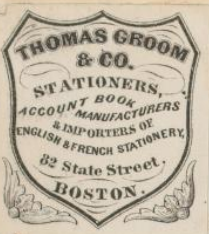


KG
11366
v. 487

Maskelyne Fundamental
Observations & Reductions.
from 15^h 38^m to 22^h 59^m.
B. 2 1877

Charles W. Sever, University Bookstore, Cambridge.



Observatory

6 books to Path
with darker paper on sides

D. Lgt 3rd

Constants

1877	15 mi
Jan 13 - Mar 1	0.12416
Mar 4 - May 14	0.12048
May 16 - July 4	0.11768
July 24 - Dec 31	0.12260

15	38	13
48	51	
35	33	54

d_0	m	z
	38	12590
Corr		z
		+ .02
d_1		z
d_2		+ 29507
p_0		z
	48	4989
Corr		z
		- .3
d_3		z
d_4		- 11568

log cos ²	9.99692	log cos ²	9.99692
15 cos Stani	0.12108	Jan ^y Feb.	R+2 18.77
	0.11460	June + July/4	R-2 18.600
	0.11952	after July/4	I 208
			I 289
tang ²	+0.12	1.01	
sin 2	+ .58		

Jan 30				Feb. 1				Feb. 6				Feb. 7			
38	6.8	38	17.1	38	25	38	6.0	38	105	38	14.6	38	17	38	14.8
	8.8		19.2		4.3		8.0		185		17.1		3.3		16.9
	11.0		21.4		6.3		10.2		206		19.2		5.6		19.0
	13.0		25.5				12.2		248		—				23.1
	15.1		27.6				14.3		268		—				25.2
	44.1		29.7				43.4		28.9		—				27.4
	46.0		31.1				45.4		31.0		—				29.4
	48.2		33.8				47.6		33.0		—				31.4
	50.4		35.0				49.6		37.2		—				33.6
	52.5		40.0				51.7		39.3		—				37.6
			42.0				41.4		—		—				39.7
	29.59		30.60				28.84		31.80		8.760				27.19
															30.01
38	29.590	38	29.636	38	28.840	38	28.909	38	27.536	38	27.503	38	27.190	38	27.2
			679				29.1								27.2
			38 29.658				38 28.919								38 27.1
-16.60	38 12.908			-15.74	38 12.972			-14.32	38 13.132			-13.97	38 13.1		
-0.24	+ 16.75			-0.85	+ 15.95			-0.27	+ 14.37			-0.27	+ 14.37		
-1.12	+ 16.73			-0.12	+ 15.93				+ 14.37				+ 14.37		
-0.32				-0.35				-0.54				-0.57			
-17.08				-16.30				-14.93				-14.61			
38 -12.58				+12.62				+12.59				+12.67			

3m-7d	+14.83	+24.55	+23.68
Log 7d	1.17114	1.39005	1.37438
Log 7d	1.29222	1.51113	1.49546
25' 3"	25' 3"	25' 3"	25' 3"
E	35.6	29.2	29.4
4	46.9	38.1	38.6
5	56.3	46.4	49.2
6	47.0	38.4	36.6
188.8	206.3	152.1	163.8
28	52.58	38.03	38.45
29	19.60	32.48	31.29
29	6.80	10.47	9.44
53	41.55	37.88	38.61
35	33	33	33
1.61410	1.61410	1.61410	1.61410
+2883	+1259	+1827	+1827
1.64293	1.62669	1.63237	1.63237
-4395	-4233	-4289	-4289
-.01	-.04	-.04	-.04
-.99	-.94	-.86	-.86
+.23	+.22	+.22	+.22
-44.72	-43.09	-43.57	-43.57
52	52	52	52
56.83	54.79	55.04	55.04
48	48	48	48
328	324	315	315
-4	-4	-4	-4
24.0	22.4	23.5	23.5
24.3	22.7	23.8	23.8
5.23	4.90	4.75	4.75
50.80	49.89	50.29	50.29

Jan 20 38 12.58 16 48 34.5 9
 25 12.74 16 33.6 8
 Feb 30 12.90 16 32.8 8
 4 13.06 16 32.0 8
 9 13.22 16 31.3 7
 Mar 1 13.84 27.2

-60
Feb. 12-41
-12
Jan. 23-50
Jan. 24-50
Jan. 25

38 23.5	38 2.4	38 12.8	38 11.8	38 9.8	39 8.8	38 9.6	38 12.9	38 4.3	38 7.0	38 12.7
25.7	4.5	14.9	13.6	11.5	10.7	11.5	21.8	5.5	11.2	21.7
27.7	6.4	17.0	38 11.5	13.6	12.4	13.6	24.0	7.1	13.2	23.9
	8.4	21.0		15.8		15.8	28.5		15.4	28.0
	10.6	23.3		17.8		17.8	30.4		17.4	30.0
	32.8	25.3	39 15.0	32.6			32.5		46.8	32.0
	41.7	27.4	11.5	47.0			34.6		48.7	34.3
	43.8	29.4	13.0	51.3		50.8	36.7		50.6	36.2
	45.9	33.6		53.3			40.7		52.8	40.2
	47.9	35.4		55.4			42.8		54.9	42.5
		37.8		62			44.7			44.5
	25.4	27.8		13.770		13.66	55.8		32.00	35.30
38 25.63	25.40	38 25.82	38 11.80	51.220	39 10.63	32.358	38 32.456	38 5.63	38 32.00	32.091
	22.9	38 25.256	39 11.50	32.583			41.7			38 32.090
		38 13.324		38 32.636			38 32.442			38 32.090
	-11.78	+ 11.93		38 12.684		-19.59	38 12.716		-19.12	38 12.748
	-0.07	+ 11.91		-19.68		-0.08	+ 19.73		-0.08	+ 19.34
	-0.73			-0.12		-0.13	+ 19.71		-0.16	+ 19.32
	-12.58			-0.09		-19.78			-19.34	
	+12.68			-19.94		+12.66			+12.75	
				+12.70						

-0.37	+20.84	-38.86	-38.19	+26.46
9.56820m	1.31890	1.58950m	1.58195m	1.44225m
9.68928m	1.43998	1.71058m	1.70303m	1.54367
25 4	25 4	25 4	25 4	25 3
0.0	48.8	48.8	48.5	23.3
9.3	51.7	51.7	49.1	30.7
19.3	6.0	6.0	2.3	38.9
8.7	56.2	56.2	52.9	30.6
37.3	222.7	222.7	210.8	123.5
29 9.33	29 55.68	29 55.68	29 52.70	29 30.88
- 4.89	+ 27.54	- 31.36	- 50.47	+ 50.47
29 4.44	30 23.22	29 4.32	29 2.23	29 5.85
53 43.91	53 44.03	53 44.03	53 46.12	53 42.50
35 33 31	34 18	34 15	34 15	32 53
1.61425	1.61450	1.61450	1.61450	1.61410
+32.75	+42.68	+42.68	+42.68	+47.06
1.64400	1.65418	1.65418	1.66253	1.66116
-44.36	-45.41	-45.41	-45.98	-45.83
- .00	- .10	- .10	- .10	- .04
- .97	- 1.32	- 1.32	- 1.32	- .95
+ .26	+ .29	+ .29	+ .29	+ .21
-45.08	-46.54	-47.11	-47.11	-46.61
52 54.43	52 57.49	52 57.49	52 59.01	52 55.89
- 4 22.43	- 4 22.40	- 4 22.40	- 4 24.70	- 4 21.33
-1.2	-1.3	-1.3	-1.3	-1.3
+ 19.1	+16.0	+16.0	+16.2	+16.3
- 4 4.53	- 4 7.70	- 4 7.70	- 4 9.80	- 4 6.33
+48 49.90	+48 49.79	+48 49.79	+48 49.21	+48 49.56

June 9	38	15.54	0	48	36.4	7														
14		15.54	0		37.1	6														
19		15.54	0		37.7															
24		15.54	1		38.3	6														
29		15.53	2		38.9	6														
July 4		15.51	3		39.5	5														
9		15.48	4		40.0	5														
14		15.44	4		40.5	4														
19		15.40	5		40.9	4														
24		15.35	5		41.3	4														
29		15.30	6		41.7	3														
1877 Aug. 3		15.24	6		42.0	3														
8		15.18	6		42.3	3														
		-1.19																		
		-0.05																		
June 14																				
36	53.4	37	4.76	36	52.8	37	4.00	36	53.70	37	4.00	36	48.0	37	3.88	36	52.0	37	3.26	
	55.3		6.83		54.7		6.10		53.70		6.10		50.2		5.43		52.1		5.35	
	57.2		9.00		56.5		8.28		57.80		8.28		52.7		8.05		54.0		7.54	
			13.10						57.80				52.7				54.0			
			2.30						2.00				1.71				1.21		13.78	
			13.18						14.40								1.21			
37	46.7	37	17.25	37	44.0	37	16.60	37	43.1	37	16.60	37	43.1	37	16.60	37	18.7	37	15.77	
	46.5		19.28		46.1		18.60		43.1		18.60						21.0		15.77	
	50.7		21.48		48.2		20.68		46.7		20.68						23.0		19.00	
			25.56						37.23		24.77						24.0		20.40	
			27.63						37.23		24.77						24.0		20.40	
			27.70						37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	
									37.23		24.77						24.0		20.40	</

1877 phase 1491

Scorpii
m 21 52
6 9' 25"
68 32 13

N.A.
h m s
16 21 52.094
corrad -0.042
da 3.609
So -26 9' 25.25"
cor. So -0.93
d 8.35
z + 68° 32' 13"

ingress 9.95307
I 2.30
R + 20.770
R1 - 20.575
R2 + 20.099
trans 1.49
surd 1.11
by 15.000
0.07555
0.07423 Jan Feb
0.07567 Aug.

1 + 13.77
2 + 11.48
3 + 9.18
4 + 4.59
5 + 2.295
6 + 0.00
7 - 2.295
8 - 4.59
9 - 11.48
10 - 13.77
11 - 15.51

1877

Jan. 30
-0.36
-0.12

Feb. 8

Feb. 12

Feb. 15

16 22 68 21 43.3 21 54.8
9.0 43.3 54.1
11.4 47.8 59.5
3.00 4.0
52.4 6.3
24.7 8.7
26.7 11.0
29.3 13.2
31.5 15.8
33.8 18.0
22.4
38.52 27.48
85.3 94.8
22 8.520 22 8.618
22 8.618
22 8.618
21 52.11
-16.58
+1.17
-0.13
-0.02
-16.56
21 52.06

Chf.

21 366 21 388 21 504
393 412 52.7
42.7 43.2 55.0
45.6 57.6
47.8 1.8
20.0 4.0
22.4 6.3
24.5 8.8
27.0 13.4
29.2 15.5
18.0
33.97 28.56
39.7 45.5
22 39.70 22 41.86
22 4.069
22 4.102
21 52.58
-11.79
+2.89
-0.49
-11.99
21 52.11

35.9 37.1 48.6
38.2 39.4 51.1
40.2 41.6 53.3
44.0 46.8 55.3
48.4 50.7 52.3
23.6 6.9
23.3 11.5
27.7 13.8
16.1
32.35
23.5
22 2.350
23.67
44.9
(22) 2.408
21 52.68
+2.4
-0.58

-0.45
9.653212
9.730444

25 0

25 0 20 4

20 4 20 4

20 4

E 9.8
F 21.3
G 30.7
H 19.8
81.6

A 23.3
B 26.3
C 17.8
D 24.7
92.1

43.2
48.8
56.8
54.3
193.1

43.0
52.8
3.2
51.6
210.6

25 20.40
0.54
25 19.86

25 23.03 24 46.70

24 48.28 24 52.65
+ 29.35
25 22.00

25 0.00
+ 29.04
25 26.04

-26 2 31.51
68 29 42
2,161.60
+27.54
2,189.14
-154.57
+ 0.0
- 0.8
+ 0.2
-26 -2 31.83
-26 5 8.14

2 33.65
29 15
2,161.42
+33.72
2,195.14
-156.73
+ 1.12
- 1.13
+ 2.9
-2 37.45
5 11.10

2 40.69
29 22
2,161.49
+27.27
2,190.76
-155.15
+ 1.2
- 1.15
+ 3.0
-2 35.88
5 16.57

-4 21.83
-2.2
+ 6.8

-4 30.45
-2.1

-4 22.43
-2.0
+ 7.7

-4 20.48
-2.0
+ 8.1

-9 32.0
-26 9 24.37
23.

9 33.0
9 27.53

9 33.3

-4 14.38
9 30.95

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Herculis
 m a
 9 3
 4 31 56
 27 50 52

20 m a
 Corra + .01
 alt + 2.7337
 31 55.03
 Corra - .5
 alt - 4.373

log cos δ 9.98588
 15 cos δ tan δ 0.11004 Feb. July-Aug.
 0.10848
 tan δ +0.26 1.03
 sin 2 +.47

log cos δ 9.98588
 15 cos δ tan δ 0.11004 Feb. July-Aug.
 0.10848
 tan δ +0.26 1.03
 sin 2 +.47

1877

Feb. 20

Feb. 21

Feb. 26

Feb. 28

17 8 478	8 475	8 584	9 230	8 468	8 575	8 482	8 446	8 554	9 298	8 - 8
49.1	49.7	0.5	243	487	57.5	50.3	467	57.5	292	-
50.6	51.9	2.6	265	510	1.4	523	48.9	57.6	316	-
	540	6.8		520	6.0		57.0	3.8		-9.26 6.86
	56.1	8.8		553	8.1		53.0	6.0		-4.6 7.3
	25.9	11.1	9 440	25.1	10.3		23.1	8.0		218 6.8 80
	28.0	13.2	459	27.1	12.4		25.0	10.2		238 9.0 87
	30.2	15.4	475	29.4	14.6		27.2	12.4		260 11.1 84
	32.3	19.6		31.4	18.8		29.3	16.6		282 15.4 88
	34.5	21.7		33.5	21.0		31.5	18.7		300 17.6 95
		23.9			23.1			20.9		197 19.7 92
	41.01	18.20		41.13	23.30		38.03	26.91		259.60
8 48.17	1101	1220	9 2460	1113	1130	8 50.27	803	891	9 2953	6882 9 6856
	9 11010	9 11091	9 4050	9 10130	10350		9 8030	9 8100		9 6889
		101			23.1			121		9 3018
	9 11096			9 10247	2808		9 8110			-3.62
-8.21	9 2.778			9 2808			9 2958			-17
-13	+ 8.32			+ 7.44			+ 3.15			-1.05
	+ 8.31			+ 7.43			+ 5.14			-0.66
-0.42				-0.45			-0.60			-4.50
-8.70				-7.92			-5.74			+2.37
+9 2.34				+2.353			+2.37			

+21.93
 134104
 145108

45 0

E 44.8
 H 52.0
 4.1
 57.2

218.1

45 5453

+ 28.25

46 22.78

+ 14 36 2557

27 50 .17

1.48290

+24.73

1.50763

-32.18

- .07

- .20

+ .05

-32.40

+14 35 53.17

31 335

-4 19.7

20.2

14

-4 18.60

-0.9

+21.5

-3 58.00

+31 55.17

-14.35 -35.55
 1.15685m 1.55084m
 1.26689m 1.66088m

45 0

59.7

7.8

18.6

15.4

41.5

46 1038

- 18.49

45 57.89

47 1038

- 45.80

46 2458

36 2377

51 32

1.48325

+23.85

1.50710

-32.14

- .18

- .46

+ .13

-32.65

35 51.2

31 334

-4 17.7

18.2

-3 5635

+31 54.77

+17.84
 1.25139
 1.36143

45 0

44.3

59.4

11.2

11.3

6.2

46 1.55

+ 22.98

46 24.53

36 23.82

50 24

1.48290

+27.50

1.51040

-32.39

- .04

- .21

+ .07

-32.57

35 57.25

31 329

-4 18.3

18.8

-3 5598

+31 55.27

-22.66
 1.35526m
 1.46530m

45 4

45 03

36.7

50.8

3.6

50.2

231.0

48 57.75

46 52.92

36 24.62

57 15

1.48320

+26.34

1.50754

-32.32

- .07

- .38

+ .11

-32.66

35 51.96

31 32.7

-4 19.3

19.8

-4 56.45

+31 55.57

45 1

45 1

52.2

54.1

52.3

42.2

200.8

46 5020

[illegible]

[illegible]

[illegible]

1877

-1.27

Aug. 7

$$-1.30$$

Aug 8

 -1.25

Aug. 11

-1.33

Aug. 14

[illegible]

N.A. ^{1.32}
Aug. 16

-1.36
Aug. 22

-1.38
Aug. 23

Aug. 30

29 2.0 105 12.2	29 1650 1833 2060 2274 2480 2714 2920 3130 3355 3570 3775 3980 4200 4405 4630 4830 5029 5240	29 2714 188 204	29 2470 2675 2881 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100 6300 6500 6700 6900 7100 7300 7500 7700 7900 8100 8300 8500 8700 8900 9100 9300 9500 9700 9900	29 3540 3740 3960 4280 4580 4805 5015 5235 5443 5643 5843 6043 6243 6443 6643 6843 7043 7243 7443 7643 7843 8043 8243 8443 8643 8843 9043 9243 9443 9643 9843 10043	29 393 414 428	29 3600 3820 4030 4240 4450 4660 4870 5080 5290 5500 5710 5920 6130 6340 6550 6760 6970 7180 7390 7600 7810 8020 8230 8440 8650 8860 9070 9280 9490 9700 9910 10120 10330 10540 10750 10960 11170 11380 11590 11800 12010 12220 12430 12640 12850 13060 13270 13480 13690 13900 14110 14320 14530 14740 14950 15160 15370 15580 15790 16000 16210 16420 16630 16840 17050 17260 17470 17680 17890 18100 18310 18520 18730 18940 19150 19360 19570 19780 19990 20200 20410 20620 20830 21040 21250 21460 21670 21880 22090 22300 22510 22720 22930 23140 23350 23560 23770 23980 24190 24400 24610 24820 25030 25240 25450 25660 25870 26080 26290 26500 26710 26920 27130 27340 27550 27760 27970 28180 28390 28600 28810 29020 29230 29440 29650 29860 30070 30280 30490 30700 30910 31120 31330 31540 31750 31960 32170 32380 32590 32800 33010 33220 33430 33640 33850 34060 34270 34480 34690 34900 35110 35320 35530 35740 35950 36160 36370 36580 36790 37000 37210 37420 37630 37840 38050 38260 38470 38680 38890 39100 39310 39520 39730 39940 40150 40360 40570 40780 40990 41200 41410 41620 41830 42040 42250 42460 42670 42880 43090 43300 43510 43720 43930 44140 44350 44560 44770 44980 45190 45400 45610 45820 46030 46240 46450 46660 46870 47080 47290 47500 47710 47920 48130 48340 48550 48760 48970 49180 49390 49600 49810 50020 50230 50440 50650 50860 51070 51280 51490 51700 51910 52120 52330 52540 52750 52960 53170 53380 53590 53800 54010 54220 54430 54640 54850 55060 55270 55480 55690 55900 56110 56320 56530 56740 56950 57160 57370 57580 57790 58000 58210 58420 58630 58840 59050 59260 59470 59680 59890 60100 60310 60520 60730 60940 61150 61360 61570 61780 61990 62200 62410 62620 62830 63040 63250 63460 63670 63880 64090 64300 64510 64720 64930 65140 65350 65560 65770 65980 66190 66400 66610 66820 67030 67240 67450 67660 67870 68080 68290 68500 68710 68920 69130 69340 69550 69760 69970 70180 70390 70600 70810 71020 71230 71440 71650 71860 72070 72280 72490 72700 72910 73120 73330 73540 73750 73960 74170 74380 74590 74800 75010 75220 75430 75640 75850 76060 76270 76480 76690 76900 77110 77320 77530 77740 77950 78160 78370 78580 78790 79000 79210 79420 79630 79840 80050 80260 80470 80680 80890 81100 81310 81520 81730 81940 82150 82360 82570 82780 82990 83200 83410 83620 83830 84040 84250 84460 84670 84880 85090 85300 85510 85720 85930 86140 86350 86560 86770 86980 87190 87400 87610 87820 88030 88240 88450 88660 88870 89080 89290 89500 89710 89920 90130 90340 90550 90760 90970 91180 91390 91600 91810 92020 92230 92440 92650 92860 93070 93280 93490 93700 93910 94120 94330 94540 94750 94960 95170 95380 95590 95800 96010 96220 96430 96640 96850 97060 97270 97480 97690 97900 98110 98320 98530 98740 98950 99160 99370 99580 99790 100000	29 1650 1833 2060 2274 2480 2714 2920 3130 3355 3570 3775 3980 4200 4405 4630 4830 5029 5240 5460 5680 5900 6120 6340 6560 6780 7000 7220 7440 7660 7880 8100 8320 8540 8760 8980 9200 9420 9640 9860 10080 10300 10520 10740 10960
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1877	Phaeo. 1.49	Lyræ	m	32	46433	Jan 20	32	4514	11	39	56.9	15	55.4	14	54.0	12	52.8	12	51.6	10	50.6	10	49.6	8	48.8	8	48.0	log 1500 Stami	2	+0.06	Jan + Feb	0.01670	Aug + Sept	0.01514																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
32	47	con	+0.2	+0.2	Feb. 4	4536	12	4548	13	45.61	14	45.75	14	45.89	16	46.05	16	46.21	16	46.35	16	46.50	16	46.65	16	46.80	16	46.95	16	47.10	16	47.25	16	47.40	16	47.55	16	47.70	16	47.85	16	48.00	16	48.15	16	48.30	16	48.45	16	48.60	16	48.75	16	48.90	16	49.05	16	49.20	16	49.35	16	49.50	16	49.65	16	49.80	16	49.95	16	50.10	16	50.25	16	50.40	16	50.55	16	50.70	16	50.85	16	51.00	16	51.15	16	51.30	16	51.45	16	51.60	16	51.75	16	51.90	16	52.05	16	52.20	16	52.35	16	52.50	16	52.65	16	52.80	16	52.95	16	53.10	16	53.25	16	53.40	16	53.55	16	53.70	16	53.85	16	54.00	16	54.15	16	54.30	16	54.45	16	54.60	16	54.75	16	54.90	16	55.05	16	55.20	16	55.35	16	55.50	16	55.65	16	55.80	16	55.95	16	56.10	16	56.25	16	56.40	16	56.55	16	56.70	16	56.85	16	57.00	16	57.15	16	57.30	16	57.45	16	57.60	16	57.75	16	57.90	16	58.05	16	58.20	16	58.35	16	58.50	16	58.65	16	58.80	16	58.95	16	59.10	16	59.25	16	59.40	16	59.55	16	59.70	16	59.85	16	60.00	16	60.15	16	60.30	16	60.45	16	60.60	16	60.75	16	60.90	16	61.05	16	61.20	16	61.35	16	61.50	16	61.65	16	61.80	16	61.95	16	62.10	16	62.25	16	62.40	16	62.55	16	62.70	16	62.85	16	63.00	16	63.15	16	63.30	16	63.45	16	63.60	16	63.75	16	63.90	16	64.05	16	64.20	16	64.35	16	64.50	16	64.65	16	64.80	16	64.95	16	65.10	16	65.25	16	65.40	16	65.55	16	65.70	16	65.85	16	66.00	16	66.15	16	66.30	16	66.45	16	66.60	16	66.75	16	66.90	16	67.05	16	67.20	16	67.35	16	67.50	16	67.65	16	67.80	16	67.95	16	68.10	16	68.25	16	68.40	16	68.55	16	68.70	16	68.85	16	69.00	16	69.15	16	69.30	16	69.45	16	69.60	16	69.75	16	69.90	16	70.05	16	70.20	16	70.35	16	70.50	16	70.65	16	70.80	16	70.95	16	71.10	16	71.25	16	71.40	16	71.55	16	71.70	16	71.85	16	72.00	16	72.15	16	72.30	16	72.45	16	72.60	16	72.75	16	72.90	16	73.05	16	73.20	16	73.35	16	73.50	16	73.65	16	73.80	16	73.95	16	74.10	16	74.25	16	74.40	16	74.55	16	74.70	16	74.85	16	75.00	16	75.15	16	75.30	16	75.45	16	75.60	16	75.75	16	75.90	16	76.05	16	76.20	16	76.35	16	76.50	16	76.65	16	76.80	16	76.95	16	77.10	16	77.25	16	77.40	16	77.55	16	77.70	16	77.85	16	78.00	16	78.15	16	78.30	16	78.45	16	78.60	16	78.75	16	78.90	16	79.05	16	79.20	16	79.35	16	79.50	16	79.65	16	79.80	16	79.95	16	80.10	16	80.25	16	80.40	16	80.55	16	80.70	16	80.85	16	81.00	16	81.15	16	81.30	16	81.45	16	81.60	16	81.75	16	81.90	16	82.05	16	82.20	16	82.35	16	82.50	16	82.65	16	82.80	16	82.95	16	83.10	16	83.25	16	83.40	16	83.55	16	83.70	16	83.85	16	84.00	16	84.15	16	84.30	16	84.45	16	84.60	16	84.75	16	84.90	16	85.05	16	85.20	16	85.35	16	85.50	16	85.65	16	85.80	16	85.95	16	86.10	16	86.25	16	86.40	16	86.55	16	86.70	16	86.85	16	87.00	16	87.15	16	87.30	16	87.45	16	87.60	16	87.75	16	87.90	16	88.05	16	88.20	16	88.35	16	88.50	16	88.65	16	88.80	16	88.95	16	89.10	16	89.25	16	89.40	16	89.55	16	89.70	16	89.85	16	90.00	16	90.15	16	90.30	16	90.45	16	90.60	16	90.75	16	90.90	16	91.05	16	91.20	16	91.35	16	91.50	16	91.65	16	91.80	16	91.95	16	92.10	16	92.25	16	92.40	16	92.55	16	92.70	16	92.85	16	93.00	16	93.15	16	93.30	16	93.45	16	93.60	16	93.75	16	93.90	16	94.05	16	94.20	16	94.35	16	94.50	16	94.65	16	94.80	16	94.95	16	95.10	16	95.25	16	95.40	16	95.55	16	95.70	16	95.85	16	96.00	16	96.15	16	96.30	16	96.45	16	96.60	16	96.75	16	96.90	16	97.05	16	97.20	16	97.35	16	97.50	16	97.65	16	97.80	16	97.95	16	98.10	16	98.25	16	98.40	16	98.55	16	98.70	16	98.85	16	99.00	16	99.15	16	99.30	16	99.45	16	99.60	16	99.75	16	99.90	16	100.05	16	100.20	16	100.35	16	100.50	16	100.65	16	100.80	16	100.95	16	101.10	16	101.25	16	101.40	16	101.55	16	101.70	16	101.85	16	102.00	16	102.15	16	102.30	16	102.45	16	102.60	16	102.75	16	102.90	16	103.05	16	103.20	16	103.35	16	103.50	16	103.65	16	103.80	16	103.95	16	104.10	16	104.25	16	104.40	16	104.55	16	104.70	16	104.85	16	105.00	16	105.15	16	105.30	16	105.45	16	105.60	16	105.75	16	105.90	16	106.05	16	106.20	16	106.35	16	106.50	16	106.65	16	106.80	16	106.95	16	107.10	16	107.25	16	107.40	16	107.55	16	107.70	16	107.85	16	108.00	16	108.15	16	108.30	16	108.45	16	108.60	16	108.75	16	108.90	16	109.05	16	109.20	16	109.35	16	109.50	16	109.65	16	109.80	16	109.95	16	110.10	16	110.25	16	110.40	16	110.55	16	110.70	16	110.85	16	111.00	16	111.15	16	111.30	16	111.45	16	111.60	16	111.75	16	111.90	16	112.05	16	112.20	16	112.35	16	112.50	16	112.65	16	112.80	16	112.95	16	113.10	16	113.25	16	113.40	16	113.55	16	113.70	16	113.85	16	114.00	16	114.15	16	114.30	16	114.45	16	114.60	16	114.75	16	114.90	16	115.05	16	115.20	16	115.35	16	115.50	16	115.65	16	115.80	16	115.95	16	116.10	16	116.25	16	116.40	16	116.55	16	116.70	16	116.85	16	117.00	16	117.15	16	117.30	16	117.45	16	117.60	16	117.75	16	117.90	16	118.05	16	118.20	16	118.35	16	118.50	16	118.65	16	118.80	16	118.95	16	119.10	16	119.25	16	119.40	16	119.55	16	119.70	16	119.85	16	120.00	16	120.15	16	120.30	16	120.45	16	120.60	16	120.75	16	120.90	16	121.05	16	121.20	16	121.35	16	121.50	16	121.65	16	121.80	16	121.95	16	122.10	16	122.25	16	122.40	16	122.55	16	122.70	16	122.85	16	123.00	16	123.15	16	123.30	16	123.45	16	123.60	16	123.75	16	123.90	16	124.05	16	124.20	16	124.35	16	124.50	16	124.65	16	124.80	16	124.95	16	125.10	16	125.25	16	125.40	16	125.55	16	125.70	16	125.85	16	126.00	16	126.15	16	126.30	16	126.45	16	126.60	16	126.75	16	126.90	16	127.05	16	127.20	16	127.35	16	127.50	16	127.65	16	127.80	16	127.95	16	128.10	16	128.25	16	128.40	16	128.55	16	128.70	16	128.85	16	129.00	16	129.15	16	129.30	16	129.45	16	129.60	16	129.75	16	129.90	16	130.05	16	130.20	16	130.35	16	130.50	16	130.65	16	130.80	16	130.95	16	131.10	16	131.25	16	131.40	16	131.55	16	131.70	16	131.85	16	132.00	16	132.15	16	132.30	16	132.45	16	132.60	16	132.75	16	132.90	16	133.05	16	133.20	16	133.35	16	133.50	16	133.65	16	133.80	16	133.95	16	134.10	16	134.25	16	134.40	16	134.55	16	134.70	16	134.85	16	135.00	16	135.15	16	135.30	16	135.45	16	135.60	16	135.75	16	135.90	16	136.05	16	136.20	16	136.35	16	136.50	16	136.65	16	136.80	16	136.95	16	137.10	16	137.25	16	137.40	16	137.55	16	137.70	16	137.85	16	138.00	16	138.15	16	138.30	16	138.45	16	138.60	16	138.75	16	138.90	16	139.05	16	139.20	16	139.35	16	139.50	16	139.65	16	139.80	16	139.95	16	140.10	16	140.25	16	140.40	16	140.55	16	140.70	16	140.85	16	141.00	16	141.15	16	141.30	16	141.45	16	141.60	16	141.75	16	141.90	16	142.05	16	142.20	16	142.35	16	142.50	16	142.65	16	142.80	16	142.95	16	143.10	16	143.25	16	143.40	16	143.55	16	143.70	16	143.85	16	144.00	16	144.15	16	144.30	16	144.45	16	144.60	16	144.75	16	144.90	16	145.05	16	145.20	16	145.35	16	145.50	16	145.65	16	145.80	16	145.95	16	146.10	16	146.25	16	146.40	16	146.55	16	146.70	16	146.85	16	147.00	16	147.15	16	147.30	16	147.45	16	147.60	16	147.75	16	147.90	16	148.05	16	148.20	16	148.35

[illegible]

Aug. 7	m	8	5
12	32	49.22	40
17	32	49.26	11
22	32	49.15	10
27	32	49.09	9
Sept. 1	32	49.00	9
6	32	48.88	7
11	32	48.75	6
16	32	48.65	5
21	32	48.53	4
26	32	48.31	3
			2

1877

Aug. 12

Aug. 16

Aug. 22

Aug. 23

18	32	37.9	32	39.66	32	58.00	32	32.3	32	44.32	32	37.42	32	44.35	32	52.30	33	56.0	32	46.4	32	53.85	33	72.0		
		40.7		42.35		33.55		34.7		46.90		2.80		48.1		57.85		8.30		49.3		54.42		72.0		
		42.1		45.00		38.30		37.2		42.50		2.80		50.7		57.45		10.85		51.2		67.05		72.95		
				47.65		3.52				42.05		8.10				6.19		16.27				1.80		72.70		
				50.15		6.13				54.70		10.80				2.77		18.85				4.37		20.38		
33	34.4			29.20		8.80	33	13.8		31.77		13.80	33	36.5		38.88		21.48	33	40.3		41.34		22.05		
	36.9			29.95		11.42		16.3		34.36		15.88		38.8		42.40		24.17		42.8		44.00		23.35		
	38.7			32.52		14.00		18.3		37.00		18.60		4.65		45.15		26.83		45.2		46.76		28.27		
				33.20		19.39				39.70		24.00				47.73		32.05				48.33		33.62		
				37.80		22.00				42.30		26.80				50.55		34.85				51.80		36.25		
						24.66						29.20					37.40							39.00		
				38.748		27.677				43.260		20.720				39.327		23.665				40.880		25.337		
32	40.57			87.48		96.77	32	34.73		132.60		147.20	32	48.10		213.27			32	48.97		228.82				
33	36.67			8.748	33	8.797	33	16.73	33	13.260	33	13.382	33	38.73	33	213.27	33	245.14	33	42.77	33	22.552	33	230.34		
						8.829				33	13.398							.440					23.05			
				-18.61		32	49.260				32	49.20		49.21				32	49.09		49.10		-32.72	32	49.07	
				-98		+19.57				-100		24.18		+24.07		-31.34		+32.28				-1.10		+33.94	+33.93	
						+19.55				-2.757		24.75		+24.15		-100.9		+32.36					+33.91	+33.9		
				-2.82						-2.757						-2.65						-2.64				
				-2.2.41						-2.7.03		26.93				-35.08						-36.66				
				+46.42						+46.85		45				+46.40						+46.36				
				+28.26		-27.84				+38.65		-2.75				-17.45						-19.75				
				1.415.117		1.444.467m				1.587.15		0.439.33m				1.523.49		1.241.80m				1.532.12		1.295.57m		
				1.466.31		1.459.81m				+1.02.17		0.445.05m				1.538.57		1.286.82m				1.547.14		1.310.57m		
				45' 2		45' 3				1.602.229		0.454.47m				1.538.613		1.256.94m				1.547.26		1.310.74m		
										45' 1		45' 2				45' 1		45' 2				45' 1		45' 2		
				6.9		3.9				53.8+0		35.9+44				59.3+0		52.9+17				58.5+0		51.5+16		
				15.2		13.4				2.4+30		45.3+41				5.1+34		2.1+29				6.4+34		2.7+27		
				16.5		13.6				3.1+44		47.1-57				9.1+2		1.6+08				9.0+05		4.4+09		
				13.9		12.8				1.9+36		44.9+3				6.5+48		0.7+08				6.2+47		1.6+25		
				52.6		43.7				1.2		13.2				23.0		23.3				20.6		3.2		
47	13.13	48	10.93							47	0.30	47	43.30			47	57.5	47	59.32			47	51.5	48	0.80	
				+29.26		-28.83				+40.08		-2.85				+34.55		-18.087				35.256		-20.45		
47	42.39	47	42.10							47	40.32	47	40.45			47	40.38	47	41.265			47	40.48	47	40.35	
										+ .22		+ .15				+ .24		+ .19				+ .23		+ .19		
+38	35	54.6	35	6.25						35	8.04	35	7.90			35	8.05		7.04			35	7.95		8.00	
3	41	55	42	83						3	41	48.2	42	23.5			41	46.8	42	34			41	45.7	42	47.3
	0.57080		0.57280							0.57033		0.57180				0.57054		0.57230				0.57050		0.57240		
	-1577		-1577							-1577		-1577				-1577		-1577				-1577		-1577		
	0.55503		0.55703							0.55504		0.55704				0.55768		0.55967				0.55568		0.55758		
	-3.59		-3.61							-3.56		-3.58				-3.61		-3.63				-3.59		-3.61		
	- .21		- .21							- .39		- .39				- .30		- .38				- .31		- .30		
	- .22		- .32							- .20		- .22				- .21		- .30				- .22		- .30		
	+ .13		+ .19							+ .12		+ .16				+ .13		+ .18				+ .13		+ .18		
	-3.89		-3.95							-3.97		-3.61		-3.69		-3.93		-3.99				-3.92		-3.63		
+38	35	2.07		2.30						35	4.07	400	4.29	421		35	4.12	405	3.35	327		35	4.03	396	4.26	
+38	35	2.18		+5		17.21				4.18		410	+5	16.57		3.74		366	+5	17.98		4.14		406	+5	17.51
	40	19.5				-6.1				40	20.7	20.3		-0.1		40	21.8	21.5		-0.1		40	22.0	21.6		-0.1
	+5	17.3				-6.9				+5	16.5	16.2		-7.8		+5	18.1	17.8		-8.9		+5	17.9	17.5		-9.1
		17.4								16.7		16.3				16.3		17.9				16.1		17.6		
				+5		10.21				+5		16.3		+5		8.67		+5		8.98		+5		8.31		
38				+40		12.39				+40		13.85		+40		12.85		+40		12.72		+40		12.45		

Aug 28 ^m 32 48.99 11
 Sept 2 48.88 11
 7 48.71 11
 12 48.66 12
 17 48.54 12
 22 48.42 12
 27 48.30 12
 Oct 2 48.17 13
 7 48.04 13

P 40 22.4 7
 23.1 6
 23.7 5
 24.2 4
 24.6 3
 24.9 3
 25.0 1
 25.0 0
 25.0 0

-1.42
 Aug. 27

-1.33
 Aug. 28

-1.37
 -1.04
 Aug. 30

-1.19
 Sept. 11

32 57.3	33 57.0	33 132.6	32 57.9	33 1.20	33 14.45	33 0.2	33 3.95	33 17.00	33 10.2	33 21.83	33 25.14
34.0	23.0	16.50	0.6	3.70	17.05	2.5	6.60	19.75	12.3	24.29	37.65
35.2	5.22	18.50	2.9	6.30	19.50	5.0	8.95	22.00	15.2	27.00	40.31
	7.90	24.50		9.00	25.10		11.72	27.63		29.64	43.67
	10.85	26.43		11.65	27.60		14.24	30.32		32.30	46.28
33 42.8	47.58	22.10	33 50.7	48.70	30.50	38 56.2	57.42	32.93	34 2.2	9.27	50.86
44.6	52.80	31.73	53.3	51.30	32.95	0.4	53.90	35.60	45	11.70	53.59
48.0	52.78	24.37	56.0	54.00	35.50	2.5	56.67	35.20	7.1	14.53	56.33
	53.56	29.68		56.64	40.85		59.20	43.55		17.22	59.67
	58.15	42.03		59.19	43.53		2.00	46.25		19.70	62.44
		44.82			46.18			48.80			65.2
337	29054	32006		30168	33321		26856	36244		20798	38056
32 53.83		33 0.47		33 2.57			32.856		33 12.57	50.798	56056
33 45.17	33 29.054	33 29.096	33 53.33	33 30.168	33 30.292	34 0.37	33 32.856	33 32.949	34 4.60	33 50.798	33 50.960
		1.67			2.51			46.9			9.11
	33 29.131			33 30.286			33 32.709				33 32.709
49.09	-37.04	32 44.00	49.01	-40.28	32 48.78	48.99	-42.77	32 48.94	48.95	-1	1.324868
33.94 + 33.93	-1.13	+ 40.13	+ 40.12	-1.06	+ 41.31	+ 41.30	-1.09	+ 44.02	44.01		-95.16225
33.91 + 33.91	-2.57	+ 40.10	+ 40.10	-2.54	+ 41.28	+ 41.28	-1.05	+ 43.97	+ 43.99		+ 62.23
	-42.74			-43.88			-2.51			-2.25	
	+ 46.39			+ 46.41			-46.52			-1 4.52	
							+ 46.44			+ 46.42	
+ 35.30	-16.04		+ 29.82	-23.04	+ 30.39	-27.41		+ 38.37	-13.66		
1.54777	1.20520m		1.474451	1.36248m	1.48273	1.43791m		1.58340	1.13545		
1.56279	1.22022m		1.48903	1.37450m	1.49775	1.45293m		1.59907	1.15044		
1.56291	1.22034m		1.489165	1.37762m	1.49787	1.45305m		1.59913	1.15059m		
45 1	45 2		45 2	45 2	45 1	45 3		45 1	45 2		
56.6 + 107	48.9 + 23		2.9 + 109	56.2 + 16	59.9 + 107	0.4 + 16		58.4 + 12	44.0 + 1		
5.8 + 34	58.0 + 28		10.2 + 34	5.2 + 28	8.6 + 35	9.1 + 30		0.4 + 28	54.7 + 35		
6.3 + 10	59.1 + 02		12.2 + 14	6.9 + 05	11.1 + 10	10.7 + 09		0.4 + 12	53.8 + 39		
5.0 + 45	57.4 + 20		9.6 + 51	4.7 + 37	9.2 + 50	6.9 + 40		59.0 + 30	52.7 + 24		
137	2234		349	130	288	271		2317	2052		
47 34.2	47 55.85		47 8.72	47 3.25	47 7.20	48 6.78		46 5.92	47 51.30		
36.54	-16.60		30.87	-28.86	31.48	-28.88		39.72	-14.14		
47 39.96	47 39.254		47 39.54	47 39.489	47 38.68	47 38.480		47 37.64	47 37.16		
+ 24	+ 18		+ 20	+ 22	+ 20	+ 19		+ 21	+ 13		
+ 38 35 8.39	9.10		35 8.76	8.95	35 9.68	9.94		35 10.74	11.19		
3 41 43.5	42 38.8		41 44	42 48.5	41 44.9	42 44.9		41 38.40	42 38.3		
0.57040	0.57220		0.57060	0.57240	0.571060	0.57260		0.57020	0.57200		
- 0.096	- 0.068		- 17.57	- 17.59	- 11.65	- 11.65		- 0.096	- 0.068		
0.560747	0.5625427		0.55583	0.554680	0.555872	0.556074		0.55022	0.5620511		
-3.64	-3.65		-3.57	-3.59	-3.62	-3.64		-3.63	-3.65		
-33	-27		-24	-14	-24	-20		-39	-05		
-1.3	-1.3		-1.21	-1.13	-1.22	-1.13		-1.22	-1.13		
+ 13	+ 17		+ 13	+ 19	+ 13	+ 19		+ 12	+ 17		
-3.99	-4.05	-3.55	-3.83	-3.89	-3.76	-3.85		-4.10	-4.12	-3.51	-3.54
35 4.40	4.33	5.35	4.93	4.86	5.19	5.11		35 6.61	6.58	7.38	7.35
4.58	4.80 + 5	17.37	5.06	4.98 + 5	17.57			7.00	6.96 + 5	16.87	
40 22.7	22.3	-0.1	40 22.84	22.4	-0.1			40 24.5	24.1	-0.0	
+ 5 17.8	17.5	-9.8	+ 5 17.8	17.4	-9.8			+ 5 17.5	17.1	-11.6	
18.0	17.6		18.0	17.5				17.7	17.2		
	+ 5 7.47			+ 5 7.61					+ 5 5.07		
17.6			17.6					17.3			
	140 12.35			140 12.67					140 12.27		

-1.22										-1.22										-1.26										-1.26 -1.05									
Sept. 12										Sept. 13										Sept. 15										Sept. 16									
18	33	18.7	33	23.40	33	36.35	32	20.3	33	24.45	32	87.81	33	20.2	33	27.20	32	40.57	33	24.4	32	22.00	33	42.10	32	21.00	33	42.10	32	21.00	33	42.10	32	21.00	33	42.10	32	21.00	
		1.63		2.56		3.20		2.48		2.70		4.081		2.75		8.000		4.380		2.70		2.70		31.43		31.43		44.67		31.43		44.67		31.43		44.67		31.43	
		2.05		2.82		4.139		2.48		2.72		4.810		2.68		8.253		4.580		2.72		2.72		34.00		34.00		47.40		34.00		47.40		34.00		47.40		34.00	
				31.05		4.710		1.32		3.235		4.825		1.90		8.524		5.110		2.85		2.85		36.75		36.75		52.66		36.75		52.66		36.75		52.66		36.75	
				32.62		4.915		1.32		3.500		5.080		1.90		8.840		5.380		2.85		2.85		38.37		38.37		55.28		38.37		55.28		38.37		55.28		38.37	
	24	4.8		10.55		5.218	24	7.0		—		5.365	24	14.2		14.85		5.641	34	18.5		2.10		16.60		16.60		57.99		16.60		57.99		16.60		57.99		16.60	
		6.7		13.20		5.477		1.07		—		5.620		16.7		17.53		5.915		2.10		2.10		18.90		18.90		0.56		18.90		0.56		18.90		0.56		18.90	
		9.0		15.84		5.746		1.32		—		5.883		19.0		20.20		6.190		2.85		2.85		21.60		21.60		3.25		21.60		3.25		21.60		3.25		21.60	
				18.50		2.83		—		—		6.20		—		22.68		7.10		2.85		2.85		24.20		24.20		8.46		24.20		8.46		24.20		8.46		24.20	
				[2.11] 20.12		5.44		—		—		6.48		—		25.36		7.70		2.85		2.85		26.82		26.82		11.77		26.82		11.77		26.82		11.77		26.82	
				22.084		8.10		—		—		7.48		—		—		12.37		—		—		13.53		13.53		—		13.53		—		13.53		—		13.53	
				27.989		39.425		33	29.726		23.877		40.961		—		26.371		38.100		—		—		27.867		27.867		33.737		27.867		33.737		27.867		33.737		27.867
	33	18.17		5.178		5.7425	33	22.70		53.603		58.961	33	22.63		58.371		63.100	33	26.87		33	26.87		57.867	33	57.867		57.867		57.867		57.867		57.867		57.867		
	34	6.85	33	6.484	33	52.205	34	10.97	33	53.603	33	58.601	34	16.63	33	56.371	33	56.455	34	21.05	33	56.455	34	57.943	33	57.943		57.943		57.943		57.943		57.943		57.943		57.943	
				52.084		202		—		—		603		—		—		484		—		—		950		950		950		950		950		950		950		950	
				52.204		48.66		—		—		53.602		—		—		56.469		—		—		57.962		57.962		57.962		57.962		57.962		57.962		57.962		57.962	
				-1	2.56	32	48.66	48.65	-1	4.01	32	48.63	48.63	-1	6.91	32	48.58	48.58	-1	8.33	32	48.56	48.56	-1	8.33	32	48.56	48.56	-1	8.33	32	48.56	48.56	-1	8.33	32	48.56		
				-9.7		+63.51	+63.55		-98		+64.97	+64.97		-1.00		+67.89	+67.89		-1.01		+69.40	+69.40		-1.01		+69.40	+69.40		-1.01		+69.40	+69.40		-1.01		+69.40			
				-2.23		+63.51	+63.53		-2.19		+64.94	+64.95		-2.15		+67.86	+67.87		-2.13		+69.37	+69.38		-2.13		+69.38	+69.38		-2.13		+69.38	+69.38		-2.13		+69.38			
				-1	5.78				-1	7.18				-1	10.06				-1	11.53				-1	11.53				-1	11.53				-1	11.53				
				+46.42					+46.43					+46.41					+46.43					+46.43				+46.43											
				+34.03		-14.63			+30.90		-17.37			+33.84		-20.16			+31.09		-23.04				+31.09		-23.04												
				1.53186		1.16524			1.48926		1.23926			1.52943		1.30442			1.49262		1.36246				1.49262		1.36246												
				1.54658		1.15026			1.50448		1.25452			1.54445		1.31951			1.50764		1.37780				1.50764		1.37780												
				1.54700		1.18036			1.50610		1.25494			1.54457		1.31963			1.50776		1.37762				1.50776		1.37762												
				45	1	45	2		45	1	45	2		45	1	45	2		45	1	45	2		45	1	45	2		45	1	45	2		45	1	45	2		
				55.1	+9	45.3	+29		55.8	+7	49.6	+21		56.5	+8	52.4	+18		58.1	+7	53.1	+16		58.1	+7	53.1	+16		58.1	+7	53.1	+16		58.1	+7	53.1	+16		
				5.1	+33	55.4	+35		5.2	+34	58.5	+30		5.7	+33	5.5	+26		6.9	+34	2.9	+27		6.9	+34	2.9	+27		6.9	+34	2.9	+27		6.9	+34	2.9	+27		
				4.6	+13	55.3	-24		8.9	+20	58.3	-06		5.9	+10	1.7	+07		7.8	+26	4.0	+12		7.8	+26	4.0	+12		7.8	+26	4.0	+12		7.8	+26	4.0	+12		
				4.2	+42	55.4	+23		5.2	+45	56.2	+22		4.4	+43	0.4	+23		7.1	+48	3.8	+34		7.1	+48	3.8	+34		7.1	+48	3.8	+34		7.1	+48	3.8	+34		
				9.0		11.4			22.1		22.26			11.5		23.60			19.9		5.8				19.9		5.8												
				47	2.25	47	52.85		47	55.2	47	55.65		47	2.88	47	59.07		47	49.8	48	1.45		47	49.8	48	1.45		47	49.8	48	1.45		47	49.8	48	1.45		
				35.28		-15.14			32.00		31.99		-17.98		35.02		-20.88		32.18		-23.88				32.18		-23.88												
				47	37.48	47	37.71		47	37.51	47	37.67		47	37.91	47	38.13		47	37.16	47	37.60		47	37.16	47	37.60		47	37.16	47	37.60		47	37.16	47	37.60		
				+2.4		+1.16			+2.2		+1.16			+2.3		+1.19			+2.4		+2.22				+2.4		+2.22												
				+38	35	10.87			35	10.84		10.68		35	10.44		10.23		35	11.19		10.75				35	11.19		10.75										
				3	41	42.4	42	38.5		41	46.8	42	36.8		41	48.5	42	39.41		41	45.7	42	41.3		41	45.7	42	41.3		41	45.7	42	41.3		41	45.7	42	41.3	
				0.57040		0.57210			0.57060		0.57220			0.57040		0.57230			0.57050		0.57240				0.57050		0.57240												
				-13.8		-13.8			-13.8		-13.8			-14.3		-14.3			-17.4		-17.4				-17.4		-17.4												
				0.55658		0.55828			0.55678		0.55830			0.55653		0.55843			0.55645		0.55855				0.55645		0.55855												
				-3.60		-3.62			-3.57		-3.58			-3.59		-3.61			-3.58		-3.59				-3.58		-3.59												
				-3.1		-0.6			-3.4		-0.8			-3.1		-1.1			-2.6		-1.4</																		

Sept 18				Sept 22				Sept 23									
10	33	28.9	3240	33	45.75	33	34.5	33	39.25	33	52.65	33	40.8	33	41.0	33	54.40
16		31.0	3488		48.20		36.7		41.95		53.39		43.3		42.75		57.04
40		33.7	3740		57.00		38.8		44.70		58.00		45.9		46.50		59.69
66			40.15		56.22				47.33		53.0				49.05		55.00
28			42.87		58.80				48.75		57.4				57.60		7.63
28	34	17.7	19.90		1.52	34	22.0		26.75	84	45.9		28.60		28.60		10.12
56		20.5	2260		4.02		24.0		29.50		48.2		31.30		31.30		12.80
28		23.0	25.20		6.80		26.4		32.03		50.4		34.00		34.00		13.50
46			27.75		17.03				34.75				36.62		36.62		20.80
17			30.44		14.68				37.50		21.69		39.20		39.20		23.40
83					17.30						24.40						24.10
737			31358		31632				38871		273.67		40172		29258		
737	88	31.20	1358		1632	33	36.67		8371		93.67	33	43.33		10172		11258
57943	34	20.40	34 1358	34	1484	34	24.13	34	8.371	34	8.515	34	48.17	34	10.172	34	10.235
950					1.471						484				285		
7962					1.478						8.500				10.260		
1856	4856	-1	1187	32	48.51	48.51		-1	19.20	32	48.40	48.41	-1	20.76	32	48.38	48.39
940	4940		-16.1		+72.97	+72.97			-9.43		+80.10	+80.09		-8.7		+81.88	+81.87
9.37	+6938		-20.7		+72.94	+72.95			-1.97		+60.07	+60.07		-1.94		+81.85	+81.85
		-1	15.04					-1	22.10				-1	23.77			
			+46.44						+46.40					+46.49			
		+30.28	-18.92			+31.83	-15.63				+26.93	-37.91					
		1.44116	1.27692m			1.50284	1.19396m				1.43024	1.57875m					
		1.44618	1.29194m			1.51786	1.20898m				1.44526	1.59377m					
		1.44630	1.29206m			1.51798	1.20910m				1.44538	1.59389m					
		45 2	45 2			45 1	45 2				45 2	45 3					
E		0.9 + 8	51.5 + 20			57.9 + 7	43.1 + 24				27 + 9	9.9 + 33					
E		9.9 + 34	0.2 + 26			8.9 + 4	58.2 + 28				13.4 + 34	20.2 + 34					
E		10.5 - 07	0.6 + 07			5.1 + 12	53.1 - 27				11.5 - 11	18.4 - 31					
E		7.7 + 49	58.2 + 24			6.4 + 47	55.9 + 22				11.1 + 49	17.9 + 36					
		24.0	2305			18.3	2183 + 12				387	669					
47		7.25	47 57.62			47 4.58	47 54.58				47 5.68	48 16.72					
		31.35	-19.59			32.98	-16.18				27.88	-39.245					
47		38.60	47 38.03			47 37.53	47 38.40				47 37.56	47 37.487					
		+ 22	+ 1.8			+ 25	+ 12				+ 20	+ 1.17					
+38		35 9.75	35 10.32			35 10.83	9.95				35 10.79	10.89					
3		41 449	42 3840			41 457	42 357				41 582	42 579					
		0.57064	0.57226			0.57050	0.57220				0.57066	0.57240					
		-0614	-0614			-0673	-0673				-0790	-0790					
		0.5645	0.5661			0.5638	0.5655				0.5628	0.5650					
		-3.67	-3.68			-3.66	-3.68				-3.65	-3.67					
		-24	-10			-26	-107				-20	-38					
		-23	-33			-15	-32				-25	-40					
		+ 13	+ 18			+ 13	+ 17				+ 13	+ 20					
		-4.04	-3.93			-4.05	-3.89				-3.98	-4.21					
		35 5.71	35 6.59			35 6.77	35 6.06				35 6.51	35 6.66					
		6.05	6.06 + 5			6.42	6.42 + 5				6.74	6.72 + 5					
		40 25.0	24.7			40 25.2	24.9				40 25.28	24.9					
+ 5		19.0	18.6			+ 5 18.8	18.5				+ 5 18.5	18.2					
		4.7	18.7			19.0	18.6				18.7	18.3					
			+ 5				+ 5					+ 5					
		18.8	5.29			18.0	4.52				17.3	5.38					
			+40				+40					+40					
			11.84				10.94					12.12					

1877 phase - prob. 1391

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Oct-7	^m 2		
	40 2752	19	4.4
Oct-27	2719	7	4.1
Nov-1	2712	7	3.8
	2705	6	3.5
	2699	6	3.1
	2693	6	2.7

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Oct. 18 M.A

-1.03
Oct. 30 1.06

66	42 0.6	42 335	42 1395	40 16.7	40 22.5	40 41.4
70	2.5	342	16.00	18.4	24.6	43.6
70	4.4	243	18.0	20.0	26.6	45.7
70		256	22.05		28.8	47.8
05		1163	2435		30.9	50.0
30	42 26.7	41.00	2637	41 8.2	32.0	
38	38.3	43.05	2844	10.0	35.1	54.0
43	40.1	45.20	3062	12.0	37.2	56.3
78		4238	3477			58.1
85		4243	3690			0.3
8			39.00			2.3
83		26345	29080		1555	4.4
83	42 2.50			40 18.37		6.5
1257	42 38.37	42 26.345	42 26.436	41 10.07	40 45.550	8.6
323			435			45.664
1290			42 26.435		17 40 45.652	640
150		-1 58.73	40 27.32		-18.26 40 27.144	
179		-1.18	+119.12		-18	+18.51
1.78			+119.11	+119.10	-0.06	+18.51
		-2.62			-243	
		-2 1.72			-20.84	
		+24.74			+24.81	

+23.94	-11.93	+27.28	-24.42
1.37912	1.07664m	1.43584	1.38775m
1.47484	1.19206m	1.55138	1.50329m
1.49466	1.19218m		
5 2	5 3	5 2	5 3

43.0 +32	31.4	1.58	40.1	47.4
58.9 +28	46.4	+33	55.6	4.3
56.4 -13	45.5	-48	53.5	0.1
56.6 +20	44.9	+17	53.9	0.9
14.9	8.2		3.1	2327

7 53.72	8 42.05	7 50.78	8 55.18
+31.23	-15.57	+ 35.59	- 31.86
8 24.95	6 24.98	8 26.37	8 26.32
+ .17	+ .15		

+10 14' 23" 39	14 21.86	14 21.98	14 22.03
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32 2 24.6	3 21.4	2 33	3 40
1.55668	1.55688	1.55670	1.55690
- 00.03	- 00.03	+2.74	+2.74
1.55575	1.55595	1.55944	1.55964
-35.95	-35.94	-36.26	-36.28
- .05	- .01	- .07	- .06
- .22	- .02	- .42	- .60
+ .17	+ .22	+ .17	+ .24
-36.14	-36.24	-36.58	-36.70
13 47.26	47.15 45.70 45.59	13 48.40	45.33
46.18	46.37 +5	13 45.36	+5 18.25
18 65.4	64.4 -0.8	19 39	-0.9
+5 18.9	18.0 -11.3	+5 18.5	-2.6
18.7	18.1	18.6	-18.9

18.0	+5 6.35	+5 6.45
	+18 52.83	+18 51.81

Agiulac

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 J₀ 82 41.93
 con. J -1.80 0
 d₀ +9.23
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 Feb 4 46.30
 9 46.39
 14 46.49
 19 46.60
 24 46.71
 Mar. 1 46.83

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 26.4 4
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 R₁ +18.85
 R₀ +0.90
 I 20.8
 C₀ +0.15
 S 1.01
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 0.11565 Apr.
 0.11777 Aug. Sept. 1900

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 25.7 13.3
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 21.580 27.0 45 15.87
 32.0 44 15.87

44 85.0 44 85.3 44 45.9 44 80.0 44 81.9 44 42.8
 87.0 87.5 47.9 82.0 34.1 44.3
 89.0 89.6 50.1 33.9 36.0 46.5
 41.5 54.2 88.0 50.8
 43.5 56.4 60.2 52.8
 13.5 58.4 45 22.5 9.4 54.9
 15.0 0.3 24.1 11.5 56.9
 17.1 2.5 26.2 13.5 59.0
 18.2 6.4 15.7 3.3
 21.3 8.7 17.8 3.2
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44 85.0 44 85.3 44 45.9 44 80.0 44 81.9 44 42.8
 87.0 87.5 47.9 82.0 34.1 44.3
 89.0 89.6 50.1 33.9 36.0 46.5
 41.5 54.2 88.0 50.8
 43.5 56.4 60.2 52.8
 13.5 58.4 45 22.5 9.4 54.9
 15.0 0.3 24.1 11.5 56.9
 17.1 2.5 26.2 13.5 59.0
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 41.5 54.2 88.0 50.8
 43.5 56.4 60.2 52.8
 13.5 58.4 45 22.5 9.4 54.9
 15.0 0.3 24.1 11.5 56.9
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45 5.67 21.580 27.0 45 15.87
 46 40.13 45 29.09 25.75
 45 2.892 44 46.214
 -16.48 + 16.68
 -1.28 + 16.68
 +0.70
 -15.95
 +44 46.94

19.420 44 34.00 88.0 34.19 88.0 34.19
 45 0.767 45 34.03 44 58.30 44 58.35 45 24.7 44 54.810 44 54.855
 45 0.745 370
 45 0.756 44 58.372
 44 46.340 44 46.553
 -14.28 + 14.42 -11.83 + 11.92
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-2.78 -37.24 -18.21 +44.74
 0.44404m 1.57101m 1.62107 1.26031m
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 45 0 45 0 45 1 45 0
 10.3 56.5 12.7 31.7
 14.8 5.2 11.8 40.9
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 78.0 20.3 40.0 16.64
 45 19.50 46 50.8 46 10.00 45 41.60
 -3.66 -49.02 +55.00 -23.07
 45 15.84 45 16.06 46 26.60 45 18.53

+21.37 -35.66
 1.32980 1.55218m
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 40 4 45 0
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 44 46.23 46 16.3
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 33 49 42 50 27 50 4
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 1.60745 1.60800 1.60455
 -40.545 -40.587 -40.23
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 - .08 - .29 - .17
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 -40.61 -40.90 -40.38
 +8 36 51.90 51.39 36 48.44
 +8 36 51.64 -4 21.83 32 28.2
 32 29.2 -1.3 -4 20.2
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37 33.99 37 33.66 37 33.99
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 36 51.54 51.80 36 46.03
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 32 27.5 -1.1 32 26.7
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Sept 17	44	50.13	7	32	51.9	3
22		50.06	8		52.2	2
27		49.98	8		52.4	1
Oct 2		49.90	8		52.5	1
7		49.82	8		52.6	0
12		49.74	8		52.6	0
17		49.65	8		52.6	1
22		49.57	8		52.5	1
27		49.49	8		52.3	2

1877

Sept 19

Sept 22

Sept 23

Oct 7

18	45	31.4	45	41.13	45	51.68	45	45.8	45	46.55	45	51.65	45	44.5	45	48.30	45	51.68	46	50	46	54.8	46	19.05				
		29.3		43.29		58.74		48.1		48.73		59.10		46.0		52.38		52.50		67		10.46		2.110				
		41.3		43.30		53.80		30.3		50.80		1.19		48.6		52.50		30.0		8.0		12.52		2.315				
				47.43		0.02				52.80		5.44				54.54		7.18				14.75		2.742				
				49.60		2.00				54.84		7.44				56.60		9.20				16.72		2.943				
46	27.7			18.69		42.9	46	31.1		24.20		9.50	46	38.1		25.85		13.40	46	52.4		46.10		3.13				
	20.2			20.78		6.32		33.3		26.15		11.60		38.6		27.88		13.40		53.0		48.15		3.358				
	32.3			23.00		8.86		83.0		28.28		18.65		41.5		29.77		15.50		57.1		50.22		3.572				
				25.00		12.55				30.32		18.00				32.08		18.63				52.34		3.780				
				27.00		14.65				32.40		20.00				34.20		21.75				54.41		4.000				
						16.70						22.15						23.85						4.400				
				34.122		22.611				39.507		22.502				41.237		17.460				314.15		346.80				
45	39.43			46.11		45	48.07			10.502		45	46.37			12.460		46	6.92									
46	30.07	46	4.122	46	4.172	46	33.13	46	9.507	46	9.547	46	39.73	46	11.237	46	11.327	46	55.17	46	51.415	46	31.527					
					.212						5.97												505					
					4.202						9.572												46	31.516				
				-1	13.89	44	50.06	50.10		-1	19.32	50.01	50.06		-1	21.09	50.00	50.04		-1	41.55		49.77					
				-1.09	+74.14	+74.10				-17	+79.56	+79.51			-16	+81.33	+81.29		+81.29		-17	+101.75		+10.75				
				-3.18	+74.12	+74.10				-3.12	+79.54	+79.51			-3.12	+81.31	+81.29		+81.29		-2.88		+101.73		+10.73			
				-1	17.26					-1	22.61				-1	24.37					-1	44.60		49				
				+46.94						+46.96					+46.96						+46.94		+10.75		+10.75			
				+24.77		-25.87				+21.50		-23.56				+24.96		-28.40				+24.95		-23.65				
				1.39373		1.41280				1.33244		1.37218				1.39724		1.45332				1.39488		1.37383				
				1.51158		1.53045				1.45009		1.48982				1.51489		1.57097				1.50892		1.49148				
				1.54170		1.58057				1.45021		1.48995				1.51561		1.57109				1.51148		1.49160				
				50	3	50	4			50	3	50	4			50	3	50	0			50	3	50	4			
E				51.1		59.3				56.8		55.4				54.8		3.7				49.9		53.2				
H				6.3		12.9				11.8		9.6				7.4		16.4				6.3		9.1				
g				2.9		9.9				7.6		9.8				4.9		16.0				1.9		5.4				
H				0.8		6.8				5.1		3.1				2.8		12.2				0.7		3.9				
				1.1		28.9				2.3		17.9				9.9		48.3				23.8		11.6				
54	0.28	55	5.22							54	5.32	55	4.48			54	2.48	55	12.08			53	59.70	55	2.90			
	32.48		-33.92							+25.48		-30.48				32.73		-37.24				32.71		-31.08				
54	32.76	54	33.30							54	33.52	54	33.58			54	35.21	54	34.843			54	32.43	54	31.898			
	+16		+1.3																									
+8	28	15.58	28	15.05						28	14.84	28	14.76			28	13.14	28	13.57			28	15.94	28	16.46			
33	48	40.2	49	47.9						48	45.7	49	44.6			48	42.4	49	52.4			48	40.2	49	48.5			
	1.58600		1.58626							1.58604		1.58624				1.58604		1.58628				1.58600		1.58624				
	-00.62		-00.62							-04.50		-04.50				-05.94		-05.94				+10.34		+10.34				
	1.58538		1.58564							1.58154		1.58174				1.58100		1.58090				1.58600		1.58624				
	-38.49		-38.52							-38.15		-38.17				-38.06		-38.08				-39.48		-39.50				
	-0.5		-0.5							-0.4		-0.5				-0.5		-0.6				-0.5		-0.5				
	-0.2		-0.2							-0.2		-0.2				-0.2		-0.2				-0.2		-0.2				
	+0.24		+0.31							+0.25		+0.31				+0.24		+0.31				+0.24		+0.31				
	-38.74		-38.83							-38.39		-38.47				-38.27		-38.36				-39.69		-39.75				
+8	27	36.85	36.84	36.22	36.24					27	36.45	36.44	36.24	36.30		27	34.87	34.79	35.15	35.07		27	36.25	36.12	36.71			
		36.54	36.54	+5	16.50						36.57	36.57	+5	16.82			35.01	35.08	+5	17.78			36.48	36.34	+5	17.91		
	32	52.88	52.0		-0.6					32	53.0	52.2		-0.6			32	53.1	52.2		-0.6			32	53.5	52.6		-0.7
+5	16.3	15.5			-11.0					+5	16.6	15.8		-11.1			+5	18.1	17.1		-11.2			+5	17.0	16.3		-11.5
	16.4	15.5									16.7	15.8						16.2	14.1				17.1	16.3				
	+5	15.5			+5	4.90				15.8		+5	5.12				17.3			+5	5.98		+5	5.71				
					+32	41.44						+32	41.49								16.2		+32	42.19				

[illegible]

2			5			P. 2			48		
Aug. 17	49	19.77	5	71.3	5	49	16.266	P'	49	16.28	
22	73	2	71.8	5	5	Cond	+ .01	P' n.A		16.24	
27	72	4	72.3	5	4			P' n.A		+ .04	
Sept 6	68	5	72.8	4	4	$\frac{dx}{dt}$	+ 2.9471				
	63	6	73.2	4	3	ρ_0	6 3.19	P'	6	2.9	
16	57	6	73.6	3	2	Cond	- .3	P' n.A		4.0	
	54	7	74.1	2	1			P' n.A		- .1	
26	38	7	74.3	2	0	$\frac{dp}{dt}$	+ 8.723				
	28	8	74.4	1	0						
Oct. 6	21	8	74.5	0	0						
	13	8	74.5	0	0						
16	05	8	74.4	1							

Aug 27			Aug 28			Aug 30			Sept 11		
49 33.2	49 36.25	49 146.68	49 36.0	49 37.19	49 17.93	49 36.7	49 40.20	49 50.50	49 54.8	49 58.21	50 8.76
34.4	38.33	48.70	37.9	39.55	19.95	37.0	42.05	52.52	56.8	0.41	10.88
36.5	40.30	50.82	39.2	41.58	52.00	41.3	44.20	54.70	58.6	2.49	13.00
	42.43	55.00		43.60	56.08		46.18	58.80		4.52	17.05
	44.87	57.05		45.70	58.20		48.30	0.70		6.33	19.20
50 25.3	18.46	59.10	50 27.2	15.00	0.25 0.75	50 24.5	17.50	2.98	50 48.0	33.52	21.22
27.0	13.35	11.6	29.0	16.70	2.29	26.3	19.45	5.00	50 2.07	37.68	23.36
29.3	17.62	3.26	30.6	18.80	4.40	28.0	21.52	7.00	52.1	39.73	25.38
	19.23	7.40		20.85	8.58		23.63	11.22		41.84	29.44
	21.76	8.75		22.00	10.38		25.60	13.30		43.95	31.60
		11.50			12.70			15.40			33.66
	28.994	35.022		30.227	30.348		32.843	27.212		27.129	23.365
49 34.80	65.022	49 37.70	50 27.20	50 0.227	50 0.271	50 26.27	50 2.843	2.987	50 56.73	50 21.129	21.241
	0.84				2.17			5.33			21.9
	49 59.097			50 0.294				2.922			50 21.230
-39.18	19.72	19.74	-40.38	19.71	19.74	-43.02	19.70	19.72	-1	1.45	1960 49 19.57
-15	+39.28	+39.26	-14	+40.58	+40.55	-15	+43.22	+43.21	-13	+61.63	+61.66
	+37.25	+39.245		+40.55	+40.54	-0.04	+43.19	+43.1920		+61.62	+61.63
-3.47			-3.47			-3.46					
-4.273			-43.99			-46.65			-1	4.90	
+16.2737			+16.30			+16.28				+16.33	

+24.30	-28.10	+22.59	-28.64	+23.92 ³	-23.38 ⁴	+24.50	-29.37
1.38561	1.44871m	1.35392	1.45897m	1.378 ³	1.368 ⁴	1.38917	1.46790m
1.50562	1.56842m	1.47393	1.57698m	1.498³	1.488⁴	1.50918	1.58791m
1.50594	1.56884m	1.47405	1.57710m	1.49904	1.48823	1.50930	1.58803m
20 0	20 1	20 0	20 1	20 0	20 1	20 0	20 1
"	"	"	"	"	"	"	"
30.1	40.4	33.4	41.4	29.9	31.6	27.9+0	40.1+33
43.4	52.9	46.4	54.2	43.1	45.2	42.2+9	54.1+39
45.5	54.1	48.2	55.6	44.8	46.2	42.4-5	52.9-42
40.4	49.9	43.2	50.2	38.8	40.2	37.1+7	50.7+38
19.4	19.3	11.2	14	15.66	32	14.96	19.78
20 389.55	21 49.32	20 42.80	21 50.35	20 39.15	21 40.50	20 37.40	21 49.45
32.034	-37.045	29.789	-37.767	31.58	-30.78	32.36	-38.73
21 11.889	21 12.287	21 12.589	21 12.598	21 10.70	21 10.03	21 9.70	21 10.782
						+ .08	+ .17
1' 36.47	36.07	1 35.77	35.76	1 37.65	38.32	1 38.65	37.62
15 20.2	16 29.31	15 38.5	16 30.2	15 39.21	16 29.3	15 38.9	16 29.31
1.62536	1.62565	1.62538	1.62565	1.62536	1.62560	1.62536	1.62565
-09.27	-09.27	-16.035	-16.035	-8.22	-8.22	-07.27	-7.27
1.61644	1.61644 ⁰⁰	1.60958	1.60960 ⁹²	1.61654	1.61678 ⁰³	1.61765	1.61794 ⁰⁴
-41.328	-41.340	-40.871	-40.703	-41.86	-41.88	-41.46	-41.4953
-.03	-.05	-.03	-.05	-.03	-.03	-.03	-.06
-.047	-.0418	-.047	-.0418	-.047	-.0417	-.047	-.0420
+ .04	+ .11	+ .04	+ .11	+ .04	+ .10	+ .04	+ .11
-41.36	-41.34	-40.72	-40.77	-41.40	-41.42	-41.52	-41.63
0 55.11	55.12	0 55.05	54.99	0 56.25	56.28	0 57.13	57.08
54.88	54.89	55.02	54.96	56.57	56.54	56.56	56.52
5 72.3	71.6	5 72.4	71.7	5 72.6	71.9	5 73.6	72.8
-5 17.4	16.7	+5 17.4	16.7	+5 16.0	15.4	+5 17.0	16.3
7.6	16.4	7.6	16.4	16.2	15.1	17.2	16.0
16.8	+5 8.27	16.9	+5 8.41	N ²⁴	+5 7.36	16.3	+5 6.57
	+6 3.15		+6 3.43		+6 3.93		+6 3.13

[illegible]

	ρ		ρ
Oct-7	49	9	6
12	19.22	8	13.7
17	19.13	8	13.7
22	19.05	8	13.6
27	18.97	7	13.4
	18.90		

-1.29										-1.14										-1.13										-1.09									
Oct. 1										Oct. 7										Oct. 13										Oct. 17									
19	50	264	50	2860	50	3230	50	350	50	3800	50	4845	51	240	51	—	50794	—	51	77	50	—	51	100															
				3050		4130		367		4005		5041		260		—	203	—		92		—		628															
				3230		4340		384		4415		5248		277		—	51	210		110		—		837															
				3370		4786				4415		5670				—	—	620				—		1243															
				3715		4964				4620		5875				—	—	825				—		1435															
	51	45		621		576	51	334		1345		885	51	375		2490		1053	51	443		3105		1656															
		57		820		5385		273		1745		221		390		2710		1246		460		3205		1870															
		73		1031		5386		292		1848		513		410		2905		1465		483		3520		2070															
				1235		010				2162		910				3120		1878				3724		2475															
				1437		210				2368		1130				3313		2090				3942		2683															
						421						1341					2305					2910																	
				21559		38909				30827		30949				29080		17491				35198																	
	50	2640		56919		50	3670					51	2590				17491		51	930		18227																	
	51	583	50	51559	50	51735	51	2740	51	0827	51	0863	51	3917			15901		51	4620		16570																	
						649						917					10446					16625																	
				50	51692					51	0890						10507					51	16588																
		-1	32.31	49	19.29	"		-1	41.65		19.19			-1	51.34	51	10466				-1	57.55	19.034																
		-14			+92.40				-12		+101.70				-12		19.10				-12		117.55																
					+92.37		+9236				+101.67		+101.66				+111.37		+111.33				+117.52																
		-3.05							-2.94						-2.82							-2.79																	
		-1	35.50					-1	44.61					-1	54.32							-2	0.46																
			+16.19						+16.28						+16.19								+16.13																

Oct-7 1890 1883 1877 1870 1864
 49 1922 7 13.4 2
 6 13.2 3
 11 12.9 3
 16 12.6 4
 12.2

Ex Min.

N-1.02
Oct. 18D.95
Oct. 27D.99
Oct. 28

51 104	50 5330	51 538	57 22.9	57 —	57 28.3	53 4.6	53 11.4	53 30.2
124	5743	770	24.0	—	30.2	6.4	13.4	22.2
143	8940	988	25.7	—	32.4	8.0	15.5	24.3
	150	1405		—	32.5		17.6	26.3
	343	1610		—	36.6		19.7	30.4
51 47.8	3260	1810	52 3.0	20.0		53 58.3	33.0	
49.3	3461	2010	5.0	22.1	40.6	0.4	24.0	42.6
57.0	3670	2220	6.4	24.4	42.8	2.7	26.0	44.7
	3873	2650			44.8			46.8
	4083	2850			46.9			48.8
		3063			48.0			50.8
					51.0			52.9
	36053	19944			53.0		34.21	55.0
51 12.47			51 24.20	51.020	55.2	49 6.33		57.0
51 44.37	51 18.053	51 18.131	52 4.80	-18.573	51 32.427	50 0.47	49 34.210	34.317
		143			32.447			30.6
	51 18.137				51 32.437			49 34.308
-1 58.79	49 19.02		-2 13.49	49 18.897		-15.24	49 18.885	
-11	+119.12		-10	+133.54		-18	+1542	
+117.51		+119.09	+119.08	+133.53			+1541	
	-2.78		-2.63			-2.62		
-2 1.82			-2 16.17			-17.97		
+16.32			+16.27			+16.34		

+5.67 -31.23
 0.75358 1.69457m
 0.87357 1.61458m
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 20 0 20 1

+8.24 -32.36
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+24.98 -26.16
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50.7 40.9
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46.1 39.2
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21.8 33.2
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21 22.5 21 52.28
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20 57.05 21 50.35
 + 10.87 -42.67
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20 31.72 21 43.62
 + 36.89 -34.50
 21 8.61 21 9.12

+6 1 38.63 1 37.28

1 40.43 40.67

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36 15 42.4 16 32.4
 1.62544 1.62565
 -65 -65
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 -42.15 -42.17
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15 39 16 32
 1.62540 1.62565
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 -43.43 -43.45
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 -43.53 -43.67

15 14 16 26
 1.62530 1.62560
 +10.14 +10.14
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 -43.20 -43.23
 -.04 -.04
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 +.03 +.10
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 +5 18.7 18.1 -10.5
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 +5 16.4 -10.2
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 0 56.13 +5 18.05
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	54.36	3.00	14.4	19.39	50.06	29.8		38.40	41.00	43.0	37.43	48.18
	56.55	7.26	16.0	21.59	32.35	31.7		32.36	43.10	46.8	39.64	50.36
	58.65	11.45		23.80	36.52			34.42	47.24		41.79	54.40
	6.48	13.60		25.88	38.69			41.6	49.41		43.84	56.60
	30.43	15.70		55.55	40.79			6.31	51.50		43.56	58.81
	32.55	17.82		57.65	42.90			8.48	53.66		43.70	60.92
	34.65	19.90		59.70	45.00			10.43	55.88		47.60	63.03
	36.80	20.15		1.70	47.25			12.67	58.00		48.20	65.14
	38.80	22.20		3.99	51.30				2.10		21.90	67.25
		26.85			53.53							69.36
	39.562	17.73		28.678	44.839			19.304	42.341		28.620	34.617
11. 58.10			12 14.43			12 29.77			54.341	12 44.83		64.617
	12 15.562	12 15.612		12 40.678	40.763		12 49.304	12 49.100		12 58.620	12 58.743	
		6.53			7.69			39.5			7.11	
		12 15.632		12 40.766			12 49.398			12 58.727		
	-1 22.44	11 17.41		-1 23.36	17.402		-1 32.34	17.32		-1 41.58	11 17.21	
	+28.6			+27	+83.36		+29	+92.08		+26	+101.52	
	-3.71				+83.32			+92.04			+101.48	
	-2.43			-3.70			-3.62			-3.51		
	26.41	25.89		27.65	26.99		36.25	35.67		45.85	44.83	
10	49.22			+13.24	78		+13.15	73		+13.88	90	
	49.74											
	+17.53			+26.34			+19.63			+13.90		
	1.24878			1.42062			1.29292			1.14301		
	1.35513			1.53197			1.40427			1.25436		
	1.35525			1.53209			1.40439			1.25448		
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E	20.8			23.3			27.8			30.4		
H	34.6			37.7			44.4			48.5		
G	36.8			40.2			47.4			48.2		
K	29.4			32.5			37.9			43.9		
	12.16			13.37			15.95			11.0		
19 30.40			21 33.42			21 39.88				21 42.75		
+22.656			34.045			25.37				17.987		
19 53.056			22 7.467			22 5.25				0.712		
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-13 2 55.29	57 47.1		59 19.17			59 16.90				59 12.38		
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1.91786		1.91836				1.91839				1.91842		
-8.29		-16.39				-6.55				+11.52		
1909.57		1.90806				1.91184				+92.982	1930.00	
-81.20		-50.42	8100			-81.63				-50.88	11	
+0.4		+0.8				+0.4				+0.02		
-1.13		-1.19				-1.19				-1.19	22	
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55 21.1	+5 18.41	55 21.1	+5 19.00			55 21.2	+5 17.74			55 21.3	+5 17.91	
	-1.1		-1.1				-1.1				-1.2	
	-6.9	+5 18.9	-6.9			+5 17.4	-6.7			+5 16.2	-6.7	
		19.1				19.6				16.4		
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	P.		P.
Oct-7	37	1656	52
Nov-27		1695	53.9
Nov		5.93	54.0
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		146		2110		8565		55.2		3.0		29.5
		172		2410		8845		57.6		6.0		32.3
				2700		4443				6.0		25.3
				2977		4730				11.8		38.2
				1040		5025	41	40.0		14.7		
				1333		5310		42.3		17.8		44.0
				1635		5610		44.4		20.7		46.9
				1915		2100						49.8
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				20135		37240				3217		1.2
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			38	50.135	38	50.218	87	42.23	37	32.170		32.327
						260						29.5
			38	50.239							37	32.311
			-1	32.39	37	16.71				-15.34	37	16.920
				-1.29		+93.53				-9.99		+16.29
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E 36.0 H 46.1 B 46.8 H 45.0 36 1739 43.48 33.54 37 16.99 17.00	32.8 45.8 39.7 42.8 1611 36 40.28 + 35.06 37 15.34	18.1 31.0 24.2 27.2 1005 37 25.12 - 9.33 37 15.79
+14 45 31.36	45 33.01	45 32.56
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+44 45 33.40 33.36 50 51.9 51.6 + 5 18.5 18.2 18.6 18.2	+ 5 17.74 + 0.0 - 22.3 + 4 55.44 + 50 28.84	45 35.04 45 34.96 50 53.9 + 5 18.9 18.9
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		23.4		34.40		44.70		38.3		42.75		53.00		47.0		52.30		3.00		47.0		51.66		2.10
		25.4		36.43		46.80		40.2		44.85		53.20		48.7		52.59		7.00		47.2		53.53		4.18
				38.55		50.95				46.90		57.30				54.50		9.08		50.8		55.85		8.3
				40.58		73.00				49.00		15.0				56.60		11.29				57.90		10.35
0	29.7			9.89		55.00	0	22.5		17.98		35.2	0	36.9		25.59		13.35	0	2.00		26.75		12.35
	32.0			11.50		57.19		23.7		19.80		56.0		39.2		27.60		15.30		2.20		28.75		14.40
	33.3			13.45		59.23		26.7		22.00		7.60		41.5		29.68		19.50		2.42		30.75		16.55
				15.60		82.6				24.00		11.80				31.78		21.35				32.83		18.63
				17.64		54.0				26.05		13.70				33.80		23.10				34.90		20.70
						73.7						16.00					25.57					24.70		
				24.354		42.58				33.413		27.822				410.89		183.30				412.83		13.646
				62.18		54.73				38.22		3.475		0	39.20		14.407		78.64		0	12.283		12.405
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0	31.67			54.98		55.07		24.30	0	3.413		3.475	0	39.20		14.407		78.64	0	22.07	0	12.283		12.405
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
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				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
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				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.1		
				55.07		55.07				0	3.488		3.477		0	11.089		11.209				37.		

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-1.29 Oct. 1				-1.14 Oct. 7				-1.13 Oct. 13				-0.97 Oct. 14			
0 44.8	0 44.0	0 51.80	0 50.0	0 30.60	1 11.0	0 59.1	1 0.50	1 10.76	1 8.5	1 1.78	-	1 12.10			
47.0	43.76	53.20	52.0	52.83	31.3	1.5	2.50	12.78	3.2	3.2		12.10			
48.6	45.61	56.00	53.7	54.70	52.0	3.5	4.56	14.78	7.3	7.3		12.10			
	47.72	0.10		57.00	9.31		6.59	19.00				20.35			
	47.66	2.24		58.84	11.41		8.53	21.10				22.45			
1 29.2	1.87	4.27		27.50	13.44		37.56	23.15	1 39.4			39.00			
31.1	20.00	6.25		28.82	15.30		39.65	25.16				41.00			
33.3	22.56	8.37		31.95	17.58		41.63	27.43	41.0			43.15			
	24.86	12.46		34.00	21.65		43.63	31.47				45.25			
	26.85	14.53		36.05	23.70		45.61	33.26				47.10			
		16.57			25.84			35.55				49.00			
	34.139	22.649		43.379	14.786		23.076	25.454				24.467			
0 46.80		46.49	0 51.90			1 1.37			1 5.47						
1 31.20	1 4.139	1 4.226		1 13.379	1 13.442		1 23.076	1 23.140	1 41.871			24.467	1 24.479		
		2.27			4.67			1.64					5.55		
		4.226			13.454			23.152					24.516		
-1 32.57		31.73		-1 41.69	31.68		-1 51.55	31.62	-1 52.86			59 31.61			
+0.3		+92.50		+0.2	+101.77		+0.2	+111.53	+0.2			+112.91	+112.91		
		+92.49	+92.50		+101.76	+101.77		+111.52	+111.53						
-3.78				-3.73			-3.68		-3.66						
-1 36.26				-1 46.40			-1 55.21		-1 56.50						
+27.97				+28.05			+27.94		+28.02						
+17.43	-26.97			+21.55			+21.78		+19.05	-17.35					
1.24130	1.43088			1.33345			1.33506		1.27959	1.23930					
1.36372	1.55330			1.45587			1.46048		1.40251	1.36172					
1.636364	1.553422			1.415599			1.46060		1.40243	1.36184					
20 1	20 2			20 1			20 1		20 1	20 2					
18.5	18.2			10.3			9.6		14.5	2.4					
33.9	33.1			27.7			28.1		31.2	20.7					
35.1	33.5			25.5			24.8		27.9	16.5					
29.9	28.9			21.6			22.9		26.8	15.9					
11.74	11.37			5.1			8.54		10.04	5.55					
21 29.35	22 28.42			21 21.28			21 21.35		21 25.10	22 13.88					
23.11	-35.756			28.858			28.858		28.256	-23.001					
21 52.46	21 52.676			21 47.856			21 50.223		21 50.354	21 50.887					
-0° 57' 4.11	4.32			59 1.58			59 1.58		59 2.00	2.58					
43 16 8.11	17 8.10			16 1.3			16 1.3		16 5.7	16 8.46					
1.73363	1.73384			1.78860			1.73360		1.73362	1.73378					
-4.55	-4.55			+1.82			+8.86		+5.82	+5.82					
1.72908	1.729238			1.74892			1.74246		1.73854	1.73910					
-53.59	-53.62			-56.036			-55.27		-54.82	-54.84					
-5.0	+0.1			0.0			-0.1		0.0	0.0					
-1.08	-1.30			-1.25			-1.08		-0.20	-0.31					
+0.09	+0.05			+0.08			+0.08		+0.08	+0.13					
-53.65	-53.68	-53.71	-53.76	-56.08	-56.15		-55.32	-55.37	-54.84	-55.02					
-0 59 57.76	58.03	58.07		59 57.58	57.66		59 57.19	57.25	59 56.95	57.54					
54 39.9	40.6	+5 17.74		54 39.8	40.6	+5 17.91	+5 17.40		54 39.9	40.6	+5 17.60				
+5 18.0	17.3	-19.4		+5 17.8	17.1	-19.5	+5 17.3	16.6	+5 16.6	16.5	-18.7				
18.2	17.2			17.0	17.0		17.0	16.5							
17.4	+4 57.44			17.3	+4 57.51		16.7	+4 57.10			+4 57.90				
-0	-55 0.46			-55 0.07			-55 0.09		-55 0.09		-54 59.34				

Oct-7 ² 39 31.6 54 40.6
 Oct-27 31.45 6 40.8
 Nov 1 31.39 6 40.9
 6 31.33 6 41.1
 11 31.27 6 41.3
 16 31.20 7 41.5

-99
 Oct. 28

-86
 Oct. 29

-1.93
 -0.06
 Oct. 30

Oct 31
 Nov. 4

59 59.9	—	59 —	59 30.8	59 25.7	59 44.4	59 28.4	59 27.2	59 46.0	59 36.8	59 36.0	59 31.5
13.0	1.9	—	22.4	27.9	46.4	30.4	29.4	48.2	38.5	38.0	36.7
15.0	-4.0	—	24.2	28.8	40.4	32.4	31.4	50.2	40.5	40.0	38.7
17.2	—	47.00 47.0	—	32.0	50.7	—	32.4	52.3	—	42.1	0.7
19.3	—	46.94 48.0	—	34.0	52.7	—	35.5	54.2	—	44.1	2.8
21.4	—	.88 56.0	0 12.7	36.2	—	—	37.7	—	—	46.4	—
23.5	—	96 55.2	14.5	38.2	56.8	—	38.7	58.3	—	48.4	7.0
25.4	—	90 57.2	16.3	40.2	58.9	—	41.8	0.2	—	50.5	9.1
27.5	—	94 58.3	—	—	0.8	—	—	2.3	—	—	11.2
29.6	—	1.4	—	—	2.9	—	—	4.3	—	—	13.0
31.7	—	2.5	—	—	4.7	—	—	6.4	—	—	15.0
33.8	—	5.4	—	—	7.0	—	—	8.5	—	—	17.0
35.9	—	7.5	—	—	9.0	—	—	10.5	—	—	19.3
38.0	—	9.7	—	—	11.1	—	—	12.6	—	—	21.2
40.1	0 193	55.00	59 22.30	18.42	59 30.40	19.92	—	—	—	28.57	—
42.2	-16.470	-16.470	59 46.937	59 48.420	48.527	59 49.920	50.082	59 38.60	59 58.570	58.727	58.727
44.3	—	—	47.030	—	50.8	—	.008	—	—	65.8	—
46.4	—	—	59 46.984	59 48.518	59 48.518	59 50.045	59 50.045	—	—	59 58.692	59 58.692
48.5	—	—	59 31.433	59 31.423	59 31.423	59 31.411	59 31.411	—	—	59 31.351	59 31.351
50.6	—	—	+ 15.55	-16.99	+ 17.10	-18.48	+ 18.63	—	—	+ 27.34	+ 27.34
52.7	—	—	+ 15.54	+ 2.2	+ 17.09	+ 2.2	+ 18.62	—	—	+ 27.33	+ 27.33
54.8	—	—	—	-3.48	—	-0.06	—	—	—	—	—
56.9	—	—	—	-20.45	—	-3.47	—	—	—	—	—
59.0	—	—	—	+28.07	—	-21.93	—	—	—	—	—
61.1	—	—	—	—	—	+28.11	—	—	—	—	—

-14.95
 1.17464m
 1.29718m
 20 2

+26.22
 1.41863
 1.54117
 20 1

+19.64
 1.29314
 1.41568
 20 1

+20.09
 1.30298
 1.42552
 20 1

0.3
 17.1
 10.4
 9.1
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 22 923
 — 1982
 21 49.41

7.9
 24.3
 22.1
 22.0
 76.3
 21 1908
 + 34.77
 21 53.85

14.5
 31.9
 29.9
 25.9
 102.2
 21 2555
 + 26.04
 21 51.59

11.9
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 96.9
 21 2273
 + 26.64
 21 49.37

59 106
 4.3 16 51
 1.73380
 +1389
 1.74769
 -55.94
 + .00
 - .33
 + .13
 -56.14
 59 57.20
 +5 18.05
 54 40.8
 +5 16.4
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59 55.50
 16 01 17 10
 1.73360 1.73390
 -57.6 -57.6
 1.72764 1.72794
 -53.41 -53.45
 + .01 + .01
 - .19 - .28
 + .08 + .15
 -53.51 -53.67
 59 59.01
 59 59.06
 54 40.8
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59 3.24
 16 08
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 -55.06
 59 58.30
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 +5 17.4
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59 102
 16 05
 1.73360
 +17.25
 1.75085
 -56.34
 + .00
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 + .08
 -56.46
 59 57.48
 +5 18.38
 54 41.0
 +5 16.5
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+4 57.65
 -54 59.55
 +4 57.74
 -56 1.32
 +4 58.05
 -55 0.25
 +4 58.08
 -54 59.40

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Paco Aust.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.				A.A.	
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1877

-1.27
 $- .05$
Sept 18

-1.16
Sept 22

-1.18
Sept 25

Sept. 30

[52]

[illegible]

-85

Dec. 2

48.2	50 27.5	50 26.0	50 47.8
52.6	29.4	28.4	50.1
53.0	22.4	30.8	52.5
53.4		33.2	54.9
57.7		35.5	57.3
		38.0	
2.5		40.5	2.0
4.5		43.0	4.5
7.2			7.0
9.6			9.2
11.8			11.7
14.3			13.9
16.6			16.0
19.0	50 29.77		18.5
2964	50 52320	52509	
923		423	
2944		50 52466	
54.956	+2.21	50 52742	
	+49	*	
	-3.91		
	-1.21		
	+51.26		

n m s
22 50 51.080

+22.70
1.35603
1.41499

40' 0"

E 30.4
N 47.4
S 37.9
W 36.1
151.8

40 37.95
+ 26.00
41 3.95

18 1560

72 30 20
2.25892
+3387
229249
-19624
+ 78
+ 18.10
+ 04

-3 16.17

21 31.71

16 13.5

+5 19.05
-21
-10.7

+5 6.25

16 25.52

-30° 16' 24.67"

1877phae.proj.149

75

ϕ	ϕ'
ϕ	ϕ'
Comp	Comp
$\frac{d\phi}{dt}$	$\frac{d\phi'}{dt}$
ϕ	ϕ'
Comp	Comp
$\frac{d\phi}{dt}$	$\frac{d\phi'}{dt}$

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	Aug	28	2	41.73	32	58.5	9
Sept	2	41.77	4	59.4			
	7	41.80	3	60.2			
	12	41.83	2	61.0			
	17	41.85	1	61.7			
	22	41.86	1	62.4			
	27	41.85	1	63.0			
Oct-	2	41.84	2	63.5			
	7	41.82	2	64.0			
	12	41.80	3	64.4			
	17	41.77	4	64.8			
	22	41.73	5	65.1			
	27	41.68		65.3			

Sept 25

Sept. 30

Oct 1

Oct. 7

59 37.9	59 4234	59 5875	59 47.0	-	0	026	59 463	59 5710	0	185	59 542	0 020	0	11.00
39.6	4154	5300	48.7	-		245	484	5328		410	465	233		1310
41.4	4662	5520	50.4	-		430	503	5340		623	582	464		1523
	4870	5739		-		877		5763		1043		665		1968
50.40	50.40	160		-		1100		5773		1254		877		2180
	2070	380		-		13.05		2957		1458		3871		2384
	2280	585		-		1518		3159		1671		4076		2570
	2488	800		-		1726		3343		1890		4261		2800
	2700	1012		-		2163		3580		2321		4520		3236
	2928	1440		-		2372		3805		2530		4722		3453
		1650				2581				2746				3654
	35776	1867												
	36553	24463				14373		14582		16141		23719		26199
59 39.63	59 4234	59 5875	59 48.70		0	13.066	59 48.23	0 14.582	0	14.674	59 56.30	0 25.719	0	23.817
	0 5.776	0 5.875			0					674				.811
		868			0	13.066			0	14.674			0	23.814
	0 5.872	41.84		-1 3091	41.83		-1 3261		41.83		-1 4176			41.506
	-1 23.76	+ 84.03		-32 +	91.24		-33 +	92.84		-38 +	-38 +	102.01		102.01
	-30	+ 84.02		+ 91.23			+ 92.83					+ 102.00		
	-377			-3.75			-3.75					-3.73		
	-38.03			-1 34.98			-1 36.69					-1 45.79		
	+ 38.03			+ 38.09			+ 37.98					+ 38.04		

+26.24	+24.37	+26.34	+27.51
1.41896	1.38686	1.42062	1.43949
1.52728	1.49518	1.52894	1.54751
1.52740	1.49530	1.52906	1.54793
50 3	50 3	50 3	50 3
54.2	51.5	47.7	45.2
6.0	6.9	4.3	2.3
5.2	4.4	2.7	58.1
0.1	1.2	58.3	55.3
55	40	2350	2209
54 138	54 100	53 58.75	53 55.22
33.6 ⁸	31.2 ⁸	33.8 ¹	35.38 ¹
54 35.0 ⁹⁶	54 32.2 ⁷⁸	54 32.5 ⁶	54 30.5 ²³
28' 13.3 ²⁹	28 16.0 ⁷	28 15.8 ²⁸	28 17.8 ²
48 41.3	48 41.3	48 41	48 38.7
1.48240	1.48240	1.48240	1.48238
-64.5 ⁰	+21.2 ²	-33.4	+1612
1.47595 ⁶⁰⁰	1.48487 ⁶³	1.47906	1.49850
-29.92	-30.52	-30.13	-31.51
- .09	- .08	- .09	- .10
- 2.5 ⁴⁸	- 2.5 ⁴⁸	- 2.5 ⁴⁸	- .52
+ 24	+ 24	+ 24	+ .23
- 30.21-30.25	- 30.52-30.84	- 30.42-30.06	- 31.77-31.89
27 43.09 43.04	27 45.28 45.23	27 45.38 45.33	27 46.06 45.93
32 63.5 62.8 +5 19.00	32 64.0 63.3 +5 17.04	32 64.1 63.4 +5 17.74	32 64.7 64.0 +5 17.91
+ 5 20.4 19.8 - 24.6	+ 5 18.7 18.1 - 25.1	+ 5 18.7 18.1 - 25.1	+ 5 18.6 18.1 - 25.8
20.6 19.1	18.4 17.4	18.5 17.4	18.8 17.4
17.9 +4 53.80	18.2 +4 51.34	18.2 +4 52.04	17.1 +4 51.51
+32 36.89	+32 36.62	+32 37.42	+32 37.57

				-1.13				-1.02				-97 N.A				P. 86							
				Oct. 13				Oct. 18				Oct. 23				Oct. 29							
0	83	0	1010	0	2100	0	173	0	1783	0	2843	0	263	0	2590	0	36.50	58	36.1	58	36.5	58	34.8
0	105		1234		2300		144		1886		3053		28.3		2800		38.62		38.1		37.7		36.9
3	127		1431		2570		216		2200		3258		30.0		30.05		40.70		39.5		39.7		39.0
8			1632		2932				2418		3785				32.10		45.05				42.0		41.0
0			1846		3144				2623		3920				34.30		47.12				44.0		43.3
4			4835		3353				5600		4130		4.10		47.40	59	25.4		25.4		46.1		45.4
0			5055		3563				5810		4325		6.20		51.39		27.0				48.3		47.6
0			5260		3774				626		4533		8.30		53.54		29.0				50.4		49.7
6			5465		4200				244		4880		10.55		57.80								16.8
3			5676		4415				466		5186		12.68		0.80								13.8
3					4630						5300				2.05								16.0
19			33455		36926				28156		45453				19218		42217				2893		20.2
	0	10.50				0	19.43				0	28.20			54217	58	3790						23.4
3.811			0	33.455	0	33.564		0	41.156	0	41.321		0	49.218	0	49.288		59	27.13	58	58.930		58.978
3.811					547					248					310								59.022
3.814				0	33.558				0	41.284				0	49.299							58	58.998
3.806			-1	57.65		41.77		-1	57.28	58	41.73		-2	7.37	58	41.694					-17.12	58	41.658
02.01			-29	+	111.79				-26	+	119.55			-25	+	127.60					-22	+	17.34
02.00			-3.70		+	111.58			-3.66		+	119.54			-3.62	+	127.59				-3.56	+	17.35
			-1	55.64				-2	3.18				-2	11.24							-20.90		
			+37.92					+38.10					+38.06								+37.10		38.10
			+23.06					+21.85					+21.10								+21.10		-28.13
			1.36286					1.33945					1.32428								1.32428		1.44917
			1.47118					1.44777					1.42266								1.43272		1.55761
			1.47130					1.44789					1.43272										
			50 3					50 3					50 3								50 3		50 4
			50.2					53.2					50.9								53.8		58.2
			7.2					10.2					8.1								10.0		13.3
			1.6					6.9					1.9								6.4		10.0
			0.2					4.5					1.3								7.8		9.3
			2392					148					22								18.0		30.8
	53	59.80						54 3.70					54 0.55								54 4.02	55	7.70
		29.5460						28.045					27.08								+ 27.08		36.9511
	54	29.5740						54 31.745					54 27.63								54 31.58	54	31.59
	+ 10	28 18.96						28 16.68					28 20.72								28 16.77		16.76
	+ 27	48 40.2						48 44.4					48 48.13								48 47	49	50
		1.48240						1.48242					1.48240								1.48240		1.48270
		+ 1034						+ 45.8					+ 3.47								- 6.04		- 10.54
		1.49274						1.486982					1.48635487								1.47636		1.47666
		- 31.10						- 30.69					- 30.6454								- 29.95		- 29.97
		- 0.7						- 0.67					- 1.06								- 1.06		- 1.11
		- 84.66						- 8.74					- 25.60								- 1.62		- 1.76
		+ 24						+ 25					+ 24								+ 1.25		+ 1.31
		- 31.33	31.49					- 30.92	- 31.08				- 30.94	30.96							- 30.38		- 30.53
	27	47.63	47.46					27 45.69	45.52				27 49.78	49.76							27 46.39		46.33
	32	65.2	64.5 +5	1740				32 65.5	64.9 +5	1845			32 65.8	65.1 +5	1718						+ 5	18.14	
										- 0.7					- 0.7							- 0.7	
	+ 5	17.6	17.0	- 26.2				+ 5 19.8	19.4	- 26.6			+ 5 16.0	15.3	- 26.9						+ 5	19.0	
		17.5	16.3					20.0	18.7				16.2	14.6							+ 5	18.3	
		17.1	+ 4	50.50				19.3		+ 4	51.15				+ 4	49.58					+ 4	50.34	
													11.5										
			+ 32	38.13						+ 32	36.84				+ 32	39.36							
																					+ 32	36.65	

Oct-27	58	4168	5	33	5.3	1
Nov 1		4163	5		5.4	1
6		4158	5		5.5	0
11		4153	5		5.5	0
16		4147	5		5.5	1
21		4142	6		5.4	1
26		4136	6		5.3	2
Dec 1		4130	6		5.1	2
6		4124	6		4.9	

1877

-1.02

Nov. 6

No Sheet

-94

Nov. 7

-79

Nov. 14

-03

-77

Nov. 15

58	46.2	58	49.0	59	8.3
	48.2		57.2		10.4
	50.5		53.2		12.5
			53.4		14.6
			57.5		16.7
59	43.1		59.8		21.0
	44.7		1.8		23.1
	46.5		4.0		25.4

59	22.8		
	25.5		
	27.0		
0	2.6		
	4.3		
	6.4		

59	21.0	58	59.3
	25.26		7.0
	43		2.0
	30		
	27		
	24		
	22		
	20		
	18		
	16		
	14		
	12		
	10		
	8		
	6		
	4		
	2		

59	52.9	414	26.7
		437	28.8
		458	30.9
		479	33.2
		500	35.5
			37.8
			40.1
			42.4
			44.7
			47.0
			49.3
			51.6
			53.9
			56.2
			58.5
			60.8

59	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0	90.0	92.0	94.0	96.0	98.0	100.0
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			4242		37.2
58	48.30				32.8
59	44.77	59	12420		35.9
					512
				59	12510
			-30.65	58	41578
			-26	+	3093
				+	3094

59	2543	19080	
0	4.43		

59	25294	59	077
	260		
	25277		
	41502		
	43479		
	41380		

59	52.9	414	26.7
		437	28.8
		458	30.9
		479	33.2
		500	35.5
			37.8
			40.1
			42.4
			44.7
			47.0
			49.3
			51.6
			53.9
			56.2
			58.5
			60.8

59	26.65	59	26.65
	60		
	59		
	26.65		
	58		
	41.49		
	+ 4519		
	+ 4520		

59	26.65	59	26.65
	60		
	59		
	26.65		
	58		
	41.49		
	+ 4519		
	+ 4520		

+2421	-32.26
1.38399	1.50866m
1.49243	1.61710m

-0.15	-39.15
9.17609m	1.59273m
9.28453m	1.70117m

+2590	-26.23
1.41330	1.41880m
1.52174	1.52724m

E
H
G
K

50' 3	55' 0
48.4	1.1
5.1	17.1
56.0	9.4
58.2	9.8
22.7	3.4
53	56.23
55	9.35
+ 3108	- 4141
54	28.01
54	27.94

50' 3	50' 4
50.8	58.4
6.3	14.4
58.7	8.1
0.0	8.2
28.8	29.1
53	56.23
55	9.35
+ 3108	- 4141
54	28.01
54	27.94

50' 4	55' 0
20.9	12.4
38.1	28.9
29.3	21.7
31.8	22.2
12.1	8.5.2
54	30.03
55	21.30
- 0.19	- 50.25
54	29.84
51	31.05

50' 3	50' 4
49.1	33.5
6.4	12.6
0.3	6.1
0.7	7.2
23.65	21.4
53	59.13
55	5.35
+ 3325	- 3367
54	32.38
54	31.68

28	20.34	28	20.41
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28	18.51	17.30
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28	15.97	16.67
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27	48	39	49	51
	1.48240		1.48270	
	+2406		+2406	
	1.50646		1.50676	
	-32.10		-32.12	
	- .08		- .14	
	- .55		- .03	
	+ .23		+ .01	
	-32.50		-32.28	

49	12	60	03
	1.48260		1.48280
	+1191		+1191
	1.49451		1.49441
	-31.23		-31.24
	- .00		- .20
	- .63		- .04
	+ .27		+ .02
	-31.59		-31.46
27	46.92		45.84
27	46.38		+5
33	5.5		-0.8
+5	18.4		19.1
	18.4		-27.2

48	41	49	47
	1.48240		1.48270
	+398		+398
	1.48638		1.48668
	-30.65		-30.67
	- .09		- .09
	- .0660		- .76
	+ .24		+ .31
	-31.10		-31.21
27	44.87		45.46
27	45.16		+5
33	6.5		-0.8
+5	20.3		-27.3
	19.6		

+14	27	47.84	48.13
+14	27	47.98	+5
	33	5.5	-0.8
	+5	17.5	-27.3
		16.8	

+5	17.36
	-0.8

+5	50.96
	37.34

+4	51.51
	36.67

	Dec. 1				Dec. 2			
140	58 8.8	58 16.2	58 25.8	58 11.0	58 15.8	58 24.8		
160	9.5	18.3	37.9	11.7	17.8	37.0		
180	10.7	20.6	40.0	13.7	20.0	39.2		
200	12.0	22.7	42.0	16.0	22.2	41.2		
240		25.0	44.1		24.4	43.5		
260	58 26.7	27.0		58 29.5	26.7			
280	38.2	29.2	48.4	1.6	28.6	47.9		
300	59.8	31.5	50.4	3.5	30.9	50.0		
350			52.6			52.1		
370			54.8			54.1		
390			57.0			56.4		
410			59.0			58.5		
430		39.78	1.0		39.27	0.7		
450	58 10.25		3.2	58 13.10		2.8		
460	58 58.23	58 39.780	39.90	59 1.53	58 39.270	39.264		
470			8.72			36.2		
480			58 39.886			58 39.313		
490		+1.82	58 41.297		+2.21	58 41.283		
500		-25	-1.41		-22	-1.94		
510		-1.10	-1.40			-1.96		
520		-3.20			-3.19			
		-1.73			-2.20	-1.20		
		+38.16			+37.11	+38.11		
					6.			
	+29.64	-18.34		+26.21	-22.22			
	1.44188	1.26340m		1.41847	1.34674m			
	1.58032	1.37184m		1.52691	1.45518m			
	50 3	50 4		50 3	50 4			
E	43.6	46.4		51.2	52.1			
S	59.1	1.2		5.9	7.2			
S	51.0	52.4		53.8	56.1			
W	51.2	52.4		56.2	56.1			
	204.9	212.4		229.1	231.5			
	53 57.23	54 53.10		53 57.28	54 57.88			
	+ 38.05	- 23.54		+ 33.64	- 28.52			
	54 29.28	54 29.56		54 30.92	54 29.36			
	28 19.04	18.79		28 17.43	18.99			
27	48 33 49 35			48 39 49 40				
	1.48240	1.48270		1.48240	1.48270			
	+26.12	+26.12		+84.02	+84.02			
	1.50852	1.50880		1.51642	1.51672			
	-32.25	-32.27		-32.84	-32.86			
	- .12	- .04		- .09	- .07			
	- .61	- .78		- .64	- .80			
	+ .23	+ .29		+ .24	+ .30			
	-32.75	-32.80		-33.33	-33.43			
	27 46.32	45.99		27 44.10	45.56			
	27 46.16	+5 18.51		27 44.83	+5 19.05			
	33 5.1	-0.9		33 5.0	-0.9			
	+5 18.9	-26.9		+5 20.2	-26.7			
	18.2			19.5				
		+4 50.71			+4 51.45			
		+32 36.87			+32 36.28			

8
8
1877phae.proj.1491

1877phase.prog.1.491

Comparison of Right Ascensions of Marked stars.
 N.A. = Nautical Almanac.
 P = Pulkova.
 R = Royce. Proc. American Academy.

1896

		R.A. N.A.	R.A. P.	R.A. R.	R.A. P-R.
α Andromedae	0 1	58.822	58.814	58.851	-0.037
α Pegasi	0 6	51.114	51.107	51.119	-0.012
α Arietis	2 0	11.161	11.147	11.169	-0.022
α Crati	2 33	47.911	47.893	47.921	-0.028
α Tauri	4 28	48.406	48.390	48.399	-0.009
α Aurigae	5 7	31.866	31.876	31.838	+0.038
β Orionis	5 8	34.741	34.758	34.786	+0.02
β Tauri	5 18	27.240	27.249	27.257	-0.008
α Orionis	5 48	27.550	27.538	27.535	+0.015
α Canis Majoris	6 39	40.999	---	40.937	---
α Canis Minoris	7 32	48.705	48.541	48.548	-0.007
β Gemorum	7 37	43.595	43.561	43.572	-0.011
α Hydrae	9 21	29.653	29.624	29.631	-0.010
α Leonis	10 1	46.053	45.987	46.009	-0.022
β Leonis	11 42	44.039	44.007	44.025	-0.018
α Virginis	13 18	39.756	---	39.722	---
α Bootis	14 10	0.345	0.329	0.372	-0.043
α Librae	14 44	1.243	---	1.251	---
α Coronae	15 29	26.294	26.278	26.305	-0.027
α Serpentis	15 38	9.638	9.640	9.674	-0.034
α Scorpis	16 21	48.425	---	48.399	---
α Mercoris	17 8	59.613	59.625	59.638	-0.013
α Ophiuchi	17 29	10.701	10.705	10.747	-0.042
α Lyrae	18 32	44.401	44.406	44.420	-0.014
γ Aquilae	19 40	21.850	21.865	21.879	-0.014
α Aquilae	19 44	43.457	43.489	43.576	-0.087
β Aquilae	19 47	13.297	13.319	13.345	-0.026
α Capricorni	20 11	10.369	---	10.422	---
α Cygni	20 37	12.250	12.272	12.308	-0.036
α Delphini	21 59	24.863	24.861	24.889	-0.028
α Pegasus	22 50	47.706	---	47.725	---
α Pegasus	22 58	38.088	38.109	38.111	-0.022

			<i>MA</i>	<i>P</i>	<i>R</i>	<i>P-R</i>	<i>P-R</i> ^{reduced to eq.}	<i>P'-MA</i>	<i>Reduction of MA, P, R to P-R</i>		
<i>Andromedae</i>	<i>2</i>	<i>0</i>	1.911	1.902	1.940	-0.38	1.924	+0.13	<i>MA</i>	<i>P</i>	<i>P-R</i>
<i>Pegasi</i>	6		54.198	54.140	54.201	-0.11	54.185	-0.13	41.68	40.28	-0.21
<i>Andri</i>	2	0	14.534	14.515	14.537	-0.22	14.421	-0.09	46.44	47.59	-0.85
<i>Boi</i>	2	55	51.040	51.022	51.050	-0.28	51.034	-0.06	21.63	22.48	-0.85
<i>Tauri</i>	4	28	51.843	51.827	51.835	-0.08	51.819	+0.24	35.6	37.05	-1.11
<i>Aurigae</i>	5	7	36.249	36.300	36.261	+0.35	36.245	-0.44	14.01	13.52	-0.49
<i>Orionis</i>	5	8	37.622	37.639	37.637	+0.02	37.621	-0.01	42.60	44.05	-1.45
<i>Tauri</i>	5	18	31.028	31.038	31.046	-0.08	31.036	+0.02	5.64	4.19	-1.45
<i>Orionis</i>	5	44	30.797	30.786	30.782	+0.04	30.766	+0.31	57.00	55.57	-1.43
<i>Orionis Maj.</i>	6	39	43.644	---	43.591	---	43.575	-0.15			
<i>Orionis Min.</i>	7	32	51.851	51.689	51.695	-0.06	51.679	-1.72	19.53	19.24	+0.21
<i>Orionis</i>	7	37	47.276	47.242	47.253	-0.11	47.237	-0.35	18.33	17.09	-1.24
<i>Hydrae</i>	9	21	32.602	32.573	32.583	-0.10	32.567	-0.35	84.28	35.44	-1.16
<i>Leonis</i>	10	1	49.256	49.188	49.210	-0.22	49.194	-0.62	4.50	3.06	-1.50
<i>Leonis</i>	11	42	47.114	47.072	47.090	-0.18	47.074	-0.30	35.68	34.29	-1.39
<i>Virginis</i>	12	18	42.909	---	42.874	---	42.858	-0.51	6.40	4.42	
<i>Bootis</i>	14	10	3.052	3.063	3.106	-0.43	3.090	+0.08	26.34	25.31	-1.03
<i>Librae</i>	14	44	4.550	---	4.559	---	4.543	-0.07			
<i>Coronae</i>	15	29	28.833	28.817	28.844	-0.27	28.828	-0.05	41.85	47.55	-1.50
<i>Serpentis</i>	15	38	12.559	12.590	12.625	-0.35	12.609	+0.20	81.00	44.19	-1.11
<i>Scorpii</i>	16	21	52.094	---	52.068	---	52.052	-0.42			
<i>Mercurii</i>	17	9	2.347	2.358	2.371	-0.13	2.355	+0.08	5.67	5.83	-1.04
<i>Capricorni</i>	17	29	13.483	13.487	13.530	-0.43	13.514	+0.31	4.74	3.99	-0.75
<i>Lyrae</i>	18	32	46.433	46.437	46.451	-0.14	46.435	+0.02	12.92	12.56	-0.36
<i>Aquilae</i>	19	40	24.703	24.717	24.732	-0.15	24.716	+0.13	59.07	53.00	-1.07
<i>Aquilae</i>	19	49	46.485	46.497	46.924	-0.07	46.908	+0.23	41.93	41.03	-0.90
<i>Aquilae</i>	19	49	16.249	16.266	16.293	-0.27	16.277	+0.33	3.95	3.19	-0.76
<i>Capricorni</i>	20	11	13.701	---	13.755	---	13.739	+0.38			
<i>Cygni</i>	20	37	14.324	14.315	14.352	-0.37	14.336	+0.12	29.57	29.37	-0.20
<i>Aquarii</i>	21	59	27.947	27.944	27.972	-0.28	27.956	+0.09	59.32	50.24	-0.75
<i>Picidis</i>	22	50	51.034	---	51.053	---	51.037	+0.02			
<i>Pegasi</i>	22	58	38.073	38.094	38.096	-0.02	38.080	+0.07	36.93	38.24	-0.65

Constant value to P--0.98

Lunar Minoris

1877 $\times P$ $h m s$
 $1 \ 13 \ 41.393 = 13 \ 41.82$
 $\times A.D. \ 1 \ 13 \ 42.20$
 $\sqrt{D} \ 88 \ 39 \ 12.27$
 $\sqrt{N.A.} \ 39 \ 11.88$
 $Z = -46 \ 16 \ 24 \ \sin Z = -72$

$$\text{Corr } \alpha = -0.28$$

$N =$
 $\text{Corr. } \alpha = +0.39 \ 10 \ 11.8 \ 12.0 \ 22.0 \ 25.0 \ 23.8 \ 28.8 \ 29.8$
 $1877 \text{ Jan } 13.2 \ \text{Apr } 9.7 \ 10-11.8$

$S =$
 $\text{tang } S = +88^\circ 39' 38'' \log \cos S \ 8.36876 \ +88 \ 39 \ 18 \ 8.37056$
 $+42.77 \ 15 \ 15 \ 8.49292 \ \text{Jan.} \ +42.59 \ 8.49104 \ \text{Apr.}$

Mean R.A. $14 \ 35.1 \ 12 \ 36.40 \ 12 \ 36.18 \ 12 \ 32.79 \ 12 \ 26.41 \ 12 \ 38.67$
 App. R.A. $13^m \ 19.24 \ 12 \ 32.26 \ 12 \ 32.33 \ 12 \ 32.66 \ 12 \ 8.523 \ 12 \ 36.18$
 M. R.A. $+44.24 \ +4.14 \ +3.85 \ +0.13 \ -8.82 \ +2.49$
 Corr M. R.A. $+44.21 \ +4.27 \ +3.98 \ +0.26 \ -8.69 \ +2.62$

$\log \cos S$ $\log R$ $\log R$
 Jan. 15 $8.36885 \ 2.90167 \ 2.89757$
 Apr. 15 $8.37047 \ 2.90205 \ 2.89595$
 May 15 $8.37119 \ 2.89933 \ 2.89776$
 June 15 $8.37154 \ 2.89898 \ 2.89748$
 July 15 $8.37146 \ 2.89906 \ 2.89746$

$+88 \ 39 \ 9 \ 8.37137$
 $+42.51 \ 8.48905 \ \text{May Ref.}$
 $11 \ 38.56 \ 13 \ 52.39$
 $12 \ 36.45 \ 12 \ 8.724$
 $-81.89 \ +35.15$
 $-81.76 \ +35.28$

$\Delta T + m$ $-24.07 \ +27.21 \ +29.40 \ +34.12 \ +$
 retard $-17.54 \ -28.96 \ -28.53 \ -28.53$
 $c \ \text{ecc}$ $-4.26 \ -2.56$
 $\frac{dt}{dt}$ $+22.96 \ +1 \ 9.74 \ +1 \ 9.54 \ +1 \ 6.97$
 Cume $-18.65 \ +1 \ 3.93 \ +1 \ 7.85 \ +1 \ 12.56$
 d $1 \ 13 \ 44.86 \ 13 \ 40.33 \ 13 \ 40.64 \ 13 \ 38.97$

R $-4 \ 22.21 \ -4 \ 22.72 \ -4 \ 25.24 \ -4 \ 26.84$
 Rip $+1.9 \ +1.3 \ +1.3 \ +1.3$
 $\frac{dR}{dt}$ $-25.6 \ -8.9 \ -7.9 \ -5.0$
 Sum $-4 \ 45.91 \ -4 \ 30.32 \ -4 \ 31.84 \ -4 \ 30.54$
 S $+88 \ 39 \ 11.7 \ 39 \ 10.6 \ 39 \ 11.8 \ 39 \ 9.7$

Corr Line R. $39 \ 54.97 \ 40 \ 8.08 \ 40 \ 8.63 \ 40 \ 5.70 \ 40 \ 7.17 \ 50 \ 13.56$

$S' +88 \ 42 \ 53.38 \ 42 \ 40.27 \ 42 \ 39.72 \ 42 \ 42.65 \ 42 \ 41.18 \ 32 \ 34.79$
 $Z -46 \ 15 \ 43 \ 15 \ 30$
 $u + \log \tan Z \ 1.77890$
 $B + \log R \ +36.25 \ +40.2 \ +100 \ +89.5 \ -52.4 \ -27.4$
 $\log R \ 1.81515 \ 1.78292 \ 1.77990 \ 1.78785 \ 1.77366 \ 1.77616$
 $\log R \ +65.34 \ +60.66 \ +60.24 \ +61.35 \ +59.38 \ +59.73$
 R_m $-1.42 \ -.02 \ -.76 \ -.71 \ -.66 \ -.68$
 $\text{Corr } R_m$ $+1.29 \ +.01 \ +.31 \ +.31 \ +.31 \ +.31$
 Σ $+1 \ 42.1 \ +1 \ 0.65 \ +59.79 \ +1 \ 0.95 \ +59.03 \ +59.36$
 $\text{Corr } S$ $43 \ 57.59 \ 43 \ 40.92 \ 43 \ 39.51 \ 43 \ 43.60 \ 43 \ 40.21 \ 33 \ 34.15$
 $\text{App } S$ $39 \ 37.5 \ 39 \ 20.8 \ 39 \ 20.4 \ 39 \ 19.7 \ 39 \ 16.9 \ 39 \ 15.7$
 Δ $-4 \ 20.1 \ -4 \ 20.1 \ -4 \ 19.1 \ -4 \ 23.9 \ -4 \ 23.3 \ +5 \ 41.5$
 $\text{Corr } \Delta$ $19.3 \ 19.3 \ 18.3 \ 23.1 \ 22.5 \ 42.3$

R.	R.	Jan. 15				Apr. 15				May 15			
		A+1 A-1	A _{gr}			A+1 A-1	A _{gr}			A+1 A-1	A _{gr}		
+13.1732	-13 9.90	8 48.65	2 56.22			8 46.79	2 55.60			8 46.69	2 55.27		
14.42	6.96	7 20.54	2 12.16			7 19.00	2 11.30			7 18.90	2 11.45		
14.38	5.65	5 52.43	1 28.11			5 51.20	1 27.80			5 51.12	1 27.636		
13.47	5.02	2 56.22	44.055			2 55.60	43.90			2 55.56	43.818		
12.87	5.17	1 28.11	0.00			1 27.80	0.00			1 27.78	0.00		
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
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		0.00				0.00				0.00			
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		0.00				0.00				0.00			
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		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00				0.00			
		0.00				0.00							

	P					
d_0	on 13	41398	1877	1877	1878	
			Jan.	Apr.	July	Oct. - Jan.
Corr d			+ .67	+ .68	+ .68	+ .69 + .70
$\frac{dt}{dt}$		+ 21.1322				
S_0		39 1227				
Corr S		- .4				
$\frac{dP}{dt}$		+ 19045				

	1879 Jan.	Apr. July	Oct.	Jan. 1878
P'	on 13	4206	4207	4208
		4220		4209
N.A.		4220		
P' N.A.		- .14	- .18	- .12
				- .11
P'	39	12.7		
N.A.		11.9		
P' N.A.		+ .8		

$$S = +9^{\circ} 20' 51''$$

$$Z = -48 \quad 58 \quad 3$$

$$\sin Z = -.75$$

-1.16

-1.14

-1.20

-90

-.88

L.C.
24L.C.
25L.C.
June 27#77
May 18L.C.
May 12, 3L.C.
13

11 3268	11 3233	12 3405	11 2214	11 2368
12 7963	12 8061	12 8243	12 4459	12 4531
-10695	-10828	-10838		
-10682	-10815	-10825		

+5258	+1 0.17	+1 0.41
+4929	+ 4844	+ 5099
+ 2257	+ 2159	+ 1977
+2 1184	+2 1022	+2 1117
13 4452	13 4255	13 4522

+4284	+4356
+3826	+3741
+ 5763	+ 5689
+2 1873	+2 1786
13 4087	13 4154

+5 4306	+5 4286	+5 4258
+ 1.3	+ 1.3	+ 1.3
- 5.2	- 7.3	- 7.2
+5 39.14	+5 3686	+5 3668
20 4923	20 4665	20 4690

+5 4027	+5 4049
+ 1.3	+ 1.3
- 0.4	- 0.6
+5 4117	+5 4119
20 4869	20 4844

8 4143	8 4029	8 4261
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8 4780	8 4682
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14 692	14 8.06	14 5.74
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14 0.55	14 1.53
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-1832	-2815	-925
180138	179155	181045
+6330	+6188	+6463
- 37	- 37	- 37
+ 22	+ 22	+ 22
+1 315	+1 173	+1 448
15 1007	15 979	15 1022
20 534	20 554	20 553
+5 43.3	+5 45.6	+5 45.1
42.5	44.8	44.3

+765	-49
182735	181921
+6720	+6595
- 46	- 46
+ 23	+ 23
+1 697	+1 572
15 752	15 725
20 485	20 487
+5 41.0	+5 41.4
40.2	40.6

57 No. 60 phi

2 1077 6^h 42^m 16.111 = 42^m 16.004 $\sin Z = -.71$
 1.2 1077 14.861 42 14.861

$P - 5 = 1077$ 87° 13' 55.28 + 1.50 = 13° 54.48

1A 5 1077 87 13 55.07 5.607

Con $\alpha = +1.143$ 1877 -55 -59 -55 -57 -52 -50 -61 -69 -59

con. $\delta = +0.42$ 1877 U.C. U.C. U.C. U.C. U.C. U.C. U.C. U.C. U.C. U.C. Mar. 1

$\delta =$
tang δ

log Cor δ 8.68275
15602501 8.80691 \sin Mar. 1
8.80323 after Mar. 1

+87° 14' 21"
+ 20.74

43 1444 43 1486 43 1277 43 1097 43 788 43 242 43 161 42 5983 42 5836 42 5652
 42 4649 42 4627 42 4569 42 4507 42 4421 42 4227 42 4201 42 4020 42 3981 42 3942
 + 2495 + 2859 + 2708 + 2590 + 2367 + 2015 + 1960 + 1963 + 1855 + 1770
 + 2498 + 2768 + 2609 + 2498 + 2268 + 1918 + 1868 + 1846 + 1758 + 1678

$\Delta T + m$ -14.89 -1472 -13.87 -12.24 -10.88 -8.50 -7.67 -4.64 -3.83 -3.26
 -1058 -1141 -1224 -1141 -1182 -1078 -1037 -1265 -1431 -1224
 -83 -104 -104 -104 -104 -104 -104 -104 -104 -104
 -3163 -3141 -3083 -3021 -2935 -2741 -2715 -2534 -2495 -2456
 -5793 -5858 -5674 -5448 -5205 -4669 -4519 -4357 -4413 -4006
 42 16.51 42 16.28 42 15.83 42 16.49 42 15.83 42 15.73 42 16.42 42 16.26 42 14.23 42 16.46

-4 2095 -4 2187 -4 2048 -4 2086 -4 2107 -4 1896 -4 1767 -4 1741 -4 1748 -4 1672
 + 15 + 15 + 15 + 14 + 14 + 13 + 13 + 13 + 13 + 13
 -182 -184 -192 -201 -208 -220 -222 -235 -236 -239
 -4 3765 -4 3877 -4 3815 -4 3956 -4 4047 -4 3966 -4 3857 -4 3961 -4 3978 -4 3732
 87 13 56.34 13 57.00 13 55.72 13 57.32 13 57.03 13 57.39 13 56.77 13 56.00 13 57.04 13 56.73

5 1386 5 1228 5 1431 5 1197 5 1219 5 1176 5 1248 5 1273 5 1144 5 1214

+87 17 3449 17 3607 17 3404 17 3638 17 3616 17 3659 17 3587 17 3662 17 3691 17 3621

-44 50 24

1.75740 +2453 +1888 +2629 +2463 +3063 +2427 +1708 +2591 +2035 +1980
 1.78193 1.77628 1.78369 1.78203 1.78803 1.78167 1.77448 1.78331 1.77775 1.77720
 +6052 +5974 +6077 +6054 +6138 +6049 +5950 +6072 +5994 +5987

-130 -105 -125 -105 -105 -104 -104 -104 -104 -104
 +31 +.01 +.31 +.01 +.01 +.01 +.01 +.01 +.01 +.01
 +5953 +5970 +5983 +7050 +1134 +1046 +5947 +5999 +5991 +5984
 +87 18 3402 18 3577 18 3387 18 3688 18 3750 18 3705 18 3834 18 3561 18 3682 18 3605

14 15.3 14 15.5 14 16.3 14 17.1 14 17.9 14 19.1 14 19.3 14 20.5 14 20.7 14 20.9
 -4 18.7 -4 20.3 -4 17.6 -4 19.8 -4 19.6 -4 18.0 -4 16.0 -4 13.1 -4 16.1 -4 15.2
 18.5 20.1 17.4 19.6 19.4 17.8 15.8 14.9 15.9 15.0

Mar 15 Legend - 8.68267

A. H. H. H. H.

4	16.65		
3	33.88	1	25.55
2	51.10	1	41.6
1	25.55		42.78
	42.776		21.39
	5.00		5.00

Corr'd

do	42	16.15
do		+30.2223
do	13	55.99
do		+1.3
do		-3.758
do		-5.63
do		-53

P'	42	15.85 ³
N.H.		14.86
P'-N.H.		+0.99 ⁴

P'	13	57.3
N.H.		57.1
P'-N.H.		+0.2

-64 -59 -61

U.C.	U.C.	U.C.	U.C.	U.C.
4	7	11	15	20

42	5448	42	5069	42	4533	42	3941	42	3093
42	3820	42	3712	42	3569	42	3390	42	3179
+	1628	+	1357	+	964	+	551	-	0.86
+	15.28 ³¹	+	12.58 ⁶⁰	+	8.65 ⁷	+	4.58 ⁴	-	1.85 ³

-1.92	+0.29	+3.72	+7.70	+12.67
-1327	-1224	-1265	-1307	-1099

-2334	-2226	-2083	-1904	-1693					
-3853	-3411	-2976	-2441	-1525					
42	15.95	42	16.58	42	15.57	42	15.00	42	15.68

-4	1530	-4	1515	-4	1381	-4	1329	-4	1415
+	12	+	12	+	12	+	12	+	12
-	24.2	-	24.5	-	25.2	-	25.5	-	25.7
-4	3830	-4	3845	-4	3781	-4	3759	-4	38.65
13	56.57	13	57.73	13	56.91	13	58.62	13	56.29

5	1201	5	1255	5	1457	5	1194	5	1434
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17	3634	17	3580	17	3378	17	3641	17	3401
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+1537	+2371	+2770	+1953	+2754
1.77247	1.78111	1.78510	1.77693	1.78494
+5726	+6041	+6097	+5983	+6095

-404	-84	-84	-84	-83					
+31	+01	+01	+01	+01					
+5853	+1038	+1094	+5980	+1093					
18	3487	18	3618	18	3472	18	3621	18	3494

14	213	14	216	14	222	14	226	14	228
-4	136	-4	146	-4	125	-4	136	-4	121
	134		144		123		134		119

5176 Cephei L.
 147d = 6h 42m 21s } Va Aug.
 U = 87° 13' 50"

U = 87° 13' 45" } For Sept.

U = 87° 13' 44" } For Oct.

U = 87° 13' 44" } For Oct.

2 - 50° 23' 27" } Sept.

1877m - 132 - 136 - 138 - 142

cos δ =
 8.68410_m

8.68432_m

8.68436_m

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A-2 Am

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3 + 0.0

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4 15.68
 8 33.07 1 25.23
 2 50.46 1 3.92
 1 25.23 42.61
 42.61 21.31
 0.00

-1.26 -1.16 -1.09 -1.18 -1.19

1877

Sept. 19

22

23

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43 27.30 43 35.48 43 40.39 43 40.64 43 42.22
 42 37.69 42 39.15 39.62 42 40.64 42 41.20
 +49.61 +56.83 +60.77 +60.00 +61.02
 +48.47 +55.19 +59.63 +58.86 +59.88
 +48.53 +55.34 +59.78 +59.05 +60.05

-1 13.77 -1 19.21 -1 20.98 -1 23.45 -1 24.64
 + 26.03 + 23.97 + 22.52 + 24.98 + 24.59

- 22.83 - 24.29 - 24.76 - 25.78 - 26.34
 -1 10.57 -1 19.53 -1 23.22 -1 24.25 -1 26.39
 42 16.73 42 15.95 42 17.17 42 16.39 42 15.83

+5 16.50 +5 16.82 +5 17.78 +5 19.00 +5 18.13

+ 10 + 10 + 10 + 10 + 10

- 12.7 - 12.9 - 12.9 - 13.3 - 13.4

+5 4.80 +5 4.92 +5 5.88 +5 6.70 +5 5.73
 92 116 1.31 46 0.91 46 3.79 46 3.16 46 3.64

43 0.39 43 0.40 42 58.27 42 58.93 42 57.34

92 39 4796 4795 5008 4942 5101

- 50 22 20 22 20 22 22 22 21 22 23

1.84150 -307 -649 -784 -1293 -1378

1.83843 1.83501 1.83366 1.82857 1.82772

+68.83 +68.89 +68.18 +67.39 +67.25

-15 -15 -15 -15 -15

-20 -20 -20 -20 -20

+68.57 +68.04 +67.83 +67.04 +66.90

92 40 5654 40 55.99 40 57.91 40 56.46 40 57.91

92 46 16.6 46 15.8 46 16.9 46 16.2 46 16.3

+5 19.1 +5 19.8 +5 18.0 +5 19.9 +5 18.4

+5 19.5 +5 20.2 +5 18.4 +5 20.1 +5 18.8

18.3 18.9 19.6 19.8 19.5

18.2 18.2

1877 July 25, 4 Aug 6 L.C. L.C. L.C. L.C.
 $\rho =$ +87 13.52 log cos ρ 8.68401
 $\tan \rho =$ -20.68 15 cos ρ 8.80661

41 4843 42 110 42 1166 42 1248
 42 1352 42 1735 42 1926 42 1960
 -25.09 -16.25 -7.60 -7.12
 -26.086 -17.242 -8.597 -8.1109

-4.42 -12.81 -17.57 -18.62
 +28.74 +27.28 +25.84 +25.42
 +1.34 -2.49 -4.40 -4.74
 +25.64 +11.98 +3.85 +2.06
 42 14.09 42 13.08 42 15.51 42 14.54

+5 18.82 +5 17.79 +5 17.76 +5 17.21
 + 0.9 + 0.8 + 0.8 + 0.8
 - 1.7 - 5.0 - 6.0 - 6.4
 +5 18.02 +5 13.59 +5 12.56 +5 11.61
 46 27.4 46 1.18 46 3.05 46 1.62

+92 43 1092 43 794 43 535 43 520

39 3743 39 4041 39 4300 39 4315

-50 22 7 22 10
 1.84140 1.84150 1.84150 1.84150
 -1264 -1345 -1148 -1552
 1.82876 1.82805 1.83002 1.82598
 +67.42 +67.30 +67.61 +66.98

+ .32 + .31 + .31 + .31
 + .19 + .19 + .19 + .19
 +1 729 +1 718 +1 749 +1 686

+92 40 4472 40 4759 40 5049 40 5001

46 46 46 79 46 90 46 93
 +5 199 +5 203 +5 185 +5 193
 197 201 183 191

Phaeo Minors L.C.

	4	6	12	2
	86	36	6	
♫	93	23	54	
2	51	1	6	

Sum 2 - 78

2	-36	-47	-55	-61	-59	-55	-57	-51	-52	-50	-69
c	-12	-15	-05			-03					05
1877	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.	L.C.
	Jan 30	Feb 3	5	6	8	11	14	15	20	21	28

[illegible]

$\Delta T + m$	-16.86	-15.13	-14.73	-14.41	-13.86	-12.27	-10.89	-10.15	-8.52	-7.67	-3.52
	+ 6.06	+ 7.91	+ 9.26	+ 10.27	+ 9.94	+ 9.26	+ 9.60	+ 8.59	+ 8.76	+ 8.92	+ 11.62
	+ 2.02	+ 2.53	+ .84			+ .51					+ .84
	+ 22.69	+ 21.76	+ 21.30	+ 21.09	+ 20.66	+ 19.96	+ 19.12	+ 18.80	+ 17.31	+ 17.04	+ 14.94
	+ 13.91	+ 17.07	+ 16.67	+ 16.95	+ 16.74	+ 17.46	+ 17.83	+ 17.24	+ 17.55	+ 17.79	+ 23.58
Δ	12 0.60	12 0.68	12 0.10	12 1.18	12 0.03	12 0.92	12 0.97	11 59.54	12 0.39	12 0.31	12 1.22

-4	22/2	-4	2047	-4	2187	-4	2120	-4	2045	-4	2086	-4	2107	-4	2048	-4	1896	-4	1767	-4	1748	
+	17	+	17	+	17	+	16	+	16	+	16	+	15	+	15	+	15	+	15	+	14	
-	204	-	214	-	220	-	221	-	226	-	233	-	242	-	243	-	252	-	252	-	266	
0	-4	4082	-4	4017	-4	4217	-4	4170	-4	4145	-4	4256	-4	4377	-4	4328	-4	4266	-4	4137	-4	4268
93	23	3029	23	3045	23	2944	23	3019	23	3024	23	3001	23	3051	23	3181	23	3122	23	3088	23	3170

55 53.15 55 51.72 55 50.64 55 50.69 55 51.81 55 50.71 55 50.73 55 47.61 55 49.33 55 49.63 55 48.12

+93	26	55,20	26	56,63	26	57,71	26	57,66	26	56,54	26	57,64	26	58,32	27	0,74	26	59,02	26	58,72	27	0,28
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- 50 59 45 -

1.85110											
+3024	+1893	+1858	+2033	+2562	+2436	+3022	+2095	+2391	+1606	+1994	
1.88134	1.87003	1.86968	1.87143	1.87672	1.87546	1.88132	1.87205	1.87501	1.86716	1.87184	
+7609	+7414	+7408	+7437	+7529	+7507	+7609	+7448	+7499	+7365	+7431	

-	.23	-	.20	-	.20	-	.19	-	.19	-	.19	-	.18	-	.18	-	.18	-	.17	-	.16
+	.05	+	.05	+	.05	+	.05	+	.05	+	.05	+	.05	+	.05	+	.05	+	.05	+	.05
+	1.591	+	13.99	+	13.93	+	14.23	+	15.15	+	14.93	+	15.96	+	14.35	+	14.86	+	13.53	+	14.20

28	11.11	28	10.62	28	11.64	28	11.84	28	11.69	28	12.57	28	14.28	28	15.09	28	13.88	28	12.25	28	14.43
23	50.7	23	51.8	23	52.3	23	52.5	23	52.9	23	53.7	23	54.5	23	54.7	23	55.5	23	55.6	23	56.9
-4	20.4	-4	18.8	-4	19.3	-4	19.4	-4	18.8	-4	18.9	-4	19.8	-4	20.3	-4	18.9	-4	16.6	-4	17.5
	20.7		19.1		19.6		19.7		19.1		19.2		20.1		20.7		18.7		16.9		17.8

-59 -64 -69 -59 -61
 L.C. L.C. L.C. L.C. L.C.
 Mar 1.3 4 6 7 11

$+86$ 36 3 8.77300^m
 -16.84 8.87348 after Mar 1

11 39.11 11 37.61 11 37.00 11 37.88 11 36.11
 11 45.90 11 46.96 11 47.61 11 47.92 11 49.24
 -6.77 -9.35 -10.61 -12.04 -13.13
 -6.73 -9.29 -10.55 -9.98 -13.07

-3.26 -1.91 -0.51 $+0.38$ $+3.70$
 $+9.94$ $+10.78$ $+11.62$ $+9.94$ $+10.27$

$+11.57$ $+13.51$ $+12.16$ $+12.55$ $+11.23$
 $+21.25$ $+22.38$ $+23.97$ $+22.87$ $+25.20$
 12 2.36 11 5.99 12 0.77 12 0.75 12 1.31

-4 16.72 -4 15.30 -4 15.10 -4 15.15 -4 13.81
 $+1.4$ $+1.4$ $+1.4$ $+1.4$ $+1.4$
 -26.7 -27.1 -27.1 -27.2 -27.5
 -4 42.02 -4 41.80 -4 40.80 -4 40.95 -4 39.91
 23 30.39 23 29.32 23 29.75 23 30.77 23 31.43

55 49.97 55 51.21 55 53.64 55 51.37 55 52.41

26 58.38 26 57.14 26 54.71 26 56.98 26 55.94

$+1896$ $+1396$ $+2951$ $+2303$ $+2696$
 1.87006 1.86506 1.88061 1.87413 1.87806
 $+74.14$ $+73.29$ $+75.96$ $+74.84$ $+75.52$
 -16 -16 -17 -15 -17
 $+1.05$ $+1.05$ $+1.05$ $+1.05$ $+1.05$
 $+1$ 14.03 $+1$ 13.18 $+1$ 15.84 $+1$ 14.74 $+1$ 15.40
 28 12.41 28 10.32 28 10.55 28 11.72 28 11.34
 23 57.1 23 57.4 23 57.5 23 57.5 23 57.9
 -4 1.53 -4 1.29 -4 1.31 -4 1.42 -4 1.34
 15.6 13.2 13.4 14.5 13.7

Musae Minoris U.C.

$$1877 \quad \begin{aligned} & \text{R} = 18^{\circ} 12' 0.465 - 043 \quad 12^{\circ} 0.422 \\ & \text{A} = 12^{\circ} 0.469 \quad 12^{\circ} 0.469 \\ & \text{U} = \text{P} = 86^{\circ} 36' 29.12 + 0.70 \quad 36' 29.82 \\ & \text{V} = 36' 29.65 \quad 36' 29.65 \\ & \text{cone} = -2.25 \\ & \text{cond} = +0.17 \end{aligned}$$

$$1877 \quad \begin{aligned} & -138 \quad -128 \quad -132 \quad -130 \quad -125 \\ & \text{July 24} \quad 29 \quad \text{Aug 6} \quad 8 \quad 11 \\ & \text{U.C.} \quad \text{U.C.} \quad \text{U.C.} \quad \text{U.C.} \quad \text{U.C.} \end{aligned}$$

$$P = \text{tang } \delta = +86^{\circ} 36' 34'' \quad +16.88 \quad \log \cos \delta = 151 \text{ Cor'd tan}$$

$$\begin{aligned} & 12^{\circ} 3286 \quad 12^{\circ} 3422 \quad 12^{\circ} 3694 \quad 12^{\circ} 3982 \quad 12^{\circ} 3926 \\ & 12^{\circ} 569 \quad 12^{\circ} 446 \quad 12^{\circ} 293 \quad 12^{\circ} 133 \quad 12^{\circ} 037 \\ & + 27.17 \quad + 29.76 \quad + 34.91 \quad + 38.49 \quad + 38.89 \\ & + 27.23 \quad + 29.82 \quad + 34.97 \quad + 38.55 \quad + 38.95 \end{aligned}$$

$$\begin{aligned} \Delta T + m & \quad -3.74 \quad -6.92 \quad -12.79 \quad -14.55 \quad -17.58 \\ & \quad -23.29 \quad -21.61 \quad -22.28 \quad -21.94 \quad -21.10 \\ & \quad -5.22 \quad -3.99 \quad -1.56 \quad -0.86 \quad +0.10 \\ & \quad -32.25 \quad -33.63 \quad -36.63 \quad -38.46 \quad -38.58 \\ & 18 \quad 12 \quad 0.61 \quad 12 \quad 0.59 \quad 12 \quad 0.31 \quad 12 \quad 1.36 \quad 12 \quad 0.68 \end{aligned}$$

$$\begin{aligned} & +5 \quad 1826 \quad +5 \quad 1826 \quad +5 \quad 1779 \quad +5 \quad 1818 \quad +5 \quad 1776 \\ & + \quad 08 \quad + \quad 08 \quad + \quad 07 \quad + \quad 07 \quad + \quad 07 \\ & - \quad 23 \quad - \quad 34 \quad - \quad 56 \quad - \quad 59 \quad - \quad 65 \\ & +5 \quad 1686 \quad +5 \quad 1566 \quad +5 \quad 1289 \quad +5 \quad 1298 \quad +5 \quad 11.96 \\ & +86 \quad 36 \quad 29.35 \quad 36 \quad 28.24 \quad 36 \quad 29.12 \quad 36 \quad 29.18 \quad 36 \quad 29.78 \end{aligned}$$

$$52 \quad 3074 \quad 52 \quad 3073 \quad 52 \quad 2614 \quad 52 \quad 2598 \quad 52 \quad 2476$$

$$+86 \quad 30 \quad 18.31 \quad 30 \quad 18.32 \quad 30 \quad 2221 \quad 30 \quad 2237 \quad 30 \quad 2359$$

$$\begin{aligned} -44 \quad & 12 \quad 48 \\ & 1.74790 \\ & -1324 \quad -1238 \quad -1455 \quad -1605 \quad -1287 \\ & 1.73466 \quad 1.73552 \quad 1.73335 \quad 1.73185 \quad 1.73503 \\ & +5428 \quad +5439 \quad +5412 \quad +5393 \quad +5433 \end{aligned}$$

$$\begin{aligned} & -25 \quad -25 \quad -24 \quad -24 \quad -24 \\ & +15 \quad +15 \quad +14 \quad +14 \quad +14 \\ & +5418 \quad +5429 \quad +5402 \quad +5382 \quad +5423 \\ & +86 \quad 31 \quad 1249 \quad 31 \quad 1261 \quad 31 \quad 1623 \quad 31 \quad 1620 \quad 31 \quad 1782 \\ & 36 \quad 319 \quad 36 \quad 331 \quad 36 \quad 352 \quad 36 \quad 356 \quad 36 \quad 361 \\ & +5 \quad 19.4 \quad +5 \quad 20.5 \quad +5 \quad 19.0 \quad +5 \quad 19.4 \quad +5 \quad 18.3 \\ & 19.7 \quad 20.8 \quad 19.3 \quad 19.7 \quad 18.6 \end{aligned}$$

$$v = 86^{\circ} 36' 40'' \quad \text{log } \delta = 77244 \quad \text{Aug 1} \quad \text{Aug 2} \quad \text{Aug 3} \quad \text{Aug 4}$$

$$\begin{aligned} R & +5 \quad 74.82 \\ R' & -5 \quad 74.82 \\ R'' & +1.489 \\ \text{tgs} & \pm 1689 \end{aligned}$$

$$\begin{aligned} & -1.32 \quad -1.36 \quad -1.38 \quad -1.33 \quad -1.37 \\ & \text{Angle} \quad 22 \quad 23 \quad -1.33 \quad 30 \end{aligned}$$

$$\begin{aligned} & 8.77189 \quad 8.89449 \\ & 12^{\circ} 4467 \quad 12^{\circ} 5051 \quad 12^{\circ} 5164 \quad 12^{\circ} 5675 \quad 13^{\circ} 658 \\ & 11 \quad 58.70 \quad 11 \quad 56.42 \quad 11 \quad 56.06 \quad 11 \quad 54.29 \quad 11 \quad 53.47 \\ & +4572 \quad +5412 \quad +55.58 \quad +62.46 \quad +68.11 \\ & +4587 \quad +5417 \quad +55.63 \quad +62.51 \quad +68.16 \\ & +4598 \quad +5418 \quad +55.64 \quad +62.52 \quad +68.17 \end{aligned}$$

$$\begin{aligned} & -23.07 \quad -31.31 \quad -32.89 \quad -40.25 \quad -42.88 \\ & -22.28 \quad -22.96 \quad -23.29 \quad -22.45 \quad -23.13 \\ & +1.72 \quad +905 \quad +4.11 \quad +6.18 \quad +7.00 \\ & -4363 \quad -5022 \quad -51.77 \quad -56.52 \quad -59.65 \\ & 12 \quad 1.04 \quad 12 \quad 0.92 \quad 11 \quad 59.87 \quad 12 \quad 0.23 \quad 12 \quad 1.93 \end{aligned}$$

$$43 \quad 52 \quad 2167 \quad 52 \quad 2280 \quad 52 \quad 2231 \quad 52 \quad 2114 \quad 52 \quad 2118$$

$$86 \quad 30 \quad 2668 \quad 30 \quad 2555 \quad 30 \quad 2604 \quad 30 \quad 2721 \quad 30 \quad 2717$$

$$\begin{aligned} -44 \quad & 12 \quad 58 \\ & 1.74790 \\ & -1862 \quad -1326 \quad -1534 \quad -1826 \quad -1249 \\ & 1.72828 \quad 1.73464 \quad 1.73256 \quad 1.72964 \quad 1.73541 \\ & +5368 \quad +5428 \quad +5402 \quad +5366 \quad +5438 \end{aligned}$$

$$\begin{aligned} & -2 \quad -2 \quad -2 \quad -02 \quad -02 \\ & -30 \quad -30 \quad -20 \quad -30 \quad -30 \\ & +5326 \quad +53.96 \quad +5370 \quad +53.24 \quad +5406 \\ & 86 \quad 31 \quad 20.04 \quad 31 \quad 19.51 \quad 31 \quad 19.74 \quad 31 \quad 20.55 \quad 31 \quad 21.23 \\ & 86 \quad 36 \quad 37.2 \quad 36 \quad 38.3 \quad 36 \quad 38.4 \quad 36 \quad 39.2 \quad 36 \quad 39.5 \\ & +5 \quad 17.2 \quad +5 \quad 18.8 \quad +5 \quad 18.7 \quad +5 \quad 18.1 \quad +5 \quad 18.3 \\ & +0.7 \quad +5 \quad 17.4 \quad +5 \quad 19.0 \quad +5 \quad 18.9 \quad +5 \quad 18.5 \quad +5 \quad 18.5 \\ & 15 \quad 17.6 \quad 15.2 \quad 19.1 \quad 19.1 \quad 19.1 \quad 18.7 \end{aligned}$$

Feb. 15				Aug. 1			
log 100				log 100			
8.77292				8.77140			
At. A. A. 1				At. A. A. 1			
A ₉				A ₉			
3	26.50			3	26.99		
2	53.75	1	9.50	2	54.17	1	9.66
2	19.00		52.12	2	19.33		52.35
1	9.50		34.75	1	9.66		34.83
	34.75		17.375		34.83		17.42
	0.00		0.00		0.00		0.00

-1.22 -1.22 -1.26 -1.13

Sept. 12 13 15 24

13	10.57	13	12.20	13	14.62	13	23.45
11	48.09	11	47.65		46.73	11	42.96
	+82.48		+84.55		+87.89		+100.49
	+82.53		+84.60		+87.94		+100.54
	+82.54		+84.61		+87.95		+100.55

-1 2.55 -1 3.97 -1 6.87 -1 22.28
- 20.59 - 20.59 - 21.27 - 19.07

+ 12.88 + 12.82 + 13.74 + 17.51
-1 10.76 -1 11.74 -1 14.40 -1 23.84
11 59.81 12 0.46 12 0.22 11 59.61

+5 17.81 +5 17.22 +5 17.61 +5 18.41
+ 0.9 + 0.9 + 0.9 + 0.9
- 11.3 - 11.3 - 11.5 - 11.6
+5 6.91 +5 6.82 +5 7.01 +5 7.71
36 29.91 36 30.20 36 29.31 36 30.73

52 19.09 52 18.23 52 19.66 52 19.57

30 29.26 30 30.12 30 28.69 30 28.78

13 1 13 2 13 1 13 0

-14.40 -18.22 -15.46 -10.38
1.73330 1.72968 1.73244 1.73752
+54.14 +53.66 +54.01 +54.64

-10 -10 -10 -10

-30 -30 -30 -30

+53.74 +53.26 +53.61 +54.24

31 23.00 31 23.88 31 22.30 31 23.02

36 40.8 36 41.0 36 41.1 36 41.3

+5 17.9 +5 17.6 +5 18.8 +5 18.3

+5 18.1 +5 17.8 +5 19.0 +5 18.5

18.2 17.9 19.1 18.6

18.3 18.0 19.2 18.7

N. Minor L.C. 1
 α A.B. = δ 91° 4' 14"

$$\alpha \delta = 19 \frac{h}{m} \frac{s}{s} = 19 \frac{47}{16.718} = 47 \frac{14.66}{15} \sin Z - 75$$

$$\delta N.A. = 88 \quad 56 \quad 9.0 \quad 47 \quad 15.84$$

$$\delta P = 88 \quad 56 \quad 19.27$$

$$\cos \alpha = -1.18$$

$$\cos \delta = +1.12$$

$$\lambda = -46 \quad 33$$

$$\delta = +88 \quad 55 \quad 46 \quad \log \cos \delta = 8.27146^m$$

$$\tan \delta = \pm 53.51 \quad \log \cos \delta = 8.39194^m$$

$$\begin{array}{r} 45 \quad 2437 \quad 45 \quad 2192 \quad 45 \quad 2293 \\ 45 \quad 6217 \quad 45 \quad 7132 \quad 46 \quad 3218 \\ - \quad 3480 \quad - \quad 4940 \quad - \quad 6923 \\ - \quad 3691 \quad - \quad 4851 \quad - \quad 6936 \end{array}$$

$$\begin{array}{r} +3.74 \quad +12.74 \quad +27.25 \\ +32.64 \quad +28.36 \quad +36.39 \\ +1 \quad 13.67 \quad +1 \quad 4.52 \quad + \quad 93.66 \\ +1 \quad 50.05 \quad +1 \quad 45.62 \quad +1 \quad 52.65 \\ 7 \quad 47 \quad 14.42 \quad 47 \quad 7.54 \quad 47 \quad 15.58 \end{array}$$

$$\begin{array}{r} -4 \quad 13.81 \quad -4 \quad 14.15 \quad -4 \quad 22.72 \\ + \quad 1.4 \quad + \quad 1.3 \quad + \quad 1.4 \\ - \quad 20.7 \quad - \quad 22.0 \quad - \quad 23.6 \\ -4 \quad 33.11 \quad -4 \quad 34.85 \quad -4 \quad 44.92 \\ 91 \quad 3 \quad 49.56 \quad 3 \quad 51.56 \quad 3 \quad 51.53 \end{array}$$

$$15 \quad 35.55 \quad 15 \quad 31.81 \quad 15 \quad 19.12$$

$$+91 \quad 7 \quad 1280 \quad 7 \quad 1654 \quad 7 \quad 2923$$

$$\begin{array}{r} -48 \quad 40 \quad 2 \quad 40 \quad 6 \quad 40 \quad 19 \\ 1.81540 \quad 1.81540 \quad 1.81550 \\ +2932 \quad +2923 \quad +1211 \\ 1.84472 \quad 1.84463 \quad 1.82761 \\ +69.94 \quad +69.92 \quad +67.24 \end{array}$$

$$\begin{array}{r} +.11 \quad +.08 \quad +.04 \\ +.04 \quad +.03 \quad +.02 \\ +1 \quad 987 \quad +1 \quad 9.87 \quad +1 \quad 7.22 \\ +91 \quad 8 \quad 22.67 \quad 8 \quad 26.41 \quad 8 \quad 36.95 \end{array}$$

$$\begin{array}{r} 4 \quad 11.5 \quad 4 \quad 12.9 \quad 4 \quad 14.4 \\ -4 \quad 11.2 \quad -4 \quad 13.5 \quad -4 \quad 22.0 \\ 11.8 \quad 14.1 \quad 22.6 \end{array}$$

$$\log \cos \delta = (88 \quad 55 \quad 47) \quad 8.27135$$

$$\begin{array}{r} 11 \quad 1.74 \\ 9 \quad 11.42 \quad 3 \quad 40.57 \\ 7 \quad 21.14 \quad 2 \quad 45.42 \\ 3 \quad 40.57 \quad 1 \quad 50.28 \\ 1 \quad 50.28 \quad 55.14 \\ 0.00 \quad 0.00 \end{array}$$

Apr. 9
 (85 55 45.6) 6.27/150
 at 11 1.49
 9 11.24 3 40.50
 7 20.99 2 45.37
 3 40.50 1 50.24
 1 50.25 35.125
 6.50 5.70

	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	
Lg	m	47	16.718																						
Corrd				-1.76	-1.77	-1.78	-1.79	-1.80																	
$\frac{dL}{dt}$				-61.904																					
P_0				56	10.27																				
Corrd				-	.5																				
$\frac{dP}{dt}$				+9.072																					

de
se
0
D
18

Phae Minoris

18
10 -2

11

Aug. 15

Aug. 15 8^h 56^m 17^s 8.26795 1.73197 +53.95

Sept 15 56 25 8.26704 1.73288 54.06

Oct 15 56 29 8.26659 1.73354 54.12

Nov 15 56 29 8.26659 1.73334 54.12

Dec 15 56 24 8.26716 1.73277 54.05

$\alpha = -46^{\circ} 33'$ $\sin \alpha = -.73$

1877 Aug 16 Aug 22 27

log cos δ 8.26795
15^h 20^m 8.39055 Aug.

19 4^h 5^m 52^s 48 55.54 49 2.10
47 16.20 47 10.76 47 6.682
+1 35.90 47.2 +1 44.84 +1 55.488
+1 36.70 +1 46.82 +1 56.686
+ 96.80 + 105.64 + 116.38

49 0.38 48 55.28 48 55.24 48 55.13 48 54.86 48 52.20 46 57.30 46 56.64
46 19.18 46 17.76 46 9.79 46 4.05 46 2.74 46 58.54 45 49.02 45 46.16
+2 41.20 +2 40.32 +2 45.45 +2 53.08 +2 52.12 +18.166 +62.28 +70.54
+2 42.38 +2 41.50 +2 46.63 +2 54.26 +2 53.30 +182.59 +63.19 +71.45
+ 162.17 + 161.23 + 166.36 + 173.99 + 173.03

-23.21 -31.46 -39.11
-71.21 -73.40 -76.65

-0.36 +5.08 +9.22
-1 34.78 -1 39.78 -1 46.54
19 47 17.32 47 15.72 47 15.56

-1 39.78 -1 41.55 -1 51.33 -1 52.53 -1 58.93 -2 13.44 -1 52.23 -18.18
-59.53 -61.70 -61.16 -58.99 -55.20 -51.42 -53.59 -55.75
-3.25
+56.66 +57.88 +1 60.5 +1 11.79 +1 13.10 +1 25.30 +1 26.82 +1 29.74
-1 45.90 -1 45.37 -1 46.44 -1 44.75 -1 41.03 -1 39.56 +18.00 +12.56
47 18.48 47 12.91 47 8.80 47 12.38 47 13.83 47 12.64 47 9.30 47 9.20

+5 16.57 +5 17.98 +5 17.37
+ 0.8 + 0.8 + 0.8
- 8.4 - 10.2 - 11.4
+5 8.99 +5 8.78 +5 6.77
88 56 9.90 56 10.45 56 10.37

+5 17.38 +5 17.91 +5 17.40 +5 17.37 +5 18.45 +5 17.80 +5 18.05 +5 18.25
+ 0.9 + 0.9 + 0.9 + 0.9 + 1.0 + 1.1 + 1.1 + 1.1
- 19.4 - 19.8 - 20.2 - 20.5 - 20.3 - 20.9 - 20.8 - 20.8
+4 58.88 +4 59.01 +4 58.10 +4 57.77 +4 59.15 +4 58.01 +4 58.35 +4 58.55
56 9.21 56 7.64 56 9.17 56 9.88 56 9.61 56 9.03 56 12.09 56 10.51

32 4562 32 4566 32 4502

32 4600 32 4609 32 3853 32 3713 32 3825 32 3955 32 3651 32 3727

88 50 2.73 50 2.69 50 3.33
9 57.27 9 57.31 9 56.67

50 8.35 50 7.66 50 9.82 50 11.22 50 10.10
9 57.65 9 52.34 9 50.18 9 48.78 9 49.90 50 8.80 50 11.84 50 11.08

32 32 34 32 35
1.78820 -1146 -926
1.76600 1.77144 1.77394
+ 58.23 +59.12 +59.42

32 40 32 39 32 42 32 43 32 42 32 38
1.78320 1.78320 1.78320
+1037 +1054 +560 +305 -071 +1231 +1808 +294
1.79354 1.79384 1.78880 1.78625 1.78249 1.79551 1.79328 1.78614
+62.17 +62.21 +61.49 +61.13 +60.60 +62.45 +62.13 +61.11

-3 -3 -13
-12 -12 -12
+58.20 +58.97 +59.27

-35 -12 -12 -12 -12 -12 -39 +.39
+16 -12 -12 -12 -12 +.16 +.16 +.16
+1 1.98 +61.94 +61.25 +60.89 +60.36 +1 2.22 +1 1.90 +1 1.88

88 51 0.93 51 1.66 51 3.60
56 17.5 56 19.2 56 20.5
+5 16.6 +5 17.5 +5 16.9
+5 17.7 +5 18.6 +5 18.0
+5 17.2 +5 18.1 +5 17.5
+5 17.9 +5 18.2 +5 18.5

51 10.33 51 8.63 51 11.07 51 12.11 51 10.16 51 11.02 51 13.74 51 11.96
56 28.6 56 28.9 56 29.4 56 29.6 56 29.5 56 30.0 56 30.0 56 29.9
+5 18.3 +5 20.1 +5 19.4 +5 18.6 +5 20.1 +5 19.0 +5 16.3 +5 17.9
18.9 20.4 18.9 18.1 19.6 19.6 16.9 18.5
21.9 19.6 18.5 20.3

R + 16 49.09
R - 16 37.60

Oct. 15

Ant. Ant.

Agm

11	9.00	3	43.00
9	17.51	2	47.25
7	26.01	1	51.50
5	43.00	0	55.75
1	51.50		0.60
	0.00		

1877

- 94

U.L.

Cor 4.2

46 53.33

45 39.68

+ 73.65

+ 74.56

- 27.05

- 30.88

± 1 36.16

+ 18.23

47 11.56

+ 5 18.38

+ 1.1

- 20.7

+ 4 58.78

56 9.17

32 40.39

50 49.6

1.78320

+ 1370

1.79690

+ 6265

- 38

+ 16

+ 1 24.2

51 10.39

56 29.8

+ 5 19.4

24.2

α Aquilae

19^h 44^m 47^s
 +8° 32' 42"
 +33 50 6

Ex Min.

1877

P. 99
 Oct 28

P. 1.03
 - .06
 Oct. 30

48 37.6	48 [41.9]	49 0.7	44 41.5	44 45.0	45 3.7
40.4	44.0	2.8	44.0	47.0	5.8
41.9	46.0	4.9	45.9	49.0	7.9
	48.0	7.0		51.2	10.0
	50.2	9.0		53.3	12.1
49 24.2	52.3		45 30.0	55.4	
26.0	54.5	13.1	31.8	57.5	16.1
27.4	56.6	15.3	33.5	59.5	18.3
		17.5			20.4
		19.5			22.4
		21.6			24.5
		23.7			26.6
	3484	25.7		37.85	28.7
44 39.7		27.8	44 43.80		30.8
45 25.8	45 4.840	48.82	45 31.77	45 7.850	78.2
		9.30			9.40
	45 4.906			45 7.911	
	45 -15.23	44 49.472		-18.17	44 49.444
	-15	+ 15.43		-15	+ 18.47
	-2.55			-0.06	+ 18.47
	-17.93			-2.53	
	44 46.98			-20.91	
				47.00	

+2494
 1.39690
 1.51067
 1.51467
 50 3

-2096
 1.22139m
 1.43516m
 1.43916m
 50 4

+2411
 1.38220
 1.49597
 1.49797
 50 3

-2386
 1.37767m
 1.49144m
 1.49544m
 50 4

E
 51.1
 7.6
 0.5
 0.7
 23.99
 53 59.98
 + 32.71
 54 32.69

53.4
 10.1
 5.2
 5.1
 13.8
 54 3.45
 + 31.62
 54 35.07

+8 28 15.66 28 15.56

28 13.28 13.42

+33 48 42 49 42
 1.58600 1.58620
 +997 +997
 1.59597 1.59617
 -39.44 -39.46
 - .05 - .04
 - .60 - .75
 + .24 + .30
 -39.85 -39.95
 +8 27 35.81 35.61
 +8 27 35.71 +5 18.25
 32 52.3 - .9
 +5 16.6 - 11.3
 16.6

48 45 49 48
 1.58600 1.58620
 +285 +285
 1.58885 1.58905
 -38.80 -38.82
 - .05 - .05
 - .62 - .76
 + .25 + .31
 -39.22 -39.32
 27 34.06 34.12
 27 34.09 +5 18.25
 32 52.2 - .9
 +5 18.1 - 11.2
 18.1

+5 5.85
 32 41.56

+5 6.15
 32 40.24

log cos δ 9.99517

15 cos δ tan δ 0.11777

tang δ +0.15 1.01

sin z +.56

α Aquarii

 $21^h 59^m 28^s$
 $-0^\circ 55' 0''$
 $+43 17 48$
 $\log \cos \delta \quad 9.99994$
 $15 \cos \delta \tan \epsilon \quad 0.12254$
 $\tan \delta \quad -0.02 \quad 1.00$
 $\sin \epsilon \quad +.69$

1877

P.102

Nov. 6

 $59 \quad 35.5 \quad 59 \quad 39.1 \quad 59 \quad 57.8$
 $30.0 \quad 41.8 \quad 0.1$
 $40.5 \quad 43.3 \quad 2.0$
 $\quad \quad 45.2 \quad 4.0$
 $\quad \quad 47.3 \quad 6.1$
 $0 \quad 24.8 \quad 19.4$
 $30.9 \quad 57.7 \quad 10.2$
 $30.5 \quad 58.7 \quad 12.3$
 $\quad \quad \quad 14.2$
 $\quad \quad \quad 16.3$
 $\quad \quad \quad 18.2$
 $\quad \quad \quad 20.4$
 $\quad \quad \quad 22.5$
 $\quad \quad \quad 24.7$
 $59 \quad 38.0 \quad 3183$
 $0 \quad 28.73 \quad 0 \quad 1.830$
 $\quad \quad \quad 1.955$
 $\quad \quad \quad 1.918$
 $\quad \quad \quad 0 \quad 1.936$
 $\quad \quad \quad -30.59 \quad 59 \quad 31.327$
 $\quad \quad \quad -32 \quad + \quad 3061$
 $\quad \quad \quad + \quad 3060$
 $\quad \quad \quad -3.38$
 $\quad \quad \quad -33.99$
 $\quad \quad \quad 59 \quad 27.95$
 $+23.94 \quad -26.79$
 $1.37912 \quad 1.42797$
 $1.50166 \quad 1.55051$
 $20 \quad 1 \quad 20 \quad 2$
 $E \quad 7.4 \quad 16.4$
 $P \quad 25.5 \quad 33.9$
 $G \quad 18.8 \quad 27.1$
 $H \quad 18.3 \quad 26.9$
 $\quad 700 \quad 1043$
 $21 \quad 1750 \quad 22 \quad 2608$
 $+ \quad 31.74 \quad - \quad 35.52$
 $21 \quad 149.24 \quad 21 \quad 50.56$
 $-0 \quad 59 \quad 0.89 \quad 2.21$
 $+43 \quad 16 \quad 0 \quad 17 \quad 8$
 $1.73360 \quad 1.73380$
 $+23.67 \quad +23.67$
 $1.75727 \quad 1.75747$
 $-57.18 \quad -57.21$
 $+ \quad .01 \quad + \quad .01$
 $- \quad .18 \quad - \quad .34$
 $+ \quad .08 \quad + \quad .14$
 $-57.27 \quad -57.40$
 $-0 \quad 59 \quad 58.16 \quad 59.61$
 $-0 \quad 59 \quad 58.88 \quad +5 \quad 18.20$
 $54 \quad 41.1 \quad - \quad 1.2$
 $+5 \quad 17.6 \quad - \quad 19.0$
 $\quad 17.7$
 $\quad +4 \quad 58.00$
 $-0 \quad 55 \quad 0.88$

