s
	12	48	14
		°	'
		+84	6
		+95	54
z =	−	53°	31'

sin z = −.80

	1874 N.A.		1875
α	12h 48m 13s.432		12 48 13.792
δ	84 5 50.64	54 9.36	5 31.01
	+0.359		+362
	−19.63		−1964

	1874	1875
l cos δ	9.01196n	9.01196
l6	.09315	.12552
l6'	9.10511	9.13748
l.6'	9.11332	
l sin δ	9.99769	

conx =
conv =
log tg δ = − 9.68
I = 16.02
K = +1.1468

1874 Nov 3	Nov 21	Dec 14	1874 Dec 16	1875 Nov 20	Dec 6
−.15	−.08	−.03	+.18	−.23	−.13
−.13"		−.035	+.163	−.215	−.136
0 47 — 48 30.4	Ch. f.	47 48 16.1	— 48 0.4	48 — 49 19.5	
—		—	—	32.3	
48.5 85		—	—	49.9	
58.8 86		44.6	47 54.6	—	
48 8.8 88		53.3	4.7	13.6 136	
18.4 86 49 13.7		48 4.0	14.6	23.8 138	
28.6 95 32.0		14.1	—	34.2 142	
39.6 95 53.8		23.8	—	44.3 147	
49.6 95		—		54.5 144	
		—			
		139.8	193.9	170.4	
		120			
48 36.40		19.8 48 16.10	48 0.40	49 33.90	
48 9.03 49 33.83		48 3.960	48 4.633	48 14.04	
9.18		4.106	4.779	14.19	
−30.87		+10.48	+11.47	− ~~6.48~~3	
− 3.10 +1.45		+ 10.50 +.29	+ 11.46 −1.74	− 6.48 +2.23	
+ 1.33 +1.689		+ .34 ~~−.61~~ +.649	− 1.58 −1.221	+ 2.08	
+5.52		−6.66	−1.48	+2.71	
+3.39		~~10.18~~ 9.82	~~8.80~~ 8.44	−1.64	
12.93		~~14.29~~ 13.93	~~13.58~~ 14.22	12.55	
.57					
12.926 52 2014		14.289 2368 ~~2464~~	14.579 52 2561	11 1276	
+2 1044		+2 1499	+2 1503	−16 1454	
+ 2.0		+ 2.6	+2.6	+ 2.4	
−27.37 −8.40		−12.14	+4.23	−7.986	Gr.
30 30		30	30	10	
26 = ±2.62		±2.97	±2.98	−3.12	
1 44.9 1 37.7	1 45.4	1 47.7	1 47.1	2 45.1	
45.9 38.7	41.7	46.8	45.9	53.2	
90.8 76.4	87.1	94.5	93.0	98.3	
31 45.40 31 38.20	1 43.55	1 47.25	1 46.50	12 49.15	
1.43727 1.92840		1.08422n	0.62634	1.77685n	
.65057 1.11417n		0.18933n	9.73145	0.91438n	
+ 3.55 +11.01		+1.55	+0.54	+8.21	
31 48.95 31 49.21		31 ~~45.70~~ 48.80	31 ~~47.04~~ 45.96	12 40.94 57.36 ✓	
50 59.40 59.14	+95°	51 ~~2.65~~ 50 59.35	51 ~~1.31~~ 50 2.39	9 50.99	
59.27					
−53 30 22 30 29			30 21	30 59	
1.89030n 1.89040n				1.89050n	
+1649		+3665	+3082	+2166	
1.90679 1.90689		1.92695 1.92705	1.92112 1.92122	1.91216	
+80.69 +80.70		+84.52 +84.54	+83.39 +83.41	+81.69	
.50 .50		+ 01 + 1	+ 1		
+ .05 +.18 + .41		+ .01 ~~.10~~	+ .00 ~~.09~~	+ .36 ~~.04~~	
−.05 −.05		−.21 −.20	−.18 −.18	−.28 +.08	
+1 20.69 +1 21.06	Can't make out	+1 24.33	+1 23.22	+1 21.77	
+9552 20.09 20.20		52 23.68	52 25.61	11 12.76	
+2 10.80		+2 14.80	+2 14.80	−16 15.12	
+ 2.10 12.10		+ 2.18 16.98	+ 2.18 16.98	+ 2.50 12.62	
− ~~24.70~~ 9.80		− 36.70 17.07	−37.10 17.47	− ~~27.30~~ 32.6 12.96	
1 47.70 54 7.79		1 40.28 3.96	1 39.38 5.49	−16 ~~39.92~~ 45.22 ~~32.84~~ 27.54	
7.90					
7.85		3.96	5.49		
27.48		23.64	25.17		

1874

	h	m	s		°	′	″	
Nov. 5	12	48	8.42		+84	5	25.2	
10			8.96	54			23.4	1.8
15			9.59	63			21.7	1.7
20			10.29	70			20.0	1.7
25			11.06	78			18.5	1.5
30			11.90	84			17.1	1.4
Dec. 5			12.80	90			15.8	1.3
10			13.75	95			14.7	1.1
15			14.76	101			13.6	1.1

1875

			h	m	s		°	′	″	
Nov. 20	~~248~~	14.9	12	48	10.33		+82	4	60.2	
25		19			11.01	68			58.5	1.7
30	~~48~~	24.8			11.75	74			57.0	1.5
Dec. 5	~~48~~	28			12.56	81			55.5	1.5
10		48			13.44	88			54.2	1.3
15		74			14.37	93			53.0	1.2
		14.8			15.36	99			51.9	1.1

−.09

Dec 13

−110

48 48 15.0

9.6
20.2 49 11.9
29.9
40.6
50.5

15.08

18 15.00
48 10.12 49 11.90
10.27
+4.02
+.87
+ 3.98
+ 1.06
−1.27
+3.77
14.04

−16 14.10
+.27

−4.88 −6.78

12
−3.21
2 46.2 2 40.2
50.9 45.4
.1 97.1 5.6
12 48.55 12 42.80

1.18070 1.62055n
0.31818 0.70803n
+.208 +5.73
12 ~~50.63~~ 12. ~~37.07~~
48.76 48.53
9 59.87

31 00.

+7.90
1.89840
+ 79.74

+.0 +.21
−.42
+ 1 18.72
7 18.54
−16 14.33
+ .27
−38.59
16 ~~37.06~~ 46.48
38.00

1874 1875

γ Cas.

		1874					1875				
h m s	Dec. 6	49m	10.22s		2'	34.9"	Dec 6	49m	14.10s	2'	56.8"
0 49 11	11		10.08	−.14		35.3 +.4	11		13.97 −.13		57.2 +.4
° '	16		9.94	.14		35.8 .5	16		13.83 .14		57.7 .5
+60 2	21		9.80	.14		36.3 .5	21		13.69 .14		58.2 .5
	26		9.66	.14		36.8 .5	26		13.55 .14		58.7 .5

g = −17° 39'

einz = −.30

α ∓ 7.104s
δ +2' 1.08"
dα/dτ +3.570s
dδ/dτ +19.569"

10.674
+2 2.065
+3.571
+19.568

corr α =
corr δ =

l cos δ 9.69853
l b .09315
l b' 9.79168
l sin δ 9.93768

9.69853
.12552
9.82405 +

tang δ = +1.73
I = 4.12s
K = −.031s

1874 Dec. 9	Dec 12 −.01		1874 Dec. 16 +18		−.13 1875 Dec 6		−.02 Dec 15	
	+.003		+.163		−.136		−.030	
Ch. γ	48 35.1	48 24.8	48	48 38.7	48 49.3	48 33.0	48 44.1	48 31.0
	38.8	29.2	50.0		53.7	36.0	48.3	35.5
	48.2	32.0	52.1		57.8	39.0	52.6	38.2
	57.5		54.2		49 6.0		49 1.0	
	53.8		56.3		10.1		5.3	
	59.7		58.4		14.5		9.3	
	4.0	49 1.7	0.3		18.5	49 10.5	13.3	49 30.2
	49 7.9	5.0	2.3		22.4	13.4	17.5	32.7
	16.3	9.5	4.1		30.6	17.0	25.4	36.7
	20.6		6.3		34.8		29.8	
	25.0				39.1		34.1	
	3579		2840		3368		2807	
	300		240		180		180	
	6579	48 28.67	5240	48 38.70	1568	48 36.00	1007	48 34.90
	48 59.809	49 5.40	48 58.222		49 14.255	49 13.63	49 9.155	49 33.20
	59.778	+10.31	58.191	+11.47	14.224	− 0.01	9.124	+4.956
	49 10.065	−.02	49 9.953	+.81	49 14.409	−.22	49 13.875	−.03
	−10.287		−11.764		+− 0.173		− 4.753	
		−2.95		−2.83		−3.42		−3.18
	+ 10.284	49 7.12	+ 11.486	49 7.14	− 0.06	49 10.57	+ 4.97	10.87
	+ .00		+ .28		− .23		− .05	
	− 2.95	+.620	− 2.83	+.740	− 3.42		− 3.18	
	+ 7.29		+ 8.91		− 3.71		+ 1.74	
	48 59.78	0 20.07	48 58.19	0 18.63	49 14.22	19 11.00	49 9.12	11.89
		+2 14.94		+2 15.03		−16 13.58		−16 14.12
	49 7.07	+ 1.0	7.10	+ 7.0	10.51	+ .9	10.86	+ 7.0
	10.640	−34.30	7.085	−34.70		−36.20	10.685	−37.00
	+60	2 1.71	7.104	10.670 ±1 59.96		2 22.12	674	2 21.77
			−.019				+.011	

	+ 31.14	− 5.59	+ 19.52		+ 36.25	+ 0.62	+ 34.25	− 24.06
20	20		20		0		0	
	He = ∓2.94"		∓2.98		− 3.16		− 3.22	
2 17.0	3 3.7	2 25.9	2 49.9	2 33.5	3 0.9	3 28.4	3 54.5	3 31.9	4 11.0
20.4	7.9	29.4	53.7	34.2	0.9	31.9	56.6	32.9	10.9
37.4	11.6	55.3	103.6	67.7	18	60.3	111	48	19
22 18.70	23 5.80	22 27.65	22 51.80	22 33.85	23 0.90	23 30.15	23 55.55	23 32.40	24 10.95

1.49832	0.74741n	1.20048		1.58268	0.79239	1.53466	1.38112n
1.28500	0.53909n	1.18216		1.40668	9.61644	1.35871	1.20517n
+ 19.28	− 3.46	+ 16.21		+ 25.51	+ 4.13	+ 22.84	− 16.04
22 46.93	22 48.34	22 49.06		23 55.66	23 59.68 6.41 55.96	23 55.24	23 54.91
+60° 0' 1.42" 0.71	0.01	59 59.29		18 52.69 52.54	18 52.39	18 53.11 53.27	18 53.44
−17 39 39	39 15	39 33		40 18	39 53	40 16	39 37
1.26320n	1.26300n			1.26350n	1.26330n		
+ 3360		+ 3083		+ 1999		+ 2483	
1.29680	1.29660	1.29403	1.29383	1.28319	1.28299	1.28803	1.28783
+ 19.81	+ 19.80	+ 19.68	+ 19.67	+ 19.19	+ 19.19	+ 19.41	+ 19.40

−.23 −.44 − ... −.08 −.34 −.34 −.72 − ... −.27 −.78 −.14

−.30	−.35	−.26	−.30	−.53	−.58	−.53	−.63
+ 19.28	+ 19.44	+ 19.34	19.37	+ 18.32	+ 18.61	+ 18.61	+ 18.63
0 20.70	19.45	0 18.63		19 11.00	11.00	19 11.72	12.07
2 35.4		35.8		2 56.8		57.6	
+2 14.7	16.0	17.2		−16 14.2	14.2	−16 14.1	14.5
+2 15.3		+2 17.2		−16 14.2		14.23	
+2 14.71	+2 1.99	+2 14.80	+1 59.62	−16 13.77	+2 21.98	− 14.40	+2 21.29
+ .88 15.09	0.74	+ .89 15.69		+ .95 12.82	21.98	+ .97 13.43	21.64
− 34.30 14.73		34.70 15.13		36.20 16.63		− 37.00 17.43	
+1 4.29	+2 1.36	∓1. 40.99		∓16 49.02	21.98	− 16 50.43	21.46
2.093			19.19		1.58		

α Sculptoris

			1874	1875	
h 0	m 52	s 36	α	52 34.91	corr α =
° −30	' 02		δ	2' 05.3	corr δ =
			dα/dT	+2.894	Yang δ = −.58
			dδ/dT	+19.52	I = 2.38 s
					k = −.018 s

z = +72 25

sin z = +95

log cos δ 9.93738 9.93738

ll .10134 .12552

ll' 0.03872 0.06290

ll' .03053

log sin δ 9.69941n

1874 Nov. 3		Dec. 12		Dec. 14		Dec. 16		1875 Apr 20 (−.23)		Apr 22 (−.27)	
−.137		+.003		−.035		+.163		−.215		−.220	
0 52 24.4 26.7 29.0 33.8 36.3 38.6 40.9 43.3 48.1 50.6 53.0	52 54.4 7.7 10.1 52 49.1 51.4 53.6	52 10.9 13.1 15.5 20.3 22.7 25.0 27.3 29.7 34.4 36.9 39.2	51 57.4 59.0 2.0 52 46.8 49.1 51.6	52 27.26 10.6 27.28 13.0 27.30 15.4 27.16 22.4 27.18 24.8 — 27.20 27.2 — 27.22 29.6 — — — —	52 0.8 4.7 8.1 52 38.2 40.1 42.5	52 9.5 11.8 14.2 19.0 21.4 23.8 26.1 28.6 33.4 35.7 38.1	51 58.1 52 1.0 3.0 52 49.1 52.0 54.7	52 30.7 32.9 35.4 40.3 42.8 45.0 47.4 49.8 54.7 57.1 59.4	52 26.8 28.3 30.0 53 9.6 11.4 14.3	52 30.7 33.0 35.4 40.3 42.5 44.9 47.2 47.6 54.3 56.7 59.1	52 21.0 22.6 25.0 52 57.3 59.6 3.0
42.47 52 38.609	52 7.73 52 51.37	27.50 52 25.000	51 59.47 52 49.17	52 27.229	52 4.53 52 40.27	26.16 52 23.782	52 0.70 52 52.27	49.55 52 45.045	52 28.37 53 11.77	49.37 52 44.882	52 22.87 52 59.97
38.591 − 3.~~10~~ 09 + 08 − 3.54 −.646 − 6.55 52 38.59		24.982 + 10.24 − .00 − 3.20 −.306 + 7.04 52 24.98		~~27.241~~ 25.04 + 10.50 + .02 − 3.18 −.286 + 7.34 52 ~~27.21~~ 25.04		23.764 + 11.46 − .09 − 3.15 −.256 + 8.22 52 23.76		45.027 − 6.43 + .12 − 3.78 ~~.556~~ − 10.09 52 45.03		44.864 − 6.09 + .13 − 3.76 ~~.866~~ − 9.72 52 44.86	
52 32.04 34.934		32.02 34.914		~~34.55~~ 32.38 ~~32.17~~ ~~34.664~~ 35.274		31.98 34.874 32.152		52 34.94		52 35.14	

√ so says

Nov. 3		Dec. 12		Dec. 14		Dec. 16		Apr 20		Apr 22	
+30.88	−12.76	+25.53	−24.17	+27.70	−13.04	+23.08	−28.49	+16.67	−26.73	+22.01	−15.09
20 Hef = ∓ 2.62		20 ∓ 2.94		20 ∓ 2.97		20 ∓ 2.98		0 − 3.12		0 − 3.12	
3 15.9 27.4 43.3 23 21.65	3 4 2.5 14.0 16.5 284 8.25	3 23.7 35.7 59.4 23 29.70	4 16.9 29.1 46.0 24 23.00	3 23.0 34.7 57.7 23 28.85	4 3.9 14.0 17.9 24 8.95	3 30.1 39.1 69.2 23 34.60	4 24.2 32.9 57.1 24 28.55	4 45.0 49.8 14.0 4 47.00	0 36.6 41.6 78.2 5 39.10	4 34.0 34.8 8 4 34.40	0 15.9 18.2 14.1 5 17.05
1.48968 1.52840 +33.76 23 55.41	1.10585n 1.14457n −13.95 23 54.30	1.40705 1.43758 +27.39 23 57.09	1.38328n 1.41281n −25.93 23 57.07	1.35602 ~~1.05543~~ 1.38655 +11.36 24.35 23 58.20	1.11528 0 ~~.81469~~ 1.14583 −6.83 −13.99 54.96	1.36324 1.39377 +24.76 23 59.36	1.45469n 1.48522n −30.57 23 57.98	1.22174 1.28484 +19.27 5 6.27	1.42700n 1.49990n −31.62 5 7.48	1.34262 1.40552 +25.44 4 59.84	1.17869n 1.24159n −17.44 4 59.61
−30° 1' 7.06" 6.50	5.95	1 8.74 8.73	1 8.72	4.85 5.73	6.61	1 11.01 10.32	9.63	42 17.92 18.52	19.13	42 11.49 11.37	11.26
+72 21 15	22 1					21 28	22 22	20 59	21 51		
2.25294 +16.49	2.25321	+33.66		+36.85		+30.85		2.25278 +22.88	2.25217	+40.81	
2.26943 −18600 − 03 +22 +02 −.10	2.26970 −18610 − 03 +.04 −.12	2.28660 −19350 − 15 +.16 −.31 −.42	2.28687 −19360 − .15 +.14 −.53	2.28979 −19490 − 20 +12 −.37 −.42	2.29006 −19500 − .20 +.04 −.49	2.28309 −19220 − .11 +13 −.25 −.36	2.28406 −19230 − .11 +18 −.45	2.27566 − 18860 − 7 +.07 −.15 −.48	2.27505 −18840 − 7 +17 −.06	2.29317 −19660 − .12 −.11 −.16 −.46	2.29258 −19630 − .12 +.05 −.03
−3 6.09 5.91 −30 4 12.97 +2 10.00 — 2.48 7.52 −15.22 +4.30	−3 6.21 12.16	−3 13.91 4 22.65 +2 14.71 — 2.79 11.92 −9.14 10.38	−3 14.14 22.86	−3 15.40 4 20.25 +2 14.80 — 2.82 11.98 −8.90 +10.62	−3 15.65 22.26	−3 12.54 4 23.55 +2 14.80 — 2.83 11.97 − 8.75 10.77	−3 12.68 22.31	−3 9.08 45 27.00 −16 15.12 — 2.96 18.08 −14.58 4.94	−3 8.36 27.49	−3 17.07 45 28.56 −13.43 — 2.96 16.39 −14.26 5.26	−3 16.40 27.66
+1 52.30 −2 20.67 −2 20.26	19.86	+2 2.78 −2 19.87 19.97	20.08	+2 3.08 −2 17.17 18.17	19.18	+2 3.22 2 20.33 19.71	19.09	−16 32.66 1 59.66 −1 59.90	2 0.15	−16 30.65 1 59.21 58.76	58.31
60.74	~~60.31~~	60.45	~~60.54~~	58.65	~~59.56~~	60.19	~~59.84~~	~~0.36~~ 1	~~00.~~		~~58.31~~

-.13 -.09 -.02

Dec 6 Dec 13 Dec 15

-.136 -.110 -.030

52 24.3 52 13.1 52 20.1 52 14.9 52 19.3 52 31.4
26.7 15.3 22.4 16.6 21.8
29.0 17.5 24.9 19.0 24.2
33.9 29.7 28.9
36.2 32.0 31.1
38.6 34.3 33.3
40.9 52 59.7 36.7 52 58.8 35.8 53 6.1
43.3 1.4 39.0 0.8 38.4 9.4
48.1 3.3 44.0 3.5 43.0 12.3
50.4 46.3 45.4
52.9 48.6 47.8

42.43 52 15.30 37.80 52 16.83 36.90 52 31.40
52 38.573 53 1.47 52 34.364 53 1.03 52 33.545 53 9.27
38.555 34.346 33.527

- 0.05 + 3.98 + 4.97
+ .08 + .06 + .02
- 3.62 - 3.54 - 3.51
- 3.59 + 0.50 + 1.48
52 38.55 52 34.35 52 33.53

52 34.96 52 34.85 52 35.01

34.980

+23.27 -22.90 +17.53 -26.67 +2.14 -36.73
0 0 5
-3.16 -3.21 -3.22
4 44.1 0 37.3 4 56.0 0 45.9 0 8.1 0 50.0
44.8 39.0 57.4 49.1 8.8 49.8
9 16.3 13.4 15.0 9 99.8
4 44.45 5 38.15 4 56.70 5 47.50 5 8.45 5 49.90

1.36680 1.35984n 1.24378 1.42602n 0.33041 1.56502n
1.42970 1.42274n 1.30668 1.48892n 0.39331 1.62792n
+26.90 -26.47 +20.26 -30.83 +2.47 -42.46
5 11.35 5 11.68 5 16.96 5 16.67 5 10.92 5 7.44

42 23.00 23.33 42 28.61 28.32 42 22.57 19.09
23.16 28.46 20.83
21 20 22 1

+2005 +798 +2483
2.27283 2.27222 2.26076 2.26015 2.27461 2.27400
-18740 -18720 -18230 -18200 -18950 -18930
- 8 - 8 - 7 - 7 - .11 - .11

-.13 -.52 -.12 -.07 -.55 -.17 -.01 -.23 -.32
-.71 -.09 -.74 -.12 -.01 -.12
-3 8.32 -3 7.49 -3 3.18 -3 2.36 -3 9.63 -3 9.85
45 31.32 30.82 45 31.79 30.68 45 32.20 28.94
-16 13.77 - 14.33 - 14.40
- 3.60 16.77 - 3.04 17.37 - 3.05 17.45
-12.19 7.33 -11.35 8.17 -11.13 8.39
-16 28.96 -16 28.72 -16 28.58
-2 0.28 59.78 2 0.51 ~~60.40~~ 59.40 2 0.78 57.52
-2 0.03 ~~-2 0.95~~ 59.15
54.95

ε Piscium
h m s
0 56 27
+7° 13'
z = + 35 10
sin z = +.58

1874

		m	s		′	″	
Nov.	16	56	27.43		12	62.3	
	21		27.41	−.02		62.2	−0.1
	26		27.38	.03		62.0	.2
Dec.	1		27.35	.03		61.8	.2
	6		27.32	.03		61.6	.2
	11		27.28	.04		61.4	.2
	16		27.23	.05		61.1	.3
	21		27.19	.04		60.9	.2
	26		27.14	.05		60.6	.3

1874		1875	
α 24.304		27.413	corr α = —
δ +12′ 40.13″		+12 59.61	corr δ = −0.90
$\frac{d\alpha}{dt}$ +3.109		+3.109	
$\frac{d\delta}{dt}$ +19.481		+19.479	log δ = +.13
			I = 2.08s
log cos δ 9.99655		9.99655	
l.C .10134		.12552	K = −.016
l.C′ .09789		0.12207	
l.C′ .08970			
l sin δ 9.09907			

	1874 Nov. 24		Dec. 4		Dec. 12		Dec. 14		1874 Dec. 16		1875 Nov 20	
	−.04		+.01		−.01		−.03		+.18		−.23	+
	−.052		−.008		+.003		−.035		+.163		−.215	
0 56	—		56 55.5	55 55.7	56 4.3	55 54.8	56 4.4	55 53.9	56 3.2	55 49.8	56 25.0	56 11.3
	—		7.6	57.9	6.6	56.7	6.4	55.4	5.4	52.4	27.0	13.0
	—		9.7	56 0.2	8.7	58.9	8.5	57.2	7.5	54.0	29.0	15.0
	15.0		13.9		12.9		12.6		11.5		33.2	
	17.2		16.0		15.0		14.7		13.4		35.3	
	19.3		18.0		17.0		16.8		15.8		37.2	
	21.3	56 31.0	20.0	56 36.3	19.3	56 37.9	18.8	56 29.9	17.8	56 34.8	39.3	56 52.2
	23.5	32.3	22.1	38.4	21.2	40.4	20.9		20.0	36.8	41.4	54.3
	—	34.9	26.3	40.7	25.2	42.9	25.1		24.0	38.4	45.4	56.1
	—		28.4		27.4		27.2		26.0		47.7	
	—		30.5		29.5		29.4		28.2		49.8	
	963		1980	55 57.93	1871	55 56.80	1848	55 55.43	1731	55 52.07	4106	56 13.10
56	19.260	56 32.73	56 18.000	56 38.47	56 17.009	56 40.50	56 16.800	56 29.90	56 15.736	56 36.67	56 37.327	56 54.20
	19.244		17.984		16.993		16.784		15.720		37.311	
56	27.39	2	56 27.30		56 27.27		27.25	9	27.23	7	56 30.86	
	− 8.15	+ 8.1~~1~~	− 9.32	+9.28	− 10.28	+10.31	− 10.47	+10.4~~8~~	− 11.51	+11.4~~8~~	+ 6.45	− ~~6~~6.43
		−.01		+.00		−.00		−.00		+.02		−.03
+	8.08		+ 9.24		+ 10.24		+ 10.50		+ 11.46		− 6.43	
−	.01	−3.09	− .00	−3.00	+ .00	−2.97	− .00	−2.93	+ .02	−2.93	− .03	−3.45
−	3.09 +.019	+2.13 56 24.26	− 3.00 +.109	24.26	− 2.97 +.139	24.33	− 2.95 +.159	24.32	− 2.93 +.179	24.28	− 3.45	27.40
+	4.98		+ 6.27		+ 7.24		+ 7.55		+ 8.55		− 9.91	
56	19.24		56 17.98		56 16.99		56 16.78		56 15.72		56 37.31	
56	24.22	11 ~~49.20~~ 50.12	24.25	48.72	24.26	48.45	24.33	49.04	24.27	10 47.31	27.40	29 40.92
	27.329 +2	13.97	27.359 +2	14.49	27.369 +2	14.94	27.439 +2	14.99	24.266 27.379	+2 15.03		−16 14.54
		− 7.8		− 1.8		− 1.9		− 1.9	304	− 1.7		− 7.7
		− 22.00		− 21.40		− 21.30		− 21.20	−.038	− 21.00		− ~~24.40~~
	+7 12	40.29	12	40.01	12	40.19	12	40.93		12 39.44		13 02.8
10		− 13.47	10 +20.07	− 20.47	10 +20.21	− 23.49	10 +21.37	− 13.10	10 +~~20~~23.67	− 20.93	50 +24.23	− 16.87
	Hf = ∓ 2.81″		∓ 2.93		∓ 2.94		∓ 2.97		∓ 2.98		− 3.12	
11	26.1		0 47.0	1 36.1	0 44.9	1 39.3	0 44.0	1 25.7	0 43.4	1 39.1	1 53.0	2 44.1
	40.6		58.8	50.1	56.4	51.1	53.9	36.3	52.3	47.9	54.7	49.5
	66.7″		105.8	86.2	101.3	90.4	97.9	62.0	95.7	87.0	47	136
11	33.35		10 52.90	11 43.10	10 50.65	11 45.20	10 48.95	11 31.00	10 47.85	11 43.50	51 52.35	52 46.80
		1.12937n	1.30255	1.31112n	1.30557	1.37088n	1.32980	1.11727n	1.37420	1.32077n	1.38435	1.22712n
		1.22726n	1.40044	1.40901n	1.39527	1.46059n	1.41950	1.20697n	1.46390	1.41047n	1.50642	1.34919n
11	33.35	− 16.88	+ 25.14	− 25.65	+ 24.85	− 28.88	+ 26.27	− 16.10	+ 29.10	− 25.73	+ 32.10	− 22.35
	− 16.88	11 16.47	11 18.04	11 17.45	11 15.50	11 16.32	11 15.12	11 14.90	11 16.95	11 17.77	52 24.45	52 24.95
	16.47											
+7°		11 31.88	11 30.31	11 30.90	11 32.85	32.03	11 33.23	33.45	11 31.40	30.58	30 23.90	23.90
			30.60		32.44		33.34		30.99		23.90	
	+35°		8 46	9 36					8 41	9 36	8 4	8 59
			1.60760	1.60790							1.60740	1.60770
	+1121		+ 1234		+ 3372		+ 3700		+ 3088		+ 2303	
	1.61881		1.61994	1.62020	1.64132	1.64162	1.64460	1.64490	1.63848	1.63878	1.63063	1.63093
	− 41.57	− 41.57	− 41.68	− 41.5?	− 43.79	− 43.82	− 44.12	− 44.15	− 43.50	− 43.53	− 42.70	− 42.73
		−.01	−.03 −.18	−.03	−.03 −.18	−.04	−.03 −.16	−.01	−.04 −.16	−.03	−.04 −.26	−.01
	− .18	−.18 −.19	− .11	− .20	− .10	− .20	− .10	− .18	− .08	− .17	− .19	− .28
		− 41.46	− 41.82	− 41.94	− 43.92	− 44.06	− 44.25	− 44.34	− 43.62	− 43.73	− 42.93	− 43.02
		10 50.12	10 48.49	48.96	10 48.93	47.97	10 48.98	49.11	10 47.78	46.85	29 40.97	40.88
	13 — 21	13 2.1	1.5		1.4		1.3		1.1		13 24.0	
		+2 12.0	13.0	12.5	12.5	13.4	12.3	12.2	13.3	14.2	~~13.0~~	13.1
		+2 12.5		12.8		12.9		12.7	13.7	−16	17.0	17.0 16.9
	+12 40.41	+2 11.1	12 39.78	11.8	12 40.64	12.0	12 40.80	11.9	12.8	12 39.86 −16	17.9	12 59.65
		+2 13.91	12.29 40.25 +2	14.38	12.69 39.68 +2	14.71	13.01 40.99 +2	14.80 +2	14.84 13.08	38.93 −16	15.12	59.56
		— 1.62	2.52 —	1.69	16 —	1.70	91 —	1.72 13.08	1.72 13.08	—	1.89 14.92	
		22.0	+12 40.01 —	21.40	1.92 40.2?	21.30	1.82 40.8?	21.20 1.72	21.00 1.52	39.39 —	24.40 4.92	59.60
	12 59.89 +1	50.09	12 59.49 +1	51.29	+1	51.71	+1	51.88 +1	52.08	16	41.32	

1875

		m	s		'	"	
Nov.	16	56	30.88		12	84.1	
	21		30.86	-.02		84.0	-.1
	26		30.83	.03		83.8	.2
Dec.	1		30.80	.03		83.6	.2
	6		30.76	.04		83.4	.2
	11		30.72	.04		83.2	.2
	16		30.68	.04		82.9	.3
	21		30.63	.05		82.6	.3
	26		30.58	.05		82.3	.3

-.27	+	-.13	+	-.09	+	-.02	+	
Nov 22		Dec 6		Dec 13		Dec 15		Dec 16
-.220		-.136		-.110		-.030		
56 24.4	56 17.3	56 18.4	56 7.1	56 14.3	56 9.4	56 13.2	56 3.0	
26.6	19.2	20.4	9.0	16.3	11.5	15.3	5.3	
28.8	20.9	22.6	10.5	18.4	13.4	17.6	7.0	
32.8		26.6		22.6		21.6		
34.9		28.8		24.7		23.7		
36.9		30.8		26.8		25.4		
39.2	56 52.6	32.9	56 57.0	28.8	56 43.6	27.9	56 50.9	
41.2	54.3	35.8	59.3	30.8	45.7	29.9	53.0	
45.3	56.0	39.1	1.0	34.9	47.6	34.1	54.8	
47.4		41.2		37.1		36.1		
49.5		43.3		39.1		38.4		
40.70	56 19.13	33.91	56 8.87	29.38	56 11.43	28.35	56 5.10	
56 37.000	56 54.30	56 30.827	56 59.10	56 26.709	56 45.63	56 25.773	56 52.90	
36.984		30.811		26.693		25.757		
56 30.85		56 30.76		56 30.70		56 30.69		
+ 6.13	- *6.05	+ 0.05	- *0.01	- 4.01	+ 4.02	- 4.93	+ 4.93 6	
	-.04		-.02		-.01		-.00	
- 6.09		- 0.05		+ 3.98		+ 4.94		
- .03	-3.44	- .02	-3.35	- .01	-3.29	- .00	-3.28	
- 3.44	27~~.65~~ 45 .45	- 3.35	27.43	- 3.29	27.41	- 3.28	27.44	
- 9.56		- 3.42		+ 0.68		+ 1.69		
56 36.98		56 30.81		56 26.69		56 25.76		
56 27.42	29 4030	27.39	3953	27.37	4008	27.45	4020	
	-16 1327		-16 1358		-16 1410	27.406	-16 1412	
	-1.7		-1.8		-1.9	413	-1.9	
	-2440		-2380		-2350		-2330	
	13 0.93		13 0.35		13 ~~1.58~~ 0.58 0.58	-.007	13 0.88	
50 +17.87 Σ4	-17.30	50 +21.96	-28.27	50 +15.28	-18.92	50 +20.67	-27.18	50
-3.12		-3.16		-3.21		-3.22		
2 59.0	2 45.5	1 57.4	3 3.4	2 5.1	2 50.1	1 58.5	3 2.3	1 58.6
59.9	47.0	56.9	2.9	8.9	52.0	56.2	59.5	59.1
9	125	143	63	140	21	147	1218	177
51 59.45	52 46.25	51 57.15	53 3.15	52 7.00	52 51.05	51 57.35	53 0.90	51 58.85
1.25212	1.23805n	1.34163	1.45133n	1.18412	1.27692n	1.31534	1.43345n	
1.37419	1.36012n	1.46370	1.57340n	1.30619	1.39899n	1.43741	1.55552n	
+23.87	-22.71	+29.09	-37.45	+20.24	-25.06	+27.38	-35.94	
52 23.12	52 23.34	52 26.24	52 25.70	52 27.24	52 25.99	52 24.73	52 24.96	
~~27~~ 25.23	25.01	30 22.11	22.65	30 21.11	22.36	30 23.62	30 23.39	
(30) 25.12		22.38		21.73		23.50		
						8 9	9 13	
+4087		+2011		+804		+2483		
1.64824	1.64854	1.62751	1.62781	1.61544	1.61574	1.63223	1.63253	
-44.49	-44.52	-42.41	-42.45	-41.25	-41.28	-42.88	-42.91	
-.02 -.31	-.02	-.03 -.41	-.05	-.01 -.39	-.02	-.03 -.40	-.05	
-.30	-.28	-.28	-.47	-.31	-.44	-.28	-.45	
-44.81	-44.82	-42.72	-42.97	-41.57	-41.74	-43.19	-43.41	
29 40.42	40.19	29 39.39	39.68	29 39.54	40.62	29 40.43	39.98	
240		234		231		229		
-16 16.4	16.2	-16 16.0	16.3	-16 16.4	17.5	-16 17.5	17.1	
-16 16.3		16.1		16.9		17.3		
-16 17.2	13 0.79	17.0	12 59.99	17.8	12 59.85	18.2	13 0.87	
-16 13.43	1523 0.56	- 13.77	1560 0.28	- 14.33	1619 0.93	- 14.40	1626 0.42	
- 1.80	492	- 1.82	432	- 1.86	402	- 1.86	382	
- 24.40	13 0.67	- 23.80	0.13	- 23.50	0.39	- 23.30	0.64	
-16 39.63		-16 39.40		-16 39.89		-16 39.56		

1874

ι Cass
h m s
0 59 47
° ′
+ 54 19
ζ = − 11° 56′
sin ζ = −.21

α 59 54.95
δ 14′ 21.9″
+3.943
+17.83

log cos δ 9.76590
log b .10134
log b′ 9.86724
log b′ 9.85905
log sin δ 9.90969

corr α =
corr δ =
tang δ = + 1.39
I = 3.53 s
k = −.026 s

1874

Nov. 24		Nov. 30		Dec. 9		Dec. 12		Dec. 14		Dec. 16	
−.052		−.077		−.008		+.003		−.030		+.163	
0 59 28.6	59 9.0	59 28.7	59 14.4	59 ~~27.2~~	59 10.1	59 26.2	59 14.7	59	59 7.5	59 24.6	59 5.6
32.0	12.7	32.3	17.8	—	13.3	29.7	19.6	40.0	10.7	28.0	9.4
35.7	16.7	35.9	20.7	—	16.6	33.3	22.3	41.9	13.6	31.6	11.8
42.7		43.0		48.1		40.1		43.7		38.9	
46.4		46.3		46.4		43.7		45.3		42.3	
49.8		49.9		50.0		47.1		46.8		45.6	
53.4	1 0 3.0	53.5	1 0 19.9	53.5	59 58.5	50.9	0 28.5	48.7	59 37.0	49.4	59 59.0
56.9	6.5	57.0	22.8	—	1 0 2.1	54.3	32.9	50.6	39.2	52.8	1.6
1 0 3.8	11.0	1 0 4.2	26.3	—	6.1	1.3	36.4	52.3	42.7	—	4.4
7.5		7.7		—		4.9		54.0		—	
10.4		11.4		—		8.4				—	
367.2		369.9				339.9		423.3			
180		180				180					
547.2	59 12.80	549.9	59 17.63		59 13.33	519.9	59 18.87		59 10.60		59 8.93
59 49.745	0 6.83	59 49.991	0 23.00	59 47.19	0 2.23	59 47.264	0 32.60	59 47.033	59 39.63	59 45.769	0 1.67
49.719		49.965		~~49.96~~ 48.20		47.238		47.007		45.743	
+ 8.08		+ 7.73		+ 9.24		+ 10.24		+ 10.50		+ 11.46	
− .07		− .11		− .01		+ .00		− .05		+ .23	
− 3.39 +.553		− 3.30 .643		− 3.14 +.803		− 3.08 +.863		− 3.04 +.903		− 2.99 +.953	
+ 4.62		+ 4.32		+ 6.12		+ 7.16		+ 7.41		+ 8.70	
59 49.72		59 49.96		59 48.20		59 47.24		59 47.01		59 45.74	
59 54.34		59 54.28		59 ~~56.08~~ 54.32		59 54.40		59 54.42		59 54.44	
58.283		58.223		58.263		58.343		58.363		58.383	

+ 36.94	− 17.09	+ 32.36	− 33.01	+ ~~36.66~~	− 12.74	+ 28.39	− 45.34	+ 36.43	~~−52.60~~ +7.40	+ 36.14	− 15.90
5		5		5		5		5		5	
Ho/c = ∓ 2.81		∓ 2.88		∓ 2.93		∓ 2.94		∓ 2.97		∓ 2.98	
1 10.7	1 50.4	1 17.2	2 5.3	1 10.9	1 46.1	1 16.7	2 10.9	1 12.3	1 33.4	1 11.0	1 49.7
17.1	56.9	20.7	8.1	14.8	52.2	20.9	15.1	13.2	35.1	13.9	51.5
27.8	107.3	37.9	13.4	25.7	98.3	37.6	26.0	25.5	68.5	24.9	101.2
6 13.90	6 53.65	6 18.95	7 6.70	6 12.85	6 49.15	6 18.80	7 13.00	6 12.75	6 34.25	6 12.45	6 50.60
1.56750	1.23274n	1.51001	1.57865n	1.56419	.08778n	1.45317	1.65648n	1.56146	0.84923	1.56632	1.20140
1.43474	1.09998n	1.37725	1.38589n	~~1.29486~~ .42324	.94683	1.31222	1.51553n	1.42051	0.72828	1.42537	1.06045
+27.21	−12.58	+23.84	−24.32	+26.50	−8.55	+20.52	−32.78	+26.35	+5.35	+26.63	−11.49
6 41.11	6 41.07	6 42.79	6 42.38	6 39.35	6 40.30	6 39.32	6 40.22	6 39.08	6 39.60	6 39.08	6 39.11
+54° 16 7.24 7.26	7.28	16 5.56 5.76	5.97	16 9.00 8.52	8.05	16 9.03 8.58	8.13	16 9.27 9.01	8.75	16 9.27 9.25	9.24
−11 55 53	55 13										
1.08520n	1.08490n										
+1125		+3688		+1244		+3377		+3711		+3089	
1.09645	1.09615	1.12208	1.12178	1.09764	1.09734	1.11897	1.11867	1.12231	1.12201	1.11609	1.11579
+12.49	+12.48	+13.25	+13.24	+12.02	+12.51	+13.15	+13.14	+13.25	+13.24	+13.06	+13.05
−.35 −.38	−.08	−.27 −.46	−.29	−.35 −.37	−.04	−.21 −.58	−.53	−.34 −.34	−.02	−.35 −.85	−.06
−.13	−.21	−.14	−.23	−.14	−.22	−.16	−.26	−.14	−.19	−.12	−.18
+12.01	+12.19	+12.84	+12.72	+12.03	+12.25	+12.78	+12.35	+12.77	+13.03	+12.59	+12.81
+54 16 19.25	19.47	16 18.40	18.69	16 21.03	20.30	16 21.81	20.48	16 22.04	21.78	16 21.86	22.05
+2 13.91	14.50	+2 14.47	15.07	+2 14.38	14.99	+2 14.71	15.32	+2 14.80	15.42	+2 14.80	15.48
+ .59		+ .60		+ .61		+ .61		+ .62		+ .68	
−30.94	13.147	−32.00	14.76	−33.26	15.436	−32.60	15.77 80	−32.50	15.97 16.00	−33.98	16.15 8
+1 43.53		+1 43.07		+1 41.73		+1 41.72		+1 41.62		+1 41.50	
+18 2.78	3.00	18 1.47	1.76	18 2.76	2.03	18 3.53	2.20	18 3.66	3.40	18 3.36	3.55
2.89		1.61		2.39		2.86		3.53		3.45	
20.69	18 ~~20.80~~	19.41	~~19.56~~	~~19~~ 19.19 20	~~19.23~~	20.66	~~20.00~~	21.33	~~21.20~~	21.25	~~21.35~~

1874/5

λ
δ

log δ 9.76590
lb .12552
lb' 9.89142

1874 Dec. 21		−.23 1874/5 Nov 20		−.27 Nov 22		−.02 Dec 15	
−.040		Ch f		−.220		−.030	
59 23.0	59 28.0			59 47.2	59 36.6	59 36.1	59 19.4
26.4				50.9	40.0	39.2	22.9
29.6				54.3	43.2	42.8	27.6
36.5				0 1.2		49.7	
40.1				4.5		53.6	
44.0				8.2		57.5	
47.4	0 23.6			11.8	0 35.2	0.6	0 8.8
51.2	27.9			15.3	38.3	3.9	11.7
58.1	33.8			22.6	42.2	11.3	15.3
7.8				25.9		14.4	
5.2				29.6		18.0	
3633				2715		3271	
120				180		300	
4833	59 28.00			915	59 39.43	6271	59 23.30
59 43.~~845~~ 936	0 29.10			0 8.318	0 38.57	59 57.009	0 11.93
43.910				8.292		56.983	
+ 18.46				− 6.09		+ 4.97	
− .05				− .30		− .64	
− 2.88 +1.063				− 3.73		− 3.34	
+ 10.53				− 10.12		+ 1.59	
59 43.91				0 8.29		59 56.98	
59 54.44 58.387				59 58.17		59 58.57	
64.377						58.370	
94 + 15.84	16 − 45.26			+ 28.39	− 30.25	+ 33.71	− 14.92
5		45		45		45	
± 302				− 3.12		− 3.22	
1 26.0	2 10.7	2 28.5	3 7.2	2 29.5	3 15.0	2 22.5	3 2.1
29.0	13.7	35.3	15.3	33.2	18.6	23.9	3.3
55.0	24.4	63.8	22.5	62.7	13.6	6.4	5.4
6 27.50	7 12.20	47 31.90	48 11.25	47 31.35	48 16.80	47 23.20	48 2.70
1.20249	1.65475n			1.45317	1.48073n	1.52776	1.17377n
1.06154	1.51380n			1.34459	1.37215n	1.41918	1.06519n
+11.52	−32.65			+22.11	−23.56	+26.25	−11.62
6 39.02	6 39.55			47 53.46	47 53.24	47 49.45	47 51.08
16 9.33	8.80			34 54.89	55.11	34 58.90	34 57.27
9.06				55.00		58.08	
− 11 55 40	54 55			56 17	55 31	56 25	55 45
				1.08550n	1.08502		
+3468				+14091		+2483	
1.11988	1.11958			1.12641	1.12591	1.11033	1.10583
+18.18	+13.17			+13.38	+13.37	+12.89	+12.88
−.07 −.48	−.52			−.20 −.50	−.23	−.39 −.58	−.06
−.15	−.22			−.25	−.33	−.36	−.45
+12.96	+12.43			+12.93	+12.81	+12.24	+12.37
3 16 22.289	21.23			35 7.82	7.92	35 11.14	9.64
+2 15.28				−16 13.43		−16 14.40	
+ .63 15.91				+ .65 12.78		+ .67 13.73	
−34.39 16.529				−32.90 15.07		~~40.95~~ 36.70	
+1 41.52				−16 45.68		−16 ~~57.48~~ 44.93	
+18 3.81	2.75			+18 22.14	22.24	18 16.66 21.21	15.16
3.28				22.19		~~15.9~~	14.7
21.08	20.55					20.46	

44 Ceph (Ho)
h m s
1 1 33
° '
+78 0
z = − 36 37
− .60

1874
Nov. 26 1 33.49 57' 99.7"
Dec. 1 33.54 −.35 101.0 +1.3
6 32.77 .37 102.2 1.2
11 32.36 .41 103.2 1.0
16 31.93 .43 104.1 .9
21 31.47 46 104.8 .7

1874
α 28.034s
δ +0° 71.0
+4.924
+19.306
log δ 9.28060
lb .10134
lb′ 9.38194
lb′ 9.37375
l sin δ 9.99195

1875
corr δ = −.057s
corr α = +.80"
long δ = +5.14
I = 10.80s
k = −.080s

−04
1874
Nov. 24
−.052
1 1 4.6 0 38.2
9.8 48.5
14.9 1 1.2
19.9
25.9
30.8
37.1 1 49.6
42.5 53.4
47.3 2 6.2
2328
0 49.30
1 35.867 1 57.07
+8.12
25.787 −.21
1 33.651
− ∗ 7.883 −5.58
− 7.80 −7.77 1 28.12
+ 8.08
− .27
− 5.58 −.656 58 24.95
+ 2.23 +2 18.97
1 25.79 +18
− 32.10
1 28.02 ~~1 49 0 8.12~~ .62
32944 79 0 8.62
+36.57 −31.20
20
Kp = ∗ 2.81
4 56.9 0 14.1
57.0 17.0
113.9 31.1
24 56.95 25 15.55
1.56312 1.49415n
0.94506 0.87609n
+8.81 −7.52
25 5.76 25 8.03
+78° 57 42.59 40.32
41.45
−36 37 10 36 51
1.63120n 1.63110n
+1129
1.64249 1.64229
+43.90 +43.89
−.13 −40 −.10
−.54 −.03
+43.23 +43.76
+78 58 25.82 24.08
39.2
+2 13.4 15.1
+2 14.2
+2 15.0 0 9.32
+2 13.91 1380 7.58
+ 1.69 −1379
32.10 +0 8.45
+1 43.50

−05
Nov. 30
−.077
1 4.1 1 22.3
10.3 31.9
14.7
20.0
26.0
31.1
35.8
42.0
47.2
2312
1 27.10
1 25.689
+7.77
25.609 −.26
1 33.230
− ∗ 7.6259 −5.17
− 7.56 −7.53 27.95
+ 7.73
− .39
− 5.17 −.246 22.24
+ 2.17 +2 14.26
1 25.61 +1.8
−33.70
27.78 0 4.60
32.704
−1.41
25
∗ 2.88
0 13.0
13.0
26.0
25 13.00
0.14922n
9.53116n
−0.34
25 12.66
57 35.89
+3692
1.66812 1.6680 z
+46.57 +46.56
− 00 −.04
−.02 −.02
+46.55
58 22.24
40.8
18.6
+2 14.47 0 4.73
+ 1.72 1619 1429
35.70
+1 42.49 34.04

+.01
Dec. 9
−.008
1 1.5 1 9.4
7.4
12.7
18.0
23.3
28.5
34.1
39.6
45.0
2101
1 9.40
1 23.344
+9.28
23.264 +.05
1 32.540
− ∗ 9.284 −4.47
− 9.22 −9.18 28.12
+ 9.24
− .04
− 4.47 +.454 28.89
+ 4.76 +2 14.49
1 23.26 +1.9
−35.80
28.02 0 9.48
32.944
+13.94
20
∗ 2.73
4 59.7
59.3
119.0
24 59.50
1.14426
0.52620
+3.36
25 2.86
57 45.49
+1247
1.64368 1.64357
+44.02 +44.01
−.02 −.31
−.60 −.62
+43.40
58 28.89
42.9
+2 14.0
14.0
14.8 0 9.23
+2 14.38
+ 1.76 1614
35.80 1649 28.54
+1 40.34

−01
Dec. 12
+.003
0 59.7 1 34.3
6.0
11.5
16.4
22.3
27.7
32.3 1 58.9
38.3 8.4
43.6 19.6
2580
60
1980 1 34.80
1 22.000 2 8.97
+10.31
21.920 −.05
1 32.245
− ∗ 10.373 −4.22
− 10.31 −10.27 27.96
+ 10.24
+ .01
− 4.22 +.704 27.65
+ 6.03 +2 14.94
1 21.92 +3.0
−36.30
27.95 0 8.39
32.874
−12.30 −46.97
25
∗ 2.94
0 9.7 0 17.8
9.0 18.7
18.7 36.5
25 9.35 25 18.25
1.08991n 1.67182n
0.46366n 1.04557n
−2.91 −11.11
25 6.44 25 7.14
57 41.91 41.21
41.56
+3379
1.66949 1.66489
+46.24 +46.23
−.01 −.14 −.22
−.02 −.04
+46.21 +45.97
58 28.12 27.18
43.9
+2 15.3 16.2
15.7
16.5 0 8.32
+2 14.71 1647 7.38
+ 1.76 1649
36.30 0 7.85
+1 40.20 27.16

−.03
Dec. 14
−.035
1 0.2 0 29.0
5.6 35.6
11.1 42.1
16.0
21.6
26.9
32.3
38.0
44.5
1962
0 35.57
1 21.800
+10.48
21.720 −.15
1 32.1208
− ∗ 10.4036 −4.05
− 10.34 −10.30 ~~27.77~~ 28.01
28.01
+ 10.50
− .18
− 4.05 +.874 27.68
+ 6.27 +2 14.99
1 21.72 +2.0
−36.70
27.99 0 7.97
32.914
+46.23
20
∗ 2.97
4 57.2
53.9
111.1
24 55.55
1.66492
1.03867
+10.93
25 6.48
57 41.87
+3722
1.66142 1.66822
+46.61 +46.59
−.21 −.40
−.59 −.80
+45.81
58 27.68
43.8
+2 16.1
16.1
16.8 0 7.56
+2 14.80 1658
+ 1.78 1639
36.70
+1 26.80

+.18
Dec. 16
+.183
0 57.9 0 32.5
3.4
9.0
14.5
19.7
25.2
30.5 1 36.4
35.9 47.4
40.9 55.5
2370
60
1770 0 32.50
1 19.667 1 46.43
+11.47
19.587 +.93
1 31.951
− ∗ 12.352 −3.88
− 12.30 −12.26 28.11
+ 11.46
+ .84
− 3.88 +1.044 29.47
+ 8.42 +2 15.03
1 19.59 +2.0
−37.00
28.01 0 9.50
32.934
+47.17 −26.76
20
∗ 2.98
4 54.4 0 12.7
51.5 9.4
105.9 22.1
24 52.95 25 11.05
1.67367 1.42749n
1.04742 0.80124n
+11.15 −6.33
25 4.10 25 4.72
57 44.25 43.63
43.94
37 14 36 56
+3891
1.66215 1.66202
+45.94 +45.92
−.22 −.40 −.07
−.49 −.02
+45.23 +45.83
58 27.98 29.46
44.1
+2 14.6 14.6
14.6
14.4 0 9.07
+2 14.80 1659 9.05
+ 1.77 1769
37.00 0 9.06
+1 39.59 28.37

1875
32.960
+0 26.40
+4.927
+19.304

9.28060
.12552
9.40612

1875

		m	s		°	"	
Nov.	26	1	38.74		0	61.2	
Dec.	1		38.40	-.34		62.5	+1.3
	6		38.04	.36		63.7	1.2
	11		37.64	.40		64.7	1.0
	16		37.22	.42		65.6	.9

-.01
1874
Dec. 21
-.040
0 57.1 1 37.2
22
7.7
12.1
18.3
23.7
29.1
35.3
40.2

2257
60
1657 1 37.20
1 18.411

18.331
1 31.484 +1350
− 13.181 -.05
− 13.1005
+ 13.46 -3.41
+ ~~8.89~~ 1 28.38
− .20
− 3.41 +1.514
+ 9.85
1 18.33 58 30.28
+2 15.39
1 28.18 33.104 +2.0
27.950 −37.70
28.034 0 9.97
−.084

−18.79
25

0 10.4
7.2
17.6
25 8.80
− 3.02
1.27393n
0.64768n
−4.44
25 4.36

57 43.99

+3470
1.66570 1.66580
+46.34 +46.33

-.03 ~~-.02~~
-.02 -.05
+46.29
58 40.28
448
+2 14.5
+2 15.3
+2 15.28 0 9.67
+ 1.81 17.09
37.70 18.69
+1 34.39
2898

-.27
1875 +
Nov 22
-.220
1 1 21.0
24.3
30.5
35.9
41.3
45.8
50.8
56.4
1.9
8.1

2950
4150 1 21.00
1 46.111

46.081
1 39.03 38.98 ± 6.05
+ 7.085 -1.39
+ ~~7.11~~ ~~7.06~~ 7.11
-6.02
− 6.09 32.57
− 1.13
− 6.02
− 13.24
1 46.03 17 12.85
−16 13.27
32.79 + 1.8
32.450 −33.40
32.960 0 27.68
−.170

+25.11
5
− 3.12
1 14.3
14.5
14.8
6 15.90

1.39985
0.80597
+6.40
6 22.30

16 26.05

−36 37 32
1.63130n
+4094
1.67214 1.67204
+47.00 +46.99

-.07 ~~-.10~~
-.13 -.20
+46.80
17 12.85
1 0.1
−16 12.7
−16 11.9
−16 13.43 0 27.59
+ 1.87 11.56
33.70 14.39
−16 45.26

1874

β Androm.

h	m	s
1	2	44
	°	′
+ 34		57

$\mathfrak{z}$ = + 7 26
+ .13

1874	m s		′ ″	
Nov. 16	2 44.19		57 34.4	
21	44.17	−.02	35.0	+0.6
26	44.14	.03	35.5	.5
Dec. 1	44.10	.04	35.9	.4
6	44.06	.04	36.3	.4
11	44.01	.05	36.5	.2
16	43.95	.06	36.7	.2
21	43.88	.07	36.8	.1
26	43.81	.07	36.8	.0

1874
s
α 40.956
δ +57 37.21
$\frac{d\alpha}{dt}$ +3.342
$\frac{d\delta}{dt}$ +19.215

cos δ 9.91363
ll .10134
ll′ 0.01497

ll′ .00678

cos δ 9.75805

corr α =
corr δ =

tang δ = +.70
s
I = 2.52
s
K = −.019

	−04 1874 Nov. 24		−.06 Nov. 26		+.02 Dec. 2		+.01 Dec. 9		−.03 Dec. 14		+18 Dec. 16	
	−.052		−.058		+.012		−.008		−.035		+.163	
1	2 —		2 21.0	2 12.1	2 20.7	2 8.2	2 19.7	2 9.4	2 18.4	2 8.1	2	2 42.7
	—		23.5	14.5	23.2	11.0	22.2	11.8	20.8	10.9	27.3	45.0
	—		26.2	17.2	25.8	13.5	24.7	14.3	23.4	13.0	28.6	47.6
	31.2		31.1		30.8		29.8		28.3		29.8	
	33.5		36.6		33.3		32.9		30.7		31.2	
	36.1		36.1		35.8		34.6		33.5		32.4	
	38.6	2 43.9	38.7		38.3	2 59.4	37.3	2 57.3	36.0	2 39.6	33.6	3 13.3
	41.0	46.2	41.2		41.0	3 2.4	39.7	59.8	38.4	42.2	35.0	17.1
	—	48.8	46.4		43.9	4.4	44.7	3 2.2	43.7	44.7	36.2	19.2
	—		48.8		48.5		47.2		46.0		37.5	
	—		51.4		51.0		49.8		48.4			
	1804		40.10	2 14.60	39.43	2 10.90	38.20	2 11.83	36.78	2 10.67	29.16	2 45.10
2	36.080	2 46.30	2 36.455		2 35.845	3 2.07	2 ~~34.816~~ 34.727	2 59.77	2 33.436	2 42.17	2 32.400	3 16.53
	36.061	2	36.436	5	35.826		34.709		33.417	9	32.381	7
2	44.15	+8.1~~1~~	2 44.14	+7.8~~7~~	2 44.09	+8.21	2 44.03	+9.28	2 43.978	+10.48	2 43.95	+11.46
	−8.09	−.03	−7.70	−.04	−8.26	+.01	−9.32	+.01	−10.556	−.02	−11.57	+.134
	+ 8.08	−3.19	+ 7.82	−3.18	+ 8.19	−3.13	+ 9.24	−3.07	+ 10.50	−3.02	+ 11.46	−2.99
	— .03	2 40.96	— .04	4~~1.09~~ .09	+ .01	40.92	— .00	40.93	— .02	40.56 .87	+ .11	41.00
	− 3.19 +.152		− 3.18 +.162		− 3.13 +.212		− 3.07 +.272		− 3.02 +.322		− 2.99 +.352	
	+ 4.86		+ 4.60		+ 5.07		+ 6.20		+ 7.46		+ 8.58	
	2 36.06		2 36.44		2 35.83		2 34.71		2 33.42		2 32.38	
		56 21.12		19.94		20.50		21.44		22.34		21.17
2	40.92	+2 13.97	41.04	+2 15.07	40.90	+2 14.43	40.91	+2 14.49	40.88	+2 14.99	40.96	+2 15.03
	44.262	− .4	44.382	− .5	44.242	− .4	44.252	− .5	44.222	− .4	44.302	− .5
	+	− 28.10		− 28.30		− 28.80		− 29.30		− 29.40		− 29.50
	+34	57 6.59		57 6.21		57 5.73		57 6.13		57 7.53		57 6.20
		− 10.42	+ 21.85		+ 24.94	− 26.23	+ 22.99	25.04 − 24.95	+ 22.77	− 8.73	− 12.70	− 44.13
	25		25		25		25		25		25	
m =	−281		−283		−289		−293		−297		−298	
	2 25.1		1 53.5		1 48.4	2 40.3	1 51.7	2 39.9	1. 52.1	2 23.2	2 29.0	3 1.5
	34.9		1.4		0.0	52.1	58.9	49.0	57.6	28.6	33.9	5.4
	60.0		11.49		10.84	9.24	11.06	8.89	10.97	5.18	6.29	6.9
	27 30.00		26 57.45		26 54.20	27 46.20	26 55.30	27 44.45	26 54.85	27 25.90	27 31.45	28 3.45
		1.01787n	1.33945		1.39690	1.41880n	1.35984	1.39863n	1.35736	0.94101n	1.10380n	1.44473n
		1.03284n	1.35442		1.41187	1.43377n	1.37481	1.41360n	1.36414	0.94779n	1.11058n	1.65751n
		−10.78	+22.62		+25.81	−27.15	+23.70	−25.92	+23.13	−8.87	−12.90	−44.83
		27 17.22	27 20.07		27 20.01	27 19.05	27 19.00	27 18.53	27 17.98	27 17.03	27 18.55	27 18.62
	+34°	55′ 29.13″	28.28		55 28.34	29.30	55 29.35	29.82	55 30.37	31.32	55 29.80	29.73
					28.82		29.58	30.19	30.84	30.56	29.76	
				+7	24 47	25 39						
	0.87460	0.87550										
	+1131		+2947		+2105		+1251		+3727		+3091	
	.88591	.88681	.90007	~~.90497~~	.89565	.89655	.88711	.88801	.91187	.91277	.90551	.90641
	~~−7.69~~	− 7.71	− 8.02	− 8.03	− 7.86	− 7.88	− 7.71	− 7.73	− 8.16	− 8.18	− 8.04	− 8.06
	−.15	−.03	−.11 −.16	−	−.16 −.45	−.17	−.14 −.42	−.16	−.13 −.33	−.02	−.04 −.54	−.49
	~~−.27~~	−.27	−.21 −.32		−.23		−.34	−.23	−.32	−.23	−.29	−.25 −.31
		−8.01	−8.34		−8.25	−8.39	−8.08	−8.21	−8.52	−8.49	−8.33	−8.86
		55 21.12	19.94		55 20.09	20.91	55 21.27	21.61	55 21.85	22.83	55 21.47	20.87
	~~57 35.3~~	57 35.3	35.5		36.0		36.0		36.6		36.7	
		+2 14.2	+2 15.6		+2 15.9	15.1	15.2	14.9	14.8	13.8	15.2	15.8
	+2 14.2		15.6		15.5		15.1		14.2		15.5	
	+2 13.91 13.55		+2 15.01	57 6.29	+2 14.27	57 5.19	+2 14.38	57 5.97	+2 14.80	57 6.87	+2 14.80	57 6.39
	− .36	57 6.57	.36 14.65		— .34 13.90	6.01	.38 14.00	6.31	.38 14.42	7.85	.38 14.42 10.29	5.79
	28.10 −8.89		28.30 9.09		28.80 13.59 +57	5.60	29.30 10.09 57	6.2914	29.40 10.19 57	7.36	29.50 57	6.09
	+1 45.45	25.78	+1 46.35	25.50	+1 45.10	24.81	+1 44.70	25.~~50~~ 35	+1 45.02	26.57	+1 44.92	25.30

1875

	m	s		° ′	″	
Nov. 16	2	47.86		57	55.9	
21		47.83	−.03		56.5	+.6
26		47.80	.03		57.0	.5
Dec. 1		47.76	.04		57.4	4
6		47.72	.04		57.8	4
11		47.67	.05		58.1	.3
16		47.62	.05		58.3	.2
21		47.56	.06		58.4	.1
26		47.49	.07		58.4	.0

1875

	s	1874.0 α	δ	1875.0 α	δ
α	44.298	40.92		44.21	
δ	+57 26.42	41.04		.27	
$\frac{d\alpha}{dt}$	+3.342	40.90			
$\frac{d\delta}{dt}$	+19.214	.91			
		.88			
		.96			
log δ	9.91363	.83			
16	.12552	40.920		44.240	
26′	0.03916	.956	7.21	.298	26.42
		−.036		−.058	

−.01 1874 Dec. 21 −.040 | −.27 1875 Nov 22 −.220 + | −.02 Dec 15 −.030 +

2 2 38.5 2 39.0 2 32.0 2 27.52 16.7
25.3 40.5 41.4 34.3 30.2 19.0
26.6 43.2 43.9 36.4 32.7 21.4
28.0 48.9 37.5
29.1 51.5 40.0
30.4 54.0 42.7
31.5 2 57.6 56.5 3 15.1 45.2 21 51.8
32.8 59.2 59.1 17.8 47.7 54.0
34.1 3 0.2 4.1 20.2 52.8 56.1
35.3 6.5 55.3
9.0 57.8
27 3 1
4139 4694
180

2 40.73 59.39 2 34.23 2 19.03
2 30.344 2 59.00 2 53.991 3 17.70 2 42.673 2 53.97
30.325 +13.52 53.972 −~~+6.05~~ 42.654 +4.956
2 43.88 −.01 2 47.82 −.19 2 47.63 −.01
−13.56 +6.15 −4.98
−2.92 −3.52 −3.33
+ 13.46 40.90 − 6.09 44.21 + 4.97 44.27
− .03 .90 − .15 − .02
− 2.92 ~~+.38~~ − 3.52 − 3.33
+ 10.51 +4.22 − 9.76 + 1.62
2 30.32 55 21.61 2 53.97 14 9.52 2 42.65 12.19
+2 15.39 −16 13.27 −16 14.12
2 40.83 44.72 −.4 44.21 − .4 44.27 − .5
40.920 −29.60 − 30.20 44.240 −31.80
40.956 57 7.00 57 25.65 .298 57 25.77
−.036 −.058

− 10.39 − 28.66 +19.76 −28.71 +23.64 −11.30
25 5 5
−3.02 −3.12 −3.22
2 26.5 2 43.0 3 8.1 3 55.4 3 2.2 3 40.3
33.9 48.9 9.9 56.7 1.9 40.3
60.4n 91.9 18.0 12.1 4.1 6
27 30.20 27 45.95 8 9.00 8 56.05 8 2.05 8 40.30

1.01662n 1.45728n 1.29579 1.37493n 1.37365 1.05308n
1.02340n 1.46406n 1.33494 1.41408n 1.41280 1.09223n
− 10.56 − 29.11 +21.13 −25.95 + 25.28 −12.37
27 19.64 27 16.84 8 30.13 8 30.10 8 27.38 8 27.93

55 28.71 31.51 14 18.22 18.25 14 21.02 20.42
30.11 18.23 20.72
+7 25 23 25 39 24 21 25 8 24 14 24 32
0.87420 0.87490
+3471 +4096 +2483
.90931 .91021 .91556 .91646 .89943 .90033
−8.11 −8.13 −8.23 −8.25 −7.93 −7.95

−.03 −.38 −.21 −.09 −.47 −.15 −.15 −.59 −.03
−.25 −.27 −.32 −.39 −.45 −.55
−8.39 −8.61 −8.64 −8.79 −8.53 −8.53
55 20.32 22.90 14 9.58 9.46 14 12.49 11.89
36.8 57 56.6 58.2
+2 16.5 13.5 −16 13.0 12.5 −16 14.3 13.7
+2 15.2 −16 13.0 14.0
+2 15.28 57 5.61 −16 13.43 57 25.55 − 14.40 57 25.88
− .39 14.89 8.19 − .40 13.83 25.43 − .41 14.81 25.28
29.60 10.39 30.20 10.99 31.80 12.59
+1 45.29 +57 6.90 −16 44.03 57 25.49 −16 46.61 25.58
2 6.11

42.

τ Piscium

h	m	s
1	4	47
	°	′
	+29	26

ʒ = +.12 57
+ .22

1874

Nov. 16	4ᵐ 46.77ˢ		25′ 38.5″		
21	46.76	−.03	38.9	+.4	
26	46.73	.03	39.3	.4	
Dec. 1	46.70	.13	39.6	.3	
6	46.66	.04	39.8	.2	
11	46.61	.05	40.0	.2	
16	46.56	.05	40.1	.1	
21	46.51	.05	40.1	.0	
26	46.45	.06	40.1	.0	

1874
s
α 43.581
δ +25 12.07
$\frac{d\alpha}{dt}$ +3.291
$\frac{d\delta}{dt}$ +19.225

l cos δ 9.98998
l.6 .10134
l.6′ 0.04132

l.6′ 0.03313

l sin δ 9.69144

cons. =
corr δ =

log δ = +.56
I = 2.37
K = −.018

−.04 1874 Nov. 24 −.052				−.06 Nov. 26 −.058				−.05 Nov. 30 −.077				+.02 Dec. 2 +.012				+.01 Dec. 9 −.008				−.06 Dec. 10 −.090			
1 4	24.4	4	10.7	4	24.4	4	12.2	4	24.7	4	12.9	4	24.3	4	9.7	4	23.0	4	12.3	4	22.7	4	8.0
	26.7		13.4		27.0		14.0		27.0		14.9		26.6		12.7		23.5		14.5		25.0		9.9
	29.1		15.2		29.2		16.0		29.4		17.3		29.0		14.7		27.8		17.3		27.3		12.0
	33.9				34.0				34.2				33.8				32.6				32.1		
	36.3				36.5				36.6				36.0				35.0				34.6		
	38.6				38.8				38.4				38.4				37.3				36.9		
	40.9	4	54.6		41.1				41.2	4	49.3		40.8	5	2.0		39.7	4	53.0		39.2		47.4
	43.2		56.8		43.5				43.6		52.0		43.3		5.0		42.0		55.3		41.6		49.1
	~~47.9~~		59.3		48.2				48.0		54.0		47.8		7.3		46.8		57.9		46.6		50.6
	50.3				50.5				50.7				50.3				49.1				48.7		
	53.0				53.0				53.0				52.6				51.6				51.1		

	4243	4	13.10		4262	4	14.07		4268	4	15.03		4229	4	12.37		4104	4	14.70		4058	4	9.97
4	38.573	4	56.90	4	38.745			4	38.800	4	(35.10)	4	38.445	5	4.77	4	37.309	4	55.40	4	36.891	4	49.03
	38555		+8.12		38727		+7.87		38782		+7.77		38427		+8.21		37291		+9.28		36873		+9.67
4	46.74		−.02	4	46.73		−.03	4	46.71		−.03	4	46.69		+.01	4	46.63		+.01	4	46.62		−.03
	−8.19				−8.01				−7.93				−8.26				−9.34				−9.75		
			−3.16				−3.15				−3.13				−3.11				−3.05				−3.04
+	8.08	4	43 ~~40~~ 50	+	7.82		43.42	+	7.73		43.39	+	8.19		43.54	+	9.27		43.53	+	9.60		43.47
−	.03		.50	−	.03			−	.04			+	.01			−	.00			−	.05		
−	3.16		+.131	−	3.15		+.141	−	3.13		+.161	−	3.11		+.181	−	3.05		+.241	−	3.04		+.251
+	4.89			+	4.64			+	4.56			+	5.09			+	6.22			+	6.51		
4	38.55	23	25.97	4	38.73		26.86	4	38.78		22.37	4	38.43		26.01	4	37.29		26.15	4	36.87		25.85
			+2 13.97				+2 15.07				+2 14.26				+2 14.43				+2 14.49				+2 13.64
4	43.44		−.7		43.37		−.7		43.34		−.7		43.52		−.7		43.51		−.7		43.38		−.7
	46.731		−27.10		46.661		−27.20		46.631		−27.50		46.811		−27.60		46.801		−27.80		46.671		−27.80
	+29	25	12.14			25	14.03			25	8.43			25	12.14			25	12.14			25	12.99

	+25.47		−18.33		+24.67				+23.77		−3.70		+26.07		−26.33		+22.61		−18.09		+26.92		−12.14
55				55				55				55				55				55			
$\frac{d\alpha}{dt}$ =	−2.81				−2.83				−2.88				−2.89				−2.93				−2.93		
3	35.7	4	23.8	3	35.7			3	41.9	4	41.9	3	34.3	4	32.2	3	40.1	4	23.1	3	35.2	4	16.9
	45.2		32.5		43.7				47.9		48.0		43.5		41.9		47.1		29.7		42.8		23.9
	80.9		56.3		79.4				89.8		89.9		77.8		74.1		87.2		52.8		78.0		40.8
58	40.45	59	28.15	58	39.70			58	44.90	59	44.95	58	38.90	59	37.05	58	43.60	59	26.40	58	39.00	59	20.40

1.40603	1.26316	1.39217		1.37603	0.56820n	1.41614	1.42045n	1.35430	1.25744n	1.43008	1.08422n
1.44735	1.30448	1.43349		1.41735	0.60952n	1.45746	1.46177n	1.39562	1.29876n	1.47140	1.12554n
+28.01	−20.16	+27.13		+26.14	−4.07	+28.67	−28.99	+24.87	−19.89	+29.61	−13.35
59 8.46	59 7.99	59 6.83		59 11.04	40.88	59 7.57	59 8.06	59 8.47	59 7.51	59 8.61	59 7.05
23 39.89 40.82 1	23 40.36	23 41.52		23 37.31		23 40.78 40.52	40.27	23 39.88 40.36	40.84	53 39.74 2 40.52	41.30

+12 56 32 57 30

1.12160	1.12220										
+1135		+2835		+3698		+2108		+1258		+2729	
1.13295	1.13355	1.14995	1.15055	1.15858	1.15918	1.14268	1.14328	1.13418	1.13478	1.14889	1.14548
−13.58	−13.60	−14.12	−14.14	−14.41	−14.43	−12.89	−13.91	−13.62	−13.64	−14.09	−14.11
−.15 −.56	−.08	−.14 ~~−.27~~		−.12 ~~−.26~~		−.16 −.61	−.16	−.11 −.58	−.08	−.16 −.57	−.03
−.41	−.49	−.40 −.54		−.41 −.53		−.40	−.51	−.44	−.53	−.43	−.52
−14.14	−14.17	−14.66		−14.94		−14.45	−14.58	−14.14	−14.25	−14.68	−14.66
23 25.75	26.19	23 26.86		23 22.37		23 26.33	25.69	23 25.41	26.59	53 25.076	26.64
25 39.2		39.3		39.6		39.7		39.9		39.9	
+2 13.5	13.0	12.4		17.2]		+2 13.4	14.0	14.2	13.3	14.8	13.3
+2 13.2		12.4				13.7		13.7		14.0	
+2 13.1	25 11.95	+2 15.01	25 14.05	+2 14.47	25 8.71	+2 14.27	25 12.37	+2 14.38	25 11.65	+2 15.54	55 12.16
− .61	13.30 12.39	− .62	14.39	− .63	13.84	− .63	13.64 11.73	− .64	13.74 12.53	− .64	14.00 13.74
− 27.10	7.88	27.20	7.98	27.50	8.28	27.60	8.38	27.80	8.58	27.80	8.68
+1 46.20	+25 12.17	+1 47.19	33.27	+1 46.34	27.93	+1 46.04	25 12.05	+1 45.94	25 12.09	+1 47.10	12.85
	31.39						31.27		31.31		32.17

1875
α 46.873
δ +25 31.29
dα/dt +3.292
dδ/dt +19.224

log cos δ 9.93998
log b .12552
log b′ 0.06550

1875

		m	s		° ′	″	
Nov.	16	4	50.41		25	60.0	
	21		50.39	-.02		60.4	+.4
	26		50.36	.03		60.8	.4
Dec.	1		50.33	.03		61.1	.3
	6		50.29	.04		61.4	.3
	11		50.25	.04		61.5	.1
	16		50.20	.05		61.6	.1
	21		50.14	.06		61.6	0
	26		50.08	.06		61.6	0

-.01		-.03		+18		1874 -.01		1875 -.27 ×		-.02	+
Dec. 12		Dec 14		Dec. 16		Dec. 21		Nov 22		Dec 15	
+.003		-.035		+.163		-.040		-.220		-.030	
4 22.0	4 13.0	4 21.9	4 10.6	4 20.7	4 12.0	4 18.6	4 6.1	4 42.2	4 34.9	4 30.94	22.9
24.4	16.3	24.1	13.0	23.1	14.0	21.0	10.8	44.7	36.9	33.3	26.4
26.7	19.0	26.6	14.8	25.5	16.1	23.3	13.3	47.0	39.0	35.7	28.1
31.6		31.3		30.2		28.1		51.7		40.4	
33.7		33.6		32.5		30.6		54.1		42.8	
36.3		36.0		34.9		32.8		56.4		45.2	
38.6	4 58.1	38.5	4 49.4	37.3	4 47.8	35.1	4 47.7	58.8	5 26.4	47.6	5 1.5
41.0	0.7	40.7	51.8	39.6	50.5	37.6		1.2	28.5	50.0	3.9
45.7	3.6	45.6	54.0	44.4	52.5	42.2		5.7	30.2	54.6	5.9
48.1		48.0		46.8		44.6		8.3		56.9	
50.6		50.4		49.1		47.1		10.7		59.4	
3987	4 16.10	3968	4 12.80	3841	4 14.03	3610	4 10.07	3808		4968	
4 36.245	5 08.04	36.073 36.064	4 51.73	4 34.918	4 50.27	4 32.818	4 47.70	240			
								6208	4 36.93		4 25.90
								4 56.436	5 28.37	4 45.164	5 3.77
36.227	+10.31	36.046	+10.49	34.900	+11.47	32.800	+13.50	56.418	~~+6.00~~	45.146	+4.96
4 46.60	-.01	4 46.58	-.02	4 46.56	+.10	4 46.51	-.01	4 50.38	-.15	4 50.21	-.01
-10.37	-3.02	-10.53	-3.00	-11.656	-2.98	-13.71	-2.93	+6.04	-3.51	~~±4.94~~ 5.06	-3.34
+ 10.24	43.51	+ 10.50	43.52	+ 11.46	43.49	+ 13.46	4 43.36	- 6.09	4 46.71	+ 4.94	46.76
+ .00		- .02		+ .04		- .02		- .12		.02	
- 3.02 +.271		- 3.00 +.291		- 2.98 +.311		- 2.93 +.361		- 3.51		- 3.34	
+ 7.22		+ 7.48		+ 8.57		+ 10.51		- 9.72		+ 1.61	
4 36.23	23 26.59	4 36.05	26.02	4 34.90	26.01	4 32.80	23 26.75	4 56.42	42 13.68	4 45.15	16.04
	+2 14.94		+2 14.99		+2 15.03		+2 15.39		-16 13.27		-16 14.12
4 43.45	-.7	43.53	-.7	43.47	-.7	43.31	-.8	46.70	-.7	46.76	-.8
46.741	-27.90 29.70	46.821	-28.00	46.761	-28.00	43.400 46.601	-28.00		-29.20	46.730	-30.30
	25 ~~11.13~~ 12.93		25 12.31		25 12.34	5.81 +.179	25 13.34		25 30.51	8.73 -.143	30.82
55 +20.14	-21.56	55 +23.27	-15.66	55 +20.89	-15.35	55 +22.75	-14.88	35 +19.51	-31.93	35 +19.26	-18.61
-2.94		-2.97		-2.98		-3.02		-3.12		-3.22	
3 42.2	4 29.9	3 40.6	4 22.2	3 42.9	4 22.2	3 40.0	4 21.3	4 55.3	0 54.9	4 55.5	0 38.5
48.8	36.0	43.5	24.6	47.1	26.4	43.9	24.9	58.5	58.9	55.3	40.4
91.0n	65.9	84.1	46.8	90.0	48.6	83.9	46.2	13.8	13.8	8	78.9
58 45.50	59 32.95	58 42.05	59 23.40	58 45.00	59 24.30	58 41.95	59 23.10	39 56.90	40 56.90	39 55.40	40 39.45
1.30406	1.39023n	1.36661	1.19507n	1.31994	1.18611n	1.35698	1.17260n	1.29026	1.50420n	1.28466	1.26975n
1.33719	1.42336n	1.39974	1.22820n	1.33307	1.21924n	1.39011	1.20573n	1.35576	1.56970n	1.35016	1.33525n
+21.74	-26.51	+25.10	-16.91	+22.55	-16.57	+24.55	-16.06	+22.69	-37.13	+22.40	-21.64
57 7.24	59 6.44	59 7.15	59 7.49	59 7.55	59 7.73	59 6.50	59 7.04	40 19.59	40 19.77	40 17.80	40 17.81
23 41.11	41.91	23 41.20	40.86	23 40.80	40.62	23 41.85	41.31	42 28.76	28.58	42 30.55	30.54
41.51		41.03		40.71		41.58		28.67		30.54	
						56 35	57 16	56 9	57 9	56 7	56 51
								1.12140	1.12200		
+3385		+3738		+3093		+3472		+4099		+2483	~~1468~~3
1.15545	1.15605	1.15898	1.15960	1.15253	1.15313	1.15632	1.15692	1.16239	1.16299	1.14623	1.14683
-14.30	-14.32	-14.42	-14.44	-14.21	-14.23	-14.33	-14.35	-14.53	-14.55	-14.80	-14.02
-.09 -.60	-.14	-.13 -.57	-.05	-.09 -.47	-.05	-.12 -.49	-.05	-.08 -.44	-.23	-.08 -.49	-.08
-.44	-.54	-.44	-.53	-.37	-.44	-.37	-.44	-.49	-.09	-.74	-.09
-14.83	-15.00	-14.99	-15.02	-14.67	-14.72	-14.82	-14.84	-15.10	-14.84	-14.82	-14.19
23 26.28	26.91	23 26.21	25.84	23 26.13	25.90	23 27.03	26.47	42 13.66	13.71	42 15.73	16.35
4.00		4.01		4.01		4.01		26 0.5		16	
+2 1.37	1.31	1.39	1.43	1.40	1.42	1.31	1.36	-16 1.32	1.32	1.41	1.48
+2 1.34		1.41		1.41	12.28	1.33		-16 1.32		1.44	
+2 14.71	25 12.45	+2 14.80	25 12.36	+2 14.80	25 ~~13.58~~	+2 15.28	25 13.65	-16 13.43	25 30.35	— 14.40	25 30.33
— .64 1407 868	13.08	— .65 1415	11.99	— .65 1413	~~13.25~~	.66 1462	13.19	— .68 1411	30.41	— .70 1510	30.95
27.90		28.00 8.78		28.00 8.78	~~12.05~~	28.00 8.78		29.20 9.98		30.30 11.08	
∓1 46.17	+25 12.76	∓1 46.15	25 12.17	∓1 ~~47.15~~ 46.15	25 ~~12.16~~ 12.16	∓1 46.62	25 13.42	-16 ~~43.31~~	25 30.38	-16 45.40	25 30.64
31.98		31.39			32.68 31.38	32.64					

37 Ceti

h	m	s
1	8	05
	°	′
	−8	36
ƺ	+ 50	59

prin ƺ = +.78

	1874	1875
α		8 6.29
δ		35 43.86
dα/dt		+3019
dδ/dt		+1944
l cos δ	9.99509	9.99509
l.6	.10134	.12552
l.6′	.09643	0.12061
l.6′	.08824	
l sin δ	9.17474n	

cos α =
cos δ =
tang δ = −.15
I = 2.08 s
k = −.016 s

1874 Nov. 24	Nov. 30	Dec. 2	Dec. 9	Dec. 10	Dec. 12
−.052	−.077	+.012	−.008	−.090	+.003
1 7 45.9 48.0 50.0 54.3 56.3 58.4 8 0.5 2.6 6.7 8.9 10.9	7 46.1 48.3 50.4 54.5 56.7 58.8 8 0.9 2.8 7.0 9.0 11.2	7 45.7 47.8 49.9 54.1 56.2 58.3 8 0.4 2.3 6.6 8.7 10.9	7 44.5 46.8 48.9 53.0 55.0 57.2 59.2 8 1.4 5.5 7.6 9.7	7 44.3 46.4 48.5 52.7 54.7 56.8 59.0 8 1.2 5.0 7.3 9.4	7 43.7 45.8 48.0 52.0 54.0 56.2 58.3 8 0.4 4.6 6.7 8.6
7 35.6 37.9 39.5 8 19.4 21.1 23.1	7 34.0 36.9 39.0 8 21.3 24.0 26.1	7 34.3 36.8 38.7	7 36.6 38.6 40.9 8 15.2 17.7 19.7	7 36.1 38.6 40.5 8 10.1 11.5 12.9	7 33.0 35.3 37.8 8 7.0
3425 300 6425	3457 300 6457	3409 300 6409	3888 240 6288	3853 240 6253	3783 240 6183
7 58.409 58.383	7 58.741 40 58.684	7 58.264 58.248	7 57.164 57.148	7 56.845 56.829	7 56.209 56.193
7 37.67 8 21.20	7 36.63 8 23.80	7 36.60	7 38.70 8 17.53	7 38.40 8 11.50	7 35.37 8 7.00
+ 8.08 + .01 − 3.21 −.191 + 4.88 7 58.39	+ 7.73 + .01 − 3.18 −.161 + 4.56 7 58.608	+ 8.19 − .00 − 3.16 −.141 + 5.03 7 58.25	+ 9.27 + .00 − 3.11 −.091 + 6.16 7 57.15	+ 9.60 + .01 − 3.11 −.091 + 6.50 7 56.83	+ 10.24 − .00 − 3.09 −.071 + 7.15 7 56.19
8 3.27 6.289	8 ~~3.16~~ 24 6.259	8 3.28 6.299	8 3.31 6.329	8 3.33 6.349	8 3.34 6.359

Nov. 24		Nov. 30		Dec. 2		Dec. 9		Dec. 10		Dec. 12	
55 + 20.74	− 22.79	55 + ~~22.16~~ .07	− ~~25.11~~ .10	55 + 21.66		55 + 18.46	− 20.37	55 + 18.44	− 14.66	55 + 20.84	− 10.79
ƺ = − 2.81		− 2.88		− 2.89		− 2.93		− 2.93		− 2.94	
3 57.7 13.9 131.6	4 51.6 7.4 119.0	3 55.8 7.5 123.3	4 53.1 4.9 118.0	3 55.7 11.9 127.6		4 4.1 18.7 22.8	4 51.7 5.0 116.7	4 1.1 16.4 17.5	4 39.9 55.6 95.5	3 58.0 11.9 129.9	4 34.8 50.1 84.9
59 5.80	59 59.50	59 1.65	59 59.00	59 3.80		59 11.40	59 58.35	59 8.75	59 47.75	59 4.95	59 42.45
1.31681 1.41324 +25.70	1.35774n 1.45417n −28.46	1.34380 1.44023 +27.56	1.39967n 1.49610n −31.34	1.33566 1.43209 +27.04		1.26623 1.36266 +23.05	1.30899n 1.40542n −25.43	1.26576 1.36219 +23.02	1.16613n 1.26256n −18.30	1.31890 1.40714 +25.54	1.03302n 1.12126n −13.22
59 31.70	59 31.04	59 29.21	59 27.66	59 ~~31.76~~ 30.84		59 34.45	59 32.92	59 31.77	59 29.45	59 30.49	59 29.23
−8 36 43.35 43.02	42.69	36 40.86 40.08	39.31	36 ~~48.41~~ 41.49		36 46.10 45.33	44.57	36 43.42 42.26	41.10	36 42.14 41.51	40.88
+50 56 59 1.85040 + 11.40	57 52 1.85070	+ 3704		+ 2111		+ 1267		+ 2734		+ 3391	
1.86180 −72.75 − 1	1.86210 −72.80 − 1	1.88744 −77.17 − 1	1.88774 −77.22 1	1.87151 −74.39 − 1	1.87181 −~~74.44~~ − 1	1.86307 −72.96 0	1.86337 −73.01 0	1.87774 −75.46 − 1	1.87804 −75.52 − 1	1.88431 −76.61 − 1	1.88461 −76.67 − 1
+.03 −.47 −.45	+.03 −.55	+.03 −.46 −.44	+.04 −.55	+.03 ~~.21~~ −.45 −.42		+.02 −.52 −.50	+.03 −.60	+.02 −.52 −.49	+.01 −.58	+.03 −.50 −.49	+.01 −.56
−1 13.18 −8 37 56.53	−1 13.33 56.02	−1 18.59 37 58.45	−1 17.78 57.05	−1 15.82 38 ~~3.22~~ 56.31		−1 13.44 37 59.54	−1 13.58 58.15	−1 15.94 37 59.36	−1 16.10 57.20	−1 17.08 37 59.22	−1 17.23 58.11
+2 13.91 2.19 11.72 − −17.97 +1.47		+2 14.47 2.24 12.23 − −17.38 +2.06		+2 11.27 2.25 13.02 − −17.19 +2.25		+2 14.38 2.28 12.10 − −16.53 +2.91		+2 15.54 2.28 13.26 − −16.44 +3.00		+2 14.71 2.29 12.42 − −16.26 +3.18	
+1 54.35 −36 2.76 −36 1.52	2.27	+1 54.85 36 3.60 36 2.90	2.20	+1 54.83 36 ~~5.16~~ 1.48	3.40	+1 55.57 36 3.47 36 3.27	2.58	+1 56.82 36 2.54 36 1.46	0.38	+1 56.16 36 3.06 36 2.50	1.95
48.08 3	41.3	43.46	~~42.76~~	~~43.96~~ 42.04	43.96	43.87	43.14	42.02	~~40.94~~	43.06	42.51

1874 1875 -.27 -.02

Dec. 14 Dec. 16 Dec. 21 Nov 22 Dec 15

-.035 +.163 -.040 -.220 -.030

7 43.4 7 31.4 7 42.4 7 30.0 7 40.0 7 30.7 8 3.4 8 2.2 8 — 8 45.2
45.4 33.9 44.4 32.0 42.2 32.4 5.4 3.8 —
47.6 35.6 46.5 33.9 44.4 33.8 7.5 5.9 —
51.7 50.7 48.5 11.8 —
53.7 52.8 51.0 13.9 2.7 4.78
55.8 54.8 52.9 16.0 4.4 .70
58.0 8 15.2 57.0 8 7.5 55.0 8 8.1 18.1 6.9 .82
8 0.1 17.0 59.0 9.9 57.0 10.1 20.1 9.0 .84
4.3 18.8 — 11.7 8 1.1 12.0 24.1 13.2 .88
6.4 — 3.3 26.2 15.1 .70
8.5 — 5.5 28.4 17.1 .72

3749 4009 1749
240 180
6149 7 33.63 7 31.97 5809 7 32.30 8 3.97 8 1 8 45.20
7 55.900 8 17.00 7 54.847 8 9.707 52.809 8 10.07 8 15.900 8 4.778
55.884 54.831 52.793 15.884 4.762

+ 10.50 + 11.46 + 13.46 − 6.09 + 4.94
+ .01 − .02 + .01 + .03 + .00
− 3.07 -.051 − 3.05 -.031 − 3.01 +.009 − 3.56 − 3.40
+ 7.44 + 8.39 + 10.46 − 9.62 + 1.57
7 55.88 7 54.83 7 52.79 8 15.88 8 4.76

8 3.32 8 3.22 8 3.25 8 6.26 8 6.33
6.339 6.239 6.269 6.295
3.285

+22.27 −21.10 +22.88 −14.86 +20.51 −17.26 +11.93 −40.42
55 55 55 40 40
−2.97 −2.98 −3.02 −3.12 −3.22
3 56.4 4 48.1 3 58.9 4 44.1 4 2.9 4 50.1 0 24.1 1 21.1 1 39.6
6.9 59.4 9.5 54.9 14.0 1.1 22.2 18.2 35.0
123.3 107.5 128.4 99.0 169 111.2 63 393 146
59 1.65 59 53.75 58 64.20 59 49.50 59 8.45 59 35.60 40 23.15 41 19.65 41 34.87

1.34772 1.32428n 1.35946 1.17202 1.31197 1.23704n 1.07664 1.60660
1.43596 1.41252n 1.44770 1.26026 1.40021 1.32528n 1.19725 48599
+27.29 −25.86 +28.04 −18.21 +25.13 −21.15 +15.75 1.92721 −5336 5336
59 28.94 59 27.89 59 32.24 31.29 59 33.58 59 34.45 40 38.90 40 41.37
53.16
36 40.59 39.54 36 43.89 42.94 36 45.23 46.10 17 ~~45.55~~ 17 53.16
40.06 43.41 45.66 50.55
57 1 57 49 56 35
1.85130
+3750 +3095 +3474 +4104 +2483
1.88790 1.88820 1.88135 1.88165 1.88574 1.88444 1.89134 1.87573
−77.25 −77.30 −76.09 −76.15 −76.76 −76.64 −77.87 −75.53 −75.53
− 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1
+.03 −.50 +.03 +.04 −.42 +.01 +.03 −.42 +.02 +.01 +.14
−.48 −.59 −.41 −.48 −.41 −.49 −.04 −.03 −.19 −.24 −.10
−1 17.71 −1 17.87 −1 16.47 −1 16.63 −1 17.15 −1 17.12 −1 17.91 −1 15.92 .64
37 58.30 57.41 38 0.36 59.57 38 2.38 3.22 19 8.46 19 8.80
+2 14.80 +2 14.80 +2 15.28 −16 13.43 −16 14.40
− 2.31 12.49 − 2.32 12.48 − 2.35 12.93 − 2.43 15.86 − 2.51 16.91
−16.08 +3.36 −15.90 +3.54 −15.49 +3.95 −20.49 −1.05 −18.30 +1.14 −18.30 +1.14
+1 56.41 +1 58.58 6.58 +1 57.44 −16 ~~50.51~~ 36.35 16 35.21 15.77
36 1.89 1.00 36 6.78 2.99 ~~5.99~~ 36 4.94 5.78 35 ~~58.71~~ 35 44.01
−36 1.44 36 5.38 36 5.36 44.81
42.00 ~~41.66~~ 43.94 ~~40.55~~ 45.92

δ Corr red to P = +.3"

Polaris N.A. P.
α 1874 1 12 39.372 38.678
δ 1874 88° 38' 14.76" 15,10
N.A. dα + 20,918
dδ + 19,05

log cos δ 8.37306
l b 10134
l b' 8.47440
l b' .05315
8.46621
l sin δ 9.99888

corr α +0.53 to P = −0.16 to N.A.
corr δ —
tan δ + 42.35 (1874)
$\frac{1}{I}$ 87.26
K = − 0.65

Log sin δ 9.99888
" cos δ 8.37306
" 1125 i 6.73672
log C = 5.10966

I = −46 16
−.72

° ' "
δ 88 38 50

1874 −.04 Nov. 24 −.052 | −.06 Nov. 26 −.058 | −.05 Nov. 30 −.077 | 2 Dec. 2 +.012 | +.01 Dec. 9 +.008 | −.06 Dec. 10 −.090

1 10 1189 27.0 | 10 113 9 5.3 | — | — 10 13.8 | 9 59.7 9 8.0 | 10 0.2 9 11.0
55.0 29.2 | 56.5 | — | — 24.7 | 10 42.4 10.0 | 43.9
11 38.4 31.0 | 11 41.2 (13 58.0) | — | no delta 12 16.9 169 | 11 25.5 | 11 28.2
12 22.1 | 12 25.8 | 12 20.9 | 13 0.7 171 | 12 11.7 | 12 11.4
13 4.7 | 13 6.4 | 13 5.6 | 43.7 165 | 52.1 | 57.5
50.9 | 49.9 15 52.5 | 49.6 | — | 13 38.9 | 13 39.9
14 31.0 | 14 33.9 54.2 | — | — 13 16.0 | 14 21.0 13 8.9 | 14 23.6 15 57.3
15 18.5 | 15 17.5 57.9 | — | — | 15 4.4 18 15.0 | 15 6.8
16 1.5 | 16 0.9 | — | — | 15 ~~48.0~~ | 53.8

2339 | 24.34 | 30.37 | 2653
180 | 180 | 450 | 240
539 | 63.4 9 5.30 | 48.37 | 505.3

13 5.989 9 29.07 | 13 7.044 15 55.53 | 13 5.37 | 12 16.83 10 19.25 | 9 9.00 | 12 56144 9 11.00
13 5.34 | 6.39 | 472 | 13 16.18 13 16.00 | 12 53.25 15 41.95 | 15 59.30
13 12.53 + 8.12 | 13 11.50 + 7.87 | 13 8.83 + 7.77 | | 53.10 + 9.28 | 55.49 + 9.67
− 7.15 − 1.69 | − 5.11 − 2.54 | − 4.11 − 2.12 | 13 7.46 | 13 3.25 + .421 | 3 2.53 − 2.54
| | | 8.72 | − 10.15 | − 7.04
+ 8.08 − 33.16 | + 7.82 − 32.13 | + 7.73 − 29.46 | + 8.19 | + 9.27 − 23.88 | + 9.60 − 23.16
− 2.20 12 38.61 | − 2.46 39.59 | − 3.26 40.91 | + 0.51 | − 0.34 38.92 | − 3.77 81 39.46
− 33.16 − 12.442 | − 32.13 − 11.412 | − 29.46 − 8.742 | − 28.09 − 7.372 | − 23.88 − 3.162 | − 23.16 − 2.442
− 27.28 | − 26.77 | − 25.99 | − 19.39 | − 14.95 | − 17.34
13 5.34 | 13 6.39 | 13 472 | 13 16.18 | 12 53.10 | 12 55.49

12 38.086 36 28.96 | 39.62 36 31.54 | 38.73 ~~36 32.94~~ 12 56.79 [~~33.01~~] | 38.15 36 34.62 | 38.152 36 32.14
58.788 + 2 13.97 | ~~86.38~~ 60.338 + 2 15.07 | 9.448 ~~+ 2 14.21~~ 17.508 53.28 | 58.868 + 2 14.49 | 58.838 + 2 15.64
+ 2.0 | + 2.1 | | + 2.2 | + 2.2
− 31.20 | − 31.80 | | − 35.40 | − 35.60
+ 88 38 13.73 | 38 16.91 | | 38 15.91 | 38 14.38

+ 216.3 | + 241.7 − 168.5 | | + 117.6 − 59.2 | + 224.7 − 15.2 | + 225.1 − 183.2
45 | 45 45 | | 45 | 45 | 45
H_{o} = − 2.81 | − 2.83 | − 2.88 | − 2.89 | − 2.93 | − 2.93
2 13.0 2 21.1 | 2 12.9 2 22.5 | 2 17.5 | 2 11.9 2 18.2 | 2 7.5 2 16.2 | 2 11.7 2 24.6
14.0 22.1 | 15.7 25.9 | 16.7 | 15.2 21.0 | 9.2 17.6 | 12.9 25.9
27.0 43.2 | 28.6 48.4 | 34.2 | 27.1 39.2 | 16.7 33.8 | 24.6 50.5
47 13.50 47 21.60 | 47 14.30 47 24.20 | 47 17.10 | 47 13.55 47 19.60 | 47 8.35 47 16.90 | 47 12.30 47 25.25

2.33506 | 2.38328 2.22660 | | 2.07041 1.77232 | 2.35160 1.18184n | 2.35238 2.26292
0.80946 | 0.85968 0.70100 | | 0.54481 0.24672 | 0.82600 9.65624 | ~~0.98822~~ 0.82678 0.73732
+ 6.45 | + 7.21 − 5.03 | | + 3.51 − 1.77 | + 6.70 − .40 | − 6.71 − 5.46
47 19.95 | 47 21.51 47 19.17 | | 47 17.06 47 17.83 | 47 16.05 47 16.00 | 47 19.01 19.79

+88 35 28.90 | 35 26.84 29.18 | | 35 31.29 30.52 | 35 33.30 3 32.35 | 35 29.34 28.56
| 28.01 | | 30.90 | 32.82 | 28.95

−46 14 53 | 14 53 15 43
1.77890n 1.77890n
+ 1148 | + 2966 | | + 2116 | + 1280 | + 2741
1.79018 1.79038 | 1.80836 1.80856 | | 1.79986 1.80006 | 1.79150 1.79170 | 1.80611 1.80631
+ 61.69 + 61.71 | + 64.32 + 64.35 | | + 63.08 + 63.10 | + 61.87 + 61.90 | + 63.99 + 64.02

− .89 − 1.13 ~~.75~~ | ~~.36~~ .78 − .80 − ~~.75~~ .36 | | − .68 − .37 − .05 | − .65 − .59 − .00 | − .64 − .81 − .43
− .24 − .26 | − .24 − .26 | − .25 | − .24 − .27 | − .25 − .28 | − .26 − .29
+ 1 0.56 | + 1 3.33 1 3.73 | | + 1 2.66 + 1 2.78 | + 1 1.97 + 1 1.62 | + 1 3.08 + 1 3.30
36 28.96 | 36 30.17 32.91 | | 36 33.95 33.50 | 36 35.27 33.97 | 36 32.42 31.86
38 46.0 4t | 46.6 | 47.9 | 48.4 | 50.2 | 50.4
+2 17.0 | 16.4 13.9 | | +2 14.5 ~~14.9~~ 15.6 | 14.8 16.2 | 18.0 18.5
+2 17.0 | 15.0 | | 14.8 | 15.6 | 18.2
−2 17.3 | 15.3 38 15.41 | | 13.1 38 16.74 | 15.9 38 16.35 | 18.5 38 14.46
+ 2 13.91 15.93 | + 2 15.01 17.04 16.15 | | + 2 14.27 16.35 16.05 | + 2 14.38 16.48 14.05 | 2 15.54 17.64 13.90
+ 2.02 − 12.16 | + 2.03 − 12.76 16.78 | | + 2.08 − 14.56 | 2.10 − 12.36 | 2.10 16.56
− 31.20 38 13.68 | − 31.80 ~~14.78~~ − 3.31 | | − 33.60 38 16.40 | − 35.40 38 15.20 | − 35.60 14.18
+1 44.73 32.74 | + 1 45.24 ~~33.83~~ 35.83 | | + 1 42.75 35.45 | + 1 41.08 36.25 | 1 42.04 33.33

1875 N. A. ☉.

α 1h 13m 0.165 59.433

δ +88 38 33.81 34.16

$\frac{d\alpha}{dT}$ +20.868

$\frac{d\delta}{dT}$ +19.04

Corr to α

N.A. ~~-0.20~~ δ P ~~+0.58~~

-0.20 +0.53

tang δ 42.52

88 39 9

-.01 Dec. 12		-.03 Dec. 14		+.08 Dec. 15		+.18 Dec. 16		-.01 1874 Dec. 21		-.27 1875 Jan 22	log δ +42.49
+.003		-.035		-.005		+.163		-.040		-.220	
9 56.4	8 53.3	10 —	8 48.4	—	10 49.8?	9 43.5	9 3.1	9 44.7	8 50.8	10 54.2	9 0.4
10 40.7		40.8 51.6		—		10 28.1		10 26.4		11 41.2	
11 24.2		11 22.7 49.5		11 5.8 49.4		11 12.3		11 11.8		12 24.3	
12 9.0		12 9.1 50.7		47.6 47.6		54.7		54.7		13 9.7	
52.6		—		12 32.8 48.6		12 39.4		12 40.1		48.1	
13 34.0		13 —		13 17.2 46.4		13 24.3		13 18.6		14 36.6	
14 20.5	14 24.4	14 17.4 50.4	15 8.5			14 4.4	12 20.8	14 1.7		15 20.3	13 59.6
15 2.0		15 1.2 50.4		—		49.7		41.0		16 3.3	
46.8		44.6 49.2		14 —		15 34.7		15 28.3		45.3	
286.0						291.1		267.3		283.0	
180						60		120		180	
4660	8 53.30		8 48.40		~~10 49.80~~	357.1	9 3.10	387.3	8 50.80	4630	9 0.40
12 51.778	14 24.40	12 50.83	~~15 8.50~~	12 47.25		12 39.011	12 20.80	12 43.033		13 31444	13 59.60
12 51.13		12 50.18		12 46.60		38.36		4238		5079	
13 0.93	+10.31	12 57.22	+10.49	12 58.37	+10.71	12 57.56	+11.46	12 53.98	+13.50	13 34.53	-6.05
— 9.80	— .42	— 9.04	— 1.27	— 11.17	+ 3.39	— 19.20	+ 7.62	— 11.57	— .42	+ 16.26	-11.47
— 9.64		— 8.88		— 11.61		— 19.04		— 11.47		+ 16.46	
	— 21.56		— 19.85		— 19.00		— 18.19		— 14.58		-34.37
+ 10.24	12 39.46	+ 10.50	39.55	+ 10.70	41.70	+ 11.46	39.25	+ 13.46	40.88	— 6.09	58.90
+ 0.13		— 1.48		— 0.21		+ 6.90		— 1.659		— 9.315	
— 21.56 -0.848		— 19.85 +0.868		— 19.00 +1.718		— 18.19 +2.528		— 14.58 +6.138		— 34.37	
— 11.19		— 10.83		— 8.51		+ 0.17		— 2.81		— 49.81	
12 51.13		12 50.18		12 46.60		12 38.36		12 42.38		13 50.79	
	36 32.30		36 32.47				36 34.61		36 35.68		55 17.93
12 39.94	+2 14.94	39.35	+2 14.99	38.09		38.53	+2 15.03	39.51	+2 15.39	13 0.98	-16 13.27
0.658	+ 2.3	0.068	+ 2.3	58808		59248	+ 2.3	38.821	0.288 + 2.4		+ 2.1
	— 36.20		— 36.60				— 37.00	38.678	— 37.90		— 32.90
	38 13.34		38 13.16				38 14.94	+.143	38 15.57		38 33.96
+2385	— 92.6	+2424		+1174		+2459	+18.21	+2322		+2910	8.12
45		45		45		45		45		25	
— 294		— 297		— 298		298		— 302		— 3.12	
2 13.6	2 22.3	2 14.6		2 25.4		2 11.3	2 18.9	2 11.1	2 20.1	3 24.7	3 35.1
13.8	23.1	12.0		20.4		9.4	17.5	9.0	18.9	27.9	38.1
27.4	45.4	26.6		45.8		20.7	36.4	20.1	39.0	12.6	13.2
47 13.70	47 22.70	47 13.30		47 22.90		47 10.35	47 18.20	47 10.05	47 19.50	28 26.30	28 36.60
2.37749	1.96661	2.38453		2.06967		2.33425	1.26031	2.36586		2.46389	0.91381
9.84370	0.43282	.85074		0.53588 ?		0.80046	9.72652	.83207		0.93010	9.38002
6.98	— 2.75	+ 7.09		+ 5.43		+ 6.32	+ .53	+ 6.79		+ 8.51	— 0.24
47 20.68	19.99	20.39				47 16.68	47 18.73	47 16.84		28 34.81	28 36.36
35 27.67	28.36	35 27.96				35 31.68	29.62	35 31.51		54 13.54	11.99
28.01						30.65				12.76	
						14 57	14 49			15 22	15 11
										1.77880	1.77880
+3399		+3771		+4916		+3098		+3477		+4111	
1.81289	1.81289	1.81641	1.81661	1.82786	1.82806	1.80988	1.80988	1.81347	1.81367	1.81991	1.81991
+64.97	+65.00	+65.53	+65.56	+67.28	+67.31	+64.52	+64.55	+65.08	+65.11	+66.06	+66.06
— 73 .69	— .11	— 76 .54				— 60 .52	— .00	— .69		— 109 .69	— .00
— .26	— .29	— .26 — 1.02				— .22	— .23	— .22	— .23	— .84	— .36
+1 3.88	+1 4.60	+1 4.51				+1 3.70	+1 4.22	+1 4.17		+1 4.63	+1 5.76
36 31.65	32.96	36 32.47				36 35.38	33.84	36 35.68		55 18.17	17.69
38 51.0		51.4		51.6		51.8		52.7		39 6.7	
+2 19.4	18.0	18.9				+2 15.4 16.4	17.0	17.0		-16 11.5	11.0
+2 18.7		18.9				16.7		17.0		-16 11.2	
19.0		19.2				19.0		17.3		16 10.9	
+2 14.71	38 12.27	+2 14.80	~~38 15.71~~			+2 14.80	38 15.32	2 15.28		-16 13.4	38 34.08
+ 2.11	16.82 13.58	+ 2.13	16.98			+ 2.14	16.94 13.78	+ 2.17	17.45	+ 2.24	11.19 33.60
— 36.20	17.76	36.6	17.56	36.8		— 37.0	17.96	— 37.95	18.86	— 32.50	13.86
+1 14.062	12.92	+1 14.033	12.80			+1 8.994	38 14.55	+1 39.55	15.23	-16 4.409	38 33.84
31.57		31.85				33.60		34.28			

1874.0 α	δ	1875.0 α	δ
38.08		0.98	
39.62		1.57	
39.73			
38.15			
38.12			
39.94			
39.35			
38.09			
38.53			
39.57			
39.078		1.275	
38.678	15.10	59.433	34.16
+.340		+ 1.842	

-.02
tan δ + 42.55
Dec 15
-.030
10 20.0 9 57.7
11 2.5
45.9
12 30.8
13 13.5
45.2
14 0.5 12 43.9
41.9 16 108.5
15 27.7

22.80
60
16.80 9 57.70
13 18.667 14 27.35?
13 18.02
13 20.30 +4.96
— 2.28 — .85
— 2.08
— 20.14
+ 4.97 1.99
— 1.238
— 20.14
— 16.45
13 18.02
55 25.63
13 1.57 -16 14.12
1.275 + 2.5
59.433 — 39.10
+1.842 38 34.91

+ 20.04 -6.87
25
-3.22
3 21.0 3 26.5
21.8 26.9
.8 14
28 21.40 28 26.70

2.30190 1.83696
0.76811 0.30317
+ 586 — 207
28 27.26 28 24.69

54 21.09 23.66
22.87
15 27 15 21

+ 2483
× 80363
64.07 + 64.07
— .52 — .81 — .09
—.51 — 51
+ 1 3.04 + 1 3.47
55 29.13 27.13
12.9
11.2 14.2
12.7
12.4
-16 14.40 32.94
+ 2.31 12.09 35.94
-20.06
— 35 10 34.44
-16 51.19

o Ceti
h m s
1 17 47
− 8° 50'
z = + 51 13
+ .78

1874

		m	s		′	″	
Nov.	16	17	46.81		49	44.2	
	21		46.80	−.01		44.7	+.5
	26		46.78	.02		45.2	.5
Dec.	1		46.75	.03		45.7	.5
	6		46.72	.03		46.2	.5
	11		46.68	.04		46.7	.5
	16		46.64	.04		47.1	.4
	21		46.59	.05		47.6	.5
	26		46.54	.05		48.0	.4

1874
α 43.538 s
δ − 50′ 29.5″
$\frac{d\alpha}{dt}$ + 2.998
$\frac{d\delta}{dt}$ + 18.704

l cos δ 9.99482
l c .10134
l c′ .09616

l sin δ 9.18628n

corr α =
corr δ =

tang δ = −.15
I = 2.08 s
k = −.016 s

−.04 1874 Nov. 24 −.052		−.06 Nov. 26 −.058		−.05 Nov. 30 −.077		+.02 Dec. 2 +.012	
1 17 26.1	17 52.8	17 26.4	17 29.9	—	17 32.0	17 26.0	17 25.0
28.3	54.8	28.5		—	33.5	28.0	26.3
30.4	56.4	30.5		—	38.0	30.2	
34.5	57.9	34.7		—		34.5	
36.6		36.8		17 37.1 35.8		36.5	
38.6		38.9		39.1 37.8		38.6	
40.9	18 14.4	40.9	18 10.8	41.2 39.14	17 46.8	40.6	18 1.6
43.0	17.3	43.1	12.7	43.1 38.84	48.5	42.8	3.7
47.1	19.8	47.4	15.0	—	51.1	46.9	6.4
49.0		49.4		—		49.0	
51.3		51.6		—		51.3	
42.59	17 35.48	42.82	17 29.90		~~17 34.50~~	42.44	17 25.65
17 38.709	18 17.17	17 38.927	18 12.83	17 39.090	17 48.80	17 38.582	18 3.90
38.693		38.911		39.074		38.566	
17 46.79		17 46.78		17 46.76		17 46.74	
− 8.10	+ 8.12 +.01	− 7.87	+7.87 +.01	− 7.69	+7.76 +.01	− 8.18	+8.21 −.00
+ 8.08		+ 7.82		+ 7.73		+ 8.19	
+ .01	−3.25	+ .01	−3.24	+ .01	−3.22	− .00	−3.20
− 3.25	−0.252 ~~43.57~~	− 3.24	−0.242 43.55	− 3.22	−0.222 43.62	− 3.20	0.202 43.58
+ 4.84	17 43.57	+ 4.59		+ 4.52		+ 4.99	
17 38.69		17 38.91		17 39.07		17 38.57	
17 43.53 46.528	51 56.32 +2 13.97 − 22 −17.90	43.50 46.498	52 0.04 +2 15.07 − 22 −17.70	43.59 46.588	51 58.25 +2 14.26 − 23 −17.30	43.56 46.558	59.14 +2 14.43 − 23 −17.10
~~− 8 5~~ − 8 50	2.45	50	4.87	50	3.59	50	4.11
− 16.77 10	− 38.46	+ 9.03 10	− 33.90	+ 4.59 10	− 9.71	+ 12.93 10	− 25.32
Hg = − 2.81″		− 2.83		− 2.88		− 2.89	
3 43.8	4 10.7	3 11.1	4 4.5	3 33.4		3 6.5	4 54.5
59.9	26.9	30.0	22.3	47.9		24.3	13.8
103.7	37.6	41.1	26.8	81.3		30.8	128.3
13 51.85	14 18.80	13 20.55	14 12.40	13 40.65		13 15.40	14 4.15
1.22453n	1.58501n	0.95569	1.53020n	0.66181	0.98722n	1.11160	1.40346n
1.32069n	1.68117n	1.05185	1.42636n	.75797	1.08338n	1.20776	1.49962n
−20.93	− 47.99	+ 11.27	− 42.30	+ 5.73 − 12.11 28.54	− 12.11	+ 16.13	− 31.60
13 30.92	13 30.81	13 31.82	13 31.10			13 31.53	13 32.55
− 8° 50 42.57 42.51	~~39.96~~ 42.46	50 43.47 43.11	42.75	50 40.19		50 43.18 43.69	44.20
+ 51 11 45	12 9					11 8	10 57
1.85420	1.85430						
+ 1158		+ 2977		+ 3721		+ 2122	
1.86578	1.86588	1.88397	1.88407	1.89141	1.89151	1.87542	1.87552
− 73.41	− 73.43	− 76.55	− 76.57	− 77.88	− 77.89	− 75.06	− 75.08
− .01	− .01	− .01	− .01	− .01	.01	− .01	− .01
+ .02 −.38	+ .12	+ .01 −.36	+ .08	+ .00 ~~.08~~ +		+ .01 −.37	+ .05
− .43	− .47	− .36	− .46	− .17	−.17	− .35	− .45
−1 13.83	−1 13.79	−1 16.91	−1 16.96	−1 18.06		−1 15.41	−1 15.49
51 56.40	56.25	52 0.38	50 59.41	51 58.25		51 58.59	59.69
49 45.0		45.2		45.6		45.8	
+2 11.4	11.2	+2 15.2	14.5	12.7		12.8	13.9
+2 11.3		14.8		12.4		13.3	
+2 13.71	50 2.58	+2 15.01	50 5.27	+2 14.47	50 3.32	+2 14.27	50 3.67
− 2.19	17.72 2.43	− 2.20	12.81 4.60	− 2.24	12.23	− 2.25	12.02 4.77
17.90	+0.80	17.70	1.00	17.30	1.40	17.10	1.60
∓1 53.82	−50 2.50	∓1 55.11	50 4.93	∓1 54.93		∓1 54.92	50 4.22
44 43.80			46.23		44.62		45.52

1874 1875

ψ Cass.
h m s
1 17 8 sin z = −.42
+67° 29' z = −25°

		m s		' "	
Nov.	16	16 67.84		28 45.4	
	21	67.75	−.09	46.8	+1.4
	26	67.65	.10	48.1	1.3
Dec.	1	67.53	.12	49.2	1.1
	6	67.38	.15	50.2	1.0
	11	67.23	.15	51.1	.9
	16	67.06	.17	52.0	.9
	21	66.87	.19	52.7	.7
	26	66.66	.21	53.2	.5

		m s		' "	
Dec.	6	17 11.87		28 71.4	
	11	11.70	−.17	72.1	+.7
	16	11.52	.18	72.9	.8
	21	11.34	.18	73.6	.7
	26	11.16	.18	74.4	.8

	1874	1875
	s	
α	3.379	7.525
δ	+28 16.21	+28 35.15
dα/dτ	+4.145	+4.147
dδ/dτ	+18.942	+18.940
l cos δ	9.58314	9.58314
l C	.10134	.12552
l C'	9.68448	9.70866
l C'	9.67629	

l sin δ = 9.96556

corr α = +.090 s
corr δ = +.54"
tang δ = +241
I = 5.39 s
K = −.038

1874 Nov. 26 −.06 −.058

1 16 48.8 16 27.6
— 55.68 60.00 35.4
54.6 60.00 39.2
—
−17 0.0 60.00
—
5.3 59.50
8.2 60.10
10.6 59.80

16 34.07
16 59.913
59.875
17 7.664
− 7.727 +7.86
− 7.886 −.14

+ 7.82 −4.26
− .14 17 33.5
− 4.26 −.115
+ 3.42
16 59.87
26 32.69
17 3.29 +2 15.07
7.435 +1.3
−3200
+67 28 17.26

+25.84
55 "
[illegible] = −2.83
1 29.4
33.7
63.1"
56 31.55

1.41229
1.09677
+ 1250
56 44.05
+67 26 4.30

−25 5 35
1.43070n
+2975
1.46045
+28.87

−.12 ~~−.14~~ −.28
−.16
+28.59
26 32.89
28 48.2
+2 1.53
+2 15.8 +28 18.08
+2 15.01 16.19
+ 1.18
32.05 13.06 37.02
6
+1 44.19

Nov. 30 −.05 −.077

— 16 54.0
—
16 55.0
57.6
0.0
2.8
5.4 17 9.4
— 13.8
— 19.8

1208
120
0.8 ~~16 54.04~~
17 0.160 17 14.33
0.122
17 7.585
− 7.443 +7.76
− 7.532 −.12

+ 7.73 −4.17
− .18 35.9
− 4.17 −.025
+ 3.48
17 0.12
26 32.45
3.50 +2 14.26
7.745 +1.3
645 −3280
28 15.21

~~+6.16~~ −14.17
55 −2.88
1 51.5
52.3
103.8
56 51.90

0.78958 1.15137n
0.47406 0.83685n
+ 298 −885
56 54.83
45.05
+67° 26 53.41
3 30

5 15

+3720
1.46790
+29.37

−.01 ~~−.11~~ −.03
−.21 −.22
+29.15
26 32.45
49.0
+2 1.66
1.71 28 15.32
+2 14.47 15.67
+ 1.20
32.80 13.86 34.26
+1 42.87

Dec. 12 −.01 +.003

16 49.3 17 6.8
52.0
54.7
57.3
0.2
2.6 17 17.1
5.3
8.3
11.8

241.9
1.4
17 68.0
17 0.155 17 17.10
0.117
17 7.149
− 7.098
− 7.187

+ 10.24
+ .01
− 3.81 +.335
+ 6.44
17 0.12
38.42
4.88

−6.65 +11.00
55 −2.94
1 49.1
51.1
100.2
56 50.10

0.82252n
0.49911
− 8.16
56 46.94
26 1.41

5 17

+3407
1.46477
+28.69 29.16

−.01 ~~−.11~~
−.22 −.23
+28.93
26 30.34
51.3
+2 21.0 28 11.18
+2 14.71 15.94
+ 1.23 16.16 √
35.10
+1 40.84

1874 Dec. 21 −.01 −.040

16 —
—
42.0
47.2
32.7
38.4
3.5
—

203.8
6.0
263.8
16 52.760
52.722
17 6.886
− 14.184
− 14.253

+ 13.47
− .10
− 3.48 +.665
+ 9.89
16 52.72
2.61

A. R.

1875 Dec. 15 −.02 −.030

16 16 52.2
56.1 57.3
58.5 2.6
17 1.1 5.3
4.0
6.6
9.3
12.2
15.0
17.6

180.4
16 56.85
17 6.711
6.673
17 11.575
− 4.9088 +4.956
− 4.997 −.05

+ 4.98 −4.03
− .07 75.5
− 4.03 +.~~115~~
+ 0.88
17 6.67
45 −24.73
7.55 −16 14.12
+ 1.5
−37.70
28 34.41

+9.86
35 −3.22
2 46.3
47.1
13.4
37 46.70

0.99388
0.70254
+5.04
37 51.74
44 56.61

6 1
1.43090n
+2483
1.45573
+28.56

−.02 ~~−.22~~
−.42 −.44
+28.12
45 24.73
29 ~~51.9~~ 12.8
−16 11.9
−16 11.4 28 43.98
−16 14.40 13.05
+ 1.35 √
37.70 18.76
−16 54.075

1874

ω Androm.
h m s
1 20 12
° ′
+ 44 46
ζ = − 2 23
sin ζ = −.04

α 20. 11.03
δ 45 36.73
dα/dt + 3.559
dδ/dt + 18.73

lcosδ. 9.85125
lb .10134
lb′ 9.95259
lbb′ 9.94440
lsinδ 9.84771

Corr α =
corr δ =
tang δ = + .99
I = 2.90 s
K = −.022 s

1874
Nov. 24
−.052
1 19 45.4 | 19 26.5
48.3 | 30.0
51.2 | 32.3
57.0
59.9
20 2.9
5.9 | 20 24.6
8.7 | 27.5
14.6 | 29.7
17.4
20.3
3316
300
316 | 19 29.60
20 2.873 | 20 27.27
2.851
+ 8.08
− .05
− 3.45 +.109
+ 4.58
20 2.85
20 7.43
10.989

Nov. 26
−.058
19 45.8 | 19 37.5
48.6 | 40.8
51.6 | 43.0
57.3
20 0.1
3.1
6.0 | 20 26.7
8.8 | 29.2
14.7 | 32.5
17.7
20.6
2743
240
343 | 19 40.43
20 3.118 | 20 29.47
3.096
+ 7.82
− .06
− 3.43 +.129
+ 4.33
20 3.10
7.43
10.989

Nov. 30
−.077
— | 19 37.8 46.9
48.7 3.20
51.7 3.30
57.5 3.30
—
—
—
—
—
—
—
19 42.35
20 3.257
3.245
+ 7.73
− .08
− 3.40 +.159
+ 4.25
20 3.24
7.49
11.049

Dec. 2
+.012
19 45.3 | 19 27.7
48.2 | 30.3
51.1 | 32.6
56.9
59.7
20 2.7
5.5 | 20 22.5
8.5 | 24.5
14.4 | 26.4
17.4
20.3
3300
300
300 | 19 30.20
20 2.727 | 20 24.47
2.705
+ 8.19
+ .01
− 3.38 +.179
+ 4.82
20 2.70
7.52
11.079

Dec. 12
+.003
19 | 20 15.7
54.6 | 18.4
56.0 | 21.4
57.6
59.1
0.6
2.0
3.6
5.0
6.4
2449
240
49 | 20 18.60
20 0.544
0.522
+ 10.24
+ .00
− 3.26 +.259
+ 6.98
20 0.52
7.50
11.059

1874
Dec. 21
−.040
19 39.8 | 19 36.3
42.8 | 41.8
45.7 | 44.1
51.2
54.3
57.3
20 0.2 | 20 .2
8.0
8.6
11.7
14.5
3291
300
62.91 | 19 40.57
19 57.191 | 20 20.20
57.169
+ 13.47
− .04
− 3.14 +.419
+ 10.29
19 57.17
7.46
11.019
7.472

i_p =

Nov. 24:
+33.27 | −24.40
35 −2.81
3 42.3 | 4 34.1
50.9 | 42.9
93.2″ | 77.0
38 46.60 | 39 38.50
1.52205 | 1.38739n
1.47464 | 1.33998n
+29.83 | −21.88
39 16.43 | 39 16.62
+44 43 31.92 | 31.73
31.82
− 2 23 20 | 22 29
0.38050n | 0.37810n
+1162
0.39212 | .38972
+2.47 | +2.45
−.30 −.69 | −.16
−.42 | −.51
+1.75 | +1.78
+44 43 33.67 | 33.51
+2 13.91 | 14.02
+ .11 | 10.50
− 29.23
+1 44.79 | ~~18.30~~
+45 18.46 | 18.30
+45 18.38
45 37.11

Nov. 26:
+22.69 | −26.35
35 −2.83
3 54.1 | 4 37.7
1.9 | 46.8
116.0 | 84.5
38 58.00 | 39 42.25
1.35583 | 1.42078n
1.30842 | 1.37337n
+20.34 | −23.63
39 18.34 | 39 18.62
43 30.01 | 29.73
29.87
+2982
.41032 | .40792
+2.57 | +2.56
−.13 −.64 | −.19
−.44 | −.52
+2.00 | +1.85
43 32.01 | 31.58
+2 15.01 | 15.12
+ .11 | 10.79
− 29.52
+1 45.60
45 17.61 | 17.18
17.39
31.12

Nov. 30:
+20.92
35 −2.88
3 45.4 | 4 36.5
50.7 | 41.1
96.1 | 77.6
38 48.05 | 39 38.80
1.32056
1.27315
+ 18.75
680
+3725
.41975 | .41535
+2.62 | +2.60
−.12
−.42 | −.51
+2.08
+2 14.47
+ .11
− 30.08
+1 44.50

Dec. 2:
+32.53 | −21.74
35 −2.89
3 43.9 | 4 30.0
51.9 | 39.8
95.8 | 69.8
38 47.90 | 39 34.90
1.51228 | 1.33726n
1.46487 | 1.28985n
+29.17 | −19.49
39 17.07 | 39 15.41
43 31.28 | 43 32.94
32.11
+2124
.40174 | .39934
+2.52 | +2.51
−.29 −.67 | −.13
−.42 | −.51
+1.81 | +1.87
43 33.09 | 34.81
+2 14.27 | 14.39
+ .12 | 11.61
− 30.34
+1 44.05
45 17.14 | 18.86
~~18.00~~
+45 18.00
36.73

Dec. 12:
06
−18.16
35 −2.94
4 29.2
34.8
64.0
39 32.00
1.25672n
1.20112n
−15.89
39 16.11
43 32.24
+3412
.41462 | .41222
+2.60 | +2.58
−.18 ~~−.36~~
−.54 −.72
+1.88
43 34.12
+2 14.71 | 14.83
+ .12 | 12.73
− 21.46
+1 43.37
17.49
36.22

Dec. 21:
+16.62 | −23.01
35 −3.02
3 57.9 | 4 34.20
0.8 | 36.7
119.87 | 70.9
38 ~~54.35~~ 59.35 | 39 35.45
1.22063 | 1.36192
1.16503 | 1.30632
+14.63 | −20.25
39 13.98 | 39 15.20
43 34.37 | 33.15
33.76
23 8 | 22 32
+3483
.41533 | .41253
+2.60 | +2.59
−.08 −.54 | −.15
−.40 | −.46
+2.12 | +1.98
43 36.49 | 35.13
+2 15.28 | 15.40
+ .12 | 13.34
32.07
+1 43.33
45 19.82 | 18.46
45 19.14
37.87

(37) A Cass = N.A.

h m s
1 21 57.1
° '
+ 69 37

z = − 27 14

here z = −.46

1874 | 1875

α 1 21 53.056
δ +69 36 54.18
dα/dt + 4.356
dδ/dt +18.71

l cos δ 9.54195 | 9.54195
l b .10134 | .12552
l b' 9.64329 | 9.66747

l b' 9.63510

l sin δ 9.97192

cos α =
cos δ =

tang δ = +2.69
s
I = 5.91
s
K = −.041

1874 N.A.

	m s	' "	
Nov. 25	21 57.66	37 25.5	
30	57.53	26.4	1.2
Dec. 3	57.38	27.8	1.1
10	57.21	28.8	1.0
15	57.01	29.7	.9
20	56.81	30.5	.8
25	56.59	31.1	.6

	-.04 1874 Nov. 24 -.052		-.06 Nov. 26 -.058		-.05 Nov. 30 -.077		+.02 Dec. 2 +.012		-.01 Dec. 12 +.003		-.01 Dec. 21 -.040	
1	21 38.0	21 2.9	21 38.0	21 9.8	21 38.0	21 19.9	21 37.5	21 6.5	21 35.3	21 15.1	21 31.7	21 9.0
	41.0	9.8	40.9	15.5	41.3	24.0	—		38.4	20.0	34.2	
	43.7	15.5	44.0	21.0	44.2	30.2	43.5		41.2	25.0	37.3	
	47.0		46.8		47.2		—		44.0		40.4	
	49.8		50.1		50.0		49.3		47.1		43.1	
	52.7		53.0		53.2		—		50.1		46.2	
	55.5	22 2.3	56.0	22 16.4	56.1		53.0	22 7.6	53.2	22 10.8	48.8	22 2.0
	58.6	7.5	58.8		59.2		—	15.0	56.1	17.8	52.1	
	22 1.7	13.9	22 1.5		22 2.1		22 1.3	21.0	59.2	24.3	55.3	

Nov. 24:
4480
21 9.40
21 49.778 22 7.90
49.737
+ 8.08 +8.12
− 14 −.11
− 4.62 −.264 −4.62
+ 3.32 21 53.13
53.06
57.~~356~~ 416
35 10.03
+2 13.97
+ 1.4

Nov. 26:
3891
60
4491 21 15.43
21 49.900 22 16.40
49.859
+ 7.82 +7.86 7
− .16 −.16
− 4.57 −.214 −4.57
+3.09 53.00
52.95
57.306
8.70
+2 15.07
+ 1.4

Nov. 30:
3913
60
4513 21 24.70
21 50.144
50.103
+ 7.73 +7.76
− .21 −.13
− 4.47 −.114 −4.47
+3.05 53.26
53.15
57.506
14.41
+2 14.26
+ 1.4

Dec. 2:
1?26.6
60
2463 21 6.50
21 49.260 22 14.53
49.219
+ 8.19 +8.21
+ .03 +.05
− 4.42 −.064 −4.42
+3.80 53.06
53.02
57.376
12.49
+2 14.43
+ 1.4

Dec. 12:
4246
21 20.03
21 47.178 22 17.63
47.137
+ 10.24 +10.32
+ .01 −.03
− 4.06 +.296 −4.06
+ 6.19 53.37
53.33
57.686
11.15
~~+2 14.94~~ +2 14.94
+ 1.5

Dec. 21:
3891
21 9.00
21 43.233 22 2.00
43.192
+ 13.47 +18.~~49~~ 50
− .11 −.03
− 3.70 +.656 −3.70
9.66 52.96
52.85
57.206
53.060
13.95
+2 15.39
+ 1.5

Ref = 45 "

Nov. 24:
+40.38 −18.12
−2.81
2 49.1 3 13.9
52.5 18.0
101.6 31.9
47 50.80 48 15.95
1.60617 −1.25816
1.24996 0.90145
+17.76 −7.97
47 8.56 7.98
34 39.79 ~~+1.69~~
40.08 40.37

Nov. 26:
s
+ 34.47 −26.50
45
−2.83
2 53.6 3 20.0
58.0 24.9
111.6 44.9
47 55.80 48 22.45
1.53744 1.42325n
1.18073 1.06654n
+ 15.16 −11.66
48 10.96 48 10.79
34 37.39 37.56
37.47

Nov. 30:
+ 25.44 +42.76
45
−2.88
2 48.9 3 21.1
60.3 22.8
109.2 43.9
47 54.60 48 21.95
1.40552 1.63104
1.04881 1.27433
+11.19 −
48 5.79
34 42.56

Dec. 2:
−25.27 ~~−25.27~~
45
−2.89
2 48.9 3 15.2
53.6 20.0
102.5 35.2
47 51.25 48 17.60
1.40260n 1.40260n
1.04589 1.04589
+18.81 − 11.11
~~16.06~~ 48 6.49
34 41.86

Dec. 12:
+ 27.15 −30.45
45
−2.94
2 56.7 3 20.3
57.9 22.8
114.6 43.1
47 57.30 48 21.55
1.43377 1.48359n
1.06887 1.11869n
+11.72 −13.14
48 9.02 48 8.41
34 39.33 39.94
39.63

Dec. 21:
+34.23 −18.77
−3.02
2 50.2 3 14.7
51.0 15.0
101.2 29.7
47 50.60 48 14.85
1.53441 1.27346
1.16951 0.90886
+ 14.77 −8.10
48 5.37 48 6.75
34 42.98 41.60
42.29

− 27 14 16 13 51
14 16 13 52

1.47180 1.47170
+ 1165
1.48345 1.48335
+ 30.44 +30.43

+2984
1.50164 1.50154
+31.74 +31.74

+3729
1.50909 1.50859
+ 32.29 +32.28

+2126
1.49306 1.49296
+ 31.12 + 31.11

+3415
1.50595 1.50585
+32.06 + 32.05

+3484
1.50664 1.50654
+ 32.11 +32.10

Nov. 24:
−.29 −.51 −.06
− .31 − .36
+29.84 +30.01
+69 35 9.69 10.38
+2 12.91 13.26
+ 1.29 13.39
− 31.10
+1 44.10
36 53.79 54.48
+36 54.13
37 12.84

Nov. 26:
−.21 −.51 −.13
− .32 −.37
+ 31.21 +31.24
35 8.60 8.80
+2 15.01 16.31
+ 1.30 12.79
− 31.50
+1 44.81
36 53.41 53.61
36 53.51
62.22

Nov. 30:
−.12 ~~−.56~~ −.44 −.32
− .32 −.37
+ 31.75
35 14.41
+2 14.47 15.79
+ 1.32 13.79
− 32.50
+1 43.29
36 57.70
16.47

Dec. 2:
−.32 ~~−.66~~ −.48 − .12
− .32 −.36
+30.48 +30.63
35 12.49
+2 14.27 15.59
+ 1.32 14.69
− 33.40
+1 42.19
36 54.68
13.39

Dec. 12:
−.14 −.53 −.17
− .35 − .41
+31.57 +31.47
35 10.90 11.41
+2 14.71 16.06
+ 1.35 16.29
− 35.00
+1 41.06
36 51.96 52.47
36 52.21
10.92 ~~+1.18~~

Dec. 21:
−.21 −.44 −.07
− .28 −.32
+31.62 + 31.71
35 14.60 13.31
+2 15.28 16.66
+ 1.38 17.79
− 36.10
+1 40.16
36 54.76 53.47
36 54.11
12.82 ~~+2.18~~

-.13 1875

Dec 6

-.136

21 50.6 21 2424 38.1
56.3 403 43.1
2.1 352 48.2
8.4 431
14.4 440

—
— 22 21.4
— 26.3
— 31.1

131.8
180.
311.0 21 43.13
22 24.160 22 26.27
24.139

- 0.084
- .36

Rej.

25 + 41.05 - 2.09
+

4 9.5 4 27.7
9.7 28.8
12 16.0
29 9.60 29 28.00

1.28398 1.37858n
0.95145 1.04605n
+8.94 -11.12
29 18.54 29 16.88

53 29.81 53 31.47

-27 14 38 14 20
1.47190 1.47180
+29.67 +29.63

-.41
-.63 -.67

1874 1875 1874

ζ Piscium
2
h m s
1 24 48
° '
+14 42

z = + 27 41
+ ,46

α s 44.538 47.737
δ +41 43.78" +42 2.49
dα/dt +3.198 +3.199
dδ/dt +18.707 +18.705

l sin δ 9.40442

l cos δ 9.98555 9.98555
l c .10134 .12552
l c' 0,08689 0,11107
l c" 0,07870

cor α =
cor δ =
tang δ = +,26
I = 2,13 s
K = -,016

		m	s		'	"	
Nov	16	24	47.79		41	67.5	+.0
	21		47.78	-.01		67.5	.0
	26		47.76	.02		67.5	.0
Dec	1		47.74	.02		67.5	.0
	6		47.72	.02		67.5	+.0
	11		47.69	.03		67.4	-.1
	16		47.65	.04		67.3	.1
	21		47.61	.04		67.1	.2
	26		47.57	.04		66.9	-.2

1874 -.04 -.06 -.07 -.05 +.02 -.01

Nov. 24 Nov. 26 Nov. 29 Nov. 30 Dec. 2 Dec. 12
-.052 -.058 -.085 -.077 +.012 +.003

1 24 27.0 24 15.6 24 27.3 24 16.7 24 27.2 24 3.0 24 27.3 24 26.3 24 27.0 24 15.6 24 24.4 24 14.0
29.1 18.4 29.4 18.4 29.2 7.1 29.5 28.2 29.0 17.9 26.9 16.4
31.1 20.3 31.4 20.6 31.4 31.7 29.8 31.1 19.7 29.0 18.9
35.4 35.7 35.6 35.9 35.3 33.1
37.6 37.9 37.9 38.0 37.5 35.3
39.9 39.9 40.0 40.2 39.6 37.4
42.0 24 58.3 42.0 25 10.1 42.0 24 53.2 42.3 41.7 24 59.0 39.6 24 46.5
44.0 25 0.8 44.2 12.1 44.2 55.0 44.4 43.8 25 0.8 41.7 48.5
48.3 3.0 48.5 13.8 48.5 56.5 48.6 48.0 2.9 45.9 49.7
50.3 50.6 50.6 50.7 50.2 48.0
52.6 52.7 52.7 53.0 52.4 50.1

43 73 24 18.10 43 9 6 24 18.57 43 9 3 24 5.05 44 1 6 24 28.10 43 5 6 24 17.73 41 1 4 24 16.43
24 39.755 25 0.70 24 39.964 25 12.00 24 39.845 24 ~~54.90~~ 24 40.145 24 39.600 25 0.90 24 37.400 24 48.23
39.739 39.948 .936 39.920 40.129 39.584 37.384
24 47.77 24 47.76 24 47.75 24 47.74 24 47.74 24 47.68
- 8.03 +8.12 - 7.81 +7.87 - 7.83 +7.97 - 7.61 +7.76 - 8.16 +8.21 - 10.30 +10.32
-.01 -.02 -.02 -.01 +.01 -.00

+ 8.08 + 7.82 + 7.91 + 7.73 + 8.19 + 10.24
- .01 24ᵐ -323 - .01 -322 - .02 -321 - .02 -320 + .00 -320 + .00 -314
- 3.23 -.032 44.62 - 3.22 -.022 44.58 - 3.21 -.013 44.66 - 3.20 -.002 44.68 - 3.20 -.002 44.60 - 3.14 +.058 44.56
+ 4.84 + 4.59 + 4.88 + 4.51 + 4.99 + 7.10
24 39.74 24 39.95 24 39.92 24 40.13 24 39.58 24 37.38

24 44.58 39 54.96 44.54 53.46 44.60 53.27 44.64 54.37 44.57 53.66 44.48 54.74
47.778 +2 13.97 47.738 +2 15.07 47.798 +2 14.95 47.838 +2 14.26 47.768 +2 14.43 47.678 +2 14.94
- 1.4 - 1.4 - 1.4 - 1.4 - 1.4 - 1.5
-23.70 -23.70 -23.70 -23.70 -23.70 -23.60
+14 41 43.83 41 43.43 41 43.12 41 43.53 41 42.99 41 44.58

89 14.96
+21.65 -20.95 +21.39 -32.04 +34.~~79~~ -~~15.06~~ +12.04 +21.87 -21.30 +20.97 -10.83
40 40 40 40 40 40
"
h_{θ} = -2.81 -2.83 2.87 -2.88 -2.89 -2.94
1 48.8 2 40.7 1 49.7 2 55.0 2 32.3 2 57.4 1 2.2 2 14.9 1 49.0 2 41.1 1 50.0 2 28.5
2.1 55.0 2.1 8.0 49.0 13.1 10.3 26.4 3.1 56.1 0.5 39.3
110.9" 95.7 111.8 123.0 81.3 130.5 12.5 41.3 112.1 97.2 110.5 67.8
41 55.45 42 47.85 41 55.90 43 1.50 42 40.65 43 5.25 41 6.25 42 20.65 41 56.05 42 48.60 41 55.25 42 33.90

1.33546 1.32118ₙ 1.33021 1.50569ₙ 1.54270 1.17493ₙ 1.08063 1.33985 1.32838ₙ 1.32160 1.03463ₙ
1,42235 1,40807ₙ 1,41710 1,59258ₙ 1,62959 1,26182ₙ 1,16752 1,42674 1,41527ₙ 1,40036 1,11333ₙ
+ 26.45 -25.59 + 26.13 -39.14 +42.62 -18.27 +14.71 + 26.71 -26.02 +25.14 -12.98
42 21.90 22.26 42 22.03 22.36 23.27 6.98 20.96 22.76 22.58 20.39 20.92

+14 40 26.45 26.09 40 26.32 25.99 40 25.08 40 27.39 40 25.59 25.67 40 27.96 27.43
26.27 26.15 25.68 27.69

+ 27 39 48 40 41
1,47960 1,48000
+ 1169 +2990 +1686 +3733 +2129 +3419
1,49129 1,49169 1,50950 1,50990 1,49646 1,49686 1,51693 1,51733 1,50089 1,50129 1,51379 1,51419
-30.99 -31.02 -32.32 -32.35 -31.37 -31.39 -32.88 -32.91 -31.69 -31.72 -32.64 -32.67

-.05 -.30 -.04 -.05 -.35 -.12 -.14 -.40 -.03 -.02 -.14 -.25 -.05 -.31 -.05 -.05 -.30 -.01
-.21 -.31 -.21 -.33 -.30 -.34 -.12 -.21 -.31 -.23 -.31
-31.25 -31.37 -32.58 -32.80 -31.81 -31.76 -33.02 -31.95 -32.08 -32.92 -32.99
39 55.20 54.72 39 53.74 53.19 39 53.27 39 54.37 39 53.64 53.59 39 55.04 54.44
42 7.5 7.8 7.5 7.1 7.5 7.4
+2 12.3 12.8 13.8 14.3 14.2 13.1 13.9 13.8 12.4 13.0
12 12.5 13.1 14.2 13.1 43.82 13.9 12.7
+2 13.91 41 44.12 +2 15.01 41 43.75 +2 14.84 41 44.06 +2 14.47 13.15 +2 14.27 41 42.89 +2 14.71 41 44.80
- 1.29 12.62 43.64 - 1.30 13.71 43.20 - 1.32 13.49 3 - 1.32 - 1.32 12.99 42.94 - 1.35 13.86 44.20
23.70 4.99 23.70 4.99 23.70 4.99 23.70 4.99 23.70 4.99 23.60 4.89
+1 48.92 +41 43.88 +1 50.01 41 43.47 +1 50.79 +1 49.45 +1 49.25 41 42.91 +1 49.76 41 44.50
42 2.59 2.18 49 1 2.77 2.53 1.62 3.21

1875

		m	s		'	"	
Apr	16	24	5133		42	285	+.0
	21		5132	-.01		285	.0
	26		51.30	.02		285	.0
Dec	1		51.28	.02		285	.0
	6		51.26	.02		285	.0

1874.0 α	δ	1875.0 α	δ
44.58		47.78	
.54			
.60			
.64			
.57			
.48			
.50			
44.559		47.780	
.538	43.78	.737	2.49
+.021		+.043	

-.01 1874 Dec. 21 -.040

-.13 1875 + Dec 6 -.136

24 21.2 24 29.3 24 38.6 24 29.6
23.3 31.2 40.7 31.9
25.7 33.2 42.9 33.7
30.0 47.1
32.0 49.2
34.0 51.4
36.1 25 0.7 53.6 25 17.3
38.5 2.9 55.7 19.1
42.6 3.4 59.7 21.4
45.0 2.0
47.0 4.2

3754 24 31.23 5653 24 31.73
24 34.127 25 3.00 24 51.391 25 19.27

34.111 +13.~~49~~ 50 51.375 -~~+~~0.01
24 47.61 -.00 24 51.26 -.03
-13.50 + 0.11
-3.07 -3.52
+ 13.47 44.54 - 0.04 47.82
- .01 - .03
- 3.07 +.128 - 3.52
+ 10.39 - 3.59
24 34.11 39 53.77 24 51.37 57 42.57
42 15.39 -16 13.58
24 44.50 -1.5 47.78 - .15
~~20~~ 47.698 -23.30 -26.00
44.557 47.780
.538 41 44.36 .737 42 1.49
+.019 +.043

+2.90 -28.87 +17.66 -27.88
40 20
-3.02 -3.16
2 14.0 2 52.4 3 8.8 4 10.7
22.2 59.9 6.8 9.0
36.2 112.3 15.6 19.7
42 18.10 42 56.15 28 7.80 29 9.85

0.46240 1.46045n 1.29358 1.44529n
0.54110 1.53915n 1.40465 1.55636n
+3.486 -3460 +2539 -3601
2.86
42 21.58 21.55 23 33.19 33.84
40 26.77 26.80 59 15.16 14.51
26.78 14.83
+27 40 11 40 4.9 39 20 40 22
1.47950 1.47990
+3485 +12058
1.51445 1.51485 1.50008 1.50048
-32.69 -32.72 -31.63 -31.66

-.00 -.31 -.10 -.05 -.62 -.09
-.23 -.29 -.47 -.63
-32.92 -33.11 -32.15 -32.38
39 53.85 53.69 58 43.01 42.13
71 42 28.5
+2 13.3 13.4 -16 14.5 13.6
+2 13.3 -16 14.0
+2 15.28 41 44.45 -16 13.77 42 1.79
- 1.38 13.90 44.29 - 1.45 15.22 0.91
- 23.30 4.59 - 26.00 7.29
+1 50.60 +41 44.37 -16 41.22 +42 1.35
3.08

Ri. 1. 109
~~B A C. 466~~

h	m	s
1	27	19
	°	′
	−87	30
z = +	79	53

sin z = +.98

	1874	1875	
α		27 2.050	cos α =
δ		30 7.965	cos δ =
dα/dτ		+ 2690	tang δ = −.77
dδ/dτ		+ 18.54	I = 2.61
			K = −.020
log cos δ	9.89947	9.89947	
log C	.10134	.12552	
log C′	.00081	0.02499	
log sin δ	9.78445n		

1874 Nov. 26		Nov. 29		Dec. 2		−13 1875 Dec 6	
−.058		−.085		+.012		−.136	
1 26 57.8	26 47.0	26 58.0	27 24.2	26 57.6	27 3.6	27 8.8	27 1.0
27 0.4	49.0	27 0.4	25.8	27 0.2	5.3	11.3	3.4
3.3	51.3	2.7		3.0	8.3	13.8	7.5
8.4		8.2		8.4		19.2	
11.1		10.9		10.6		21.6	
13.5		13.4		13.1		24.2	
16.1	27 24.5	16.0	27 52.5	15.8	27 40.2	26.8	27 36.1
18.7		18.5	54.2	18.4	42.4	29.5	38.8
24.1		23.6	57.3	23.7	44.3	34.7	40.4
26.6		26.3		26.1		37.3	
29.2		28.3		29.0		39.9	
2092		2063		2059		2671	
60		60		60			
1492	26 49.10	1463	27 25.00	1459	27 5.73		27 3.97
27 13.564	27 24.50	27 13.300	27 54.67	27 13.264	27 42.30	27 24.282	27 38.43
13.544		13.280		13.244		24.262	
+ 7.82		+ 7.91		+ 8.19		− 0.04	
+ .04		+ .06		− .01		+ .10	
− 3.58 −.890		− 3.55 −.860		− 3.52 −.830		− 3.81	
+ 4.28		+ 4.42		+ 4.66		− 3.75	
27 13.54		27 13.28		27 13.24		27 24.26	
27 17.82		27 17.70		27 17.90		27 ~~28.01~~ 2051	
20.510		20.390		20590 17.807		28.010 C.P.	

45 +24.46	−10.94	50 ∓11.70	−41.37	45 +7.53	−29.04	30 +20.31	−14.15
Refr = −2.83		−2.87		−2.89		−3.16	
4 29.7	0 5.3	0 14.1	0 44.7	4 56.0	0 30.8	1 1.6	1 38.6
45.9	22.9	31.2	0.8	14.9	49.2	4.6	41.0
75.6	28.2	45.3	105.5	130.9	80.0	6.2	79.6
49 37.80	50 14.10	50 22.65	50 52.75	50 5.45	50 40.00	31 3.10	31 39.80
1.38846	1.03902n	1.06819n	1.61669n	0.87679	1.46300n	1.30771	1.15076n
1.38927	1.03983n	1.06900n	1.61750n	0.87760	1.46381n	1.33270	1.17575n
+24.51	−10.96	−11.72	−41.45	+7.54	−29.10	+21.51	−14.99
50 2.31	50 3.14	50 10.93	50 11.30	50 12.99	50 10.90	31 24.61	31 24.81
−37° 27 13.96 14.57	14.79	27 22.58 22.76	22.95	27 24.64 23.59	27 22.55	8 36.26 36.36	8 36.46
−79 47 31	48 7			47 58	48 33	47 15	47 52
2.49044n +2993	2.49085n	+1685		2.49078n +2131	2.49112n	2.49030n +2062	2.49071n
2.52037	2.52078	2.50929	2.50990	2.51209	2.51243	2.51092	2.51133
−*331.40	−*331.70	−*321.60	−*321.90	−*325.20	−*325.40	−*324.30	−*324.60
−* .57	−* .57	−* .43	−* .43	−* .44	*− .44 ~~−.0~~	*− .51	*− .51
+24.15 −.16	+.03	+.03 +.17	+ .45	+.40 −.02	+.08 +.23 ~~+.05~~	+.11 −.12	+.05
−.51	−.04	−.04	−.00	−.01	−.08	−.15	−.25
−5 32.33	−5 32.26	−5 22.04	−5 21.98	−5 25.63	−5 25.69	−5 24.85	−5 25.31
−37 32 46.29	47.05	32 44.62	44.93	32 50.27	48.24	14 [illegible].11	[illegible].77
+2 15.01	12.24	+2 14.81	12.00	+2 14.27	11.44	−16 13.77	16.86
− 2.77		− 2.81		− 2.83		− 3.09	
−10.96	+9.56	−10.39	+8.15	−9.84	+8.70	−11.47	+7.07
+2 1.28		+2 1.61		+2 1.60		−16 28.33	
−30 45.01	45.77	30 43.01	43.32	30 48.67	46.64	30 29.44	30.10
−30 45.39		30 43.16		30 47.65		30 29.77	
30 26.86		24.63		29.12			

51 Androm. = ϑ Persei

h m s
1 30 20
° ′
+ 48 00
δ = − 5 37
− .10

	1874	1875
α	15.976	19.623
δ	+59 19.72	+59 38.121
dα/dt	+3.646	+3.647
dδ/dt	+18.399	+18.397
l cos δ	9.82551	9.82551
l b	.10134	.12552
l b′	9.92685	9.95103
l b′	9.91866	
l sin δ	9.87107	

corr α =
corr δ =

tan δ = +1.11
I = 3.08 s
K = −.023

−.06 1874 Nov. 26 −.058		−.07 Nov. 29 −.085		+.02 Dec. 2 +.012		+.08 1874 Dec. 15 −.005		−.13 1875 Dec 6 × −.136		−.09 × Dec 13 −.110	
1 29 53.2 56.3 59.4 30 5.6 8.7 11.8 14.9 17.9 24.1 27.3 30.3	29 36.4 38.5 41.5 30 28.0 30.8 33.0	29 53.2 56.3 59.5 30 5.6 8.7 12.1 15.0 18.0 24.1 27.2 30.2	29 41.7 45.4 47.7 30 37.6 40.4 44.3	29 52.9 56.0 59.1 30 5.3 8.4 11.5 14.4 17.5 23.7 26.8 29.8	29 33.1 36.7 39.6 30 40.3 43.9 46.1	29 50.3 53.3 56.6 30 2.4 5.5 8.7 11.7 14.8 21.0 24.2 27.3	29 36.8 39.3 41.8 30 26.7 30.3 32.9	30 5.2 8.3 11.4 17.5 20.5 23.9 26.8 29.9 36.0 39.0 42.4	29 53.2 55.9 58.2 30 42.7 45.8 48.4	30 1.1 4.1 7.2 13.4 16.6 19.7 22.8 25.8 32.0 35.1 38.1	29 52.7 55.3 58.2 30 30.0 33.3 35.5
3095 180		3099 180		3054 180		2758 180		2607		2159	
129 5 30 11.773 11.750 30 19.60 −7.85	29 38.80 30 30.60 +7.81 −.07 −3.62	1299 30 11.809 11.786 30 19.58 −7.79	29 44.93 30 40.77 +7.97 −.08 −3.60	125 4 30 11.400 11.377 30 19.55 −8.17	29 36.47 30 43.43 +8.21 +.02 −3.57	958 30 8.709 8.686 30 19.39 −10.70	29 39.30 30 29.97 +10.72 +.09 −3.41	30 23.700 23.677 30 23.50 +0.18	29 55.77 30 45.63 −0.01 −.14 −3.88	30 19.627 19.604 30 23.421 −3.821	29 55.40 30 32.93 +4.07×2 −.10 −3.79
+ 7.82 − .06 − 3.62 +.026 + 4.14 30 11.75 30 15.89 19.536 +~~48~~ 47	30 15.93 57 31.86 +2 15.07 + .3 −24.50 59 17.73	+ 7.91 − .09 − 3.60 +.046 + 4.22 30 11.79 ~~15.99~~ 16.01 19.656	16.08 33.92 +2 14.95 + .3 −30.00 59 19.17	+ 8.19 + .01 − 3.57 +.076 + 4.63 30 11.38 16.01 19.636	16.04 35.75 +2 14.43 + .3 −30.50 59 19.98	+ 10.70 − .00 − 3.41 +.236 + 7.29 30 8.69 15.98 15.968 15.976 −.008	16.09 57 33.53 +2 17.65 + .4 19.626 −32.00 59 19.58	− 0.04 − .15 − 3.88 − 4.07 30 23.68 19.61	19.65 16 24.23 −16 13.58 + .3 −33.30 59 37.65	+ 3.99 − .12 − 3.79 + 0.08 30 19.60 19.68 19.645 19.623 +.022	19.73 25.97 −16 14.10 + .3 −34.10 59 38.07
+32.97	−18.83	+26.88	−28.96	+34.93	−32.03	+29.41	−21.26	+27.93	−21.93	+24.23	−13.30
20 ″ ½ρ = −2.83		20 −2.87		20 −2.89		20 −2.98	5	−3.16	5	−3.21	
4 50.2 55.9 106.1 24 53.05	0 32.0 39.7 7.7 25 35.85	4 52.1 0.7 11.28 24 56.40	0 39.8 50.1 8.99 25 ~~49.95~~ 44.95	4 45.0 52.2 97.2 24 48.60	0 40.8 48.9 89.7 25 ~~44.85~~ 44.85	4 57.9 55.4 113.3 24 56.65	0 38.8 37.0 75.8 25 37.90	1 3.9 5.9 9.8 6 4.90	1 48.5 49.7 18.2 6 49.10	1 4.9 7.7 12.6 6 6.30	1 38.0 41.3 79.3 6 39.65
1.51812 1.44497 +27.86 25 20.91	1.27485n 1.10170n −12.64 25 23.21	1.42943 1.35628 +22.71 25 19.11	1.46180n 1.38865n −24.47 25 20.48	1.54320 1.47005 +29.52 25 18.12	1.50556n 1.43241 −27.07 25 17.78	1.46850 1.38716 +24.39 25 21.04	1.32756n 1.24622n −17.63 25 20.27	1.44607 1.39710 +24.95 6 29.85	1.34104n 1.29207n −19.59 6 29.51	1.38435 1.33538 +21.65 6 27.95	1.12385n 1.07488n −11.88 6 27.77
+47° ″ 57 27.44 26.29	25.14	57 29.24 28.55	27.87	57 30.23 30.40	30.57	57 27.31 27.69	28.08	16 18.50 18.67	18.84	16 20.40 20.49	20.58
−5 37 14 0.75340 +3000n 0.78340 +6.07	36 31 0.75240n .78241 +6.06	+1684 .77024 +5.89	.76925 +5.88	+2134 .77474 +5.95	.77374 +5.94	37 10 +4920 .80260 +6.35	36 29 .80160 +6.33	37 43 0.75390n +2066 .77456 +5.95	36 59 0.75310n 0.77376 +5.94	37 42 +863 .76253 +5.79	37 20 .76173 +5.78
−.29 −.49 −.54 +5.24 57 32.68 59 ~~50.0~~ 49.2 +2 16.5 +2 17.3 +2 15.01 + .28 − 29.50 +1 45.79	−.09 −.07 +5.98 31.04 18.2 59 18.47 15.29 −11.10 16.83 + 59 17.65 36.05	−.19 −.52 −.54 +5.16 57 34.40 49.9 15.3 15.8 +2 14.81 + .29 − 30.30 +1 45.10	−.23 −.08 +5.57 33.94 16.3 59 19.56 15.10 11.60 18.54 59 19.02 37.42	−.31 −.59 −.38 +5.11 57 35.34 50.2 14.5 14.5 +2 14.27 + .29 − 30.50 +1 44.06	−.27 −.08 +5.59 36.16 14.0 59 19.40 14.56 12.10 20.22 59 19.81 38.21	−.23 −.50 −.59 +5.53 57 32.84 51.7 +2 18.9 +2 18.2 +2 17.17 + .20 − 32.00 +1 45.47	−.12 −.07 +6.14 34.22 17.5 59 18.31 17.47 13.60 19.69 59 19.00 37.40	−.21 −.38 −.16 +5.58 16 24.08 0 11.4 −16 12.9 −16 12.9 −16 13.47 + .32 − 33.30 −16 46.75	−.13 .27 +5.54 24.38 13.0 59 37.33 13.45 14.90 37.63 59 37.48 5.88	−.15 −.30 −.16 +5.48 16 25.88 12.2 −16 13.7 13.8 −16 14.33 + .32 − 34.10 −16 48.11	−.05 −.25 +5.48 26.06 13.9 59 37.77 14.01 15.70 37.95 59 37.86

	1874							1875						1874.0		1875.0	
	m	s		′	″			m	s		′	″		α	δ	α	δ
														15.89		19.61	
Nov 16	30	19.65		59	47.4		Dec 6	30	23.50		59	71.4		16.01		.68	
21		19.63	-.02		48.3	+.9	11		23.49	-.06		72.0	+.6	16.01			
26		19.60	.03		49.2	.9	16		23.38	.06		72.5	.5	15.98			
Dec. 1		19.56	.04		50.0	.8	21		23.30	.08		72.9	.4	15.972		19.645	
6		19.57	.05		50.7	.7	26		23.22	.08		73.3	.4	.976	19.72	.623	38.12
11		19.45	.06		51.3	.6								-.004		+.022	
16		19.38	.07		51.8	.5											
21		19.30	.08		52.2	.4											
26		19.21	.09		52.6	.4											

τ Androm.

			1874	1875	
h	m	s			corr α =
1	33	12	α	33 12.42	corr δ =
+39°	37'		δ	56' 53.96	tang δ = +.84
			dα/dT	+3.518	I = 2.67 s
			dδ/dT	+18.37	K = −.020 s
z = + 2	26		l cos δ 9.88457	9.88457	
			l b .10134	.12552	
			l b' 9.98591	0.01009	
sin z = +.04			l b' 9.97772		
			l sin δ 9.80762		

1874 Nov. 26		Dec. 2		Dec. 10		Dec. 15		1875 Dec 6	
−.058		+.012		−.090		−.005		−.136 −13	
1 32 48.5	32 32.7	32 48.0	32 31.0	32 46.7	32 50.0	32 45.4	32 31.7	33 0.2	32 46.8
51.1	34.9	50.7	34.0	49.3	51.7	48.0	34.0	3.0	49.0
53.7	37.0	53.4	35.7	51.7		50.7	36.4	5.6	53.8
59.1		58.9		57.5		56.1		11.0	
33 1.8		33 1.4		33 0.2		59.0		13.6	
4.6		4.0		2.7		33 1.5		16.4	
7.3	33 21.5	6.8	33 23.1	5.4	33 31.6	4.1	33 11.6	19.0	33 31.7
10.0	23.8	9.6	25.4	8.0	34.1	7.0	13.7	21.6	34.4
15.3	26.5	15.0	27.7	13.6	36.0	12.3	16.0	27.1	37.0
18.0		17.6		16.2		14.9		29.8	
20.8		20.3		18.7		17.9		32.4	
2902		2857		2700		3169		1797	
240		240		240		300			
502	32 34.87	457	32 33.57	300	32 50.85	169	32 34.03		32 48.87
33 4.564	33 23.93	33 4.155	33 25.40	33 2.727	33 33.90	33 ~~1.635~~ 1.536	33 13.77	33 16.336	33 34.37
4.544		4.135		2.707		1.516		16.316	
+ 7.82		+ 8.19		+ 9.61		+ 10.70		− 0.04	
− .05		+ .01		− .07		− .00		− .11	
− 3.48 +.038		− 3.45 +.068		− 3.38 +.138		− 3.33 +.188		− 3.76	
+ 4.29		+ 4.75		+ 6.16		+ 7.37		− 3.91	
33 4.54		33 4.13		33 2.71		33 1.52		33 16.32	
33 8.83		33 8.88		33 8.87		33 8.89		33 12.41	
12.348		12.398		12.388		8.868 12.408		12.410	

Nov. 26		Dec. 2		Dec. 10		Dec. 15		Dec 6	
+29.69	−19.37	+30.58	−21.25	+11.88	−31.17	+ ~~26.60~~ 27.51	− ~~13.14~~ 12.23	+27.47	−18.03
25		25		25		25		5	
Hgl = − 2.83		− 2.89		− 2.93		− 2.98		− 3.16	
2 43.0	3 29.8	2 40.0	3 29.3	2 59.7	3 39.4	2 47.8	3 26.5	3 55.9	4 42.7
52.2	38.3	50.7	39.2	5.5	47.7	50.1	28.0	56.7	44.2
95.2	68.1	90.7	68.5	125.2	87.1	97.9	54.5	126	69
27 47.60	28 34.05	27 45.35	28 34.25	28 2.10 .60	28 43.55	27 48.95	28 27.25	8 56.30	9 43.45
1.47261	1.28713n	1.48544	1.32736n	1.07482	1.47374n	1.43949	1.08743n	1.43886	1.25600n
1.45852	1.27304n	1.47135	1.31327n	1.06073	1.47965n	1.41721	1.06515n	1.44895	1.26609n
+28.74	−18.75	+29.61	−20.57	+11.50	−30.17	+26.14	−11.62	+28.11	−18.45
28 16.34	28 15.30	28 14.96	28 13.68	28 14.10	28 13.38	28 15.09	28 15.63	9 24.41	9 25.00
+39° 54 32.01	33.05	54 33.39	34.67	54 34.35	34.97	54 33.26	32.72	13 23.94	13 23.35
32.53		34.03		34.66		32.99		23.64	
+2 25 41	26 27	25 38	26 27			25 42	26 20	25 8	25 55
0.38780	0.38970							0.38600	0.38840
+3005		+2138		+2773		+4921		+2071	
.42385	.41975	.40918	.41108	.41553	.41843	.43701	.43891	.40851	.41041
−2.65	−2.63	−2.57	−2.58	−2.60	−2.61	−2.74	−2.75	−2.56	−2.57
−.24 −.50	−.10	−.25 −.54	−.12	−.04 −.55	−.26	−.20 −.48	−.04	−.20 .78	−.08
−.31	−.36	−.31	−.40	−.36	−.44	−.34	−.38	−.58	−.71
−3.20	−3.09	−3.13	−3.10	−3.00	−3.31	−3.28	−3.17	−3.34	−3.36
+39 54 28.81	29.96	54 30.26	31.57	54 31.35	31.66	54 29.98	29.55	13 20.60	19.99
+2 15.01 14.90		+2 14.27 14.16		+2 15.54 15.42		+2 17.17 17.05		−16 13.77 13.90	
− .11 −10.02		− .11 −10.75		− .12 −11.55		− .12 −11.93		− .13	
−28.89		−29.12		−29.92		−30.30		−31.85 −13.48	
+1 46.6 +51	~~16.47~~	+1 45.04		+1 45.50		+1 46.75		−16 45.75	
+56 15.32	16.47	56 15.30	16.61	56 16.85	17.16	56 16.73	16.30	56 34.85	34.24
+56 15.89		56 15.95		56 17.00		56 16.51		56 34.54.	
56 34.26		34.32		35.37		34.88			

1874

1875

43 Cass

h	m	s
1	33	6

°	'	
+ 67	25	

sin z = $-$.42
z = $-$25° 2'

	1874	1875
α	s 1.967	6.307
δ	+24 16.43	+ 24 34.84
$\frac{d\alpha}{dT}$	+4.341	+ 4.342
$\frac{d\delta}{dT}$	+18.409	+ 18.406

l cos δ	9.58436	9.58436
l C	10134	.12552
l C'	9.68570	9.70988
l C'	9.67751	

		m	s		'	"	
Nov.	16	32	66.75		24	44.7	
	21		66.68	$-$.07		46.1	+ 1.4
	26		66.59	.09		47.4	1.3
Dec.	1		66.48	.11		48.6	1.2
	6		66.36	.12		49.7	1.1
	11		66.22	.14		50.7	1.0
	16		66.06	.16		51.6	.9
	21		65.88	.18		52.3	.7
	26		65.69	.19		53.0	.7

l sin δ = 9.96535

		m	s		'	"	
Dec.	6	33	11.07		24	70.4	
	11		10.90	$-$.17		71.3	+.9
	16		10.74	.16		72.1	+.8
	21		10.58	.16		72.9	.8
	26		10.42	.16		73.7	.8

corr α = +.147 s
corr δ = $-$.80"

tang δ = +2.40
I = 5.36 s
K = $-$0.38 s

1874 Nov. 29 $-$.07 $-$.085
+.05 1874 Dec 23 $-$.005
$-$.09 1875 Dec 13 $-$.110 +

1 32 48.3 32 13.5 32 40.6 31 58.0 32 56.6 32 5.0
57.2 17.5 43.4 5.1 59.2 9.9
53.7 22.0 46.3 8.2 33 2.0 14.6
56.5 48.8 4.2
59.0 51.8 7.2
33 1.4 54.3 10.0
4.4 32 45.4 56.7 32 54.5 12.7 32 43.7
7.1 51.6 59.4 15.4 47.4
9.6 55.0 33 2.2 18.1 53.4

2912 4035 1854
240 60 120
5312 32 17.67 4635 32 3.77 654 32 9.83
32 59.022 32 50.67 32 51.500 32 54.50 33 7.267 32 48.17

+7.97 +14.55 +4.0×2
58.984 $-$.17 51.462 +.12 7.229 $-$.22
33 6.552 33 5.810 33 10.853
$-$7.554 $-$4.55 $-$14.354 $-$3.83 $-$3.620 $-$4.52
$-$7.7069 33 2.23 $-$14.5049 2.30 $-$3.775 6.51

+ 7.91 + 14.53 + 3.99 ~~4.00~~
$-$ .20 $-$ .01 $-$ .26
$-$ 4.55 $-$.209 22 31.82 $-$ 3.83 +.511 22 37.26 $-$ 4.52 ~~$-$.179~~ 41 24.06
+ 3.16 +2 14.95 + 10.69 +2 15.18 $-$ 0.79 $-$16 14.10
32 58.98 + 13 32 57.46 + 14 33 7.23 + 1.4
$-$31.80 $-$36.20 $-$36.90
33 2.14 67 24 16.27 2.15 24 17.64 6.44 24 34.46
6.481 2.145 6.491 6.440 34.46
1.967 6.307
+178 +130

+ 41.35 + 8.35 + 47.73 $-$ 2.00 +57.44 +19.10
0 0 40
$\mathfrak{M}_\mu$ = $-$ 2.87 $-$ 3.05 $-$ 3.21

0 19.9 0 36.1 0 13.7 0 38.4 1 19.4 1 39.6
28.6 44.1 19.2 41.9 23.1 43.9
48.5 80.2 32.9 80.3 42.5 83.5
0 24.25 0 40.10 0 16.45 0 40.15 41 21.25 41 41.75

1.61648 0.92169 1.67877 0.47712n 1.75921 1.28103
1.30218 0.60739 1.35630 0.15463n 1.46909 0.99091
+20.05 + 4.05 + 22.71 $-$ 1.43 +29.45 + 9.79
0 44.30 0 44.15 0 39.16 0 38.72 41 50.70 41 51.54

+67° 22' 4.05" 4.20 22 9.19 9.63 40 57.65 56.81
4.12 9.41 57.23
$-$ 25 1 43 1 27 1 51 1 27 2 27 2 6
1.42940n 1.42930 1.42970 1.42950n
+1682 +1959 +863
1.44622 1.44612 1.44899 1.44889 1.43833 1.43817
+27.94 +27.93 +28.12 +28.11 +27.44 +27.43

$-$ ~~12~~ 34.23 $-$.01 $-$.43 $-$.26 $-$.00 $-$.60 .60 $-$.07
$-$.04 $-$.08 $-$.03 $-$.07 $-$.21 $-$.27
+ 27.56 +27.84 + 27.66 +28.04 + 26.58 + 27.09
22 31.61 32.04 22 36.85 37.67 40 24.23 23.90
24 48.2 52.6 25 11.7
+2 16.6 16.2 15.8 14.9 $-$16 12.5 $-$16 12.2
+2 16.4 15.3 12.3
+2 15.6 24 15.82 14.5 24 16.75 13.1 24 44.34
+2 14.81 16.01 16.25 +2 14.82 16.10 17.51 $-$ 16 14.33 12.99 44.01
+ 1.20 13.39 + 1.28 17.79 + 1.34 18.49
31.80 24 16.03 $-$ 36.20 24 17.16 $-$ 36.90 24 34.17
+1 44.21 34.44 +1 39.90 35.57 $-$ 16 49.89

ν Piscium
h m s
1 34 36
° ′
+ 4 51
z = + 37 32
lim z. + 6′

			1874				
Nov.	16	m 34	s 55.82		50′	″ 78.7	
	21		55.81	−.01		78.5	−.2
	26		55.80	.01		78.3	.2
Dec.	1		55.78	.02		78.1	.2
	6		55.76	.02		77.8	.3
	11		55.73	.03		77.5	.3
	16		55.70	.03		77.3	.2
	21		55.66	.04		77.0	.3
	26		55.62	.04		76.7	.3

1874
α s 52.538
δ +50 56.″83
$\frac{d\alpha}{dT}$ +3.s117
$\frac{d\delta}{dT}$ +18.″359

log cos δ 9.99844 ~~9.99946~~
l b .10134
l b′ .10080 .10978
l b′ ~~.09261~~ .09159
l sin δ 8.92710

1875
55.655
+51 15.19
+ 3.117
+ 18.357
9.99844
9.99946
.12552
~~0.12498~~ 0.12396

corr α = −.s015
corr δ = −.″17
tang δ = +.09
I. 2.s07
k = −.015

×

	−.06		−.07		+.02		+.08		+.05		−.13	
	1874								1874		1875	
	Nov. 26		Nov. 29		Dec. 2		Dec. 15		Dec. 23		Dec 6	
	−.058		−.085		+.012		−.005		−.005		−.136	
1	34 35.6	34 25.3	34 35.5	34 29.2	34 35.1	34 25.4	34 32.6	34 22.2	34 28.7	34 19.8	34 46.9	34 36.5
	37.7	27.2	37.5	31.2	37.2	27.4	34.8	24.3	30.7	22.2	49.0	38.6
	39.7	29.0	39.6	33.4	39.3	29.5	36.7	26.0	32.8	23.7	51.1	40.5
	43.9		43.7		43.4		40.4		37.0		55.1	
	46.0		45.8		45.5		43.0		39.1		57.2	
	48.0		47.9		47.6		45.0		41.1		59.3	
	50.0	35 4.4	49.9	35 3.1	49.7	35 9.8	47.0		43.1	35 2.2	1.3	35 13.0
	52.1	6.7	52.0	7.1	51.8	11.9	49.1		45.2	4.2	3.4	14.8
	56.4	9.1	56.3	9.1	55.9	13.8	53.6		49.3	6.3	7.4	17.0
	58.4		58.1		58.0		55.5		51.5		9.7	
	35 0.5		35 0.3		35 0.1		57.3		53.6		11.8	
	4683		4666		4636		4952		4521		3522	
	60		60		60	27.43					300	
	5283	34 27.17	5266	34 31.27	5236	34 ~~27.10~~		34 24.17		34 21.90	6522	34 38.53
	34 48.027	35 6.73	34 47.~~964~~ .873	35 7.10	34 47.600	35 11.83	34 45.018		34 41.100	35 4.23	34 59.291	35 14.93
		+7.86		+7.98		+8.21		+10.72		+14.56		−0.042
	48.012	−.01	47.858	−.01	47.585	+.00	45.003	+.01	41.085	+.00	59.276	−.01
	34 55.80		34 55.79		34 55.78		34 55.74 71		34 55.64		34 59.21	
	− 7.79	−3.26	− 7.93	−3.25	− 8.20	−3.24	− 10.69 71	−3.17	− 14.56	−3.10	+0.067	−3.56
	− 7.78	34 52.60	− 7.91	52.57	− 8.19	52.5~~6~~.55 .55	− 10.6769	52.56	− 14.55	52.~~55~~ 54 .54	+ 0.08	55.69
	+ 7.82		+ 7.91		+ 8.19		+ 10.40		+ 14.53		− 0.03	
	− .00		− .01		+ .00		+ .00		− .00		− .01	
	− 3.26 −.143	49 6.62	− 3.25 −.138	6.52	− 3.24 −.123	6.33	− 3.17 −.053	3.50	− 3.10 +.017	49 4.14	− 3.56	7 54.24
	+ 4.56	+2 15.07	+ 4.65	+2 14.95	+ 4.95	+2 14.43	+ 4.53	+2 17.65	+ 11.43	+2 15.18	− 3.60	−16 13.58
	34 48.01	− 1.8	34 47.86	− 1.9	34 47.58	− 18	34 45.00	− 2.1	34 41.08	− 2.1	34 59.28	− 2.0
		−21.50		−21.40		−21.20		−20.50		−20.10		−23.20
	34 52.57 +4 50	58.39	52.51	50 58.17	52.53	50 57.76	52.53	50 58.55	52.51	[52.530 57.12	55.68	50 15.46
	55.687	~~46.74~~	55.627		55.647		55.647		55.627	538 −.008		~~14.46~~
	+ 20.83	− 18.70	+ 16.64	− 19.14 23	+ 20.50 .17	− 14.23 2	+ 20.85		+ 14.20 19	− 23.13	+20.76	− 15.64
	30		30		30		30		30		13	
Hefe	− 2.83		− 2.87		− 2.89		− 2.98		− 3.05		− 3.16	
	2 20.9	3 10.9	2 26.5	3 11.4	2 22.3	3 19.2	2 25.4	3 3.7	2 27.8	3 20.9	3 40.0	4 27.9
	33.9	25.1	44.0	27.0	36.8	33.0	33.1	11.0	39.5	32.2	39.4	27.7
	54.8	36.0	70.5	38.4	59.1	52.2	58.5	14.7	67.3	53.1	79.4	16
	32 27.40	33 18.00	32 35.25	33 19.20	32 29.55	33 26.10	32 29.25	33 7.35	32 33.65	33 26.55	13 39.70	14 27.80
	1.31869	1.27184n	1.22011	1.28398n	1.30471	1.38435n	1.31911		1.28330	1.36418n	1.31723	1.19424
	1.41949	1.37264n	1.32091	1.38478n	1.40551	1.48515n	1.41172		1.37591	1.45679n	1.44119	1.431820
	+26.27	−23.59	+20.94	−24.25	+25.44	−30.56	+25.81		+23.76	−28.63	+27.62	−20.87
	32 53.67	32 54.41	32 56.19	32 54.95	32 54.99	32 55.57	32 55.06		32 57.41	32 57.92	14 7.32	6.99 14 6.79
+4°	49 54.″68 54.31	53.94	49 52.16 52.78	53.40	49 53.36 53.08	52.81	49 53.29		49 50.94 50.68	50.43	8 41.03 41.19	18 41.36
+37	30 20	31 11							30 27	31 19	29 52	30 50
	1.64510	1.64530									1.64500	1.64520
	+3009		+1683		+2139		+4921		+1961		+2074	
	1.67519	1.67539	1.66193	1.66213	1.66649	1.66669	1.69431	1.69451	1.66471	1.66491	1.66574	1.66594
	−47.34	−47.36	−45.91	−45.93	−46.40	−46.41	−49.47	−49.49	−46.21	−46.23	−46.32	−46.34
	−.02 −.33	−.02	−.01 −.34	−.02	−.02 −.34	−.03	−.02 −.32		−.02 −.32	−.03	−.02 −.62	−.01
	−.27	−.36	−.29	−.36	−.27	−.37	−.30	−.37	−.26	−.34	−.55	−.66
	−47.63	−47.74	−46.21	−46.31	−46.69	−46.81	−49.79		−46.49	−46.60	−46.89	−47.01
	49 7.05	6.20	49 5.95	7.09	49 6.67	6.00	49 3.50		49 4.45	3.83	7 54.14	54.35
	51 1.83		1.42		1.80		1.73		1.69		51 38.14	
	+2 1.13	1.21	1.23	1.11	1.13	1.20	1.38		1.25	1.31	−16 1.57	1.59
	+2 11.70		11.70		11.65		13.80		12.80		−16 15.80	
	+2 11.5	50 58.84	11.5	50 57.61	11.5	50 57.98	13.6	50 58.36	12.6	50 57.31	−16 16.0	50 15.25
	+2 15.01 13.29	57.99	+2 14.81 13.06	58.75	+2 14.27 12.51	57.31	+2 17.17 15.36		+2 14.82 12.96	56.69	−16 13.77 15.49	15.46
	− 1.72 −3.14		− 1.75 3.04		− 1.76 2.84		− 1.81 2.14		− 1.86 1.74		− 1.92 4.84	
	21.50 +50	58.41	21.40	50 58.18	21.20	50 57.64	20.50		20.10	50 57.00	23.20	15.35
	+1 51.79	51 14.77	+1 51.66	15.54	+1 51.31	16.00	+1 54.86	18.72	+1 52.86	15.36	−16 38.89	

1875

o Piscium

Dec. 6	34m	59s.21		51′	38″.4	
11		59.18	-.03		38.2	-.2
16		59.14	.04		37.9	.3
21		59.11	.03		37.7	.2
26		59.07	.04		37.4	.3

1874.0 α	δ	1875.0 α	δ
44.38		47.68	
41		.65	
34		.61	
.45			
44.395		47.647	
.628	21.21	.790	39.47
-.233		-.143	

-.09

Dec 13 +

-110

34 42.8 34 32.3
44.9 34.0
46.9 35.7
51.0
53.0
55.1
57.2 35 20.2
59.2 22.0
3.4 23.9
5.5
7.6

4266
180
6066 34 34.00
34 55.145 35 22.03
55.130 +4.0×2
34 59.16 -.01
- 4.03
- 4.01 -3.51
5563

+ 3.99
- .01
- 3.51
+ 04% 7 5516
34 55.13 -16 1410
- 20
34 55.60 -22.90
55.640 5′ 16.16
655
-.015

+21.14 -26.89
10

-3.21
3 38.7 4 42.9
40.2 43.4
78.9 63
~~10~~ 89.45 ~~16~~ 43.15
13 14

1.32510 1.42959n
1.44906 1.55355n
+28.12 -35.77
14 7.56 14 7.38

8 40.79 40.97
40.88
29 51 30 55
1.64580 1.64600
+8.72
1.165372 1.165392
- 45.95 -45.97

-.02 .65 -.04
-.54 -1.71
- 45.61 -45.82
7 55.18 55.05
54 381
-16 17.1 17.9
-16 17.2
-16 14.33 51 16.00
1.75 16.28 15.97
- 22.90 40.54
-16 39.18 51 15.98

1874 1875

θ Piscium

	Nov. 16	38	47.94		31	43.9			Dec. 6	38	51.40		31	63.9	
	21		47.94	-.00		43.7	-.2		11		51.37	-.03		63.6	-.3
	26		47.93	.01		43.6	.1		16		51.33	.04		63.4	.2
	Dec. 1		47.92	.01		43.5	.1		21		51.30	.03		63.2	.2
	6		47.90	.02		43.3	.2		26		51.26	.04		63.0	.2
	11		47.87	.03		43.1	.2								
	16		47.84	.03		42.9	.2								
	21		47.80	.04		42.7	.2								
	26		47.76	.04		42.4	.3								

h m s
1 38 48 sin z = +.56
+ 8° 32′ z = +33° 51′

	1874	1875
α	44.628	47.790
δ	+31′ 21″.21	+31 39.47
$\frac{d\alpha}{dt}$	+3.162	+3.162
$\frac{d\delta}{dt}$	+18.257	+18.255
l cos δ	9.99517	9.99517
l b	.10134	.12552
l b′	.09651	.12069

l b′ .08832

l sin δ = 9.17139

corr α =
corr δ =
tang δ = +.15
I = 2.08
K = -.016

Dec 6 12

1874 Nov. 29 -07 | Dec. 2 +02 | Dec. 15 +08 | Dec. 23 +05 | 1875 Dec 6 -13 ✕ | Dec 12 -06 ✕

-.085 | +.012 | -.005 | -.005 | -.136 | -.085

1 38 27.2 38 14.6 | 38 27.0 38 17.4 | 38 24.5 38 16.9 | 38 20.6 38 9.0 | 38 38.9 38 29.4 | 38 35.1 38 36.4
29.3 16.6 | 29.1 19.0 | 26.5 19.2 | 22.7 10.8 | 41.0 31.3 | 37.1 38.1
31.5 18.5 | 31.2 20.8 | 28.7 21.0 | 24.8 12.6 | 43.1 33.1 | 39.2 39.6
35.6 | 35.3 | 32.7 | 28.9 | 47.2 | 43.3
37.7 | 37.5 | 34.9 | 31.0 | 49.2 | 45.4
39.8 | 39.6 | 36.9 | 33.1 | 51.3 | 47.5
42.0 38 49.2 | 41.7 39 2.7 | 39.0 38 37.6 | 35.1 38 49.6 | 53.4 39 5.5 | 49.6 39 19.1
44.0 51.3 | 43.7 4.8 | 41.1 33.5 | 37.3 57.5 | 55.5 7.0 | 51.8 20.5
48.1 53.0 | 47.8 7.6 | 45.3 35.0 | 41.3 53.1 | 59.6 9.1 | 55.8 22.1
50.1 | 49.9 | 47.4 | 43.5 | 1.8 | 57.9
52.3 | 49.7 | 48.5 | 45.7 | 3.9 | 0.0
| 52.0 | | | |

43.76 38 16.57 | 43.48 38 19.07 | 40.55 38 19.03 | 36.50 38 10.80 | 56.49 38 31.27 | 52.27 38 38.03
38 39.782 38 51.17 | 38 39.527 39 5.03 | 38 36.864 38 53.37 | 38 33.~~182~~ .091 38 51.40 | 38 51.355 39 7.20 | 38 47.518 39 20.57

39.766 +7.97 | 39.511 +8.21 | 36.848 +10.72 | 33.075 +14.56 | 51.339 -0.02 | 47.502 +3.80
38 47.92 -.01 | 38 47.92 +.00 | 38 47.85 +.01 | 38 47.78 +.01 | 38 51.40 -.02 | 38 51.36 -.01
-8.15 | -8.41 | -11.00 | -14.71 | -0.06 | -3.86
-3.29 | -3.29 | -3.22 | -3.15 | -3.61 | -3.57

+ 7.91 38 44.44 | + 8.19 44.43 | + 10.71 44.36 | + 14.53 44.~~50~~.49 | - 0.03 47.69 | + 3.73 47.72
- .01 | + .08 | - .00 | - .00 :49 | - .02 | - .01
- 3.29 -.128 | - 3.29 -.128 | - 3.22 -.058 | - 3.15 +.012 | - 3.61 | - 3.57
+ 4.61 | + 4.90 | + 7.49 | + 11.38 | - 3.66 | + 6.15
38 39.77 29 30.85 | 38 39.51 29.98 | 38 36.85 27.81 | 38 33.07 29 29.09 | 38 51.34 48 20.11 | 38 47.50 21.81
+2 14.95 | +2 14.43 | +2 17.65 | +2 15.18 | -16 13.58 | -16 14.19
38 44.38 -1.7 | 44.41 -1.7 | 44.34 -1.9 | 44.45 -1.9 | 47.68 -1.8 | 47.65 -1.8
47.542 -22.30 | 47.572 -22.30 | 47.502 -21.70 | 44.395 47.612 -21.40 | -24.40 | 47.665 -24.00
+8 31 21.80 | 31 20.41 | 31 21.86 | .628 31 20.97 | 31 40.33 | .290 31 41.82
| | | -.233 | | -.425

+23.21 -11.39 | +20.46 -25.50 | +17.83 -16.51 | +22.~~38~~ .29 -18.~~22~~ .31 | +26.08 -15.85 | -9.49 -33.05
50 | 50 | 50 | 50 | 30 | 30

Hgt -2.87 | -2.89 | -2.98 | -3.05 | -3.16 | -3.20

2 0.2 2 48.2 | 2 5.0 3 2.0 | 2 12.3 2 54.3 | 2 5.5 2 55.1 | 3 20.5 4 8.1 | 3 33.1 4 29.1
16.0 59.5 | 19.7 15.9 | 18.0 0.1 | 17.8 5.2 | 20.1 8.9 | 34.8 29.9
16.2 102.7 | 24.7 17.9 | 30.3 114.4 | 23.3 120.3 | 0.6 10 | 79 10
52′ 8.10″ 52 51.35 | 52 12.35 53 8.95 | 52 15.15 52 57.20 | 52 11.65 53 0.15 | 33 20.30 34 8.50 | 33 33.95 34 29.50

1.36568 1.05652n | 1.31091 1.40654n | 1.25115 1.21775n | 1.~~25084~~ 34810 1.26269n | 1.30276 1.20003n | 0.99727 1.51917n
1.46219 1.15303n | 1.40742 1.50305n | 1.34766 1.31426n | 1.44466 1.33707n | 1.42345 1.32072n | 1.09796 1.63986n
+28.98 -14.23 | +25.55 -31.85 | +22.26 -20.62 | +28.06 -22.44 | +06.51 -20.93 | +12.53 -43.64
52 37.08 52 37.12 | 52 37.90 52 37.10 | 37.41 36.58 | 52 ~~39.71~~ 39.49 52 37.71 | 33 46.81 33 47.57 | 33 46.48 33 45.86

30 11.27 11.23 | 30 10.45 30 11.25 | 30 10.94 11.77 | 30 ~~8.64~~ 8.86 9.75 10.64 | 49 1.54 49 0.78 | 49 1.87 2.49
11.25 | 10.85 | 11.35 | | 1.16 | 2.18
+33 50 1 50 44 | | | 50 5 50 53 | 49 32 50 20 | 49 46 50 41
1.58630 1.58650 | | | | 1.58620 1.58640 |
+16.79 | +21.44 | +49.22 | +19.65 | +20.80 | +12.26
1.60309 1.60329 | 1.60774 1.60794 | 1.63552 1.63572 | 1.60595 1.60615 | 1.60700 1.60720 | 1.59846 1.59866
-40.09 -40.11 | -40.53 -40.55 | -43.20 -43.22 | -40.36 -40.38 | -40.46 -40.48 | -39.67 -39.69

-.04 -.29 -.01 | -.03 -.32 -.04 | -.02 -.33 -.01 | -.03 -.28 -.02 | -.03 -.58 -.01 | -.07 -.69 -.10
-.23 -.31 | -.24 -.34 | -.28 -.35 | -.22 -.30 | -.50 -.62 | -.54 -.67
-40.36 -40.43 | -40.80 -40.93 | -43.50 -43.58 | -40.61 -40.70 | -40.99 -41.11 | -40.28 -40.46
29 30.91 30.80 | 29 29.65 30.32 | 29 27.44 28.19 | 29 28.25 29.94 | 48 20.55 19.67 | 48 21.59 22.03
31 43.5 | 43.5 | 42.9 | 42.6 32 | 3.7 | 3.5
+2 12.6 12.7 | 13.9 13.2 | 15.5 14.7 | 14.4 12.7 -16 | 16.6 15.8 | 18.1 18.5
+2 12.6 | 13.5 | 15.1 | 13.5 | 16.2 | 18.3
+2 14.81 31 21.82 | +2 14.27 31 20.01 | +2 17.17 31 21.25 | +2 14.82 31 19.97 | -16 13.77 31 40.62 | -16 14.53 31 41.27
- 1.60 13.21 21.71 | - 1.61 12.66 20.68 | - 1.66 15.57 22.60 | - 1.70 13.12 21.66 | - 1.76 15.53 39.74 | - 1.79 16.32 41.71
22.30 -4.04 | 22.30 4.04 | 21.70 3.44 | 21.40 3.14 | 24.40 6.14 | 24.00 5.74
∓1 50.91 +31 21.76 | ∓1 50.36 31 20.34 | ∓1 53.81 31 21.62 | +1 51.72 31 20.81 | -16 39.93 31 40.18 | -16 40.32 31 41.49
31 40.02 | 38.66 | 39.85 | 39.07 | ~~38.75~~ |

Q 1 170

B.A.C. 544

h m s
1 41 1.6
° '
+ 87 20

ζ = + 5 3

sin ζ = +.09

	1874	1875
α		41 16.66
δ		19' 45.71
dα/dT		+3.517
dδ/dT		+18.11
log cos δ	9.90043	9.90043
log C	.10134	.12552
log C'	.00177	0.02595
log C'	9.99358	
log sin δ	9.78280	

cos α =
cos δ =

tang δ = +.76
s
I = 2.60
s
k = -.020

	1874.0 α	δ	1875.0 α	δ

1874 Nov. 29		1874 Dec. 15		-.06 1875 Dec 12		Dec 13
-.085		-.005		-.085		Ch f.
1 40 53.3	40 39.0	40 50.3	40 34.8	41 1.0	40 46.3	
55.7	41.6	52.9	37.4	3.7	48.4	
58.4	43.8	55.4	39.6	6.3	50.6	
41 3.4		41 0.6		11.5		
6.2		3.2		14.0		
8.8		5.7		16.6		
11.4	41 29.0	8.4	41 19.7	19.3	41 50.3	
14.0	31.3	10.9	22.4	21.9	52.7	
19.1	33.8	16.2	24.8	27.1	54.7	
21.7		18.6		29.7		
24.3		21.4		32.3		
2763		2436		1834		
180		180				
963	40 41.47	636	40 37.27		40 48.43	
41 ~~8.936~~ 8.755	41 31.37	41 5.782	41 22.30	41 16.673	41 52.57	
8.735		5.762		16.653		
+ 7.91		+ 10.41		+ 3.73		
- .06		- .00		- .06		
- 3.50	+.017	- 3.38	+.137	- 3.76		
+ 4.35		+ 7.33		- 0.09		
41 8.73		41 5.76		41 16.65		
41 13.08		41 13.09		41 16.56		
16.597		13.085	16.601	16.560		

.28 62
+ ~~27.47~~ -22.43 + 28.51 - 16.52 + 28.24 - 35.90
0 0 45 45

- 2.87 - 2.98 - 3.20

4 28.0 0 18.1 4 33.3 0 19.1 0 39.5 1 47.1 0 44.8 1 43.7
39.9 31.3 33.9 21.4 42.0 49.9 48.6 45.9
67.9 49.4 67.2 40.5 81.5 17.0 13.4 9.6
4' 33.95 5 24.70 4 33.60 5 20.25 45 40.75 46 48.50 45 46.70 46 44.80

1.43584 1.35449n 1.45500 1.21801n 1.45086 1.55509n
1.43761 1.35626n 1.44858 1.21159n 1.47681 1.58164n
+27.39 -22.71 +28.09 -16.28 +29.98 -38.11
5 1.34 5 1.99 5 1.69 5 3.97 46 10.73 46 10.39

+37 17 47.01 46.36 17 46.66 44.38 36 37.62 37.46
46.68 45.52 37.79
+5 2 27 3 18 2 26 3 13 1 53 3 00
0.70590 0.70700 0.70500 0.70660
+1678 +4923 +1227
.72268 .72378 .75513 .75623 .71727 .71887
-5.28 -5.29 -5.69 -5.70 -5.21 -5.23

-.20 -.44 -.13 -.21 -.43 -.07 -.21 -.46 -.34
-.51 -.04 -.55 -.04 -.10 -.27
-5.99 -5.46 -6.45 -5.81 -5.52 -5.84
+37 17 40.02 40.90 17 40.21 38.57 36 32.10 32.12
+2 14.81 +2 17.17 -16 14.53
- .26 14.55 - .27 16.90 - .29 14.82
- 28.07 -13.96 -29.49 -11.38 -31.57 -13.46
+1 46.48 +1 47.41 -16 46.39
+19 27.50 27.38 19 27.62 25.98 19 45.71 45.73

+19 ~~26.94~~ 27.44 19 26.80 19 45.72
19 ~~45.55~~ 45.55 44.91

X Ceti
h m s
1 43 27
° '
−11 18
z = +53 41
sin z = +.81

1875
α 43 26.83
δ 10' 849
dα/dt 17 20.78
dδ/dt +2.943
+ 17.95

l cos δ 9.99150
l6 .12552
l6' .11702

l sin δ 9.29214n

corr α =
corr δ =
tang δ = −.20
I = 2.09 s
K = −.016 s

1874			1874				−.06 1875				−.09		
Nov. 29			Dec. 15				Dec 12				Dec 13		
			Ch. J.				−.085				−.110		
						43	14.0	43	11.1	43	13.8	43	7.0
							16.0		13.1		15.9		9.0
							18.0		14.9		17.9		10.7
							22.3				22.1		
							24.6				24.2		
							26.6				26.3		
							28.8	43	42.7		28.3	43	49.3
							30.8		44.7		30.5		
							34.8		47.0		34.7		
							37.0				36.7		
							39.0				38.8		
							2919	43	13.03		2892	43	8.90
						43	26.536	43	44.80	43	26.291	43	49.30
							26.520				26.275		
						+	3.73			+	3.99		
						+	.02			+	.02		
						−	3.59			−	3.58		
						+	0.16			+	0.43		
						43	26.52			43	26.27		
						43	26.68			43	26.70		
											26.690		
							+13.51		−18.26		+17.39		−23.01
40		40				20				20			
							−3.20				−3.21		
2	20.0	1	29.9	2	31.1	2	58.4	3	39.2	2	53.5	3	45.3
	39.7		39.4		40.9		56.2		38.1		52.4		43.8
	59.7"		69.3		72.0		14.6		17.3		59		91
42'	29.85	41	34.65	42	36.00	22	57.30	23	38.65	22	52.95	23	44.55
							1.13066		1.26150n		1.24030		1.36192n
							1.24768		1.37852n		1.35732		1.47894n
							+17.69		−23.91		+22.77		−30.12
						23	14.99	23	14.74	23	15.72	23	14.43
					−11	0	26.64		26.39	0	27.37		26.08
							26.51				26.72		
					+53	38	9	39	51	39	5	39	57
							1.89230		1.89280				
							+1231				+887		
							1.90461		1.90511		1.90117		1.90167
							−80.28		−80.37		−79.65		−79.74
							0		0		0		0
							+.01	−.47	+.03		+.03	−.45	+.06
							−.44		−.54		−.44		−.55
						−1	20.71	−1	20.88	−1	20.06	−1	20.23
					−11	1	47.35		47.27	1	47.43		46.31
						−16	14.53			−16	14.33		
						−	2.59	17.12		−	2.60	16.93	
							−18.21	−0.26			−18.11	−0.16	
						−16	35.33			−16	35.04		
						−18	22.68		22.60	18	22.47		21.35
						−18	22.64			18	21.91		

1874 1875

ζ Ceti

h m s
1 45 18
° '
−10 57
z +53 20
sin z = +.80

α
δ
dα/dt
dδ/dt

45 17.48
57 13.40
+2.958
+17.90

l cos δ 9.99202 9.99202
l C .10134 .12552
l C' .09336 0.11754
l C' .08517
l sin δ 9.27864n

corr α =
corr δ =
tang δ = −.19
s
I = 2.09
s
k = −.016

1874 Nov. 29 | Dec. 15 | 1874 Dec. 21 | −.06 1875 Dec 12 | −.09 Dec 13

−.085 | Ch. f. | −.040 | −.085 | −.110

1 44 57.3 44 45.4 | 44 51.8 44 38.3 | 45 4.7 44 55.4 | 45 4.4 44 54.4
57.4 47.1 | 53.6 40.2 | 6.7 57.5 | 6.5 56.8
45 1.5 49.7 | 55.8 41.8 | 8.9 59.5 | 8.7 58.5
5.6 | 45 0.1 | 13.1 | 12.7
7.7 | 2.1 | 15.1 | 15.0
9.9 | 4.2 | 17.2 | 17.0
12.0 45 24.3 | 6.3 45 14.2 | 19.4 45 38.4 | 19.0 45 24.9
14.0 25.9 | 8.5 16.3 | 21.4 40.9 | 21.2 27.1
18.1 27.4 | 12.7 18.3 | 25.5 42.4 | 25.5 29.9
20.3 | 14.7 | 27.7 | 27.5
22.5 | 16.7 | 29.8 | 29.6

2283 | 2265 | 1895 | 1871
120 | 180
1883 44 47.40 | 465 44 40.10 | 44 57.47 | 44 56.57
45 9.845 45 25.67 | 45 4.227 45 16.27 | 45 17.227 45 40.57 | 45 17.009 45 27.30
9.829 | 4.211 | 17.211 | 16.993

+ 7.91 | + 13.48 | + 3.73 | + 3.99
+ .02 | + .01 | + .02 | + .02
− 3.33 −.372 | − 3.20 −.242 | − 3.59 | − 3.59
+ 4.60 | + 10.29 | + 0.16 | + 0.42
45 9.83 | 45 4.21 | 45 17.21 | 45 16.99

45 14.43 | 45 14.50 | 45 17.37 | 45 17.41
17.388 | 14.465 17.458 | | 17.390.

+22.44 −16.03 | +24.13 −12.04 | +19.76 −23.34 | +20.44 −10.29
20 20 | 20 0 | 0
Hel. −2.87 | −3.02 | −3.20 − ~~3.20~~ | −3.21
0 16.2 1 2.9 | 0 22.5 1 13.3 | 0 16.9 1 3.8 | 1 42.4 2 39.0 | 1 41.1 2 22.4
36.4 23.0 | 32.1 24.0 | 28.1 15.3 | 41.1 34.8 | 42.0 21.7
52.6 25.9 | 54.6 37.3 | 45.0 19.1 | 35 16.8 | 31 41
20 26.30 21 12.95 | 20 27.30 21 18.65 | 20 22.50 21 9.55 | 21 41.75 22 38.40 | 21 41.55 22 22.05

1.35102 1.20493n | 1.38256 1.08063n | 1.29579 1.36810n | 1.31048 1.01242n
1.44438 1.29829n | 1.46773 1.18580n | 1.41333 1.48564n | 1.42802 1.12996n
+27.82 −19.87 | +29.36 ~~−12.18~~ 15.34 | +25.90 −30.60 | +26.79 −13.49
20 54.12 20 53.08 | 20 51.86 20 ~~5.37~~ 54.21 | 22 7.65 22 7.80 | 22 8.34 22 8.56

−10 58 5.77 4.73 | 58 3.51 5.86 | 59 19.30 19.45 | 59 19.99 20.21
5.25 | 4.68 | 19.37 | 20.10
+53 18 19 19 6 | 18 15 19 2 | 17 54 18 50 | 17 53 18 34
1.88710 1.88730 | | 1.88700 1.88720
+1677 | +3499 | +1234 | +890
1.90387 1.90407 | 1.92209 1.92229 | 1.89934 1.89954 | 1.89590 1.89610
−80.14 −80.18 | −83.58 −83.62 | −79.31 −79.35 | −78.69 −78.72
0 0 | −1 −1 | 0 0 | 0 0
+.05 −.05 +.02 | +.06 −.03 +.01 | +.04 −.27 +.06 | +.04 −.28 +.01
−.04 −.13 | −.02 −.12 | −.25 −.39 | −.25 −.36
−1 20.13 −1 20.29 | −1 23.55 −1 23.74 | −1 19.51 −1 19.68 | −1 18.90 −1 19.07
−10 59 25.90 25.02 | 59 27.06 29.60 | 40 38.82 39.13 | 40 38.89 39.28
+2 14.81 | +2 15.28 | −16 14.53 17.04 | −16 14.33 16.90
− 2.30 12.51 | − 2.42 12.86 | − 2.56 | − 2.57
−17.51 +0.39 | −13.12 +2.66 2.78 | −18.04 0.44 18.34 | 18.23 0.33
+1 55.00 | +1 −57.74 | −16 35.43 | −16 35.13
−57 30.90 30.02 | −57 29.32 31.86 | 57 14.25 14.56 | 57 14.02 14.41

−57 30.46 ~~12.12~~ | 57 30.59 | 57 14.40 | 57 14.21
12.56 | 12.69

1874 1875

β Arietis

	1874							1875						
Nov.	16	47 44.31		11 52.3			Dec.	6	47 47.93		11 73.0	
	21	44.31	−.00	52.5	+.2			11	47.90	−.03	72.9	−.1
	26	44.30	.01	52.7	.2			16	47.86	.01	72.9	.0
Dec.	1	44.29	.01	52.8	.1			21	47.83	.03	72.8	.1
	6	44.27	.02	52.9	.1			26	47.79	.04	72.8	.0
	11	44.25	.02	52.9	+0							
	16	44.22	.03	52.9	−0							
	21	44.18	.04	52.9	0							
	26	44.14	.04	52.8	−.1							

h m s
1 47 44
° ′
+ 20 12 3 +22 13

sin z = +.38

	1874	1875
α	40.927	44.228
δ	+11 28.12	+11 45.90
$\frac{d\alpha}{dt}$	+3.301	+3.301
$\frac{d\delta}{dt}$	+17.784	+17.782

l sin δ 9.53819

l cos δ	9.97243	9.97243	9.97243
C	10134	.09315	.12552
C′	.07377	.06558	.09795

cos α =
cos δ =
log 8 = +.37
I = 2.27 k = −.016

	1874 Nov. 27 −.07		Dec. 9 +.01		Dec. 15 +.08		Dec. 21 −.01		Dec. 27 +.03		1875 Dec 12 −.06	
	−.085		−.008		−.005		−.040		−.010		−.085	
1	47. 23.3	47 13.5	47 21.9	47 15.5	47 20.3	47 11.6	47 17.4	47 9.1	47 14.4	47 21.2	47 30.9	47 22.6
	25.4	15.0	24.0	17.0	22.6	13.8	19.7	12.0	16.7	23.5	33.2	24.6
	27.6	17.2	26.3	18.8	24.7	15.4	22.0	14.0	18.9	25.7	35.4	26.9
	32.0		30.7		29.0		26.2		23.2		39.7	
	34.2		32.9		31.2		28.5		25.4		41.9	
	36.4		35.0		33.5		30.8		27.7		44.1	
	38.6	47 56.0	37.3	48 16.3	35.7	47 53.0	33.0	47 46.0	29.9	47 57.0	46.4	47 57.0
	40.8	58.0	39.5	18.7	37.9	54.9	35.1	48.0	32.0	59.0	48.6	58.7
	43.3	48 0.6	43.8	20.8	42.2	56.6	39.6	50.0	36.3	48 1.2	52.9	1.4
	47.5		46.0		44.4		41.8		38.5		55.2	
	49.6		48.2		46.8		44.0		40.8		57.2	
	4007	47 15.23	3856	47 17.10	3683	47 13.60	3381	47 11.70	3038	47 23.47	4855	47 24.70
	47 36.427	47 58.20	47 35.055	48 18.60	47 33.482	47 54.83	47 30.736	47 48.00	47 27.618	47 59.07	47 44.136	47 59.03
	36.411	+7.97	35.039	+9.28	33.466	+10.72	30.720	+13.49	27.602	+16.57	44.120	+3.79
	47 44.29	−.03	47 44.26	+.00	47 44.23	+.03	47 44.18	−.00	47 44.13	+.01	47 47.89	−.02
	−7.88		−9.22		−10.76		−13.46		−16.53		−3.77	
		−3.36		−3.33		−3.30		−3.25		−3.20		−3.66
	+ 7.91	47 40.99	+ 9.28	41.00	+ 10.41	40.92	+ 13.48	40.96	+ 16.54	40.98	+ 3.74	44.23
	− .03		− .00		− .00		− .01		− .00		− .03	
	− 3.36 −.059		− 3.33 −.029		− 3.30 +.008		− 3.25 +.051		− 3.20 +.101		− 3.66	
	+ 4.52		+ 5.95		+ 7.41		+ 10.22		+ 13.34		+ 0.05	
	47 36.41	9 38.53	47 35.04	39.17	47 33.47	35.47	47 30.72	38.12	47 27.60	9 37.39	47 44.12	28 27.56
		+2 14.95		+2 14.49		+2 17.65		+2 15.39		+2 15.84		−16 14.19
	47 40.93	−1.2	40.99	−1.2	40.88	−1.2	40.94	−1.2	40.94	−1.3	44.17	−1.4
	44.231	−24.70	44.291	−24.80	44.181	−24.80	44.241	−24.80	40.936 44.241	−24.70		−27.00
	+2.0	11 27.58		11 27.66		11 27.12		11 27.51		11 27.23		11 44.97
	+21.20	−21.77	+17.95	−43.55	+19.88	−21.35	+19.04	−17.26 (?)	+ 4.15	−31.45	+19.44	−14.89
	10		10		10		10	75 10		50		
Hefe =	−2.87		−2.93		−2.98		−3.02		−3.08		−3.20	
	2 12.7	2 3.9	2 17.9	3 30.4	2 21.3	3 8.8	2 18.3	3 1.7	2 35.6	3 17.0	3 31.6	4 14.1
	26.9	18.3	28.9	41.1	24.9	13.2	25.8	7.9	46.8	28.2	32.1	14.9
	39.6	22.2	46.8	71.5	46.2	22.0	44.1	9.6	82.4	45.2	37	10
	12 19.80	12 11.10	12 23.40	13 35.75	12 23.10	13 11.00	12 22.05	13 4.80	12 41.20	13 22.60	53 31.85	54 14.50
	1.32634	1.33786n	1.25406	1.63899n	1.29842	1.32940n	1.27967	1.23704n	0.61805	1.49762n	1.28870	1.17389n
	1.40011	1.41163n	1.32783	1.71276n	1.36400	1.39498n	1.34525	1.30262n	0.68363	1.56320n	1.38665	1.27084n
	+25.13	−25.80	+21.27	−51.61	+23.12	−24.83	+22.15	−20.07	+4.83	−36.58	+24.36	−18.66
	12 44.93	45.30	44.67	44.14	46.22	46.17	44.20	44.73	46.03	46.02	53 56.21	55.84
+20	10 3.42	3.05	10 3.68	4.21	10 2.13	2.18	10 4.15	3.62	10 2.32	2.33	28 52.14	52.51
	3.23		3.94		2.15		3.88		2.32		52.32	
+22	10 13	10 4					10 15	9 57			9 44	10 26
	1.37040	1.37030									1.37020	1.37040
	+1676		+1375		+4924		+3501		+1934		+1239	
	1.38716	1.38706	1.38415	1.38405	1.41964	1.41954	1.40541	1.40531	1.38974	1.38964	1.38259	1.38279
	−24.39	−24.38	−24.22	−24.21	−26.28	−26.27	−25.43	−25.43	−24.53	−24.53	−24.13	−24.14
	−.08 −.32	−.07	−.06 .55	−.33	−.07 −.41	−.08	−.06 −.33	−.05	−.01 −.40	−.18	−.06 −.62	−.03
	−.25	−.24	−.29	−.43	−.29	−.38	−.24	−.31	−.27	−.34	−.53	−.63
	−24.72	−24.69	−24.57	−24.97	−26.64	−26.73	−25.73	−25.79	−24.81	−25.05	−24.72	−24.80
	9 38.40	38.36	9 39.11	39.24	9 35.49	35.45	9 38.42	37.83	9 37.51	37.28	28 27.42	27.71
	11 52.8		52.9		52.9		52.9		52.8		12 12.9	
+2	14.1	14.4	13.8	13.7	17.4	17.5	14.5	15.1	15.3 +2	15.5 −16	14.5	14.8
+2	14.3		13.7		17.4		14.8	27.76	15.4		14.6	
+2	14.81	11 27.72	+2 14.38	11 27.58	+2 17.77	11 26.73	+2 15.28	11 ~~28.26~~	+2 15.76	11 27.50	−16 14.53	11 44.68
−	1.09 13.72	27.38	− 1.11 13.27	27.71	− 1.13 16.64	26.69	− 1.14 14.14	27.17	− 1.17 14.64	27.27	− 1.2 15.74	44.47
−	24.70 6.92		− 24.80 7.02		− 24.80 7.02		− 24.80 7.02	27.46	− 24.70 6.92		− 27.00 9.22	
+1	49.02	+11 27.55	+1 48.47	11 27.64	+1 51.24	11 26.71	+1 49.34	11 ~~27.71~~	+1 49.99	11 27.38	−16 42.74	11 44.82
		45.33		45.42		44.49		45.24		45.16		

1874.0		1875.0	
α	δ	α	δ
40.93		44.17	
.99		.27	
.88			
.94			
.94			
40.936		44.220	
.927	28.12	.228	45.90
+.009		−.008	

−.09 ×

Dec 13

−.110

47 30.8 47 19.2
33.0 21.0
35.2 23.0
39.5
41.8
44.0
46.1 47 57.7
48.4 59.7
52.7 1.3
55.0
57.2

48.37 47 21.07
47 43.973 47 59.57

43.957 +4.01
47 47.88 −.03
−3.92
−3.65
+ 4.00 44.29
− .04
− 3.65
+ 0.31
47 43.96 28 27.82 ~~24.57~~
−16 14.10
47 44.27 −.14
−27.00
11 45.32

+22.90 −15.67
50
−3.21
3 26.9 4 15.2
27.4 16.1
14.3 11.3
53 27.15 54 15.65

1.35984 1.19507n
1.45788 1.29302n
+28.69 −19.63
53 55.84 53 56.02

28 52.51 52.33
52.42

−22 9 39 10 28
+8.95
1.37915 1.37935
−23.94 −23.95

−.09 −.65 −.04
−.53 −.64
−24.56 −24.63
28 27.95 27.70
1.29
−16 1.80 14.8
−16 1.49
−16 14.33 11 45.41
− 1.21 13.54 45.16
− 27.00 9.22
−16 42.54 11 45.28

ι Arietis

h	m	s
1	50	58
	°	′
+	22	59

ʒ = + 19 24

sin g = +.33

1874

α
δ
dα/dτ
dδ/dτ

l cos δ 9.96408
l b .10134
l b′ 0.06542

l b′ .05723

l sin δ 9.59158

1875
50 57.95
59 7.09
~~4~~ 3.327
+1773

996408
.12552
.08960

cos α =
cos δ =

tang δ = +.42

I = 2.24 s

K = -.017 s

	1874 Nov. 29		Dec. 9		Dec. 21		1874 Dec. 27		+17 1875 Jan. 9		-.06 Dec 12	
	-.085		-.008		-.040		-.010		+.050		-.085	
1	50 36.7	50 24.4	50 35.4	50 31.4	50 31.0	50 23.2	50 28.0	50 17.0	50 19.4	50 14.0	50 44.5	50 31.4
	38.9	27.4	37.6	33.4	33.2	25.3	30.3	19.0	21.7	16.0	46.8	33.1
	41.2	29.9	39.9	35.7	35.5	27.0	32.4	21.1	23.9	18.2	49.0	35.1
	45.7		44.4		40.0		37.0		28.3		53.5	
	48.0		46.7		42.2		39.2		30.6		55.9	
	50.1		48.8		44.5		41.4		32.8		58.0	
	52.5	51 0.5	51.0	51 28.4	46.7	51 12.2	43.6	51 3.1	35.0		0.1	51 13.3
	54.7	2.7	53.3	31.0	49.0		45.8	5.7	37.3		2.4	15.6
	59.3	4.5	57.7	33.0	53.4		50.4	7.4	41.8		6.9	17.4
	51 1.5		51 0.0		55.7		52.6		44.1		9.1	
	3.7		2.2		58.0		54.8		46.2		11.4	
	43 23		417 0		489 2		455 5		361 1		337 4	
	120		120								300	
	55 23	50 27.23	537 0	50 33.50		50 25.17		50 19.03		50 16.07	637 4	50 33.20
	50 50.209	51 2.57	50 48.836 18	51 30.80	50 44.464 73	51 12.20	50 41.409	51 5.40	50 32.827		50 57.945	51 15.43
	50.192		48.801		44.456		41.392		32.810		57.928	
	+ 7.73 91		+ 9.28		+ 13.48		+ 16.54		+ 24.83		+ 3.74	
	+- .013		+ .00		+- .012		+- .00		+ .012		+- .014	
	- 3.41 -.084		- 3.38 -.053		- 3.29 +.037		- 3.24 +.087		+ 0.24		- 3.65	
	+ 4.47		+ 5.90		+ 10.17		+ 13.30		+ 25.09		+ 0.05	
	50 50.19		50 48.80		50 44.46		50 41.39		50 32.81		50 57.93	
	50 57.66		50 57.70		50 54.63		50 57.69		50 57.90		50 57.98	
	57.987		58.027		57.951		58.017					
							57.700				57.940	

	+ 22.98	- 12.36	+ 15.38 2	- 41.96 8	+ 19.29 30	- 27.74 3	+ 22.38	- 23.99	+ 16.76		+ 24.74	- 17.49
	20		25		20		20		25		5	
Hoff =	- 2.87		- 2.93		- 3.02		- 3.08		- 3.13		- 3.20	
	4 53.1	0 33.1	0 5.0	1 10.1	4 1.8	0 56.3	4 55.7	0 49.8	0 5.6		1 6.4	1 57.4
	3.9	46.1	13.3	18.1	5.1	59.9	3.0	57.7	7.2		9.1	59.5
	117.0	79.2	18.3	28.2	6.9	116.2	118.7	101.5	12.8		15.5	16.9
	24 58.50	25 39.60	25 9.15	25 14.10	24 3.45	25 58.10	24 59.35	25 53.75	25 6.40		6 7.75	6 58.45
	1.36135	1.09202n	1.18526	1.62304n	1.28556	1.44295n	1.34986	1.38023n	1.22427		1.39840	1.24279n
	1.42677	1.15744n	1.25068	1.68846n	1.34279	1.50018n	1.40709	1.43726n	1.~~21587~~ 28150		1.48300	1.33239n
	+26.72	-14.37	+17.81	-48.80	+22.02	-31.63	+25.53	-27.37	+~~20.60~~ 19.12		+30.41	-21.50
	25 25.22	25 25.23	25 26.96	25 25.30	25 25.47	25 26.47	25 24.88	25 26.38	25 ~~27.00~~ 25.52		6 38.16	6 36.95
+22°	57′ 23″.13 23.12	23.12	57 21.39 22.22	23.95	57 22.88 22.38	21.88	57 23.47 22.72	21.97	57 ~~24.35~~ 22.83		16 10.19 10.79	11.40
+19	22 51	23 33					22 52	23 47			22 20	23 10
	1.30650	1.30680							1.30630	1.30670		
	+ 1674		+1383		+3503		+1936		+ 2241		+ 1245	
	1.32324	1.32354	1.32033	1.32063	1.34153	1.34183	1.32586	1.32616	1.32871	1.32911	1.31875	1.31915
	-21.05	-21.06	-20.91	-20.92	-21.96	-21.97	-21.18	-21.19	-21.32	-21.34	-20.83	-20.85
	-.09 -.37	-.03	-.04 -.21	-.34	-.07 -.35	-.14	-.09 -.39	-.11	-.05 ~~-.03~~ -.07		-.11 -.31	-.06
	-.55	-.08	-.02	-.02	-.40	-.10	-.50	-.09	-.02		-.16	-.30
	-21.69	-21.17	-20.97	-21.28	-22.43	-22.21	-21.77	-21.39	-21.39		-21.10	-21.21
+22	57 1.44	1.95	57 0.42	1.77	57 0.45	59.67	57 01.70	0.58	57 1.44		15 49.09	50.19
	+2 14.81 13.87		+2 14.38 13.42		+2 15.28 14.29		+2 15.86 14.85		+2 14.20 13.17		-16 14.53 15.58	
	- .94		- .96		- .99		- 1.01		- 1.03		- 1.05	
	-25.19 -7.46		-25.51 -7.78		-25.64 -7.91		-25.64 -7.91		-7.55 +0.18		-27.85 -10.12	
	+1 48.68		+1 47.91		+1 48.65		+1 49.21		+2 5.62		-16 43.43	
	+58 50.12	50.63	58 48.43	49.68	58 49.10	48.32	58 50.91	49.79	59 7.06		59 5.66	6.76
	+58 50.37		58 49.05		58 48.71		58 50.35				59 6.21	6.76
	59 8.10		6.78		6.44		8.08		7.06			

-.09

Dec 13

-.110

50 44.2 50 34.9
46.5 37.0
48.8 38.7
53.1
55.4
57.7
59.9 51 15.8
2.1
6.6
8.9
11.1

3943
240
634 3 50 36.87
50 57.664 51 15.80
57.647

+ 4.00
+ .025
- 3.65
+ 0.30
50 57.65

50 57.95
57.943

5 +20.79 -18.14

-3.21
1 9.8 1 58.9
12.9 0.9
22.4 119.8
6 11.35 6 59.90

1.31785 1.25864m
1.40745 1.34824m
+25.56 -22.30
6 36.91 6 37.60

16 11.44 10.75
11.09
22 23 23 12

+900
1.31530 1.31570
-20.67 -20.69

-.08 -.31 -.06

-.18 -.30
-20.93 -21.05
15 50.51 49.70
-16 14.33
1.05 15.38
-27.84 -10.14
-16 43.25
+59 7.26 6.45

+59 6.85

1782
5900

1785
1950