1888phae.proj.1791E

KG
11366
v.787

Time Service

Oct 30-1888 to Jan 16-1890

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1993ApJ...404..781E

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Explanation.

When the normal sidereal clock is slow, we give the amount that it is slow in minutes and seconds with no sign.

But when it is fast, we give a number of minutes minus a number of seconds, thus: Clock fast = $1^m - 27^s.34$ would mean that the clock is fast 1 minute lacking 27.67 seconds, (the equivalent of clock fast $32^s.66$).

In no case do we give a result with a sign attached, leaving doubt whether it be "correction" or "error" — we avoid those terms. (In preliminary figures leading up to our results we use signs as if for clock correction.)

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Old Colony Railroad Co.	Boston.	300.–
Boston & Providence R. R. Co.	"	300.–
Boston & Albany R. R. Co.	"	300.–
Boston & Maine R. R. Co.	"	250.–
Eastern R. R. Co.	"	250.–
J. P. Kettell & Co.	376 Washington St., Boston.	50.–
Bigelow, Kennard & Co.	511 Washington St., Boston.	50.–
Jos. Gaudner & Son.	344 Washington St., Boston	50.–
Gustav H. Roth.	47 West St., Boston.	50.–
W. E. Hadlock & Co.	125 State St. Boston.	50.–
C. A. W. Loveby.	474 Washington St., Boston.	50.–
American Watch Co.	405 Washington St., Boston.	50.–
New York & New England R. R. Co.	Boston.	200.–
G. H. Richards Jr.	383 Washington St., Boston	50.–
Equitable Life Assurance Co.	Boston.	100.–
A. J. Applegate.	475 Main St., Camb.-pt.	50.–
Shreve, Crump & Low.	432 Washington St., Boston	50.–
Fitchburg Railroad Co.	Boston.	150.–
James Munroe & Son	112 State St., Boston.	50.–
City of Boston.		400.–
C. W. Beals.	11 Milk St., Boston.	50.–
Kettelle Bros. & Morrill.	2 Bromfield St., Boston.	50.–

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Average Errors of Signals.

	Error at Transit	Error at 10 R.A. ~~Stars~~	Change of Daily Rate
Nov. 1887	0.s45	0.s39	0.s27
Dec. "	0.47	.46	.15
Jan. 1888	0.34	.30	.24
Feb.	0.31	.25	.23
Mar.	0.25	.24	.21
Apr.	0.20	.18	.15
May	0.15	.34	.14
June	0.37	.68	.10
July	0.30	.26	.15
Aug.	0.40	.30	.17
Sept.	0.19	.22	.11
Oct.	0.43	.35	.21
Average	0.s32	0.s33	0.s18

152 groups of transits during the year.
Average Interval = 2.4 days.

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30 1888

Oct 30.5 (See Amer. Ephem.)

B Triang. | J Triang.

7.2	7.1	4.3	4.1	3.5	7.6
9.7	4.9	.6	6.5	1.0	7.5
2.1	2.1	.2	8.9	8.3	7.2
4.7	~~2.1~~ 9.4	.1	1.2	5.9	7.1
7.1	~~9.7~~ 6.9	.0	3.8	3.7	7.5
2.1	~~7.1~~ 2.1	.2	8.8	~~1.0~~ 8.4	7.2
4.9	~~7.8~~ 9.7	.6	1.2	~~8.3~~ 6.2	7.4
7.1	~~7.6~~ 7.1	.2	3.8	~~5.9~~ 3.7	7.5
9.5	4.8	~~9.1.3~~ 7.3	6.2	~~3.7~~ 1.3	7.5
		(41.6)			28.8
		18)2.5			~~38.5~~
					13.3

.06
.3
+.02
56.24
.26

.10
.5
.05
42.78
42.83

2 02 42.14
02 56.26
− 0 14.12
−.09
−.60
14.81

2 10 28.70
2 10 42.83
− 0 14.13
−.10
−.60
14.83

Average = 14.82

2 8 32.40
9 04.48
+ 0 32.08

#394 Normal
15 27.67
14 37 46.09
11 14 00.
1 50.721
26 09 04.48

Oct. 30.9

#103 Standard
15 27.67
14 37 46.09
21 57 00.
3 36.350
36 53 50.11

12 53 35.41
53 50.11
+ 0 14.70

Another reading gives + 0 14.75 at 22h 03m Mean Time
Average + 0 14.73

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1888phae.proj.1791E

1038 Standard

Oct 31.9 (Out of order. See negt-page.)

12 57 29.38
12 47 45.02
13 46 16.31

+ 0 15.64

Ker Comp. gives + 0 15.65 at 21h 20m 24s.

15 27.67
14 41 42.64
47 00.
34.707
5.999
37 46 16.31
36 47 45.02

(Out of order. See negt-page)

Oct. 31.2 74 Cygni

7.8 1.3 9.1
0.3 8.7 9.0
3.0 5.9 8.9
5.7 3.3 9.0
8.4 0.5 8.9
3.7 5.2 8.9
6.5 2.5 9.0
9.0 9.9 8.9
1.8 7.0 8.8

14.5
9.0

21 32 14.5
21 32 29.90
− 0 15.44
−.06
−.60
0 15.46

21 27

β Cephei

8.3 9.6 7.9
4.2 7.0 7.9
0.3 7.0 7.3
6.2 4.7 7.2
2.1 2.7 7.2
4.7 6.1 7.9
6.7 8.8 7.7
8.6 6.6 7.6
0.6 4.7 7.6

2.7 5.0
4.7 3.0
6.6 0.9
8.6 8.8
0.7 6.8
2.7 4.9
4.7 2.8
6.6 1.0

42.7
7.7
7.7
7.5
7.4
7.5
7.6
7.5
7.6
58.71
27.5
58.71
14.44
− 0 15.73
0 14.62
2.4) 1.11
n = 0.4

1 Pegasi

9.6 3.1 2.7
1.7 1.0 2.7
3.9 9.8 3.7
6.0 6.6 2.6
8.3 4.3 2.6
2.7 0.0 2.7
4.8 7.9 2.7
7.0 5.7 2.7
9.1 3.5 2.6

41.3
7.3

21 16 41.38
42.91
21 16 56.00
− 0 14.62
−.60
0 15.42

Area

1888phae.proj.1791E

Oct 31.2 Stars on previous page.

21	~~23~~ 19	~~41.~~ 40.71
21	20	13.06
+	0	32.35

#394 Normal

	15	27.67
14	41	42.64
6	22	00.
6	26	~~00.~~
	1	2.753
21	20	13.06

Another reading gives the same at 6h16m Mean Time

Oct 31.9 See page 31.

~~Oct~~
Nov. 1.2

#103 Standard

	15	27.67
14	45	39.19
4	14	00.
		41.726
19	15	48.594

19	15	~~29.~~ 32.65
	15	48.59
+	0	15.94

Another reading gives + 0 15.95 at 4 19 00. Mean Time

#394 Normal

	15	27.67
14	45	39.19
4	05	00.
		40.247
19	06	47.11

19	06	14.78
	06	47.11
+	0	32.33

Another reading gives + 0 32.34 at 4 09 00. Mean Time

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Nov 1.9

#113 Standard

15 27.67

14 45 39.19

21 56 00.

3 36.185

43.05

Ear Comp. gives

~~Another~~

Jan. 17 1889

Phase 140

Sid. Clock is slow

2ᵐ 33ˢ.59

at 15ʰ 40ᵐ

Ear Comp. gives

Another reading

Nov. 2 10/10

Another reading gives

average

Ear Comp. gives

14 38 22.68

14 38 55.05

~~14 34 58.49~~

~~− 4 + 35.81~~

+ 0 32.37

~~− 4 + 35.89~~

Another reading gives + 0 32.38

14 15 27.67

~~14 45 39.19~~

23 30 00.

3 51.627

~~38 34 58.49~~

38 38 55.05

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1888phae.proj.1791E

Nov 1.9

#113 Standard

15 27.67
14 45 39.19
21 56 00.
3 36.185
37 00 43.05

~~12 59 26.~~
13 00 26.57
00 43.05
+ 0 16.48
+ 0 16.50 at 21 22 Mean Time
+ 0 16.49

Ear Comp. gives

#394 Normal

15 27.67
14 45 39.19
21 45 00.
3 34.378
36 49 41.24

12 49 08.48
49 41.24
+ 0 32.76

Ear Comp. gives the same at 23 19 00. Mean Time
Another reading gives + 0 32.75 at 21 50 00.

Nov. 2 10/10

#113 Standard

15 27.67
14 ~~45~~ 49 ~~39.19~~ 35.75
23 48 00.
353.434
~~38 46 00 36~~
38 49 56 ~~08.52~~

14 48 39.50
49 56.84
~~14 46 00.30~~
~~- 3 56 + 20.80~~
~~+ 3 8 + 17.34~~
~~- 3 + 20.81~~
+ 0 17.36

Another reading gives
Ear Comp. gives average -3 + 20.72 at 21 11 26. Mean Time

#394 Normal

~~14 15 27.67~~
~~14 45 39.19~~
23 30 00.
351.627
~~38 34 58.47~~
38 38 55.05

14 38 22.68
14 38 55.05
~~14 34 58.49~~
~~- 4 + 35.81~~
+ 0 32.37
~~- 4 + 35.89~~
+ 0 32.38

Another reading gives

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1888phae.proj.1791E

Nov 4.5

2 00° ~~02~~ 10. 49
2 00 42.65
+ 0 32.16

Another reading gives + 0 32.17 at 1h 59m 10s.00

Nov. 4.9

13 35 17.~~38~~ 34
35 36.49
+ 0 19.~~27~~ 13

Another reading gives + 0 19.12 at 13 34 33.23
+ 0 19.14

Nov. 5. ~~#10~~ 10

14 56 25.55
56 45.~~79~~ 69
+ 0 20.~~15~~ 17

Bar Comp. gives + 0 20.11 at 12h 38m
Average + 0 20.13

14 47 11.35
47 ~~45.86~~ 44.21
+ 0 ~~34.51~~ 32.86

Another reading gives + 0 32.88 at 14h 53m 12.32
Average + 0 32.87

#394 Normal.

15 27.67
14 57 28.86
10 47° 00.
1 46.121
26 00 42.65

#113 Standard

15 27.67
14 57 28.86
22 19 00.
3 39.964
37 35 36.49

#103 Standard

15 27.67
15 1 25.41
23 36 00.
352.613
38 56 45.~~69~~ 69

#394 Normal

15 27.67
15 1 25.41
23 27 00.
3 ~~51.134~~ 52.134
~~38 45.86~~ 38 44.21

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Nov
~~Oct~~. 6. 9

13 23 5.33
23 26.32
+ 0 20.99
Ear Comp. gives + 0 20.94 at ~~20 43~~ 12h 06m
Average + 0 20.97

13 02 49.70
03 23.03
+ 0 33.33
Ear Comp. gives + 0 33.37 at 13h 40m
Average + 0 33.35

103 Standard
15 27.67
15 5 21.97
21 59 00.
3 6.678
~~38 23 36.18~~
37 23 26.32

394 Normal.
15 27.67
15 05 21.97
21 39 00.
3 33.393
37 03 23.03

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1888phae.proj.1791E

36

Nov.

~~Oct~~ 7.2 V bzgzii

61 bzgzii par.

61 bzgzii Pr.

3.7		~~37~~ – 0.4
6.~~3~~[2]		– 7.7
9.0		– 5.0
1.6		– 2.6
4.0		– 0.0
6.8	0.4	3.7 4.7 8.4
9.~~3~~[4]	7.7	6.2 2.1 .3
2.~~8~~[1]	5.0	9.0 9.4 .4
4.7	2.5[c]	1.6 6.8 .4
	5–0.0	34.0
		1.5
		21 01 34.17
		01 ~~3~~4.06
		19.89
		–.05
		–.60
		[Reading] 20.54

.21
.1
–.02
5 24.08
06

~~8~~.3 3.9 2.2 41.1 3

5 2 ~~48.10~~

20 53-01.0

–0 ~~20.9~~ 19.0

–.6

0 20.5±

#394 Normal.

15 27.67

15 09 18.52

5 3 ~~6 34.~~ 54.868

~~15 30 15.06~~

20 59 41.06

20 59 7 .31

20 59 41.06

+ 0 33.75

Another reading gives + 0 33.74 at 20 55

1888phae.proj.1791E

Nov. 7.9

13 / ~~22~~ 29 01.40
13 29 23.20
+ 0 21.80

Another reading gives the same at 13 24

13 20 47.30
21 21.88
+ 0 34.58

Another reading gives the same at 13 22

Nov. 8.9

13 43 58.64
44 21.56
+ 0 22.92

An Ear Comp. gives + 0 22.90 at 12 56
Average + 0 22.91

13 32 43.52
33 19.76
+ 0 36.24

Another reading gives + 0 36.23 at 13.37

103 Standard

15 27.67
15 09 18.52
22 01 00.
3 37.007
37 29 23.20

#394 Normal

15 27.67
15 09 18.52
21 ~~77~~ 57.3 00.
3 35.693
37 21 21.88

#103 Standard

15 27.67
15 13 15.08
22 12 00.
3 38.814
37 44 21.56

#394 Normal

15 27.67
15 13 15.08
22 01 00.
3 37.007
37 33 19.76

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Nov. 9.9

#394 Normal
15 27.67
15 17 11.63
2 1 46 00.
3 34.543
3 7 8 2 2 13.85

36.40
13.85
+ 0 37.45
Another reading gives + 0 37.43
Average + 0 37.44

#103 Standard
15 27.67
15 17 11.63
2 1 30 24.
3 31.914
.066
3 7 06 35.28

13 05 48.
24.
06 12
06 35.28
Lar Comparison + 0 23.28
Another Lar Comp. + 0 23.38 at 15 27
Average + 0 23.33

Nov. 11.5

#394 Normal
15 27.67
15 25 04.74
11 22 00.
151.729
17 04 24.14

3 0 3 44.57
04 24.14
+ 0 39.63

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Nov 11.5 ♀ Persei

8.8 2.3 1.1
1.9 9.1 1.0
5.2 5.9 1.1
8.2 2.9 1.1
1.4 9.3 .07
8.0 3.0 1.0
1.0 0.4 1.4
4.3 7.0 1.3
7.3 3.6 0.9
0.5
10.1

3 16 0.53
3 16 24.16
-0 23.63
+.10
-.60
0 24.13

.13
.5
.07
.01
24.09
24.16
.10
.5
+.05
30.25
.30

Nov 11.7

♀ Persei ♀ Tauri

6.2 8.0
8.5 6.0
0.3 4.7
2.3 1.7
4.5 9.4
8.9 5.2
0.8 3.3
2.8 0.0
1.9 8.0

3 18 24.03
18 50.70
-0 23.27
.30
.60
0 24.17

4.2
4.5
4.0
5.0
4.0
3.9
4.1
5.2
4.5
3.8
3.9
27.0
0.0
16.85

#13 Standard
15 27.67
15 25 04.74
22 08 00.
338.649
B7 55 11.06

Average = 24.15

13 54 46.47
55 11.06
+ 0 24.59
+ 0 24.60 at 13 14

Ear Comp. gives

#394 Normal.
15 27.67
15 25 04.74
22 05 00.
3 37.664
3749 10.07

13 48 20.78
49 10.07
+ 0 39.29
+ 0 40.33 at 14 44

Ear Comp. gives
Average
+ .0 40.31

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1888phae.proj.1791E

Nov. 12.5?

#103 Standard

15 27.67
15 29 01.30
22 19 00.
3 39.964
38 07 08.93

14	06	43.36	
	07	08.93	
+	0	25.57	

Another reading gives + 0 25.58 at 14 06 13.27

Nov. 13.2
Ear Comp. gives + 0 25.88 at 19 22

#394 Normal.
15 27.67
15 29 01.30
22 14 00.
3 39.142
38 02 08.14

14	02	26.69	
	02	08.11	
+	0	41.42	

Another reading gives + 0 41.40
Average + 0 41.41

Nov. 13.2

#394 Normal
15 27.67
15 32 57.85
5 07 00.
50.432
2056 15.95

20	55	34.30	
	56	15.95	
+	0	41.65	

Another reading gives + 0 41.67 at 20 57

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1888phae.proj.1791E

Nov. 13.2

32 Vulpec

V Cygni

2. 3 Boggin

61 Cygni pr

0.6 6.9 7.5 8.5 3.1 1.6 8.9 6.0 4.9

3.0 4.6 7.6 1.4 0.3 1.7 1.9 3.0 4.9

5.0 2.2 7.2 4.0 7.5 1.5 4.8 0.1 4.9

7.2 9.8 7.0 6.8 5.0 1.8 7.6 7.6 5.2

9.8 7.6 7.4 9.6 2.4 2.0 0.4 4.4 4.8

4.7 2.9 7.6 5.1 — — 6.2 9.0 5.2

6.7 0.5 7.2 8.0 4.3 2.3 9.0 6.0 5.0

9.1 8.4 7.5 0.6 1.6 2.8 3.0 1.1 5.1

1.3 5.9 7.2 3.0 8.7 1.7 4.9 0.3 5.2

23.5 23.5 35.8 27.6 27.6

12.7 15.6 9.8

2049 23.67 2053 35.92 21 00 27.56

2049 48.43 2052 60.88 48.43 53.93

— 0 24.76 — 0 25.01 21 01 54.02

.69 24.96 — 01 26.51

-.16 -.02 26.41

-.60 -.60

25.45 25.58

Average = 25.52

Nov. 13.9

103 Standard

15 27.67

15 32 57.85

21 41 00.

333.721

3 32 59.24

13 32 32.88

32 59.24

+ 0 26.36

Ear Comp. gives + 0 26.34 at 13 14

Average + 0 26.35

#394 Normal

15 27.67

15 32 57.85

21 35 00.

3 32.736

3 26 58.26

13 26 15.59

26 58.26

+ 0 42.67

Ear Comp gives + 0 42.77 at 16 07

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1888phae.proj.1791E

Nov. 14. 9

13 46 30.67
4657.44
+ 0 26.77

Nov 15.2
Ear Comp gives + 0 26.83 at 2006
+ 0 26.80 at 16 56
Average

13 39 12.80
39 56.29
+ 0 43.49
Another reading gives + 0 43.52 at 1342
Average + 0 43.51

Nov. 15. 9

14 05 29.32
05 56.47
+ 0 27.15

Nov 16.2
Ear Comp gives + 0 27.29 at 20 58
Average + 0 27.21 at 17 32

14 00 11.37
00 55.65
+ 0 44.28

Nov. 16.2
Ear Comp. gives + 0 44.57 at 21 06

#103 Standard
15 27.67
15 36 54.41
21 51 00.
3 35.364
37 46 57.44

#369 Normal
15 27.67
15 36 54.41
21 44 00.
3 34.214
37 39 56.29

#103 Standard
15 27.67
15 40 50.97
22 06 00.
3 37.828
38 05 56.47

#394 Normal
15 27.67
15 40 50.97
22 00 00.
3 37.837
37 59 55.48
38 00 35.65

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Nov. 16.9

#103 ~~Standard~~

15 27.67

15 44 47.52

22 18 00.

339.799

3 ~~8~~ 21 54.99

14 20 27.35

14 21 54.99

+ 0 27.64

+ 0 27.67 at 15 01

+ 0 27.66

Bar Comp. gives

Average

#394 Normal

15 27.67

15 44 47.52

21 23 00.

330.764

3 7 26 45.95

2600

13 ~~27~~ ~~1~~ 75

26 45.95

5

+ 0 45.20

+ 0 45.23 at 15 17

+ 0 45.22

Bar Comp.

Average

Nov. 17.2

#394 Normal

15 27.67

15 48 44.07

5 19 00.

52.404

21 24 04.14

2 ~~4~~ 23 18.28

24 04.14

+ 0 45.86

+ 0 45.78 at 21 19

+ 0 45.82

Another reading gives

Average

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[Anon. Ephem]

Nov. 17.2

	ζ Eggii			τ Eggii			q Eggii		
.17	9.8	7.3	7.1	6.4	8.4	4.8	—	—	
.1	2.0	4.7	6.7	9.0	5.7	4.7	—	—	
.02	4.3	2.4	6.7	1.6	3.2	4.8	—	—	
14.37	6.7	9.9	6.6	4.0	0.6	4.6	—	—	
11.35	9.0	7.6	6.6	6.7	8.0	4.7	—	—	
.21	4.0	3.0	7.0	2.0	2.9	4.9	9.0	4.4	3.4
.2	6.4	0.6	7.6	4.7	0.0	4.7	0.6	2.7	3.3
.04	8.8	8.1	6.9	7.1	7.6	4.7	3.1	1.4	3.5
20.42	1.0	5.8	6.8	9.7	4.9	4.8	3.5	9.8	3.3
20.38							5.0	8.4	3.4
							6.4	9.6	
.42							6.4	6.9	3.3
.1							1.9	5.1	3.0
.04							9.7	3.7	2.9
55.12							0.8	3.2	3.0
55.08							2.2	3.7	
							2.2	1.6	3.1
							3.8	2.6	
							3.8	9.6	3.4
							5.1	7.8	
							5.1	8.0	3.1
							6.6	7.0	
									26.6
									28.0
									15.3
	43.5			52.3					
	8.5			6.8					
21 07	43.45			21 09	52.36				
21 08	11.35			21 10	20.38				
— 0	37.90			— 0	28.02				
	-.14				-.06				
	-.60				-.60				
	28.64				28.68				

Average: 28.66

21 15 26.81

21 15 55.08

— 0 28.27

— .60

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1888phae.proj.1791E

Nov. 18. 9

14 04 14.58
04 43.99
+ 0 29.41

Ear Comp. gives + 0 29.38 at 14 42
Average + 0 29.41

Ballot #103 Standard
15 27.67
15 52 40.63
21
12 53 00.
335.693
8
37 04 43.99

#394 Normal
15 27.67
15 52 40.63
21
12 47 00.
334.707
37 58 43.01

13 57 54.44
58 43.01
+ 0 48.57

Ear Comp. gives + 0 48.52 at 15 02
Average + 0 48.55

Nov. 19. 9

Ballot #103 Standard.
15 27.67
15 56 37.18
21 41 00.
333.721
37 56 38.57

13 56 08.41
56 38.57
+ 0 30.16

Ear Comp. gives + 0 30.20 at 14 54
Average + 0 30.18

#394 Normal
15 27.67
15 56 37.18
21 36 00.
3 32.900
37 51 37.75

13 50 48.37
51 37.75
+ 0 49.38

Ear Comp. gives + 0 49.37 at 13 41

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1888phae.proj.1791E

Nov. 20.2

β Delphini

— 0.0
— 8.0
— 5.7
3.9 3.6 7.5
6.8 1.5 7.7
4.3 7.3 7.6
2.4 5.2 7.6
4.5 3.0 7.5
6.6 1.0 7.6
48.7
10.2

20 30 48.78
20 32 18.85
— 0 30.07
— .26
— .60
30.93

.18
.4
+.07
41.75
41.82

.13
.4
.05
18.90
18.85

.23
.4
.09
37.54
37.45

α Cygni

7.9 6.5 4.4
0.9 3.1 4.0
3.0 0.2 3.2
6.7 7.5 4.2
9.6 4.5 4.1
5.5 8.8 4.3
8.2 6.0 4.2
1.2 2.7 3.9
4.2 0.0 4.2
7.1
0.6

20 37 7.03
20 37 37.45
— 0 30.42
+.03
— .60
30.99

ε Cygni

6.7 6.1 2.8
8.0 3.8 1.8
1.6 1.2 2.8
4.0 8.7 2.7
6.6 6.5 3.1
1.6 1.2 2.8
3.8 8.9 2.7
6.3 6.4 2.7
8.9 4.0 2.9
11.4
6.7

20 41 11.35
20 41 <11.8
— 0 30.47
.10
— .60
31.17

Average = 31.03

20 23 52.30
2442.15
+ 0 49.85
Another reading gives + 0 49.87 at 20 25

394 Normal
15 27.67
16 033.74
4 08 00.
40.740
20 24 42.15

1888phae.proj.1791E

#1038 standard
15 27.67
16 0 33.74
22 12 14.
3 38.814
.038
3831 54.26

Nov. 20.9

14 38 09.
14.
31 23.
38 54.26
Ear comparison + 0 31.26
Another Ear comp + 0 31.29 15 38
Average + 0 31.28

#394 Normal
15 27.67
16 0 33.74
22 59
54.
3 46.535
.148
39 19 42.09

15 17 57.
54.
18 51.
19 42.09
Ear Comp. + 0 51.09
Another Ear Comp. + 0 51.11 at 23 12
Average + 0 51.10 at

Nov. 21.9

#103 standard
15 27.67
16 4 30.29
22 37 00.
3 42.921
3900 40.88

15 00 08.62
00 40.88
+ 0 32.26
Ear Comp gives + 0 32.25 at 15 44

#394 Normal
15 27.67
16 4 30.29
21 41 00
3 38.721
3 29.206
3804 31.68

14 01 14 39.38
14 04 71.68
+ 52.30

Another reading gives the same at 14 05(?).

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Difficulty with illumination. Discard discordances. E. obs.

Nov. 22.3

.17								
.2								
+.03								
32.91								
.94								
.11								
.6								
.66								
.07								
49.80								
49.73								
.12								
6								
.07								
38.355								
38.48								

ζ Pegasi

6.0								
~~8.2~~ 9.2		5.2						
8.2	7.0	5.2						
0.4	5.1	5.5						
2.4	3.0	5.4						
4.8	0.9	5.7						
9.0	6.5	5.5						
1.1	4.3	5.4						
3.2	2.0	5.2						
5.5	0.0	5.5						
		17.5						
		13.1						
2 3	46	17.69						
23	46	49.73						
− 0		32.04						
		−.23						
		−.60						
		32.87						

χ Andromedae

2.8	0.0	2.8						
5.3	7.0	2.3						
7.6	4.6	2.2						
9.8	2.6	2.8*						
2.2	0.4	2.6						
7.0	5.6	2.6						
9.3	3.3	2.6						
1.7	0.9	2.6						
3.9	8.6	2.5						
		06.1						
		4.7						
0	02	06.25						
0	02	38.48						
		32.23						
		−.15						
		−.60						
		32.98						

22 Andromedae

1.0	9.9	0.9						
4.2	7.0	1.2						
7.0	4.0	1.0						
0.0	1.0	1.0						
2.7	8.1	0.8						
8.7	2.0	0.7						
1.7	9.6	1.3						
4.7	6.6	1.3						
7.7	3.5	1.2						
		00.6						
		10.0						
0	04	00.53						
0	04	32.94						
− 0		32.41						
		+.04						
		−.60						
0		32.97						

Average = 32.94

#394 Normal.

15 27.67
16 8 26.85
7 19 00.
1 17.117
23 44 06.64

23 43 13.39
44 06.64
+ 0 53.25

Another reading gives the same at 23 38

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1888phae.proj.1791E

#103 Standard

15 27.67
16 8 26.85
2201 00.
3 37.007
38 28 31.53

Nov. 22.9

14 27 58.41
28 31.53
+ 0 33.12
Ear Comp. gives + 0 33.24 at 13 53
Average + 0 33.18

#394 Normal
15 27.67
16 08 26.85
21 50 00.
335.200
38 17 29.72

14 17 35.40
17 29.72
+ 0 54.32
Ear Comp gives + 0 54.35 at 14 00
Average + 0 54.34

103 Standard
15 27.67
16 12 23.41
21 54 00.
3 33.857
38 27 27.27
38 25 26.94

Nov. 23.9

14 24 52.86
25 26.94
+ 0 34.08
Ear Comp gives + 0 34.13 at 14 43
Average + 0 34.11

394 Normal
15 27.67
16 12 23.41
21 38 00.
3 38.228
38 09 24.31

14 08 28.24
09 24.31
+ 0 56.07

Ear Comp. Gives the same at 14 54

Nov. 25.2 (Sunday P.M.) Big snow storm all day. Ear companion taken by J.R.E. H.C.C. relays working all night. Main line sounder working weakly, with some failures. Adjacent W. U. and "Lenox" relays. They were working weakly, showing that the standard-clock-battery in the closet is not in best condition. W. U. line sounder not working at all: line probably broken by storm.

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Nov. 25. 9

#1038 Standard

15 27.67
16 21 16.52
22 26 00.
3 41.114
39 05 25.30

15 04 49.54
05 25.32
+ 0 35.78
+ 0 35.87
+ 0 35.83
+ 0 35.75

Ear Comp. gives
Average

at 15 47

#394 Normal

15 27.67
16 20 16.52
22 07 00.
3 37.992
38 46 22.18

14 45 23.56
46 22.18
+ 0 58.62
+ 0 58.60
+ 0 58.61

Ear Comp. gives
Average

at 14 35

Nov. 26.8 Circuit, battery, and relays appear to be all right, except the Western Union home line, which appears to be open. Current on H. C. O. line is very weak, doubtless on account of escape at wet insulator.

Nov. 26.9

#103 Standard

15 27.67
16 24 13.08
21 46 00.
3 34.543
38 29 15.29

14 28 38.55
29 15.29
+ 0 36.64
+ 0 36.69
+ 0 36.67

Ear Comparison gives
Average

#394 Normal

15 27.67
16 24 13.08
21 43 00.
3 34.050
38 26 14.80

14 25 15.46
26 14.80
+ 0 58.34

Ear Comp. gives the same at 15 35

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1888phae.proj.1791E

Nov. 27.9

#103 ~~Standard~~ Normal

15 27.67
16 28 09.64
22 23 00.
3 40.621
39 10 17.93

15 09 40.40
10 17.93
+ 0 37.53
+ 0 37.44 at 14 17
+ 0 37.49

Star Comp. gives

#394 Normal.
15 27.67
16 28 09.64
2154
3 35.857
38 41 13.17

14 ~~39~~ 40 13.37
41 13.17
+ 0 59.80
+ 0 59.81 at 1425

Star Comp. gives

Nov. 28.8 H. C. G. relay and sounder working all night.

Nov. 29.9

#103 Standard
15 27.67
16 36 02.75
~~16 28 09.64~~
22 2600.
341.114
~~39 13 18.42~~
39 21 11.53

15 20 ~~38~~ 37.42
21 11.53
+ 0 39.11
+ 0 39.12 at 14 16

Star Comp. gives

#394 Normal
15 27.67
16 36 02.75
21 52 00.
3 35.528
38 47 05.95

14 46 03.58
47 05.95
+ 01 02.37
+ 01 02.39 at 14 36

Star Comp. gives

Both relays & sounders working all night.

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1888phae.proj.1791E

Nov. 30.9

15 ~~19~~ 20 27.~~54~~ 66
21 07.44
+ 0 39.~~7~~ 8~~0~~
+ 0 39.76 at 16 04
+ 0 39.77

Ear Comp. gives
Average

15 16 03.41
17 06.78
+ 01 03.37
+ 01 03.35
+ 01 03.36

Ear Comp. gives
Average

Both relays & sounders working.

#103 Standard

15 27.67
16 39 59.31
22 ~~27~~ 00.
3 40.456
3 ~~40.292~~
39 21 07.44

#394 Normal

15 27.67
16 39 59.31
22 18 00.
3 39.799
39 21 06.78

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1888phae.proj.1791E

Dec. 12

74 Cygni		
2.7	6.3	9.0
5.2	3.6	8.8
7.8	0.9	8.7
0.6	8.2	8.8
3.2	5.5	8.7
8.6	0.0	8.6
1.5	7.5	9.0
4.0	4.7	8.7
6 9	2.0	8.9
		49.5
		8.7

.26
.5
+.13
40.23
.36

.20
.5
.10
28.73
28.63

.15
.5
.08
59.38
59.30

21 31 49.41
21 32 28.63
− 0 39.22
−.03
−.60
0 39.85

π² Cygni		
9.6	2.1	1.7
2.6	9.0	.6
5.7	5.9	.6
8.9	2.9	.8
2.0	9.7	.7
8.5	3.3	.8
1.6	0.3	.9
4.7	7.1	.8
7.7	4.6	.7
		00.9
		16.5

21 42 00.87
42 40.36
− 0 39.49
+.09
−.60
0 40.00

16 Pegasi		
7.3	2.8	0.1
9.7	0.6	0.3
1.9	8.4	0.3
4.2	6.1	0.3
6.5	3.8	0.3
1.0	9.2	0.2
3.4	6.9	0.3
5.6	4.7	0.3
7.8	2.4	0.2
		20.0
		2.3

21 47 20.12
21 47 59.30
− 0 39.18
−.17
−.60
0 39.95

Average = 39.93

21 36 05.66
37 09.84
+ 01 03.82

Another reading gives + 01 03.41

#394 normal
15 27.67
16 43 55.87
4 37 00.
45.504
21 37 09.04

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1888phae.proj.1791E

Dec. 2. 9

#103 Standard
15 27.67
16 47 52.43
21 59 00.
3 36.678
39 05 56.78

15 05 15.46
05 56.78
+ 0 41.32
Ear Comp. gives + 0 41.33 at 14 25

#394 Normal
15 27.67
16 47 52.43
21 36 00.
3 32.900
39 42 53.00

14 42 48.62
42 53.00
+ 01 05.62
+ 01 05.54
Ear Comp. gives
~~Ear Comp. gives~~ + 01 05.58

Both relays working. H.C.O sounder working but not N.M. sounder.

Dec. 3. 9

#103 Standard
15 27.67
16 51 48.98
~~16 47 52.43~~
2232
~~3 3~~ 3 42.099
~~39 39 02.20~~
39 42 58.75

15 42 16.66
42 58.75
+ 042.09
+ 042.12
Ear Comp. gives
Average + 042.11

#394 Normal
15 27.67
16 51 48.98
22 29 00.
3 41.606
39 39 58.26

15 38 51.27
39 58.26
+ 01 06.89
+ 01 07.11 at 17 09
Ear Comp. gives
Average + 01 07.05

Dec 4.0
~~3.0~~ Both relays working. H.C.O. sounder working but not N.M. sounder

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1888phae.proj.1791E

Dec. 5.9 Sounder and relays O.K. Dec. 7.9 At Obsy. Signals O.K.

" 6.9 " " " "

" 8.2 " " " "

Dec. 6.2

7 Lacaille			10 Lacaille			η Pegasi		
6.8	0.5-	7.3	—	8.7		0.0	7.3	7.3
0.0	7.3	.3	—	6.0		2.3	4.9	.2
3.1	4.0	.1	1.5-	3.4	4.9	4.7	2.4	.1
6.3	1.0	.3	4.0	1.0	5.0	7.0	0.2	.2
9.6	7.9	.5	6.7	8.4	5.1	9.4	7.9	.3
6.0	1.5-	.5	2.0	3.0	5.0	4.1	3.0	.1
9.1	8.0	.1	4.6	0.3	4.9	6.6	0.7	.3
2.4	4.9	.3	7.1	7.8	4.9	8.9	8.3	.2
5.7	1.7	.4	9.9	5.0	4.9	1.3	6.0	.3
		58.6			32.4			03.5-
		12.4			(10) 7.1			11.5
22	25-	58.65-	22	33	32.47	22	37	03.61
	26	42.08		34	15.74		37	46.79
	- 0	43.43		- 0	43.27		- 0	43.18
		+.10			-.05-			-.14
		-.60			-.60			-.60
	0	43.93		0	43.92		0	43.92

Dec 9.5 H.C.O. relay and sounder O.K. (W.O. not inspected.)

9.7 " " " " " "

10.2 " " " " " "

10.7 Both " " " " (Watched the batteries)

11.5 H.C.O. " " " "

Dec. 6.2

*394 Normal

15 27.67

17 03 38.65-

4 45 00.

46.818

22 04 53.14

22 03 43.35-

04 53.14

+ 01 09.79

Another reading gives + 01 09.80 at 22 04

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1888phae.proj.1791E

Dec 12.5

	η Aurigæ			μ Aurigæ			ϑ Aurigæ		
.13	9.6	4.0	3.6	—			2.8	1.8	4.6
.4	2.1	6.3	3.4	—			5.7	8.9	.6
−.05	5.0	8.6	3.6	—			8.7	5.9	.6
50.20	7.6	5.9	3.5	—			1.6	3.0	.6
.15	1.1	3.0	4.1	—			4.4	0.2	.6
.14	6.0	7.7	3.7	2.6	3.5	6.1	0.5	4.0	.5
.4	8.7	5.0	3.7	5.0	0.9	5.9	3.4	0.9	.3
−.06	1.1	2.2	3.3	7.7	8.0	5.7	6.5	8.0	.5
29.76	4.0	9.5	3.5	0.2	5.4	5.6	9.2	5.0	.2
.70			50.8			02.8			~~02.1~~
						8.1			4.6
						02.90			~~02.24~~
				5	05	50.15	5	08	29.70
						−47.25			−47.46
						−.05			+.05
						−.60			−.60
						47.90			~~48.01~~

Dec. 12.9 H.C. Relay and sounder working, also W.U. 5 min break all right.
Dec 13.9 " " " " " " " " " " " " " "
Dec 12.5

#394 Normal

4 40 12.35
41 33.60
+ 01 21.25

Another reaching gives + 01 21.24

15 27.67
17 27 18.00
10 57 00.
1 47.928
2841 33.60

15 27.67
17 27 18.00
++ ~~1.8 00~~
~~1 49.784~~
+ ~~50 0.64~~
~~28 54 35.73~~
10 59 ~~00.~~ 10.1
~~1 48.27~~
~~28~~ 4335.95
28 4343.95

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1888phae.proj.1791E

Dec 14.8

.36
.15
−.04
44.37
.33

.27
.15
−.03
33.94
.91

.25
.15
.04
43.57
43.53

12 Can Ven Sig.

— 5.5 —
— 8.9
— 0.0
— 7.7

3.0	4.2	7.9
6.6	9.6	8.2
1.0	7.0	8.0
3.7	4.1	7.8
6.4	1.7	8.1

57.0
0.0
12 59 59.00
50 48.33
−0 49.33
−.04
−.60
0 49.97

α Bootis

6.9			
4.6			
2.3			
9.7	0.0	9.7	
1.7	7.9	.6	
6.0	3.7	.7	
8.4	1.3	.7	
0.6	9.1	.7	
2.8	7.0	.8	

44.9
13 11.1
44.85
14 10 33.91
−0 49.06
−.22
−.60
0 49.88

Average =

β Bootis

~~6.9~~ 6.4	~~1.5~~ 1.5	
9.5	8.7	8.2
2.3	5.9	8.2
5.0	3.2	8.2
7.7	0.5	8.2
3.3	5.0	8.3
5.9	2.3	8.2
8.7	9.6	8.3
1.2	7.0	8.2

~~4.1~~ 54.1
1.9
54.11
14 57 43.53
−0 49.42

β Oph. Min.

—	—	
—	—	
—	—	
—	—	
4.6	7.1	1.7
7.4	4.6	2.0
0.0	2.0	2.0
2.9	9.5	2.4
5.0	7.0	2.0
7.5	4.3	1.8
0.2	1.6	1.8
2.6	9.0	1.6
5.6	6.7	2.3
8.2	4.5	2.7
0.9	1.6	2.5
3.4	8.9	2.3

06.0
1.1
06.04

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58

Dec. 14.8

~~#703 Standard~~
#394 Normal
15 27.67
17 35 11.12
18 55 00.
+ 03 6.452
36 48 45.24

12 47 19.41
12 48 45.24
~~+~~ 01 25.83

Another reading gives + 01 25.82 at 12 46

Dec. 14.9 Both H.C.O & W.U. relays & sounders O.K.
Dec. 16.0 " " " " "
" 16.9 H.C.O. relay but not sounder working W.U. all O.K.
" 17.9 Both H.C.O. & W.U. relays & sounders O.K.
" 18.9 H.C.O. relay but not sounder working W.U. all O.K.
" 19.9 " " & sounder working W.U. O.K. all but sounder not working.

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[Amer. Ephem.]

Dec 20.5 ζ Aurigae η Aurigae ν Aurigae

.07	2,0	6.5	8.5	2.7	7.6	0.3	0.0	2,5	2.5
.4	4.9	4.0	8.9	5.8	4.8	.6	2,6	0.0	2.6
+.03	7.4	1.6	9.0	8.2	2.0	.2	5,0	7.2	2.2
44.17	0.4	8.7	9.1	0.9	9.4	.3	8,0	4.7	2.7
.20	3.1	5.8	8.9	3.9	6.5	0.4	0.7	2,0	2.7
	8,6	0.5	9.1	9.7	1.3	1.0	5,6	7.0	2.6
	1.4	7.8	9.2	2.3	8.5	0.8	8,2	4.1	2,3
	4 8,0	5.0	9.0	4.7	5.7	0,4	1.0	1,6	2,6
.10	6.9	2.0	8.9	7.2	3.0	0.2	3,6	8,7	2,3 56.1
.6			49.4			50.0	6.1		56.1
.06			89.8			4.2			4.6
43.46			47.						
43.52	4	53	49.47	4	57	50.22	5	04	56.24
	4	54	43.52		58	44.20	5	05	50.23
	−	0	54.05	−	0	53.98	−	0	55.99
						−.02			−.05
						−.60			−.60
						0 54.60			0 54.64

.07
.4
.03
50.20
47.
50.23

Dec. 20.9 H.C.O. relays & sounder working W.U.O.K. all but sounder not working.
" 21.9 " " " " " " " " " " " " " " "

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[Ahrens Ephem.]

~~ζ Bootis~~ ~~ζ Bootis~~

Dec. 23.8 ε Bootis

	6.0	2.5	8.5		
	8.5	0.1	8.6		
	0.8	7.9	8.7		
.87	3.1	5.6	8.7		
.26	5.5	3.2	8.7		
.9					
.234	0.1	8.6	8.7		
6.25	2.3	6.3	8.6		
6.48	4.7	4.0	8.7		
	7.0	1.6	8.6		
.29			09.3		
.5			6.1		
.13					
43.57	14	39	09.32		
43.72	14	40	06.48		
	−	0	57.16		
			−.16		
			−.60		
		0	57.92		

β Bootis

	9.2	3.6	2.8		
	2.0	0.9	2.9		
	4.6	8.1	2.7		
	7.4	5.5	2.9		
	0.0	2.7	2.7		
	5.6	7.2	2.8		
	8.3	4.6	2.9		
	1[illegible]0	1.9	2.9		
	3.6	9.1	2.7		
			46.5		
			7.8		
	14	56	46.41		
	14	57	43.72		
	−	0	57.31		
			−.02		
			−.60		
		0	57.69		

Dec. 23.9 H.C. relay & sounder O.K. W. M. relay O.K. but sounder not working.

" 25.9 " " " " " " " " " " " " "

" 26.9 " " " " " " " " " " " " "

" 27.9 " " " " " " " " " " working very slightly

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Dec 28.2

	ζ Andromm.		ν Piscium			δ Cassiop.
	2.5 7.5	0.0	6.6 2.7	9.3		0.0 ~~7.8~~ ~~7.8~~
.14	4.7 5.2	9.9	9.0 6.4	.4		4.1 7.6 1.7
.12	7.0 3.0	0.0	1.1 8.1	.2		8.1 3.4 1.5
+103	9.2 0.7	9.9	3.6 5.8	.4		2.2 9.3 1.5
21.33	1.4 8.2	9.6	5.9 3.5	.4		6.6 5.2 1.8
.36	~~6.0~~ ~~8.1~~	4.0	0.5 9.0	.5		4.6 7.3 1.9
	8.1 ~~0.6~~	1.8 ~~4.0~~	2.9 6.7	.6		8.6 ~~3~~ X0 ~~4.6~~
	~~0.6~~ ~~2.8~~	9.3 ~~7.7~~	5.0 4.3	.3		2.6 9.0 1.6
	2.8 ~~5.0~~	7.2 9.3	7.3 2.0	.3		6.6 5.0 1.6
		~~2 5.0~~ ~~2 7.2~~ ~~4 9.2~~ 17.2		19.6		30.6
.13				13.0		15.6
.2	0 40	~~24.54~~ 24.91	1 12	19.68	117	30.82
.03	0 41	26.46	13	21.36	118	33.26
26.49		-1 01.~~92~~ .55		-1 01.68		-1 02.44
26.46		-.19		-.16		+.32
		-.60		-.60		-.60
1.71		1 02.34		1 02.44		1 02.72
.91						
.8						
~~.4~~ .32						

Average = $1^m 02.^s 50$

32
.2
.06
33.32
33.286

Dec. 28.9 W.C.O. relay & sounder O.K. W.U. O.K. but sounder not working

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Dec. 30. 29 Androm

0.7	7.9	8.6
3.0	5.6	8.6
5.5	3.0	8.5
7.2	0.6	7.8
0.0	8.2	8.2
4.8	3.4	8.2
7.1	1.1	8.2
9.5	9.0	8.5
1.9	6.5	8.4
		34.0
		3.5

0 01 34.18
02 37.96
−1 03.78
−.15
−.60
1 04.53

22 Androm

—		
—		
—		
0.8		
6.5	0.0	
9.5	7.0	6.5
2.5	4.1	.6
5.1	1.1	.2
		28.2
		1.5

0 03 28.08
04 32.19
−1 04.11
+.04
−.60
1 04.67

γ Pegasi

5.2	7.8	3.0
7.3	5.8	3.1
9.4	3.5	2.9
1.4	1.3	2.7
3.6	9.2	2.8
8.0	5.0	3.0
0.0	2.9	2.9
2.0	1.8	3.8
4.4	8.6	3.0
		26.5
		9.7

0 06 26.51
07 30.12
−1 03.61
−.26
−.60
1 04.47

.15 .4 .06 38.02 37.95 −6

.12 .4 .05 30.17 30.12

.17 .6 −.10 30.93 30.83

o Androm.

1.4	2.6	4.0
3.9	0.0	3.9
6.−	7.4	
9.0	4.8	3.8
1.6	2.2	3.8
6.8	7.2	4.0
9.2	4.6	3.8
1.7	2.0	3.7
4.3	9.3	3.8
		27.0
		15.6

0 11 26.92
12 30.83
−1 03.91

−1 03.91
−.07
−.60
1 04.58

−.53 −.12 = .65
−.67 +.03 = .64
−.47 −.19 = .66
−.58 −.05 = .63
.18
04.64

Thus, correcting n from .4 to .7 the stars accord well and give an average = 1m 04.s64

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Dec. 30. 9 H.C.O. relay + sounder O.K. W.U. O.K. all but sounder not working.

" 31. 9. " " " " " " " " " " " " " " " " " "

Jan 1. 2 1889

β Androm				δ Lacerta		η Piscium		
.16								
.14	9.4	9.7	9.1	6.0	7.4	3.4	5.0	7.7 2.7
+.06	2.0	7.3	.3	9.9	3.1	3.0	7.0	5.5 2.5
30.32	4.4	5.0	.4	4.0	9.1	3.1	9.2	3.1 2.3
.38	6.9	2.4	.3	8.0	5.0	3.0	1.4	1.0 2.4
.21	9.7	9.2	—	2.2	1.0	3.2	3.5	9.0 2.5
.4				~~3.0~~				
+.08	4.5	4.7	.2	0.3	~~2.7~~ 3.0	3.3	]]	4.8 2.5
10.30				~~5.0~~				
.38	7.0	2.0	.0	1.7	~~1.2~~ 1.5	3.2	9.8	2.6 2.4
	9.6	9.8	.4	3.0	~~1.5~~			
				~~4.1~~	~~9.6~~ 0.0	3.0	2.0	0.5 2.5
(Moved to .7)	2.0	7.1	.1	4.1	~~0.0~~		4.0	8.2 2.2
n = .7				~~5.4~~	~~8.4~~ 8.8	2.9		
			24.7	5.4			6.4	26.1
			10.5-	~~6.8~~	~~6.8~~ 7.5	2.9		4.1
.11				6.8				
.4				~~8.4~~	~~7.5~~ 6.0	2.8	8.2	
.04				~~8.8~~	~~6.0~~ 4.5-	2.9		
31.90	1	02	24.62	9.8			1 24	26.21
31.94		03	30.38	~~7.3~~	~~4.5~~ 3.4	3.3	1 25-	31.94
		-1	05.76	1.3			- 1	05.73
.32			-.15	~~2.7~~	~~3.4~~ 2.1	3.4		
.4			-.60	2.7				
.13				~~3.0~~	~~2.1~~ 0.9	3.6		
33.00		1	06.51	~~5.3~~	~~0.9~~ 9.5-	3.3		
33.13				5.1	~~7.5~~ 8.0	3.1		
				~~6.0~~	~~7.5~~ ~~3.0~~	26.6		
						19.9		
							1 17	26.79
							1 18	33.13
							- 1	06.34
								05.73
			.57				1.4)	00.61 (.44
1.708			.59					56
.264			.66					50
1.444			~~1m 06.59~~					

1m 06.s59 = average

δ Lacerti & η Piscium do not seem to bear out the longer n. Rowe n = 0.5 for η Pisc.

ν Pisc		
3.5	~~5.1~~	~~8.6~~
6.5-	2.0	.8
9.6	8.9	.5
2.7	6.8	.5
4.7	2.9	.6
2.0	6.8	.8
~~5.0~~	3.4	.4
8.0	0.3	.3
1.0	~~7~~.4	.4
		04.2
		4.8
1 30		04.25
31		10.38
-1		06.13
		+.14
		-.60
1		06.59

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Note. Jan 2 10 the signals were sounding O.K. at Balby 12.

Jan 1.9 H.C.O. relays sounder O.K. W.N. O.K. all but sounder not working.

Jan 3.3

ν Arietis

0.8	5.1	5.9
3.0	2.8	5.8
5.0	0.5	5.5
7.3	8.3	5.6
9.6	6.2	5.8
4.0	1.8	5.8
6.2	9.5	5.7
8.4	7.3	5.7
0.6	5.0	5.6
2.9	7.3	22.9
	5.0	25.0
		16.3
2 31		22.86
2 32		30.48
− 1		07.62
		−.26
		−.60
1		08.48

θ Persei

8.0	0.3	8.3
1.0	7.2	.2
4.2	4.0	.2
7.1	1.0	.1
0.4	8.0	.4
6.9	1.7	.6
9.9	8.6	.5
3.0	5.6	.6
6.1	2.4	.5
9.1		29.1
		3.5
2 35		29.18
36		37.12
− 1		07.94
		+.11
		−.60
1		08.43

47 H Cephei

5.5	1.4	6.9
6.0	0.4	6.4
6.7	9.7	6.4
7.7	8.6	6.3
8.5	8.0	6.5
0.3	7.0	7.3
3.9	3.0	6.9
7.5	9.6	7.1
0.9	5.8	6.7
4.2	2.4	6.6
8.0	8.8	6.8
1.4	5.0	6.0
4.9	1.1	6.0
8.9	7.3	6.4
2.6	3.9	6.5
6.0	0.7	6.7
9.8	6.8	6.6
		11.6
		10.7
2 5 D		13.43
2 5 1		23.68
− 1		10.25
		07.62
5.07		2.63 (.52
		25 35
		950

Mean n = 0.5

.48
.43
.47

1m 08.46 clock slow = average of three stars using other two for n.

41 Arietis

6.0	2.1	8.1
8.3	9.9	8.2
0.8	7.5	8.3
2.9	5.1	8.0
5.1	3.0	8.1
0.0	8.3	8.3
2.2	6.0	8.2
4.5	3.8	8.3
6.8	1.4	8.2
		19.0
		1.1
2 42		19.09
2 43		26.76
− 1		07.67
		−.20
		−.60
1		08.47

α Cetii

0.4	6.6	2.0
2.3	9.3	1.8
4.5	7.4	1.9
6.5	5.3	1.8
8.6	3.2	1.8
2.6	9.0	1.6
4.8	7.0	1.8
6.7	5.0	1.7
8.8	6.8	1.6
		20.8
		16.8
2 55		20.88
2 56		28.50
− 1		07.62

5.13
0.06
5.07

Jan 3.9 H. C. O. relay + sounder O. K.; W. N. "all but sounder not working". [Copy. Original was entered on next page, but rubbed out to leave room for clock.] Observer gives following explanation of his remark about W.N. Words intended to read "W.N. O.K. all but sounder not working"

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Jan 4.9

.11
.1
+.01
56.73
.74

.17
.1
.02
37.09
37.11

.10
.1
.01
26.74
26.75

	θ Persei			41 Arietis			β Persei		
	7.0	9.4	6.4	5.1	1.2	6.3	1.0	5.0	6.0
	9.8	6.2	6.0						
	3×1	3.0	6.1	7.3	8.9	6.2	3.6	2.4	6.0
	6.3	0.0	6.3	9.6	6.5	6.1	6.2	9.7	5.9
	9.5	7.0	6.5	2.0	4.3	6.3	9.0	7.0	6.0
	5.8	0.8	6.6	4.2	2.1	6.3	1.7	4.4	6.1
	9.0	7.6	6.6	7.0	7.4	6.4	7.1	8.9	6.0
	2.0	4.4	6.6	1.3	5.0	6.3	0.0	6.0	6.0
	5.0	1.3	6.3	3.6	2.8	6.4	2.5	3.3	5.8
			28.0	5.8	0.5	6.3	5.2	0.9	6.1
			3.4			18.0			47.9
	2 35		28.18			2.6			18.8
	2 36		37.11	2 42		18.14	2 69		47.99
			−1 08.93	2 43		26.75	60		56.74
			+.11			−1 08.61	−1 08.75		
			−.60			−.20			−.03
			1 09.42			−.60			−.60
						1 09.41			1 09.38

Average = $1^m 09.^s40$ clock slow

Jan. 4.9 H.C.O. relays & sounder O.K. W.U. O.K. all but sounder not working.
" 6.9 H.C.O. & W.U. relays & sounders both O.K.
" 7.9 " " " " " " " "
" 8.9 " relays & sounder O.K. W.U. O.K ~~all~~ but sounder not working.
" 9.9 " & W.U. relays & sounders both O.K.
" 10.9 " " " " " " " " H.C.O sounder light.

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Jan 11.3

.16	2.3	5.1	7.4	4.9	8.9	3.8	7.3	0.6	7.9
.1	5.0	2.4	7.4	7.2	6.1	.9	0.2	7.1	7.3
.02	7.7	9.8	7.5	0.0	3.4	.4	3.1	4.0	7.1
03.65	0.3	7.0	7.3	2.9	0.9	.8	6.4	0.9	7.3
.63	3.0	4.5	7.5	5.5	8.0	.5	9.8	7.6	7.4
.17	8.2	9.3	7.5	1.0	2.7	.7	5.9	1.2	7.1
.1	1.0	6.0	7.0	3.5	0.0	.5	9.3	8.3	7.6
.02	3.5	4.0	7.5	6.1	7.1	.2	2.5	5.1	7.6
56.66	6.0	1.3	7.3	9.0	4.5	.5	5.6	1.9	7.5
.64			48.7			41.7	7.0		09.0
			13.1			14.4			13.8
.20	2	56	48.69	2	56	41.76	3	15	09.73
.1	2	56	03.63		56	03.63		03	13
.02		1	14.94		1	14.88	3	16	24.00
24.02			.06			.03		1	15.27
24.00			.60			.60			.13
		1	15.60		1	15.51			.60
								1	15.74

Jan 11.9

Average = 1m 15.32

Jan 11.9 H.C.O. + W.M. relays + Saunders both O.K.

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Note. ζ Tauri is on the sheet, but will not be worked up if the others accord.

Jan 12.3

	α Persei			ν Persei			η Tauri		
.15	— 9.5			~~6.6~~ 1.3			4.8	0.0	4.8
.2	— 6.1			— 8.4			7.2	7.8	5.0
-.03									
39.30	— 3.0			— 5.7			9.4	5.7	5.1
.27	— 0.2			— 3.0			1.6	3.3	4.9
.20	8.9	6.9	5.8	6.6	0.0	6.6	4.0	0.9	4.9
.2	5.3	0.7	6.0	2.2	4.4	.6	8.6	6.5	5.1
.04	8.7	7.8	6.5	5.0	1.8	.8	0.7	4.4	~~5.7~~
24.02	1.8	4.3	6.1	7.1	9.0	.1	~~3.0~~ 5.7	~~2.0~~ 6.5	5.0
23.98	5.0	1.1	6.1	0.5	6.0	.5	~~5.1~~ 1.7	~~8.6~~ 4.7	4.7
			08.1			23.4			~~47.4~~
.11						3.0			
.2			0.6	3	36	23.27			9.0
	3 15		08.05		37	39.27	3 ~~46~~ 39		47.47
.02	3 16		23.98		-1	16.00	3 40		53.08
53.10	— 1		15.93			.00	— 1		05.61
53.08			+.13			-.~~6~~0			-.24
			-.~~6~~0						-.~~6~~0
			1 16.~~6~~0			1 16.~~6~~0			1 16.~~6~~5

Average = $1^m 16.^s 18$

Jan. 13.9 H.C.O. relay as sounder O.K. M.A. not working at all until a slight adjustment was made of ~~the~~ both the magnet & tension; then the relays worked all right but sounder not working.

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Jan 14.2

	δ Androm			ζ Androm			ψ Androm		
.15							– 3.1		
.4	1.0	8.9	9.9	6.4	1.3	7.7			
–.06	3.6	6.5	0.1	8.6	9.0	7.6	3.5	0.6	4.1
22.56	6.0	4.0	0.0	0.9	7.0	7.9	6.2	7.9	4.1
.50	8.4	1.6	0.0	3.3	4.7	~~7.7~~ 8.0	8.8	5.4	4.2
.14	1.0	9.2	0.2	5.4	2.3	7.7	1.5	2.8	4.3
.4									
.05	5.4	4.7	0.1	9.9	8.0	7.9	6.7	7.5	4.2
26.29	~~6~~ 8.9	2.2	0.1	2.1	5.8	7.9	9.2	5.0	4.2
26.24	0.2	9.9	0.1	4.5	3.4	~~7~~ 8.9	1.8	2.4	4.2
.18	2.6	7.3	9.9	6.6	1.0	7.6	4.5	9.8	4.3
.4			05.0	8.		08.8			07.0
.07			0.4			~~17~~.0			1.6
34.73	0 32		05.02			08.89			07.09
34.66	~~4 39~~								
	0 33		22.50	041		26.24	050		34.66
	– 1		17.48			–17.35			–27.57
			–.16			–.24			–.07
			–.80			–.80			–.80
			1 18.84			1 17.89			1 27.94

Average = $1^{m}\ 17.^{s}92$

Jan. 14 9 H.C.10 relays sounder O.K. W.U. relay working hard, sounder not working. after adjusting the relay by loosening tension and moving magnet the relay was made to work less ~~hard~~ easily but trying to make it work still easier caused ticks to occur in the five minute break. I touched the sounder, after which it worked.

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Jan 15.3

.15
.5
.08
39.30
.22

.11
.5
.06
53.10
53.04

.13
.5
.07
24.40
24.37

.16
.5
.08
36.46
36.37

V Persei

8.0	8.3	1.3
5.5	5.5	.0
8.5	2.7	.2
1.1	0.0	.1
4.0	7.2	.2
9.5	1.9	.4
2.3	8.9	.2
5.0	6.4	.4
8.1	3.6	.7
		20.7
		12.2

3 36 20.64
37 39.22
— 1 18.68
.00
−.60
1 19.88
+.9

η Tauri

2.0	7.1	9.1
4.1	4.9	9.0
6.6	2.8	9.4
8.8	0.1	8.9
1.0	8.0	9.0
5.8	3.6	9.4
8.2	1.6	9.8
0.2	9.5	9.7
2.6	6.0	8.6
		34.7
		11.6

3 39 34.61
3 40 53.04
— 1 18.43
−.24
−.60
1 18.27

ε Persei

9.0	2.6	1.6
1.6	0.0	1.6
4.2	7.0	1.2
6.9	4.5	1.4
9.8	1.9	1.7
5.2	6.2	1.4
8.0	3.7	1.7
0.4	1.2	1.6
3.0	8.6	1.6
		05.9
		14.7

3 49 05.77
3 50 24.37
— 1 18.60
−.05
−.60
1 18.55

C Persei

7.3	8.0	5.3
0.2	5.0	5.2
3.4	2.1	5.5
6.3	9.0	5.3
9.3	5.9	5.2
5.5	0.0	5.5
8.6	6.9	5.5
1.7	3.9	5.6
4.7	0.8	5.5
		17.6
		13.2

3 59 17.69
4 00 36.37
1 18.68

1 18.68
+.09
−.60
1 19.19

.28
.27
.25
.19

~~Clock slow = + 19.24 = average~~
Clock slow = 1 18.94 = average

Jan 15.9 H.C.O. relay & sounder O.K. after moving magnet away a little the W.U. relay was O.K. but sounder not working.

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June 16.9 H.C.O. relay & sounder O.K. W.O. relay O.K. sounder not working

" 17.9 " " " " " N. " " " sounder working very vigorously. I therefor screwed it up a little. In the following five minute break the relay was making one or two faint ticks which I obviate by moving away the magnet. At last observation the sounder was not working nor would not by changing the tension screw on top.

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Jan 18.2

	η Aurigae			β Andromedae			ν Persei		
	7.4	9.6	7.0	3.8	4.2	8.0	8.0	9.5	7.5
	0.0	7.0	7.0	6.4	1.6	8.0	1.0	6.6	7.6
	2.7	4.2	6.9	9.0	9.0	8.0	4.0	3.4	7.4
	5.0	1.7	6.7	1.4	6.7	8.1	7.2	0.3	7.5
	7.9	9.2	7.1	4.0	4.0	8.0	0.2	7.3	7.5
	3.0	4.0	7.0	9.0	9.1	8.1	6.3	~~1.0~~	7.3
	5.7	1.3	7.0	1.6	6.7	8.3	9.6	~~8.0 7.2~~	7.6
	8.3	8.8	7.1	4.0	4.0	8.0	2.7	~~5 8.0 7.2~~	7.7
	0.9	6.1	7.0	6.7	1.6	8.3	5.8	~~1.98 8.0~~	7.7
			13.5			09.1	~~8.8~~	~~5.0~~	48.8
			9.3			0.9			~~48.8 31.9~~ 16.6
	0	49	13.49	81	02	09.05	1	~~30~~ 29	48.77
		50	34.58	1	03	30.20	1	31	10.15
	− 1		21.09	− 1		21.15	− 1		11.38
			−.07			−.10			+.10
			−.80			−.80			−.80
	1		21.26	1		21.85	1		11.88

Average = $1^m 21.^s53$ clock slow

0.24
2
0.05
10.20
10.15

30.23
30.20

.18
.2
+.03
34.55
.38
.17
.2
.03
.4

Jan 18.9 H.C.O. relay working O.K. but not sounder — W.M. after adjusting both relay & sounder a little so as to obviate slight taps in the former during five min. breaks, and a very vigorous movement of the latter, I left them both working O.K.

19.9 H. C. O. relay O. K. Also sounder.

20.9 " " & sounder O.K. W.M. relay OK. sounder worked once or twice during observation & then only just after passing with my finger to see if it was all free to work. [Probably a little loosening of the tension would have made it indicate that all was right. E.]

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[Aurr. Effem]

Jan 21.3

	C Persei	m Persei	q Tauri
.13/2	1.1 2.1 3.2	4.0 0.2 4.2	7.3 0.3 7.6
-.03	4.0 9.0 3.0	6.7 7.4 4.1	9.7 8.2 7.9
36,52	7.3 6.0 3.3	9.3 4.5 3.8	1.8 5.9 7.8
.39	0.4 3.0 3.4	2.3 1.8 4.1	4.0 3.9 7.9
	3.4 0.0 3.4	5.0 8.2 3.9	6.0 1.9 7.9
.19	9.7 3.9 3.6	0.7 3.4 4.1	0.2 7.6 7.8
.1	2.6 0.8 3.4	3.6 0.5 4.1	2.6 5.5 8.1
.02	5.6 7.9 3.5	6.5 7.7 4.2	4.6 3.2 7.8
36.30	8.7 4.7 3.4	9.1 4.8 3.9	6.8 1.0 7.8
36.28	11.7	12.0	09.0
.11	12.9	0.4	17.5
.1			
.01	3 59 11.68	4 24 12.02	4 2/8 08.92
33.11		25 36.49	4 29 33.10
33.10	4 0 36.28	-1 24.47	-1 24.18
	-1 2/4.60	+.09	-.31
5.11	+.09	-.60	-.60
5.07	-.80	1 25.07	1 24.37
4.47	1 25.11	4.7	
4.89	4.8		

Average = 1m 24.89 clock slow
1m 24.59

Jan 21.9 H.C.O. relay & sounder O.K. W.U. relay O.K but sounder not working. I therefor altered the adjustments & left it working

22.9 H.C.O & W.U. relays & sounders both O.K.

23.9 H.C.O & W.U. relays & sounders both O.K.

24.9 " " " " " " " " after altering relay of H.C.O. a trifle so as to stop taps occurring during 5 min. break.

25.1 H.C.O & W.U. relays & sounders both O.K.

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Jan 25.9

Geminor			♀ Gemenor.		Holl.	π Geminor.			26 Lyncis		
.04	6.1	4.8	0.9	9.0	7.6	6.6	8.5	7.8	6.3	9.3	0.9 / 7.3 / 0.7	0.2 / 9.3
.2										2.0	4.4	
-.01	8.4	2.6	1.0	1.3	3.1	6.4	1.0	5.4	6.4			
38.59										5.0	7.3	9.4
58	1.0	0.0	1.0	3.7	2.9	6.6	3.4	7.0	6.4		1.4	
	3.6	7.6	1.2	6.0	0.2	6.2	5.8	0.6	6.4	8.1	4.4 / 8.3	9.5
.03	5.9	5.3	1.2	2.6	8.0	6.6	8.1	7.9	6.0	1.5	7.1	9.8
.45										7.7	2.3	0.0
	0.8	0.1	0.9	3.4	3.0	6.4	3.2	3.0	6.2			
.02										0.8	9.0	9.8
58.83	3.2	8.0	1.2	5.8	0.4	6.2	5.6	0.6	6.2			
58.85	6.0	5.4	1.4	8.5	8.1	6.6	8.0	8.0	6.0	3.9	6.0	9.9
.04	8.0	3.0	1.0	0.6	5.6	6.2	1.7	5.5	6.2	0.9	3.0	9.9
.05			30.6			03.2			5 3 X.3			09.9
.02			10.4			4.0			2.4			13.2
31.40												
31.42	7 20		30.55	7 26		03.21	7 38		59.13	7	45	09.88
											46	38.55
	7 21		58.85	7 27		31.42	7 40		21.61			
.05	— 1		28.30	— 1		28.21	— 1		28.48	— 1		28.70
.5			-.14			-.14			-.12			+.11
.03			-.48			-.60			-.30			-.60
21.58	1		29.04				1		29.20	1		29.19
21.61			29.07						29.19			29.18

Average = 1m 28s.84 / 29s.14

Jan. 25.9 H.C.O. relay & sounder O.K. W. M. relay had one or two ticks occurring during 5 min. break, after moving the magnet away the relay worked O.K. sounder not working.

Jan. 27.9 H.C.O. relay & sounder O.K. W.M relay O.K. sounder not working

" 28.9 " " " " " W. M. " " " " " " "

until I pressed it with my finger. When it worked as I tightened the tension & left the sounder working.

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Jan 29.3 m Persei ι Aurigae η Aurigae

	m Persei			ι Aurigae			η Aurigae		
	7.0	3.0	0.0	0.1	9.2	9.3	5.3	0.0	5.3
.12	9.8	0.1	9.9	2.6	6.9	.5	8.0	7.1	.1
.1	2.6	7.4	0.0	5.0	4.3	.3	0.8	4.5	.3
+.01 44.04	5.2	4.7	9.9	7.6	2.0	.6	3.6	1.9	.5
.05	8.1	2.0	0.1	0.0	9.4	.4	6.1	9.0	.1
.12	4.0	6.2	0.2	5.0	4.7	.7	1.9	3.4	.3
.1 +.01	6.7	3.4	0.1	7.5	2.0	.5	4.6	1.0	.6
45.99	9.5	0.6	0.1	0.0	9.9	.9	7.0	8.4	.4
46.00	2.1	7.8	9.9	2.1	7.0	.1	9.8	5.3	.1
			05.0			14.6			12.6
			0.2			13.9			12.3
	4	24	05.01			14.73			12.65
		25	36.36	4	49	46.00	4	58	44.05
	−	1	31.35	−	1	31.27		1	31.40
			.00			−.13			.00
			−.30			−.30			−.30
		1	31.65		1	31.70		1	31.70

Clock slow: average = $1^m 31.^s 68$

Notice a marked change of rate since Jan 25.

Jan. 29.9 H.C.O. relay & sounder O.K. W.M. relay & sounder O.K., sounder rather loud.
" 30.9 " " " " " " " " " ... I altered screw of sounder so that it should not tick quite so loud.

(continued from p. 75)
work & Mr Edmands was hunted up. When he came he found that relay of H.C.O. was not O.K., & adjusted it to be O.K. & sounder worked faintly. At 11.15 it was also working faintly but at 11.20 was not working. At 11.55 both relay & sounder working O.K.

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Jan 31.3

L Amiyae		E Amiyae		N Amiyae
8.6 7.8	6.6	9.0 6.0	5.0	6.6 6.0 .6
1.0 5.3	6.3	1.9 3.1	5.0	9.2 7.0 .2
3.7 2.9	6.6	4.8 0.3	5.1	2.0 0.4 .4
6.0 0.5	6.5	7.5 7.4	4.9	5.0 7.7 .7
8.6 8.0	6.6	0.5 4.7	5.2	0.2 8.2 .4
3.4 3.0	6.4	6.2 9.0	5.2	3.1 9.4 .5
5.9 0.7	6.6	9.0 6.0	5.0	5.9 6.9 .8
8.4 8.2	6.6	1.9 3.3	5.2	8.5 4.0 .5
0.9 3.6	6.5	4.7 0.4	5.1	11.1
	13.1		27.5	4.9
	45.8		10.52	11.26
4 48	13.25	452	27.54	58 44.06
449	45.97	453	60.36	+1 32.80
−+	58.77	−1	32.82	.00
−1	32.73		+.02	−.30
	−.30		−.30	+1 33.10
	1 33.05		1 33.50	

99
.7
1
.04
4.66
47.62
.18
.1
.02
60.38
60.36
.15
.1
.023
47.99
45.97

Amiyae, − clock slow = 1m 33.08

Jan. 31.9 H.C.O. relay & sounder O.K. N.M. relay O.K. but sounder not working
Feb 1.8 " " O.K. — Sounder rattling occasionally as if they were fixing the line (20.3)
" 1.9 " " " but not sounder, this is rattled once as I observed. N.M. all O.K.
" 1 10/10 Bly had telephoned from Boston ~~to say but sounder was the~~ but thought it unnecessary to call Mr Edmands to come to the office as the trouble had seemed was on the line. His man Tim came out & found the line all O.K. from Boston to Alb. H.C.O. still did not

(continued on Pg 74)

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[Amer. Ephem.]

Feb. 22 γ Androm — β Triang. — γ Triang.

.21	2.4	7.7	0.1	6.2	6.3	2.5	2.8	7.1	0.2
.3	5.0	4.9	9.9	8.7	3.8	2.5	5.0	5.0	0.0
.06	7.8	2.0	9.8	1.2	1.3	2.5	7.9	2.0	9.9
04.27	0.8	9.3	0.1	3.8	8.7	2.5	0.8	9.4	0.2
.21	3.5	6.5	0.0	6.3	6.3	2.6	3.5	6.6	0.1
	8.8	1.0	9.8	1.2	1.4	2.6	8.9	1.0	9.9
21	1.8	8.3	0.1	3.8	8.8	2.6	1.9	8.3	0.2
.3	4.6	5.6	0.2	6.3	6.3	2.6	4.7	5.7	0.4
.06	7.1	2.8	9.9	8.7	3.8	2.5	7.1	2.8	9.9
4.27			30.0			21.2			30.1
4.21			18.8 9			5.1			0.9
	1	53	29.99	2	01	21.27	1	55	30.05
.18		157	4.21	2	02	33;46		57	04.21
3		−1	34.22		−1	34.19		−1	34.15
.05			00			−.11			.00
55;51			−.30			−.30			−.30
55.46		1	34.52.		1	34.60		1	34.45

Average; clock slow = $1^m 34.^s52$

Feb. 3.9 H. C. O. relay & sounder D. K. W. 11. relay & sounder O. K.

" 4. " " " " " " " " at 10d.

" 4.9 " " " " " " " " "

" 5.9 " " " " " " " " "

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Feb. 6.2

.21
.3
+.06
56.09
.15

.20
.3
+.06
3.10
.16

ρ Perri

0.2	3.0	3.2	
3.0	0.4	.4	
5.7	7.7	.4	
8.2	5.0	.2	
1.0	2.5	.5	
6.0	7.0	.0	
8.9	4.3	.2	
1.3	1.9	.3	
3.9	9.3	.2	Short read with quadrifoveolate - with haze

26.7
12.0

2 56 26.63
58 03.16
-1 36.53
-.06
-.30
1 36.89

β Perri

2.2	6.9	9.1	
5.3	4.0	.3	
8.0	1.3	.3	
0.5	8.8	.3	
3.2	6.0	.2	
8.9	0.5	.4	
1.4	7.8	.2	
4.1	5.0	.1	
7.0	2.3	.3	Short read with quadrifoveolate - with haze.

19.5
11.7

2 59 19.62
60 56.15
-1 36.53
-.03
-.30
1 36.86

Feb. 6.9 H.C.O. relay & sounder O.K. W.U. relay & sounder O.K.

7.9 " " working with ~~slight~~ Tape during five min. break I turned the screw-a a little following five min it worked O.K When I first observed the sounder was not working, but five min. afterward it was working O.K. W. U. O.K both relay & sounder. at 21 hrs, at 23 hrs both H.C.O. W.U were O.K.

" 8.9 H. C. O relay & sounder O.K. W. U. relay ~~sounder~~ O.K. sounder not working at 21 hrs

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Feb 10.2

β Persei			δ Arietis			ψ Persei		
9.9	9.1	4.0	9.7	3.8	3.5	1.2	—	—
2.4	1.3	3.7	1.9	1.6	3.5	4.3	—	—
5.3	8.7	4.0	4.1	9.3	3.4	8.5	9.3	7.8
8.0	6.0	4.0	6.4	7.2	3.6	2.0	6.1	8.1
0.7	3.4	3.7	8.6	4.9	3.5	5.0	3.0	8.0
8.0	8.0	4.0	3.0	0.3	3.4	1.5	6.8	7.3
8.9	5.1	4.0	5.1	8.5	3.6	4.5	6.6	7.8
[Chimney Smudge]	2.4		7.3	6.2	3.5	7.5	5.4	7.8
4.4	9.9	4.3	9.5	4.0	3.5	0.8	7.0	7.8
		17.0			51.8	38.87		23.9
		16.7			14.3			14.45
2	59	17.98	3	0.6	51.75	3	14	3.97
	60	56.07	3	0.5	30.62	3	16	23.30
	−1	38.09			21.13			1 39.33
		−.03			−.22			+.19
		−.30			−.30			−.30
	1	39.42		1	39.39		1	39.50

Average 1 39.44

.22 .1 −.02 56.09 .07

.17 .1 .02 16.34 16.62 .27 .1 .03 83.33 29.30 .16 .2 .03 30.65 30.62

Feb. 10.9 H.C.O. relays & sounder O.K. W.U. relays & sounder O.K. at 21 hrs.
" 11.9 " " " " " " " " " " " "
" 12.9 " " " " " " " " " " " "
" 13.0 " " " " " " " " " " " 0 hrs

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Feb 13.3

.15
.4
.08
23.53
.45

.15
4
.06
60.76
60.70
.22
.4
.09
18.37
18.28

ζ Tauri

8.1 2.4 0.5
0.3 0.3 0.6
2.4 8.0 0.4
4.5 5.8 0.3
7.0 3.6 0.6
1.6 9.2 0.8
3.6 7.0 0.6
5.9 4.6 0.5
8.0 2.7 0.7
20.3
5.3

5h 29 20.28
5 30 60.70
−01 40.42
−.26
−.30
1 40.98

θ Aurigae

6.5 9.4 5.9
8.6 6.3 4.9
1.7 3.0 4.7
4.9 9.7 4.6
8.0 6.8 4.8
4.9 0.3 5.2
7.9 7.0 4.9
0.7 3.8 4.5
4.3 0.7 5.0
3 27.6
9.1

5h 35 3 27.48
5 37 18.28
−01 40.80
+.13
−.30
01 40.97

β Aurigae

3.7 2.0 5.7
6.3 9.0 5.3
9.1 5.9 5.0
2.0 2.9 4.9
5.0 9.9 4.9
0.9 4.1 5.0
4.0 1.5 5.5
6.9 8.4 5.3
9.7 5.5 5.2
42.5
11.3
42.59
5h 51 23.45
−01 40.86
+.04
−.30
01 41.12

Image: clock slow = 1m 41.502

Feb. 13.9 H.C.O. relays sounder O.K. M.W.O. relays sounder O.K. at 21 hrs
14.9 " " " " " " " " " " " " " "

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Feb 18.7

	N Seminor			χ' Aurigae		
	1.4			—		
	9.0			—		
	6.9					
	~~7.0~~			—		
	4.6			—		
6.0	2.4	8.4		—		
~~8.2~~ 0	8.0	8.2		— 2.0		
~~2.4~~	5.7	8.1		~~6.0~~ 6.9 ~~2.0~~		8.9
~~3.4~~ 4.7	3.5	8.2		3.0 5.3 ~~8.9~~		.3
6.9	1.3	8.2		6.0 2.3 ~~5.3~~		.3
		29.0		=	39.2	
		1.1			1.7	
6 06		29.10		6 14	39.24	39.24
6 08		10.85		16	+.13	21.40
-01		41.75		-1m 42.16	-.30	-42.16
		-.25			+.39	
		-.33			-.30	
		1 42.33			1 42.33	

Feb. 15.9	H.C. V. relays sonder O.K. N.W. relay & sonder O.K. at 21 hrs.
" 17.9	" " " " " " " " " " " " " " " " " " " "
" 18.9	" " working O.K. but not sonder. N.W. relay & sonder O.K. at 21 hrs.
" 19.0	" " " " " " " " " " " " " " " " " " " "

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~~Feb 17.4~~

Feb 19.9 (copied) H.C.O. relay working O.K. sounder not working.
W.A. " " but not making a good contact on the magnet side of the relay. I therefor moved the magnet bodily until I was satisfied with the contact. The sounder was working only occasionally. I left the relay O.K. a/s 21 hrs.

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Feb 20.9 q Lyrae

7.6	0.4	8.0
0.4	1.8	.2
3.0	5.0	.0
5.6	2.5	.1
8.1	9.9	.0
3.5	4.7	.2
6.2	2.0	.2
8.7	9.4	.1
1.4	6.8	.2

9.57
+.07
.54

24.0
1.0
24.05

18 33 09.54
+1 45.49
-.06
-.30
1 45.85

Feb. 20.9 (a.m.) H.C.O. relay & sounder working O.K. W.M. ticking all through the five min. break, both relay & sounder. Adjusted magnet the relay leaving relay O.K. but sounder was not then working at 21 hrs.

20 40/10 (a.m.) H.C.O. relay & sounder & W.M. relay & sounder O.K at 24 hrs

Feb. 22.9 (a.m.) H.C.O. relay & sounder O.K. W.M. relay was hitting the magnet side as it should and also working irregularly as to force; sounder not working at 21 hrs After readjusting magnet I left the relay O.K. at 22 hrs

22 10/10 (a.m.) W.M. relay ~~giving occasionally giving~~ W.M. relay giving occasional very faint sounds but no movement through the five min break at 24 hrs.

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Feb 23.8 α Lyrae

	5.0	8.3	3.3
.31	7.9	5.5	.4
.4	0.5	2.9	.4
+.13	3.0	0.3	.3
9.51	5.8	7.6	.4
.63	1.2	2.0	.2
	3.9	9.6	.5
	6.4	7.1	.5
	9.1	4.6	.7
		22.0	
		12.3.7	

18 31 24.67

33 09.63

+1 46.96

−.06

−.30

~~1 47.32~~

1 48.27

Feb. 25.9 ~~H.C.O. relay & sounder working O.K. O.R. relay working O.K. but not sounder at 21 hrs.~~ in wrong place

Feb. 24.9 (Copied) H.C.O. relay & sounder O.K. O.R. relay occasionally giving very faint sounds, but no movement during the five min. breaks, otherwise O.K. Sounder working irregularly at 21 hrs.

24 10/10 (Copied) H.C.O. O.K. at 24 hrs.

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Feb-25.5 m Leonis

5.6	1.6	7.2
8.0	9.5	7.5
0.1	7.0	7.1
2.6	4.8	7.4
4.8	2.5	7.3
9.6	7.9	7.5
1.8	5.6	7.4
4.0	3.4	7.4
6.4	0.9	7.3

38,6

12.7

38,67

946 ~~27.84~~

— 1 49.17

— 1 49.15

54.10
-.03
.07
.06
.0
+.04
43.9
44.00

.05
.7
+.04
27.80
27.84

.025
.02
27.80
27.82

19 Leon. Min.

7.1	2.2	9.3
0.0	9.6	9.6
2.7	6.8	.5
5.4	4.0	.4
8.1	1.1	.2
3.9	5.9	.8
6.6	3.0	.6
9.2	0.2	.4
2.0	7.4	.4

04.7

13.9

04.66

9 50 54.07

-1 49.34

-.01

-.30

1 49.76

m Leon. Maj.

~~8.0~~ - 2.1

9.0 - 9.0

2.0 - 6.8

4.8 - 4.0

7.4 - 1.3

— 5.5

6.0	2.9	8.9
9.0	0.0	9.0
2.0	7.4	9.4

54.8

4.1

10 13 54.59

18 - 44.00

1 49.41

.00

-.30

1 49.71

31 Leon Min.

3.5	5.3	8.8
5.9	2.7	8.6
8.7	9.9	8.6
1.3	7.6	8.9
4.0	4.9	8.9
9.1	9.7	8.8
1.8	7.1	8.9
4.2	4.35	8.7
6.7	1.8	8.5

39.4

7.1

10 19 39.37

10 21 28.70

— 1 49.47

.06
.16
.04
28.74
28.70

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Feb 25.9 (copied from preceding page) H.C.O. relays sounder working O.K. – N.W. relay working O.K. but not sounder at 21hrs.

At about 21hrs 30m Bly's man appeared saying that he could not get ~~not~~ everything to work as it should on the line to the Phys. laboratory. He found that our relay was O.K. but thought a little dust might have got on one of the points: he therefor passed paper over to clean it & tried the laboratory wire & found it ⏚ grounded. Thought the trouble must be at "Whiting's place" if a little dust on our relay had not accounted for it. He had been to Mr Edmands' house & found him out of town.

Feb. 26.9 H.C.O relays & sounder O.K. N.W. relay ~~O.K.~~ giving a very slight sound or two during five min. break but no movement ~~otherwise~~ O.K. ~~N.W.~~ sounder not working at 21hrs

Feb. 27.9 H.C.O relay & sounder O.K. N.W. relay O.K. but sounder not working at 21hrs

---

Mar 11.3 Additional stars. Yu P 88

24 lyncis — N Geminor

0.1	0.0	0.1	5.9	1.1	7.0
4.2	6.2	0.4	7.9	8.9	6.8
8.1	2.0	0.1	0.4	6.7	7.1
2.2	8.1	0.3	2.6	4.4	7.0
6.3	4.2	0.5	4.9	2.0	6.9
4.4	6.3	0.7	9.4	7.7	7.1
8.4	2.0	0.4	1.7	5.4	7.1
2.4	8.2	0.6	4.0	3.0	7.0
6.2	4.0	0.2	6.2	0.8	~~7.0~~
		40.2	8.2	3.0	48.6
		3.5			~~9.6~~
					9.6
7 31		40.18	7 35		48.50
7 33		37.38	7 37		43.05
– 1		57.20	– 1		~~37.55~~ 56.55
		+.18			–.23
		–.10			–.30
		157.12			157.08

1.66
.91
2.57
.38

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Feb. 28.3 & Seminar.

2.0	1.7	3.7
4.3	9.1	.4
7.0	6.7	.7
9.4	4.1	.5
2.0	1.8	3.8
7.0	7.0	4.0
9.3	4.1	3.4
1.9	1.7	.8
4.3	9.3	.6

37.0
15.9
36.84

6 45 28.62
-1 51.78
-.11
-.30
1 52.19

Feb. 29.9 H.C.O. relay & sounder O.K. N.U. working through five min. break, by readjusting relay it was made to work O.K. as was also the sounder, during.

Mar. 1.9 H.C.O. relay & sounder O.K. N.U. relay sounder O.K. at 21 hrs.

" 3/4.9 H.C.O. " " " " " " O/K. sounder slightly irregular at 20 hrs

" 4.9 " " " " " " " sounder O.K. at 21 hrs.

" 5.9 H.C.O. " " " " " " O/K. sounder worked once or twice only during observation at 21 hrs.

5 10/10 H.C.O. relay & sounder O.K. at 11.50

6.9 H.C.O relay & sounder O.K. N.U. relay & O/K. sounder not working at 21 hrs

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Mar. 7.3 — 63 Aurigae — 19 Lyncis sig. — 6 Geminor

.19	9.5	2.9	2.4	6.9	9.6	6.5	1.6	8.3	9.9
.4	2.0	0.0	.0	0.5	6.0	6.5	4.0	5.9 / 8.5	9.9
+.08	4.9	7.4	.3	4.0	8.4	6.4	6.2	5.9	9.6
1.36	7.4	4.7	.1	7.8	8.7	6.5	8.5	1.3 / 5.7	9.8
.44	0.0	2.0	.0	1.5	5.1	6.6	0.9	8.4 / 1.3	9.8
	5.5	6.8	.3	8.9	7.9	6.8	5.7	4.3	0.0
	8.0	4.0	.0	2.5	4.3	6.8	7.9	0.9	8.8
.15	0.9	1.4	.3	6.0	0.6	6.6	0.1	9.7	9.8
.6	3.4	8.8	.2	9.7	6.9	6.6	2.6	7.1	9.7
.09			06.0			53.3			54.7
50.29			1.6			5.5 6			16.0
50.20	7	02	06.08	7	11	53.29	7	16	54.84
.26		04	01.44	7	13	48.94	7	18	51.20
.6		− 1	55.36		−1	55.6 5		− 1	55.3 6
.16			−.04			+.28			−.19
49.10			−.30			−.30			−.30
48.94		1	55.70			1 55.67			1 55.85

Average = $1^m 55^s.74$ = clock slow

Mar. 7.9 H.C.O relays sounder O.K. W. Ch. relay O.K. sounder not working at 21^{hr}

Mar 8.9 " " " " " " " " " " " " " " " " 21^{hr}

10.9 " " " " " " " " " " " " " " " " 21^{hr}

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Mar. 11.3 ρ Geminor. | τ Geminor | 26 Lyncis

ρ Geminor			τ Geminor			26 Lyncis		
7.8	6.1	3.9	9.9	7.3	9.2	0.4	1.9	2.3
0.0	3.7	3.7	2.4	6.8	9.2	3.6	8.9	2.5
2.6	1.3	3.9	4.8	4.2	9.0	6.7	5.8	2.5
5.0	8.9	3.9	7.0	1.7	8.7	9.6	2.7	2.3
7.5	6.5	3.9	2.7	9.4	9.1	2.7	9.6	2.3
2.3	1.6	3.9	4.8	4.7	9.5	8.9	3.6	2.5
4.7	9.3	4.0	7.2	2.0	9.2	2.0	0.5	2.5
7.0	6.7	3.7	9.7	9.6	9.3	4.9	7.3	2.2
9.5	4.3	3.8	2.2	7.0	9.2	8.1	4.3	2.4
		01.8			24.5			41.4
		27.4			10.9			3.9
7	20	01.91	38		24.59	7	44	41.20
7	21	58.68	40		21.31	7	46	38.18
	− 1	56.57		− 1	56.74		− 1	56.98
		−.14			−.12			+.09
		−.30			−.30			−.30
		57.01		1	57.16		1	57.19

.20
.1
.02
38.20
38.18

See also page 85, where two additional stars give 57.12 and 57.08
Average 1m 57.s11

−.14 .01
−.12 .16
+.09 .19
+.38 .12
−.23 .08
+.47 .11
−.49

Mar 11.9 H.C.O. relay sounder O.K. W.A. relay O.K. sounder not working at 21hrs.
" 12.9 " " " " " " " " " working irregularly at 21hrs

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Mar 13, 2 q Aurigae β Tauri

	1, 2	0.6	1.8	5.0 2.0	7.0
.26	4.3	7.7	2.0	7.3 9.7	7.0
.2					
-.05	7.1	4.7	1.8	9.7 7.2	6.9
28.74	0.2	1.9	2.1	2.0 4.9	6.9
.69	3.3	8.8	2.1	4.5 2.6	7.1
	9.0	2.9	1.9	9.0 7.9	6.9
	2.0	9.9	1.9	1.4 5.6	7.0
	5.0	7.0	2.0	3.7 3.3	7.0
	8.0	4.0	20	6.1 0.9	7.0
20		31.0			18.5
.2					9.3
.04		18.6			
16.02		30.98		5 17	18.49
15.98	5 08	28.69		5 19	15.98
	-1	57.71		-1	57.49
		+.06			-.18
		-.30			-.30
	1	57.95		1	57.97

Aurigae = 1 57.96

Mar. 13.9 H.C.O. relay + sounder O.K. W.N. relay O.K. sounder not working at 21 hrs

" 14.9 " " " " " " " " " " " " " " " " 21 "

" 15.9 " " " " " " " " " " " " " " " " 21 hrs

" 17.9 " " O.K. sounder, not working W.N. relay O.K. " " " " 21 hrs

" 18.9 " " + sounder O.K. W.N. relay O.K. sounder not working at 21 hrs

" 19.9 " " " " " " " " " working occasionally at 21 hrs

" 20.9 " " " " " " " " " not working at 21 hrs

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Mar. 21.

3 Geminor			π Geminor			26 Lyncis		
6.6	3.4	0.0	4.7	4.2	8.9	5.3	6.7	2.0
8.7	1.0	9.7	7.0	1.8	.8	8.2	3.6	1.8
1.1	8.5	9.6	9.6	9.1	.7	1.4	0.4	1.8
3.5	6.1	9.6	2.0	6.8	.8	4.6	7.4	2.0
5.9	4.0	9.9	4.4	4.2	.6	7.4	4.4	1.8
0.6	9.2	9.8	9.6	9.3	8.9	3.7	8.3	2.0
3.0	6.9	9.9	2.0	7.0	9.0	6.8	5.3	2.1
5.1	4.5	9.6	4.5	4.4	8.9	0.0	2.1	2.1
7.6	2.1	9.7	7.0	1.8	8.8	3.0	8.9	1.9
		29.9			19.4			36.0
		17.7			7.8			17.5
7	36	29.88	7	38	19.41	7	44	35.91
	38	31.52		40	21.13		46	37.96
	-2	01.64		-2	01.72		-2	01.99
		~~.00~~			-.12			~~.00~~
		-.30			-.30			-.30
	2	01.94		2	02.14		2	02.29

23
.1
.02
37.98
37.96

Average = 2 02.12

Mar. 21.9 ~~A~~ C.O. relay & sounder O.K. N.Y.O. relay O.K. sounder not working at 21 hrs.
" 22.9 " " " " " " " " " " " " " 21 "

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Mar 23.2 Lauri

.21	5.1	4	5.1
.3	7.7		7.4
-.06	9.9		7.3
47.21	2.1		7.1
.15	4.2	0	9 5.1
.25	5.7	6.4	2.1
.8	1.0	4.1	5.1
.4.20	3.0	2.0	5.0
22.62	5.3	9.7	5.0
22.42			57.6
.18			10.8
.8	5 28		57.54
.14	5 30		59.93
60.07	- 2	02.39	
59.93			.00
			-.30
	2	02.09	

Antiqua

8.0	1.1	9.1	
0.6	8.5	.1	
3.2	5.8	.0	
6.0	3.1	.1	
8.7	0.5	.2	
4.0	5.3	.3	
6.5	2.6	.1	
9.2	0.0	.2	
0.0	2.0	5.2	
		52.6	44.6
			10.9
5 41		44.57	
43		47.15	
-2	02.58		
		-.05	
		-.30	
2	02.93		

Aurigae

0.9	9.0	9.9
3.7	6.0	9.7
6.6	3.1	9.7
9.6	0.3	9.9
2.4	7.5	9.9
8.2	1.6	9.8
1.1	8.7	9.8
4.0	5.7	9.7
7.0	2.9	9.9
		19.9
		17.2
5 49		19.90
5 51		22.42
- 2	02.52	
		-.30
2	02.82	

~~Anuga = 2~~

Anuga = 2 02.81

Mar 24.9 84.C10. relay a sounder B.K., W.M. relay B.K. sounder, not working at 21 hrs

1888phae.proj.1791E

92

Mar. 25.s 2 Can Ven

4.0	9.3	3.3
6.7	6.4	3.1
9.6	3.4	3.0
2.1	0.7	2.7
5.0	7.8	2.8
0.4	2.4	2.8
3.3	9.7	3.0
5.9	6.8	2.8
8.6	4.0	2.6
		31.5
		8.6
12	08	31.45
	10	35.04
−	2	03.59
		−.01
		−.30
	2	03.90

.06
.4
+.02
29.47
.49

.07
.5
.04
35.01
35.05
.07
.3
.03
35.01
35.04
.06
.4
.02
9.69
9.71

Comae
20 ~~Tauri~~

4.0	8.7	2.7
6.6	6.2	2.8
8.7	3.7	2.6
0.9	1.6	2.5
3.0	9.5	2.5
6.6	5.1	2.7
9.7	2.9	2.6
1.9	0.7	2.6
4.0	8.5	2.5
		06.1
		5.6
12	22	06.29
	24	9.71
−	2	03.42
		−.26
		−.30
	2	03.98

8 Can Ven.

9.9	8.0	3.7	1.7
3.6	0.9	0.9	1.8
9.4	3.6	8.0	1.6
9.3	6.4	5.5	1.9
	2.3	2.6	1.9
	5.0	7.0	2.0
	7.9	4.3	2.2
	0.4	1.4	1.8
	3.1	8.7	1.8
			25.8
			17.6
12	26		25.92
	28		29.49
−	2		03.57
			−.01
			−.30
	2		03.88

Average = $2^m 03^s.92$ (clock slow)

Mar 25.9 H.C.O. relays sounder O.K. W.U. relay O.K. sounder not working at 21h
" 26.9 " " " " both working during five min. break, having attended to the batteries immediately before observing, I at once went to Mrs Edmands house to report to him — finding that he was in Boston, I got everything working O.K. by turning a screw of magnet toward me & by drawing out some of the water from the ~~sounder~~ cups of the Sounder battery. Left relays sounder working O.K. W.U.

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March 26.9 continued. (See lower light line of page.)

Mar 27.9 M.C.O. relays & sounder O.K., M.R. relay O.K. sounder not working at 2/

relay O.K., sounder not working at 2/

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Mar. 28.5

26 Can Ven			20 Comae			8 Can. Ven		
2.7	7.5	0.2	~~8~~ 7 .6	7.0	9.6	6.5	2.3	8.8
5.1	4.8	9.9	~~4~~ 9	4.8	9.7	9.2	9.5	8.7
7.9	2.0	9.9	~~7~~ 3.0	2.4	9.4	2.2	6.5	8.7
0.8	9.1	9.9	~~9~~ 5.2	0.2	9.4	5.0	3.9	8.9
3.4	6.3	9.7	~~1~~ 7.4	8.0	9.4	7.9	1.0	8.9
9.0	1.0	0.0	~~6~~ 2.0	3.8	9.8	3.6	5.8	9.4
1.9	8.1	0.0	~~8~~ 4.0	1.7	9.7	6.0	2.9	8.9
4.5	5.4	9.9	0.2	9.2	9.4	8.9	0.0	8.9
7.0	2.8	9.6	2.6	7.0	9.6	1.7	7.0	8.7
		29.9			04.9		~~24~~	24.3
		18.2			14.9			8.2
12 08		29.96	~~12~~ 12	~~24~~	04.78	12		24.43
10		35.01	12 24		09.73	12 28		29.51
-2		05.05			04.95			05.08
		.01						
		-.30			-.70			-.70
2		05.36			5.25			5.38

.02 .2 -.04 35.05 .01

.06 .7 .04 9.69 9.73

.06 -.7 .04 29.47 29.51

Average = 2 05.33

Mar. ~~28~~ 29 H.C.O. relay & sounder O.K., N.C. relay O.K. sounder working intermittently at 21 hrs

29.9 " " " " " only sounder differing in intensity of sound

N.C. relay O.K. sounder not working

29 ~~10~~ 11 H.C.O. relays sounder O.K. at 23 hrs.

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Mar. 30.2 31 Ygnacio Sr 1450 Cancu

	4.6	9.9	6.7	6.6	0.0	2.7	2.7	9.6	6.7	6.3
	5.5	2.6	3.8	.4	2.6	9.8	2.4	1.8	4.3	6.1
	8.3	5.5	0.9	.4	5.1	7.5	2.6	4.1	9.9	4.0
	1.1	8.3	8.1	.4	8.0	4.7	2.7	6.7	9.7	6.4
.22		1.1	5.2	.3	0.7	2.0	2.7	9.3	7.4	6.7
.1		7.0	5.7	.7	5.7	6.9	2.6	3.7	2.6	6.3
+.02		9.9	6.7	.6	8.4	4.1	2.5	6.2	0.4	6.6
14.38		2.5	3.7	.2	1.0	1.6	2.6	8.7	7.9	6.6
.40		5.0	1.0	.0	3.8	8.9	2.7	0.9	5.6	5.5
20		~~7.9~~	07.9				36.2			53.0
.1			3.5				5.7			+1.5
.02	8	13	08.18		823		36.30	837		53.08
42.15		15	14.40		825		42.17	839		59.08
42.17			-2 06.22				-2 05.87		-2	06.00
.17			+.02				-.06			-.17
.1			-.30				-.30			-.30
.02			2 06.50				2 06.23			2 06.47
59.10										
59.08										

Average = 2m 06s.40 clock slow

Mar 31.9 H.C.O relay & sounder O.K., W.U. relay O.K. sounder not working at 21 hrs

Apr. 1.9 " " " " " " " " " " started working immediately after observing the 5 min. break & worked through a min. O.K. and I left it working. at 20 hrs

Apr 2.9 H.C.O relay & sounder O.K. W.U. relay O.K. sounder working occasionally at 21 hrs

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Apr. 7. 2 Remarkable condition of Wire Line to Boston.

1 D. R. S.'s attention having been attracted to the sharpness of the return beat of the H. 6. 6. Bermuda, he tried to adjust the relay. Nothing that he could do seemed to lengthen the make.

2 Additional movements of the relay made by hand failed to cause additional responses on the sounder.

3 Holding the relay-armature back so as to close the line, the sounder failed ~~also~~ to indicate a closed-current, but went on giving the clock beats as before.

4 Going over to the east end of the building, a piece of paper was put between the points of the W. U. relay (which sounder had been working all night) so as to keep that line open. Upon doing the W. U. sounder stopped. Returning to the west end, the H. 6. 6. sounder had stopped. Restoring the regular operation of W. U. relay, the H. 6. 6. sounder also started all right.

All this indicates that the ground connection of both the wires is defective, the current passing by preference back to Boston on the other line and failing when either line is broken.

N. B. The H. 6. 6. ground wire connects to a water pipe in the west cellar, which the W. U. ground wire connects with a gas pipe in the east cellar. So the connection of the gas and water pipes must be electrically good.

5 Stopping the H. 6. 6. connection failed to similarly stop the W. U. sounder. But resistance and battery power are greater on that line so that this is natural.

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Apr 4.5

	12 hour Ten sey.			43 Comae		
	6.3	9.5	5.8	0.8	7.7	8.5
.04	9.0	6.8	.8	3.0	5.1	8.1
.6	1.8	4.0	.8	3.6	2.9	8.5
4.02	4.2	1.3	.5	7.8	0.7	8.5
51.35	7.0	8.6	.6	0.0	8.4	8.4
37	2.3	3.6	5.9	5.0	3.8	8.8
	5.0	1.0	6.0	7.3	1.4	8.7
.04	7.5	8.0	5.5	9.7	9.0	8.7
.6	0.1	5.4	5.5	1.9	6.6	8.5
.02			42.8			34.3
42.70			16.2			5.0
42.72			42.85	13 04		34.26
	12	50	51.37	13 06		42.72
			2 08.52	02		08.46
			-.05			
			-.30			
			2 08.87			

April 4.9 After having fixed batteries the relay of the H.C.O. gave faint sounds occasionaly thro' the five min. break. After having readjusted relay left H.C.O. relay & sounder working O.K., W.U. relay O.K.

Apr 4.9 While J.R.E. held the W.U. relay so as to close the circuit, H.W.W. could rattle the N.G.C. sounder by moving the N.G.C. relay-arm. But when the W.U. relay was again allowed to work, ~~the rattle~~ motion of the N.G.C. arm was ineffective as usual yesterday.

Apr. 5.9 H.C.O. relay & sounder O.K. at 21.10. At 21.11 sounder stopped working completely. W.U. ~~sounder~~ relay O.K. sounder not working at 21hrs. At 22 hrs 25 mn H.C.O relay & sounder both O.K.

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Apr. 6.3

.20	5.7	8.0		3.7			4.6			2.8	3.9	6.7
.4	8.8	4.8		3.6		1.7	1.3	3.0		5.7	1.0	6.7
.08	1.9	1.7		3.6		4.2	8.7	2.9		7.7	8.0	6.8
16.12	3.0	8.5		3.5		7.0	5.9	2.9		3.0	4.6	6.3
30	8.0	5.6		3.6		9.7	3.0	2.9		4.9	1.7	6.6
.23	4.5	9.3		3.8		5.3	7.7	3.0		0.9	5.5	6.4
.6	7.5	6.1		3.6		8.1	4.8	2.9		4.0	2.6	6.6
.14	0.7	2.9		3.6		0.9	2.0	2.9		7.3	9.6	6.9
36.87	3.7	9.9		3.6		3.8	9.2	3.0		0.2	6.3	6.5
36.73				26.9				16.7				53.0
				15.5				8.2				5.3
.22	8	49		26.81		8 5 1		16.48		8 5 3		53.29
.6	8 5 1			36.73		5 3		26.30		8 5 6		3.14
.13	- 2			09.92		- 2		09.82		- 2		09.85
3.27				-.30				.00				-.30
3.14				10.22				-.30				10.15
								2 10.12				

Aver 2 10.09

April 7 8:9 Everything O.K. about H.C.O. relays sounder befor watering batteries, after which relay gave occasional sounds through five min. break, & sounder seemed a little uncertain but after adjusting relay left it O.K. sounder seemed to vary in intensity of sound. W.U. relay O.K., sounder not working at 21 40m

Apr. 7 11 10 H.C.O. relay & sounder O.K. at 23.50m

Apr 8 9 H.C.O. relay & sounder O.K. It was found by moving the arm of the relay by hand that the sounder moved simultaneously with it. W.U. relay O.K. sounder not working. at 21 Apr 11

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Apr. 6.3 Continue. K Cancri

4.0	5.9	9.9
6.0	3.8	9.8
8,0	1.7	9.7
0.1	9.6	9.7
2.2	7.4	9.6.
6.4	3.4	9.8
8,6	1.1	9.7
0.7	9.0	9.7
2,8	7.0	9 8
		34.9
~~8 59~~		16.6
8 59		34.87
9 01		44.44
− 2		09.57

.13
.7
.09
44.53
44.44

−.30
09.87

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April 9.3

× 40 Lyncis			/ Draconis (#)			10 Leon min.		
~~7.5~~ 2.7			3.0	0.3	3.3	8.8	0.2	9.0
~~6.7~~ 9.1			8.7	5.6	4.3	1.3	7.8	9.1
~~8.9~~ 6.6			3.9	0.6	4.5	4.0	5.0	9.0
~~7.7~~ 4.0			8.5	5.4	3.9	6.4	2.5	8.9
~~1.6~~ 1.7		3.2	4.1	0.6	4.7	9.0	0.0	9.0
6.4	6.8	3.2	8.5	5.7	4.2	4.2	4.8	9.0
8.9	4.3	3.2	3.1	1.8	~~4.9~~ 3.9	6.8	2.3	9.1
1.6	1.6	~~3.2~~ 3.1	7.4	5.8	3.2	9.5	9.8	9.3
4.0	9.0	3.0	2.3	1.0	3.3	2.0	7.0	9.0
		06.5	7.4	6.4	3.8			14.5
		~~2 2~~ 6.3	2.1	1.5	3.6			9 9
9 12		06.57	7.4	7.0	4.4	9 23		14.52
14		17.86			02.7	9 27		23.83
− 2		11.29			0.8	− 2		11.31
		−.09	9 19		02.03			−.07
		−.30	9 21		15.64 57			−.30
		2 11.68	− 2		13.54			2 11.68
					11.29			

.17
.9
.15
18.01
17.86

.16
.9
.14
25.97
25.83

~~1.06~~
~~1.0~~
~~1.1~~
~~16.72~~
~~15.62~~
6.96
1.22
5.74

5.74) 2.25 (.4
2296

$\delta n = 0.4$

April 9.9 H.C.O relays sounder O.K. after adjusting slightly sounder so as to prevent some faint sounds which occurred in it after watering batteries. W.U. relay O.K. sounder not working at 21 hrs

" 10.9 H.C.O relays sounder O.K. W.U. relay O.K. sounder worked two three times more then when touched by the finger. at 21 hrs

" 11.9 H.C.O relays sounder O.K. W.U. relay O.K. sounder not working at 21 hrs

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43 Comae.

Am 15.5

5.0	1.8	6.8
7.0	9.4	6.4
9.5	6.9	6.4
1.7	4.6	6.3
4.0	2.2	6.6
8.9	7.7	6.6
1.1	5.3	6.4
3.6	2.9	6.5
5.8	0.7	6.5
		28.0
		4.5
13	05	28.24
13	06	42.38
—	2	14.54
		-.15
		-.30
		2 14.99

101

.03
.5
.02
42.76
42.78

14.94
11.68
6.2) 3.26 (.53
310
160

20 Camelo.

~~4.5~~	3.3	8.0 5.1
~~4.2~~	6.0	~~8.0~~ 2.6
	9.0	~~5.1~~ 9.9
	1.5	~~1.6~~ .4
4.2	7.1	.3
	9.7	1.6 .3
	2.4	9.0 .4
	5.1	6.3 .4
	8.0	3.4 .4
		20.5
		12.7
13	10	20.68
	12	35.27
—	2	14.59
		-.01
		-.30
		2 14.90

Average = 2m 14.s94 (clock #132 slow).

Daily Rate = a little more than 0.s5 losing.

April 12.9 H.C.O. relay & sounder O.K. W.M. relay O.K. sounder not working at 21 hrs
14.9 " " " " O.K. " " O.K. " working occasionally at 21 hrs
15.9 " " " " O.K. W.M. " O.K. " not working at 21 hrs
16.9 " " " " O.K. " " " " " " " " 21 hrs
17.9 " " " " " " " " " " " " " " 21 hrs
18.9 " " " " " " " " " " " " " " 21 hrs

at 20 hrs before fixing batteries but after watering over

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18.9
Continued

them and ~~the~~ adding sulphate of copper the relay together with sounder gave 4 taps during five min. break. After adjusting the relay left it so the sounder working O.K. at 20 hrs. W.U. relay seemed to be striking O.K. but the strokes differed in intensity, sounder not working at 21 hrs

Apr. 19.0 At 0h.30m H.C.O. relay & sounder O.K.

19.9 H.C.O. relay & sounder O.K. at 21 hrs

10/10 " " " " " " 23 hrs W.U. relay O.K. sounder not working.

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Apr. 21.5

	α Bootis			λ Bootis				γ Bootis	
.04	0.2	3.6	5.8	2.8	2.7	5.5		5.5	
1	2.1	3.1	5.2	5.6	9.8	.4		2.8	
+.01	4.5	0.8	5.3	8.6	6.7	.3		0.3	
11.44	6.8	8.6	5.4	1.6	3.7	.3	0.8	7.5	8.3
.45	9.9	6.5	6.4	4.6	0.5	.1	3.2	5.0	8.2
.10	3.7	1.9	5.6	0.7	4.8	.5	8.7	9.6	8.3
.2	5.9	9.6	5.5	3.7	1.6	.3	1.1	6.9	8.0
+.02	8.1	7.3	5.4	6.7	8.7	.4	3.6	4.5	8.1
43.92	0.3	5.0	5.3	9.6	5.6	.2	6.4	8.7	8.1
.94			02.8			52.7			49.0
			14.7			12.7			1.0
.05			03						
.1	14	05	02.77	14	09	52.67	14	27	37.92
.01	14	05	21.42	12		11.45			
21.43		02	18.65	−2		18.78		02	18.84
21.42			−.17			+.06			−.05
			−.30			−.30			−.30
			2 19.12			2 19.02			2 19.19

Average = 2m 19.s08

33 Bootis		
6.2	4.4	0.6
9.0	1.3	.3
2.0	8.3	.3
4.7	5.5	.2
7.7	2.8	.5
3.5	7.0	.5
6.5	4.0	.5
9.5	1.0	.5
2.4	8.0	.4
		25.1
		3.9
		25.21
14	34	43.94
−2		18.73
		+.03
		−.30
		2 19.00

Apr. 21.9 H.C.O. relays sounder O.K. at 21hrs W.U. relay O.K. after adjustment at 22hrs

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Apr. 22.3

	10 Lon. Min.			M Obs. Maj.		
	6.9	1.8	8.7	−	1.8	
.18	9.2	8.8	8.0	9.0	9.0	8.0
.3	2.1	6.0	8.1	1.9	6.1	8.0
−.05	4.8	3.3	8.1	4.6	3.4	8.0
53.54	7.6	0.7	8.3	7.3	0.7	8.0
.49	3.0	5.4	8.4	3.1	5.1	8.2
.18	5.7	2.4	8.1	5.7	2.3	8.0
.2	8.5	9.7	8.2	8.4	9.7	8.1
−.04	1.2	6.9	8.1	1.1	6.8	7.9
43.51			34.0			24.0
.47			2.0			0.2
	9	48	34.11	10	13 ~~47~~	24.01
		50	53.49		15	43.47
		−2	19.38		+2	19.46
			−.04			.00
			−.30			−.30
		2	19.69		2	19.76

Average = $2^m 19.^s 73$ Sidereal Clock 4 sec 27 slow.
Rate for the last 7 days = $0.^s 7$ losing (but the daily rate is liable to diminish to half a second.)

I am using $n = 0.4$ with such sign that the term involving it is negative for stars south of the zenith.
I am using $b \sec \varphi = -0.^s 30$

Apr 22.9 H.C.O. relays sounder O.K. W.U. relay O.K. left sounder working at 2½ to

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Apr 22.9

#103 Standard

15 27.67

2 03 46.67

22 02 00.

3 37.171

24 24 51.51

0 22 31.52 ~~00~~

24 51.51

+ 02 19.99

Another reading gives the same at 0.24

#394 Normal

15 27.67

2 03 46.67

21 39 ~~00.00~~ ~~24.206~~

3 33.393

24 01 47.73

23 59 27.69

24 01 47.73

+ 02 20.04

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Apr. 23.3 L Urs. Maj. δ Hydrae.

5.2	7.2	2.4	5.0	6.2	1.2
8.3	4.0	2.3	7.0	4.1	1.1
1.4	1.0	2.4	9.1	2.0	1.1
4.4	8.0	2.4	1.1	0.0	1.1
7.5	5.0	2.5	3.2	8.0	1.2
3.8	8.6	2.4	7.5	4.0	1.5
7.0	4.5	2.5	9.2	1.9	1.1
0.0	2.3	2.3	1.5	9.8	1.3
3.0	9.2	2.2	3.7	7.8	1.5
		16.1			15.8
		3.5			11.9
8	49	16.18	9	06	15.63
8	57	36.33	9	08	35.47
	− 2	20.15		− 2	19.84
	+	.08		−	.34
	−	.30		−	.30
	2	20.37		2	20.48

.24 .3 .072 − 36.40 / 36.33

.16 .3 .048 − 35.51 / 35.47

Apr 23.9 H.C.O relay & sounder O.K. & W. O relay O.K. sounder working irregularly at 20 hrs

" " " " " " " " " sounder will work for a while when touched, after watering batteries at 21 hrs

" 23 10/10 H.C.O relay & sounder O.K. at 23 35

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Balloon #103

15 27.67
2 07 43.23
21 49
3 35.035
24 15 45.94

Apr 23.9

April 23.9

Balloon #103

15 27.67
2 07 43.23
22 26 00.
341.114
24 5 2 5 2.01

0 5 0 30.54
5 2 52.01
+ 0 2 27.47
+ 0 2 27.51 at 0 5 7
+ 0 2 27.49

Another reading
Average

Band 394

15 27.67
2 07 43.23
22 18 00.
339.199
24 4 4 5 0.70

0 42 31.47
44 50.70
+ 0 2 19.23
+ 0 2 19.22 at 044
+ 0 2 19.23

Another reading
Average

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Apr 24.2

31 Leyncis.			β Cancri.			δ Cancri		
5.0	2.0	7.0	8.2	0.1	8.3	0.5	4.0 / 1.7	4.5
8.0	9.0	7.0	0.4	8.0	8.4	2.4	4.0 / 9.7	4.1
0.7	6.1	6.8	2.3	6.0	8.3	4.7	1.7	4.4
3.5	3.2	6.7	4.7	4.0	8.7	7.0	7.4	4.4
6.2	0.4	6.6	6.7	1.8	8.5	9.0	5.1	4.1
2.1	5.0	7.1	0.9	7.6	8.5	3.6	1.0	4.6
5.0	2.0	7.0	3.0	5.5	8.5	5.6	8.7	4.3
7.9	9.1	7.0	5.0	3.3	8.3	7.9	6.5	4.4
0.5	6.2	6.7	7.1	1.3	8.4	9.9	4.3	3.2
		53.4			09.2			02.0
		8.3			4.1			3.0
8	12	53.44	8	08	09.22	8	36	02.16
8	15	13.81	8	10	29.48	8	38	22.49
	− 2	20.37		− 2	20.26		− 2	20.33
	+	.00		−	.33		−	.23
	−	.30		−	.30		−	.30
	2	20.67			2 20.79		2	20.86
					2 20.86			

.21 .4 .12* 13.93 13.81

.15 .4 .060 29.54 29.48

.15 .4 .060 22.55 22.49

Average = 2m 20.s80

April 24.9 H.C.O relay O.K. sounder not working at 20hrs N.A. relay working irregularly, sometimes skipping a second or two, ~~Obound~~ O.K through five min. break, sounder not working.
Both relays O.K. at 21hrs but neither sounder working.
Bly was called up by telephone & reported that there was something the matter with the line & that a man was out on it.

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Apr. 24.9

Balloon #103

15 27.67
2 11 39.79
21 56 00.
3 36.185
24 26 43.65

0 24 22.79
26 43.65
+ 02 20.86

Another reading + 02 20.90 at 0.26
Average + 02 20.88

Bond #394

15 27.67
2 11 39.79
21 52 00.
3 35.528
24 22 42.99

0 20 24,54
22 42.99
+ 02 18.45

Apr. 25 0 H.C.O. relay O.K. & sounder worked occasionally after being touched with the finger at 0h 0m

Apr. 25,9 H.C.O. relay ~~O.K.~~ & sounder O.K. W.R. relay O.K., sounder not working at 20h 7m

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Apr 25.9

Ballon # 103

15 27.67
15 36.54
21 54 00.
3 35 85 7
24 28 39.87

0 26 18.37
28. 39.87
+ 02 21.50
+ 02 21.47
Another reading
Average + 02 21.49 at 023

Band # 394

15 27.67
2 15 36.34
21 46 00,
3 34 34.543
24 20 38.55

0 18 21.35
0 20 38.55
+ 02. 17.20
Another reading + 02 17.20

Apr 26.9 H.C.O relay & Sounder O.K. & W.U. relay & sounder O.K. at 20 hrs
After attending to batteries observed H.C.O relay working O.K.
but sounder working quite irregularly. W.U. relay & sounder O.K.

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Apr. 26.9

Ballon #103

15 27.67
2 19 32.89
21 49 00.
3 35,035
24 27 35.60

0 25 13.47
27 35.60
+ 02 22.13
Another reading + 02 22.12

Bond #394

15 27.67
2 19 32.89
21 38 12.
3 33.288
,033
24 16 45.82

0 14 29.53
16 45.82
+ 02 16.29
Another reading + 02 16.22
Average + 02 16.25 6/7

Apr 26 10/10 The sounder of the H.C.O. worked irregularly all the forenoon. Bly called up to know about it. Mr Wendell & I overlooked all the adjustments, brightening all the points. I had previously weakened the batteries a little more, and we answered Bly that the trouble seemed to be outside. At 0 hrs 11 Apr. 27. relay was O.K. sounder not working.

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Apr. 28.5

11 Boötis		η Urs. Maj.	
4.0 0.6	4.6	7.4 1.0	8.4
6.4 ~~0.6~~		0.6 8.0	8.6
8.9 6.2	5.1	3.9 4.8	8.7
1.0 3.9	4.9	6.9 1.2	8.1
3.8 1.4	5.2	9.6 8.2	~~7~~ 8
8.0 6.8	4.8	6.3 2.0	8.3
0.5 4.4	4.9	9.7 9.0	8.7
2.9 2.0	4.9	2.9 6.0	8.9
5.0 9.4	4.4	6.1 2.3	8.4
	47.4		49.4
	7.2		4.3
13 5 3	47. ~~5~~ 4 2	13 40	49.23
13 56	9.78	43	11.73
	2 22.36		2 22.50
	-.19		+.13
	-.30		-.30
	2 22.85		2 22.67

~~9.79~~
~~.1~~
4.9 38
.04
.2
.01
9.79
9.78
~~.02~~
0
~~.02~~
.01
.2
0

Average = $2^{h}\ 22^{m}.76$

Apr 28.9 H.C. relay O.K. sounder not working but when touched by the finger worked for a time then stopped. W.U. ~~O.K.~~ relay & sounder O.K. at 21 hrs.

After proper adjustment of the sounder of the H.C.O. the sounder worked O.K.

Apr 29.9 H.C.O. relay & sounder O.K. W.U. relay & sounder O.K. at 21 hrs

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Apr. 30.5

η Bootis		λ Bootis			θ Bootis	
1.8 5.7	7.5		8.1		9.9 2.3	7.2
4.0 ~~5.7~~ 3.4	7.4		5.0		3.0 3.8	6.8
6.2 1.3	7.5		2.0		6.4 0.5	6.9
8.5 9.0	7.5		9.0		9.9 7.0	6.9
0.4 6.9	7.3	0.0 5.8		5.8	3.1 3.8	6.9
5.0 2.7	7.7	6.0 0.1		6.1	0.0 6.9	6.9
7.2 0.4	7.6	9.1 7.0		6.1	3.4 3.6	7.0
9.5 8.0	7.5	2.0 4.0		6.0	6.8 0.2	7.0
1.6 6.9	8.5	5.0 1.0		6.0	0.0 7.0	7.0
	13.7			48.0		02.4
	15.2			0.0		9.0
14 08	13.80	14 09		48.00	14 19	03.47
14 10	37.11	14 12		11.48	21	26.96
2	23.31	2		23.48	2	23.49
	-.22			+.05		+.20
	-.30			-.30		-.30
2	23.83	2		23.73	2	23.59

Average = 2^m $23^s.72$

Apr. 30.9 H.C.O. relay & sounder O.K at 21 hrs 11 m. W.U. relay made one or two slight clicks through five min break but after watering batteries and at 22 hrs W.U. relay & sounder worked O.K.

~~Apr 3~~ May 1.0 H.C.O relay & sounder O.K.

May 1.9 " " " " " W.U. relay & sounder O.K. at 20 hrs

" 2.9 " " " " " " " " " " : sounder not working at 21 hrs

" " " " " at 21 h 25 m W.U. relay O.K. sounder not working at 21 40.

" 3.9 H.C.O. relay & sounder O.K. W.U. relay O.K but sounder not working at 21 hrs 11 m.

" ~~3~~ 12 " " " " " at 22 55 W.U. relay at 23 hrs missing a stroke, Afterwards working O.K.

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May 5.5

33 Bootis

9.4	7.5	6.9
2.1	4.4	.5
5.2	1.5	.7
8.0	8.7	.7
1.0	5.6	.6
6.7	0.0	.7
9.7	7.0	.7
2.6	4.1	.7
5.4	1.1	.5

.01
.07
.4
.02
9.81
9.79

18.2
6.2
14 32 18.33
34 44.05
2 25.72
+.03
−.30
2 25.99

ε Bootis

0.9	7.1	8.0
3.0	4.8	7.8
5.4	2.5	7.9
7.8	1.0	7.8
0.0	7.9	7.9
4.8	3.4	8.2
7.0	1.0	8.0
9.3	8.7	8.0
1.7	6.3	8.0
4.0	8.7	4.0

40.0
4.8
12
7.6
14 37 48.98
14 40 09.79
2 25.81
−.15
−.30
2 26.26

Average = 2m 26s.12

May 4.0 Sine men appeared from the W. U. but failed to find anything wrong in the Observatory. Their relay They were not getting the time over their wire. Mr Garrish saw them.

H.C.O. relay & sounder O.K. W.U. relay O.K. at 1h

May 5.9 H.C.O relay & sounder O.K. W.U. relay O.K. sounder not working at 21h 40m

" 6.9 " " " " " " " " & sounder O.K. at 21 Aro

7.0 " " " " " at 21 40. W.U. relay & sounder O.K. at 21 50

" 7.9 " " " " " W.U. relay & sounder O.K. at 21 Aro

" 8.9 " " " " " " " " " " " " 21 Aro

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Concerning the irregularity of May 3.

At May 2.8 i.e. at 20h4 the mean time signals were about 0.s15 slow. According by large weight was added, so that at 22.3 the signals were 0.s4 slow. This was all it was best to do at once, and so the large weight was removed. By some unaccountable accident, a ten-gramm weight which belongs permanently on the clock was also unconsciously removed. J. R. E. remembers dropping weight and picking them up from the bottom of the clock.

Next morning (May 3.8) a series of circumstances delayed the comparison till long after J. R. E. arrived for the purpose of taking it. So at 21.2 the result 3.s4 slow was obtained. The outside lines were stopped at about 21h 20m

The absence of the weight from the pendulum was discovered. The weight was found with the other weights on top of the clock. Deductions were checked by comparisons with chronometer #3451 with Mr. Wendell's help. The escapement was jumped forward 4s and the remaining weights were removed.

At 22h 27m the error was about 0.s35 fast

The time lines were then restored.

At noon May 4.0 the error for the time ball was about 0.s3 fast.

A Memo. of all this (without the circumference) was left for Mr. Gunsh on account of its possible bearing on any r

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May 8.9 ψ Ursæ Maj — σ Leonis — λ Draconis

ψ Ursæ Maj			σ Leonis			λ Draconis		
7.5	7.0	4.5	7.4	9.0	6.4	2.7	3.0	5.7
0.0	4.6	.6	9.4	6.9	6.3	8.7	7.0	5.7
2.6	2.0	.6	1.6	5.7	6.3	4.8	5.0	5.8
5.0	9.6	.6	3.6	2.7	6.3	0.6	5.0	5.6
7.5	7.1	.6	5.7	0.6	6.3	6.5	8.9	5.4
2.4	2.2	.6	0.0	6.5	6.5	8.6	7.0	5.6
5.0	9.8	.8	2.0	4.4	6.4	0.8	5.1	5.9
7.3	7.3	.6	4.0	2.4	6.4	2.8	2.9	5.7
9.9	4.9	.8	6.1	0.2	6.3	4.9	0.1	5.0
						6.8	9.0	5.8
						9.0	6.1	5.1
						0.9	5.0	5.9
						2.8	3.0	5.8
						5.0	1.0	6.0
						7.0	9.0	6.0
						9.0	7.0	6.0
						1.0	5.0	6.0

ψ Ursæ Maj: 02.3; 6.0; 11 10 02.32; 12 29.71 (~~30.07~~); 2 27.39 (~~27.75~~); −.00; −.30; ~~2 28.15~~; ~~2 27.74~~; 2 27.69

σ Leonis: 58.3; 3.5; 11 12 58.18; 11 15 25.36; 2 27.18; −.00; −.30; 2 27.48

λ Draconis: 23.0; 30.0; 11 22 22.86; 11 24 50.07; 2 27.21; 2 27.18; .03

Average 2 27.59

Margin computations: .08, .3, .02, −.02, 30.09, .07, .13, .3, +.04, 29.67, 29.71; .10, .2, .32, 25.34, 25.36; .43, .2, .09, 49.98, 50.07

n appears to be very small.
Let us use zero

May 9.9 H.C.O. relay & sounder O.K. W.U. relay & sounder O.K. at 21 hrs.
" " " " " at 22h 25m W.U. relay & sounder O.K. at 22 30
10.9 " " " " " W.U. sounder O.K. relay not working at 21 hrs.
" " " " " " " " " " " " at 22 hrs.

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May 11.3 χ Aur. May

3.6	5.3	8.9
6.6	2.3	8.9
9.7	9.2	8.9
2.8	6.3	9.1
5.9	3.1	9.0
2.0	7.0	9.0
5.1	3.6	8.7
8.1	0.7	8.8
1.1	7.4	8.5

44.3
8.1

11 37 44.43
40 12.14
−2 27.71
.00
−.30
2 28.01

.19
.1
−.02
12.16
.14

B Leonis

~~6.7~~	5.4	8.1
~~8.9~~	7.6	6.0
	9.8	4.0
	1.9	1.7
	3.9	9.7
	—	5.3
	—	3.1
	—	1.0
	—	8.9

3.5
.6
.8
.6
.6
—
—
—
—

56.7
~~8.8~~

11 39 56.80
43 24.54
−2 27.84
.00
−.30
2 28.14

Average 2m 28s.07

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May 14.3

4 H. Draco			9 Virginis		
4.4	5.4	9.8	6.0	7.1	3.1
8.7	2.0	0.7	8.0	5.0	.0
1.4	8.9	0.3	0.0	3.0	.0
5.2	5.6	0.8	2.1	1.0	.1
8.0	1.7	9.9	4.3	9.0	.3
1.5	8.6	0.1	8.5	5.0	.5
5.4	5.1	0.5	0.5	2.9	.4
8.2	2.0	0.2	2.6	0.9	.5
1.1	8.5	9.6	4.6	8.8	.4
4.7	5.0	9.7	E°	46.6	
8.1	1.6	9.7		11.9	
1.9	8.2	0.1	12 11	46.63	
		35.0	14	14.45	
		1.4	2	27.82	
12 04		35.06		.00	
07		02.92		-.30	
-2		27.66	2	28.12	
		27.82			
		0.16			

.77 −.02 .75 .12 −.90 62.81 61.91 −.09 62.81 2.72

.07 .1 .01 14.46 .45

We may contain n = zero

Speeding up of clock due to fall of temp. very marked.
Since May 7.5 the temperature in vault has ranged between 68° and 72°
For the fundamental preceding May 6 it ranged from 75° to 79°
Thus a fall of about 7° has changed the daily rate about 0.5
Last autumn a high temp. was recorded with high rate, and the same conditions have held (without record) more or less during the furnace season.
Last summer, no temp. was recorded. Earlier records could hardly be compared with this.
Let us wait for further observations.

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May 15.4

17 H. Cam Var			N Mrs. Arai			11 Booths.		
7.7	0.0	7.7			5.4	8.4	5.1	3.5
0.3	7.0	.3			2.1	0.8	2.8	3.6
3.0	6.5	.5			9.0	3.0	0.2	3.2
5.4	2.0	.4			5.9	5.4	8.0	3.4
8.0	9.3	.3	4.6	2.7	7.3	7.8	5.8	3.6
3.2	4.0	.2	1.0	6.3	7.3	2.4	1.1	3.5
6.8	1.6	.6	4.0	3.0	7.0	4.9	8.8	3.7
8.4	9.0	.4	7.2	9.9	7.1	7.2	6.3	3.5
1.1	6.3	.4	0.4	6.7	7.1	9.4	4.0	3.4
		23.7			43.6			41.8
		13.5			6.4			14.2
		23.71	13 40		43.58	13 53		41.75
		51.67	43		11.64	56		9.79
		-27.96	2		28.06	2		28.04
		.00			.00			.00
		-.30			-.30			-.30
		28.26			27.96			27.94

.06 .5 −.03 51.70 .67

.09 .5 .05 11.59 11.64

.02 .5 .01 9.78 9.79

Average $2^m 28^s.32$

May 12.9 H.C.O relay & sounder O.K. W.N. ~~sounder~~ relay O.K. sounder not working at 21 hrs

" " " " " at 21.40 ~~relay~~ W.N. relay at 21 45 sounder not working

13.9 " " " " " W.N. relay & sounder O.K at 21 hrs

14.9 " " O.K. sounder not working, W.N. relay & sounder O.K. at 21 hrs

J.R.E. found that the sounder of the H.C.O. was making a very short click on May 14.2 but by moving the arm of the relay he could produce the proper click upon sounder. He found that the fault was due to the influence of the W.N. line, which made a circuit with that of the H.C.O.

15.9 H.C.O. relay sounder O.K. W.N. relay & sounder O.K at 21 hr

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May 18.5

E Here.

1.5	9.4	0.9
4.0	7.0	1.0
6.3	4.7	1.0
8.7	2.4	1.1
1.0	9.7	0.7
6.0	5.0	1.0
8.3	2.7	1.0
0.7	0.2	0.9
3.0	7.8	0.8
		35.4
		8.8
16 5 3		35.46
16 5 6		4.10
	2	28.64
		.00
		-.30
		2 28.94

.14
.1
-.01
32.07
.06

.16
2
.03
4.17
4.10

A Hercules

8.7	8.8	7.0
1.1	5.7	6.8
3.8	3.3	7.1
6.1	0.9	7.0
8.8	8.3	7.1
3.9	3.6	7.5
6.1	1.0	7.1
8.8	8.7	7.5
1.1	5.9	7.0
		83.6
		10.7
16 55		03.56
57		32.06
- 2		28.50
		.00
		-.30
2		28.80

Amag 2m 28s.87

May 16.9 H.C.O. relay & sounder O.K. N.W. relay & sounder O.K. at 21 hrs

" " " " " " " " " " " " " " after adjusting at 22 hrs

" 17.9 " " " " " " " " " " O.K. sounder not working at 21 hrs

" 19.9 " " " " " " " " " " " " " " 20 hrs

" " " " " " " " " " " " " " " " 21 hrs

Line men appeared saying that no time was being received over the line to the laboratory. They found that the trouble was due to corroding at the gas pipe where the wires crossed. They got the current to go out of the building all right before leaving. They said the battery was very weak & therefore added sulfate of copper to all four cups.

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1000phae.proj.17915

May 23.5 ⊙ Huc. | ♂ Coron Bor. | ☾ Here.

		− 8.7			9.4	9.0	8.4	7.6	7.4	5.0
		− 5.7			1.8	6.5	8.3	0.4	4.2	4.8 6
.01/4	6.1	2.9	9.0		4.1	3.9	8.0	3.3	1.2	4.5
+.03	9.0	9.9	8.9		6.6	1.5	8.1	6.3	8.1	4.4
18.01	1.8	7.1	8.9		9.1	9.0	8.1	9.4	5.1	4.5
.04	8.0	1.1	9.1		4.2	4.0	8.2	5.6	9.5	5.1
	0.9	8.2	9.1		6.7	1.5	8.2	8.4	6.4	4.8
	3.7	5.1	8.8		9.1	9.0	8.1	1.3	3.1	4.4
	6.6	2.0	8.6		1.6	6.5	8.1	4.2	0.2	4.4
.07			49.4				04.0			57.4
.3			6.8				1.5			6.1
.02	16	05	49.45		16	08	04.08	16	13	57.32
26.09		05	18.04			10	32.91	16	16	26.11
26.11		− ×2	28.59			2	28.83		2	28.79
.09			.00				−.30			−.30
.4			−.30							
.04	1		28.89				29.13			29.09
32.87										
32.91										

Average = 1 29.04

May 20.9 H.C. relays sounder O.K. W.M. relay O.K. sounder not working at 21 hrs

" 21.9 " " O.K " not working. W.M. relay O.K. sounder not working at 21 hrs

" 23.9 " " " " " " " " " " " O.K. at 21 hrs

" 23.9 " " " " " " W.M. " " " not working at 21 hrs

" 24.9 " " H. sounder O.K. " " " O.K sounder " " " 21 hrs

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25.5
May ~~46.5~~ π Herculis

	3.3	4.4 7.7
.13	5.9	1.9 .8
.43	8.3	9.0 .9
-.08	3.4	4.1 .5
12.63	6.0	1.4 .4
.59	8.6	9.0 .6
	1.1	6.2 .3
		44.0
		10.6
		~~43~~.78
	17 11	12.59
	-2	28.80
		.00
		-.30
	2	29.10

May 26.9 A. C. relays + sounder O.K. M.A. relays + sounder O.K. at 21 hrs
~~27.0~~ " 22 hrs
27.9 " 21 hrs
28.9 " 21 hrs

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May 29.3

	2.0	4.1	6.1	4.3	7.0		1.3
.20	5.1	1.0	.1	6.6	4.9		1.5
.1	8.1	7.9	.0	8.7	2.8		1.5
+.02	1.2	4.9	.1	0.8	0.6		1.4
11.77	4.4	1.8	.3	3.0	8.6 5.6		1.6
.79	0.7	5.6	.3	7.1	3.9		1.0
.11	3.8	2.3	.1	9.3	2.9		1.3
.1	6.9	7.2	.1	1.4	9.9		1.3
.01	0.0	6.0	.0	3.6	7.8		1.4
24.34			43.0				55.7
24.35			1.0				13.0
	11	37	43.05	11	40	55.68	
		30	11.79	11	43	24.35	
			2 28.76			2 28.67	
			.00			.30	
			.30			.30	
			2 29.04			2 28.97	

May 29.9 H.C.O. relay & sounder O.K. W.U. relay & sounder O.K. at 21 hrs.

30.9 " " " " " " " " " " O.K. at 21 hrs, after advancing the magnet of the relay a little to obviate some irregularities which occurred ~~very~~ at great intervals.

~~June~~ May 31.9 H.C.O. relays sounder O.K. W.U. relay & sounder O.K. at 21 hrs

" " " " " " " " " " " " at 22 hrs

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June 24 B Bookie X Bookie ~~H & Bookie~~

.05	7.3	1.0	5.2	6.2	0.0	6.6	6.6
.3	1.0	3.7	2.6	6.3	2.4	4.1	.5
-.02	9.7	6.1	9.7	5.8	4.9	1.9	.8
47.52	2.6	9.0	7.0	6.0	7.0	9.5	.5
.50	5.2	1.7	4.3	6.0	9.4	7.4	.8
	1.0	7.1	9.0	6.1	4.0	2.6	.6
.02	3.7	9.9	6.0	5.9	6.3	0.4	.7
.3	6.1	2.6	9.5	6.1	8.7	8.0	.7
-.01	9.0	5.4	0.8	6.2	1.0	5.6	.6
42.80			01.7	18.0			13.2
.79				0.6			6.0
		14	55	18.03	14	57	19.32
			57	47.50		59	42.79
			-2	29.47		-2	29.47
				.00			.00
				-.30			-.30
			2	29.77		2	29.77

June. 2.9 H.C.O relay ~~sounder~~ O.K. sounder not working. W.U. relay O.K. relay not working 21hrs at
3. A line man from the W.U. appeared about 1 o'clock saying that they were getting their time from Bly & not over the W.U. line — the line being open at their end. He was shown the relay working and the sounder was not working.

June 3.9 H.C.O relay O.K. sounder not working. W.U. relay O.K. sounder not working at 21hrs
3 10/10 " " & " O.K. at 23.10 W.U. sounder not working at June 4. 0 hrs 11 of 1
Bly called up that their line was not working and we reported that all was right here at about 22 hrs.

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June 4.5

ζ Here.

	6.8		
	3.6		
	~~0.6~~		
	~~7.7~~		
5.8	~~4.6~~	3.5	
8.8	~~4.6~~	3.4	
4.8	8.7	3.5	~~5.5~~ 0.0
7.9	5.6	3.5	2.2
0.8	2.6	3.4	4.5
3.7	9.7	3.4	6.7
	56.7		
	9.4		
16 13	56.72		
16 16	26.1~~2~~ 1		
2	~~30.40~~ 29.45		
	+.02		
	-.30		
2	29.75		

.04
.01
.03
.5
-.02
03.41
.39

~~.04~~
~~.01~~

~~.1~~
~~.3~~
~~.4~~
.07
.5
.04
15.51
15.55

.06
.5
.03
28.49
28.46

.01
.5
.05
26.17
26.12

2.606
0.399
2.307

β Here.

~~9~~ 2.8	1.2	8.0
~~9.0~~ 6.8	8.9	7.9
~~1.1~~ 0.6	6.7	7.8
~~3.3~~ 1.1	4.3	~~7.6~~
~~5.5~~ 3.3	2.2	7.7
~~5.5~~ 0.0	7.9	7.9
	5.~~6~~ 5	7.7
	3.2	7.7
	1.0	7.7
	~~8.9~~ 58.9	
	~~16 22~~ 16.9	
	~~4.6 25 28.~~	
	16 22 58.89	
	16 25 28.46	
	2 29.57	
	-.07	
	-.30	
	2 29.94	

σ Here.

5.9	2.0	7.9
8.6	9.0	.6
1.5	6.2	.7
4.3	3.3	.6
7.0	0.6	.6
2.9	5.0	.9
5.5	2.1	.6
8.1	9.4	.5
1.0	6.7	.7
	04.0	
	16.1	
16 28	03.85	
30	33.39	
2	29.54	
	.00	
	-.30	
2	29.84	

Average
6 week #1327 slow
$= 2^m 29.^s 84$

A Draconis

8.8	4.3	3.1
4.5	8.0	2.5
1.2	2.1	3.3
5.9	6.6	2.5
1.5	0.9	2.4
3.0	9.9	2.9
5.0	7.7	2.7
7.0	~~5.8~~	2.8
9.0	3.7	2.7
1.0	1.7	2.7
2.9	9.8	2.7
4.6	7.9	2.5
6.7	5.9	2.6
8.7	3.8	2.5
0.5	1.8	2.3
2.3	0.0	2.3
4.5	8.1	2.6
	46.1	
~~16 25~~	11.2	
16 25	46.32	
28	15.55	
2	29.23	
2	29.57	
	2.3) .34	
	$n = .15$	

Note.

"n" may be neglected, except for a star well distant from the zenith and unbalanced by others on other side. When necessary, use $n = 1/7$

Correction negative for stars south of zenith i.e. same sign as latitude.

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June 5. 3

	9 Ursae Majoris			17 H Camelopardalis			20 Camelopardalis		
.16	9.9	3.7	3.6	7.0	7.1	6.1	8.1	2.9	1.0
.4	2.9	0.6	3.5	7.6	6.6	6.2	2.0	0.1	2.1
.06	6.0	7.3	3.3	1.0	5.9	3.9	6.6	7.4	2.0
11.30	9.0	4.0	3.0	3.8	7.1	3.9	8.0	4.6	3.6
11.36	2.5	1.0	3.5	6.3	7.7	4.0	8.0	1.7	3.7
	9.0	5.6	3.6	1.7	2.6	4.3	6.6	6.3	3.9
.12	2.0	2.0	3.0	4.3	9.8	4.1	8.2	3.6	3.8
.4	5.1	8.0	3.1	6.8	7.1	3.9	9.8	0.9	0.8
.105	8.6	5.7	3.3	9.1	4.7	3.8	2.8	8.0	0.8
51.42			4.7			21.9			05.5
51.47			1.6			6.5			4.1 8.2
.15	13 40		41.87	13 27		22.01	13 10		05.74.3
.3	43		11.36	29		51.47	12		34.93
.05	2		29.49	2		29.45	2		29.50
34.88			.70						.00
34.93			+.03			+.02			
			−.30			−.30			−.30
			2 29.97			2 29.78			2 29.80

Average 2^m 29.85

June 4. 9. H.C.O. relay & sounder O.K. W.U. relay O.K. sounder not working at 21 hrs.

3. 9 " " " " O.K. at 21 hrs. W.U. relay O.K. " " " " 22 hrs.

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June 6.

η Bootis			ιι Bootis		
3.6	7.1	0.7	6.6	3.0	9.0
5.8	5.0	0.8	8.9	~~7.8~~ 9	9.7
8.0	2.9	0.9	1.1	8.6	9.7
0.1	0.7	0.8	3.6	6.3	9.9
2.1	8.4	0.5	6.0	4.0	0.0
6.7	4.1	0.8	0.7	9.1	9.8
8.9	2.0	0.9	2.9	6.9	9.8
1.1	9.8	0.9	5.2	4.7	9.9
3.1	7.6	0.7	7.6	2.3	9.9
		55.5			40.0
		7.5			14.7
13 46		55.39	13 53		39.77
49		25.09	56		9.68
2		29.70	2		29.91
		− .08			− .05
		− .30			− .30
2		30.08	2		30.26

.06
.3
.02
25.07
25.09

.07
.3
.02
9.66
9.68

Average $2^m\ 30^s.17$

Jan 6.9 ~~H.C.O.~~ relay & sounder O.K. W.U. relay O.K. sounder not working at 21^{hrs} W.U. line man appeared about 22^{hrs} reporting their line to be open. He found our relay O.K. moreover he found that he could signal from here over the line. The sounder started up while he was here but ceased working again, which cessation he attributed ~~to~~ a change in the W.U.'s battery.

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June 7.3	η Urs Maj.			η Bootis			ρ Bootis		
.16	9.6	3.5	3.1	3.5			0.5	8.4	8.9
.8	2.7	~~4.6~~ 0.7	2.9	5.8			2.8	6.0	8.8
-.13	6.0	7.0	3.0				5.0	3.6	8.6
11.46	9.0	4.0	3.0				7.6	1.4	9.0
11.33	2.3	0.7	3.0				0.0	8.9	8.9
	8.8	4.2	3.0	6.5	4.0	0.5	4.8	4.0	8.8
.06	2.0	1.0	3.0	8.8	1.8	0.6	7.2	1.7	8.9
.2	5.1	8.0	3.1	1.0	9.7	0.7	9.7	9.2	8.9
.01	8.2	4.8	3.0	3.1	7.6	0.7	2.0	6.8	8.8
25.07		41.6			55.2			34.5	
25.08		9.7			2.7			8.1	
	13 40	41.51		13 46	55.30		14 24	34.43	
	13 42	11.33		49	25.08		14 27	4.11	
.06		- 2	29.82		- 2	29.78		- 2	29.68
.2		+	.04		+	.04			- .05
.01		-	.30			- .30			- .30
4.80		2	30.08		2	30.04		2	30.03
4.11									

Average $2^{m}\ 30.05^{s}$

.08
.2
.12
37.88
37.90

June 7. Inspected Instruments
20h 45m H.C.O. relay; ~~sounder~~ drew signal away. O.K.
H.C.O. sounder O.K.
W.U. ~~relay~~, O.K.
W.U. sounder

June 7. 10/10 H.C.O. relay & sounder O.K. after a little adjusting at $2^{3}\ 40^{m}$.
W.U. " O.K. sounder not working at $2^{3}\ 45^{m}$.
" 8.0 H.C.O " & sounder O.K. W.U. relay & sounder O.K. at about $4^{0}\ 45^{m}$.
" 8.2 " " " " O.K. at $4^{h}\ 0^{m}$
" 9.9 " " " " " W.U. relay O.K. sounder working slightly at 21^{h}
" 10.9 " " " " O.K. W.U. " & " O.K. at 21^{h}
" 11.9 " " " O.K. sounder not working, W.U. relay O.K. sounder working at times at 21^{h}

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June 12

τ Herc.			β Herc.			ε Herc.		
	6.0		6.1	0.6	6.7	5.0	1.2	6.2
9.1	7.0	2.1	8.3	8.1	6.4	7.9	8.5	6.4
2.0	0.0	2.0	0.5	6.0	6.5	0.8	5.6	6.4
5.1	2.2	2.3	2.7	3.8	6.5	3.7	2.9	6.6
	4.1		5.0	1.7	6.7	6.5	0.0	6.5
	8.0		9.4	7.2	6.6	2.0	4.5	6.5
	4.8		1.7	5.0	6.7	4.8	1.7	6.5
	1.9		3.8	2.8	6.6	7.7	8.8	6.5
3.0	9.0	2.0	6.0	0.6	6.6	0.4	6.0	6.4
	56.0			58.4			03.1	
	0.4			5.7			4.1	
16 13	56.02		16 22	58.30		16 28	03.21	
16			25	28.50		16 30	33.41	
			− 2	30.20		2	30.20	
				− .07			.00	
				+ .30			− 30	
			2	30.53		2	30.50	

.04 .03 .01 — .03 .3 .01 28.49 28.50 — .01 .3 .003 — .01 .1 .003 7.33

η Herc.

Ou. 2m 30.s58

0.3

3.1	1.0	4.1
5.8	8.3	4.1
8.5	5.7	4.2
1.1	3.1	4.2
6.5	7.8	4.3
9.0	5.1	4.1
1.7	2.5	4.2
4.4	9.8	4.2
		36.9
		18.3
16 36		36.96
16 39		7.33
2		30.37
2		30.37
		− .01
		− .30
2		30.68

June 11.9 Sounder of H. C. O. was working at 22 hrs.

" 12.9 H.C.O relay & sounder O.K. after adjusting magnet slightly as the laboratory arm was working occasionally through five min break. N.W. relay & sounder O.K. at 21 hrs

" 13.9 H. C. O. sounder & relay O.K. N.W. " " O.K. " 21 hrs

H. C. O. relay needed adjusting after watering batteries but left it a sounder O.K. at 21 N.W. relay & sounder O.K at 22 hrs

Both relays & sounders O.K. at 24 hrs

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June 14·3

12 Can. Ven. seq.			ℓ. Virgin.			43 Comae		
4·0	7·0	1·0	8.3	0.3	8.6	8.6	5.4	4.0
6·7	4·2	0·9	0.8	8.3	9.1	0.9	3.1	4.0
9·3	1·5	0·8	2.7	6.1	8.8	3.2	0.8	4.0
1·9	9·1	1·0	4.7	4.0	8.7	5.7	8.2	3.9
4·6	6·3	0.9	6.9	2.0	8.9	8.2	6.0	4.0
0·0	1·0	1·0	1.0	7.9	8.9	2.6	1.2	3.8
2·4	8·3	0.7	3.0	5.8	8.8	4.9	8.9	3.8
5·1	5·8	0·9	5.2	3.7	8.9	7.2	6.7	3.9
7·8	3·1	0·9	7.3	1.4	8.7	9.7	4.2	3.9
		20·5			09.4			12.0
		8·6			8.8			18.3
12	48	20·45	12	54	09.46	13	04	11.99
12	50	50·83		56	39.85		06	42.42
	2	30·38		2	30.39		2	30.43
		−·02			−.10			−.05
		−·30			−.30			−.30
	2	30·70		2	30.79		2	30·78

10
.5
.05
39.80
39.85

.12
.5
.06
42.36
42.42

.13
.5
.07
51.29
51.36

17 H. Com. Nov.

5.6	7.1	2.1
7.8	4.4	2.2
0.4	1.8	2.2
2.9	9.3	2.2
5.4	6.6	2.0
0.6	1.4	2.0
3.2	8.9	2.1
5.9	6.2	2.1
8.4	3.8	22
		21.0
		1.1
13	27	21.05
	29	51.36
	2	30.31
		−.02
		−.30
	2	30.99

m s
av: 2 30·72

June 14.9 H.C.O. relays sounder O.K., N.M. relay O.K. sounder not working.

17.9 " " " " O.K. after slightly advancing magnet. N.M. relay sounder O.K.

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June 18.4 ν' Bootis ?

(5) 2.4	7.6	0.0
5.3	4.7	0.0
7.7	1.7	9.4
0.3	8.9	9.2
3.1	6.1	9.2
8.7	0.8	9.5
1.4	8.0	9.4
4.1	8.0	9.1
7.0	2.2	9.2
		39.7
		13.7
15	25	39.72
	2	58.20

q Coron Bor.

—	3.6	
9.6	1.2	0.8
2.0	8.9	0.9
4.0	6.5	0.5
6.6	4.1	0.7
1.0	9.6	0.6
3.3	7.2	0.5
5.9	5.0	0.9
8.0	2.7	0.7
		30.4
		6.0
15	27	30.32
	30	00.81
— 2	30	29.49
		−.05
		−.30
2		30.84

June. 18. 9 H.C.O. relay was left O.K. after adjusting magnet. sounder not working
W.W. relay was left O.K. after adjusting magnet. sounder O.K. at 21 hrs

19. 9 H C.O. relay O.K. sounder not working. W.W. relay & sounder O.K. at 21 hrs

20. 9 " " " " " " " " " " " " " "
" " " " worked once or twice at long intervals. W.W. relay
& sounder O.K. after fixing batteries and adjusting H C.O. relay slightly at 21 hrs

20. 4 H C.O. relay O.K. sounder working occasionally at 23h 20m W.W. relay & sounder O.K. at 23,25

21. 9 " " & " O.K. W.W. relay & sounder O.K at 21 hrs

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Lantern not lighted
Field-liner barely seen
Observation unreliable. Clear

June 22.3

	δ Booti	γ Booti	33 Booti
.13		1.0 4.0 5.0	4.6 — —
.4		3.6 6.1 4.7	7.7 9.7 7.0
-.05		6.1 8.7 4.8	0.2 6.7 6.9
43.72		9.0 6.0 5.0	3.0 3.9 6.9
.62		1.5 3.2 4.7	6.0 1.0 7.0
.14		7.0 8.0 5.0	1.9 5.0 6.9
.3		9.5 5.4 4.9	4.8 2.0 6.8
-.04		2.1 2.7 4.8	7.6 9.2 6.8
37.28		4.7 0.0 4.7	0.4 6.4 6.8
.48		~~7.4~~ 07.4	13.4
		8.0	7.5
		14 25 07.42	14 32 13.39
		27 37.48	34 43.62
		-2 30.06	-2 30.23
		-.02	+.01
		-.30	-.30
		2 30.38	2 30.52

Average (γ+33) = 2^m 30.^{s}40 ? i.e. work seems improbable

June 23.9 H.C.O. relays & sounder O.K. W.U. relays & sounder O.K. at 21 hrs
" 24.9 " " O.K. sounder working occasionally. W.U. relays & sounder O.K. at 21 hrs
" 25.9 " " " O.K. W.U. relays & sounder O.K. at 21 hrs
" 26.9 " " O.K. " working irregularly. W.U. relays & sounder O.K. at 21 hrs
" 27.9 " " " " O.K. W.U. relays & sounder O.K. at 21 hrs
" " O.K. " working irregularly. W.U. relays & sounder O.K. ~~at 21 hrs~~

after attending to batteries

" 27 10/10 H.C.O. relays O.K. sounder ticking irregularly. W.U. relays & sounder O.K. at 23 hrs 11

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June 27.4

β Draconis

3.1	0.9	4.0
6.7	7.2	3.9
0.0	4.8	4.0
3.6	0.7	4.8
6.8	8.9	3.8
	7.0	
	0.5	
3.4	6.7	3.9
6.9	4.6	3.9
0.1	3.6	3.6
3.6	0.3	3.9

26.9
18.2

17 25 26.96
57.84
2 30.88

.02
.2

.05
.2
.01
48.70
48.69

α Ophiuchi

6.7	8.9	5.6
8.8	6.7	5.5
1.0		
3.7	4.6	5.6
3.1		
5.1	2.5	5.6
5.1	0.4	5.5
9.3	6.1	5.4
1.4	4.0	5.4
3.6	2.0	5.6
5.7	9.9	5.6

17.8
14.6

17 27 17.77
29 48.69
2 30.92

ζ Herculis

1.5	1.0	2.5
4.4	7.9	.3
7.4	5.0	.4
0.2	2.0	.2
3.3	9.0	.3
9.4	3.1	.5
2.3	0.1	.4
5.2	7.0	.2
8.1	4.1	.2

51.0
3.0

17 33 51.16
36 22.10
−2 30.94
+.12
−.30
2 31.22

μ Herculis

4.6	1.0	5.6
6.9	8.8	.7
9.1	6.4	.5
1.5	4.0	.5
3.9	0.7	.6
8.5	7.1	.6
0.9	4.9	.8
3.0	2.4	.4
5.1	0.0	.1

37.9
14.7

17 39 37.77
42 08.25
2 30.98
−.05
−.30
2 30.63

.05
.2
.01
08.76
.75

Mean = 2 31.09

June 28.9 W. M. relay O.K. sounder working slightly irregularly at 21 hrs
H.C.O. relay & sounder O.K at 22 hrs
June 30.9 H.C.O relay O.K. sounder not working.
W. M. relay O.K. " " " at 21 hrs

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July 14

τ Herc.			β Herc.			α Herc.		
4.5	4.6	9.1	4.9	9.3	4.2	3.9	0.0	3.9
7.6	1.6	9.2	7.0	7.0	4.0	6.7	7.1	3.8
0.7	8.6	9.3	9.3	4.7	4.0	9.6	4.4	4.0
3.8	5.6	9.4	1.6	2.8	4.4	2.4	1.7	4.1
6.7	2.6	9.3	3.8	0.4	4.2	5.3	8.9	4.3
2.6	6.8	9.4	8.2	6.0	4.2	0.8	3.1	3.9
5.8	3.7	9.5	0.4	3.7	4.1	3.6	0.5	4.1
8.8	0.7	9.5	2.8	1.6	4.4	6.5	7.7	4.2
1.8	7.8	9.6	4.9	9.4	4.3	9.3	4.9	4.4
		54.7			57.0			02.1
		13.0			1.8			.05
16	13	54.68	16	22	57.09	16	28	02.03
	16	26.02		25	28.49		30	33.32
	− 2	31.34		− 2	31.40		−2	31.29
		+.01			−.07			.00
		−.30			−.30			−.30
	2	31.63		2	31.77		2	31.59

.10
.2
−.02
33.74
.32

.13
.2
1083
2605
26.052

.05
.2
.01
28.50
28.49

Average = 2^h 31.66

July 1.9 Balloon #103
Clock stopped at ~~about 17 10~~ $17^h\ 09^m\ 17\frac{3}{4}^s$
" 2.9 H.C.O. relay O.K. but sounder not working. W.U. relay & sounder O.K. after advancing magnet at 21 hrs
" 3.1 Balloon #103
Clock stopped at $0^h\ 26^m\ 11\frac{1}{2}^s$ this was noticed at about $2^h\ 15^m$

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July 3.6 ε Delphini

	3.6	–	
.21	5.6	–	
.4	7.8	–	
.98	9.9	–	Lower
.18	2.0	–	
4	6.1	4.0?	(0.1?)
+.07	8.2	–	
56.29	0.4	8.8	9.2
.36	2.5	6.7	9.2
			24.6
			23.0
20	25		24.60
	27		56.36
	–2		31.76
			–.10
			–.30
	2		32.16

July 3.$\frac{10}{10}$ H.C.O relays & sounder O.K. W.W. relays & sounder O.K. at 23 hrs

4.9 " " " " O.K. " " " " " O.K at 21 hrs

" " " " , after advancing magnet a little, O.K. W.W. relays & sounder O.K. at 22 hrs after firing batteries.

4 $\frac{10}{10}$ Both relays & sounders O.K at 23 hrs

5.9 H.C.O relays & sounder O.K. W.W. relays & sounder O.K at 21 hrs

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July 6.3

	δ Bootis			γ Ursæ Minn.			ν' Bootis		
.14	6.0	5.6	1.6	~~6.3~~ 7	1.9	9.2	8.3	2.3	1.6
.3	8.6	3.0	1.6	4.0	5.4	9.4	1.0	0.7	1.7
.04	1.1	0.7	1.8	1.1	8.9	0.0	4.0	7.9	1.9
57.94	3.5	8.3	1.8	8.0	2.6	0.6	6.9	5.0	1.9
.90	6.1	5.7	1.8	4.9	5.7	0.6	9.8	2.3	2.1
	0.8	0.8	1.6	8.0	1.8	9.8	5.0	6.9	1.9
.12	3.5	8.1	1.6	0.1	9.5	9.6	7.6	4.0	1.6
.3	5.9	5.8	1.7	2.5	7.1	9.6	0.1	1.2	1.3
.04	8.3	3.3	1.6	4.8	4.0	9.8	3.0	8.6	1.6
62.95			30.8	7.0	3.0	0.0	~~5.0~~		25.9
62.99			15.9	9.2	0.8	0.0			16.5
.53	15	0	30.84	1.4	8.6	0.0	15	24	25.87
.3	15	10	62.99	3.9	6.2	0.1		26	57.90
.16		2	32.15	6.0	4.2	0.2		2	32.03
56.82			.00	8.4	2.0	0.4			.00
56.98			-.30	0.4	9.6	0.0			-.30
		2	32.45	2.5	7.1	9.6		2	32.33
						24.8			
						33.7			

Average = $2^m\ 32.^s39$ = #1327 slow

15 18 24.96
20 56.98
2 32.02

Note. It is to be recalled that the two stars ν' Bootis ($\delta = 7° 2'.3$) and γ Ursæ Minn ($\delta = 71° 2'$) have been used without any correction for π.

July 7.9 H.C. relays & sounder O.K. N.M. relays & sounder O.K. at 21 hrs

8.9 " " " " O.K. " " " " " O.K. " 21 hrs

9.9 " " " " O.K. " " " " " O.K. " 21 hrs

10.9 " " " " O.K. " " " " " O.K. " 21 hrs

11.9 " " " " O.K. " " " " " O.K. " 21 hrs.

" " " " O.K. " " " " " O.K after advancing magnet and after attending to batteries. at 22 hrs

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July 12.1

α Urs. Maj.			η Boötis.			ζ Boötis.		
4.1	3.1	7.2	0.0	3.5	3.5	1.9	5.7	7.6
8.4	8.6	7.0	2.2	1.4	3.6	4.1	3.5	7.6
2.9	3.8	6.7	4.5	9.1	3.6	6.4	1.2	7.6
7.7	9.7	7.4	6.6	7.0	3.6	8.6	9.0	7.6
2.0	5.1	7.1	8.8	4.8	3.6	0.7	7.0	7.7
0.9	6.3	7.1	3.0	0.5	3.5	5.0	2.6	7.6
5.5	2.0	7.5	5.2	8.2	3.4	7.2	0.4	7.6
0.0	7.6	7.6	7.5	6.1	3.6	9.4	8.1	7.5
4.0	3.1	7.1	9.6	4.0	3.6	1.6	6.0	7.6
		18.8			51.8	3		03.8
		11.5			14.8			15.2
10	54	18.61	13	46	51.78	14	08	03.80
10	56	51.29	13	49	24.73		10	36.73
	− 2	32.68		− 2	32.95		− 2	32.93
		.00			.00			.00
		− .30			− .30			− .30
	2	32.98		2	33.25		2	33.23

.20 .3 .060 — .035 51.29 51.29

.13 .3 .04 24.77 24.73

.13 .3 .04 36.77 36.73

Average = 2 33.15

July 12.9 ☆.C.O relay & sounder O.K. W.U. relay & sounder O.K. at 21h

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July 14.3

.16
.5
+.08
18.94
19.02

.15
5
−.08
62.95
62.87

δ Bootis.

5.0	4.3	9.3
7.3	2.0	9.3
0.0	9.4	9.4
2.3	7.0	9.3
4.8	4.5	9.3
9.7	9.7	9.4
2.2	7.1	9.3
4.8	4.7	9.5
7.3	2.3	9.6

29.8
13.2

15 8 29.69
15 10 62.87
−2 33.18
.00
−.30
2 33.48

γ Bootis

5.6	6.4	2.0
8.1	3.8	1.9
0.7	1.1	1.8
3.4	8.2	1.6

45.9
8.2
15 17 45.91
20 19.02
−2 33.11
.00
−.30
2 33.41

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1888phae.proj.1791E

July 16.3

μ Bootis.			ν' Bootis.		
9.5	1.8	1.3	7.0	2.0	9.0
2.1	9.1	1.2	9.8	9.1	8.9
4.8	6.4	1.2	2.5	6.3	8.8
7.3	4.0	1.3	5.2	3.4	8.6
0.1	1.2	1.3	8.0	0.8	8.8
5.2	6.1	1.3	3.6	5.3	8.9
7.9	3.6	1.5	6.1	2.7	8.8
0.4	1.0	1.4	9.0	0.0	9.0
3.0	8.3	1.3	1.8	7.2	9.0
		45.8			24.5
		12.6			8.3

15	17	45.66	15	24	24.44
15	20	18.99	15	26	57.82
	2	33.33		2	33.38
		.00			.00
		.30			.30
	2	33.63		2	33.68

.16
7
.11
19.10
18.99

.17
.7
.12
57.94
57.82

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1888phae.proj.1791E

July 17.3

ε Coron. bor.			α Serpentis.			ν Draconis.			β Serpentis		
4.5	0.8	5.3	5.1	6.7	1.8	7.0	7.0	4.0	0.3	3.2	3.5
6.7	8.2	4.9	7.2	4.8	2.0	1.2	3.0	4.2	2.7	1.1	3.8
9.2	6.1	5.3	9.4	2.8	2.2	5.3	9.1	4.4	4.7	9.0	3.7
1.6	4.0	5.6	1.5	0.7	2.2	9.1	5.0	4.1	6.8	7.0	3.8
3.7	1.5	5.2	3.6	8.4	2.0	3.1	0.1	4.2	9.0	4.5	3.5
8.4	7.0	5.4	7.7	4.2	1.9	1.0	3.1	4.1	3.2	0.3	3.5
0.9	4.9	5.8	9.8	2.2	2.0	4.8	9.1	3.9	5.3	8.2	3.5
3.0	2.1	5.1	1.9	0.3	2.2	9.1	5.3	4.4	7.6	6.1	3.7
5.3	0.0	5.3	4.0	8.2	2.2	3.2	1.3	4.5	9.7	4.0	3.7

		27.8			16.0			17.3			31.9
		12.7			19.5			21.1			15.6
15	50	27.67	15	36	16.03	15	57	17.11	15	38	31.82
15	52	60.88	15	38	49.37	15	59	50.36	15	41	5.18
	− 2	33.21		− 2	33.34		− 2	33.25		− 2	33.36
		.00			.00			.00			.00
	−	.36		−	.30		−	.30		−	.30
	2	33.51		2	33.64		2	33.55		2	33.66

~~15~~ 2 33.51

64

55

66

236

2 33.59 = Average

N.B. The word "Error" marked out because of the policy adopted several years ago. We avoid the words "Error" and "Correction" to avoid any mistake as to sign by assuming that the other is given. "Clock Slow" is the word for the result given above.

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July 18·3

	μ Bootis.			ν' Bootis.			ζ Coron. bor.		
	9·2	1·3	0·5	6·8	1·4	8·2	3·7	0·0	3·7
	2·0	~~1·3~~	0·8	9·5	8·7	8·2	6·0	7·6	3·6
	4·5	~~8·8~~	0·6	2·2	6·0	8·2	8·2	5·2	3·4
	~~9·2~~	~~9·6~~							
	~~9·8~~	~~6·1~~	0·8	5·0	3·2	8·2	0·8	3·0	3·8
	9·8	1·0	0·8	7·7	0·5	8·2	3·0	0·7	3·7
	4·9	5·7	0·6	3·0	5·0	8·0	7·7	6·1	3·8
	7·4	3·1	0·5	6·0	2·3	8·3	0·0	3·8	3·8
	0·1	0·5	0·6	8·6	9·6	8·2	2·1	1·3	3·4
	2·8	8·0	0·8	1·1	7·0	8·1	4·5	9·1	3·6
		45·3			24·1			26·9	
		6·3			1·7			15·7	
	15 17	45·33		15 24	24·09		15 27	26·83	
	15 20	18·96		15 26	57·79		15 29	60·54	
	− 2	33·63		− 2	33·70		− 2	33·71	
		·04			·00			·00	
	−	·30		−	·30		−	·30	
	2	33·93		2	34·00		2	34·01	

	2	33·93	
		34·00	
		34·01	
	3	2·94	
	2	33·98	= Average ~~error~~ = "Clock Slow"

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July 20.2 η Urs. Maj. π Bootis

4.1	8.0	2.1	8.7	2.1	0.8
7.5	5.0	2.5	0.9	9.9	0.8
0.6	1.8	2.4	3.0	7.8	0.8
3.9	8.5	2.4	5.2	5.7	0.9
7.0	5.3	2.3	7.3	3.5	0.8
3.4	8.9	2.3	1.8	9.1	0.9
6.6	5.9	2.5	4.0	7.0	1.0
9.8	2.6	2.4	6.0	4.8	0.8
3.0	9.4	2.4	8.2	2.6	0.8
		36.2		~~58.3~~	50.3
		3.5			7.9
13	40	36.18	13	46	50.42
13	43	10.43	13	49	24.63
	− 2	34.25		2	34.21
		.00			.06
		.30			.80
	2	34.55		2	34.51

.24
.1
.02
10.45
10.43

.13
.1
.01
24.64
24.63

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1999phae.proj.1791E

July 22.3 α Coronae bor. 109 Virginis δ Bootis.

2·7	8·8	1·5	3·8	4·9	8·7	3·1	2·6	5·7
5·0	6·2	1·2	6·0	2·9	8·9	5·7	0·1	5·8
7·2	4·1	1·3	8·0	0·8	8·8	8·0	7·7	5·7
9·5	1·8	1·3	0·0	8·8	8·8	0·5	5·1	5·6
1·9	9·5	1·4	2·0	6·8	8·8	3·0	2·7	5·7
6·2	5·0	1·2	6·2	2·7	8·9	8·0	7·8	5·8
8·8	2·5	1·3	8·2	0·5	8·7	0·4	5·2	5·6
1·0	0·2	1·2	0·2	8·3	8·5	2·9	2·9	5·8
3·3	8·0	1·3	2·2	6·3	8·5	5·2	0·2	5·4

.14 .3 −.04 60.53 / 60.49

.12 .3 −.04 39.23 / 39.19

.17 .8 −.051 62.80 / 62.75

		25·8			04·2			27·9
		12·5			6·8			16·0
15	27	25·66	14	38	04·36	15	08	27·84
15	29	60·49	14	40	39·19	15	10	62·75
	− 2	34·83		− 2	34·43		− 2	34·91
		·00			·00			·00
		− ·30			− ·30			− ·30
	2	35·13		2	34·13		2	35·21

73
113
121
3 | 307
102 = Ow = 2 35.02

1888phae.proj.1791E

July 23·3 or Hercules,

·18
·4
-·078
33·10
33·03

0·0 6·1 6·1
2·8 3·1 5·9
5·6 0·2 5·8
8·2 7·7 5·9
1·1 4·9 6·0
6·8 9·1 5·9
9·7 6·3 6·0
2·4 3·6 6·0
5·1 0·8 5·9

58·0
18·5

16 27 57·97
16 30 33·03
-2 35·06
·00
- ·30
2 35·36

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1888phae.proj.1791E

July 24.3 σ Herculis β Herculis. ε Coron. bor.

σ Herculis			β Herculis			ε Coron. bor.			
9.6	6.0	5.6	0.8	5.2	6.0	9.6	2.7	8.9	1.6
2.5	3.1	5.6	3.0	3.1	6.1	2.5	4.9	6.4	1.3
5.4	0.2	5.6	5.2	1.0	6.2	5.3	7.1	4.1	1.2
8.2	7.6	5.8	7.4	8.7	6.1	8.2	9.5	2.0	1.5
1.0	4.8	5.8	9.8	6.4	6.2	1.0	2.0	9.7	1.7
6.7	9.1	5.8	4.1	2.0	6.1	6.8	6.4	5.1	1.5
9.6	6.2	5.8	6.4	9.9	6.3	9.6	8.9	2.8	1.7
2.2	3.6	5.8	8.8	7.7	6.5	2.2	1.1	0.2	1.3
5.1	0.7	5.8	1.0	5.3	6.3	5.4	3.4	8.1	1.5
		58.0			53.1			~~58.1~~	25.9
		16.6			1.9				14.2
16 27		57.87	16 22		53.10		15 50		25.75
16 30		33.01	16 25		28.31		15 52		60.79
− 2		35.14	− 2		35.21		− 2		35.04
		.00			.00				.00
−		.30	−		.36		−		.30
2		35.44	2		35.51			2	35.34

4
14
21
39
13

Av. ~~———~~ = 2m 35s.43 slow.

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1888phae.proj.1791E

July 25.3

	σ Herculis.	β Herculis	ε Coron. bor.
.18	9·2 5·1 4·3	0·2 4·8 5·0	1·9 8·1 0·0
.6	2·0 2·5 4·5	2·7 2·3 5·0	4·1 5·8 9·9
.11	5·0 0·0 5·0	5·0 0·2 5·2	6·5 3·4 9·9
33.10	7·9 7·0 4·9	7·1 8·1 5·2	9·0 1·2 0·2
32.99	0·5 4·1 4·6	9·2 6·0 5·2	1·1 9·0 0·1
.11	6·2 8·3 4·5	3·7 1·5 5·2	5·8 4·2 0·0
.6	9·0 5·5 4·5	6·0 9·2 5·2	8·0 2·0 0·0
.07	2·0 2·9 4·9	8·2 7·1 5·3	0·2 9·8 0·0
28.37	4·7 0·0 4·7	0·3 4·9 5·2	2·8 7·3 0·1
28.30	57·3	52·6	25·0
.14	6·2	11·1	19·2
.6			
.08	16 27 57·33	16 22 52·58	15 50 25·01
.06	16 30 32·99	16 25 28·30	15 52 60·78
60.78	− 2 35·66	− 2 35·72	− 2 35·71
	·00	·00	·00
	− ·30	− ·30	− ·30
	2 35·96	2 36·02	2 36·01

6
11
12
3 | 29
9

av. (slow) 4h 2m 36s·00

1000phae.proj.1791E

July 26·3

	β Bootis.			β Coron. bor.			α Coron. bor.		
	3·5	8·0	1·5	6·3	4·0	0·3	1·1	7·6	8·7
	6·2	5·2	1·4	8·9	1·3	0·2	3·5	5·1	8·6
	9·0	2·4	1·4	1·1	9·0	0·1	5·9	2·7	8·6
	1·7	9·9	1·6	3·7	6·7	0·4	~~8·0~~	0·3	8·3
	4·4	7·1	1·5	6·0	4·1	0·1	0·3	8·1	8·4
	9·9	1·7	1·6	0·7	9·5	0·2	5·1	3·6	8·7
	2·5	9·0	1·5	3·0	~~9·5~~ 7·1	0·1	7·3	1·1	8·4
	5·2	6·0	1·2	5·2	~~7·1~~ 5·0	0·2	9·7	8·9	8·6
	8·0	3·4	1·4	7·7	~~5·0~~ 2·3	0·0	2·0	6·6	8·6
c			10·9			40·0			24·1
			14·0			1·6			5·0
	14 55		10·74	15	20	40·~~84~~ 08	15	27	24·26
	14 57		46·77	15	23	16·25	15	29	60·43
		− 2	36·03		− 2	36·17		− 2	36·17
			·06			·00			·06
			− ·30			− ·30			− ·30
		2	36·33		2	36·47			36·47

3
17
17
3 | ·37
·12

Av. (slow) = 2ᵐ 36ˢ·42

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July 29.3 ε Coronæ bor.

0·3 6·8 7·1
2·6 4·3 6·9
5·0 2·0 7·0
7·2 9·8 7·0
9·8 7·3 7·1
4·2 2·8 7·0
6·6 0·4 7·0
9·0 8·1 7·1
1·2 5·9 7·1

23·5
9·8

15 50 23·52
15 52 60·72
− 2 37·20
·00
— ·30
2 37·50

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1888phae.proj.1791E

Aug 2.3 — 2 Mar.

1.1	9.2	0.3
3.5-	7.0	.5
6.0	4.5-	.5
8.3	2.0	.3
0.9	9.8	.7
3.5-	4.9	.4
8.0	2.5-	.5
0.4	0.0	.4
3.0	7.7	.7

.15-
.5
+.07
3.97
4.04

25.4
4.7

16 53 25.25-
5-6 04.04
-2 38.79
.00
-.20
2 39.09

1888phae.proj.1791E

Aug 4.5 q6 3gmi

2.5	0.9	3.4
8.2	6.0	.2
8.6	5.0	.6
1.4	2.2	.6
4.5	9.4	.9
0.0	3.3	.3
3.0	0.3	.3
6.0	7.5	.5
8.7	4.6	.9

~~7~~ 7

01.7
13.8

20 35 01.73
37 41.37
- 2 39.64
.00
-.30
2 39.94

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1888phae.proj:1791E

Aug 6.3

15
.2
+.03
3.97
4.00

E Merc.

9.8	8.0	7.8
2.2	5.5	7.7
4.8	3.0	7.8
7.0	0.9	7.9
9.6	8.4	8.0
4.4	3.6	8.0
6.6	1.0	7.6
9.0	8.8	7.8
1.6	6.4	8.0

24.0
17.6

16 53 23.93
5 6 04.00
- 2 40.07
.00
- .70
2 40.37

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1888phae.proj.1791E

152

Aug. 8.3

η Tauc.

θ Tauc.

θ Lyrae

1.8	3.7	5.5
4.2	1.0	.2
7.0	8.4	.4
9.4	6.0	.4
2.1	3.1	.2
9.3	8.0	.3
0.0	5.4	.4
2.5	3.0	.5
5.0	0.4	.4

47.7
13.0

17 49 47.67
52 28.47
-2 40.80
.00
-.30
2 41.10

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1888phae.proj.1791E

Aug. 11 & 15

61 Cygni Pr.

9.9	2.4	2.3
2.9	9.7	.6
5.5	7.3	.8
7.9	4.6	.5
0.6	1.9	.5
5.6	6.9	.5
8.4	4.0	.4
1.0	1.4	.4
3.7	8.9	.6
~~62~~	16.2	
	4.8	
20	59	16.25
	61	57.79
	−2	41.54
		.00
		−.30
	2	41.84

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1888phae.proj.1791E

154

Aug 16.3

.26
.2
+.05
21.13
.18

C Nuc
— 8.0
— 5.0
— 1.1

7.7 9.3 7.0
0.7 6.3 7.0

6.6 0.1 6.7
9.5 7.2 6.7
2.6 4.5 7.1
5.6 1.6 7.2

39.6
7.3
38.56

17 33
36 21.18
2 42.62
.00
-.30
2 42.92

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1000phae.proj.1791E

Aug 18.3

Vega

2.7	5.6	8.3
5.3	3.0	.3
8.0	0.1	.1
0.9	7.6	.5
3.4	5.0	.4
8.7	9.9	.6
1.3	7.0	.9
4.0	4.6	.6
6.6	1.9	.5

29.3
3.9

18 30 29.21
33 12.62
+2 43.41
.00
-.30
2 43.71

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1888phae.proj.1791E

Aug 20.

Vega

2.0	5.0	
4.9	2.1	7.0
7.4	9.6	.0
0.1	7.0	.1
3.0	4.4	.4
8.0	9.2	.2
0.7	6.6	.3
3.3	4.0	.3
6.0	1.3	.3

28.7

11.3

.19
.2
-.04
12.62
.58

18
+7 30 28.59
33 12.58
-2 43.99
.00
-.30
2 44.29

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1000phae.proj.1791E

Aug 24.3

.19
.4
+.08
12.43
.57

Vega

0.9	3.7	4.6
3.4	1.0	.4
8.4	8.5	.9
8.6	6.0	.6
1.4	3.3	.7
6.9	8.0	.9
9.5	5.0	.5
2.0	2.6	4.6
5.0	0.0	5.0
		27.6
		6.8
18	30	27.36
	33	12.57
		−2 45.15
		.00
		−.30
		−2 45.45

1327 slow = −2

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1888phae.proj.1791E

Aug 24/25 - Sid Clock Brookham #1327 cleaned by Mr. Henry Aston. It was in fine condition in spite of the long run it had made. Only the feeling that it had been running longer than was safe led to stopping it.

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1888phae.proj.1791E

Aug 26.3 B Deacon.

~~0.9~~ 3.0	1.0	4.0
6.6	~~6.7~~ 7.5	.1
0.0	~~3.0~~ 4.2	.2
3.4	0.9	.3
7.0	7.2	.3
3.6	0.8	.4
7.1	7.4	.5
6.1	3.9	.0
3.7	0.7	.4

57.0

2.1

17 27 57.11

37 56.65

+ 1 - 59.54

.00 ±

-.30

1327 fast $1^m - 59^s.84$

.32
.2
+.06
56.57
.65

At the pendulum was disturbed about an hour ago, a steady rate can hardly be effected yet.

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1888phae.proj.1791E

Aug 27.3 Vega (α Lyrae)

~~and 17.5~~

1.9	4.7	6.6
4.4	2.0	6.4
7.2	9.6	6.8
9.9	7.0	6.9
2.3	4.1	6.4
8.0	9.0	7.0
0.6	6.4	7.0
3.0	3.6	6.6
5.7	1.0	6.7

12.43
+.02
45

08.3
6.7

18 33 08.35
33 12.45
−0 04.10
.00
−.30

1327 clear = $0^m\ 04^s.40$

N.B. Pendulum was declenched a half hour before this.

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1888phae_proj_1791E

Aug 27.5

Block of Androm.			22 Androm Asteroid		
3.1	0.3	9.7	2.0	1.0	3.0
6.0	7.9	9.9	4.9	8.0	2.9
8.1	5.6	3.7	8.0	5.1	3.1
0.6	3.4	4.0	1.0	2.2	3.2
3.0	0.9	3.9	4.0	9.2	3.2
7.4	6.1	3.5	9.7	3.2	2.9
9.9	3.9	3.8	2.6	0.3	2.9
2.2	1.7	9.9	5.4	7.1	2.5
4.6	9.1	3.7	8.2	4.4	2.6
		36.9			31.6
		16.7			8.9
0 02		36.88	0 04		31.46
02		41.36	04		35.91
-0 04.48			0 04.45		
		.00			.00
		-.30			-.30
0m 04s.78			0m 04s.75		

.18
.1
-.02
41.38
36

.17
.1
+.02
35.85
.91

Average = 0m 04s.76 = block #1327 slow

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1888phae.proj.1791E

Aug 28.5

11 Pegasi			7 Lacertae			10 Lacertae		
7.0	6.0	3.0	9.6	2.9	2.5	8.7	1.4	0.1
9.5	3.7	.2	2.8	0.1	2.9	1.4	8.9	.3
2.0	1.2	.2	6.0	7.0	3.0	3.9	6.2	.1
4.5	8.9	.4	9.2	4.0	3.2	6.7	3.6	.3
7.0	6.3	.3	2.6	0.8	3.4	9.6	1.6	.6
1.8	1.4	.2	8.9	4.5	3.4	4.8	5.9	.7
4.2	8.9	.1	2.1	1.4	3.5	7.3	3.1	.4
6.9	6.8	.3	5.3	8.1	3.4	9.9	0.7	.6
9.1	4.1	.2	8.6	5.0	3.6	2.5	6.0	.5
	01.7			41.6			15.1	
	11.6			11.5			3.7	
22	05	01.61		41.61			15.19	
	05	05.90	22	26	45.98	22	34	19.41
	0	04.29		0	04.37		0	04.22
		.00			.00			.00
		-.30			-.30			-.30
1327 elow =	0	04.59		0	04.67		0	04.52

Average = $0^h 04^s.59$ = 1327 elow

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1888phae_proj.1791E

Aug 29, 3

	α Lyrae			110 Herc.		
	1.6	4.4	6.0	8.3	2.3	0.8
	4.4	1.6	6.0	0.5	0.3	0.8
.22	7.0	9.3	6.3	2.9	8.0	0.9
.1	9.5	6.7	6.2	5.0	6.0	1.0
-.02	2.1	3.8	5.9	7.2	3.6	0.8
12.43	7.7	8.6	6.3	1.6	9.2	0.8
.41	0.3	6.0	6.3	4.0	7.1	1.1
.16	2.9	3.3	6.2	6.0	5.0	1.0
.1	5.4	0.6	6.0	8.3	2.9	1.2
-.02			08.0			50.6
54.74			1.2			9.0
.72	18	33	08.06	18	40	50.47
		33	12.41		40	54.72
		-0	04.35		-0	04.25
			.00			.00
			-.30			-.30
		0m	04.65		0	04.55

Average = 0m 04.s60 = #127 slow

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1888phae.proj.1791E

Aug 30.3

.20
2
-.04
14.20
.16

.17
.2
-.03
59.64
.61

.38
.2
-.08
18.53
.85

o Her.

6.4	3.4	9.8
8.8	1.0	9.8
1.3	8.9	0.2
3.6	6.5	0.1
6.0	4.0	0.0
0.6	9.5	0.1
3.0	7.0	0.0
5.3	4.7	0.0
7.8	2.6	0.4

10.2
0.6
18 03 10.03
03 14.16
-0 04.13
.00
-.30
04.43

10 Her.

3.2	7.6	0.8
5.4	5.4	0.8
7.7	3.1	0.8
0.0	1.0	1.0
2.2	8.8	1.0
6.6	4.3	0.9
8.8	2.1	0.9
1.0	0.0	1.0
3.2	7.7	0.9

55.5
8.6
18 18 55.45
18 59.61
-0 04.16
.00
-.30
04.46

2 Draco.

4.9	4.4	9.3
9.0	0.5	.5
2.7	6.5	.2
6.9	2.7	.6
1.0	8.7	.7
8.9	0.6	.5
3.0	6.6	.6
6.9	2.8	.7
1.0	8.9	.9

15.0
15.0
18 22 14.79
22 18.85
-0 04.06
.00
-.30
04.36

Average = 0m 04.42 = Clock slow

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1888phae_proj_1791E

Aug 31.3 B Draconis

.34	~~8.7~~ 5.6	6.0	4.7
.3	2.1	2.7	.8
-.10	5.3	9.1	.4
56.57	8.7	6.0	.7
.49	2.1	1.8	.4
.17	8.7	5.8	.5
.3	2.0	2.4	.4
-.05	5.4	9.0	.4
48.25	8.6	5.5	.1
.20			
.29		52.1	
.3		5.0	
-.09	17 27	52.26	
21.13	27	56.49	
.04		-0 04.23	
		.00	
		-.30	
		0 04.53	

ζ Ophiuchi

2.7	5.0	7.7
5.0	3.0	8.0
7.0	0.9	7.9
9.0	8.8	7.8
1.1	6.7	7.8
5.4	2.3	7.7
7.6	0.2	7.8
9.7	8.1	7.8
2.6	6.0	80
		44.0
		17.5
17 29	43.92	
29	48.20	
	-0 04.28	
	.00	
	-.30	
	0 04.58	

ζ Herc.

7.0	6.4	3.4
0.0	3.5	.5
3.0	0.4	.4
6.0	7.6	.6
9.0	4.6	.6
4.9	8.5	.4
7.9	5.8	.7
1.0	2.7	.7
3.9	9.8	.7
		16.8
		14.8
17 36	16.78	
36	21.04	
	-0 04.26	
	.00	
	-.30	
	0 04.56	

Average = $0^{h}04^{s}.56$

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1888phae.proj.1791E

Sept. 1.3

	α Lyrae			β Lyrae			R Lyrae		
	4.1 (1.7)	4.6	6.3	1.4	1.0	2.4	3.3		
.23	7.0	—	—	3.9	8.4	2.3	0.6		
.6	9.7	9.1	6.8	6.3	6.0	2.3	7.6		
+.13	2.1	6.4	6.8	9.0	3.6	2.6	4.9		
12.21		3.9	6.0	1.4	1.1	2.5	2.0		
.34	7.4	8.6	6.0	6.4	6.3	2.7	6.4		
	0.0	5.9	5.9	9.1	3.8	2.9	2.7		
.20	2.9	3.3	6.2	1.5	1.2	2.7	9.4	0.6	0.0
.6	5.4	0.7	6.1	3.9	8.6	2.5	2.0	7.8	9.8
.120									
60.40									
60.52		08.0			56.2			54.4	
		0.7			5.1			2.3	
.24	18	33	08.04		46	56.27		51	54.46
.6		33	12.34	18	45	60.52	18	51	59.09
.14		− 0	04.30		− 0	04.25		− 0	04.63
58.95			.00						
59.09			−.30						
		0	04.60						

Sept. 1.9 A.C.O. relay O.K. sounder not working. W.N. relay & sounder O.K. at 21 hrs 15 before the 5-min. break. I notice that the last tick of the relays in both cases sounds like a short double tick.

2.3 A.C.O. relay O.K. sounder not working. W.N. relay O.K. sounder not working at 5 hrs. after fixing batteries.

2.9 A.C.O. relay O.K. sounder not working. W.N. relay & sounder working at 27 hrs 15

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1888phae.proj.1791E

Sept. 2.5 (Androm.

—	8.1		
—	5.3		
8.9	2.5	0.4	
0.4	9.8	.2	
3.6	7.0	.6	
9.0	1.7	.7	
1.9	8.8	.7	
4.6	5.8	.4	
7.5	3.0	.5	
	40.2		
	3.7		
23	32	40.25	
	32	44.31	
	−0	04.06	
		.00	
		−.30	
	0	03.36	

22 Androm.

6.0	3.0	9.0	2.3	1.3	3.6
8.4	0.6	9.0	5.1	8.3	3.4
0.7	8.1	8.8	8.0	5.3	3.3
3.0	5.9	8.9	1.1	2.5	3.6
5.4	3.5	8.9	4.0	9.4	3.4
	8.7		9.9	3.3	3.2
	6.5	9.0	2.9	0.1	3.0
		8.8	5.9	7.6	3.5
		8.8	9.0	4.9	3.9
		49.3		31.9	
		7.5		13.8	
23	46	49.44	23	50	31.73
	46	52.76			
		3.33			

Sept. 1.3 (Lyrae

0.2	9.5	9.8
2.7	7.9	9.7
5.4	3.6	9.0
7.9	2.0	9.9
0.4	9.7	0.1
5.1	4.8	9.9
7.8	2.3	0.1
0.1	0.0	0.1
2.6	7.6	0.2
	5.0	45.0
		17.8
	54	44.94
18	54	49.12
	0	04.18

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1888phae.proj.1791E

Sep. 3·3

.20
.6
−.120
60·60
60·48

.16
.4
.06
54·58
54·64

.22
.4
.09
12·21
12·30

.17
.4
.07
59·47
59·54

β Lyrae

1·7	0·8	2·5
4·1	8·3	2·4
6·7	6·0	2·7
9·1	3·5	2·6
1·6	1·1	2·7
6·5	6·0	2·5
9·0	3·7	2·7
1·3	1·2	2·5
3·9	8·9	2·8

56·2
5·6

18 45 56·29
18 45 60·48
− 0 4·19
·00
− ·30
4·49

110 Herc.

8·6	2·4	1·0
0·8	0·3	1·1
3·0	8·1	1·1
5·1	6·0	1·1
7·3	3·7	1·0
1·7	9·2	0·9
4·0	7·1	1·1
6·1	5·0	1·1
8·3	2·7	1·0

50·5
9·9

18 40 54·52
18 40 54·64
− 0 4·12
00
−·30
4·52

δ Lyrae

7·6	8·6	6·2
0·0	5·9	5·9
2·8	3·4	6·2
5·3	0·7	6·0

08·0
0·3

18 33 08,03
18 33 12,30
— 0 4,27
00
−·30
4·57

109 Herc.

3·1	7·6	0·7
5·5	5·4	0·9
7·6	3·1	0·7
9·8	1·1	0·9
2·1	—	
6·5	4·3	0·8
8·7	2·2	0·9
1·1	9·8	0·9
3·2	7·7	0·9

55·5
7·2

18 18 55·42
18 18 59·54
− 0 4·12
00
− ·30
4·42

δ Herc.

8·0	9·7	7·7
0·5	7·2	7·7
3·1	4·6	7·7
5·7	2·1	7·8
8·3	9·3	7·6
3·7	4·2	7·9
6·1	1·6	7·7
8·8	9·0	7·8
1·4	6·4	7·8

24·0
6·7
24·

17 55·2

Av. 4·50

Sep. 3.9 H.C.O. relay O.K.
sounder not working.
M.A. relay + sounder O.K.
at 21 hrs.

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1888phae.proj.1791E

Sep. 4.3

.24
.7
.16 8
.17
59.19
59.02
59

.20
.3
.06
60.40
60.46

.16
.3
.05
54.58
54.63

.22
3
.07
12.21
12.28

R Leyrae

6.3	3.4	9.7
9.2	0.8	0.0
2.1	7.8	9.9
5.0	5.0	0.0
7.9	2.0	9.9
3.6	6.2	9.8
6.3	3.4	9.7
9.2	0.7	9.9
2.1	7.6	9.7

54.8
17.4

18 57 54.92
18 57 59.02
4.10
.00
− .30
4.40

β Leyrae

1.6	1.0	2.6
4.2	8.6	2.8
6.7	6.1	2.8
9.1	3.7	2.8
1.7	1.1	2.8
6.6	6.2	2.8
9.0	3.8	2.8
1.5	1.4	2.9
3.9	8.9	2.8

56.6
7.7

18 43 56.40
45 60.46
− 04.06
.00
− .30
04.36

110 Herc.

8.6	2.4	1.0
0.7	0.2	0.9
2.9	8.0	0.9
5.2	5.9	1.1
1.3	3.7	1.0
1.7	9.3	1.0
3.8	7.1	0.9
6.0	4.9	0.9
8.2	2.7	0.9

50.4
9.0

18 40 50.47
40 54.63
− 0 04.16
.00
− .30
04.46

α Lyrae

1.7	~~18~~ 4.3	6.0
4.3	~~21~~ 1.8	6.1
7.0	~~9~~ 9.0	6.0
9.4	~~6.4~~ 6.6	6.0
2.2	~~4.~~ 4.0	6.2
7.6	8.6	6.2
9.9	6.0	5.9
2.8	3.1	5.9
5.4	0.8	6.2

08.0
0.5

18 33 08.03
33 12.28
− 04.25
.00
− .30
04.55

Sept. 4.9 ~~4 C.~~ relay O. K. sounder not working. W. U. relay & sounder O. K. at 2½

1888phae.proj.1791E

Sept. 5. 2

Tel S. Scrw. E; W = 2.4 E = 9.8
" W: 4.2 8.0

Sept 5. 3

θ Herculis

3.3		9.7
1.0		9.7
8.3		9.5
6.1		9.5
3.9		9.6
0.4	9.2	9.6
2.9	7.0	9.9
5.1	4.6	9.7
7.5	2.3	9.8
		09.7
		15.7
18.03		09.83
18.03		09.84
		04.21
		.00
		30
		04.51

Sept. 5. 9 A.C.O. relay & K. sounder not working. W.A. relay & sounder & K. at 21 hrs

1888phae.proj.1791E

Sept. 6

110 Herc.

8.4 2.6 1.0
0.5 0.2 0.7
2.9 8.0 0.9
5.0 6.0 1.0
7.2 3.7 0.9
~~4.7~~ 9.2 ~~8.9~~ 0.
4.0 7.0 1.0
6.1 4.9 1.0
8.2 2.6 0.8

50.5

8.7

50.46

~~54.60~~ 6.0

~~54.58~~

4.14
.00
− .30
4.44

.16
.1
.02
54.58
54.60

.22
.1
.02
12.21
12.23

~~.15~~
~~.1~~
~~.02~~
~~59.43~~
~~59.47~~
~~.17~~
.1
.02
59.47
59.49

δ Lyrae

1.7 4.4 6.1
4.2 1.7 5.9
6.9 9.1 6.0
9.3 6.5 6.0
2.2 4.0 6.2
7.6 8.6 6.2
0.1 6.0 6.1
2.8 3.3 6.1
5.4 0.7 6.1

08.0

0.7

~~18 33~~ 08.04

33 12.23

4.19
.00
.30
4.49

109 Herc.

3.1 7.6 0.7
5.3 5.3 0.6
7.6 3.0 0.6
9.8 0.9 0.7
2.0 8.7 0.7
6.4 4.1 0.5
8.6 2.0 0.6
0.9 9.9 0.8
3.0 7.6 0.6

55.4

6.2

~~18 18~~ 55.33

18 ~~35.47~~

59.49

04.186
.00
− .30
4.46

Sept. 6 9

~~H.C.~~ Relay ~~D.K.~~ sounder not working. W.U. relay & sounder D.K. at 21 hrs 11

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Sept. 7. 1

Observations of Iuel.

Iel	S.	Screw	E.	W.	3·5	E. 11·4	− 7·9
"	S	"	W.		5·2	9·7	− 4·5
"	N	"	E.		3·7	11·0	− 7·3
"	"	"	W.		8·4	6·1	+ 2·3
Iel	N	Screw	E.		3·6	11·2	− 7·6
"	"	"	W.		9·0	5·7	+ 3·3
"	S	"	E		2·5	11·7	− 9·2
"	"	"	W		5·2	9·0	− 3·8
Iel	S	Screw	E		3·6	10·6	− 7·0
"	"	"	W		5·2	9·1	− 3·9
"	N	"	E		3·0	10·8	− 7·8
"	"	"	W.		8·3	5·5	+ 2·8
Iel	N.	Screw	E		3·6	10·5	− 6·9
"	"	"	W.		8·9	5·2	+ 3·7
"	S	"	E		3·0	10·9	− 7·9
"	"	"	W		5·0	9·2	− 4·2
Iel	S	Screw	E		4·2	9·8	− 5·6
"	"	"	W		5·0	9·0	− 4·0
"	N	"	E		3·9	9·8	− 5·9
"	"	"	W.		8·0	5·8	+ 2·2

			− 6·2
			− 4·4
			− 2·5
			− 2·2
			− 4·4
			− 6·6
			− 5·4
			− 4·0
			− 2·5
			− 1·6
			− 3·8
			− 6·0
			− 4·8
			− 3·3
			− 1·8

−4·4
−4·4
−4·0
−3·8
−3·3

5 | 19 9

−3·98

−4·108
.11
4088
4088
b = −0·4488
−3·98
.11
3927
3928

Sec φ = 1·354
+0644

Sec φ = 1·354
0·438
10838
4062
5416
−0·593052

1888phae.proj.1791E

Sept. 8.9 H.C.O. relay O.K. sonder networking. W.T. relay & sonder O.K. at 21 hrs

9.9 " " " " " " " " " " " " " 21 hrs

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Sept. 10.2

Observations with Level

Tel. S. Screw	E.	W. 5.8	E. 11.3	− 5.5	− 5.6
" " "	W.	5.6	11.4	− 5.8	
" N. "	E	5.4	11.3	− 5.9	− 4.0
" " "	W.	9.1	7.8	+ 1.3	− 2.3
Tel N Screw.	E	5.1	11.7	− 6.6	
" " "	W.	9.3	7.8	+ 1.5	− 2.6
" S "	E	5.2	11.6	− 6.4	− 4.4
" " "	W.	5.3	11.5	− 6.2	− 6.3
Tel S Screw.	E.	5.7	11.2	− 5.5	
" " "	W.	5.0	11.9	− 6.9	− 6.2
" N "	E.	5.2	11.7	− 6.5	− 4.4
" " "	W.	9.0	7.8	+ 1.2	− 2.6
Tel N. Screw.	E.	5.6	11.2	− 5.6	
" " "	W.	9.9	7.1	+ 2.8	− 1.4
" S "	E.	5.0	11.9	− 6.9	− 4.0
" " "	W.	5.3	11.6	− 6.1	− 6.5

Sept. 10.9 N.C.O. relay O.K. sounder not working. W. N. relays sounder O.K. at 21 hrs

Av. level rdg. − 4.20
.11
420
420
$b = -0.4620$

-0.462
$1.354 = \sec \varphi$
1848
2310
1386
462
$-0.625548 = b \sec \varphi$

-0.63
-0.59 = Sept 7. value
Av = -0.61

Level constant $b \sec \varphi$ $-0^{s}.61$

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Sept. 11. 9 A.C.O. relay O.K. sounder not working. N.N. relay + sounder O.K. at 21 hrs

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1888phae.proj.1791E

Sept. 12.3

R Lyrae

2·2	7·1	9·3
5·8	4·0	9·8
9·1	0·2	9·3
2·7	7·0	9·7
5·9	3·6	9·5
4·5	5·0	9·5
9·7	9·9	9·6

54·9
+ 11·6

18 51 54·77
18 57 58·82
— 4·05
·00
— ·61
4·66

B Lyrae

8·3	4·2	2·5
2·1	1·6	2·7
4·0	8·4	2·4
7·0	5·6	2·6
0·0	2·6	2·6
7·6	5·0	2·6
1·9	0·3	2·2

56.4
4.0

18 45 56.26
18 45 60.29
— 4.03
·00
— ·61
4·57

110 Herc.

5·4	5·6	1·0
8·1	3·0	1·1
0·7	0·3	1·0
3·4	7·6	1·0
6·0	5·0	1·0
2·6	8·4	1·0
6·5	4·4	0·9

50.6
7.6

18 40 50,50
18 40 54.49
— 3.99
00
— ·61
4·60

Y Lyrae

7·2	2·7	9·9
0·2	9·8	0·0
3·0	6·8	9·8
6·0	4·0	0·0
8·9	1·0	9·9
6·1	3·7	9·8
0·6	9·3	9·9

44.8
14.1

18 54 44.94
18 54 48.90
— 3.96
·00
·61
4·57

Sept. 12.9 H.C.O. relay O.K. sounder not working } at 21 hrs
N.M. " " sounder O.K.

Sept 13.9 H.C.O. relay O.K. sounder not working } at 21 hrs
N.M. " " sounder O.K.
H.C.O. relay & sounder O.K. at 21 hrs } after fixing batteries
N.M. " " " O.K. at 22 hrs

Sept. 15.9 H.C.O. relay O.K. sounder working occasionally
N.M. relay & sounder O.K. at 21 hrs

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Sept. 16.

109
~~19~~ Herc.

0.0	0.5	0.5
2.7	7.9	0.6
5.4	5.1	0.5
8.0	2.4	0.4
0.6	9.8	0.4
7.3	3.2	0.45
1.2	9.2	0.4

55.2
3.5

18 18 55.23
18 18 59.29
— 4.06
.00
— .61
4.67

.20
1
.02
59.27
59.29

Sept 16.9 H.C. relay N.K. sounder not working. N.W. relays sounder O.K. at 21h 20m
" 17.9 " " " " " " " " " " " " " " 21h 20m
" 18.9 " " " " " " " " " " " " " " 21h 20m

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1888phae.proj.1791E

Sept. 19.3

γ Lyrae			β Lyrae			α Lyrae		
6.9	2.2	9.1	7.7	3.8	1.5	7.0	8.0	5.0
9.8	9.6	9.4	0.7	1.0	1.7	0.2	4.7	4.9
2.5	6.5	9.0	3.7	8.0	1.7			
5.5	3.6	9.1	6.7	5.0	1.7			
8.4	0.6	9.0	9.6	2.0	1.6			
5.7	3.2	8.9	7.0	4.9	1.9	8.0	7.0	5.0
0.1	8.8	8.9	1.6	0.4	2.0	2.8	2.3	5.1
~~4.4~~		44.4			56.0			07.5
		7.8			13.1			4.5
18 54		44.52	18 45		55.87	18 32		07.50
18 54		48.75	18 45		60.13	18 32		11.91
		− 4.23			− 4.26			− 4.41
		.00			.00			.00
		− .61			− .61			− .61
		4.84			4.87			5.02

.23 .2 .05 → 60.18 / 60.13

.26 .2 .05 → 11.96 / 11.91

.26 2 .05 → 27.60 / 27.55

ε Herculis

3.9	2.7	6.6
7.0	9.7	6.7
0.1	6.4	6.5
3.2	3.6	6.8
6.2	0.3	6.5
3.9	2.7	6.6
8.5	8.0	6.5
		23.3
		4.5
17 52		23.30
17 52		27.55
		4.25
		.00
		− .61
		4.86

Sept. 19.9 ~~H.C.~~ relay O.K. sounder not working at 21 hrs
W. " " " O.K. at 21 hrs
~~H.C.~~ " O.K. " not working at 22 hrs
W. " " " relay O.K. at 22 hrs
after fixing batteries

20.9 ~~H.C.~~ relay O.K. sounder not working at 21 hrs
W. " " sounder O.K. at 21 hrs

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(E.'s first observations with new reticule.)

Sept. 22.3 α Cygni

3.0	9.0	2.0
6.3 5.7	5.7	2.0
0.0	1.9	1.9
3.7	8.7	2.4
6.8	5.5	2.3
5.2	6.9	2.1
1.0	1.1	2.1
6.1	36.1	
	15)0.9	
20 37	36.06	
37	40.81	
−0	04.75	
	.00	
	−.60	
0	05.35	

.22
.5
+.11
40.20
.81

.17
.5
.07
45.22
45.15

ε Cygni

2.2	8.3	0.5
5.3	5.6	0.9
8.2	2.7	0.9
1.1	9.7	0.8
4.2	6.7	0.9
1.2	9.3	0.5
5.9	4.8	0.7
	40.5	
	5.7	
20 41	40.38	
20 41	45.15	
—	04.77	
	.00	
	−.60	
0	05.37	

Average = 0m 05.36 = block #137 slow.

Sept. 22.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21 hrs
23.9 " " O.K. " " " " " " " " O.K. at 21 hrs
24.9 " " O.K. " " " " " " " " O.K. at 21 hrs
25.9 " " O.K. " " " " " " " " O.K. at 21 hrs
26.9 " " O.K. " " " at 21 hrs " " " " O.K. after adjustment at 22 hrs
27.9 " " O.K. " " " " " " " " O.K. " " at 21 hrs
27.9 " " O.K. " " " " " " " " O.K. " " at 21 hrs
after fixing batteries.

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Sept 29.3 61 Cygni Pr.

9.9	9.5	9.4
3.1	–	–
6.1	2.9	9.0
9.5	6.0	9.5
2.3	7.1	9.4
0.5	9.2	9.7
5.1	4.6	9.7
~~9.9~~	49.9	
	9.6	
	49.74	

21 01
01 57.34
– 0 07.60
,00
– .60
0 08.20

.19
.2
– .04
57.38
.34

Only one star.

Sept. 29.9 H.C.O relay O.K, sounder not working at 22hrs
" " & sounder O.K. at 22hrs. N.W. relay & sounder O.K. at 22hrs
30.9 " " O.K. sounder not working. N.W. relay & sounder O.K. at 22hrs
~~The magnet on the H.C.O relay had to be advanced after fixing the batteries, after which the H.C.O. relay was O.K. sounder not working at 22hrs. N.W. relays sounder O.K after a little adjustment at 22hrs~~
H.C.O. relay O.K. sounder not working. N.W. relay & sounder

See next page

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Oct. 1.9

	q Cygni			ε Cygni			λ Cygni		
	9.3	5.4	4.7	8.6	4.9	3.5	9.7	7.6	7.3
.24	2.9	2.0	.9	1.6	2.2	3.6	3.0	4.8	7.8
.6	6.2	8.6	.8	4.6	9.0	3.6	6.0	1.7	7.7
7.14	9.9	5.6	.9	7.5	6.0	3.5	9.0	8.7	7.7
40.46	3.1	1.5	.6	0.6	3.0	3.6	2.0	5.6	7.6
.60	1.9	2.6	.5	8.0	5.6	3.6	9.3	7.7	7.0
.19	7.1	7.6	.7	2.4	1.2	3.6	~~4.1~~ 3.6	3.4	7.5
.6		32.5			36.8			58.8	
.11		5.6			11.8			11.4	
44.86	20 37	32.37		20 ~~29~~ 41	36.78		20 42	58.76	
44.97	37	40.60		20 41	44.97		20 43	6.83	
	−0	08.23		− 0	08.19		− 0	08.07	
20		.00			.00			.00	
.6		−.60			−.60			−.60	
.12									
6.71	0	07.63		0	07.79		0	07.67	
6.83									

Average (clock slow) = $0^m 08.^s 76$

Oct. 1.9 H.C.O. relay O.K. sounder not working. at 21 hrs W.U. relay & sounder O.K. at 22 hrs

2.9 " " O.K. " " " " " " " " O.K. at 21 hrs

3.9 " " O.K. " " " " " " " " O.K. at 21 hrs

The magnet of the H.C.O. relay had to be advanced after firing the batteries, after which the H.C.O. relay was O.K. sounder not working at 22 hrs W.U. relay & sounder O.K. after a little adjustment at 22 hrs H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 23 hrs

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Oct 4.9

	0 Androm.			η Pegasi.			10 Lacertae		
	1.0	3.9	4.9			8.1			0.0
.08	4.4	0.7	5.1			5.4			7.0
.3	7.6	7.4	5.0			2.6			3.9
+.02	1.0	4.0	5.0	2.8	9.7	2.5	9.9	0.8	0.7
51.45	4.4	0.7	5.1	5.7	7.0	2.7	8.0	7.5	0.5
51.47	2.6	2.4	5.0	3.0	8.8	2.8	0.7	7.7	0.4
.08	7.7	7.4	5.1	7.0	5.5	2.5	5.6	4.9	0.5
.3			42.6			41.2			10.4
+.02			7.8			2.7			2.5
50.29	22	56	42.52	22	37	41.30	22	34	10.28
50.31		56	51.47	22	37	50.31	22	34	19.28
		− 0	08.95		− 0	09.01		− 0	09.00
			.00			.00			.00
.10			− .60			− .60			.60
.3		0	09.55			09.61			09.60
+.03									
19.25									
19.28									

Bn 3077.

3.5	7.6	1.1
2.5	8.6	1.1
9.3	2.0	1.3
8.2	3.3	1.5
4.7	6.6	1.3
3.9	7.6	1.5
0.4	1.0	1.4
9.4	2.0	1.4
5.7	5.3	1.0
4.8	6.5	1.3
4.4	6.9	1.3
3.4	7.8	1.2
8.0	3.7	1.7
7.0	4.5	1.5
50.0	57.5	1.5
		20.1
23	7	50.68
23	7	59.68
	− 0 0	09.01
		.00
		.60
		09.61

Oct 4.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21h 30m

Oct. 6.9 H.C.O. relay O.K. sounder working irregularly. W.U. relay & sounder O.K. after receding magnet slightly at 21h 30m

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Sept 22 to Oct.

Normal Mean Time Clock, Ballon #03

Sept. 22.3

15 27.67
12 06 59.69

20 25 43.64 & 03 00.
26 46.70 1 19.34
03.06
20 26 46.70

Sept 29.3

15 27.67
12 34 35.58

Oct 1.3

15 27.67
12 42 28.66

20 48 07.31 49
48 13.37 1 17.04
+0 06.06
20 48 13.37

Oct 4.4

15 27.67
12 54 18.32

22 42 13.58 9 31
42 19.79 1 33.80
+0 06.21
22 42 19.79

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Oct. 7·3

γ Cygni.

8·5	5·4	8·9
7·0	2·2	9·2
0·1	9·0	9·1
3·6	5·7	9·3
6·5	2·1	8·6
4·9	4·2	9·1
9·7	9·6	9·3

54·8 / 15 | 8·3

20 52 54·55
20 53 3·81
— 9·26
·00
— ·60
9·86

32 Vulpe

5·9	8·9	4·8
8·7	6·3	5·0
1·3	3·3	4·6
4·4	0·6	5·0
7·1	7·9	5·0
4·3	0·7	5·0
8·0	6·5	4·5

42.2 / 6.1

20 49 42.40
20 49 51.48
— 0 09.08
·00
— ·60
0 09.68

61 Cygni (R2)

8·3	7·8	6·1
1·3	4·9	6·2
4·3	1·7	6·0
7·7	8·6	6·3
0·8	5·4	6·2
8·8	7·6	6·4
3·4	2·8	6·2

48.1 / 1.5

21 01 48.10
21 01 57.19
— 0 09.09
·00
— ·60
09.69

δ Cygni

8·4	2·4	0·8
1·4	9·7	1·1
4·0	6·7	0·7
7·2	4·0	1·2
9·8	1·0	0·8
7·0	4·0	1·0
1·0	9·7	0·7

05·3 / 6·6

21 08 05.44
21 08 14.52
— 0 09.08
·00
— ·60
09·68

Oct. 7·9 H.C.O. cloudy & some working occasionally. Wire rel. & sounder O.K. at 21h 22m

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Oct 10·3

74 Cygni.			5 Cygni			1 Pegasi		
2·3	3·7	6·0	8·8	2·7	1·5	5.5	5.1	0.6
6·0	0·8	6·8	1·7	0·0	1·7	8.2	2.6	0.8
9·1	7·4	6·5	4·3	7·1	1·4	0.7	0.0 ~~9.7~~	0.7
2·2	4·2	6·4	7·1	4·1	1·2	3.5	7.4	0.9
5·4	0·9	6·3	0·1	1·3	1·4	6.1	4.8	0.9
3·7	2·8	6·5	7·2	4·2	1·4	2.5	8.2	0.7
8·3	7·9	6·2	1·6	0·0	1·6	6.4	4.2	0.6
		23·1			05·7			50.4
		2·8			10·9			5.6
21	32	23.19	21	08	05·72	21	16	50.37
21	32	31·95	21	08	14·47	21	16	58.99
		− 08·76			− 8·75			− 8.62
		·00			·00			·00
		− ·60			− ·60			− 60
		09·36			= 9·35			9·22

.20 .3 −.060 32.01 31.95 ·18 .3 −.054 14.52 14.47

.15 .3 −.04 59.03 58.99

Oct. 8.9 W.C. relay OK. sounder not working W.U. relay & sounder O.K. at 21 hrs "

9.9 " " " " " " " W.U. " " " " " 21 hrs "

10.9 " " " " " " " " " " " " " 21 hrs "

adjustment after fixing batteries. " at 21 hrs " " " " " " 22 hrs after slight

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Oct. 11.2

.19	110 Herculis.			β Lyrae.			R Lyrae.		
.4	0.2	0.1	0.3	2.8	9.0	1.8	6.5	1.5	8.0
.076	2.9	7.7	0.6	5.8	5.9	1.7	0.0	8.1	8.1
.08	5.5	5.0	0.5	8.7	3.0	1.7	3.5	4.7	8.2
5 3.99	8.1	2.2	0.3	1.6	0.0	1.6	7.0	1.5	8.5
5 3.91	0.7	9.6	0.3	4.3	7.0	1.3	0.2	7.9	8.1
	7.2	3.0	0.2	1.9	9.2	1.1	8.8	9.2	8.0
.23	1.2	9.1	0.3	6.2	5.1	1.3	3.9	4.0	7.9
.4			45.1			50.7			49.0
.09			2.6			11.2			0.8
59.71	18	40	45.17	18	45	50.75	18	51	49.05
59.62	18	40	53.91	18	45	59.62	18	51	58.01
		−	08.74		−	8.87		− 0	08.96
.29			.00			.00			.00
.4		−	.60		−	.60			−.60
−.11			9.34			9.47			09.56
58.12									
58.01									

γ Lyrae

.33			
.4	1.6	7.0	8.6
−.09	4.7	4.2	8.9
48.33	7.7	1.2	8.9
48.24	0.6	8.7	9.3
	3.1	5.7	8.8
	0.8	8.2	9.0
	5.0	3.9	8.9
			39.4
			6.8
	18	53 (4)	39.45
	18	54	48.24
		− 0	08.79
			.00
			−.60
		0	09.39

Oct. 11.9 H C O relay O.K. sounder not working. W. U. relay & sounder O.K. at 21 hrs

13.9 " " " " " " " " " " " " " 21 hrs

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Oct 14.8 α Leonis β Urs. Maj.

	3.7	1.6	5.3	4.2 0.2	4.4
.24	6.2	9.0	5.2	8.9 5.7	4.6
.3	8.7	~~9.0~~ 6.6	5.3	3.4 1.1	4.5
-.07	1.3	~~6.6~~ 4.0	5.3	7.8 6.8	4.6
28.26	3.7	1.5	5.2	2.1 2.0	4.1
.19	0.1	5.2	5.3	3.7 0.7	4.4
	3.9	1.4	5.3	0.1 3.8	3.9
			17.8		57.1
			9.7		2.6
.32			17.65	10 54	57.17
.3				10 55	08.25
-.10	02	28.19			
8.25	-0	10.54		- 0	10.98
8.15		.00			.00
		-.60			-.60
	0	11.14		0	11.58

Average = 11.36

Oct. 14.9 H.C.O. relay & K. sounder working occasionally. W. U. relay & sounder O.K. at 21 hrs

15.9 " " " " not " " " " " " " " 21 hrs

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Oct 16.2 β Lyrae

7.2	0.1	7.3	
0.1	7.4	.5	
2.9	4.8	.7	
5.7	2.0	.7	
8.7	9.1	.8	
5.6	2.2	.8	
9.8	8.0	.8	
		03.9	
		12.5	
19	26	03.83	
	26	15.63	
	−0	11.80	
		.00	
		−.00	
	0	12.40	

31.16
+.03
.19

15.61
+.02
.63

.32
.01
+.03
28.50
28.53

θ Cygni.

0.0	2.9	2.9
4.0	9.1	3.1
7.7	5.6	3.3
1.7	1.6	3.3
5.6	7.9	3.5
4.8	8.7	3.5
5.6	7.8	3.4
0.5	~~8.7~~ 2.8	3.3
1.4	~~7.8~~ 2.0	3.4
6.2	~~2.8~~ 7.0	3.2
~~7.0~~	~~2.0~~	
		12.9
19	33	16.60
19	33	28.53
	−0	11.93
		.00
		−.60
	0	12.53

ε Lyrae

6.1	2.1	8.2
9.6	8.8	.4
3.1	5.3	.4
6.6	1.8	.4
9.9	8.6	.5
8.5	0.0	.5
9.0	9.1	8.1
3.9	5.0	8.9
4.7	4.1	.8
9.0	9.6	.6
		20) 4.8
19	41	19.24
	41	31.19
	−0	11.95
		.00
		−.60
	0	12.55

Average = 12.49 = clock 1227 slow

Oct. 16.9 H.C.O. relay O.K. sounder not working. W.W. relay & sounder O.K. at 21h
17.9 " " " sounder not working. W.W. relay & sounder O.K. at 21hrs
" " " after advancing magnate. W.W. " " " " " 21hrs after
fixing batteries.
W.W. relay & sounder O.K. at 23h 50m H.C.O. relay O.K. sounder not working at 23h 55m

Oct. 16.2 cont.

		15	27.67
		13 41	56.95
19	21 55.26	5 24	00.
	21 57.84		55.22
	+0 02.58	19 21	57.84

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Oct 18, 2

32
1
−.03
28.50
28.47

29
1
−.03
31.16
31.13

18
01
18
1
−.02
50.44
50.42

29
1
03
9.22
9.89

ϑ Cygni

8.1 0.7 8.8
1.9 7.3 9.2
5.9 3.1 9.0
9.7 9.5 9.2
3.3 5.6 8.9

2.6 6.6 9.2
3.5 5.8 9.3
8.6 0.8 9.4
9.5 0.0 9.5
4.1 5.0 9.1
5.0 11.6

19 33 14.58
33 28.47
− 0 13.89
.00
−.60
14.49

δ Cygni

4.0 0.1 4.1
7.7 7.0 4.7
1.0 3.6 4.6
4.6 0.0 4.6
8.0 6.4 4.4

6.6 8.0 4.4
7.0 7.4 4.4
1.7 2.8 4.5
2.4 2.1 4.5
7.0 7.7 4.7
4.9

19 41 17.24
41 31.13
− 0 13.89
.00
−.60
14.49

γ Sagittae

1.9 1.4 3.3
4.5 8.9 3.4
7.0 6.2 3.2
9.7 3.5 3.5
2.4 1.0 3.4

8.7 4.4 3.1
2.5 0.4 2.9
36.5
9.3

19 5 36.46
5 3 50.42
− 0 13.96
.00
−.60
14.56

Amag. = 14.52

0' seg. Cygni

9.0
5.8
2.0
8.6
4.7

4.1 1.0 6.2 0.3
4.9 0.3 5.7 0.6
9.4 1.1 1.0 0.4
0.3 5.6 0.3 0.6
4.8 4.7 4.6 5.6 0.4
9.4 0.3 2.3

20.09 55.11
10 9.19
− 0 14.08 13.96
.00
−.60
14.56

Oct. 18.9
20
14.9

Det. C.O. relay & K. sounder not working. W.O.R. relay & sounder & K. at 21h 21h

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1888phae.proj.1791E

Oct. 22. 3

Annual Image.

	π^2 Cygni			16 Pegasi		
	0.1	1.1	1.2	9.3	1.3	0.6
	4.1	7.8	1.9	2.0	8.5	0.5
	7.7	4.1	1.8	4.9	5.7	0.6
.26	1.7	0.0	1.7	7.6	3.0	0.6
.5	5.3	6.2	1.5	0.3	0.5	0.8
+.13	4.9	7.0	1.9	7.1	3.7	0.8
43 26	0.5	1.6	~~1.6~~	1.4	9.6	1.0
43.39			25.8	~~5.~~		45.6
			~~12.4~~			5.5
.16	21 42		25.80	21 48		45.36
.5	21 42		43.39	21 48		~~02.53~~
+.08			−17.59±			−17.17
62.45			.00			.00
62.53			−.60			−.60
			0 18.19±			0 17.77

22 15 45.23
15 48.78
+0 03.55

15 27.67
14 05 16.28
7 53 47.00
1 17.702
.119
22 15 48.78

Oct. 21.9 H. C. O. relay O.K. sounder working occasionally. W. U. relay & sounder O.K. at 21h.

22.9 " " " " not " W. U. relay & sounder O.K. at 21h.

23.0 " " " " " " " " " " " " " " O.K. after fixing letters

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1888phae.proj.1791E

Oct 23.3

.17
.4
+.07
5.33
5.40

.31
.14
.15
+.13
62.17
62.30

22 05 03.47
04 18.55
− 0 44.92
22 05 05.40
22 04 20.48

.21
.4
+.08
45.28
45.36

.21
.4
+.08
45.28
.36

.17
.4
+.07
18.96
19.03

27 Pegasi

1.2	7.0	8.2
4.7	4.0	8.7
7.4	1.0	8.4
0.2	8.2	8.4
3.1	5.0	8.1
0.4	8.6	9.0
1.0	7.9	8.9
4.8	4.0	8.8
5.3	3.3	8.6
8.9	9.8	8.7

5.8

22 04 19.29
04 5.40 20.48

54.11
− 0 01.19
.00
−.60
0 01.79

10 Lacertæ

7.7	8.2	5.9
8.2	7.6	5.8
0.7	5.1	5.8
1.1	4.3	5.4
4.0	2.0	6.0
4.7	1.1	5.8
7.0	6.9	5.9
7.8	8.0	5.8
0.3	5.6	5.9
1.1	5.0	6.1
8.2	7.7	5.9
9.0	7.0	6.0
3.0	3.0	6.0
3.7	2.4	6.1
7.8	8.3	6.1

30) 28.5

22 34 17.95
34 19.03
− 0 01.08
.00
−.60
0 01.68

3 Cephei

7.0	4.4	1.4
1.4	0.0	1.4
6.7	5.3	2.0
0.6	0.6	1.2
5.7	6.0	1.7
6.1	5.0	1.1
7.0	4.0	1.0
3.3	5.0	1.7
4.1	2.7	1.5
0.1	1.2	1.3

14 3

22 07 00.71
22 07 02.30
− 0 2.12
− 0 01.62
.59
2 .00
−.60
02.19

7 Lacertæ

7.4	0.5	7.9
8.1	9.8	7.9
1.0	7.0	8.0
2.0	6.1	8.1
5.1	3.0	8.1
6.0	2.5	8.5
9.0	9.2	8.2
9.7	8.4	8.1
2.6	5.2	7.8
3.4	4.5	7.9
7.9	0.1	8.0
8.7	9.3	8.0
3.6	4.6	8.2

26) 26.7

22 26 44.03
22 26 45.36
− 0 01.33
.00
−.60
0 01.93

Average (excluding 3) = 0m 01.s80 = clock slow

15 27.67
14 09 12.83
21 53 07.26 7 27 00.
52 53.93 1 13.43
−1 +46.67 21 52 53.93

Oct. 23 9 H.C.O. relay O.K. sounder not working.
W.U. relay & sounder O.K. at 21h 30m
Oct. 24.9 H.C.O. relay O.K. sounder not working.
W.U. relay & sounder O.K. at 21h 30m
Oct. 25. 9 H.C.O relay O.K. sounder not working
W.U. relay & sounder O.K. at 21h 30m
Oct. 27 9 W.U. " " " O.K. after advancing magnet
at 21h 30m

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Nov 3.4

β Androm			ν Piscium			ν Persei		
7.0	4.1	1.1	0.15	2.9	3.4	0.4	1.2	1.6
0.2	1.5	1.7	3.1	0.0	3.1	1.1	0.8	1.9
3.1	8.4	1.5	5.9	7.4	3.3	4.4	8.0	2.4
6.1	5.4	1.5	8.7	4.7	3.4	5.2	7.0	2.2
9.1	2.2	1.3	1.5	1.8	3.3	7.9	4.4	2.3
6.2	5.0	1.2	8.1	5.1	3.2	8.9	3.5	2.4
7.0	4.4	1.4	8.6	4.8	3.4	1.8	0.3	2.1
1.0	0.8	1.8	2.7	1.0	3.0	2.4	9.8	2.2
1.6	0.0	1.6	2.7	0.5	3.2	5.3	6.7	2.0
25.5	26.1	1.6	6.5	7.0	3.5	6.1	6.0	2.1
		14.7			12.8	4.7	7.3	2.0
1	03	25.74	1	13	16.64	5.3	6.7	2.0
	03	34.09	1	13	24.81	0.2	1.9	2.1
	0	08.35		−0	08.17	1.0	1.0	2.0
		.00			.00	08.9	06.5	2.4
		−.60			−.60			1.7
	0	08.95		0	08.77	1	31	06.06
							31	14.41
							−0	08.35
								.00
								−.60
							0	08.95

Average = $0^m 08^s.93$ = clock #1327 slow.

Oct. 28.9 H.C.O. relay O.K. sounder not working. W.U. relay O.K. sounder not working at 21 hrs. Just before 23 hrs the sounder of the W.U. was not working, whereupon I altered the adjustment finding that it could thus make it work. So at 23 hrs W.U. relay & sounder were working O.K.

Oct. 29.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21 hrs

30.9 " " " " " " " " " " " " " " " " 21 hrs

31.9 " " " " working occasionally. W.U. relay O.K. & sounder working occacionally at 21 hrs

" " " " " " W.U. " O.K. irregular at 21 hrs. after

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Nov. 3.4 (continued on account of interruption of matter at foot of page.

C Persei

0.4	4.3	4.3
1.4	3.5	4.9
4.6	~~9.9~~ 0.7	5.3
5.6	~~9.9~~ 9.9	5.5
8.4	6.8	5.2
9.3	6.0	5.3
2.1	3.0	5.1
3.0	2.4	5.4
5.8	9.2	5.0
6.8	8.5	5.3
5.5	9.5	5.0
5.8	9.0	4.8
6.3	8.6	4.9
1.4	3.7	5.1
1.7	3.0	4.7
2.3	3.0	5.3
7.0	7.8	4.8
		37.6
		18.5
	36	37.53
1	~~37~~	
1	36	46.00
	0	08.47
		.00
		.60
		609.07

.03
.17
+ .02
45.98
46.00

Nov. 1.9 #CO. relay OK. sounder not working. W.U. relays sounder O.K. at 21 hrs
" 3.9 " " " " " " " " " " " " " " 21 hrs
" 4.9 " " " " " " " " " " " " " " 21 hrs
" 5.9 " " " " " " " " " " " " " " 21 hrs
" 6.9 " " " " " " " " " " " " " after receding magnet at 21 hrs

after fixing batteries

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Nov. 6

Nov. 7.

c Androum.

1.4	6.0	7.4
2.1	5.2	7.3
4.9	2.4	7.3
5.8	1.8	7.6
8.2	9.1	7.9
9.0	8.5	7.5
1.7	5.7	7.4
2.3	5.0	7.3
5.0	2.3	7.3
5.8	2.0	7.8
—	—	—
3.1	4.0	7.1
3.5	3.7	7.2
3.9	3.5	7.4
—	—	—
9.0	8.9	7.9
—	—	—
3.6	4.1	7.7
4.9		33.9
		22.4
23	32	33.72
23	32	44.06
		11.66

.16
.1
-.02
44.08
44.16

-.80

Oct. 7.9 H.C.O. relay O.K. sounder not working. W.U. relay O.K. sounder, not working at 21h 30m
" " " " " " " " " " " " " " at 22h
after fixing batteries.

8.9 H.C.O. relay O.K sounder not working. W.U. relay O.K. sounder not working at 21h 30m

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1000phae.proj.1791E

[Sober.]

Nov. 12.3 γ Pegasi

7.7	6.0	3.7
0.3	~~6.0~~ 3.6	3.9
2.9	~~3.6~~ 1.1	4.0
5.4	~~1.1~~ 8.5	2.9
7.9	~~8.5~~ 6.0	3.9
4.0	9.5	3.5
6.0	5.7	3.7

.08
4
+.09
33.56
.59

21.9
13.5
21.90
33.59
11.69
.00
−.60
12.29±

[Cotied]

Nov. 10.9 " H.C.O. relay O.K. sounder not working. W.U. relay O.K. sounder not working at 21h

11.9 " " " " " " " " " " " " " " " " " " 21h

12.9 " " " " " " " " " " " " " " " " " " 21h

13.9 " " " " " " " " " " " " " " " " " " 21h

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1888phae.proj.1791E

Nov. 14, 3 q Androm

2.5	5.5	8.0
5.3	9.0	.3
8.0	0.1	.1
0.9	7.3	.2
3.6	4.5	8.1
0.3	7.6	7.9
0.8	7.1	7.9
4.7	3.6	8.3
5.2	3.0	.2
(2) 8.9	9.4	.3

20) 1.3

.10
.2
± .02
41.45
.47

0 02 29.06
02 41.47
− 0 12.41
.00
− .60
0 13.01

22 Androm

0.0	6.7	6.7
3.5	3.4	.9
7.0	9.9	.9
0.5	6.3	.8
4.0	2.8	.8
2.9	4.0	.9
7.9	9.0	.9
8.5	8.3	.8
(~~13.0~~ 3.9	3.9	.9

18) 7.6

0 04 22.42
04 35.91
− 0 12.49
00
− .60
0 13.09

Average = 0m 13s.05 = clock slow

(Copied)
Nov. 14.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K after adjustment of sounder at 21 3/4
" " H.C.O. relay O.K. " " " " " " " " " fixing battery at 21 3/4
15.9 H.C.O. relay O.K. sounder not working. W.U. relays. sounder O.K. at 21 3/4

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(copied)

Nov. 16.5

	3 Persei			E Persei			ζ Persei		
	2.3	7.2	9.5	4.0	5.9	9.9	2.0	2.0	4.0
	5.0	4.2	9.2	4.9	5.1	0.0	2.9	1.1	4.0
				7.3	2.7	.0	5.7	8.7	4.4
.19	7.9	1.4	9.3	8.1	2.0	.1	6.6	7.8	4.4
.4				0.7	9.4	.1	9.5	5.0	4.5
.07	0.9	8.5	9.4	1.2	8.8	0.0	0.2	4.2	4.4
40.40				3.7	6.0	9.7	3.2	1.2	4.4
40.48	3.8	5.8	9.6	4.5	5.4	9.9	3.9	0.6	4.5
	0.6	8.7	9.3	7.0	3.0	0.0	6.8	7.7	4.5
.14	1.1	8.0	9.1	7.7	2.3	0.0	7.5	7.0	4.5
.4	5.0	4.5	9.5				5.6	8.6	4.2
.05	5.8	3.8	9.6	5.0	4.9	9.9	6.4	7.8	4.2
12.76	59.5	0.0	9.5	5.7	4.1	9.8	1.6	3.0	4.5
12.81		20	14.0	0.6	0.2	0.2	2.0	2.2	4.4
	3	46	59.70	0.5	9.6	.1	27.0	7.6	4.6
				14.7	5.3	.0		30	5.5
	3	47	12.81		30	29.7	4	00	27.18
	—	0	13.11	3	50	14.99	4	0	40.48
			.00		50	28.08	—	0	13.30
			-.66		0	13.09			02
			13.71			.00			-.60
						.60			13.90
						13.69			

Average = 0 13.77

Nov. 17.9 H.C.O. relay O.K. sounder not working. W. R. relay & sounder O. K. at 21 1/2 hrs.

" 18.9 " " " " " " " " " " " " " " " " " " 21 hrs.

19.9 " " " " " " " " " " " " " " " " " " 21 1/2 hrs.

Nov. 20.8 " " " " " " " " " " " " " " " " " " 20 hrs.

but W. R. sounder not working at all. Did not have to touch adjustment of either relay. That characteristic of B. 394, the short clip on last signal before 5 min. pause was very marked: we do not attempt to remedy it by adjustment of relay: the difficulty is in the clock.

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[= α Leacuta A Anon. 9½mm]

Nov. 20.2] Leacuta

	(5)4.1	(6)6.9	61.0
	(5)8.8	(6)3.5	61.6
	(5)1.9	(5)9.0	60.9
	(6)5.8	(5)5.1	60.9
	(6)9.8	(5)1.1	60.9
	(1)9.1		
	(2)4.9		

5) 5.3

31.06

Or discarding the second wire, 4) 3.7 / 30.92 Take the average, and call it:

22 26 30.99

26 44.93

− 0 13.94

.00

−.60

0 14.54

.19 / 5 / +.09 / 18.43 / .52

.20 / 5 / +.13 / 44.80 / .93

Nov. 21.9 H.C.O. relay O.K. sounder not working. W.U. relays & sounder O.K. at 21h 20m after fixing batteries neither relay would work, the clock sounder was taken out of the circuit and some of the screws fastening the yoke in the cups to the sounder were tightened, these being done together with the adjustment of the relays they were left O.K. at 23h 7m.

" 22.0 H.C.O. relay O.K. sounder not working. W.U. relays & sounder O.K. at 0h 9m after putting the clock sounder back into the circuit.

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Nov. 22.4 J Andrew q Arietes β Triang

2.5	6.5	9.0	8.5	9.4	7.9		6.8	4.1	0.9
3.3	~~6.0~~ 5.6	8.9	1.1	7.0	8.1		7.5	3.7	1.2
6.0	3.3	9.3	4.0	4.0	8.0		9.7	1.4	1.1
6.8	2.5	9.3	6.7	1.5	8.2		0.5	1.7	1.2
9.3	9.8	9.1	9.2	8.8	8.0		2.7	8.2	0.9
0.0	9.0	9.0	5.7	2.4	8.1		3.3	7.7	1.0
2.9	6.6	9.5	6.1 ~~9.7~~	1.9	8.0		5.8	5.1	0.9
3.0	5.9	8.9	~~9.1 7.8~~	8.3 ~~4.7.8~~	8.0		6.5	4.8	1.3
6.0	3.0	9.0	0.1	7.8	7.9		8.8	2.3	1.1
6.8	2.3	9.1	4 3.7 ~~4.4~~	4.4	8.1		9.5	1.8	1.3
4.1	4.8	8.9			20.3		6.1	5.0	1.1
4.9	4.0	8.9	2	0	~~38.67~~ 43.61		7.0	4.1	1.1
9.3	9.9	9.2	2	0	57.99		0.0	0.2	1.2
0.0	9.3	9.3	—	0	14.32		0.6	9.7	1.3
(8) 4.2	5.0	9.2			.00		4 5.3	6.0	1.3
		~~17.3~~			-.60			~~3.2~~	16.9
		16.6		0	14.92		2	~~3.8~~ 3.2	45.56
1	5.6	54.55					2	0 2	59.66
	5.7	08.66							
	~~+~~ 0	14.11					—	0	14.10
		.00							.00
		-.60							-.60
		0 14.71							0 14.70

Average = 0 14.77

Nov. 22.9 H.C.O. relay O.K. sounder not working. N. H. relay & sounder O.K. at 21 hr

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Nov 24.5

E swing

8.0	2.8	0.8
1.3	9.6	1.2
4.5	6.0	0.5
8.0	2.5	0.5
1.6	9.4	1.0
9.7	1.0	0.7
0.6	0.2	0.8
5.0	5.8	0.8
5.7	5.0	0.7
50.0	0.7	0.7
0.7		7.7
3.0		
5.8		
4 53		50.25
4 53		64.35
— 0		14.10
		-.60
		14.70

N

2 7.9	5.0	7 8.9
6.0	2.0	8.0
9.0	8.5	7.5
2.4	5.2	7.6
5.7	1.7	7.4
3.8	3.9	7.7
4.5	3.0	7.5
8.6	9.0	7.6
9.1	8.4	7.5
33.4	4.0	7.3
4.0		16.0
4 58		33.53
4 58		47.88
— 0		14.35
		-.60
		14.95

Q

5.2	3.4	8.6
6.2	2.7	8.9
9.0	0.4	9.4
9.7	9.6	9.3
2.5	6.0	8.5
3.2	5.6	8.8
6.0	2.9	8.9
6.8	2.4	9.2
9.7	9.1	8.8
0.2	8.5	8.7
8.8	0.5	9.2
9.6	9.8	9.4
3.8	5.1	8.9
4.5	4.6	9.1
19.0	9.8	8.8
9.8		6.5
5 08		19.21
5 08		33.63
— 0		14.42
		-.60
		15.02

Nov 24.5

.23
.2
— .05
64.40
64.35

.22
.2
— .04
47.92
47.88

.25
.2
— .05
33.68
33.63

Average (clock slow) = $0^m\ 14^s.89$

Nov. 24.9 N.C.O. relay O.K. somodernot working. M.M. relay a seconder O.K. at 21 hrs

25.9 " " " " " " " " " " " " " " " " " " 21 hrs

26.9 " " " " " " " " " " " " " " " " " " 21 hrs

28.9 " " " " " " " " " " " " " " " " " " 21 hrs

" " " " " " " " " " " " " " " " " " 21 hrs after fixing batteries

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Nov. 29.3

	~~H. Anderson~~	H. Anderson		S. Anderson
	8.6	6.6 2.7	9.3	4.0 8.0 2.0
.12	0.5	9.9 9.9	.8	6.9 5.4 2.3
.3	4.9	2.6 6.9	.5	9.7 2.5 2.2
-.04	9.1	5.7 3.9	.6	2.8 ~~9.8~~ 2.6 ~~2.9~~
59.74	3.5	8.4 0.9	.9	5.3 6.7 2.0
.70	0.9 2.7	5.6 8.5	.1	2.6 9.7 2.3
.11	3.9 9.9	0.5 9.1	.6	6.9 5.2 2.1
.3	06.9		44.9	~~11.0~~ ~~11.0~~ 11.0
-.03			11.1	1.5
26.18		0 30	44.74	0 33 11.10
26.15		30	59.70	0 33 26.65
		-0	14.96	-0 15.05
			.00	.00
			-.60	-.60
		0	15.56	15.65

Average = 15.60 slow

Nov. 29.9 H.C.O. relay O.K. sounder not working; W.U. relay & sounder O.K. at 21h 11m

Dec. 1.9 " 21h 11m

" 2.9 " 21h 11m

" 3.9 " 21h 11m

" 4.9 " 21h 11m

" 5.9 " 21h 11m

" " " after advancing magnet sounder not working at 21h 55m W.U. relay & sounder O.K. after advancing magnet slightly at 22h 0m after trying batteries. Dec. 6.0 W.U. relay & sounder O.K. at 0h 0m 0s.

" 6.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21h 11m

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Dec. 7.5 i Aurigae

3.0	9.6	2.1
3.5	8.6	2.1
5.7	6.4	2.1
6.4	5.8	2.2
8.8	3.5	2.3
9.4	2.9	2.3
1.6	0.2	1.8
~~4.5~~	~~0.1~~	
2.1	9.8	1.9
4.5	7.4	1.9
5.1	6.8	1.9
1.7	0.0	1.7
2.5	9.6	2.1
6.2	5.9	2.1
7.0	5.1	2.1
30.8	1.4	2.2
		0.8
4 49		31.02
4 49		49.80
		18.78
		.00
		-.60
0		19.98

112
.1
+ .01
64.56
.57

.13
.1
+ .01
48.10
.11

.11
.1
+ .01
49.79
49.80

E Aurigae

	7.8	
2.7	5.2	1.3
3.6	4.4	1.4
		1.7
		1.5
6.5	1.8	1.7
7.1	1.0	1.5
		1.5
9.7	8.2	1.6
0.5	7.6	
		1.6
3.0	4.9	1.6
4.0	4.2	
6.7		1.3
7.4	5.0 6.3	1.5
	5.8 5.7	
	0.3 1.3	1.6
	1.0 0.5	1.5
		1.4
45.4	6.0	22.6
4	53	45.75
	54	04.59
	-0	18.84
		.00
		-.60
	0	19.44

η Aurigae

7.9	0.7	8.6
8.4	6.0	.4
1.0	7.6	.6
1.9	6.9	.8
4.4	4.0	.4
5.0	3.5	.5
7.6	1.0	.6
8.1	0.1	.2
0.7	7.5	.2
1.4	6.9	.3
9.0	9.4	.4
9.7	8.7	.4
4.0	4.4	.4
4.7	3.9	.6
28.9	9.5	.4
		6.8
4	58	29.23
	58	48.11
	-0	18.88
		.00
		-.60
	0	19.48

Aurigae = 19.43

Dec. 8 1/10 Noticed A.V.A. relay & sounder at 23h 55m the five min. break at this time was O.K. but about ten seconds say, before the break the relay lagged the magnet over a second break, the magnet being receded everything worked well through the next five min. and through the break preceding 0h

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Dec 9.5

~~34.4~~
.18
.5
+.09
34.11
.20

.14
.3
+.042
64.16
64.20

.21
.5
+.11
+1.86
51.97

γ Aurigae

0.8	2.8	9.3
7.1	2.0	.1
9.7	9.9	.6
0.1	9.1	.3
2.5	6.9	.4
3.0	6.1	.1
5.4	3.9	.3
6.0	8.3	.3
8.3	1.0	.1
8.9	0.4	.3
5.5	3.7	.3
6.1	3.0	.1
0.0	9.4	.4
0.7	8.9	.6
14.4	15.0	.4

30) ~~29~~.5

5 25 14.65

25 34.20

- 0 19.55
,00
,60

0 20.85

ζ Tauri

4.7		
5.1		
7.3		
8.0		
	0.1	
9.9	9.7	
	7.6	
	7.0	
4.7	5.0	9.7
5.1	4.3	9.4
7.3	2.3	9.6
8.0	1.8	9.8
9.9	9.6	9.5
0.5	9.0	9.5
6.5	3.0	9.5
7.1	2.4	9.5
0.6	9.0	9.6
1.0	8.6	9.6
44.5	5.0	9.5

22) 17.82

5 30 44.80

5 20 64.20

— 0 19.40
,00
-.60

0 20.00

γ Aurigae

1.7	3.0	4.7
2.6	2.1	4.7
5.3	0.0	5.3
5.9	9.3	5.2
8.4	6.7	5.1
9.0	6.0	5.0
1.6	3.6	5.2
2.1	2.9	5.0
4.7	0.3	5.0
5.3	9.6	4.9
2.4	2.4	4.8
3.2	1.6	4.8
7.4	7.5	4.9
8.0	7.1	5.1
32.1	2.7	4.8

30) 14.5

5 43 32.48

5 43 51.97

— 0 19.49
,00
-.60

0 20.09

Average = 20.08

Dec. 9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K at 21h 30m

" 10.0 failed to notice W.U. relay & sounder until 0h 5m when both worked

" 11. H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21h 30m

" 12.0 W.U. relay & sounder O.K. through both breaks at 23h 55m & 0h 5m.

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Dec. 11.2

.19
.3
+.09
18.23
.31

.25
.5
−.13
44.27
44.14

.15
.5
−.08
48.42
48.36

7 Leonitae

~~4.3~~	6.9	0.2	7.1
5.1	7.8	9.5	7.3
8.0	1.0	6.6	7.6
8.9	1.7	5.8	7.5
1.8	4.7	2.7	7.4
2.7	5.6	1.8	7.4
5.7	8.6	9.0	7.6
6.7	9.4	8.0	~~7.4~~
	2.4	5.1	7.5
	3.2	4.3	7.5
	1.8	5.6	7.4
	2.7	4.7	7.4
	7.6	9.7	7.3
	8.3	9.0	7.3
	23.3	4.1	7.4
		30	221.1
22	26		~~23.70~~
22	26		~~44~~.14
	—	0	20.~~44~~
			.00
			−.60
			21.04

Average = 20.99

10 Leonitae

7.4	8.0	~~6.4~~
8.2	~~7.3~~	.5
0.9	5.0	.9
1.4	4.3	.7
3.9	1.9	.8
4.6	1.0	.6
7.1	8.6	.7
7.9	8.0	.9
0.1	5.5	.6
1.0	4.9	.9
8.1	7.7	.8
8.9	7.0	.9
2.9	3.0	.9
3.6	2.1	.7
57.6	58.1	.7
		26.0
	33	
22	~~3~~	57.87
	34	18.31
	−0	20.44
		00
		−.60
	0	21.04

η Pegasi

1.8	6.5	8.3
2.4	5.9	8.3
4.7	3.6	8.3
5.2	7.0	8.2
7.4	0.5	7.9
8.0	0.0	8.0
0.4	7.7	8.1
1.0	7.2	8.2
3.1	5.0	8.1
3.8	4.4	8.2
0.1	8.0	8.1
0.8	7.1	7.9
4.6	3.7	8.3
5.0	3.0	8.0
28.9	9.4	8.3
	30	2.2
22	37	29.07
22	37	49.36
	— 0	20.29
		.00
		−.60
		20.69

Dec. 11.9. H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21 hrs

.. 12.0 W.U. relay & sounder O.K. through both breaks at $23^h 55^m 4$ at 0 hrs

12.9 H.C.O. relay O.K. .. not working. W.U. relays sounder O.K. at 21 hrs

.. .. after advancing both magnets after fixing batteries at 21 hrs

.. 13.0 W.U. relays & sounder O.K. through both breaks at $23^h 55^m 4$ at 0h

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Dec 16.5 57 Aurigae

0.0		
4.9		
9.7		
4.5		
9.1		
7.5	9.7	
0.5	6.8	
		02.6
9.7	0.0	9.7
2.8	6.8	.6
5.7	9.6	.3
8.9	0.5	.4
2.0	2.5	.5
0.0	9.1	.1
4.9	4.5	.4

39.7

15) 10.7

6 30 39.71

30 62.29

−0 22.58

.00

−.60

23.98

ε Geminor

0.9	3.5	4.4
1.6	3.0	4.6
4.0	0.8	4.8
4.6	0.1	4.7
6.6	8.0	4.6
7.0	7.4	4.4
9.1	5.3	4.8
9.7	4.6	4.3
1.9	2.5	4.4
2.4	2.0	4.4
9.0	5.7	4.7
9.2	5.1	4.3
3×0	1.6	4.6
3×4	1.0	4.0
47.0	7.6	4.6

30) 7.2

6 36 47.24

6 37 9.88

−0 22.64

.00

−.60

23.24

ζ Geminor

1.4	8.0	9.4
4.4	5.0	9.4
7.6	1.9	9.5
0.1	9.0	9.1
3.1	6.0	9.1
0.9	8.6	9.5
5.4	4.3	9.7
		09.8

15) 143.5

6 45 09.57

6 45 32.40

−0 23.17

−0 22.64

.00

−.60

23.24

Aurigae 0 23.22

Dec. 13.9 H.C.O. relay was not working but [illegible] the magnet. after retreating the magnet slightly relay worked O.K. at 21h.0. After slightly retreating magnet W.U. relay & sounder O.K. at 21h.0

" 14.0 W.U. relay & " " " " 0h.0

" 15.9 H.C.O. relay O.K. after slightly advancing magnet. sounder not working. W.U. " & sounder O.K. at 21h.0

" 16.0 " " " " through both breaks at 23h 55m at 0h

" 16.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21h.0

" 17.0 W.U. relay & sounder O.K. through breaks at 0h

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α Loc 20.4 ν Persei ξ Persei

7.5 0.9 8.4 — 1.1 6.1 7.2
0.9 7.7 .6 — 4.1 3.7 7.8
4.1 4.2 .3 — 7.1 0.6 7.7
7.4 1.0 .4 — 0.0 7.7 7.7
0.6 7.3 .1 — 3.0 4.9 7.9
9.0 9.1 .1 — 0.1 7.8 7.9
4.1 4.1 .2 — 4.5 3.6 8.1

19.1 — 48.9
2.2 — 15) 13.2
3 37 19.15 — 3 46 48.88
37 43.32 — 3 47 13.01
− 0 24.17 — − 0 24.13
.60 — 00
− .60 — − .60
0 24.77 — 0 24.73.

Mean = 24.75

.04
.4
.02
43.34
.32

13.01
.4
.01
.4
.004
13.01

Dec. 7.9 H.C.O. relay O.K. sounder not working. W.M. relay & sounder O.K. at 21 hrs
" 18.0 W.M. " & sounder O.K. through both breaks at 23h 55m & at 0h.
" 18.9 H.C.O. " O.K. sounder not working. W.M. relay & sounder O.K. at 21 hrs
" 19.0 W.M. " & sounder O.K. through both breaks at 23h 55m & at 0h
" 19.9 H.C.O. " O.K. " not working. W.M. relay & sounder O.K. at 21 hrs
" " irregular. W.M. relay & sounder O.K. after adjustment at 22 hrs after fixing batteries.
20.0 W.M. relay & sounder O.K. at & through breaks at 23h 55m, 0h & at 0h 5m
H.C.O. relay comes in 2 seconds too late after the 5 min break at 0h

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Dec, 23.5 — χ⁵ Aurigae

0.6	5.8	6.4
1.2	5.0	.2
3.7	2.4	.1
4.5	1.8	6.3
7.0	8.9	5.9
7.9	8.1	6.0
0.6	5.5	.1
1.1	5.0	.1
4.0	2.0	.0
4.9	1.4	.3
2.6	3.7	.3
3.1	2.9	.0
7.9	8.5	.4
8.5	7.7	.2
22.9	3.4	.3
		2.6

,20
.1
−.02
48.90
.88

23
.83
−.07
65.63
65.56

6 3p8 23.09
38 48.88
−0 25.79
00
−.60
26.39

63 Aurigae

~~7.7~~	8.7	
	9.7	
~~2.1~~	7.1	
	6.6	
	4.0	
	3.5	
	0.7	
	9.9	
	7.5	
4.6	6.9	
5.4	9.6	
9.4	8.9	
0.0	5.0	
44.0		

9.0	0.7	9.7
9.7	9.9	9.6
2.1	7.1	9.2
3.0	6.6	9.6
5.4	4.0	9.4
6.0	3.5	9.5
8.6	0.7	9.3
9.2	9.9	9.1
1.7	7.5	9.2
2.5	6.9	9.4
9.8	9.6	9.4
0.5	8.9	9.4
4.6	5.0	9.6
5.4	4.0	9.4
39.4	0.0	9.4
		21.2

7 03 39.70
7 03 65.56
−0 25.86
.00
−.60
26.46

Average 26.42

20.0 H.C.O. relay adjusted by Mr Gerrish and working O.K. at 1h 25m
.9 " " O.K. sounder not working. W.U. relay & sounder O.K. at 21h.
22.9 " " " " " " " " " " " " " 21 1/2
23.9 " " " " " " " " " " " " " 21 1/2

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Dec 22

7.4	8.4	5.8
0.1	5.7	.8
2.9	3.0	.9
5.5	0.2	.7
8.1	7.7	.8
4.9	1.6	5.9
9.0	7.0	6.0

43.0

13.9

23 14 42.93

15 10.08

0 27.15

.00

-.60

0 27.75

.12
.7
-.01
10.11
.08

Dec. 24 0. W.U. relay & sounder O.K. through both breaks at 23h55 & at 0h.

" 25.9 H.C.O. " O.K. " not working. W.U. relay & sounder O.K. at 21hrs

" 26.0 W.U. " & " O.K. through both breaks at 23h55 & at 0h

" 26.9 H.C.O. " O.K. " not working. W.U. relay & sounder O.K. at 21hrs

" " " " " " " " " " after advancing magnet

O.K. after fixing batteries, at 21½ hrs H.C.O. relay O.K. at 23h45m

" 27.0 W.U. relay & sounder O.K. through both breaks at 23h55m & at 0h

27.9 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21hrs

28.0 W.U. relay & sounder O.K. through both breaks at 23h55m & at 0h between 0h & 5m at "m

I retracted the magnet slightly which improved the adjustment leaving it working O.K.

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1888phae.proj.1791E

Dec. 30.5

63 Aurigae

6.2	7.0	4.1
	4.5	.1
7.1	3.9	.2
9.6	1.3	.2
0.3	0.6	.1
2.9	8.0	.0
3.5	7.5	.1
6.0	5.0	4.0
9.03 → 6.6	4.3	3.9
9.63		
6.9	6.9	3.8
7.5	6.1	3.6
1.8	2.1	3.9
2.7	1.5	4.2
36.7	37.3	4.2
~~7.8~~		0.5

17
7.4
+.07
5.63
.70

7 03 37.02
04 05.70
− 0 28.68
.00
− .60
0 29.28

Dec. 29.9 W.C.O relay O.K. sounder not working. W.U. relays & sounder O.K. at 21h

30.0 at ~~23 55 0m~~ W.U. relays & sounder O.K. through the successive 5 min breaks, 23 55, 0h, 0 5m. But the ~~two~~ ticks immediately following the five min. break at 0h were very short ones. This peculiarity was not again observed 5 mins. later

Dec 30.8 At W.U. relay and sounder seem to be O.K. while the other lines are open, Blaine left for Mr. Winkley to fix the W.C.O. relay which is not all right. E.

" 30.9 W.C.O. not working rightly. Slightly improved by advancing magnet but not O.K. At Mr Edmond's suggestion I shook off a little water from each replacing it by fresh water.

O.K.

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1888phae.proj.1791E

Jan 3.5 1890 3 Zeiniver 63 Aurigae (?) 17 Lyrae Seq.

9.0	9.7	8.7	3.8	5.5	9.3	1.3	4.7	6.0			
7.6	9.0	8.6	4.5	4.8	.3	1.7	4.1	5.8			
1.9	7.1	9.0				2.3	3.8	6.1			
2.6	6.7	9.3	7.3	8.5	.8	5.6	0.6	6.2			
4.3	4.6	8.9	8.0	1.6	.6	6.0	0.1	6.1			
5.0	4.0	9.0				6.6	9.6	6.2			
7.1	2.0	9.1	0.3	9.1	.4	0.0	6.0	6.0			
7.7	1.3	9.0	1.0	8.5	.5	0.4	5.4	5.8			
9.8	9.1	8.9				0.7	5.0	5.7			
0.4	8.6	9.0	3.4	6.0	.4	4.1	1.8	5.9			
			4.1	5.4	.5	4.7	1.4	6.1			
6.0	2.6	8.6				5.1	0.6	5.7			
6.7	1.9	8.6	6.8	2.7	.5	8.5	7.6	6.1			
0.1	8.7	8.8	7.6	2.0	.6	9.0	7.0	6.0			
1.0	8.1	9.1	4.8	4.7	.5	9.5	6.6	6.1			
4.3	4.9	9.2	5.6	4.0	.6						
						9.1	6.2	5.3			
30)	13.8		9.9	0.0	.9	9.7	5.6	5.3			
6 5	04.46		0.4	9.2	.6	0.4	5.3	5.7			
6 5	35.39		34.5	5.1	.6						
					23.1	5.8	0.0	5.8			
− 0	30.93					6.4	9.4	5.8			
	.00		7	03	34.77	7.0	8.6	5.6			
	−.60			04	05.76	2.4	3.3	5.7			
0	31.53							22.7			
			− 0	30.99			45	41.7			
				.00							
				−.60		7	13	22.93			
			0	31.59		7	13	34.18			
						− 0		31.25			
								.00			
								−.60			
						0		31.65			

.12	.14	~~5~~			
.3	.3	.19			
.07	.04	.3			
+.04	+.04	+.06			
35.35	05.72	54.12			
35.39	.76	54.18			

Average = 31.^{s}66 slow

Dec. 30.9 W.U. relay & sounder O.K. except that the peculiarity of the clock was so intensified that the last tick before the five min. break seemed to be omitted entirely.

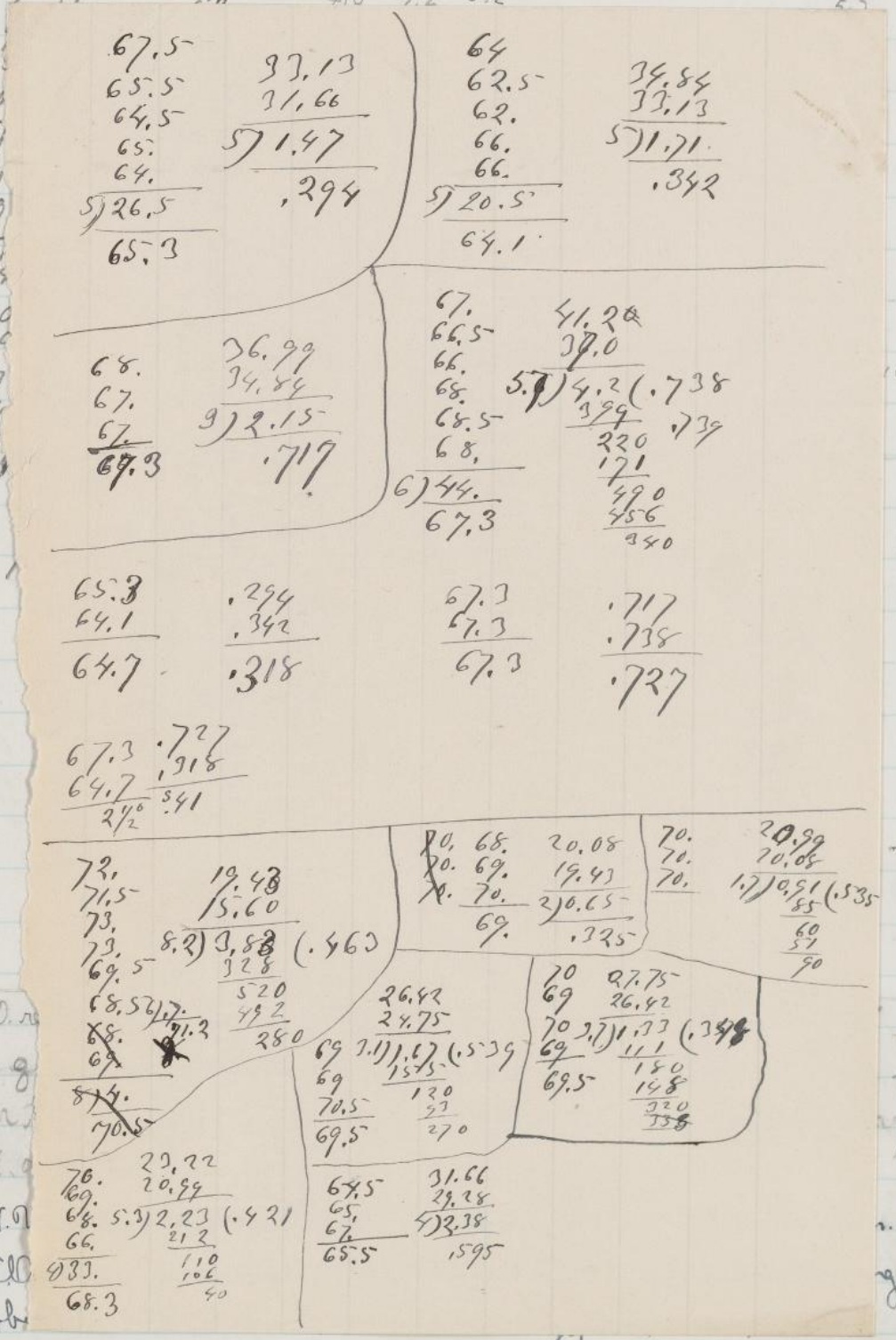
Dec. 31.0 Just before 23 5^{m} I advanced the magnet of the W.U. relay as it seemed to need it. Through both breaks at 23 5^{m} & at 0^{h} the relay was O.K. H.C.O. networking right. The relay was coming in 2 seconds too late after the five min. break. I was about to disconnect the clock from it after. This I did for a few mins and then connected again, & at the next five min break the tick came in on the right second but the relay was not working right.

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Stars continued on next page.

Jan 8.5 — 63 Aurigae — 19 Lyncis — 1 Leonis



Dec. 31.9 — H.C.O. relay armature held away from the magnet during five min. break, & therefor advanced magnets left relay working O.K. W.U. relay & sounder working O.K. at 21 hrs.

Jan. 1.0 — W.U. relay & sounder O.K. at 0 hrs. three 5 min. breaks.

Jan. 1.5 — G.R.E. found H.C.O. relay armature unattached; advanced the magnet till it worked.

Jan. 1.9 — H.C.O. relay armature held away from the magnet during five min. break, & therefor advanced magnets left relay working O.K. W.U. relay & sounder working O.K. at 21 hrs. Jan. 2.0 W.U. relay & sounder O.K. at 0 hrs. three 5 min. breaks.

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Jan 8.5

63 Aurigae

2.7	4.0	6.7
3.2	2.1	6.3
5.9	1.0	6.9
6.5	0.1	6.6
9.0	7.6	6.6
9.7	7.0	6.7
2.1	4.5	6.6
2.9	3.7	6.6
5.4	1.2	6.9
6.1	0.7	6.8
3.2	1.0	2.1	6.9
4.0	2.0	2.6	6.6
8.0	7.7	6.4	6.4
8.9	8.5	7.9	6.8
			6.7
			9.5

7 03 33.92
04 05.83
− 0 32.51
.00
−.60
0 33.11

19 Lyncis Seq

9.6	3.0	2.6
0.6	2.1	2.7
4.0	9.2	3.2
5.0	8.1	3.1
8.3	4.7	3.0
9.1	3.7	2.8
3.0	0.1	3.1
3.8	9.2	3.0
7.0	6.0	3.0
8.0	5.0	3.0
8.0	5.0	3.0
8.9	4.0	2.9
4.6	8.4	3.0
5.5	7.7	3.2
21.0	2.0	3.0
		14.6

7 13 21.49
7 13 54.27
− 0 32.78
.00
−.60
0 33.38

1 Geminor

		8.3
		7.7
		5.7
		5.1
		3.0
		2.4
		0.0
		9.6
		7.4
		6.7
3.0	0.1	3.1
3.7	9.7	3.4
7.1	6.0	3.1
7.7	5.6	3.3
21.5	2.0	3.5
		10 | 6.4
7	18	21.64
7	18	54.05
	− 0	32.41
		.00
		−.60
		31.01

19
.2
−.04
54.31
54.27

.14
.2
−.03
54.08
54.05

.14
.38
.01
.07
3.09
57.66
33.13

Average

~~Star's constan~~

Dec. 31.9 H.C.O. relay working very badly W.U. relays & sounder O.K. at 21hrs found one gink in battery badly honeycombed, replaced it by a fresh one after this & proper adjustment left H.C.O. relay & W.U. relays & sounder O.K. at 21hrs

Jan. 1.0 W.U. relays & sounder O.K. at 23h & again at & during the five min. break at 0h H.C.O. relay O.K. sounder not working at 0 30m after advancing magnet to obviate ticks which occurred during five min. break.

Jan. 1.9 H.C.O. relay armature held away from the magnet during five min. break, I therefor advanced magnet & left relay working O.K. W.U. relays & sounder working O.K. at 21hrs Jan. 2.0 W.U. relays & sounder O.K at 0hrs thro' 5 min break.

Jan 1.5 A.R.E. found H.C.O. relay armature unattached; advanced the magnet till it worked.

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Jan 8.5

I Seminor.

2.0	8.0	0.0
2.7	7.3	0.0
5.0	5.1	0.1
5.7	4.6	0.3
7.8	2.1	9.9
8.5	1.6	0.1
1.0	9.3	0.3
1.7	9.8	0.5
3.6	6.1	9.87
4.4	5.7	0.1
1.0	9.0	0.0
1.7	8.5	0.2
3.4	4.8	0.2
6.0	4.1	0.1
29.8	0.5	0.3

30 | 1.78
7 2 | 30.06
7 2202.53
— 0 32.47
.00
−.60
33.07

I Seminor Dec.

4.7	0.7	5.4
5.5	0.0	5.5
7.8	8.0	5.8
8.4	7.3	5.7
0.6	5.0	5.6
1.2	4.3	5.5
3.6	2.0	5.6
4.0	1.4	5.4
6.5	9.1	5.6
7.0	8.6	5.6
3.7	1.8	5.5
4.4	1.1	5.5
8.0	7.5	5.5
8.8	6.9	5.7
02.5	3.0	5.5

23.4

7 2 | 02.78 | 02.78
7 2 | 35.27 | 35.27
— 32.49 | 32.49
32.09 | .00
.60 | −.60
32.69 | 33.09

Doubtless "Holl". Obsn.
The brighter rose of course observed and the most likely nucleation was to call it Prec. when Holl. remarked The observer's recollection was to imbrace the fact that it was and that was observed that was observed.
E.
Obsn.

.15
.2
— .03
2.56
2.53

.17
.2
— .03
35.10
35.07
+.20
35.27

Jan. 29 H.C.O. relay O.K. sounder not working. W.U. relay & sounder O.K. at 21h
" " " after adjustment of magnet at 22h W.U. relay & sounder O.K. after adjustment of magnet at 21h after fixing batteries.

Jan. 30 W.U. relay & sounder O.K. through both 5 min. breaks at 23h55 & at 0h
H.C.O. relay O.K. at 0h

" 3.9 " " " sounder not working. though during the first five min break observed the sounder gave one or two taps during it but on observing through another five min. break everything was O.K. W.U. relay O.K. sounder not working at 21h

" 4.0 W.U. relay & sounder O.K. through both five min. breaks at 23h55 & at 0h. between these two times I retreated the magnet slightly which improved the regularity of the ticks.

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Stars continued on next page

ζ Geminia

~~ζ Geminor~~

Jan 13.5 ~~63 Auriga~~

	8.3		
	3.0		
5.0	5.6	7.6	
2 5.6	5.0	7.6	
4 0.8	2.8	7.6	
5 7.4	2.1	7.5	
7 3.6	0.0	7.6	
8 7.1	9.6	7.7	
0 0.4	7.3	7.7	
1 7.0	6.7	7.7	
3 7.1	4.4	7.5	
3 7.7	3.8	7.5	
	0.1	7.5	7.6
	0.5	6.9	7.4
	4.4	3.2	7.6
	4.9	2.7	7.6
08.6	9.1		7.7

30) 23.9

7 17 08.78

7 18 34.71

.10
.3
+.03
2.56
.59

.10
.3
+.03
54.08
54.71

.10
.3
+.03
35.10
35.13

ζ Geminia

0	0	0.1	6.0 6.1
0.5	0.6	0.9	5.4 .3
		3.0	3.1 .1
		3.6	2.6 .2
2.3	6.0		
2.9	6.5	6.0	0.1 .1
		6.5	6.8 .3
6.7	9.0		
7.2	9.6	9.0	7.4 .5
		7.6	6.9
2.0	2.0	4.6	.6
2.5	2.5	3.9	.4
		2.0	2.2 .2
		2.5	2.7 .2
		3.5	2.9 .4
		4.1	2.3 .5
		26.0	6.5
			4.7

7 21 28.16

22 02.57

-*0 34.43

.00

-.60

0 35.03

ζ Geminor

2.4	8.8	1.2
3.6	7.8	1.4
5.6	6.0	1.6
6.4	5.0	1.4
8.3	3.0	1.3
9.2	2.0	1.2
1.3	0.0	1.3
2.2	8.9	1.1
4.1	7.1	1.2
5.1	6.0	1.7
1.4	9.9	1.3
2.4	8.9	1.3
5.8	5.5	1.3
6.8	4.6	1.4
00.2	1.1	1.3

30) 19.4

7 27 00.64

7 27 35.13

*-0 34.49

.00

-.60

0 35.09

Jan. 5.9 H.CO. relay held away from magnet during five min. break when first observed, by adjustment this was obviated and at 23hrs the relay was O.K.
W.N. relay a sounder O.K. after a slight retreating of the magnet at 21 hrs

" 6.0 W.N. " " " O.K. at 0m and through break.

" 6.9 H.CO. " O.K. " not working. W.N. relay a sounder O.K. at 21hrs after readjusting sounder.

" 7.9 " " held away from magnet so that it did not work at all, when I first observed it at 21h 0m after finding it impossible to make it work as it should, I changed one of the gimles in one of the battery cups for a fresh one. By Edward's direction, which had the desired effect viz. of causing the H.CO. relay to work with great vigor. I therefore retreated the magnet leaving it a the W.N. relay a sounder O.K. at 22 hrs

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214

Jan. 13.5

.12
.3
+.04
25.32
25.36

.19 (?)
.4
+.08
42.75
42.83

.25 (?)
.3
+.08
63.66
63.74

" Seminor.

2.3	9.1	1.4
3.0	8.6	1.6
5.3	6.4	1.7
5.9	5.7	1.6
8.5	3.4	1.7
8.9	2.7	1.6
1.2	0.4	1.6
2.0	9.9	1.9
4.2	7.5	1.7
4.7	6.8	1.7
1.6	0.1	1.7
2.1	9.6	1.7
6.0	5.6	1.6
6.7	5.0	1.7
50.5	1.0	1.5
		24.7

739 50.82
740 25.36
— 0 34.54
-.60
35.14

.03
.09
.14
.09

Aetan preceding

26 Lyncis.

20.0	3.01	0.1
0.7	9.4	0.1
3.7	6.57	0.24
4.6	6.0	0.6
7.5	3.0	0.75
8.2	2.3	0.5
1.0		
1.7	8.5	0.2
4.6	5.7	0.3
55	47	0.2

16) 2.7
.7 45 55.15
46. 42.83
-0 47.68
12.84
34.84

Anst. that it precedes as determined Jan 16.5h
This accounts for the observation, but we will not use it.

Jan 7. 10h H.C.O. relay O.K. N.W. relay & sounder O.K. at 23 hrs 10h
" 8.9 " " " " " " " " " 21 hrs 10h
" 9.9 " " " " " " " " " 21 hrs 10h
" " " " " " " " " " 21 hrs 10h after fixing batteries.
" 10.0 " " " at 23 45 N.W. relay & sounder O.K. through both 5 min. breaks at 23 55m at 0h Jan. 10.9 H.C.O. relay O.K. N.W. relay sounder O.K. at 21 hrs 10h
" 11.0 N.W. relay & sounder O.K. through both 5 min. breaks at 2355m at 0h.
" 12.9 H.C.O. " O.K. N.W. relay & sounder O.K at 21 hrs 10h
" 13.0 N.W. " & sounder O.K. through both 5 min. breaks at 23 55m at 0h
" 13.9 H.C.O. " O.K. N.W. relay & sounder O.K. at 21 hrs 10h
" 14.0 " " " " through 5 min breaks at 0h m

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Jan. 14.9 H.C.O. relay O.K. W.U. relay & sounder O.K. at 21h 11m

15.0 W.U. " & sounder O.K. through both 5 min breaks at 23h 55m & 0h.

15.9 H.C.O. " O.K. W.U. relay & sounder O.K. at 21h 11m

16.0 " " " " " thro' both 5 min breaks at 23.55 & at 0h

16.9 " " " " " " " " at 21h 11m O.K. after fixing battery at 22h 22m

17.0 " " " " thro' both 5 min breaks at 23 55 & at 0h

17.9 H.C.O. relay O.K. " " " " " at 21h 11m

18.0 " " " " thro' both 5 min breaks at 23 55 & at 0h

Jan. 16.5 [Not Twin Star.]

Preceding 26 Lyncis

∓	18.0	
∓	18.8	Average of corresponding wires of 26 Lyncis in Twin-tally
	21.9	
	22.5	
	25.4	
	26.1	
	29.0	
	27.8	
	33.0	
	33.6	
Average	29.48	42.32

Difference 12.84

Using this correction on Jan 13.5 accounts for the observations there made.

Probable Object - Probably observed for c Jan 13.5

~~4.8~~	5.8	9.0	4.8
~~9.9~~	8.9	6.3	5.2
~~1.0~~	1.5	3.6	5.1
~~8.5~~	4.2	0.~~7~~	4.9
~~3.6~~	7.2	7.9	5.1
	4.0	0.9	4.9
	8.3	6.8	5.1
	22.5		2.5
		157	7.6

22 22.51
18 17.85

Follows c 4m 04s.66

Find this star proves to be D.M. +28° 1400

Time Star on next page.

The star observed Jan 13.5 was more probably D.M. +27° 1374 (Obs made Jan 16d 13.4)

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1888phae.proj.17915

216 1890

Jan 16.5

c Geminarum

∓	−	4.3
∓	−	1.8
7.0	9.0	6.0
9.8	6.0	5.8
2.6	2.1	5.7
9.2	6.1	5.3
3.7	2.0	5.9

17.7
11)19.4

7 18 17.85
18 54.15
− 0 36.30
.00
−.60
0 36.90

q Geminorum

0,8	7.0	7.8	5.7
1.8	5.8	7.6	
3.8	4.1	7.9	8.8
4.7	3.0	7.7	
6.5	1.3	7.8	1.5
7.4	0.2	7.6	4.2
9.4	8.3	7.7	
0.4	7.2	7.6	
2.2	5.4	7.6	3.9
3.1	4.4	7.5	8.3
9.6	8.0	7.6	
0.6	7.0	7.6	
4.0	3.7	7.7	
5.0	2.8	7.8	
5814	9.6	8.0	

30) 23.3

726 58,85
727 35,16
− 0 36.31
.00
−.60
36.91

β Geminorum

2.3	6.0	8.4
2.9	5.5	8.5
5.6	2.8	8.4
7.8	0.6	8.4
8.5	0.0	8.5
0.7	7.7	8.4
1.5	7.1	8.6
3.6	4.8	8.3
4.0	4.3	8.3
0.5	8.0	8.5
1.1	7.4	8.4
4.7	3.7	8.4
5.4	3.1	8.5
59.0	9.7	8.7

31) 6.6

7 37 59,22
7 38 35.56
− 0 36.34
.00
−.60
36.94

ν Geminorum

0.5	7.4	7.9
1.0	6.7	7.7
3.5	4.5	8.0
4.0	3.8	7.8
6.4	1.5	8.0
7.0	0.9	7.9
9.5	8.6	8.1
0.0	8.0	8.0
2.2	5.7	7.9
3.8	5.0	7.8
0.7	8.1	7.8
0.2	7.6	7.8
2.2	3.7	7.9
4.8	3.2	8.0
4.2	9.3	8.0
3.8	5.8	

30) 28.6

739 48.95
740 25,39
− 0 36.69
36.44
−.60
37.04

26 Lyncis

−	1.3	
−	0.4	
−	8.0	
−	7.1	
8.3	4.1	2.4
9.0	3.4	.4
1.9	0.8	.7
2.8	9.9	.7
5.6	8.8	.5
6.3	6.1	.4
5.0	7.7	.7
5.6	6.9	.5
0.4	0.1	.5
1.0	4.5	.5
0C.0	6.8	.8

24) 6.1

7 46 06.28
46 42.86
− 0 36.58
.00
−.60
0 37.18

36.90
6.91
6.94
7.04
7.18
36.99

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1 19
2 38
3 57
4 76
5 95
6 114
7 133
8 152
9 171

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