

KG
11365
142

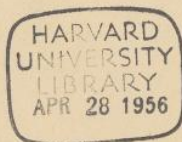
F. 126

(Copy)
Prime-Vertical.
Computation of
Latitude
1864
Sold by T. Groom & Co., Stationers, India Building, 82 State St., Boston.

KG 11365.142

See note in H. 3 for the old position of
the P.V. Transit.

KG 11365.142



1864		Cor Chron	Ad Rate
June 8 th	15-37	-27.61	-0.13
		-0.176	
13	14 44	48.71	-0.18
		0.182	
14	15-16	53.08	-0.18
		0.170	
16	15-32	62.20	-0.17
		0.190	
18	15-12	71.31	-0.19
		0.197	
19	1 15	78.21	-0.20
21	15 48	-84.40	
		0.181	
23	15 05	93.19	
27	14 54	109.83	0.180
28	15 54	154.16	

Clock corrections reduced to Rogers

		C cor	Rate
July 5	16 28	+25.803	-0.064
9	15 46	19.204	0.060
12	15 54	15.820	0.052
13	16 46	14.433	0.060
14	16 19	12.947	0.063
16	17 9	10.025	0.060
18	18 6	6.980	0.060
19	15 24	5.712	-0.060

1864 June 8 M.W.

W.A.R. Stars for Gunthorpe Chronograph

3 Hercules & Leonis

12 Canine ven

13 ^h 27 ^m 33.3	13 38	42.0	14	38	12.5-
40.1		46.7			22.7
46.6		57.6			33.3
52.6		58.6			44.5-
58.5-11.3		01.7			56.2
<u>231.1</u>		<u>258.6</u>			<u>169.2</u>
46.2		57.7	K		33.8
	K				K
+12.9	2	+9.7	1	+21.3	5-
+6.5	0	+5.0	0	+11.1	1
-0.4	0	+0.1	0	+0.5	0
-6.4	0	-4.9	0	-10.7	1
-12.3	2	-9.0	1	-22.4	6

Level Telescope East

W.A.R.

13^h 40^m

N S

91.0	89.9	+1.1
91.8	89.5	+2.3
99.0	82.0	+17.0
99.1	82.8	+16.3
20.9	24.2	
95.22	86.03	
86.03		
99.17		
+4.58		

Telescope M.W.

15^h 4^m

N S

103.9	85.5
103.8	85.8
103.6	86.0
93.9	96.0
94.1	96.4
93.8	96.0
593.1	546.0
98.55	91.0
91.00	
7.85	
+3.92	

Telescope E

J.H.S.

15^h 25^m

N S

96.3	95.5	0.8
90.8	94.5	2.3
96.0	95.0	1.0
103.0	90.0	13.0
103.7	88.7	15.0
105.0	87.2	17.8
		949.9
		25.48
		4.24

Raised level after
each trial and
replaced it on a
different part of pint

Hourly Change = -.40

8 39'46"23"

41 34 28

40 47 56

41 17'23"

1864 June 13 M.S.

NAE

+24 11 29

moving by 40^{3.2}

-18 56 17

+15 45 50

13 56 20.0

19 56 20.0

14 11 11.0

14 17 34.4

20 56 20.0

13 56 20.0
33.2
43.5
58.2
8.8
165.7
13 56 45.14
-5.1

19 56 20.0
24.8
48.8
11.2
30.5
117.3
14 4 47.46

14 11 11.0
24.2
37.0
50.5
02.5
125.2
14 11 37.04

14 17 34.4
47.0
2.0
18.4
33.3
135.1
14 18 3.02

20 56 20.0
47.3
4.5
21.4
37.5
52.2
162.9
14 15 20.55

+25.1
+11.9
-0.4
-13.1
-23.7

46 17' + 3.8' + 2.7' + 44.5' + 112.2' + 54.1' + 26.0
+2 58' + 1.29' + 2.1' + 22.70' + 5.40' + 2.50' + 12.8
0 6 - 3 - 2.3 - 13.5 - 0.19 - 0.10
2.3 17 - 1.38 - 4.3 2.23 2.2 - 1.55 - 2.58
4.5 55 - 2.57 - 0.31 0.43 0.45 - 1.5 45 - 5.22

+26.0
+12.8
0.0
-13.5
-25.5

8 + 6.30' + 3.15' + 30.6
2 + 3.12' + 1.36' + 16.0
0 0 0 + 1.0
2 - 3.22 - 1.41 - 15.4
8 - 6.22 - 3.11 - 32.3

14 + 7.35' + 8.49' + 33.3 3 + 8.1
24 0 20 + 16.1 2 + 4.1
0 + 15 + 7 0.8 0 - 1
2 - 3.51 + 1.55 - 16.9 3 - 4.1
12 - 5.23 - 2.41 - 1.6 72 - 7.5

9.82869
9.88562
9.71438

9.82869
9.87326
9.70265

9.82869
9.87710
9.70779

9.82869
9.87586
9.70453

24 8 21 +24 14.6 9.61338
10 0 13.07 9.61302
11 32 11.34 9.61257
13 7 10.14 9.61214
14 26 8.21 9.61167

+13 42 3 9.37448
37 38 9.37322
36 50 9.37176
33 51 9.37021
31 0 9.36871

+13 39 33 9.37318
37 9 9.37193
34 21 9.37047
31 21 9.36890
28 30 9.36740

-15 53.36 9.51041
55.22 9.51094
56.24 9.51132
57.17 9.51201
60.06 9.51268

+15 49 47 9.43
47.56 9.43
45.56 9.43
43.50 9.43
41.40 9.43

9.32776
1.37767 0.72743
9.32740 5.34
1.07555 0.40295
9.32695 2.53
9.60206 8.92901
9.32652 0.6
1.11727 0.44379
9.32605 2.78
1.37475 0.70080
5.02

9.07713
1.0654
9.07587
0.43136
9.07445
0.32888
9.07288
1.64048
9.07136
1.79934
0.48367
0.04
9.50723
0.32
0.40279
2.83
0.71334
5.17
0.87070
7.42

9.07583
1.65801
9.07458
1.35602
9.07312
0.11394
9.07155
1.37475
9.07005
1.63347
0.73384
5.42
0.43060
2.69
9.18706
1.15
0.44620
2.77
0.70352
5.05

9.21820
1.48572
9.21873
1.20412
9.21931
0.00000
9.21980
1.18752
9.22047
1.50920
0.70392
5.06
0.42285
2.65
9.21931
1.16
0.40732
2.88
0.72967
5.37

9.14036
1.52244
9.13916
1.20682
9.13864
9.90309
9.13770
1.22789
9.13673
1.49769
0.66280
4.60
0.3477
2.22
9.04173
1.11
0.36559
2.32
0.63642
4.33

Level 13 30 52 Level 14 30 50

80.5- 88.2
83.0 86.0
78.8 92.1
79.3 92.1
82.8 89.6
77.3 15.8
48.17 543.8
80.28 90.63
80.28 80.28
-80.35
-5.17

85.0 92.5
86.8 91.3
81.8 96.0
82.2 96.2
13.8 16.0
83.95 94.10
83.95 10.05
5.02

236 Compared with

14 45 30
35
40
45
50
55
60

41° 21' 48"

- 15 13 51

2₂ Bootis

14 26 13.0

30.2

54.3

10.5-

31.5-

133.5-

14 26 57.10

3 +8 19' 4" 10 +38.1 16 9' 31" +4' 46"

2 +4 1 +2 0 +20.9 57 5 13 +2 36

0 - 12 - 6 + 0.8 0 + 12 + 6

3 -4 13 -2 06 -19.4 4 -4 51 -2 26

12 -754 -3 57 -40.4 18 -10 6 -5 3

2869
7586
04539.82869
9.87537
9.70406

9 47	9.43581	-15 8 48	9.41712
56	9.43467	11 25	9.41834
56	9.43409	13 57	9.41952
50	9.43315	15 26	9.42021
140	9.43218	17 37	9.42122

6280	9.12118	0.70210
460	1.58092	5.04
636	9.12240	0.44255
1077	1.32015	2.77
222	9.12358	2.02667
4173	9.90309	.11
11	9.12427	0.41207
559	1.28780	2.58
32	9.12528	0.73166
642	1.60638	5.39
33		

*

E C

This array to 14 43 44.56
 5th in error 49.57
 as I came out 54.57
 five seconds ahead 59.53
 of an even ten sec 4.54
 Perhaps it should 9.55-
 be diminished 5- 14.57

14 43 59.53 - EC

14 45 - 45.00 236

+ 1 45.45 - 236 - EC

56.74

4871.0 at 14h 44m

34 213 - 0.1 7.78 52.2

2122	+ 1.22	+ 0.1	253	534
2137	2.55	- 16	265	526
2152	2.55	- 11	277	524
			265	515

E C correction +36.76 at 14h 44m
 EC Rate = 0.52

8 39 27 52

39 46 23

41 34 28

40 1 6

40 47 56

1864 June 14 SUN

W.H.R.

-25 32 45

+24 11 14

+13 33 44

+23 2 56

-18 55 43

Coronal E 6 Comm W 19 Comm W 10 Comm W 01 Bricks E

13 48 36.4	13 36 24.4	14 3 37.5	14 11 14.4	14 17 26.8
48.6	35.5	12.5	26.0	17 43.5
0.8	47.5	34.1	39.3	16 00.5
12.3	0.4	56.5	52.4	14 16.2
22.5	13.4	19.5	6.5	11 30.3
120.6	121.8	179.1	138.6	117.3

13 49 0.12 13 56 48.36 14 4 34.82 14 11 39.72 * 14 17 59.46

K

K

K

K *

+137 +5.55" +2.58"	+24.0 +6.07 +3.0	+433	21+10.49+5.24	+25.3	7 10.8 hours	+32.9	+8.1
+115 +2.52 +1.26	+12.9 +3.132 +1.36	+223	6+5.35+2.47	+13.7	2+6.19" +3.10	+16.0	+4.0
-0.7 -10 -5	+0.3 +5.0 +2	+7	0+10+5	0.4	0+3.25 +1.42	1.0	1
+124 -38 -1.32	-12.0 -3.02 -1.30	-217	6-5.25+2.42	12.7	2+6 +3	16.7	-4.1
-224 -5.36 -2.48	-25.0 -6.157 -3.7	-447	23.7 10-5.35	26.8	2-3.11 -1.36	30.8	7.4

982869
988763
971632

982869
988569
971438

982869
987396
970265

56 982869
988414
11 971283

982869
987910
970779

9.63550 -25 35 43	9.61164 +24 8 14	9.36731 +13 28 20	9.59181 +22 59 46	9.51257 -18 59 48
9.63509 34 11	9.61204 9 38	9.36868 30 57	9.59224 23 1 14	9.51180 57 43
9.63469 32 40	9.61248 11 12	9.37010 33 39	9.59274 2 53	9.51102 55 35
9.63431 31 13	9.61291 12 44	9.37156 36 26	9.59325 4 32	9.51029 53 37
9.63401 30 05	9.61336 14 21	9.37306 39 19	9.59374 6 17	9.50965 51 52
9.63401 29 57				

9.35182 0.72657	9.32602 0.70623	9.06996 0.70643	9.30464 0.70776	9.22036 0.73491
1.37475 5.33	1.38021 5.08	1.63649 5.09	1.40312 5.10	1.51455 5.43
9.35141 0.41211	9.32642 0.43701	9.07133 0.41963	9.30507 0.44179	9.21959 0.42371
1.06070 2.58	1.11059 2.74	1.34830 2.63	1.13672 2.76	1.20412 2.65
9.35101 7.25470	9.32686 8.80398	9.07275 8.91785	9.30587 8.90763	9.21881 9.21881
9.35099 9.19611	9.32729 0.06	9.07421 0.06	9.30608 0.08	9.21808 0.16
9.35063 9.4519	1.07918 0.40647	1.33646 0.41067	1.10380 0.40988	1.22272 0.44080
1.08636 0.43699	2.55	2.57	2.57	2.76
9.35029 0.70054	9.32774 0.72568	9.07571 0.72602	9.30657 0.73470	9.21744 0.70599
1.35025 5.02	5.32	5.32	5.43	5.08

at 13 30.5 J 2	at 15 0 5 W	236 compared with 80
81.2 80.3	81.0 83.3	15-17 45-
82.8 79.3	82.1 83.5	15-15-57.19
76.7 86.1	87.9 81.8	50 56.15
75.8 86.9	88.5 82.2	53 1.12
316.5 332.6	81.7 88.6	10 6.09
79.12 83.15	91.8 80.4	5 11.10
79.12 79.12	513.0 23.8	10 16.21
4.03 4.03	83.97 83.97	15 21.14
-2.01 -2.01	11.53 11.53	15-16 6.14
	+26 +26	15-18 0.00
		-1 53.86

Hourly change = +.81

41 28 45

-15 13 4

11 H Camm v₂ / Brooks C

14 21 57.2	14 26 18.5-
6.1	39.0
21.5-	59.0
38.9	19.1
56.2	36.5-
173.9	172.1

14 22 22.78 14 26 58.42

-1.2

+8' 10" + 4' 5"	+31.6	+39.9 + 9 48 + 4 54"
+4 0 + 2 0	+16.7	+19.4 + 4 51 + 2 26
- 15 - 8	+13	- 0.6 - 9 - 4
-4 11 - 2 6	-16.1	-20.7 - 5 11 - 2 36
-7 42 - 3 51	-33.4	-38.1 - 9 31 - 4 46

9.82869
9.87460
9.70329

9.42138	-15 17 58
9.42024	15 30
9.41908	13 0
9.41790	10 28
9.41689	8 18

9.12467	0.72564
1.60097	5.32
9.12353	0.41133
1.28780	2.58
9.12237	8.90052
9.77815	.08
9.12119	0.43716
1.31597	2.74
9.12018	0.70110
1.58092	5.02

5.33	2.58	-16	2.774	5.02
5.08	2.74	+06	2.55	5.32
5.05	2.63	-08	2.57	5.32
5.10	2.76	+08	2.57	5.63
5.43	2.65	-16	2.76	5.08
5.32	2.58	+08	2.76	5.02
5.33	2.66	-07	2.65	5.20

E C correction at 15^h 59^m = 53.75-

Rate -0.44

5^h should be subtracted from this giving -1 48.86

+ 53.78

- 53.08 at 15^h 16^m

8 39 27 52

39 46 23

41 34 28

40 1 6

1864 June 16 M.C.S.

M.A.R.

-25 32 46	+24 11 35	+13 34 10	+23 3 16
6 Cannon E	6 Cannon W	19 Cannon W	10 Cannon W 11 Cannon
13 48 46.4	13 56 33.5	14 4 0.5	14 11 23.9 14 22 0.4
56.7	46.5	24.2	37.1 17.3
8.5	59.7	46.7	57.0 34.4
20.8	11.5	83	03.1 50.4
33.1	22.6	28.5	15.4 5.1
165.5	173.8	108.2	130.5 107.6
13 49 9.10	13 56 58.76	14 4 45.64	14 11 52.10 14 22 33.52
+22.7 +5.41" +2.50"	+25.3 +6.3" +2.2"	+45.1 +11.17" +5.38"	+26.2 +6.33" +3.11" +33.1
+12.4 +3.6 +1.33	+12.3 +3.5 +1.32	+21.4 +5.21 +2.40	+13.0 +3.15 +1.38 +16.2
+0.6 +9 +4	-0.9 -13 -6	-1.1 -17 -8	-0.9 -13 -6 -0.9
-11.7 -2.55 -1.27	-12.7 -3.11 -1.36	-22.7 -5.41 -2.50	-13.0 -3.15 -1.38 -16.9
-24.0 -6.0 -3.0	-23.8 -5.57 -2.58	-42.9 -10.43 -5.22	-25.3 -6.19 -3.10 -31.6

log K 000.0004
 $\frac{982869}{988763}$
 $\frac{971632}{971438}$

000.0011
 $\frac{982869}{987326}$
 $\frac{970265}{970265}$

000.0004
 $\frac{982869}{988414}$
 $\frac{971283}{971283}$

982
 $\frac{987}{970}$

9.63392	-25 27 46	9.61342	+24 8 37 43	9.37317	+13 39 32	9.59379	+23 6 26
9.63433	31 19	9.61303	9.671311	9.37185	37 0	9.59333	4 54
9.63473	32 50	9.61261	11 29 11 41	9.37044	34 18	9.59288	3 22
9.63512	34 19	9.61215	13 27 10 3	9.36897	31 30	9.59266	2 38
9.63546	35 36	9.61201	13 27 9 33	9.36741	28 32	9.59190	0 5

9.50
 9.51
 9.51
 9.51
 9.51

9.35024	0.70626	9.32780	0.73092	9.07582	0.73000	9.30662	0.72492
1.35602	5.08	1.40312	5.38	1.65418	5.37	1.41830	15.31
9.35065	0.44406	9.32741	0.41731	9.07450	0.40491	9.30616	0.42010
1.09342	2.78	1.08990	2.61	1.33041	2.54	1.11394	2.63
9.35105	9.12920	9.32699	9.28123	9.07309	9.10448	9.30571	2.25998
9.77815	.13	9.95424	.19	0.04139	.13	9.95424	.18
9.35144	0.41962	9.32653	0.43033	9.07162	0.42764	9.30549	0.41943
1.06818	2.63	1.10380	2.69	1.35602	2.68	1.11394	2.63
9.35178	0.73199	9.32639	0.70297	9.07006	0.70252	9.30473	0.70785
1.38021	5.39	1.37658	5.05	1.63246	5.04	1.40312	5.10

9.2
 1.4
 9.2
 1.2
 9.2
 0.8
 9.2
 1.1
 9.2
 1.3

J E		J E		J E		236 Compared with EC	
Level at 13 ^h 30		Level at 14 ^h 30		Level at 14 50		15 ^h 33	20. 15-31 24.49
K	S	K	S	K	S		25
574.6	74.2	72.3	86.3	72.9	87.0		29.50
71.8	77.6	77.1	82.3	75.6	84.2		30
							35
574.7	80.2	77.7	81.4	77.1	82.3		40
70.5	81.8	74.1	85.7	76.0	84.1		45
							50
77.0	76.1	21.2	15.7	21.6	17.6		54.44
77.4	83.4	75.3	83.92	75.4	84.40		15-31 39.48
20.4	473.3		4530		75.40		15-33 35.00
73.40	78.88		78.62		9.00		-41.5-5.52
	73.46		74.31		-14.50		+53.32
	5.48						-10.20
	2.74						

40 47 57

41 17 58

41 21 49

-18 55 54

-15 41 30

-15 13 24

 α Bootis E γ Bootis ν_2 Bootis

14 17 46.8

44.9

14 26 28.9

18 1.3

2.0

45.4

17.1

20.5

5.3

33.4

40.3

26.7

50.3

0.5

46.5

148.9

107.3

15.9

14 18 17.78

14 24 21.46

14 27 6.19

+ 31.0 + 7.45" + 3.52" + 37.5 + 9.22 + 4.41" + 38.2 + 9.33" + 4.46"

+ 16.5 + 4.7 + 2.3 + 19.5 + 4.52 + 2.26 + 20.8 + 5.12 + 2.36

+ 0.7 - 11 - 5 + 1.0 + 15 + 8 + 0.9 + 13 + 6

- 15.6 - 4.9 - 2.4 - 18.8 - 4.42 - 2.21 - 19.5 - 4.53 - 2.26

- 32.5 - 8.1 - 4.0 - 39.0 - 9.45 - 4.52 - 40.3 - 10.5 - 5.2

$$\begin{array}{r} 982869 \\ 987910 \\ \hline 970779 \end{array}$$

$$\begin{array}{r} 982869 \\ 987580 \\ \hline 970449 \end{array}$$

$$\begin{array}{r} 982869 \\ 987537 \\ \hline 970406 \end{array}$$

9.50966 -18 51 54

9.42991 -15 36 38

9.41692 -15 8 22

9.51037 53 50

9.43104 39 9

9.41796 10 36

9.51110 55 49

9.43216 41 38

9.41931 13 30

9.51189 57 57

9.43320 43 56

9.42047 16 0

9.51256 59 46

9.43420 46 11

9.42147 18 10

9.21745

1.49136

9.21816

1.21748

9.21889

9.84570

9.21968

1.19312

9.22035

1.51188

0.70881

5.11

0.43564

2.73

9.06379

+1.72

0.41280

2.59

0.73223

5.40

9.13440

1.57403

9.13553

1.29003

9.13665

0.00000

9.13769

1.27416

9.13869

1.59106

0.70843

5.11

0.42556

2.66

9.13665

14

0.41885

2.58

0.72975

5.37

9.12098

1.58206

9.12202

1.31806

9.12337

9.95424

9.12453

1.29003

9.12553

1.60530

0.70304

5.04

0.44008

2.75

2.07761

.12

0.41456

2.60

0.73083

5.38

Aug 8 5.26 267 -02 265 5.28
 Aug 13 5.26 264 -07 265 5.25
 14 5.23 266 -07 265 5.20
 16 5.25 265 +02 267 5.20

5.250 2.650 -035 -2662 5.205

5.35 263 -13 -265 5.25
 5.05 265 +15 261 5.38
 5.04 268 +18 252 5.37
 5.10 263 +18 268 5.31
 5.40 255 -12 273 5.11
 5.37 258 -11 266 5.11
 5.38 260 +12 275 5.04
 5.25 2.63 +02 2.67 5.20

E.C. correction at 15^h 20^m = 53.32

Rate = .050

at 15^h 32^m

8 39° 27' 52"

39 46 24

41 34 28

40 1 7

41 17 24

1864 June 18 SUN

M. 18

-25 32 29

+24 11 0

+13 33 15

+23 2 38

+15 44 56

u Cronus E 6 Cannon 77 19 Cannon 77 10 Cannon 77 20 Cannon 77

538

41.7

7.3

31.7

2.3

7.8

52.8

28.1

#

43.0

19.2

20.1

4.8

50.4

5.5.8

38.4

31.4

17.9

13.2

09.8

58.4

41.8

30.7

36.2

23.4

18.3

156.9

147.9

135.4

163.7

136.8

13 49 19.38

13 57 17.52

14 4 51.08

14 11 56.74

14 15 39.32

+23.6 +5.54 +35.9 +8.58

+8.28 +4.14 +43.6

+10.54 +5.27 +25.0

+6.15 +3.8 +37.0

+9.15

+11.6 +2.54 +24.8 +6.12

+5.42 +2.51 +23.0

+5.45 +2.52 +13.7

+3.25 +1.42 +20.1

+5.1

-0.7 -11 +12.8 +3.12

+2.42 +1.21 +0.7

+10 +5 +0.9

+13 +6 +0.9

+13

-12.0 -3 0 -3 -5

-34 -17 -22.1

-5.31 -2.46 -18.1

-3.17 -1.38 -19.1

-4.47

-22.4 -5 36 -13.1 -3.16

-3.47 -1.54 -4.57

-11.16 -5.38 -26.7

-6.41 -3.20 -39.0

-9.45

9.82869
9.88763
9.716329.82869
9.88562
9.714389.82869
9.87396
9.702659.82869
9.88414
9.712839.82869
9.87586
9.704559.63620 -25 38 23
9.63541 35 23
9.63459 32 18
9.63385 29 29
9.63316 26 539.61123 09.19 +24 6 46
9.61162 16.67 8 9 48
9.61204 11.52 9 39 48
9.61250 44 11 17 15
9.61295 12 54 149.36703 +13 27 48
9.36839 30 23
9.36985 33 10
9.37134 36 1
9.37283 38 539.59173 +22 59 30
9.59216 23 0 56
9.59263 23 2 32
9.59314 4 16
9.59365 5 589.43156 +15 40 18
9.43252 42 26
9.43360 44 50
9.43472 47 20
9.43582 49 489.35252 0.72543
9.35173 0.41619
9.35091 0.19601
9.35017 0.16
9.34948 0.42935
9.34865 0.269
9.34782 0.69973
9.34699 5.009.32564 42.9 0.85181
9.32500 7.17 1.63949
9.32640 50.5 0.68393
9.32673 4.83 9.07104
9.32642 52.0 1.36173
9.32642 52.0 0.35984
9.32642 52.0 2.71
9.32642 52.0 8.91760
9.32642 52.0 0.8
9.32642 52.0 0.41838
9.32642 52.0 2.62
9.32642 52.0 0.73966
9.32642 52.0 5.379.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.70917
9.06968 0.709179.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.70250
9.30456 0.702509.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820
9.13611 1.56820

Level at 13.45

Level at 13.52

Level 14.5

Level 15.10

X 80.3 79.8
83.4 78.4
16.37 138.2
81.85
79.10
2.75
+1.37X 80.2 80.4
X 83.2 78.2
163.4 158.6
81.7 9.32510
79.3 1.37840
2.4 9.32590
+1.20 1.10721
9.32674
9.90309+3 80.3 80.4
X 82.2 78.8
162.5 159.2
81.25
79.60
1.65
+1.82X 85.8 83.6
X 90.5 77.7
X 89.4 78.7
X 84.0 85.0
349.7 325.0
87.92 81.25
81.25
6.17
+3.089.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350
9.32520 7.0350

The lamp was removed at 14.28m

40 47 58

41 17 59

41 21 50

-18.55 21

-15 40 53

-15 12 47

11th Comm W

11th Comm W

11th Comm W

11th Comm W

56.9

8.4

54.0

38.1

13.3

23.2

14.2

57.8

29.7

40.8

34.1

18.3

46.0

56.2

52.4

38.3

59.8

12.3

10.7

56.3

205.7

140.9

165.4

209.0

14 18 29.14

14 20 40.18

14 24 33.08

14 27 17.80

+9'15"4'38" +32.2 +8'3" +4'2" +31.8 +7'57" +3'58" +39.1 +9'47" +4'54" +39.7 +9'45" +4'52"
 +5.1 +2.30 +15.8 +3.87 +1.58 +17.0 +4.10 +2.5 +16.9 +4.43 +2.22 +20.0 +5.0 +2.30
 +13 +6 -0.6 -9 -4 -0.6 -9 -4 -1.0 -15 -8 -0.5 -7 -4
 -4.47 -2.24 -16.9 -4.13 -2.6 -16.0 -4.0 -2.0 -19.3 -4.49 -2.24 -20.7 -5.11 -2.36
 -9.45 -4.52 -30.7 -7.41 -3.50 -32.1 -8.1 -4.0 -37.6 -9.24 -4.42 -38.5 -9.37 -4.48

982869
 9.87910
 9.70779

982869
 9.87579
 9.70448

982869
 9.87537
 9.70406

0 18 9.51242 -18 59 23
 2 26 9.51166 57 19
 4 50 9.51091 55 17
 7 20 9.51016 53 15
 9 48 9.50952 51 31

9.43402 -15 45 47 9.42123 -15 17 39
 9.43289 43 15 9.42014 15 17
 9.43177 40 45 9.41895 12 43
 9.43074 38 29 9.41777 10 11
 9.42970 36 11 9.41674 7 59

9.22021
 1.50786 0.72807
 9.21945 5.35
 1.19866 0.41811
 9.21870 2.62
 9.21795 8.99685
 1.22789 1.10
 9.21731 0.44584
 1.48714 2.79
 0.70485
 5.06

9.13850
 1.59218 0.73068
 9.13737 5.38
 1.27646 0.41283
 9.13625 2.59
 0.00000 9.13625
 9.13522 2.14
 1.28556 0.42078
 9.13418 2.63
 1.57519 0.70937
 5.12

9.12529
 1.59879 0.72408
 9.12420 5.30
 1.30103 0.42523
 9.12301 2.66
 9.12183 8.82198
 1.31597 0.7
 9.12080 0.43780
 1.58546 2.74
 0.70626
 5.08

110236 Compared with EC

15-14 0 15-12 58.05
 5- 30.8
 10 8.08
 15 13.09
 20 18.07
 25 23.07
 30 28.06

531 261 -16 269 5.00
 505 271 +17 261 5.35
 512 271 +8 262 5.37
 504 276 +9 265 5.41
 506 276 +12 263 5.39
 535 262 -10 279 5.06
 538 259 -14 263 5.12
 530 266 -7 274 5.08
 161 312
 520 268
 269 5.22

13-12 13.04
 15-14 15.00
 -2 1.43
 +5071
 11122

41 17 59

41 21 50

- 15 42 6

- 15 14 1

11 H Canum. W v, Boots E v₂ Boots

14.7	36.6	39.2
31.9	13.2	57.2
49.0	32.3	16.5
4.5	51.9	37.5
29.1	11.8	38.1
129.2	165.2	208.5

14 22 49.84 14 24 33.04 14 27 17.70

+8.47 +4.24 +3.51	+9.15 +4.38 +37.0	+9.37 +4.48 +38.5
+4.28 +2.14 +17.9	+4.57 +2.28 +19.8	+5.7 +2.34 +20.5
+1.2 +6	+11 +6 +0.7	+18 +9 +1.2
-3.41 -1.50 +0.8	-4.43 -2.22 -18.9	-4.57 -2.28 -19.8
-9.49 -4.54 -14.7	-9.42 -4.51 -38.8	-10.6 -5.3 -40.4
-39.3		

9.82869
9.87579
9.70448

9.82869
9.87537
9.70406

9.43019	-15 37 15	9.41681	-15 8 8
9.43131	39 44	9.41840	11 33
9.43242	42 12	9.41962	14 10
9.43348	44 34	9.42074	16 35
9.43445	46 44	9.42177	18 49

9.13467	9.12087
1.56820	1.58546
0.70287	0.70633
5.04	5.09
9.13579	9.12246
1.29666	1.31175
0.43245	0.43421
2.71	2.72
9.13690	9.12368
9.84510	0.07918
8.98200	2.0286
.10	.16
9.13796	9.12480
1.27646	1.29666
0.41442	0.42146
2.60	2.64
9.13893	9.12583
0.72776	1.60688
5.34	0.73221
	5.40

EC correction 18 23 = -149.45

Rate = -.06

-5.11	-2.71	+9	+2.58	+5.37
-5.38	-2.68	+6	2.76	+5.21
-5.35	-2.71	+16	2.74	+5.06
-5.17	-2.74	+10	2.64	+5.38
-5.04	-2.71	+10	2.60	5.34
-5.05	-2.72	+16	2.64	5.40
5.19	2.71		2.66	5.29

40° 5' 12"

39 24 31

41 46 22

- 42 9 36

39 11 2

1864 June 21 SUN

-22 42 54

-25 46 45

+11 46 42

+7 6 27

-26 42 23

gr 22 93

gr 23 17

20 H Can

11413 Boots of Hercules

57.3

164

105-

14 37 240

289

57

282

339

38 2.5

410

188

409

348

38 470

525

31.7

521

258

39 29.0

40

434

23

57.5

40. 11.5

13.7

150.3

140.1

181.5

114.0

139.1

14 23 18.06

14 25 40.02

14 29 0.30

14 38 46.8

14 52 57.82

+6 42 +3 21 +26.8

+5 54 +2 57 +23.6

+12 27 +6 14 +49.8

+20 52 +10 26 82.8

+5 43 +2 52 229

+3 15 +1 38 +13.0

+2 57 +1 28 +11.8

+6 36 +3 18 +26.4

+11 5 +5 32 44.3

+2 57 +1 28 11.8

- 10 - 5 - 0.7

- 13 - 13 - 0.9

+ 7 + 4 + 0.5

- 3 - 2 - 0.2

- 11 - 6 - 0.7

-3 24 -1 42 -13.6

-3 1 -1 30 -12.1

-6 23 -3 12 -25.5

-10 33 -5 16 -42.2

-3 3 -1 32 -12.2

-6 19 -3 10 -25.3

-5 37 -2 48 -22.8

-12 48 -6 24 -51.2

-21 11 -10 36 -84.7

-5 28 -2 44 21.9

9.82869

9.82869

9.82869

9.82869

9.82869

9.88370

9.88370

9.88370

9.88370

9.88370

9.71239

9.71667

9.70131

9.69867

9.71806

9.58776

9.58724

9.58673

9.58624

9.58580

9.58537

9.58485

9.58433

9.58381

9.58329

9.58277

9.58225

9.58173

9.58121

9.58069

9.58017

9.57965

9.57913

9.57861

9.57809

9.57757

9.57705

9.57653

9.57601

9.57549

9.57497

9.57445

9.57393

9.57341

9.57289

9.57237

9.57185

9.57133

9.57081

9.57029

9.56977

9.56925

9.56873

9.56821

9.56769

9.56717

9.56665

9.56613

9.56561

9.56509

9.56457

9.56405

9.56353

9.56301

9.56249

9.56197

9.56145

9.56093

9.56041

9.55989

9.55937

9.55885

9.55833

9.55781

9.55729

9.55677

9.55625

9.55573

9.55521

9.55469

9.55417

9.55365

9.55313

9.55261

9.55209

9.55157

9.55105

9.55053

9.55001

9.54949

9.54897

9.54845

9.54793

9.54741

9.54689

9.54637

9.54585

9.54533

9.54481

9.54429

9.54377

9.54325

9.54273

9.54221

9.54169

9.54117

9.54065

9.54013

9.53961

9.53909

9.53857

9.53805

9.53753

9.53701

9.53649

9.53597

9.53545

9.53493

9.53441

9.53389

9.53337

9.53285

9.53233

9.53181

9.53129

9.53077

9.53025

9.52973

9.52921

9.52869

9.52817

9.52765

9.52713

9.52661

9.52609

9.52557

9.52505

9.52453

9.52401

9.52349

9.52297

9.52245

9.52193

9.52141

9.52089

9.52037

9.51985

9.51933

9.51881

9.51829

9.51777

9.51725

9.51673

9.51621

9.51569

9.51517

9.51465

9.51413

9.51361

9.51309

9.51257

9.51205

9.51153

9.51101

9.51049

9.50997

9.50945

9.50893

9.50841

9.50789

9.50737

9.50685

9.50633

9.50581

9.50529

9.50477

9.50425

9.50373

9.50321

9.50269

9.50217

9.50165

9.50113

9.50061

9.50009

9.49957

9.49905

9.49853

9.49801

9.49749

9.49697

9.49645

9.49593

9.49541

9.49489

9.49437

9.49385

9.49333

9.49281

9.49229

9.49177

9.49125

9.49073

9.49021

9.48969

9.48917

9.48865

9.48813

9.48761

9.48709

9.48657

9.48605

9.48553

9.48501

9.48449

9.48397

9.48345

9.48293

9.48241

9.48189

9.48137

9.48085

9.48033

9.47981

9.47929

9.47877

9.47825

9.47773

9.47721

9.47669

9.47617

9.47565

9.47513

9.47461

9.47409

9.47357

9.47305

9.47253

9.47201

9.47149

9.47097

9.47045

9.46993

9.46941

9.46889

9.46837

9.46785

9.46733

9.46681

9.46629

9.46577

535	2.59	-14	2.70	5.03
535	2.67	-20	2.74	5.09
507	2.70	+5	2.63	5.30
499	2.70	-12	2.64	5.37
535	2.77	-16	2.86	5.13
<u>2615</u>				
523	2.69		2.71	5.18

Correction of EC at 1620 = +46.71
Rate -.054

41° 17' 24"

40° 5' 13"

39° 24' 32"

41° 46' 23"

-42° 9' 36"

1864 June 24 M 5

WAP

-22 43 39

-25 47 21

+11 46 17

+7 8 38

20 Camm

Gr 22 93

Gr 23 17

20 H Camm

114 B Brod

26.3 38.3

24.1

23.8

14 37 320

46.5 10.1

34.5

48.9

38 23.0

6.2 23.2

46.1

16.9

39 7.0

25.3 37.0

57.9

42.0

39 49.0

42.1 57.0

7.9

5.9

40 26.0

146.4 179.6

172.5

137.5

142

14 16 5.28

14 23 23.92

14 25 46.5

14 29 15.50 14 39 4.4

+9 45 +14 52 +39.0

+6 24 +3 12 +25.6

+5 36 +2 48 +22.4

+13 25 +6 42 +53.7

+21 51 +10 56 +87.4

+4 42 +2 21 +18.8

+3 27 +1 44 +13.8

+3 0 +1 30 +12.0

+7 9 +3 34 +28.6

+10 21 +5 10 +87.4

-13 -6 +18.8

+11 +6 +0.7

4 +6 +3 +0.4

3 +9 +4 +24.5

16 -39 -20 +41.4

Logk -0.99

-3 17 -138 -13.1

-2 51 -126 -11.4

-6 7 -33 -48.4

-11 9 -5 34 -26.4

-5 0 -2 30 -20.0

-6 47 -3 24 -27.1

-5 51 -2 56 -23.4

-12 6 -6 3 -48.4

-20 24 -10 12 -81.6

-19 12 -9 36 36.8

9.82869

9.82869

9.82869

9.82869

9.87586

9.88370

9.88797

9.87262

9.86998

9.70455

9.71239

9.71666

9.70831

9.69867

9.43836 +15 55 32

9.43521 48 26

9.43414 46 2

9.43304 43 35

9.43191 41 4

9.58595 -22 40 15

9.58649 42 1

9.58701 43 45

9.58750 45 23

9.58794 46 51

9.63778 -25 44 25

9.63818 45 55

9.63866 47 24

9.63894 48 51

9.63928 50 9

9.31320 +11 52 20

9.31149 49 20

9.30960 46 13

9.30748 42 43

9.30556 39 35

9.10484 +7 18 50

9.10826 14 12

9.09502 8 58

9.08944 3 28

9.08382 6 57 42

9.14291

1.59106

9.13976

1.27416

9.13869

9.95424

9.13759

1.30103

9.13646

1.56585

9.29834

1.40824

9.29888

1.13988

9.29940

9.84570

9.29989

1.11727

9.30033

1.43297

9.35444

1.35025

9.35484

1.07918

9.35522

2.60206

9.35560

1.05690

9.35594

1.36922

9.01451

1.72997

9.01280

1.45637

9.01091

9.77815

9.00879

1.38917

9.00687

1.68484

8.80351

1.94151

8.79893

1.61700

8.79369

0.41497

8.78811

1.64933

8.78219

1.91169

60.0 71.2

62.0 70.3

63.5 69.2

60.3 75.4

247.8 286.1

61.95 715.2

61.95

95.7

4.78

725 720

66.0 84.2

138.5 152.2

69.25 76.10

69.25

48.5

-34.2

67.7 81.4

73.5 76.8

141.2 158.2

70.6 79.1

70.6

8.5

-4.25

15 6 5.0

55

0

5

10

15

20

15 4 32.57

37.36

42.5

47.59

52.54

57.53

25.3

15 4 47.55

15 6 5.0

-1 17.45

+44.26

39° 11' 3"

-26 42 54

γ Herculis

36.9

47.0

58.0

10.4

21.0

173.0

14 52 58.60

+5.25 +2.42 +21.7

+2.54 +1.27 +11.6

+ 9 + 4 + 6

-2.53 -1.26 +11.5

-5.36 +2.48 +22.4

9.82869

9.88939

9.71806

9.65208 -26 40 6

9.65242 41 28

9.65280 42 58

9.65314 44 21

9.65346 45 36

9.37014

1.33646 0.70660

9.37048 5.09

1.06446 0.43494

9.37086 2.72

2.77815 2.14901

9.37120 1.14

1.06070 0.43190

9.37152 2.70

1.35025 0.72177

5.27

5	y	2	1
5.42	2.59	+12	+2.75 +5.04
5.09	2.75	+14	+2.61 +5.41
5.07	2.72	+9	2.58 5.31
5.55	2.95	+6	2.50 4.92
5.56	2.61	+16	2.74 4.94
5.09	2.72	+14	2.70 5.27
5.30	2.72		2.65 5.89
			5.15

cc dt = +4427 at 14^h 58^m

Rate - .057

5.04	269	+8	259	535
5.01	258	-5	263	532
5.36	251	-7	2.70	5.06
<u>41</u>	17 ⁸			
5.74	259		192	73
			264	5.24

236	15-14	10.63
15-6 40		15.67
50		20.62
55-		25.60
0		30.59
5-		35.66
10		40.65-

15-4	25.64
15-6	53.50
+2	29.36
+	39.53
-	149.83

EC dt at 1454 + 3953
Rate -.05-

41° 17' 25"

41° 46' 23"

-42° 9' 37"

39° 11' 4"

1864 June 28 SLLS

MAR

+25 45 59

+11 48 11

+7 80

-26 42 54

20 Cannon

20 H Cannon

114 B Bortu & Hercules

480

42.5

37 363

579

70

11.2

38 415

80

26.4

38.2

39 26.8

18.5

44.9

2.4

40 6.5

30.8

4.1

25.0

43.5

41.9

1304

119.3

173.0

157.1

14 16 26.08

14 29 35.86

14 39 22.60

14 53 19.42

+9 31 +4 46 38.1

+4 47 +2 24 119.1

- 5 - 2 - 3

-4 42 -2 21 188

-9 30 -4 45 38.0

9.82869

9.87586

9.70455

9.63942

9.63880

9.63819

9.63755

9.63693

9.34397

9.34335

9.34274

9.34210

9.34148

9.34086

9.34024

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

9.34000

+13 21 +6 40 153.4

+6 11 +3 6 124.7

- 35 - 18 - 2.3

-6 37 -3 18 -2.3

-12 16 -6 10 -2.3

9.82869

9.87262

9.70131

9.31452

9.31279

9.31098

9.30892

9.30674

9.01580

9.01410

9.01229

9.01023

9.00805

9.00600

9.00400

9.00200

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

9.00000

+21 31 +10 46 86.1

+10 17 +5 8 41.1

- 36 - 18 - 2.4

-10 58 -5 29 -43.9

-20 13 -10 6 -80.9

9.82869

9.86998

9.69867

9.10412

9.09955

9.09435

9.08883

9.08304

8.80279

8.79822

8.79302

8.78750

8.78171

8.77595

8.77019

8.76443

8.75867

8.75291

8.74715

8.74139

8.73563

8.72987

8.72411

8.71835

8.71259

8.70683

8.70107

8.69531

8.68955

+5 23 +2 42 11.4

+2 51 +1 26 9

- 2 51 -1 26 11.4

-5 37 -2 48 22.5

9.82869

9.88937

9.71806

9.65208

9.65242

9.65280

9.65314

9.65346

9.37014

9.37048

9.37086

9.37120

9.37152

9.37184

9.37216

9.37248

9.37280

9.37312

9.37344

9.37376

9.37408

9.37440

9.37472

9.37504

9.37536

9.37568

9.37600

9.37632

9.37664

5.27	263	+4	+258	+520
5.54	255	+24	+271	+500
5.47	258	+15	+269	+489
5.04	267	+21	+268	+529
5.33	261		2.66	5.10

EC $\Delta t + 37.39$ at 15-21
Rate - .08

1864phae:proj 142R

1864phae.proj.142R

41° 20' 41" 42 7 5 40 6 46 42 7 11 40° 6' 12"

1864 July 5 M X

15 21 0	+7 43 58	+22 35 11	-7 42 9	-22 37 46			
297 B Hec	5 B Lysae	271 B Hec	5423 Cygni	226 B Cygni			
11.7	18 40 40.7	48.4	57 45.5-	14 5-			
30.8	41 18.4	0.0	58 25.2	28.5-			
49.0	41 57.2	13.7	59 5.1	42 0			
9.2	38.1	27.5-	59 44.7	53.3			
29.2	43 17.4	40.9	60 21.1	7.3			
129.9	171.8	130.5-	141.6	147.6			
18 22 29.9	291.8	70.5-	21.6	207.6			
18 29 49.8	18 41 58.36	18 47 14.10	18 59 4.32	18 5 41.52			
+38.3 9 35 +4 48 +2 24 +15 -4 48 -9 48 9.82869 9.87549 9.70418	+19 25 +10 0 +18 -9 55 -19 45 9.82869 9.87027 9.69896	+9 42 +5 0 +9 -4 58 -9 52 9.82869 9.87027 9.69896	+77.7 +40.0 +1.2 -39.7 -79.0 9.82869 9.88354 9.71223	+6 25 +3 31 +6 -3 21 -6 42 9.82869 9.87025 9.69894	+3 12 +1 46 +3 -1 40 -3 21 9.82869 9.87025 9.69894	+257 +19 42 +9 51 +78.8 +6 45 +3 22 +270 9.82869 9.88360 9.71229	+14 45 +7 3 -21 -7 33 -13 54 9.82869 9.88360 9.71229

41 53 54

-10 28 48

116 B Cygini

10 3.4

36.2

11 5.8

11 34.6

12 0.0

82.0

22.0

19 11 4.4

270 +14'45" +7'22" +59.0
 130 +7 3 +3 32 +28.2
 -5 -21 -10 -1.4
 138 -7 33 -3 46 -30.2
 258 -13 54 -6 57 -55.6

982869

987177

970046

18 9.26482 -10 36 10
 24 9.26222 32 20
 42 9.25970 28 38
 2 9.25723 25 2
 32 9.25504 21 51

8.96528
 1.77085 0.73613
 8.96268 5.45
 1.45825 0.41293
 8.96016 2.57
 0.14613 9.10629
 8.95769 .13
 1.45807 0.43770
 8.95550 2.74
 1.74507 0.70057
 5.02

5.10	2.57	+13	2.58	5.28
5.12	2.66	+8	2.70	5.43
5.08	2.79	+8	2.66	5.32
5.39	2.65	-5	2.68	5.04
5.37	2.58	-10	2.73	5.11
5.45	2.59	-13	2.74	5.02
<u>5.25</u>	<u>2.64</u>		<u>2.61</u>	<u>5.20</u>

5 42° 16' 40' 6' 47" 40' 6' 13" 41 33 55
1864 July 9 I S

+7 453	+22 35 53	-22 38 7	-10 29 44
513 <i>Spae</i>	2713 <i>Herentis</i>	22613 <i>Cygnin</i>	11613 <i>Cygnin</i>
490	46 54.8	21.6	10 124
32.2	47 8.8	33.2	38.0
11.6	21.80(3)	46.4	11 5.7
49.7	33.6	59.5	36.1
24.2	46.9	13.7	12 5.3
166.7	167.9	174.4	97.4
46.7	107.9	234.4	37.4
18 42 9.34	18 47 ^{215.8} ~~234.8~~	19 3 46.58	19 11 7.48

+20' 5"	+10' 2"	+80' 3"	+7' 12"	+3' 36"	+28' 8"	+6' 19"	+3' 10"	+253' 13' 47"	+6' 54"	+55' 1"	
+9' 17"	+4' 34"	+37' 1"	+3' 42"	+1' 51"	+14' 8"	+3' 25"	+1' 42"	+13' 7"	+7' 23"	+3' 42"	+29' 5"
-35'	-18'	-2' 3"	+17'	+8'	+1' 8"	+7'	+4'	+3'	+27'	+14'	+1' 8"
-10' 6"	-5' 3"	-40' 4"	-3' 0"	-1' 30"	-12' 0"	-3' 9"	-1' 34"	-12' 6"	-7' 9"	-3' 34"	-28' 6"
-18' 43"	-9' 22"	-74' 9"	-5' 49"	-2' 54"	-23' 3"	-6' 42"	-3' 21"	-26' 8"	-14' 25"	-7' 12"	-57' 5"

982869	982869	982869	982869
987026	988353	988359	987402
969895	971218	971228	970271

9.13851	+7 54 25	9.58551	+22 38 47	9.58429	-22 34 46	9.25551	-10 22 32
9.13456	50 6	9.58508	37 23	9.58483	36 33	9.25801	26 10
9.13018	45 21	9.58459	35 45	9.58533	38 11	9.26061	29 88
9.12564	40 29	9.58407	34 2	9.58582	39 49	9.26297	33 26
9.12048	35 1	9.58354	32 17	9.58626	41 17	9.26513	36 38

8. 83746	0.74218	7. 29769	0.75708	9. 29657	0.69969	8. 95822	0.69937
1. 90472	5.52	1. 45939	5.71	1. 40312	5.01	1. 74115	5.00
8. 83351	0.40288	9. 29726	0.46752	9. 29711	0.43383	8. 96072	0.43054
1. 56787	2.53	1. 17026	2.93	1. 13672	2.71	1. 46982	2.70
8. 82913	0.25527	9. 29677	9.55204	9. 29764	8.99658	8. 96332	2.21859
0. 36173	.15	0. 25527		9. 69897	.10	0. 25527	.16
8. 82459	0.43097	9. 29625	0.37543	9. 29810	0.39847	8. 96568	0.42203
1. 60638	2.70	1. 07918	2.37	1. 10037	2.50	1. 45637	2.64
8. 81943	0.69391	9. 29572	0.66368	9. 29854	0.72667	8. 96784	0.72902
1. 87448	4.91	1. 36726	4.90	1. 42813	5.37	1. 76118	5.36
757	829	818	763	847	707		

75.6	82.9	84.3	76.3	85.7	78.7
<u>82.2</u>	<u>76.5</u>	<u>78.1</u>	<u>83.0</u>	<u>80.0</u>	<u>84.9</u>
157.8	159.4	162.4	159.3	158.5	86.7
78.9	79.7	81.2	79.65	83.8	<u>81.7</u>
	78.90	<u>79.65</u>		328.0	332.0
	<u>0.80</u>	<u>15.5</u>		82.05	83.0
- .40		+ .77		<u>820.5</u>	<u>.95</u>
					- .45

-552	-253	+15	+2.70	+4.94
<u>5.71</u>	<u>2.93</u>		<u>2.37</u>	<u>4.60</u>
5.01	2.71	+10	+2.50	+5.33
<u>5.00</u>	<u>2.70</u>	+16	<u>2.64</u>	<u>+5.36</u>
5.15	2.65		2.61	5.24

41° 20' 43"

42 7 7

40 6 48

42 7 13

40 6 14

1864 July 12 L

+15 20 44

+7 43 39

+22 34 59

-7 41 40

-22 37 30

297 B Hore

5 B Lyne

271 B Hore

F423 Cygni

226 B Lyne

20.5

50.3

46 57.7

57.4

25.3

38.4

27.3

9.4

37.5

39.5

57.7

6.2

22.7

17.3

53.3

18.6

46.7

36.5

53.8

6.6

39.3

25.4

50.2

33.6

19.0

174.5

153.5

176.5

201.6

143.7

294.5

35.5

116.5

81.6

263.7

18 29 58.9

18 42 7.10

18 47 23.30

18 59 16.32 19 3 52.74

+9 36 +4 48 +38.4

+19 42 +9 36 +76.8

+6 24 +3 12 +25.6

+19 43 +9 52 +78.9 +6 51

+3 26 +27.4 +14 30

+5 7 +2 34 +20.5

+9 57 +4 58 +39.8

+3 28 +1 44 +13.9

+9 42 +4 51 +38.8 +3 18

+1 39 +13.2 +7 21

+18 +9 +12

+13 +6 +9

+9 +4 +6

-15 -8 -10 -9

-4 -6 -23

-4 55 -2 28 19.7

-9 54 -4 57 39.6

-3 18 -1 39 -13.2

-9 53 -4 56 -39.5 -3 28

-1 44 -13.9 -7 30

-10 6 -5 3 -40.4

-19 28 -9 44 77.9

-6 43 -3 22 -26.9

-19 19 -9 40 -77.3 -6 35

-3 18 -26.3 -14 0

9.82869

9.82869

9.82869

9.82869

9.82869

9.87549

9.87026

9.88353

9.87025

9.88359

9.70418

9.69895

9.71222

9.69894

9.71228

+15 15 56

+7 34 3

+22 31 47

-7 51 32

22 40 56

9.42044

18 10

9.11957

38 41

9.58338

33 15

9.13588

46 31

9.58616

39 9

9.26

9.42147

20 35

9.12395

43 33

9.58383

34 55

9.13126

41 32

9.58562

37 26

9.26

9.42259

23 12

9.12850

48 36

9.58434

36 38

9.12662

36 44

9.58510

35 46

9.25

9.42379

25 47

9.13318

53 23

9.58486

38 21

9.12211

32 0

9.58459

34 12

9.25

9.42497

25 47

9.13756

53 23

9.58538

38 21

9.11761

32 0

9.58412

34 12

9.25

9.12462

0.70895

8.81852

0.70388

9.29560

0.70384

8.83482

0.73190

9.29844

0.73619

0.58433

5.12

1.88536

5.06

1.40824

5.06

1.89708

5.40

1.43775

5.45

9.12565

0.43740

8.82290

0.42278

9.29605

0.43906

8.83020

0.41903

9.29790

0.41847

1.31175

2.74

1.59988

2.65

1.14301

2.75

1.58883

2.62

1.12057

2.62

9.12677

9.20595

8.82745

8.78169

9.29656

9.07471

8.82556

8.82556

9.29738

9.07553

0.07918

.16

8.83213

.06

9.77815

.12

0.00000

.07

9.77815

.10

9.12797

0.42244

1.59770

0.42583

9.29708

0.41765

8.82105

0.41765

9.29687

0.43958

1.29447

2.64

8.83651

2.69

1.12057

2.62

1.59660

2.61

1.14301

2.75

9.12915

0.73553

1.89154

0.72805

9.29760

0.72735

8.81655

0.70473

9.29640

0.71636

1.60638

5.44

8.83651

5.35

1.42975

5.34

1.88818

5.07

1.41956

5.20

75.3

73.9

89.3

72.6

91.9

75.3

88.0

64.1

83.7

82.4

87.9

79.1

163.3

178.0

86.2

80.0

179.8

154.4

81.65

69.0

91.8

75.6

89.9

77.20

69.60

126.5

357.0

310.6

127.0

+6.35

126.5

63.2

87.25

77.65

10.10

30.5

41 54 56

-10 28 33

116 13 Cygni

17.2

46.2

17.1

45.6

11.7

1378

778

19 11 1536

27.4 +14 36 +7 18 584

13.2 +7 21 +3 49 294

6 - 23 - 12 1.5

13.9 -7 30 -3 45 300

26.3 -14 0 -7 5 56.1

982862

987165

990034

56 9.26460 -10 35 51

9 9.26214 82 13

26 9.25951 28 21

46 9.25707 24 48

12 9.25483 21 33

19 8.96494

5 1.76641 073135

7 8.96248 5.39

1.46835 0.43082

53 8.95985 2.70

0.17609 2.13594

8 8.95741 .14

5 1.47712 0.43453

6 8.95517 2.72

1.74896 0.70413

5.06

5.12	2.74	+16	2.64	5.44
5.06	2.65	+6	2.69	5.35
5.06	2.75	+12	2.62	5.34
5.40	2.62	-7	2.61	5.07
5.45	2.62	-10	2.75	5.20
5.39	2.70	-14	2.72	5.06
5.25	2.68		2.67	5.24

42 7 13

40 6 14

41 53 56

1864 July 13 M.S.

-7 42 46

-22 37 55

-10 29 25

423 Cygni

22613 Cygni

11613 Cygnii

58.7

26.9

17.4

32.3

38.5

44.1

11.4

57.5

11.9

57.1

3.5

41.6

33.1

19.9

12.4

1866

142.3

127.4

66.6

262.3

67.4

18 59 1332

19 3 52.46

19 11 1348

+18 39 +9 40 +7 46	+6 24	+3 12	+25 6 +14 1	+7 0	+56.1
+10 15 +5 8 +4 10	+3 30	+1 45	+14 0 +7 21	+3 40	+29.4
+28 +14 +1.9	+15	+8	+10 +24	+12	+16
-9 27 -4 44 -3 78	-3 15	-1 38	+10 -7 0	-3 30	-28.1
-19 57 -9 58 -7 98	-6 51	-3 26	-13 0 -14 43	-7 22	-58.9

9.82869
9.87025
9.69894

9.82869
9.88359
9.71228

9.82869
9.87176
9.70045

9.11838	-7 32 48	9.58420	-22 34 29	9.25378	-10 22 3
9.12334	38 2	9.58475	36 17	9.25784	25 55
9.12799	43 0	9.58529	38 3	9.25937	29 37
9.13254	47 54	9.58578	39 40	9.26273	33 5
9.13670	52 26	9.58621	41 7	9.26498	36 25

8.81732	9.29648	8.95563
1.87274	1.40824	1.74896
8.82228	9.29703	8.95829
1.61278	1.14613	1.46835
8.82693	9.29757	8.95982
0.27875	0.00000	0.20412
8.83148	9.29806	8.96318
1.57749	1.11394	1.44871
8.83564	9.29849	8.96543
1.90270	1.43775	1.77012
	0.70472	0.70459
	5.07	5.06
	0.44316	0.42664
	2.77	2.67
	9.29757	9.16394
	.20	.15
	0.41200	0.41189
	2.58	2.58
	0.73624	0.73555
	5.45	5.44

788	788	80.0	779
83.7	74.6	79.9	78.9
162.5	153.4	159.9	156.8
80.25	76.7	79.95	78.40
76.70		78.40	
45.3		15.5	
22.7		7.5	

4 90	2.72	#13	2.56	5.46
5.07	2.77	#20	2.58	5.45
5.06	2.67	#15	2.58	5.44
5.01	2.72		2.57	5.45

42 7 7"	40 6 48	42 7 14	40 6 15	41 54 57
July 14 M X				
+7 43 41	+22 35 1	-7 41 30	-22 37 30	-10 28 34
583 Lyrae	271 B Kue	F 423 Cygni	226 B Cygni	116 B Cygni
52.8	0.5	0.0	19 3 28.8	20.2
29.5	12.5	41.3	42.4	58.3
9.3	25.8	22.3	56.7	18.7
49.4	39.7	59.6	9.1	48.2
29.3	52.9	36.1	21.3	14.5
170.3	131.4	159.3	158.3	157.9
50.3		99.3	278.3	91.9
18 42 10.16	18 47 26.58	18 59 14.86	19 3 53.66	19 11 18.38

+19'13"	+9 36	+77.3	+6 27	+3 14	25.8	+19'58"	+9'59"	+79.9	+6 43	+3 22	+26.9	+14 33"	+7 16	+58.2
+10 9	+5 4	+40.6	+3 27	+1 44	13.8	+9 39	+4 50	+38.6	+3 19	+1 39	+13.3	+6 47	+3 24	+27.1
+12	+6	+8	+7	+4	0.5	-36	-18	-24	-15	-8	-10	-5	-2	-3
-9 35	-4 48	-38.3	-3 21	-1 40	13.4	-9 55	-4 58	-39.7	-3 21	-1 40	-13.4	-7 27	-3 43	-29.8
-19 48	-9 54	-79.2	-6 39	-3 20	26.6	-19 3	-9 32	-76.2	-6 24	-3 12	-25.6	-14 0	-7 0	-56.1

9.82869
9.87026
9.69895

9.82869
9.88353
9.71222

9.82869
9.87025
9.69894

9.82869
9.88359
9.71228

9.82869
9.87165
9.70034

9.11960	-7 34 5	9.58338	+22 31 47	9.13583	-7 51 29	9.58614	-22 40 52	9.26459	-10 35 50
9.12389	38 37	9.58384	33 17	9.13109	46 20	9.58622	39 9	9.26197	31 58
9.12854	43 35	9.58435	34 57	9.12631	41 12	9.58608	37 22	9.25963	28 32
9.13308	48 29	9.58487	36 41	9.12192	36 32	9.58461	35 50	9.25722	25 1
9.13775	53 35	9.58538	38 21	9.11758	31 58	9.58415	34 18	9.25484	21 34

SW 18 5-	SE 18 15-	SW 18 20	SE 18 28	8.96493	0.72985
83 4	78.8	82.8	81.9	1.76492	5.37
71.2	71.7	93.0	71.6	8.96231	0.39528
179.6	150.5	175.3	153.5	1.43297	2.48
87.3	86.35	87.55	88.65	8.95997	8.43709
75.25	77.53	76.75	76.15	2.47712	.03
12.05	8.8	11.9	12.50	8.95756	0.43178
6.02	4.4	+5.615	+6.25	1.47422	2.70
				8.95522	0.70418

8.81855	0.70673	9.29560	8.83477	9.29842	1.74896	0.70418
1.88818	5.09	1.41162	1.90285	1.42975	5.35	5.06
8.82284	0.43137	9.29606	8.83003	9.29790		
1.60853	2.70	1.13988	1.58659	1.12385	0.42195	
8.82749	0.73058	9.29657	8.82525	9.29736	2.64	
9.90309	.05	9.67897	0.38021	0.00000	9.29736	.20
8.83203	0.41523	9.29709	8.82086	9.29689	1.12710	0.42399
1.58820	2.60	1.12710	1.59872	1.12710	2.65	
8.83670	0.73542	1.42488	8.81652	9.29643		
1.89872	5.44	0.72248	1.88196	1.40824	0.70467	5.07
		5.28				

58.2
+27.1
-3
-298
-56.1

550
58
32
51
134

85
7
28
5
09
3
78
0
18
6

509	270	+5	2.60	544
510	273	+10	2.66	528
546	261	-16	2.63	4.99
535	264	-20	2.65	507
537	248	-3	2.70	506
137			2.65	5.17
529	2.63			

41.2044

42 78

40 6 48

42 7 14

40 6 15

1864 July 16 N

+15 19 17

+7 42 22

+22 34 44

-7 40 52

-22 37 8

297 B Huc

5 B Gyr

271 B Huc

7423 B Gyr

226 B Gyr

25.1

52.0

24

5.7

32.8

42.0

26.7

14.1

58 45.5

47.3

1.3

4.4

27.6

5 26.0

0.5

22.3

49.2

41.0

6.1

14.0

43.2

25.4

53.0

43.0

25.8

123.9

158.3

140.1

126.3

124.4

3.9

38.3

18 30 27.8

18 42 7.66

18 47 25.02

18 59 26.26 19 4 0.01

+9 25 +4 42 +3 77

+18 46 +9 23 +7 5.1

+6 24 +3 14 25.6

+19 54 +9 57 +9 6

+6 48 +3 24 +2 22

+5 12 +2 36 +2 0.8

+10 15 +5 8 +4 1.0

+3 28 +1 44 +3 9

+9 57 +4 58 +3 9.8

+3 10 +1 35 +1 2.7

+22 + " +1.5

+49 +24 +3.3

+6 +3 +0.4

-10 -5 0.7

-7 -4 -5

-4 52 -2 26

-10 22 -5 11 +3.3

-3 15 -1 38 +3.0

-10 12 -5 6 40.8

-3 30 -1.45 -14.0

-10 6 -5 3 19.5

-19 25 -9 42 -4.5

33 -6 45 -3 22 -2.0

4 25 -9 42 -7.7

-6 27 -3 14 -2.58

9.82869

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9.87549

9.87026

9.88353

9.87025

9.88359

9.70418

9.69895

9.71222

9.69894

9.71228

9.41981 +15 14 35

9.11855 +7 32 59

9.58331 +22 31 32

9.13522 -7 50 49

9.58604 -22 40 32

9.42079 16 41

9.12258 37 14

9.58375 33 0

9.13063 45 50

9.58545 38 43

9.42190 19 6

9.12703 41 58

9.58426 34 41

9.12592 40 47

9.58499 37 4

9.42311 21 43

9.13221 47 33

9.58478 36 22

9.12120 35 46

9.58448 35 23

9.42431 24 20

9.13636 52 4

9.58530 38 6

1.11682 31 10

9.58403 33 54

9.12399

8.81750

9.29553

8.83416

9.29832

1.57634

0.70033

1.87564

0.69314

1.40824

0.70377

1.90091

0.73507

0.73289

9.12497

8.82153

9.29597

8.82957

9.29857

1.37806

0.44303

1.61278

0.43431

1.14301

0.43898

1.59988

0.42948

9.29773

9.12608

8.82598

9.29648

8.82486

9.10380

0.46153

0.17609

9.30217

0.57851

9.34449

9.60206

8.89854

9.84510

8.66996

9.29727

9.12729

8.83116

9.29700

8.82014

9.29727

1.29003

0.42732

1.61805

0.44921

1.11394

0.41094

1.61066

0.43080

9.29676

9.12849

8.83531

9.29782

8.81576

1.14613

0.44289

1.60638

0.73487

1.89042

0.72573

2.29782

0.72988

1.89042

0.70618

9.29631

1825

18 33

18 33

18 33

1.41162

0.70793

81.5

85.3

95.8

79.2

95.3

82.3

96.3

78.0

88.6

86.1

89.8

88.7

1844

163.3

1844

165.3

91.3

87.3

89.05

81.65

92.2

98.7

80.5

81.65

82.65

95.5

375.7

338.8

96.43

95.5

95.5

937.8

84.7

52.7

+4.77

84.70

90.8

+4.54

+3.70

41 00 57

10 27 42

116 B Cygni

274

63.1

26.1

53.5-

21.4

153.5-

123.5-

19 11 24.70

+14 19 +7 10 57.3

+7 24 +3 42 29.6

- 21 - 10 - 1.4

-7 12 -3 36 28.8

74 10 -7 5 19

982869

987165

970034

9.26394 -10 34 52

9.26159 31 24

9.25895 27 32

9.25659 24 6

9.25419 20 37

8.96428

1.76815

8.96193

1.47129

8.95929

0.74613

8.95733

1.46939

8.95453

1.76388

0.72243

5.28

0.43322

2.71

0.10542

13

0.41672

12.261

0.70811

5.11

502	2.77	+20	2.61	5.43
4.93	2.72	+22	2.81	5.32
506	2.75	+8	2.57	5.36
543	2.69	-5	2.70	5.08
541	2.52	-10	2.77	5.10
528	2.71	-13	2.61	5.21
549	2.74		2.68	5.23

41 20 45 1864 July 18 & 8	42 78	40 6 49	42 7 15	40 6 16
+15 21 48 97 B Herc	+7 45 42 5 B Lynx	+22 35 48 271 B Herc	-7 43 40 423 Cygni	+22 38 9 226 B Cyg
32.5 52.3 13.1 31.2 49.9 179.0 59.0 18 30 11.80	4.3 45.3 26.5 6.0 3810 120.1	8.6 21.8 36.2 48.5 1.1 116.2 176.2 1847 35.24	0.8 36.5 15.4 54.2 38.5 145.4 85.4 18 59 17.08	33.3 45.5 58.4 11.9 23.6 179.7 294.7 19 3 58.94
+9 49 +4 54 39.3 +4 52 +2 26 19.5 - 19 - 10 13 -4 51 -2 26 19.4 -9 31 -4 46 38.1 9.82869 9.87549 9.70418	+19 55 +9 58 79.7 +9 40 +4 50 38.7 - 37 - 18 38.7 -10 30 -5 15 25 -18 30 -9 15 42.0 -74.0 9.82869 9.87026 9.69895	+6 39 +3 26 26 +3 21 +1 40 40 - 15 - 8 8 -3 19 -1 40 40 -6 28 -3 14 14 9.82869 9.88353 9.71222	+26 19 4 10 2 76.3 +10 9 +5 4 40.6 -10 +25 +12 1.7 -13 -9 16 -4 38 37.1 -25 -20 21 -10 40 81.4 9.82869 9.87025 9.69894	+6 24 +3 12 +25.6 +3 21 +1 40 +13.4 + 7 + 4 + 5 5 -3 15 -1 38 -13.0 -6 40 -3 20 -26.7 9.82869 9.88359 9.71228
9.42533 +15 26 34 9.13899 9.42426 24 14 9.13534 9.42322 21 58 9.13078 9.42202 19 22 9.12600 9.42086 16 50 9.12116	+7 54 57 9.58558 50 57 9.58511 46 0 9.58464 40 52 9.58410 35 44 9.58359	+22 39 2 9.11857 37 28 9.12428 35 56 9.12880 34 8 9.13330 32 28 9.13740	7 32 0 9.58632 39 2 9.58581 43 52 9.58530 48 44 9.58481 53 12 9.58435	+22 41 29 9.28632 39 47 9.28581 38 5 9.28530 36 29 9.28481 34 57 9.28435
9.12951 1.59439 9.12844 1.29003 9.12740 0.11394 9.12620 1.28780 9.12504 1.58992	8.83794 1.70146 8.83429 1.58777 8.82973 0.39794 8.82495 1.62325 8.82011 1.86923	9.29780 1.42488 9.29733 1.12710 9.29686 0.00000 9.29632 1.12385 9.29581 1.41330	0.72268 5.28 0.42443 2.66 9.29686 2.20 0.42017 2.63 0.70911 5.12	8.81751 1.88252 8.82322 1.60853 8.82774 0.23045 8.83224 1.56937 8.83634 1.91064
85.4 80.7 82.4 87.1 83.90 83.87 63 10.1	80.6 86.4 86.2 82.3 83.87 86.28 88.82 86.28 25.6 -1.28	82.0 87.9 89.2 86.0 86.28 88.82 86.28 25.6 -1.28	91.9 86.7 86.6 90.1 355.3 88.82 86.28 25.6 -1.28	9.70003 5.01 0.43175 2.70 9.05819 1.11 0.40861 2.52 0.74678 5.58

41 53 58

-10 30 1

11613 Cygni

22.4

48.6

16.1

47.7

17.0

152.4

92.4

19 11 1848

+14 1" +7 4" 56.1

+7 28 +3 34 29.9

+36 +18 2.4

-7 18 -3 34 29.2

+14 46 -7 23 59.1

9.82869

9.87176

9.70045

9.25558

9.25821

9.26085

9.26539

-10 22 38

26 27

30 19

33 35

37 1

8.95603

1.74896

0.70499

5.07

8.95866

1.47567

0.43433

2.72

8.96130

0.38021

2.34151

2.22

8.96352

1.46538

0.42596

2.465

8.96584

1.72159

0.73743

2.546

8.96809

0.32

2.546

2.546

8.97030

0.32

2.546

2.546

June 8 CN

13 CS

14 CN

16 CS

17 CN

19 CS

21 CN

23 CS

27 CN

29 CS

July 8 CN

8 CS

12 CN

13 CS

14 CS (CN)

16 CN (CS)

18 CS

19 CS

41 53 58

10 30 1

11613 Cygni

224

486

16.1

477

17.0

152.4

92.4

19 11 1848

+14 1" +7 4" 56.1

+7 28 +3 34 299

+ 36 + 18 +24

-7 18 -3 34 292

+14 46 -7 23 591

9.82869

9.87176

9.70045

9.25558 -10 22 38

9.25821 26 27

9.26085 30 19

9.26539 33 35

37 1

8.95603

1.74896

0.70499

507

8.95866

1.47527

0.43433

8.96130

0.38021

2.72

8.96352

1.46538

2.34151

8.96584

1.77159

0.42590

0.73743

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5.30	2.62	+17	2.60	5.08
5.49	2.64	+17	2.81	4.89
5.28	2.66	+20	2.63	5.12
5.01	2.70	+11	2.52	5.58
5.09	2.66	+10	2.58	5.29
5.07	2.72	+22	2.68	5.46
5.21	2.67		2.64	5.24

1864 phae. proj. 142R	41 20 45	42 7 9	40 6 49	40 6 16	41 54 68
1864 July 19 LMX					
15 20 38	+7 43 18	+22 34 56	-22 37 25	-10 28 22	
19713 Herc	583 Lyrae	271 B Koro	224 B Cyg	116 B Cygni	
30.5	58.4	7.6	366	288-	
48.3	36.3	19.9	50.1	58.6	
7.7	14.9	32.8	4.0	27.5	
28.1	53.0	59.9	17.0	56.2	
48.1	34.5	165.8	28.9	22.4	
163.7	199.1		136.6	192.6	
42.7	79.1		16.6	132.6	
18 30 8.54	18 42 15.82	18 47 33.16	19 4 3.35	19 11 26.52	

+9' 30" +4' 45"	+380 +19 21	+9' 40" +774	+6' 24" +3' 12'	+25.6 +6 40	+3' 20" +26.7	+14' 30" +7 15	+580
+5 3 +2 32	+202 +9 52	+4 56 +395	+3 19 +1 40	+43.3 +3 18	+1 39 +13.2	+7 7 +3 34	+285
+12 +6	+8 +13	+6 +9	+12 +6	+8 -10	-5 -7	-15 -8	-10
-4 54 -2 27	-196 -9 48	-4 54 -392	-3 12 -1 36	-128 -3 25	-142 -13.7	-7 25 -3 42	-297
-9 54 -4 57	-356 -19 40	-9 50 -787	-6 40 -3 20	-26.7 -6 24	-3 12 -25.6	-13 58 -6 59	-559
<u>282869</u>	<u>282869</u>	<u>282869</u>	<u>282869</u>	<u>282869</u>	<u>282869</u>	<u>282869</u>	
287542	287026	288353	288353	288359	287164	287164	
<u>270418</u>	<u>269895</u>	<u>271222</u>	<u>271222</u>	<u>271228</u>	<u>270033</u>	<u>270033</u>	

9.42042	+15	15 53	9.11822	+7	32 38	9.58337	+22	31 44	9.58610	-22	40 45	9.26444	-10	35 37
9.42144		18 6	9.12365		38 22	9.58383		33 16	9.58529		38 4	9.26195		31 56
9.42256		20 32	9.12818		43 12	9.58431		34 50	9.58507		37 20	9.25943		28 14
9.42374		23 5	9.13281		48 12	9.58483		36 32	9.58458		35 43	9.25698		24 40
9.42488		25 35	9.13734		53 8	9.58535		38 16	9.58412		34 13	9.25472		21 23

511	1815	511	1835	511	1925	511	1925
806	74.3	80.1	76.2	87.2	74.9	8.29888	8.96477
837	71.7	83.1	73.5	83.7	77.7	1.42651	1.76343
851	70.3	1632	149.7	84.6	75.9	9.29757	8.96228
81.9	73.9	81.6		87.6	75.3	1.12057	1.45484
8377	10.2	74.85		86.25	75.3	9.29735	8.95976
7340		675		75.45	75.95	9.84510	8.95731
1037		+33.7		1433		2.29686	0.43358
519				576		1.13672	2.71
						9.29640	8.95505
						1.40824	0.70464
							5.07
12460	0.70438	8.81717	0.70591	9.29559	0.70383		
57978	5.06	1.88874	5.08	1.40824	5.06		
12562	0.43097	8.82260	0.41920	9.29605	0.41970		
30535	2.70	1.59660	2.62	1.12385	2.63		
12674	9.02983	8.82713	8.78137	9.29653	9.99562		
90309	11	9.95424	1.06	9.90309	1.16		
12792	0.42018	8.83176	0.42505	9.29705	0.40426		
29226	2.63	1.59325	2.66	1.10721	2.54		
12906	0.72676	8.83629	0.73226	9.29757			
59770	5.33	1.89597	5.40	1.42651	0.72408		
					5.30		

580
285
10
297
559

37
56
14
40
23

20
12
76
92
107
9
46
14

506	270	+11	263	533
508	262	+6	266	540
506	263	+16	254	530
531	262	-14	271	507
535	261	-9	269	504
519	266		265	523

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11 β Bootis			11 β Canum		
May 22	Jun 9	Jul 26	May 22	Jun 9	Jul 26
+3002	+3149	3301	3002	3149	3301
-1247	-1259	-1350	-875	-907	-932
+2549	+2410	+2205	+576	+1232	+854
+4304	+4260	+4156	-3770	+3374	+3223
-218	-120	-18	-218	-120	-18
-251	-276	-308	1058	-1114	-1154
+355	+553	+770	+1070	+1187	+1269
-070	+197	+444	-206	-047	+277

31 β Mercus			31 β Mercus			L ₁ Bootis			L ₂ Bootis		
May 19	Jun 29		May 19	Jun 29		May 22	Jun 9	Jun 19	May 22	Jun 9	Jun 19
+3301	+3453		+3301	+3453		+3002	+3149	+3301	+3002	+3149	+3301
-1307	-1358		+1294	-1346		-1261	-1314	-1365	-1265	-1318	-1370
+2364	+2157		+2456	+2336		+2542	+2351	+2154	+2550	+2356	+2142
+4358	4246		+4503	+4443		+4263	+4276	+4110	+4267	+4275	+4113
-19	+56		-19	+57		-216	-119	-18	-216	-119	-18
-70	-98		+145	+125		-294	-322	-355	-285	-316	-349
+582	+751		+418	+557		+441	+635	+511	+487	+602	+508
+453	+739		+545	+813		-065	+194	+438	-065	+197	+441

116 Blynn			206 Blynn		
May 29	Jul 9	Jul 19	May 29	Jul 9	Jul 19
+3453	2660	2242	+3453	2660	2242
-893	-945	-996	-626	-665	-713
+2560	+2664	+2695	+2280	+2451	+2554
+5120	+5320	+5441	+5107	+5353	+5583
+83	+152	+274	+86	+487	+282
+1322	+1351	+1374	+1479	+1578	+1557
-487	-285	-074	-681	-458	-301
+918	+1248	+1574	+821	+1207	+1532

Radcliff Positions Jan 1845

Star	α	δ	α	δ
✓ 6 Canum	12 ^h 18 ^m 12 ^s	184° 33' 14"	39° 52' 45"	✓
10 " "	212 37 35.8	189 24 43.2	40 7 19.3	
✓ 11 H " "	3 13 6 40.85	196 40 12.8	40 58 31.5	
19 " "	4 13 8 33.39	197 8 20.8	41 40 31.9	
✓ 20 " "	5 13 10 35.12	197 38 46.8	41 23 25.6	✓
✓ 114 B " " (Boris?)	7 14 8 8.39	212 2 5.8	42 14 56.3	✗
✓ 4, Bootis	8 15 25 21.1	231 20 27.2	41 21 52.7	✓
✓ 42 " "	9 15 26 14.20	231 33 33.0	41 25 43.7	✓
" Leonis	10 15 29 33.78	232 23 26.8	39 31 41.6	
✓ 4 Bootis	11 15 32 15.78	233 3 56.2	40 57 40.3	✓
✓ 2 Mercurii	12 16 37 35.10	249 23 46.5	39 13 12.5	✓
271 B " "	13 17 16 38.72	259 9 40.8	40 7 46.4	
297 B " "	14 17 28 12.35	262 8 5.2	41 21 22.9	
✓ 5 B Lynce	14 18 10 49.55	272 42 23.2	42 6 35.1	✓
4423 Cygni	15 29 35.01	292 24 30.2	42 4 33.8	
✓ 116 B " "	15 52 43.51	298 10 52.6	41 50 42.3	✓
226 B " "	20 33 53.14	308 28 17.1	40 2 30	
✓ 61 2317	13 16 6 40.83	241 40 0.4	35 27 25.9	✓
20 A Canum	13 39 38.41	204 54 36.1	41 52 51	
✓ 8 B Mercurii	14 15 52 25.2	238 0 37.5	40 8 25.6	✓

Precession and Annual Variation from Radcliff and Bessel.

Stars	6 Canum	10 Canum	19 Canum	20 Canum	21 Bootis	22 Bootis	4 Coronae	4 Bootis	2 Mercurii
Radcliff	184 23 14	185 24 432	197 8 208	197 38 468	231 20 272	231 32 330	232 23 268	233 3 562	245 23 465
Fundamental	183 25 517	188 20 149	196 7 114	196 37 497	230 32 23	230 45 197	231 33 592	232 15 302	245 27 370
R- γ	+147 87	+14 283	+11 94	+100 571	+48 249	+48 133	+49 276	+48 260	+46 85
R- γ	44774	42961	40771	40634	32277	32145	32973	32250	30712
$\Delta\mu$	-142	-120	-096	-093	+012	+015	+014	+015	+027
Radcliff	355 2451	40 7 153	41 40 319	41 23 258	41 21 527	41 25 427	39 31 416	40 51 403	39 13 125
Fundamental	40 22503	40 36493	42 9 198	41 52 77	41 40 493	41 44 340	39 50 113	41 9 486	39 24 63
R- γ	-30 52	+25 300	+28 479	+28 419	+15 566	-18 513	-18 297	-18 083	-10 538
R- γ	-20 058	-196 67	-14 199	-15 132	-12 629	-12 570	-12 330	-12 092	-7 262
$\Delta\mu$	+017	+032	+054	+055	+111	+111	+115	+113	+127
$\frac{d\alpha}{dt} + \mu$	+44 632	+42 861	+40 675	+40 541	+32 889	+32 163	+32 987	32 305	30 799
$\frac{d\delta}{dt} + \mu$	-20 041	-19 635	-19 145	-19 077	-12 518	-12 459	-12 215	-11 979	-7 136
$\frac{d\alpha}{dt} - \frac{d\delta}{dt}$	-316	-267	-214	-207	+027	+063	+031	+033	+060
$\frac{d\alpha}{dt} - \frac{d\delta}{dt}$	+038	+071	+120	+122	+247	+247	+256	+257	+282
1845	184 33 14	189 24 432	197 8 208	197 38 468	231 20 272	231 32 330	232 23 268	233 3 562	245 23 465
-20 $\frac{d\alpha}{dt}$	-14 5264	-14 1722	-13 3350	-13 308	-10 4578	-10 4826	-10 5576	-10 4608	-10 1598
+25	-63	-53	-42	-41	+015	+06	+06	+08	+12
-10 $\frac{d\alpha}{dt}$	-7 2632	-7 861	-6 4675	-6 4540	-5 2289	-5 2163	-5 2988	-5 2304	-5 799
+45	-16	-13	-11	-10	+01	+02	+02	+02	+03
1845	355 2451	40 7 153	41 40 319	41 23 258	41 21 527	41 25 427	39 31 416	40 51 403	39 13 125
-20 $\frac{d\alpha}{dt}$	+6 4082	+6 3270	+6 229	+6 2157	+4 1036	+4 0888	+2 430	+3 558	+2 2272
+25	+07	+14	+24	+24	+49	+49	+52	+50	+56
-10 $\frac{d\alpha}{dt}$	+3 2041	+3 1635	+3 1145	+3 1077	+2 518	+2 459	+2 215	+1 5979	+1 1136
+45	+03	+03	+06	+06	+12	+12	+13	+12	+14
1825	184 14 81	189 10 255	196 54 465	197 25 156	231 9 415	231 22 458	232 12 271	232 58 102	249 13 306
1835	25 349	17 345	19 1 340	32 13	15 43	28 114	17 589	58 332	18 385
1845	32 14	24 432	8 208	38 468	20 272	33 330	23 268	22 3 562	23 465
1855	40 276	31 577	15 74	45 321	25 501	38 576	28 567	9 193	28 545
1865	47 534	38 559	21 535	52 172	31 130	44 163	34 266	14 423	34 266
1825	35 55 262	40 13 521	41 56 550	41 28 476	41 26 35	41 29 524	39 35 464	40 55 404	39 15 378
1835	56 55	10 357	43 934	41 26 306	23 550	27 474	33 435	53 402	35 14 250
1845	52 451	7 193	40 319	41 23 258	21 527	25 927	31 416	51 403	39 13 125
1855	49 247	4 30	37 205	41 20 151	15 476	23 382	29 356	49 406	39 12 03
1865	46 247	3 14	34 205	41 18 45	17 425	23 378	28 358	48 402	39 10 488

For 1845-0

Precession and Annual Variation (by the usual formulae)

Star	11 Hlan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan	114 Bhan
Prec. R	+41061	+36354	+35457	+31713	+31527	+29453	28573	27950	25319	+30227	+32866	
" Dsc	-15212	-17001	-15189	-10624	-9518	-3771	-2773	+0946	+7645	+9471	+12476	
I	+0284	+0284	+0284	+0284	+0284	+0284	+0284	+0284	+0284	+0284	+0284	
II	+1347	+2327	+1942	+2122	+1918	+0872	+0713	-0242	-1507	-2114	-2250	
III	-3706	-3408	-3609	-1940	-1658	-0574	-0471	+0205	+1613	+1562	+2358	
Sac. R. R.	-2075	-0800	-1383	+0466	+0514	+0582	+0526	+0310	+0280	+0132	+0352	
I	-0139	-0498	-0310	-1183	-1244	-1235	-1311	-1369	-1171	-1056	-0782	
II	+1367	+2450	+1966	+3845	+3984	+4429	+4449	+4471	+4109	+3908	+3454	
Richardse	+1228	+1952	+1656	+2662	+2740	+3194	+3138	+3102	+2938	+2852	+2672	

Formula for reduction from any date to 1845
 Set t = the time from the given date to 1845
 " T = " " " 1845 to 1865

$$\text{Then the precession for the meandate } 1845 + \frac{T-t}{2} \\ = p + \frac{(T-t)^2}{200s}$$

1800	=	65p	-	8125
1810	=	55p	-	4125
1825	=	40p		05
1830	=	35p	+	885
1840	=	25p	+	1885
1845	=	20p	+	2405
1850	=	15p	+	1885
1860	=	5p	+	0885

Ephemeris from 1800 to 1865

α	6 Camm	10 Camm	19 Camm	20 Camm	2, Boetis	2, Boetis	4, Coronae	4, Boetis	2, Hercules
1800	183 54 297	185 52 317	196 37 483	197 8 204	230 56 145	231 9 260	231 58 427	232 38 428	245 0 312
1810	184 6 574	186 59 414	196 44 369	197 15 56	231 1 373	231 14 475	232 4 125	232 45 57	249 5 489
1815									
1825	184 18 81								
1830									
1835	25 349								
1840	33 14								
1845	33 14								
1850									
1855	40 276								
1865	47 534								
$\sqrt{}$									
1800	40 7 473	40 22 36	41 54 546	41 37 455	41 31 185	41 38 65	39 40 539	41 0 419	39 18 365
1810	40 4 268	40 18 470	41 51 427	41 34 342	41 29 123	41 33 03	39 38 507	40 58 411	39 17 240
1815									
1825									
1830									
1835									
1840									
1845									
1850									
1855									
1865									
$\frac{1}{2}$ from 1800									
-4542	-33 2844	-32 874	-30 3007	-30 2430	-24 1300	-24 0733	-24 4441	-24 1372	-23 1595
+1028	-322	-272	-218	-211	+28	+34	+32	+34	+61
-4540	+15 184	+14 4357	+14 2152	+14 1846	+9 2331	+9 2065	+9 967	+8 5505	+5 2112
+1028	+39	+72	+122	+124	+252	+252	+261	+256	+286
$\frac{1}{2}$ from 1810									
-3502	-26 212	-25 013	-23 4362	-23 3953	-18 5011	-18 4570	-19 1454	-18 5067	-17 5756
+615	+153	+163	+130	+126	+16	+20	+19	+20	+34
-3500	+11 4143	+11 2722	+11 1007	+11 0769	+7 1813	+7 1606	+7 0752	+6 5526	+4 976
+615	+23	+44	+83	+74	+150	+150	+155	+153	+171

Systematic Corrections

Berulvis	$aa = -0.2$	$ad = +1.2$
Angland 1830	$+0.7$	-0.2
Pond 1830	-0.5	-1.0
Strom 1830	0.0	0.0
Sing 1840-50	$+0.6$	$+0.2$
Robinson 1840	$+0.7$	-0.5
Mendham 1840	$+0.8$	-0.5
Radcliff 1845	-0.4	-0.2
Madros 1850	0.0	-0.2
Sing 1860	$+0.5$	$+0.2$

Star	6 Canum	10 Canum	19 Canum	L. Portis	L. Portis	u Coronae	4 Portis
Ansul 1815		189 3 12.9					
" 1825	184 18 62	189 10 18.8	196 54 43.9	231 9 42.9	231 22 47.6	232 12 24.9	232 8 3 92
Arg. 1830	81	189 13 57.6	48.9	48.6	49.8	27.1	10.2
Struve 1830		14 00.0					
Pond 1830						232 15 11.2	
Taylor 1831						12.0	
Arg. 1840		189 21 48					
Robinson 184	29 164	189 21 88	197 4 53.8	231 17 46.0	231 30 54.8	232 01 13.6	
Nenderson 184	29 146	8.8	57.4	45.7	52.2	19.7	
Arg. 1845	184 33 32	189 21 88	197 4 53.8	231 17 42.3	231 30 50.8	232 01 12.4	
Rodcliff 184	33 14	8.8	57.4	45.7	52.2	19.7	
Arg. 1850							
Arg. 1860							
Yoland 1860							
Brombidge 184	6 52.9	188 89 39.4	196 44 35.9	231 1 38.4	231 14 45.1	232 4 44	232 45 07
Piazzi 184	59 28.5	41.4	36.5	39.3	47.5	12.5	5.7
B 1845		188 52 16.5	196 37 44.5	230 56 8.1	231 9 21.0	231 58 39.6	232 39 38.4
B 1825	39 5 9 26.7	31.7	48.3	14.5	26.0	42.7	42.8
Arg. 1850							
Struve 1830							
Pond 1830							
Taylor 1831							
Arg. 1840	39 54 25.8	40 8 57.7					
Robinson 184	54 25.8	57.5					
Nenderson 184	54 25.3	57.5					
Arg. 1845							
Arg. 1850	39 51 42						
Rodcliff 184	52 45.1						
Yoland 1860							
Brombidge 184	40 4 26.4	40 18 46.4	41 51 25	41 25 11.5	41 32 59.3	39 38 50.1	40 58 08
Piazzi 184	40 7 48.3	40 22 58	41 54 54.6	41 31 17.0	41 35 60	39 40 58.9	41 00 43.5
Arg. 1860							
Mean Dist. comets	-85	-160	-80	-62	+40	-62	-86
Syllinote (ser)	+42	+40	+15	+45	+45	+05	+42
Mean Cor. 1847	-43	-120	-42	-65	-17	-57	-44
Mean Cor. 1865	-52	-153	-81	-20	+102	-72	-55

α Canum	α Mercu	O-C	66	10C	15C	L.B	L ₂ B	4C	4B	20C	2N
197				-3.5							
197 25 147	249 13 305		-1.9	-6.7	-3.9	+1.4	-2.2	-2.2	-1.0	-1.4	+0.2
150	249 16 13			-2.4							-0.2
	249 16 4.5										-0.9
197 28 339	249 16 5.2							-0.8		-4.5	+0.7
36.4	4.5										
				-4.0							
57 35 216	249 21 112		-1.7	-0.0	-1.6	+0.3	+2.6		-1.1	-2.4	-1.3
24.0	12.5		-3.5			-3.4	-1.4		-2.3		
197 38 456	249 23 454		+1.8					-1.2	0.0	-1.2	-1.1
46.5	46.5		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
197 38 468	249 23 465										
46.5	46.5										
						+0.6	+0.4	-0.0			
197 45 460	249 0 86.2			-2.0	-4.3	-4.7	-1.0	-1.4			+1.8
20.4	48.5		-4.5	-2.0	-7.2	+1.4	-2.4	-3.1	-5.0	-2.8	-4.1
197 15 38	249 5 48.8		-1.2	-15.2	-3.8	-6.4	-5.0	-3.1	-4.4	-5.4	+2.5
5.6	48.5		-0.85	-1.60	-0.80	-0.62	+0.40	-0.62	-0.86	-2.02	-0.47
197 8 150	249 0 84.5			-0.9							
20.4	34.5										
41 29 457	39 15 34.1		+2.5	+2.9	-1.6	-1.0	-0.3	-3.4	-1.8	-1.9	-3.4
47.6	39 15 1.4			+0.8							-0.7
	39 15 1.3										-0.1
41 28 125	39 15 1.8							-0.3		+0.4	+0.4
12.1	1.4										
	39 13 49.2		+0.5	+0.2							+0.4
41 25 18	39 13 48.0		+0.5	+1.2	-0.9	+0.2	-1.2	-0.8	+1.8	+0.6	+0.8
1.12	48.8					-1.1	-0.9	-0.6			
41 23 249	39 13 13.0							-1.2	-0.1	-0.9	-2.5
25.8	12.5		-0.7								+1.8
41 23	39 12 36.2										
	36.2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
41 23 255	39 13 12.5										
25.8	12.5										
41 34 149	39 18 40.4				-1.6	+0.6	+1.6	+2.7	+1.6		+3.9
34.2	36.5		-0.4	-0.6	-0.2	-0.8	-1.0	-0.6	-0.3	-1.3	+0.4
41 37 470	39 18 35.5		+1.2	+2.2	0.0	-1.5	+0.1	+2.6	+1.1	+1.5	+2.0
45.5	35.5					-1.1	-1.3	-1.9			
	26.5		+0.7	+0.0	-4.5	-5.0	-0.85	-8.4	+2.5	+0.3	+4.6
-2.02	-4.7	Systematic Cor.	-0.7	-1.7	-3.5	-2.5	-2.5	-5.5	-2.5	-6.7	-3.0
+1.0	+3.8		0.0	+4.3	-8.0	-0.75	-1.10	-1.39	+0.3	-6.4	+1.3
1840	1837										
-2.50	-4.0		0.0	+5.7	-1.00	-5.0	-1.32	-1.57	+0.4	-8.3	+1.7

1.4
+8
+0.5
+1.5
+3.9
+2.0
9.4
+1.6
10 453
10 497

2

Reduction of Observed places to 1864

Star	11 II Cam	m-o	20 II Cam	m-o	14 B Cam	m-o	8 B Herculis	m-o	31 B Herculis	m-o	271 B Herculis	m-o
Andromeda			15				237 36 53.5		241 16 19.8		258 47 07.0	
Pisces 1400	190 9 22.0						34 21.0		34 08.8		31 53.8	
Brownbridge 180	196 16 12.1		204 32 57		211 40 44		237 42 55		241 21 40.9		258 52 25.0	
Bessel 1805	37 31.1		350 7.4		24 30.8		29 04.0		28 53.8		26 59.7	
Bessel 1805			204 41 45.0		211 49 51.3		237 50 31		241 25 31.8		258 55 53.1	
Argelanders			25 35.7		24 15.8		21 5.5		21 1.1		19 38.1	
Struve 1800												
Arg 1800												
Pond 1800												
Taylor 1805												
Arg 1840												
Robinson												
Henderson												
Arg 1845	196 40 14.2		204 54 30.6		212 2 15		238 0 37.8		241 40 0.4		259 9 40.8	
Andalucia 156	40 12.4		204 54 36.1		12 7.7		10 34.4		10 30.6		9 43.2	
Madison	13 40.8		12 69.5		212 5 10							
Arg 1860	196 50 26.2		204 57 38.4		9 5.8							
	3 25.1		9 37.0									
Galanda							938 11 14.5		241 50 27.8		259 15 20.9	
Pisces 156	53 52.6											
Brownbridge	51.2		205 07 27.1		211 14 10.3		12.5		34.7		24.7	
Bessel												
Bessel 1805			24.7		7.1		11.6		82.9		31.2	
Arg 1845												
Struve												
Arg												
Pond												
Taylor												
Arg 1840												
Robinson												
Henderson												
Arg 1840	55.0		24.1									
Andalucia	53.5		25.8		13.5		12.2		31.0		30.0	
Madison			25.4		6.8							
Arg 1860	51.3											
Wilson	196 53 53.7		205 7 25.03		212 14 13.57		238 11 12.20		241 50 31.00		259 19 30.0	
Systematic Cor.	+ 23		+ 23		- 40		- 40		- 4		- 40	
LR 1865	196 53 53.60		205 7 25.26		212 14 13.97		238 11 11.80		241 50 30.60		259 19 29.60	
					14 8 50.874		15 52 44.98		16 7 22.04			

259 Mercuris	on 5 D Lyrae	4420 Cygnus	116 Blynn	226 Blynn
261 41 19.8 30 56.8	272 21 26.5 30 16.5	272 2 34.2 31 45.7		308 3 28.0 35 35.8
261 46 27.6 26 11.3	272 26 8.6 25 37.1	292 7 24.9 26 53.5	277 53 9.8 27 42.4	308 5 3.3 30 4.5
261 53 37.6 19 2.9	272 32 45.5 18 38.0		257 3 20.6 17 37.9	
	272 40 25 11 38.8			
262 3 5.2 9 31.5	272 42 23.2 9 19.1	292 24 30.2 9 46.4	298 10 52.6 10 4.6	308 25 17.1 10 57.4
262 10 14.7 2 22.9	272 51 43.2			
262 12 16.7	272 57 43.2	292 34 19.5		308 35 58.5
38.9	45.7	17.4	298 20 51.2	308 39 10.8
40.5	23.9			
	41.6		58.5	
			1 4	
36.7 37.6	42.3	16.6	57.2	308 39 14.5
262 12 37.5 + .00	272 51 41.7 + .10	292 34 16.6 - .40	298 20 57.85 - .20	308 39 14.50 - .4
262 12 37.5	272 51 41.7	292 34 16.20	298 20 57.65	308 39 14.10

Reduction of observed places to 1850

Star	11 th Canon m-d	20 th Canon m-d	114 B. Port. m-d	8 B. Mercuris m-d	31 B. Mercuris m-d
Palander				40 16 282 -11 327	39 23 246 10 207
Rossi 1800	41 12 58.3 -20 49.5				
Groombridge	41 9 43.9 -17 37.0	42 2 44.0 -10 40.7	42 24 53.8 -15 35.8	40 14 40.2 7 45.4	39 33 10.3 -8 44.6
Bessel 1815					
Bessel 1828		41 58 8.4 -12 7.6	42 20 34.8 -11 20.0	40 11 57.7 7 5.0	39 30 35.2 -6 20.7
- Aug. 1830					
Stetson 1830					
- Aug. 1830					
Pond 1830					
Taylor 1835					
Aug. 1840	41 0 5.0 -12 45.5	41 53 36.9 -7 34.4	42 16 20.4 -7 4.7		
Robinson 1840					
Henderson 1840					
Rodcliffe 1845	40 58 31.5 -6 24.0	41 52 5.8 -6 3.4	42 14 56.3 -5 35.6	40 8 28.6 3 34.9	39 27 25.9 3 9.8
Singg 1845	40 58 30.6 -6 24.0	41 52 5.4 -6 3.4			
Madras 1850		41 50 3.43 -4 32.5	42 13 30.2 -4 19.6		
Singg 1860	40 53 40.3 1 35.9				
Palander				40 4 55.5	39 24 19.8
Rossi	40 52 9.5				
Groombridge	6.6	41 46 3.9	42 9 18.0	54.6	15.7
Bessel					
" "		0.6	14.6	52.7	17.5
Aug.					
Stetson					
Pond					
Taylor					
Aug. 1860	2.2	2.5			
Robinson			15.7		
Henderson					
Aug. 1845	6.6	2.0	11.7		
Rodcliffe	7.5	1.7	16.7	56.7	16.1
Madras		1.8	15.6		
Singg 1860	7.4				
Aug. Cor.	40 52 5.2 -10	41 46 20.0 -20	42 9 16.00 -20	40 4 56.7 -2	39 24 16.1 -2
Aug. 1865	40 52 5.2	41 46 1.0	42 9 15.70	40 4 56.5	39 24 15.9

271 B Hermin	m-v	257 B Hermin	m-v	5 B Cygni	m-v	442 B Cygni	m-v	116 B Cygni	m-v	226 B Cygni	m-v
40 10 471 -4 0.77		41 23 248 -3 4.9		42 5 565 +59.0		41 58 538 + 8 14.5				35 52 525 13 28.8	
40 10 53~ -8 25.7		41 23 40 -2 33.8		42 6 25 +50.5		42 00 5.5 +659.3		41 45 113 8 34.6		35 54 456 11 25.1	
40 9 54 -2 30.8		41 22 172 -1 50.9		42 6 135 +37.8							
				42 6 313 +24.2				41 48 201 5 31.7			
40 7 484 -1 14.8		41 21 229 - 54.8		42 6 357 +19.5		42 4 338 2 33.4		41 50 423 3 10.0		40 2 30 4 10.1	
40 7 278 - 56.0		41 21 84 -41.6 41 20 402 -13.6		42 6 376 +14.8		42 5 114 1 55.2				40 3 61 37.6	
40 6 394		41 20 19.9		42 6 538		42 7 83				40 6 217	
86.8		30.2		42 5 53.3		4.8		41 53 475		13.7	
34.6		26.3		51.6							
0				55.6				51.8			
83.6		26.1		54.6		7.2		52.3		81	
31.8		27.4		52.4		6.6				13.7	
- 13		26.6									
40 6 31.40 - 20		41 20 27.37 - .07		42 6 521.17 - 30		42 7 6.90 - 20		41 53 5205 - 10		40 6 13.40 - 20	
40 6 31.20		41 20 27.30		42 6 53.87		42 7 6.70		41 53 51.95		40 6 13.20	

	6 Canon	10 Canon	19 Canon	21 Canon	23 Canon	23 Canon	23 Canon	23 Canon
α 1865	114 47 53.4	119 38 55.9	197 21 53.9	231 31 13.0	231 44 16.3	232 34 20.6	232 14 42.3	197
mean correction	-5	-1.5	-8	-2	+1.0	-7	-1.5	
α 1865	114 47 52.9	119 38 58.4	197 21 53.1	231 31 12.8	231 44 17.3	232 34 25.9	232 14 41.8	197
$\frac{dx}{dt}$	-446	-428	-407	-323	-322	-330	-323	
α 1864	114 47 8.3	119 38 15.6	197 21 12.4	231 30 40.5	231 43 45.1	232 33 52.9	232 14 5.5	197
on to $\frac{dx}{dt}$	-015	-021	-006	-003	+015	-005	-009	
$\frac{dx}{dt}$	44,632	42,861	40,675	32,289	32,63	32,588	32,304	
$\frac{dx}{dt}$ 1865	+44.62	+42.84	+40.67	+32.29	+32.17	+32.58	+32.29	
$\frac{dx}{dt}$ May 30	+34.21	35.48	37.06	42.88	42.57	43.05	43.04	
June 6	31.60	33.02	34.76	42.26	42.29	42.62	42.60	
June 19	29.22	30.27	32.71	41.10	41.13	41.58	41.56	
June 8.6	31.90	33.1	34.9	42.3	42.3	42.7	42.7	
13.6	30.6	31.8	33.0	41.7	41.7	42.1	42.1	
14.6	30.3	31.5	33.3	41.6	41.6	42.0	42.0	
16.6	29.5	31.0	32.8	41.4	41.4	41.8	41.8	
18.6	29.3	30.5	32.3	41.2	41.2	41.6	41.6	
19.6	29.0	30.1	32.0	41.0	41.0	41.5	41.5	
α								
June 8.6	114 47 40.2	119 38 48.7	197 21 47.3	231 30 22.8	231 44 27.4	232 34 35.6	232 14 52.2	197
13.6	38.9	47.4	46.0	22.2	26.8	35.0	51.6	
14.6	38.6	47.1	45.7	22.1	26.7	34.9	51.5	
16.6	38.1	46.6	45.2	20.9	26.5	34.7	51.3	
18.6	37.6	46.1	44.7	20.7	26.3	34.5	51.1	
19.6	37.3	45.7	44.2	21.5	26.1	34.4	51.0	

W Cam. N. Mercurii

197 52 17.2 X 249 34 2.62

-2.5 - 4

197 52 14.7 249 34 2.2

-40.5 - 30.8

197 51 34.2 249 34 31.4

+40.50

+30.81

34.52

32.41

29.72

35.0

33.8

33.6

32.8

32.6

32.5

45.03

44.43

1878.2 9.2

8.0

7.8

7.3

6.8

6.5

	6 Camm	10 Camm	19 Camm	L. Bortis	L. Bortis	u. Lozonne	u. Bortis
ρ 1865	39 46 44	40 0 46.7	41 34 9.2	41 17 42.8	41 21 34.0	39 27 37.8	40 47 41.2
Mean correction	0	+ .6	-1.0	- .6	-1.3	-1.6	+ .0
ρ 1865	39 46 44	40 0 47.3	41 34 8.2	41 17 41.9	41 21 32.7	39 27 36.2	40 47 41.2
$\frac{d\rho}{dt}$ 1865	-20.04	-19.63	-19.15	-12.52	-12.45	-12.23	-11.98
ρ 1864	~~39 45 44~~	~~40 0 27.7~~	~~41 33 48.1~~	~~41 17 39.4~~	~~41 21 20.2~~	~~39 27 24.0~~	~~40 47 26.2~~
ρ 1864	39 46 24.4	40 1 6.9	41 34 27.3	41 17 54.4	41 21 45.2	39 27 48.4	40 47 53.2
$\frac{d\rho}{dt}$ May 20	-28.5 ^{1.14}	-25.9 ^{1.32}	-18.7 ^{1.61}	- .69	-68 ^{7.65}	-87 ^{2.62}	-70 ^{2.01}
Jun 9	-1.71 ^{1.78}	-1.27 ^{1.97}	- .26 ^{1.25}	+1.90 ^{2.63}	+1.97 ^{2.44}	+1.75 ^{2.48}	+1.97 ^{2.47}
Jun 19	- .93	- .30	+ .49	+4.38	+4.41	+4.18	+4.41
Jun 29							
Jun 8.6	-1.8	-1.3	-0.3	+1.8	+1.8	+1.6	+1.9
13.6	-1.4	-0.8	+0.3	3.1	+2.1	2.9	3.1
14.6	-1.3	0.7	+0.4	3.3	+3.3	3.2	3.3
16.6	-1.1	0.5	+0.9	3.8	+3.5	3.7	3.6
18.6	- .9	0.3	+0.8	4.3	+4.3	4.1	4.3
19.6	- .9	0.2	+1.0	4.5	+4.5	4.3	4.6
ρ							
Jun 8.6	39 46 22.6	40 1 5.6	41 34 27.0	41 17 56.2	41 21 47.0	39 27 50.0	40 47 53.1
13.6	23.0	6.1	27.6	57.5	48.3	51.3	56.8
14.6	23.1	6.2	27.7	57.7	48.5	51.6	56.5
16.6	23.3	6.4	28.0	58.2	48.0	52.1	57.0
18.6	23.5	6.6	28.1	58.7	48.5	52.5	57.5
19.6	23.5	6.7	28.3	58.9	49.7	52.8	57.8

20 Cannon & Perseus

12	41 17 45	39 10 48.3
0	-8	+2
12	41 17 37	39 10 48.5
68	-18.08	-7.14
2	41 17 22.8	39 10 55.6

20	~~30~~	~~30~~
5	+0.8	+5.45
249	+1.9	+13.68
6		

9	-0.4
1	+0.5
3	.4
8	.6
3	.9
6	1.0

531	41 17 22.4
568	23.1
65	23.2
70	23.4
75	23.7
78	23.8

Second List

Star	11 H Cam	20 Cam	20 H Cam	114 B Cam	23 B Heron	31 B Heron	2 Mercus
1165	196 53 535	197 52 147	205 7 253	212 14 132	238 11 118	241 50 306	249 34 22
+411	+411	-405	+355	+364	+317	+305	+300
1264	196 53 124	197 51 342	205 06 468	212 13 368	238 10 401	241 49 591	249 33 314
June 19 0.4	+3223 ^{2.57}	3452 ^{2.57}	+3426 ^{2.63}	3611 ^{2.62}	4273 ^{1.57}	4358 ^{1.12}	4503 ^{1.60}
29.0	+2972	3241	3163	3345	4142	4246	4443
June 2							
21.0	31.6	343	33.6	35.4	42.4	43.3	44.9
24.6	30.8	337	32.8	34.6	42.0	42.0	44.7
27.6	30.1	327	32.0	33.8	41.6	42.7	44.5
28.6	29.8	325	31.7	33.6	41.5	42.6	44.4
June 16	196 53 440	197 52 085	205 09 204	212 14 122	238 10 225	241 50 424	249 34 163
24.6	43.2	7.7	19.6	11.4	22.1	42.1	16.1
27.6	42.5	6.9	18.8	10.6	21.7	41.8	15.9
28.6	42.2	6.7	18.5	10.4	21.6	41.7	15.8
June 19	40 52 58	41 12 225	41 46 181	42 9 157	40 4 565	39 24 159	39 10 556
29	-192		-182	-170	-106	-95	
June 16	40 52 250	41 17 228	41 46 200	42 9 327	40 5 071	39 24 214	39 10 556
June 19	+76	+58 ⁹²	+151 ¹²⁰	+274 ^{1.51}	+474 ^{2.35}	+453 ^{2.46}	+545 ^{2.68}
29	+165 ⁵⁹	+150	+311	+425	+709	+709	+513
June 21.6	41.0	+1.2	+2.2	+3.0	+5.3	+5.6	6.1
24.6	1.2	1.5	2.6	3.5	6.0	6.4	7.0
27.6	1.5	1.8	3.0	4.0	6.8	7.1	7.9
28.6	1.6	1.9	3.1	4.1	7.0	7.3	8.0
June 21.6	40 52 260	41 17 240	41 46 222	42 9 857	40 5 524	39 24 310	39 10 1.7
24.6	262	243	226	36.2	13.1	31.8	2.1
27.6	265	246	230	36.7	13.9	32.5	3.5
28.6	266	247	231	36.8	14.1	32.7	3.6

Third List

Star	271 B Mercur	257 B Mercuris	5 B Lynce	4423 Cygni	116 B Cygni	226 B Cygni
11265	259 19 296	262 12 371	272 51 420	292 34 16.2	298 20 54.6	308 39 14.1
dx 197	+244	266	279	25.3	30.2	32.9
11264	259 19 00.2	262 12 8.5	272 51 14.1	292 33 46.9	298 20 27.4	308 38 41.2
dx same 29	+4637	4623	4669	5052	5120	5107
July 9	45.62	4620	4678	5241	5320	5353
" 19	44.16	4486	45.01	58.25	5441	5583
July 56	259 19 46.0	262 12 54.9	272 52 28	292 34 38.4	298 21 15.3	308 39 34.1
9.6	45.7	54.6	2.8	39.4	20.7	35.2
12.6	45.3	54.2	2.6	39.7	21.0	35.8
13.6	45.2	54.1	2.5	39.8	21.2	36.0
14.6	45.0	53.9	2.4	39.9	21.3	36.2
16.6	44.7	53.7	2.3	40.0	21.5	36.6
18.6	44.4	53.4	2.1	40.2	21.8	37.0
19.6	44.3	53.3	2.1	40.2	21.9	37.2
11265	40 6 31.2	41 20 24.3	42 6 58.9	42 7 6.7	41 53 51.9	40 6 13.2
dx 197	-38	-28	+9	+7.6	+9.5	+12.5
11264	40 6 35.0	41 20 30.1	42 6 53.0	42 6 59.1	41 53 42.4	40 6 9.4
dx same 29	+893	+916	+955	+540	+918	+114
July 9	+11.65	+11.97	+12.61	+12.65	+12.45	+12.07
" 19	+14.08	+14.53	+15.47	+15.88	+15.74	+15.32
July 56	40 6 45.7	41 20 41.1	42 7 4.6	42 8 10.6	53.5	11.4
9.6	46.3	42.2	5.8	13.0	55.1	13.0
12.6	47.5	43.0	6.7	13.0	56.2	14.0
13.6	47.8	43.3	6.9	13.3	56.4	14.3
14.6	48.0	43.5	7.2	13.6	56.7	14.6
16.6	48.5	44.0	7.5	14.2	57.4	15.2
18.6	49.0	44.6	8.4	14.9	58.0	15.9
19.6	49.2	44.8	8.7	15.2	58.3	16.2

First-Series

$$q = \frac{18}{1} \text{ ft} \cdot 10 = T$$

1864phae

	T	47	7+47	7+47	L	T=7+47	S	cos θ
Bunsen								
19 Canon	14 4 9.70	2730	14 3 42.36	210 55 35.4	197 21 47.8	+13 33 48.1	41 34 27.0	9.9877159
20 "	14 14 57.86	2737	14 14 30.49	213 37 37.3	197 52 2.2	+15 45 28.1	41 17 22.4	9.9833638
Q Boots	14 17 42.36	2738	14 17 15.98	214 18 59.7	233 14 52.2	-18 56 32.5	40 47 55.1	9.9758492
L ₂ "	14 26 32.02	2741	14 26 4.61	216 31 9.1	231 44 27.4	-15 13 18.3	41 21 47.0	9.9844899
L ₃ "	14 23 47.14	2740	14 23 19.74	215 48 56.1	231 31 22.5	-15 41 26.7	41 17 56.2	9.9835070
June 13 C.S.								
6 Canon	13 56 45.74	4841	13 55 56.50	208 59 7.5	184 47 38.9	+24 11 28.6	39 46 23.0	9.9605818
19 " "	14 4 27.46	4846	14 3 48.80	210 55 57.0	197 21 46.9	+13 34 11.0	41 34 27.6	9.9877043
Q Boots	14 18 30.2	4870	14 17 14.32	214 18 34.8	233 14 51.0	-18 56 06.8	40 47 56.3	9.9758316
20 Canon	14 15 20.58	4870	14 14 31.88	213 37 57.9	197 52 8.0	+15 45 45.9	41 17 23.1	9.9833509
L ₂ Boots	14 26 57.10	4873	14 26 2.37	216 30 35.5	231 44 26.5	-15 13 51.3	41 21 48.3	9.9844710
June 14 Coronad	13 49 0.12	5281	13 48 7.31	207 01 48.6	232 34 34.6	-25 32 45.3	39 27 51.6	9.9550221
6 Canon	13 56 48.36	5283	13 55 55.53	208 58 52.9	184 47 38.6	+24 11 14.3	39 46 23.1	9.9601952
19 " "	14 4 34.82	5285	14 3 41.97	210 55 29.5	197 21 45.7	+13 33 48.8	41 34 27.7	9.9877181
10 " "	14 11 35.72	5287	14 10 46.85	212 41 42.7	189 38 47.1	+23 2 55.6	40 1 62.9	9.9638690
Q Boots	14 18 05.46	5250	14 17 16.56	214 19 08.4	233 14 51.5	-18 55 43.0	40 47 56.5	9.9758559
L ₂ " "	14 26 38.42	5252	14 26 5.50	216 31 22.5	231 44 26.7	-15 13 04.2	41 21 48.5	9.9844979
June 16 Coronad	13 49 9.10	1186	13 48 7.22	207 1 48.0	232 34 34.7	-25 32 46.4	39 27 52.1	9.9553210
6 Canon	13 56 58.76	150	13 55 56.46	208 58 12.9	184 47 38.1	+24 11 34.8	39 46 23.3	9.9600759
19 " "	14 4 45.64	153	14 3 48.71	210 55 55.6	197 21 45.5	+13 34 10.4	41 34 28.0	9.9877046
10 " "	14 11 50.10	155	14 10 48.15	212 42 2.2	189 38 46.6	+23 0 51.6	40 1 64.9	9.9638511
Q Boots	14 18 17.78	157	14 17 15.81	214 18 57.1	233 14 51.0	-18 55 54.2	40 47 57.0	9.9758479
L ₂ " "	14 24 21.46	159	14 23 19.47	215 49 52.0	231 31 21.9	-15 41 28.9	41 17 58.2	9.9835030
June 18 " "	14 27 6.18	200	14 26 4.18	216 31 2.7	231 44 26.6	-15 13 23.8	41 21 49.0	9.9844668
June 18 Coronad	13 49 19.38	1103	13 48 6.35	207 02 08.2	232 34 34.5	-25 32 29.3	39 27 52.5	9.9553362
6 Canon	13 57 05.38	1106	13 55 52.52	208 58 37.8	184 47 37.6	+24 11 01.2	39 46 23.5	9.9601086
19 " "	14 4 51.08	1109	14 3 39.99	210 54 59.9	197 21 44.7	+13 33 15.2	41 34 28.1	9.9877326
10 " "	14 11 56.74	1111	14 10 45.63	212 41 24.4	189 38 46.1	+23 0 38.3	40 1 65.5	9.9638814
20 " "	14 15 35.32	1112	14 14 28.70	213 37 3.0	197 52 68	+15 44 58.2	41 17 23.7	9.9833828
Q Boots	14 18 29.14	1113	14 17 18.01	214 19 30.1	233 14 51.1	-18 55 21.0	40 47 57.5	9.9758719
L ₂ " "	14 24 33.08	1115	14 23 21.93	215 50 28.9	231 31 21.7	-15 40 52.8	41 17 58.5	9.9835270
June 19 " "	14 27 17.80	1116	14 26 6.64	216 31 38.6	231 44 26.3	-15 12 46.7	41 21 49.5	9.9845080
June 19 Coronad	13 49 21.22	1154	13 48 5.35	207 1 20.2	232 34 34.4	-25 33 14.2	39 27 52.7	9.95552930
6 Canon	13 57 12.50	1150	13 55 56.60	208 59 9.0	184 47 37.3	+24 11 31.9	39 46 23.5	9.9600784
19 " "	14 05 00.8	1152	14 3 44.16	210 56 2.4	197 21 41.2	+13 34 30.8	41 34 28.5	9.9876905
Q Boots	14 18 29.56	1154	14 17 13.60	214 18 24.0	232 14 51.0	-18 56 27.0	40 47 57.8	9.9758242
L ₂ " "	14 24 33.04	1156	14 23 17.06	215 49 15.9	231 31 21.5	-15 41 05.6	41 17 58.9	9.9834639
L ₃ " "	14 27 17.40	1157	14 26 17.00	216 31 25.5	231 44 26.5	-15 12 46.7	41 21 49.5	9.9845080

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$$m(-\delta) \text{ then } +e = -\delta \sin \alpha + \alpha \cos \alpha$$

$$\varphi = 42 \ 22 \ 48.6 \quad \tan \varphi = 9 \ 9602285$$

$$\tan \delta_0 = \frac{\tan \varphi \cos T}{12} \quad m = \frac{\cos \varphi}{\cos \delta}$$

$\log \tan \frac{\varphi}{2}$	δ_0	$\delta - \delta_0$	α	$m \delta - \delta_0$	$\cos \alpha$	$\sin \alpha$	time	"
	41 34 27.5	-0.5	44.8	-1.9	+1.38	+0.6	1340	+4.58
	41 17 22.1	+0.3	45.8	+2.9	+1.26	+0.5	1504	+3.92
	40 47 54.6	+0.5	48.1	+4.8	+1.18	+0.2		
	41 21 47.3	-0.3	48.1	-2.9	+1.08	+0.2		
	41 17 53.8	+0.4	48.1	+3.9	+1.08	+0.2		
	39 46 21.2	+1.8	-5.2	+1.73	-4.54	-3.2	1330	-5.17
	41 34 24.8	+2.8	-5.1	+2.76	-4.82	-2.0	1430	-5.02
	40 47 50.5	+5.8	-5.0	+5.66	-4.65	+0.8		
99602276	41 17 19.0	+4.1	-5.0	+4.03	-4.87	-0.8		
	41 21 42.9	+5.4	-5.0	+5.32	-4.87	+0.5		
	39 27 50.8	+0.8	-1.7	+7.7	-1.60	-0.8	1330	-2.01
	39 46 24.9	-1.3	-1.5	-1.25	-1.52	-2.8	1500	-7.6
	41 34 28.0	-0.3	-1.5	-0.30	-1.48	-1.8		
	40 1 6.3	-0.1	-1.4	-1.10	-1.33	-1.4		
	40 47 56.2	+0.3	-1.3	+2.9	-1.26	-1.0		
	41 21 45.2	-0.7	-1.2	-1.69	-1.17	-1.7		
99602281	39 27 50.8	+1.5	-3.2	+1.43	-3.02	-1.6	1330	-2.74
99602281	39 46 19.9	+3.4	-3.3	+3.27	-3.13	+0.1	1440	-9.00
99602274	41 34 24.9	+3.1	-3.4	+3.06	-3.35	-0.3		
99602281	40 1 2.1	+4.3	-3.7	+4.16	-3.54	+0.6		
99602278	40 47 54.1	+2.6	-3.9	+2.54	-3.78	-1.2		
99602276	41 17 55.4	+2.8	-4.0	+2.71	-3.92	-1.2		
99602276	41 21 46.6	+2.4	-4.1	+2.37	-4.00	-1.6		
	39 27 54.6	-2.1	+1.3	-2.00	+1.23	-0.8	1345	+1.07
	39 46 27.5	-4.0	+1.0	-3.84	+0.55	-2.9	1352	+1.20
	41 34 31.5	-3.4	+0.8	-3.36	+0.76	-2.6	145	-7.82
	40 1 9.9	-3.3	+0.8	-3.18	+0.76	-2.4		
	41 17 26.6	-2.9	+0.8	-2.86	+0.78	-2.1		
	40 48 00.0	-2.5	+0.8	-2.40	+0.78	-1.7		
	41 18 08.6	-1.9	+0.8	-1.87	+0.78	-1.1		
	41 21 37.6	-2.1	+0.8	-2.06	+0.78	-1.3		
	39 27 44.0	+2.7	-6.9	+2.33	-6.57	+1.8	1330	-7.07
	39 46 20.5	+3.0	-6.5	+2.88	-6.17	-3.3	1500	-5.83
	41 34 21.5	+6.8	-6.4	+6.72	-6.29	+0.4		
	40 47 48.8	+7.0	-6.2	+6.79	-6.01	+2.8		
	41 17 50.4	+8.5	-5.9	+8.37	-5.78	+2.6		
	41 21 41.6	+8.1	-5.8	+8.36	-5.68	+2.3		

June 8 C.V.

$$+89$$

$$+1.57$$

$$+1.66$$

$$+7.9$$

$$+1.47$$

$$+1.27$$

$$+1.94$$

$$+33.8$$

$$+33.8$$

$$+1.16$$

June 14 C.V.

$$98$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

June 16 C.V.

$$92$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

June 18 C.V.

$$99$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

June 19 C.V.

$$99$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

$$-1.58$$

Second Series

D

June 21	T	24T	T+24T	T+24T	Σ	T+24T	Σ
Gr. 2253	14 23 1806 (2) -1 24.15	14 20 53.91	215 28 28 238	224 22 42 53.9	40 5	424	+2.1
Gr. 2317	14 25 4002 (3) -1 24.16	14 24 15.86	216 3 57.9 241.50	433 25 46 45.4	39 24	310	-1.4
20 H Cam	14 29 030 (4) 24.17	14 27 36.13	216 54 20 205	204 11 46 41.6	41 46	222	-1.4
114 B Brts	14 38 4680 (J) 24.19	14 37 20.61	219 20 39.2 212.74	122 +7 6 27.0	42 9	357	-2.5
Mercuris	14 52 5182 (6) 24.26	14 51 27.56	222 51 53.4 249 34	163 26 42 22.9	39 11	17	+2.2
C S June 24							
20 Cam	14 16 528 (1) 33.05	14 14 32.23	213 38 34 197 52	47 45 45 55.7	41 17	243	-1.0
Gr. 2293	14 23 2392 33.06	14 21 50.86	215 27 42.9 238 11	22.7 22 43 39.2	40 5	131	+2.1
Gr. 2317	14 25 4650 33.06	14 24 13.44	216 3 21.6 241 50	430 25 47 21.4	39 24	318	-1.4
20 H Cam	14 26 1750 33.08	14 27 44.42	216 53 36.3 205 7	19.6 41 46 16.7	41 46	226	-1.4
114 B Brts	14 39 440 33.09	14 37 31.31	219 22 49.6 212 14	112 +7 8 38.4	42 9	362	-2.5
Mercuris	14 52 5860 33.15	14 51 25.45	222 51 21.8 249 34	161 26 42 54.3	39 11	26	+2.2
C N June 27							
20 H Cam	14 28 2512 -1 49.76	14 27 35.06	216 53 50.4 205 7	18.8 41 46 31.6	41 46	230	-1.4
114 B Brts	14 39 830 49.78	14 37 18.52	219 19 37.8 212 14	106 +7 5 27.2	42 9	367	-2.5
Mercuris	14 53 1648 49.83	14 51 28.65	222 52 9.8 249 34	15.9 26 42 6.1	39 11	35	+2.2
C S June 28							
20 Cam	14 16 2608 -1 53.86	14 14 32.22	213 38 33 197 52	6.7 45 45 56.6	41 17	247	-1.0
20 H "	14 29 3586 53.89	14 27 41.97	216 55 29.6 205 7	18.5 41 46 11.1	41 46	231	-1.4
114 B Brts	14 39 2260 53.93	14 37 28.67	219 22 10.0 212 14	10.4 +7 7 58.6	42 9	368	-2.5
Mercuris	14 53 1942 53.98	14 51 25.44	222 57 21.6 249 34	15.8 26 42 54.2	39 11	36	+2.2

Second Series Conditional Equations

June 21

$-2.5 = -.154a + .554\varphi + .37 - .37 = +.304a + .554\varphi$ Eq. 2153
 $-0.3 = -.09 + .100 + .16 - .16 = +.34 \quad .54$ Eq. 2317
 $-1.4 = -.124a + .100a + .35 = +.35 \quad .94$ a Mercuris
 $-3.03 = +.334a + .944\varphi + c$

June 24

$-0.6 = -.21a + .554\varphi$ $+2.1 = +.304a + .554\varphi$
 $+0.3 = -.09 + .100$ $+3.3 = .34 \quad .54$
 $+1.85 = -.154a + .994\varphi - c$ $+0.5 = .35 \quad .54$
 $+1.57 = .334a + .544\varphi - c$

$a = -\frac{.31}{.36} - .31$
 $a = +.14$

June 27

$-0.5 = -.154a + .554\varphi - .52 = +.35a + .944\varphi$
 $-0.9 = -.09 + .100$
 $-1.7 = -.124a + .100a + .35 = +.354a + .944\varphi$

$a = -\frac{.36}{.36}$

$-.36$
 $+.14$
 $-.36$
 $-.18$
 $-.39$

June 28

$+1.7 = -.21a + .554\varphi + 0.4 = +.354a + .544\varphi$
 $+2.3 = -.15 + .95$
 $+1.0 = -.09 + .100$
 $+1.67 = -.124a + .994\varphi + 0.4 = .354a + .544\varphi - c$

$a = -.28$

$\text{June 21 } -5.2 = .374\varphi + c$ $-1.4 = -.124a + .100a + .35 + c$ 73
 $-1.5 = .163 + c$ $-3.0 = .334a + .554\varphi + c$ 27
 $-1.11 = .1404\varphi + c$ $-1.02 = +.334\varphi + .70c$
 $-0.81 = +.374\varphi + .27c$
 $-1.83 = +.100a + c$

June 24

$+1.85 = -.154a + .554\varphi - c$ $.69$
 $+1.57 = .33 + .94 - c$ $.31$
 $+1.29 = +.69$
 $+1.60 = .28$
 $+1.89 = +.974\varphi - c$

June 27

$-0.7 = -.124a + .100a + .35 + c$ 74
 $-5.2 = +.35 + .544\varphi + c$ 26
 $-.52 =$
 $.735 =$
 $-1.87 = +.974\varphi + c$

June 28

$$+1.67 = -.1240 + 9540 - C \quad .74$$

$$+0.40 = +.35 + 94 - C \quad .26$$

$$+2.07 =$$

$$+1.10 =$$

$$+1.83 = +.9640 - C$$

weight-

$$\text{June 21} \quad -1.83 = 1.0040 + C \quad 1.1$$

$$24 \quad +1.89 = +.9740 - C \quad 1.1$$

$$27 \quad -1.87 = +.9740 + C \quad .7$$

$$28 \quad +1.83 = .9640 - C \quad .7$$

$$+0.03 = 9840 \cdot 2.4$$

$$+0.07 = 9740 \cdot 2.0$$

$$-0.27 = 9740 \cdot 1.4$$

$$+.07$$

$$+.02$$

$$-.38$$

$$-.29$$

5.8

$$-.04 = 9740$$

$$-.05 = 40$$

40

$$-14 = +.5 + 10040 + C$$

$$-30 = +.3 + 9840 + C$$

$$+18 = +.6 + 98 - C$$

$$+20 = +.3 + 98 - C$$

$$-22 = -.4 + 9740 + C$$

$$+19 = -.3 + 98 - C$$

$$-18 = .8740 + C$$

$$+22 = 9740 - C$$

$$+0.4 = 1.9440$$

$$46 = +0.2$$

$$-7 = +.5 + 10040 + C$$

$$-52 = .14 + 9840 + C$$

$$-30 = -.4 + 9740 + C$$

$$+10 = -.04 + 9740 - C$$

$$-20 = -.08 + 1.9440$$

$$-12 = 1.9440$$

$$22 = -.06$$

$$+17 = +.5 + 9840 - C$$

$$+0.4 = -.14 + 9840 - C$$

$$1.02$$

$$-0.6$$

$$-0.2$$

Conditional Equations First Series

Linear

$T = \text{Sideric time of obs.} - \Delta T$

$$\tan \psi \cos T = \tan \delta$$

$$m = \frac{\cos \psi}{\cos \delta}$$

$$m(2\Omega) + b \cos 2 = -4a \sin 2 + 4\psi \cos 2 + c$$

$$\begin{array}{r} -64 \\ 71.0 \\ +6.6 \\ -3.0 \\ +0.3 \\ +9.1 \\ +18.0 \end{array}$$

June 8

$$+38 = -184a + 954\psi$$

$$+39 = -21 + 58$$

$$+385 = -204a + 954\psi + c$$

$$+3.6 = +254a + 974\psi$$

$$+3.7 = +20 + 58$$

$$+3.6 = +21 + 58$$

$$+3.63 = +224a + 954\psi + c$$

June 13

$$-3.2 = -814a + 954\psi$$

$$-2.0 = -18 + 58$$

$$-0.8 = -21 + 58$$

$$-2.0 = -234a + 954\psi + c$$

$$+0.8 = +204a + 974\psi$$

$$+0.5 = +19 + 58$$

$$+0.65 = +224a + 954\psi + c$$

$qa = +b$

June 14

$$-1.5 = -314a + 954\psi$$

$$-1.8 = -18 + 58$$

$$-1.4 = -30 + 95$$

$$-1.67 = -264a + 964\psi + c$$

$$-0.8 = +334a + 944\psi$$

$$-1.0 = +25 + 58$$

$$-1.7 = +19 + 58$$

$$-1.7 = +264a + 964\psi + c$$

June 16

$$+0.1 = -814a + 954\psi$$

$$-0.3 = -18 + 58$$

$$+0.6 = -30 + 95$$

$$+0.13 = -264a + 964\psi + c$$

$$-1.6 = +334a + 944\psi$$

$$-1.2 = +25 + 97$$

$$-1.2 = +29 + 98$$

$$-1.6 = +28 + 98$$

$$-1.4 = +244a + 974\psi + c$$

$au = -34$

June 18

$$-2.9 = -314a + 954\psi$$

$$-2.6 = -18 + 98$$

$$-2.4 = -30 + 95$$

$$-2.1 = -21 + 98$$

$$-2.82 = -254a + 964\psi + c$$

$$-0.8 = +334a + 944\psi$$

$$-1.7 = +25 + 97$$

$$-1.1 = +19 + 98$$

$$-1.3 = +15 + 98$$

$$-1.22 = +32 + 974\psi + c$$

June 19

$$-3.3 = -314a + 954\psi$$

$$+0.4 = -18 + 98$$

$$-1.45 = -244a + 974\psi + c$$

$$+1.8 = +334a + 944\psi$$

$$+2.8 = +25 + 97$$

$$+2.6 = +19 + 98$$

$$+2.3 = +15 + 98$$

$$+2.38 = +244a + 964\psi + c$$

$au = +91$

$$+385 = -204a + 954\psi \times 52$$

$$+363 = +224a + 954\psi \times 45$$

$$200 = 5100$$

$$174 = 1740$$

$$+374 = 984\psi + c$$

$$31 = 31$$

$$-167 = -264a + 964\psi$$

$$-117 = +264a + 964\psi$$

$$-1.42 = +964\psi + c$$

$$-2.1 = -234a + 974\psi \times 49$$

$$+0.65 = +224a + 984\psi \times 51$$

$$-98 = +484\psi$$

$$+32 = +490\psi$$

$$-520 = +974\psi + c$$

$$+0.13 = -264a + 964\psi \times 46$$

$$-1.40 = +244a + 974\psi \times 52$$

$$+0.6 = +984\psi$$

$$-73 = +49$$

$$-67 = +974\psi + c$$

$$-2.52 = -254a + 964\psi \times 56$$

$$-1.22 = +324a + 974\psi \times 46$$

$$-1.41 = 974\psi$$

$$-54 = 964\psi$$

$$-1.95 = +964\psi + c$$

$$-1.45 = +244a + 974\psi$$

$$+2.38 = +244a + 964\psi$$

$$+98 = +964\psi + c$$

$$+48$$

$$\text{sum } a_2 = +2.0''$$

June 8 $+3.7 = 98.44 + C$ 1.4 weight

13	$-0.7 = 97.44 - C$	1.1
14	$-1.4 = 96.44 + C$	1.5
16	$-0.3 = 97.44 - C$	1.5
18	$-1.9 = 96.44 + C$	2.0
19	$+1.0 = 96.44 - C$	1.3

$$\begin{array}{r}
 +1.50 = 98.44 \text{ wt } 2.5 \\
 -1.00 = 97.44 \quad 3.7 \\
 -0.85 = 97.44 \quad 3.2 \\
 -1.24 = 97.44 \quad 3.7 \\
 -0.74 = 96.44 \quad 3.4
 \end{array}$$

$$\begin{array}{r}
 +3.75 \quad 2.5 \\
 -2.97 \quad 2.7 \\
 -2.72 \quad 3.2 \\
 -4.08 \quad 3.7 \\
 -2.55 \quad 3.4 \\
 \hline
 8.99 \quad 15.5
 \end{array}$$

$$\begin{array}{l}
 -5.8'' = 97.44 \\
 -6.0 = 44
 \end{array}$$

$$\begin{array}{r}
 +1.50 = 98.44 \\
 -0.85 = 96.44 \\
 -0.74 = 96.44
 \end{array}$$

$$\begin{array}{r}
 +2.5 = -4 + 98.44 + C \\
 +2.0 = +9 + 97.44 + C \\
 +2.4 = +0 + 98.44 + C \\
 -0.7 = +0 + 98.44 + C \\
 \hline
 0.8 = 15.6 \\
 44 = +0.4
 \end{array}$$

$$\begin{array}{r}
 -1.7 = +5 + 96.44 + C \\
 -1.2 = +5 + 96.44 + C \\
 -1.5 = +0 + 96.44 + C \\
 -0.7 = +0 + 96.44 - C \\
 -2.2 = 15.244 \quad 44 = -1.2
 \end{array}$$

Another solution

$$\begin{array}{r}
 +3.74 = 98.44 + C \\
 -1.42 = 96.44 + C \\
 -1.95 = 96.44 + C \\
 -1.12 = 97.44 + C
 \end{array}$$

$$\begin{array}{r}
 +1.2 = 97.44 + C \quad 4.4 \\
 -2.8 = 97.44 - C \quad 4.7 \\
 +5.3 \\
 -1.33 \quad 9.1 \\
 -0.9 = 44
 \end{array}$$

$$\begin{array}{r}
 +3.74 = 98.44 + C \\
 -0.66 = 97.44 - C \\
 -1.42 = 96.44 + C \\
 -0.67 = 97.44 - C \\
 -1.95 = 96.44 + C \\
 +0.48 = 96.44 - C \\
 \hline
 +1.54 = 98.44 \quad 2.5 \\
 -1.10 = 97.44 \quad 2.7 \\
 -1.02 = 96.44 \quad 3.2 \\
 -1.35 = 96.44 \quad 3.7 \\
 -1.00 = 96.44 \quad 3.4 \\
 \hline
 1.55
 \end{array}$$

$$\begin{array}{r}
 -2.5 = -5 + 96.44 + C \\
 -1.2 = +6 + 97.44 + C \\
 -0.7 = +0 + 97.44 + C \\
 +0.5 = +0 + 96.44 - C \\
 -0.2 = 15.344 \\
 44 = -0.1
 \end{array}$$

$$\begin{array}{r}
 +0.1 \\
 -1.2 \\
 -0.1 \\
 \hline
 -0.3
 \end{array}$$

$$\begin{array}{r}
 3.5 \\
 2.97 \\
 3.26 \\
 5.00 \\
 3.40 \\
 \hline
 10.13
 \end{array}$$

$$\begin{array}{l}
 -7.0'' = 97.44 \\
 -7.1 = 44
 \end{array}$$

Third Series

Star	TT	δ	TT + δ	$\nabla + \theta$	~~TT + δ~~	748 - α - τ	cost	
A July 6								
297 B Mercurii	18 29 4558	1 + 2569	18 30 1567	277 33 550	262 12 649	+15 21 01	99820241	998
5 B Cygni	18 41 5836	2 68	18 42 2404	280 36 06	272 52 28	+7 43 578	99860326	998
271 B Mercurii	18 47 1410	4 67	18 47 3977	281 54 566	259 19 460	+22 35 10.6	99653439	996
4423 Cygni	18 55 432	5 67	18 59 2999	284 52 298	292 34 389	-7 42 9.1	99860637	998
226 B Cygni	19 3 4152	66	19 4 0718	286 1 477	308 39 311	-22 37 46.4	99652073	996
116 B Cygni	19 11 940	65	19 11 3005	287 52 308	298 21 193	-10 28 48.5	9926540	992
							99653065	996
C.S. July 9								
5 B Cygni	18 42 934	2 + 1502	18 42 2836	280 37 54	272 52 28	+7 45 2.6	99860141	998
271 B Mercurii	18 47 2358	02	18 47 4260	281 55 390	259 19 457	+22 35 53.3	99653065	996
226 B Cygni	19 3 4688	6 01	19 4 589	286 1 284	308 39 352	-22 38 68	99651894	996
116 B Cygni	19 11 748	7 00	19 11 2648	287 51 372	298 21 207	-10 29 435	99653539	996
							9926726	992
C.N. July 12								
257 B Mercurii	18 29 5890	+1567	18 30 1457	277 33 386	262 12 542	+15 20 44.4	99842333	998
5 B Cygni	18 42 710	66	18 42 2276	280 35 414	272 52 26	+7 43 38.8	99860381	998
271 B Mercurii	18 47 2330	66	18 47 3096	281 54 444	259 19 457	+22 34 59.1	99653539	996
4423 Cygni	18 55 1632	65	18 59 3197	284 52 596	292 34 397	-7 41 40.1	99860720	998
226 B " "	19 3 5274	64	19 4 838	286 2 57	308 39 356	-22 37 30.1	99652216	996
116 B " "	19 11 1836	63	19 11 3119	287 52 478	298 21 210	-10 28 33.2	99826999	998
C.S. July 13								
4423 Cygni	18 55 1382	+1430	18 59 2762	284 51 543	292 34 395	-7 42 45.5	99860584	998
226 B " "	19 3 5246	30	19 4 676	286 1 414	308 39 360	-22 37 54.6	99652001	996
116 B " "	19 11 1848	29	19 11 2777	287 51 566	298 21 212	-10 29 24.6	99826800	998
C.N. July 14								
5 B Cygni	18 42 1006	+1281	18 42 2287	280 35 430	272 52 24	+7 43 40.6	99860376	998
271 B Mercurii	18 47 2628	80	18 47 3908	281 54 462	259 19 450	+22 35 1.2	99653522	996
4423 Cygni	18 55 1986	79	18 59 3265	284 53 98	292 34 397	-7 41 30.1	99860718	998
226 B " "	19 3 5566	78	19 4 844	286 2 66	308 39 362	-22 37 25.6	99652271	996
116 B " "	19 11 1838	77	19 11 3115	287 52 472	298 21 213	-10 28 34.1	99826996	998

	lytong	δ	δ^u	$\delta - \delta^u$	Time	δ	δ^u	$\delta - \delta^u$	Sum	Sum
41	25602276	41 20 41.1	41 20 44.7	-3.6	18 20	+3.06	+3.4	-0.34	-3.57	-0.2
26	25602250	42 7 46.2	42 7 10.0	-5.9	19 20	+5.25	3.9	+1.35	-5.39	-1.5
39	25602281	40 6 45.7	40 6 54.4	-5.7	19 35	+5.65	+4.1	+1.55	-5.61	-0.7
47	25602249	42 7 10.0	42 7 17.3	-6.7		+4.5	+4.49	-0.01	-6.65	-2.2
43	25602281	40 6 11.7	40 6 19.4	-7.7		+4.7	+4.52	-0.18	-7.60	-3.1
55	25602266	41 53 53.8	41 53 01.8	-8.0		+4.9	+4.86	-0.04	-7.7	-3.1 -1.97
										11.8 +1.2
										-0.93
41		42 7 58.2	42 7 56	+0.2	18 35	-0.40	+1	+1.4	+0.20	+0.3
55		40 6 46.8	40 6 42.7	+4.1	18 50	+0.77	+6	+5.23	+4.02	+4.6
4		40 6 13.2	40 6 15.2	-2.2	19 10	-0.45	.0	.0	-2.18	-2.2
49		41 53 55.1	41 53 56.8	-1.7		-5	-4.9	-0.1	-1.69	-2.2
6										4.4 +1.2
3		41 20 43.0	41 20 46.8	-3.8	18 20	+6.32	+6.2	+0.12	-3.77	+2.3
51		42 7 6.2	42 7 11.2	-4.5	19 25	+5.05	6.2	+1.15	-4.49	+1.7
		40 6 47.5	40 6 53.7	-6.2	19 45	+6.35	6.7	+0.4	-6.08	-0.1
20		42 07 13.1	42 07 19.2	-6.2		-6.0	+5.59	-0.41	-6.18	-0.2
16		40 6 14.0	40 6 22.8	-8.8		6.0	+5.89	-0.11	-8.66	-2.8
9		41 54 56.2	41 54 56.8	-0.6		5.9	+5.65	-0.25	-6.97	-1.9
										5.0 -9.3
										1.10
										-0.55
34		42 07 13.3	42 07 14.9	-1.6	18 25	+2.27	+1.5	+0.77	-1.59	-0.1
1		40 6 14.3	40 6 17.5	-3.5	18 30	+0.75	+1.5	+0.75	-3.43	-1.9
20		41 53 56.4	41 53 57.5	-1.1		+1.5	+1.49	-0.01	-2.09	-0.8
										2.8
										-9.3
6		42 7 7.2	42 7 11.1	-3.9	18 5	+6.02	+5.5	+0.52	-3.89	+1.6
22		40 6 48.0	40 6 53.3	-5.3	18 25	+4.40	+5.5	+1.1	-5.21	0.0
8		42 7 13.3	42 7 19.4	-6.3	18 20	+5.70	+5.5	+0.2	-6.28	-0.8
1		40 6 14.6	40 6 22.9	-8.3	18 25	+6.25	+5.5	+0.75	-8.17	-2.9
		41 54 56.7	41 54 56.8	-0.1			+5.46	-0.06	-6.38	-0.9
										6
										11.4
										3.0
										-6.0
										-1.7
										3.8

Wind Series

Star	T_1	$Q T_1$	$T + \Delta T$	$T + \Delta T$	Σ	$T + \Delta T - \Sigma$
July 16 CV						
257 B Heron's	18 30 278	+5.54	18 30 1272	277383 108	262 12 537 +15	19 171 9.9842836
5 B Cygnus	18 42 766	.93	18 42 1759	28034 238	272 52 23 +7	42 215 9.9560601
271 B Heron's	18 47 2502	.92	18 47 3795	28154 292	259 19 447 +22	34 445 9.9653664
7423 Cygni	18 59 2826	.92	18 59 3518	28453 417	252 34 400 -7	40 523 9.9960855
226 B " "	19 4 001	.91	19 4 992	286 2 288	308 39 366 -22	37 78 9.9652412
116 B " "	19 11 2470	.90	19 11 3460	287 53 390	258 21 215 -10	27 425 9.9927197
July 18 CS						
257 B Heron's	18 30 1180	+6.96	18 30 1876	27734 414	262 12 534 +15	21 480 9.9841965
5 B Cygnus	18 42 2402	.95	18 42 3097	28037 446	272 52 21 +7	45 425 9.9960027
271 B Heron's	18 47 3824	.95	18 47 4219	28155 328	259 19 444 +22	35 484 9.9653108
7423 Cygni	18 59 1708	.94	18 59 2402	28451 403	252 34 402 -7	43 399 9.9960378
226 B " "	19 3 5894	.93	19 4 587	286 1 280	308 39 370 -22	38 90 9.9651874
116 B " "	19 11 1448	.92	19 11 2540	287 51 210	258 21 218 -10	30 08 9.9926658
July 19 CV						
257 B Heron's	18 30 854	+5.52	18 30 1406	27733 309	262 12 533 +15	20 376 9.9842371
5 B Cygnus	18 42 1562	.91	18 42 2103	28035 200	272 52 21 +7	43 179 9.9960441
271 B Heron's	18 47 3316	.91	18 47 3867	28154 400	259 19 443 +22	34 557 9.9653570
226 B Cygni	19 4 332	.90	19 4 882	286 2 123	308 39 372 -22	37 249 9.9652262
116 B " "	19 11 2652	.89	19 11 3201	287 53 02	258 21 219 -10	28 217 9.9927043

836

01

64

5-

2

7

65-

27

8

8

4

8

1

1

0

2

3

σ	σ^*	σ^0	$P-\sigma^0$	line flat	ϵ	ϵ	ϵ_{cor}	$m(\sigma-\sigma^0)$	Sum			
41	20	440	41	20	58.7	-4.7	18.25	+5.27	+5.0	+4.90	-4.66	+0.2
412	7	38.2	42	7	16.4	-8.6	18.35	+4.77	4.9	+4.89	-8.58	-3.7
40	6	48.5	40	6	56.8	-8.3	19.20	+4.54	4.8	+4.62	-8.17	-3.6
412	7	14.7	42	7	22.3	-8.1			4.9	+4.69	-8.08	-3.4
40	6	15.2	40	6	27.8	-12.1			4.7	+4.52	-11.50	-7.4
41	54	58.8	41	54	08.0	-10.8			4.5	+4.39	-10.87	-6.5
												46
41	20	440	41	20	38.3	+6.3			-6	-5.9	+6.25	+5.6
412	7	38.2	42	7	28.9	+5.5	18.20	+0.1	-6	-6.0	+5.49	+4.9
40	6	48.5	40	6	43.0	+5.4		-12.8	-6	-5.7	+5.31	+4.7
412	7	14.7	42	7	11.1	-3.8			-6	-6.0	+3.79	3.2
40	6	15.2	40	6	14.8	+1.1			-6	-5.7	+1.07	0.5
41	53	58.8	41	53	56.7	+2.1			-6	-6.0	+2.89	+2.3
												212
												+353
41	20	440	41	20	47.7	-2.9	18.15	+5.19	+3.3	+3.24	-2.87	+0.3
412	7	38.2	42	7	12.7	-4.0	18.35	+3.37	+3.6	+3.59	-3.99	-0.4
40	6	48.5	40	6	54.4	-5.2	19.25	+5.16	+3.8	+3.63	-5.10	-1.5
40	6	15.2	40	6	23.9	-7.7			+4.3	+4.11	-7.57	-3.5
41	54	58.8	41	54	04.2	-5.9			+4.6	+4.38	-5.87	-1.3
												67
												64
												-128

$$\begin{array}{r}
 42.224860 \\
 -43 \\
 \hline
 48.17
 \end{array}$$

$$\begin{array}{r}
 +16 \\
 -1.16 \\
 -38 \\
 -24 \\
 -15 \\
 -93 \\
 -55 \\
 -38 \\
 -27 \\
 \hline
 406 \\
 390
 \end{array}$$

$$\begin{array}{r}
 -93 \\
 -55 \\
 -38 \\
 -24 \\
 -15 \\
 -93 \\
 -55 \\
 -38 \\
 -27 \\
 \hline
 341 \\
 -668
 \end{array}$$

$$\begin{array}{r}
 -68 \\
 -35 \\
 -103 \\
 \hline
 -1.57
 \end{array}$$

Third Series Conditional Equations

Aug 5 C W

$$\begin{aligned} 0.2 &= -190a + 984p & 297.13 \text{ Mercator} \\ +15 &= -100a + 1000p & 5.13 \text{ Lyne} \\ -17 &= -290a + 960p & 27.13 \text{ Mercator} \\ +13 &= -194a + 984p + c & 43 \end{aligned}$$

-47

Aug 9 C S.

$$\begin{aligned} +0.5 &= -194a + 984p \\ +0.8 &= -10 + 100 \\ +4.6 &= -29 + 96 \\ +2.45 &= -194a + 984p + c \times 52 \end{aligned}$$

-115

Aug 12 C W

$$\begin{aligned} +2.3 &= -194a + 984p \\ +1.7 &= -10 + 100 \\ -0.1 &= -29 + 96 \\ +1.30 &= -194a + 984p + c & 48 \\ & & -80 \end{aligned}$$

Aug 13

$$\begin{aligned} -47 \\ -115 \\ -64 \\ -55 \\ -86 \\ -49 \\ -96 \end{aligned}$$

Aug 14

$$\begin{aligned} +1.6 &= -10 + 100 \\ +0.0 &= -29 + 96 \\ +8.0 &= -194a + 984p - c & 48 \end{aligned}$$

-64

$$\begin{aligned} -2.2 &= +104a + 1000p & 7413 \text{ Lyne} \\ -3.1 &= +29 + 96 & 226.13 \\ -3.1 &= +13 + 99 & 116.13 \\ -2.8 &= +174a + 984p + c & 47 \end{aligned}$$

$$\begin{aligned} +3.1 &= +104a + 1000p \\ -2.2 &= +29 + 96 \\ -2.2 &= +13 + 99 \\ -2.2 &= +214a + 984p + c \times 48 \end{aligned}$$

$$\begin{aligned} -0.2 &= +104a + 1000p \\ -2.8 &= +29 + 96 \\ -1.9 &= +13 + 99 \\ -1.63 &= +174a + 984p + c & 53 \end{aligned}$$

$$\begin{aligned} -0.1 &= +104a + 1000p \\ -1.9 &= +29 + 96 \\ -0.6 &= +13 + 99 \\ -8.7 &= +174a + 984p + c \end{aligned}$$

$$\begin{aligned} -0.8 &= +10 + 100 \\ -2.9 &= +29 + 96 \\ -0.9 &= +13 + 99 \\ -1.63 &= +174a + 984p + c & 52 \end{aligned}$$

July 16 CW

$$+02 = -19 + 98$$

$$-37 = -10 + 100$$

$$-36 = -29 + 96$$

$$-237 = -1940 + 9844 + C \quad 47$$

$$-24 = +10 + 100$$

$$-44 = +29 + 96$$

$$-65 = +13 + 99$$

$$-577 = 1740 + 9844 + C \quad 58$$

July 18 CS

$$+5.6 = -119 + 98$$

$$+4.9 = -10 + 100$$

$$+4.7 = -29 + 96$$

$$+507 = -1940 + 9844 - C \quad 47$$

$$+32 = +10 + 100$$

$$+0.5 = +29 + 96$$

$$+2.3 = +13 + 99$$

$$+200 = +1740 + 9844 + C \quad 58$$

July 19 CW

$$+0.3 = -19 + 98$$

$$-0.4 = -10 + 100$$

$$-1.5 = -29 + 96$$

$$-0.53 = -1940 + 9844 + C \quad 47$$

$$-3.5 = +29 + 96$$

$$-1.3 = +13 + 99$$

$$-2.4 = 2140 + 9844 + C \quad 58$$

July 5 -61 =

$$-132 =$$

$$-193 = 9844 + C$$

July 16 -111 =

$$-306$$

$$-417 = 9844 + C$$

July 9 +127

$$-106$$

$$+21 = 9844 + C$$

July 18 +238

$$+106$$

$$+344 = 9844 + C$$

July 12 +61

$$-86$$

$$-25 = 9844 + C$$

July 19

$$-24$$

$$-127$$

$$-151 = 9844 + C$$

July 13 +50 = 9844 + C

July 14 +38 =

$$-79$$

$$-41 = 9844 + C$$

July 5 -1.93 = 9844 + c vnt. 1.5
 9 +0.21 = 9844 + c 1.0
 12 -0.25 = 9844 + c 1.5
 13 +0.50 = 9844 + c 0.0
 14 -0.41 = 9844 + c 1.1
 16 -4.17 = 9844 + c 1.5
 18 +3.44 = 9844 + c 1.5
 19 -1.57 = 9844 + c 1.1

-1.07 = 9844
 -0.25 = 9844
 -0.41 = 9844
 -0.73 = 9844

July 5 -1.93 = 9844 + c +2.1 = 9844 + c.
 12 -2.5 = +5.0 =
 14 -4.1 = +3.44 =
 16 -4.17 = 4.15 = 3(9844 + c)
 19 -1.57 = +1.38 = 9844 - c
 8.27 = 3(9844 + c)
 -1.65 = 9844 + c. 8.0
 +1.38 = 9844 + c. 3.1
 -7.2 = 9844
 -7.5 = 44

July 9
 13
 18

Comparison of results

1st Series 44 = -7.1 . 9.2 -6532 =
 2nd Series = -0.5 . 4.2 210
 3rd Series = -7.5 . 10.2 76.50
23.6 14392

6532
 210
 76.50
 14392
 44 = -7.1

-6.1 = 44

The revision of this work has been carried on, on board the U.S.S. Vermont, where neatness is the exception to the general condition of things. This will explain the soiled appearance of ~~this work~~.

M.S.R.

$$\text{let } a_0 = -80$$

$$\begin{array}{r} \text{Rev} \\ I - 0.2 \\ II - 0.3 \\ III - 0.7 \\ \hline -0.4 \end{array}$$

$$\begin{array}{l} * -11 = +15 + 8846 + C \\ -28 = -13 + 88 + C \end{array} \quad \begin{array}{l} +24 = +15 + 88 - C \\ -22 = -17 + 88 - C \end{array} \quad \begin{array}{l} -20 = +1 + 8846 + C \\ +2 = -1 + 88 - C \end{array}$$

$$\begin{array}{r} -18 = 18646 \\ \varphi = -1.1 \end{array}$$

$$\begin{array}{l} +13 = +15 + 8846 + C \\ -16 = +14 + 88 + C \end{array} \quad \begin{array}{l} +08 = +15 + 88 - C \\ -15 = -14 + 88 - C \end{array} \quad \begin{array}{l} -02 = 0 + 8846 + C \\ -04 = 0 + 88 + C \end{array}$$

$$\begin{array}{r} -06 = 186 \\ \varphi = -0.3 \end{array}$$

$$\begin{array}{l} -24 = +15 + 8846 + C \\ -58 = -13 + 88 + C \end{array} \quad \begin{array}{l} +57 = +15 + 88 - C \\ +20 = -15 + 88 - C \end{array} \quad \begin{array}{l} -41 = +1 + 88 + C \\ +35 = +1 + 88 - C \end{array}$$

$$\begin{array}{r} -06 = 186 \\ \varphi = -0.3 \end{array}$$

$$\begin{array}{r} -11 \\ -03 \\ -03 \\ -11 \\ -28 \\ -0.7 \end{array}$$

$$\begin{array}{l} +57 \\ -03 = +15 + 88 + C \\ -24 = -17 + 88 + C \end{array} \quad \begin{array}{l} +57 = +15 + 88 - C \\ +02 = +15 + 88 - C \\ -09 = 0 + 88 - C \end{array} \quad \begin{array}{l} -15 = -01 + 88 + C \\ -09 = 00 + 88 - C \end{array}$$

$$\begin{array}{r} -27 = 186 \\ \varphi = -1.1 \end{array}$$

1864phae-proj-142R